

Environmental Assessment: Modification

Pharmaceutical & Illicit Drug Waste Processing

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Pharmaceutical & Illicit Drug Waste

Client: Weston Aluminium Pty Ltd

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Executive Summary

Introduction

This Environmental Assessment (EA) has been prepared for Weston Aluminium Pty Ltd (WA) to accompany a modification application under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). WA proposes to modify existing Development Consent DA 86-04-01 and Land and Environment Court (LEC) 10397 of 1995 to allow for the commercial-scale processing of pharmaceutical and illicit drug wastes within existing rotary furnaces at WA's Kurri Kurri facility (the Project). Approval for the commercial-scale processing of pharmaceutical and illicit drug wastes is sought in response to the significant contraction in traditional markets served, and the resultant surplus thermal treatment capacity of the existing plant and infrastructure.

Pharmaceutical wastes include expired, superseded, unwanted / unused and off-specification medications. Packaging would typically include cardboard boxes containing plastic blister packs with aluminium foil seals, bottles and vials, and bulk product/powders in drums or similar containers. These wastes would primarily be derived from pharmaceutical manufacturers, aged-care facilities, hospitals and other healthcare providers. Illicit drug wastes would include plant material, including stems, foliage, seeds and roots, and pill-form drugs stored in either cardboard or plastic evidence satchels. Illicit drug wastes would be derived from confiscated and evidentiary materials managed by NSW Police.

Domestic processing and disposal options for pharmaceutical and illicit drug wastes are heavily constrained. In response to an increasing and ageing population, quantities of these wastes appear to be increasing nationally at a rate of approximately 3% per annum. The NSW Police has limited storage capacity and there are very few avenues for the regulatory approved, appropriate and controlled destruction of illicit drugs. Domestic processing and disposal of pharmaceutical wastes are similarly constrained. In accordance with NSW legislation, pharmaceutical wastes must be incinerated. Beyond the WA facility, there is only one suitable NSW-based facility offering thermal destruction services for these types of wastes, and otherwise these wastes are transported to Queensland or Victoria.

On 15 September 2015, WA was granted approval for a 24 month trial processing of illicit drug and pharmaceutical waste in existing furnaces. The current Development Consent authorises WA to process up to 200 tonnes of illicit drug wastes and up to 1,000 tonnes of pharmaceutical wastes over the 24 month trial period. The trial program commenced on 14 October 2015 and is nearing completion. In response to trial successes and ongoing demand by the waste management sector, WA is now seeking to modify the existing Development Consent to provide for the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes at the existing Facility.

WA proposes to process up to 5,000 tonnes per annum of pharmaceutical wastes and up to 5 tonnes per annum of illicit drug wastes in existing rotary furnaces. WA's existing Development Consent allows for the processing of a combined total of 40,000 tonnes per annum of dross aluminium and Spent Potlining (SPL) wastes in existing rotary furnaces. The ongoing processing of pharmaceutical and illicit drug wastes would fit within this existing processing limit (that is, up to a combined total of 40,000 tonnes per annum of aluminium dross, SPL and pharmaceutical and illicit drug wastes).

Description of the Project

Pharmaceutical and illicit drug wastes are principally organics and are readily transformed to common products of combustion, including carbon dioxide, oxides of nitrogen and water.

WA proposes to process pharmaceutical and illicit drug wastes in the same manner as is currently undertaken under trial operating conditions. In summary, the key elements of the process include the following:

- Pharmaceutical waste would be delivered to site from domestic sources by a licensed contractor. The transport and handling of the Illicit drug wastes would be managed by NSW Police and its independent verifiers;
- Pharmaceutical waste would be placed in storage bays where it would be held until processing is performed. Illicit drugs would be processed immediately upon receipt in the presence of NSW Police and as such storage of these wastes would not be required;
- Thermal processing of waste blends with conventional dross and/or SPL furnace additions would be undertaken in existing rotary furnaces under a batch-style process to safely oxidise combustible components;
- Processed ashes would be removed from the furnace (along with bulk furnace ashes) and processed in the cooler; and
- Ash material would then be milled to specification, bagged and transported to customers.

Emissions monitoring data obtained to date during the trial program confirmed that all emission concentrations were below the existing regulatory compliance limits throughout the process. Consequently, no change to WA's existing Environmental Protection Licence (EPL) limits would be required for the Project.

Environmental Impact Assessment

Air Quality

An Air Quality Impact Assessment was prepared for the Project to determine the potential impacts of the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes in addition to the site's existing operations.

A modelling scenario was undertaken to represent typical WA operations, including the proposed pharmaceutical and illicit drug wastes processed continuously in conjunction with dross and SPL. The assessment also included consideration of the cumulative impacts associated with the operation of WA's proposed thermal waste processing plant and a Battery Recycling Facility (BRF) proposed by Pymore Recycling Pty Ltd on adjacent land.

Dispersion modelling demonstrated that the WA Facility incremental contribution for all assessed pollutants and air toxics would meet their respective EPA criterion for all averaging periods. The cumulative assessment identified that all assessed pollutants and air toxics would be below the relevant EPA criteria, with the exception of NO₂.

With regard to the modelling results for NO₂ concentrations, the maximum 1-hour NO₂ contribution from WA (21.9 µg/m³) equates to approximately nine percent of the EPA criterion (246 µg/m³). When added to the predicted impact of the BRF (168.5 µg/m³) and the background concentration (73.3 µg/m³), the predicted cumulative concentration of 263.7 µg/m³ exceeded the EPA criterion by seven percent. However, the cumulative annual average was predicted to be well below the EPA criterion, equating to just over half of the annual average criterion. It was noted that emission rates from WA are conservative as they are based on continuous operation, include the thermal waste treatment facility operating at maximum capacity continuously and assume that all NO_x is converted to NO₂. Therefore, actual concentrations are expected to be lower than reported and the cumulative impacts can be considered to be an overestimate of actual worst case cumulative concentrations.

On the basis of the dispersion modelling undertaken for the Project, the Project is not expected to result in a substantial change to the air emissions from the facility and is not expected to result in significant impacts on the surrounding environment.

Hazard and Risk

A preliminary risk screening assessment was undertaken to determine the potential need for further hazard assessment. Based on the proposed quantities of pharmaceuticals processed and stored as part of the project (which may include small quantities of dangerous goods), the screening assessment identified that the project is not considered to be a Potentially Hazardous Development for the storage or transport of dangerous goods. The preliminary risk screening also included a review of the Environmental Assessment (WA, 2015) prepared for the trial processing of pharmaceutical and illicit drug wastes and the Preliminary Hazard Assessment (PHA) (AECOM, 2017) prepared for the proposed thermal waste processing project at the WA facility.

Based on the analysis conducted in the preliminary risk screening, the hazards associated with the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes at the WA facility do not result in a change to the existing risk profile. Therefore, with the previously recommended safeguards continuing to be in place for the operation of the Project, no further hazard analysis is deemed necessary for the Project to proceed.

Other Environmental Factors

An assessment was undertaken of the potential impacts of the Project on a range of other environmental factors:

- Traffic;
- Soil and Water;
- Greenhouse Gas Emissions;
- Noise;
- Waste Management;
- Social and Economic;
- Visual;
- Heritage;
- Land use; and
- Fauna and Flora.

The Project is anticipated to have a negligible impact on these environmental issues as there would be no change to the existing and approved tonnage processing limits, approved vehicle movements, site footprint, construction activities and operation of the facility.

Environmental Management

The assessment of potential impacts that may occur as a result of the Project concluded that the Project would use the same site processes and would not result in an increase in hazards nor result in significant air emissions. Furthermore, existing site management measures are deemed suitable for the ongoing management of potential environmental impacts associated with the Project. WA therefore commits to the ongoing operation of the site's Environmental Management System including procedures for the handling, storage and processing of pharmaceutical and illicit drug waste, and the operation of the site's air pollution control systems.

Conclusion

The Project offers a local and cost-effective solution for the disposal of pharmaceutical and illicit drug waste, utilising the existing infrastructure, operational protocols and emission control systems in place at the WA facility. The Project would also result in improved market versatility and would assist in securing the ongoing operation of the WA site and employment for its workers and associated contractors.

The potential adverse impacts of the Project have been assessed to be negligible. No change to WA's existing EPL limits would be required for the Project. With the implementation of the mitigation measures (existing and proposed), impacts would be appropriately mitigated and the Project can proceed accordingly.

1.0 Introduction

1.1 Purpose of this Document

This Environmental Assessment (EA) has been prepared for Weston Aluminium Pty Ltd (WA) to accompany a modification application under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). WA proposes to modify existing Development Consent DA 86-04-01 and Land and Environment Court (LEC) 10397 of 1995 to allow for the commercial-scale processing of pharmaceutical and illicit drug wastes within existing rotary furnaces at WA's Kurri Kurri facility (the Project). Approval for the commercial-scale processing of pharmaceutical and illicit drug wastes is sought in response to the significant contraction in traditional markets served, and the resultant surplus thermal treatment capacity of the existing plant and infrastructure.

Domestic processing and disposal options for pharmaceutical and illicit drug wastes are heavily constrained. In response to an increasing and ageing population, quantities of these wastes appear to be increasing nationally at a rate of approximately 3% per annum. The NSW Police has limited storage capacity and there are very few avenues for the regulatory approved, appropriate and controlled destruction of illicit drugs. Domestic processing and disposal of pharmaceutical wastes are similarly constrained. In accordance with NSW legislation, pharmaceutical wastes must be incinerated. Beyond the WA facility, there is only one suitable NSW-based facility offering thermal destruction services for these types of wastes, and otherwise these wastes are transported to Queensland or Victoria.

On 15 September 2015, WA was granted approval for a 24 month trial processing of illicit drug and pharmaceutical waste in existing furnaces. The trial program commenced on 14 October 2015 and is nearing completion. In response to trial successes and ongoing demand by the waste management sector, WA is now seeking to modify the existing Development Consent to provide for the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes at the existing Facility.

WA proposes to process up to 5,000 tonnes per annum of pharmaceutical wastes and up to 5 tonnes per annum of illicit drug wastes in existing rotary furnaces. WA's existing Development Consent allows for the processing of a combined total of 40,000 tonnes per annum of dross aluminium and Spent Potlining (SPL) wastes in existing rotary furnaces. The ongoing processing of pharmaceutical and illicit drug wastes would fit within this existing processing limit (that is, up to a combined total of 40,000 tonnes per annum of aluminium dross, SPL, and pharmaceutical and illicit drug wastes).

This EA provides a detailed assessment of the key environmental issues associated with the Project and has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DP&E). A copy of these SEARs is attached at **Appendix A**.

1.2 Facility Background

1.2.1 Site Location

The existing aluminium recycling and refining facility owned by WA is located on Lot 796 DP 39877 at 129 Mitchell Avenue, Kurri Kurri in the Hunter Valley, NSW. The location of the site is shown in **Figure 1** and the existing site layout is detailed in **Figure 2**.

The site is approximately 40 km northwest of Newcastle and is located within an established industrial area. Residential areas in Kurri Kurri (approximately 600m) and Weston (approximately 800m) are located to the south and west of the site, respectively. The Hydro Aluminium Smelter (now closed) is located approximately 2 km north of the site.

1.2.2 Proponent

The plant is owned and operated by WA, which is majority owned by Watou Holdings and the balance by Asahi Seiren, a major secondary aluminium processor in the Japanese Aluminium industry. Both shareholders have an established track record in the operation of aluminium refining and waste recycling facilities through the operation of the existing development in Kurri Kurri and a number of facilities in Japan and Indonesia.

1.2.3 Facility History

The facility commenced operations as a pilot plant in 1998 with six employees and one rotary furnace and has progressively grown. At its pre-Global Financial Crisis peak, WA employed over 80 employees, and operated 24 hours per day, 7 days per week. The current WA facility employs 40 personnel, and recovers aluminium from dross, a by-product of the aluminium smelting process, sourced from aluminium smelters across Australia and New Zealand. The facility also processes SPL wastes, which is a hazardous by-product of primary aluminium production generated from the periodic de-lining of electrolytic cells.

Dross is a dry metallic solid typically composed of aluminium, aluminium oxide, other metal oxides, traces of sodium aluminium fluoride (bath) and alloying metals. Dross can contain 30-75 percent metallic aluminium, which represents a significant loss of metal if not recovered. The plant also remelts and recycles scrap aluminium, producing deoxidant products for the steel manufacturing industry.

SPL is processed onsite to remove hazardous trace-level chemical compounds (e.g. cyanide) and transform its mineralogy. First Cut SPL (originating from the carbon cathode) and Second Cut SPL (originating from the refractory lining of reduction cells/pots) contain varying proportions of aluminium, carbon, cyanide, fluorides, sodium and other trace contaminants. In 2012, WA received development consent for the receipt and processing of Second Cut SPL. In 2017, WA was granted approval for the processing of all SPL wastes (First Cut, Second Cut and Mixed SPL (a mixed ratio of First and Second Cut SPL)).

The facility is currently approved to process up to 35,000 tonnes of scrap aluminium metal per annum and up to a combined 40,000 tonnes of aluminium dross and SPL per annum. The facility also has approval for the processing of up to 200 tonnes of illicit drug waste and up to 1,000 tonnes of pharmaceutical waste over a 24 month trial period.

1.3 Project Background

1.3.1 Background

WA has historically provided illicit drug waste thermal destruction services to the NSW Police. This activity has previously been performed as a non-commercial, community service. However the Environment Protection Authority (EPA) made a directive in November 2014 requiring that the premises be formally licenced and obtain development consent to undertake this specific activity. The NSW Police Force approached WA regarding this issue and was strongly supportive of the trial program and subsequent ongoing processing of illicit drug wastes at the WA facility.

Preliminary research and industry consultation indicates that domestic processing and disposal options for other wastes such as pharmaceutical wastes were also constrained, with only one suitable facility offering thermal destruction services in NSW. Generators and managers of pharmaceutical wastes were also highly supportive of trial activities and the prospect of a competitive market and an alternative service provider in the industry.

In 2015, WA gained approval for a 24 month trial processing of pharmaceutical and illicit drug wastes, in conjunction with existing plant feedstock. The trial program was designed to evaluate the variability of waste streams and to assess and verify the performance of the treatment sequence. As the trial program is nearing completion and has successfully shown the plant's ability to process these wastes in an environmentally rigorous manner, WA is now seeking approval for the ongoing processing of pharmaceutical and illicit drug wastes.

1.3.2 Pharmaceutical and Illicit Drug Wastes

A detailed analysis was previously undertaken to identify the type, source location and generation quantities of wastes that require thermal treatment, and for which the plant, equipment, processes and environment controls at the WA facility are compatible. A summary of the waste descriptions is provided in **Table 1**.

Table 1 Summary of Pharmaceutical and Illicit Drug wastes

Waste Description	Source	Estimated Annual Generation (tonnes)
Pharmaceutical waste		
- Council and Government return / collection schemes, hospitals, dental service providers, Medical Centres, chemists / pharmacist recalls, aged-care facilities and medical clinics¹. - Expired, superseded, unwanted / unused and/or off-specification medications. - Packaging of pharmaceuticals including cardboard boxes containing plastic blister packs with aluminium foil seals¹, vials/bottles, and drums/containers.	Nationally	10,000
	NSW	5,000
	QLD	1,500
	VIC	1,000
Illicit Drug waste		
- Confiscated and evidentiary materials management by NSW Police. - Plant material, including stems, foliage, seeds and roots. Residual soils may also be present. - Pill- and powder-form drugs (e.g. MDMA, amphetamines, etc) in either cardboard or plastic 'evidence' satchels.	Nationally	150
	NSW	50

1. In NSW these wastes must be incinerated. Incineration typically achieves 90-100% original weight reduction.

1.3.3 Processing Trials and Validation

WA has previously undertaken a number of formal trial programs at its Kurri Kurri facility, including First and Second Cut SPL processing trials (2005 – 2012), and Mixed SPL processing trials (2014 – 2016). The outcomes of these trials were confirmed during subsequent commercial-scale processing.

The pharmaceutical and illicit drug wastes trial program commenced in October 2015 and includes the processing of up to 200 tonnes of illicit drug wastes and up to 1,000 tonnes of pharmaceutical wastes. Consistent with prior trial activities, the trial program includes a treatment process based on the following elements:

- Input characterisation and segregated storage where required;
- Furnace feedstock formulation;
- Thermal treatment;
- Crushing and blending of minor ash residues with existing ash streams; and
- Dispatch to customers.

The processing of pharmaceutical and illicit drug wastes utilises existing plant and equipment at the WA facility. Existing infrastructure and associated controls are utilised for material containment and compliance with regulatory requirements.

The 24 month trial program is due for completion in October 2017. Preliminary results from monitoring undertaken throughout the trial program indicate that regulatory requirements and environmental compliance obligations were met during the trial period, with no exceedances of existing emission concentration limits (further discussed in **Section 6.1**). The results indicate that the infrastructure, processes, and control measures at the existing WA facility are suitable for the processing of pharmaceutical and illicit drug wastes.

1.3.4 Commercial Processing of Pharmaceutical and Illicit Drug Wastes

As a result of the successful trials, WA is seeking Development Consent for the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes at its Kurri Kurri facility. Consistent with in-progress trial protocols, the Project would use the site's existing technologies and processes including:

- The delivery of pharmaceutical wastes from domestic sources would be undertaken by a licensed Transport Contractor. Transport routes, material handling and quality control / quality assurance documentation protocols established and implemented for existing waste movements would be adopted for the transport and handling of these wastes;
- Pharmaceutical waste feedstock deliveries would be stored in existing enclosed storage bays until processing. As illicit drug wastes would be processed immediately upon receipt in the presence of NSW Police, temporary storage of these inputs would not be required;
- Thermal processing of waste blends with conventional dross and SPL furnace additions) would occur within existing natural gas-fired furnaces under a batch-style process. These furnaces are capable of attaining the required elevated temperatures to efficiently and safely oxidise combustible components;
- Process emissions would be ventilated, controlled and monitored using existing emission controls systems, including extraction hoods, lime scrubber, fabric-filter baghouse complexes, and real-time continuous emissions monitoring systems;
- Processed ash would be removed from the furnace (along with bulk furnace ashes) and processed in the cooler. Once sufficiently cooled, the ash residue would be stored undercover awaiting laboratory assessment and future beneficiation into end-use products; and
- The storage, handling and dispatch of finished product to customers would be undertaken in accordance with existing quality control procedures.

Further detail regarding the operation of the Project is provided in **Section 2.0**.

1.3.5 Residual Ash

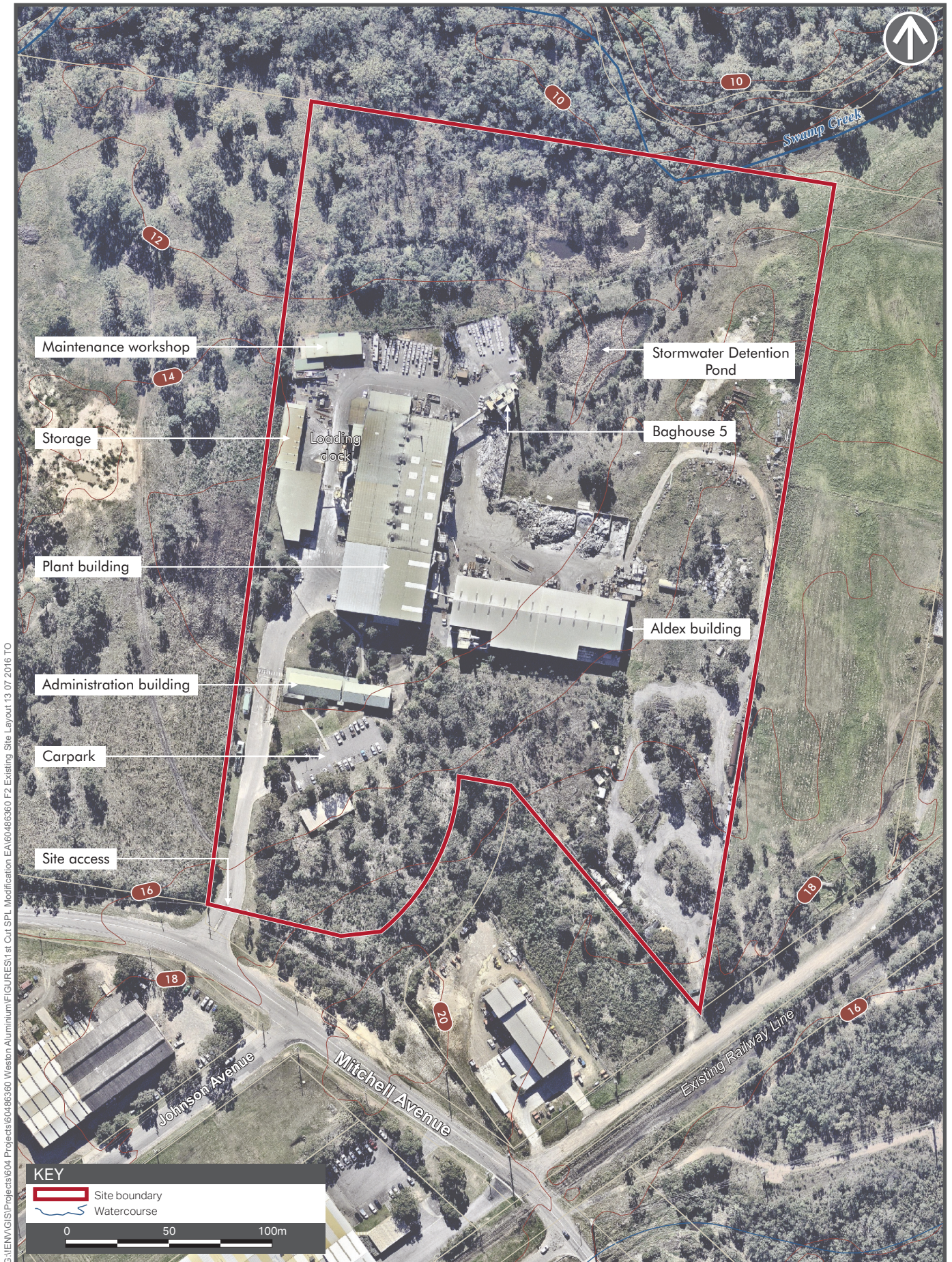
Management and disposal of pharmaceutical and illicit drug wastes is a major issue faced by industry within NSW and throughout Australia. WA's objective is to offer a sustainable solution to the disposal of pharmaceutical and illicit drug wastes, enabling a local option for the cost-effective destruction of these wastes. As part of this approach WA seeks to achieve a minimal ash solution for the disposal of these wastes.

Pharmaceutical and illicit drug waste would be disposed of concurrently with SPL and dross material in WA's existing furnaces. This means any residual ash, which would be only a small component of total ash production, would form part of WA's established marketable product. The end-use product has the potential to be used as a substitute for raw materials in a number of manufacturing and industrial processes. Such reuse options include:

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



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2.0 Description of the Project

2.1 Modification of Conditions

The site currently operates under two development consents (DA 10397 of 1995 and DA-86-04-01) with matching conditions of consent. Copies of existing development consents for the site are attached at **Appendix B**. Modification of both consents would be required to enable the commercial scale processing of pharmaceutical and illicit drug wastes as described in the following section. Where proposed amendments to conditions of consent are shown, deletions are indicated by ~~strike through~~ and additions in **bold**.

2.1.1 Required Modifications to DA 10397 of 1995

Condition 2, Schedule 2

This condition needs to be updated to include reference to this EA document. The following should be added to the condition:

- k. **Modification application DA-86-04-01 Mod 12 and DA 10397 of 1995 Mod 10, and the enclosed Environmental Assessment: Modification, Pharmaceutical and Illicit Drug Waste Processing, AECOM, June 2017.**

Condition 5, Schedule 2

This condition needs to be updated to include reference to pharmaceutical and illicit drug wastes. Proposed amendments to this condition are:

*5. The Applicant shall not process on site more than a combined total of 40,000 tonnes of dross aluminium and SPL **and pharmaceutical and illicit drug wastes**, and 35,000 tonnes of scrap aluminium metal per year.*

2.1.2 Required Modifications to DA 84-04-01

Condition 2, Schedule 2

This condition needs to be updated to include reference to this EA document. The following should be added to the condition:

- k. **Modification application DA-86-04-01 Mod 12 and DA 10397 of 1995 Mod 10, and the enclosed Environmental Assessment: Modification, Pharmaceutical and Illicit Drug Waste Processing, AECOM, June 2017.**

Condition 5, Schedule 2

This condition needs to be updated to include reference to pharmaceutical and illicit drug wastes. Proposed amendments to this condition are:

*5. The Applicant shall not process on site more than a combined total of 40,000 tonnes of dross aluminium and SPL **and pharmaceutical and illicit drug wastes**, and 35,000 tonnes of scrap aluminium metal per year.*

2.2 Interaction with Existing Operations

The existing WA facility has regulatory approval to undertake the following activities:

- Recover aluminium from dross and scrap aluminium metal products;
- Reprocess SPL for use in various industries and industrial manufacturing; and
- Thermally destroy illicit drug and pharmaceutical wastes under limited trial conditions.

The current Development Consent (DA 86_04_01 MOD 10 & DA_10397 MOD 8) authorises WA to process up to a combined 40,000 tonnes of dross aluminium and SPL, process up to 35,000 tonnes of scrap aluminium metal per year, and undertake a limited trial processing of illicit drug waste (200 tonnes) and pharmaceutical waste (1000 tonnes) over a 24 month interval.

The Project does not seek to amend the existing approved processing tonnages, but rather seeks to continue the processing of pharmaceutical and illicit drug wastes on an ongoing basis whilst remaining within the site's existing 40,000 tonnes per annum processing of materials within rotary furnaces, not including scrap aluminium. The processing of pharmaceutical and illicit drug wastes would utilise the same plant, equipment and procedures as currently used at the WA facility, therefore no changes to the existing operation would be required.

2.3 Interaction with Proposed Operations

WA is in the process of applying for approval of a proposed thermal waste processing project. This project proposes the construction and operation of an independent thermal waste treatment facility for medical and other problem wastes, processing up to 8,000 tonnes per year.

WA prepared a briefing document for the project that was provided to the DP&E in late 2015. DP&E subsequently issued its SEAR's (SSD_7396) for the thermal waste processing facility on 16 December 2015. On behalf of WA, AECOM has undertaken detailed environmental investigations for that project. An Environmental Impact Statement (EIS) was submitted to the DP&E in August 2016, subsequently placed on public exhibition during 8 September – 24 October 2016. WA is currently preparing a response to the submissions received during the public exhibition of the EIS.

The thermal waste processing environmental assessment includes a detailed analysis of the potential cumulative impacts of the project and the existing WA operation. Given the negligible changes to the operation expected as a result of proposed ongoing processing of pharmaceutical and illicit drug wastes, there is limited opportunity for cumulative impacts to occur should the thermal waste treatment project be approved. Regardless, this EA includes consideration of combined air quality impact from the processing of pharmaceutical and illicit drug wastes and thermal waste processing (refer to **Section 6.1**).

In addition to projects proposed by WA, Pymore Recyclers International Pty Ltd (Pymore) has also proposed to construct and operate a battery recycling facility (BRF) on a neighbouring site to the east of the WA facility. DP&E issued SEARs (SSD_16_7520) for the BRF and an EIS was submitted in November 2016. The proponents of the BRF project are currently preparing a response to submissions received during the public exhibition of the EIS. The air quality information contained in the Pymore EIS was used to undertake a cumulative assessment in conjunction with the proposed modification. Reference is made to **Section 6.0** which considered potential impacts from the proposed modification along with potential cumulative impacts from the BRF.

2.4 Proposed Project

2.4.1 Process Description

WA proposes to diversify its service provision beyond the reprocessing of SPL, aluminium dross and other aluminium-bearing wastes to also include the ongoing commercial processing of pharmaceutical and illicit drug wastes. Pharmaceutical and illicit drug wastes are principally organics and are readily transformed to common products of combustion, including carbon dioxide, oxides of nitrogen and water.

WA proposes to process pharmaceutical and illicit drug wastes in the same manner as is currently undertaken for other material processed on site such as SPL. In summary the key elements of the process include the following:

- Pharmaceutical waste would be delivered to site from domestic sources by a licensed contractor. The transport and handling of the Illicit drug wastes would be managed by NSW Police and its independent verifiers;
- Pharmaceutical waste would be placed in storage bays where it would be held until processing is performed. Illicit drugs would be processed immediately upon receipt, and as such, storage of these wastes would not be required;
- Thermal processing of waste blends with conventional dross and/or SPL furnace additions would be undertaken in existing rotary furnaces under a batch-style process to safely oxidise combustible components;

- Processed ashes would be removed from the furnace (along with bulk furnace ashes) and processed in the cooler; and
- Ash material would then be milled to specification, bagged and transported to customers.

The processing of pharmaceutical and illicit drug wastes would utilise the same facilities, plant and equipment currently used onsite. As no increase in the overall approved tonnages of materials being processed by WA is proposed, no additional storage or processing equipment is required.

Emissions monitoring data obtained during the trial program confirmed that all emission concentrations were below the existing regulatory compliance limits throughout the process (refer to **Section 6.1**). Consequently, no change to WA's existing Environmental Protection Licence (EPL) limits would be required for the Project.

All occupational hygiene, safety and monitoring requirements for the processing of pharmaceutical and illicit drug wastes at the facility have already been successfully determined and implemented during the trial program.

2.4.2 Pharmaceutical and Illicit Drug Waste Raw Materials

Pharmaceutical wastes would be sourced from various domestic sources such as pharmaceutical product manufacturers, hospitals, medical centres and aged-care facilities (refer to **Table 1** for additional detail). Pharmaceutical wastes are those wastes classified as R120 and R140 waste types under the National Environment Protection Measures (NEPM) waste classification system. Pharmaceutical wastes may come in a variety of forms such as tablets, capsules, vials, puffers or other modes of pharmaceutical storage and associated packaging. Larger quantities of pharmaceutical waste materials may include bulk powders or liquid material resulting from manufacturing processes. These materials may become wastes for a variety of reasons including expiration dates being reached, relinquished stock (e.g. council or pharmacist collection), recalled stock or manufacturer off-specification materials. Importantly, the Project does not propose to process any radioactive pharmaceutical wastes.

It is expected that up to 5,000 tonnes per year of pharmaceutical waste would be processed by the Project.

Illicit drug wastes would include confiscated and evidentiary materials sourced from NSW Police. It is expected that up to 5 tonnes per year of illicit drug wastes would be processed by the Project. There would be no storage of these wastes at the site. Illicit drug wastes would be delivered to site by the NSW Police and immediately destroyed under strict NSW Police observation.

2.4.3 Operational Facilities

The storage and processing of pharmaceutical and illicit drug wastes would be undertaken within existing storage buildings and processed through the existing rotary furnaces and rotary cooler. There would be no need for additional pollution control systems, or the construction of any additional infrastructure.

2.4.4 Transport Requirements

The transportation of pharmaceutical wastes from sources to the WA facility would be undertaken by licensed transport contractors. WA has extensive experience with bulk waste materials that require special procedures for correct storage, handling and processing.

As per historical protocols, controlled transport, handling and attended observation during the destruction of illicit drug wastes would be managed by NSW Police and its independent verifiers. Illicit drug wastes would be transported by NSW Police or by contractor under police escort. Due to the nature of this waste stream, quantities of illicit drug waste would generally be transported in small quantities (<100kg) and would occur infrequently. For security purposes, WA would be advised on short notice by NSW Police of an illicit drug waste delivery and processing event.

WA operates a Transport Code of Conduct which was submitted and approved by the DP&E as part of existing approvals. This would be followed for the Project. The existing development consent does not include a limit on the number of truck movements to and from site, however this is limited by approved production limits, which would not change as a consequence of the Project.

2.4.5 Workforce

The current workforce at the WA plant is composed of approximately 40 personnel. This existing workforce would be used for the processing of the pharmaceutical and illicit drug wastes.

2.4.6 Hours of Operation

Under the existing Development Consent, the facility is approved for operations 24 hours per day, 7 days a week. Truck movements to and from the premises are limited to between the hours of 7am and 10pm pursuant to the site's EPL. No change to the existing operating hours or truck movement times would be required for the Project.

2.4.7 Capital Investment Required

The Project would make use of existing infrastructure that is currently used to treat and process dross, SPL and remelt various grades of aluminium scrap. Therefore, no capital outlay is required to enable the Project.

2.4.8 Construction Details

As the Project would use infrastructure already in place at WA, no installation or construction of any major component or pieces of equipment is required.

2.4.9 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 complex, 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.

2.5 Need for the Project

In relation to the processing of pharmaceutical and illicit drug waste, WA has undertaken research to understand industry demand and requirements for the disposal of such waste. This has included consultation with both the private sector and law enforcement agencies.

Under the NSW *Protection of the Environment Operations Act 1997* (POEO Act) and related regulations and guidelines, the disposal of certain pharmaceutical wastes by thermal destruction is required by law (refer to **Section 3.3.2**). Consultation with the pharmaceutical, healthcare industries and their affiliated waste contractors has indicated that options for the thermal processing and destruction of these wastes in NSW is limited, with a single facility licenced for such thermal destruction currently operating in NSW. It is understood that a large portion of these wastes generated in NSW are currently exported to facilities in Victoria and Queensland for thermal disposal. In the context of forecasted and increasing waste generation rates, this situation is not financially or environmentally sustainable for the industry.

The need for an additional and competent service provider in NSW to thermally dispose of pharmaceutical waste is therefore necessary to achieve cost savings and improved environmental sustainability through both local competition and reduced transport costs.

In regards to illicit drug waste, WA has previously provided NSW Police with the ability to thermally dispose of illicit drugs as a community service. NSW Police have a limited storage capacity for such material and have in the past utilised open-air burning as a means of disposal. It is clear that there is a need for this service to be available to NSW Police Local Area Commands. The EPA has identified

that it is moving to licence the disposal of illicit drug wastes. This will provide the EPA with a formal compliance role which would have the following benefits:

- Greater surety for the community and environment regarding the control and management of such thermal waste disposal activities;
- Greater security of disposal service provision to the NSW Police Force, ensuring it has access to a fully licenced and regulated facility; and
- Ensuring processes at the site meet all relevant environmental performance and legislative requirements.

In addition to the key benefits to the waste management, healthcare and law enforcement sectors detailed above, the Project would also assist WA to diversify its current service offerings. Due to reduced dross and SPL processing being required by the aluminium smelting industry, WA is able to use spare capacity in its plant to achieve Project goals, whilst securing the ongoing operation of the plant and the employment it provides.

2.6 Alternatives Considered

The 'do nothing' option would involve the continuation of existing methods of disposal for pharmaceutical and illicit drug wastes. If this Project does not proceed, these wastes would be stockpiled until the single licensed facility in NSW can provide the required disposal services, or the wastes would be transported interstate for disposal at a higher cost to healthcare and law enforcement sectors. As detailed in **Section 2.5**, the current alternative for the disposal of some illicit drug waste being used by the Police force is open air burning. This is not a viable alternative as it offers no environmental control. The Project offers a local and more cost effective solution to the management and disposal of pharmaceutical and illicit drug wastes for healthcare facilities and law enforcement agencies.

Alternatives to the processing of pharmaceutical and illicit drug wastes at the WA facility or interstate include establishment of a new facility in NSW to dispose of these wastes. However, as the WA facility is already established and capable of processing these wastes, with all relevant environmental management processes in place, the additional impacts and costs associated with establishment of a new facility preclude it from further consideration as an alternative option.

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intentionally.

3.0 Statutory Planning

3.1 Overview

This section identifies the legislative requirements and planning controls relevant to the Project and outlines the key policy and statutory considerations that would be addressed in more detail in the EA.

3.2 Commonwealth Legislative Requirements

3.2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires the approval of the Commonwealth Department of Environment and Energy (DEE) for actions that would have, or are likely to have, a significant impact on matters of National Environmental Significance (NES). The EPBC Act lists nine matters of NES which must be addressed when assessing the impacts of a proposal.

A Protected Matter Search of NES Matters was undertaken on 20 April 2017 to determine what NES features may be present within 5km of the facility. A copy of the Protected Matters Search Results is attached at **Appendix C** and summarised in **Table 2**.

Table 2 Consideration of Matters of National Environmental Significance under the EPBC Act

NES Matters	Comment
Australia's World Heritage properties	There are no World Heritage properties within 5 km of the WA facility.
National Heritage Places	There are no National Heritage places within 5 km of the WA facility.
Ramsar wetlands of international importance	The search results identified one Ramsar wetland of international importance in the vicinity, the Hunter Estuary Wetlands Ramsar site which is located over 20 km from the WA facility. As the Project would be undertaken within an established facility, with existing environmental management controls in place, there would be no impact to this wetland system.
Nationally threatened species and ecological communities	There are three listed threatened ecological communities and 30 listed threatened species that may occur within 5 km of the WA facility. The Project would be undertaken within an existing facility, with no ground disturbance or clearing of vegetation required. With existing environmental management controls in place, the Project would not impact on Commonwealth-listed threatened species or ecological communities.
Migratory species listed under the EPBC Act	There are 16 listed migratory species within 5 km of the WA facility. The Project would not impact on Commonwealth-listed migratory species or species protected under international agreements.
Commonwealth Marine areas	There are no Commonwealth Marine Areas within 10 km of the Facility.
Great Barrier Reef Marine Park	The Great Barrier Reef Marine Park is not located within 10 km of the Facility.
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.

The Project is not expected to have a significant impact on relevant matters of NES. Accordingly, the Project would not need to be referred to the DEE.

3.3 NSW Legislative Requirements

3.3.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (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 at Kurri Kurri currently operates under two separate development consents:

- DA No. 86-04-01 (as modified) issued by the then Minister for Urban Affairs and Planning under Part 4 of the EP&A Act; and
- Land and Environment Court Consent LEC 10397 of 1995 (as modified).

The original development was declared to be State Significant Development (SSD) by the Minister for Planning and Environment pursuant to Schedule 1 of *State Environmental Planning Policy No. 34 – Major Employment Generating Industrial Development* (SEPP 34) (repealed), as it was a materials processing development with a capital investment in excess of \$20 million. Clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000* provides the transitional provisions for proposed modifications to Projects declared to be State Significant Development under the now repealed SEPP 34. Clause 8J provides that a modification to a development consent issued under SEPP 34 shall be modified in accordance with section 75W of the EP&A Act. Despite Part 3A of the EP&A Act also having been repealed, the transitional provisions continue to apply and the Project can be modified in accordance with section 75W of the EP&A Act.

The 24 month trial program for the processing of pharmaceutical waste (up to 1,000 tonnes) and illicit drug wastes (up to 200 tonnes) was approved by the DP&E as a section 75W Modification. Following successful trials, modification is now being sought to allow for the ongoing commercial processing of pharmaceutical and illicit drug wastes under section 75W. WA proposes to process up to 5,000 tonnes per annum of pharmaceutical wastes and up to 5 tonnes per annum of illicit drug wastes.

It has been demonstrated through this EA, that the thermal processing of pharmaceutical and illicit drug waste at the existing facility would not fundamentally alter the scale or nature of the existing development. Importantly, no increase to the overall annual processing tonnage limits is being sought; rather WA is seeking to diversify materials being processed within the existing processing limits (that is, up to a combined total of 40,000 tonnes per annum of aluminium dross, SPL, and pharmaceutical and illicit drug wastes). It is therefore appropriate for DP&E to use its discretionary power to accept the current proposal as a section 75W Modification.

3.3.2 Protection of the Environment Operations Act 1997

The 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 EPA if any of the activities associated with the Project are determined to be a 'scheduled activity' under Schedule 1 of the Act.

The Kurri Kurri plant currently operates under EPL No. 6423, which allows WA to carry out the following operations on the premises.

Table 3 Existing WA Site Scheduled Activities

Fee Based Activity	Scale
Aluminium Production (scrap metal)	> 10,000 t processed
Recovery of hazardous and other waste	> 0 t recovered
Scrap metal processing	0-100,000 t processed
Waste storage – hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	> 0 t stored

The approved quantities of materials that can be processed by WA at its plant would not be altered as part of the Project. Consequently, only minor changes to EPL 6423 would be required for the proposed modification:

- Condition L4.1 – Update references to ‘combined total of 40,000 tonnes per annum’ to include pharmaceutical and illicit drug wastes;
- Condition E2 - Remove condition following completion of the trial program.

Under Schedule 1, clause 50 of the POEO Act, the definition of ‘clinical and related waste’ includes pharmaceutical, drug or medicine waste. Clinical and related waste is classified as a ‘special waste’, which allows the EPA to set more stringent and specific requirements for the transport and management of these types of waste.

Clause 113 of the *Protection of the Environment Operations (Waste) Regulation 2014* (POEO Regulation) sets out special requirements relating to clinical and related waste. These include requirements for storage, labelling, transport and disposal of clinical waste. Clause 113(6) of the POEO Regulation requires facilities which generate clinical and related waste to comply with the NSW Health’s *Waste Management Guidelines for Health Care Facilities* (NSW Health, 1998). These Guidelines set out a minimum standard for safe and efficient waste management. Section 7.5 of the Guidelines states that pharmaceutical waste must be incinerated at a licensed controlled waste facility.

3.3.3 Environmentally Hazardous Chemicals Act (1985)

The *Environmentally Hazardous Chemicals Act 1985* (EHC Act) is regulated by the NSW EPA and provides a mechanism for the regulation of chemicals of environmental concern throughout their entire lifecycle including when they are classed as waste products. The pharmaceutical and illicit drug wastes are non-hazardous and non-dangerous goods materials.

WA currently holds EHC licence No. 119 for *the processing, keeping, selling, distributing, conveying or using of aluminium smelter wastes containing fluoride or cyanide*. No change is proposed to the amount of these wastes, or how they would be processed, kept, stored, distributed or used onsite as part of the Project. The Project would not trigger any additional licensing requirements for WA under the EHC Act.

3.4 Environmental Planning Instruments

The following environmental planning instruments have been reviewed for their relevance in relation to the Project.

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

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33) aims to ensure that the consent authority has sufficient information regarding a proposal to determine whether the development meets the criteria for hazardous or offensive development. Conditions to minimise or reduce adverse effects can then be imposed with any consent issued. SEPP 33 requires applications for potentially hazardous or offensive industry to be accompanied by a preliminary hazard screening.

Assessments of the hazards and risks associated with operation of the WA facility have previously been conducted for the SPL and dross processing trials and for the proposed medical waste processing facility (SSD_7396) currently under assessment by DP&E. These assessments determined

that the operations would not have significant off-site risk implications if the proposed risk mitigation measures were implemented.

A Preliminary Risk Screening study prepared for this EA in accordance with the requirements of SEPP 33 concluded that the hazards associated with the processing of pharmaceutical and illicit drug wastes would not result in a change to the existing risk profile. Further details of the hazard assessment are detailed in **Section 6.2**.

3.4.2 Cessnock Local Environmental Plan 2011

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

Due to the classification of the Project as a transitional Part 3A Project, the provisions of the LEP 2011 do not apply. Regardless, the proposed Modification is considered consistent with the objectives of the LEP 2011 and is consistent with the existing approved industrial land use.

4.0 Stakeholder Consultation

4.1 Consultation Undertaken to Date

WA undertook consultation with relevant agencies and the community as part of its application for the trial processing of pharmaceutical and illicit drug wastes. This included various meetings with regulatory authorities and a Stakeholder Information Session held in May 2015. This consultation will be followed by exhibition of the EA, the receipt and addressing of submissions and an ongoing dialogue with relevant stakeholders.

It is noted that this proposed modification is for the ongoing commercial-scale processing of wastes beyond the current trial basis. Regardless the Project is fundamentally the same as the Project that was previously described during the consultation undertaken for the trial program albeit increasing the total tonnages of these waste being processed, but still within WA annual tonnage limits for all waste types processed onsite.

As part of the proposed modification for ongoing commercial processing, WA has consulted with DP&E and provided Project details. Following this consultation, DP&E undertook further consultation with the EPA, Cessnock City Council, and Hunter New England Population Health. DP&E subsequently wrote to WA on 8 March 2017 to provide the SEARs for the EA. **Table 4** sets out the requirements of the EA as well as a reference to the section in this document where each item is addressed.

Table 4 Secretary's Environmental Assessment Requirements for the Modifications

SEAR	Addressed in this Report
Description of the modification.	Section 2.0
Need and justification for the modification	Section 2.5
Other Approvals – Identification of any proposed variations to WA's existing EPL and <i>Environmentally Hazardous Chemicals Act (1985)</i> Licence.	Section 3.0
Identification of environmental impacts of the modification – including a more detailed assessment of the following:	-
Air Quality – including a review of the data accumulated during the trial processing of illicit drug and pharmaceutical waste and allowance for the variation in feedstock;	Section 6.1
Traffic and Transport – including details of any revised traffic movements	Section 6.3
Any proposed safety protocols;	Section 6.2
Hazard and Risk – including a Preliminary Hazard Analysis in accordance with the <i>Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis and Multi-level Risk Assessment</i> and in particular: - Identify the hazards associated with all the dangerous goods to be stored on-site and the proposed storage quantities; - Demonstrate that the proposed development complies with the criteria set out in <i>Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning</i>; and - Estimate the cumulative impacts from the overall site and the surrounding potentially hazardous developments in the area and demonstrate that the proposed development does not increase the cumulative risk of the area to unacceptable levels;	Section 6.2
Water;	Section 6.3
Waste Management;	Section 6.3
Noise; and	Section 6.3
Identification of conditions to be modified	Section 2.1

4.2 Stakeholder Engagement Strategy

WA would continue to engage with the following stakeholders:

- Local environmental interest groups and residents;
- Aluminium smelters (in relation to existing SPL and dross processing operations);
- Generators and agents of pharmaceutical wastes;
- NSW Police; and
- Regulatory authorities and Local Government (including EPA, DP&E, Cessnock City Council).

In particular, WA is committed to meeting the relevant reporting conditions of its development consent and EPL on an ongoing basis to provide agencies with the necessary information regarding the operation of the facility.

5.0 Prioritisation of Issues

An assessment of potential environmental impacts associated with the Project based on existing data and knowledge of the site (including historical performance and compliance trial processing activities) and preliminary desktop investigations 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 5**) 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 5 Risk Matrix

Potential Consequence	Likelihood of adverse impact					
		A	B	C	D	E
	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

The prioritisation of potential environmental issues related to the Project is provided in **Table 6**.

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. These measures are described throughout **Section 6.0** of this EA and summarised in **Section 7.0**.

Table 6 Risk Assessment

Environmental Aspect	Potential Environmental Issue	Consequence	Likelihood	Ranking
Air Quality	Generation of fugitive emissions, dust and odour.	3	C	Med
	Exceedance of existing regulatory compliance stack air emission limits	4	D	Low
Hazard and Risk	Furnace explosion and expulsion of raw/ product materials	3	D	Low
	Hazard to the health of employees	3	D	Low
Traffic and Transport	Traffic movements still within approved limits	5	E	Very Low
Soil and Water	Spills of raw materials to site catchment and pollution of local waterways	3	E	Very Low
Greenhouse Gas (GHG) Emissions	Excessive generation of GHG, including carbon dioxide, methane and oxides of nitrogen	4	E	Very Low
Noise	Exceedance of regulatory compliance noise limits	4	E	Very Low
Waste Management	Generation of wastes requiring disposal	4	E	Very Low
Social and Economic	Potential for social impact and crime	5	E	Very Low
Visual	No change to current operations	5	E	Very Low
Heritage	No change to current facility footprint	5	E	Very Low
Land use	No change to current facility footprint	5	E	Very Low
Fauna and Flora	No change to current facility footprint	5	E	Very Low

5.3 Key Issues

Based on the risk analysis presented above and consultation with the DP&E and EPA, the key issues requiring detailed assessment within this EA were identified and include:

- Air Quality; and
- Hazards and Risk.

These key issues are assessed in **Sections 6.1** and **6.2** of this EA. Other issues having very low or no anticipated impact are addressed in **Section 6.3**.

6.0 Environmental Impact Assessment

6.1 Air Quality

An Air Quality Impact Assessment (AQIA) was prepared for the Project. A summary of this assessment is provided below. For further details, refer to the AQIA report included in **Appendix D**.

6.1.1 Existing Environment

The WA plant at Kurri Kurri is located within an established industrial area, with some residential areas in Kurri Kurri (approximately 600m) and Weston (approximately 800m) to the south and west of the site, respectively. The air quality within the area is considered to be typical to that of an industrial area, with existing sources which contribute to air pollution including:

- Industrial emissions;
- Coal mines;
- Emissions from motor vehicles travelling on the local road network; and
- Dust and pollens in drier and windier conditions.

Emissions from the power stations in the Upper Hunter Valley also affect air quality in the area. It is noted that the Hydro Aluminium Smelter, which was previously a source of local emissions, is now closed.

Existing Air Quality

The EPA operates a number of air quality monitoring stations in the Lower Hunter. The closest monitoring station site to the WA facility is located at Beresfield (17km east of the site). This station records hourly PM₁₀ and PM_{2.5} concentrations using a Tapered Element Oscillating Microbalance (TEOM), as well as Nitrogen Dioxide (NO₂) and Sulfur Dioxide (SO₂).

Ambient air quality monitoring data for 2014¹ at Beresfield is presented in **Table 7** as sourced from the Office of Environment and Heritage (OEH) website². All other pollutants assessed in the AQIA are not measured and as such no background data is available for use in the cumulative assessment. Notable nearby emission sources, however, have been included in the assessment.

Table 7 Ambient Air Monitoring in Beresfield, NSW for 2014

Pollutant	Averaging Period	Concentration (µg/m ³)	EPA Criteria (µg/m ³)
PM ₁₀	24 Hour Maximum	45.4	50
	Annual Average	19.3	30
PM _{2.5}	24 Hour Maximum	19.0	25
	Annual Average	7.5	8*
NO ₂	1 Hour Maximum	73.3	246
	Annual Average	16.9	62
SO ₂	1 Hour Maximum	81.2	570
	24 Hour Maximum	18.3	228
	Annual Average	2.6	60
* NEPM Standard			

¹ The dispersion model used in this AQIA is the same as that used for the Thermal Waste treatment AQIA prepared in 2016 as part of the DA for the proposed thermal waste processing plant. To ensure the background data from Beresfield was contemporaneous with the meteorology used in the modelling, the Beresfield data for 2014 was used for this assessment.

² <http://www.environment.nsw.gov.au/AQMS/search.htm> accessed May 2016.

Ground level concentrations for Carbon monoxide (CO) are not recorded at the Beresfield EPA monitoring station, however 8-hour averages for CO are recorded at the EPA monitoring station in the more populated area of Newcastle located approximately 31km southeast of the site. The maximum 8-hour average for CO recorded at Newcastle for 2014 was found to be $3,000\mu\text{g}/\text{m}^3$ which is just under one third of the EPA criterion of $10,000\mu\text{g}/\text{m}^3$.

No measurements of local Total Suspended Particles (TSP) ambient air quality concentrations were available. In the absence of existing annual TSP concentration data, the annual PM_{10} concentration can be assumed to be 40% of the annual TSP concentration. This is a conservative approach as reported by the NSW Minerals Council (2000) for the measurement of PM_{10} in TSP in the Hunter Valley and is considered to be applicable in Kurri Kurri. This equates to an annual average TSP concentration of $48.3\mu\text{g}/\text{m}^3$, which is below the NSW EPA criterion of $90\mu\text{g}/\text{m}^3$.

OEH does not currently undertake ambient air quality monitoring for air toxics (such as hydrogen chloride (HCl), Sulfuric Acid (H_2SO_4) and Cyanide (CN)). Previous ambient air quality monitoring for air toxics undertaken between 1996 and 2001 indicated low levels of pollutants within the Greater Metropolitan Region (GMR) and as such background concentrations of air toxics are not considered to be a primary issue of concern.

Table 8 presents ambient hydrogen fluoride (HF) ground level concentrations in the vicinity of the study area recorded between the cessation of Hydro Aluminium smelter operation in October 2012 and 2014. Since the shutdown of Hydro Aluminium, the highest HF concentrations have been recorded at McLeod Road. The McLeod Road station is located in proximity (approximately 1km to the east) to the WA site, and Hydro Aluminium staff indicated that the concentrations recorded at this station were influenced by WA's emissions. As such, if ambient data from this station were used in the cumulative HF concentration calculations, the contribution from WA would likely be substantially overestimated due to the potential double counting of emissions from WA. To avoid that overconservative situation, the ambient data used to calculate the total cumulative HF concentrations at receptors were the highest measured HF concentrations at any monitoring station other than McLeod Road.

Table 8 Maximum Ambient HF Concentrations; October 2012 – 2014 (Hydro Aluminium)

Site	7 days ($\mu\text{g}/\text{m}^3$)	30 days ($\mu\text{g}/\text{m}^3$)	90 days ($\mu\text{g}/\text{m}^3$)
Yawarra	0.20	0.16	0.11
Heddon Greta	0.16	0.12	0.11
Lot 103	0.16	0.11	0.08
Wangara	0.13	0.09	0.07
Bish Bridge	0.13	0.10	0.07
Kurri Kurri	0.13	0.10	0.08
Wandin Valley	0.13	0.09	0.06
Janannie	0.14	0.10	0.08
Allandale	0.14	0.08	0.06
Hope Estate	0.13	0.09	0.07
McWilliams	0.09	0.07	0.05
Wyndham Estate	0.12	0.09	0.07
Maximum	0.20	0.16	0.11
General land use criteria	1.7	0.84	0.5

Terrain

The site lies approximately 17m above Mean Sea Level (MSL) and the immediate terrain surrounding the area is relatively flat. In the wider context, the study area lies approximately 30km to the northwest of the east Australian coastline and terrain height within the study area ranges from between 0 and 520 m with higher elevations to the southwest.

Land Use and Sensitive Receptors

Land use surrounding the WA facility is largely comprised of small to medium industrial premises within the Kurri Kurri industrial area (predominantly to the south of the site) and native vegetation. Residences are located approximately 600 metres to the south (Kurri Kurri) and 800m to the west (Weston) of the site. A total of 184 sensitive receptors were included in the dispersion modelling. A description and coordinates for all sensitive receptors are tabulated in **Appendix D**.

Local Climate

The Bureau of Meteorology (BoM) meteorological station located at Cessnock Airport (Station Number 061260), approximately 12.5 km west of the site, records climate data for a range of meteorological parameters including temperature, humidity, rainfall, wind speed and wind direction. A summary of the long-term data recorded at this station between 1968 and 2017 is provided in **Appendix D** and summarised below.

The study area experiences a warm to moderate climate. The warmest temperatures occur during the summer months, with the highest average maximum temperature (30.1°C) occurring in January. July is the coldest month, with a recorded average minimum temperature of 4.1°C.

The annual average rainfall for the area is 743 millimetres (mm) over 73 days a year. February is the wettest month, with an average rainfall of 98 mm, while July is the driest month with an average rainfall of just 29mm. Humidity follows a diurnal cycle, with higher humidity in the morning compared to the afternoon.

Daytime wind speeds were found to be moderate, with higher wind speeds occurring in the afternoon compared to the morning. The annual average 9am wind speed recorded is 11.6 kilometres per hour (km/h) and the annual average 3pm wind speed is 16.9 km/h. Seasonally, wind speeds are higher during the warmer months with the highest average wind speed occurring in September at 19.1 km/h.

6.1.2 Methodology

Modelling Scenarios

A modelling scenario was undertaken for this assessment to represent typical WA operations during the processing of pharmaceutical and illicit drug wastes. The modelling scenario is described as follows:

- Proposed pharmaceutical and illicit drug waste processed continuously in conjunction with aluminium dross and SPL within the rotary furnaces;
- Proposed thermal waste processing plant (as discussed in **Section 2.3**) operating continuously at maximum operational capacity of 800 kg/h; and
- All other existing point sources modelled continuously using average source emission data.

Emissions Estimation

Stack parameters for each of the seven modelled emission point sources and the modelled emission rates for the modelling scenario are presented in Table 6 and Table 8 of **Appendix D**, respectively.

A conservative estimate of emission rates has been assumed whereby all plant operations, including proposed operations, would be operating continuously 24 hours a day, seven days per week. The methodology used to estimate emission rates from each stack is described in Section 3.2.4 of **Appendix D** and generally consists of average stack emission data collected during previous monitoring events and air quality assessments.

Dispersion Model

Potential air quality impacts were assessed using the Air Pollution Model (TAPM), the CALMET meteorological processor and the CALPUFF dispersion model. Full details of the model input parameters used in the AQIA are provided in **Appendix D**. The model setup is the same as that used for the Thermal Waste treatment AQIA prepared in 2016 as part of the DA for the proposed thermal waste processing plant which has been subject to recent clarifications to the NSW EPA. Comments and recommendations made in the clarifications to NSW EPA have been incorporated into the methodology of this assessment. Where relevant, reference has been made to clarifications provided to NSW EPA in relation to the methodology.

6.1.3 Potential Impacts

Results of the dispersion modelling are presented in **Table 9** and **Table 10**. Results in **Table 9** are maximum ground-level concentrations reported at sensitive receptor locations. The assessment includes consideration of the cumulative impacts associated with WA's proposed thermal waste processing plant and Pymore's proposed BRF.

Maximum predicted incremental concentrations from the WA facility include both the operation of the proposed processing of pharmaceutical and illicit drug wastes and operation of WA's proposed waste treatment facility at maximum capacity. These values have then been added to the predicted incremental impacts of the proposed BRF and the existing background concentration to determine the cumulative impacts.

Table 9 Modelling Results for Predicted TSP, PM₁₀, PM_{2.5}, CO, SO₂, NO₂, HF and Pb Ground Level Concentrations

Pollutant	Averaging Period	Concentration (µg/m ³)				Criteria (µg/m ³)
		WA Incremental Impact	Cumulative Assessment			
			BRF Max Incremental Impact	Background	Cumulative	
TSP	Annual Average	0.2	No Data	48.3	48.5	90
PM ₁₀	24 Hour Maximum	1.2	2.1	45.4	48.7	50
	Annual Average	0.1	0.5	19.3	19.9	25
PM _{2.5}	24 Hour Maximum	0.00193	1.5	19.0	20.5	25
	Annual Average	0.00017	0.3	7.5	7.8	8
CO	1 Hour Maximum	54	No Data	-	-	30,000
	8 Hour Maximum	34	No Data	3000	3034	10,000
SO ₂	10 Minute Maximum ¹	46.6	318.0	116.2	480.9	712
	1 Hour Maximum	32.6	222.3	81.2	336.1	570
	24 Hour Maximum	3.2	72.1	18.3	93.6	228
	Annual Average	0.2	14.5	2.6	17.3	60
NO ₂ ²	1 Hour Maximum	21.9	168.5	73.3	263.7	246
	Annual	0.3	14.6	16.9	31.8	62

Pollutant	Averaging Period	Concentration ($\mu\text{g}/\text{m}^3$)				Criteria ($\mu\text{g}/\text{m}^3$)
		WA Incremental Impact	BRF Max Incremental Impact	Background	Cumulative	
	Average					
HF	90 days	0.07	No Data	0.11	0.18	0.5
	30 days	0.12	No Data	0.16	0.28	0.84
	7 days	0.22	No Data	0.20	0.42	1.7
	24 hours	0.44	No Data	-	-	2.9
Pb	Annual Average	1.43×10^{-5}	0.1	-	0.1	0.5
1. The SO_2 10 minute predicted ground level impacts (including background value) have been calculated from the 1-hour predictions using the power law equation provided in the Victorian EPA model guidance document (2013) 2. Conservatively assumed total conversion of NO_x to NO_2						

The air dispersion modelling predicts that all assessed pollutants would meet their respective EPA criterion for all averaging periods incrementally (WA alone). All assessed pollutants were also found to be below the relevant criteria cumulatively with the exception of NO_2 which is discussed below. A summary of the modelling results and the findings of a comparison with EPA criteria are as follows:

- The predicted annual average TSP incremental and cumulative concentrations (background only) were below the EPA criteria ($90\mu\text{g}/\text{m}^3$) with a maximum cumulative annual average concentration of $48.5\mu\text{g}/\text{m}^3$ at the sensitive receptors. Predicted TSP values for the BRF were unavailable however given the relatively small contribution of PM_{10} at nearby sensitive receivers, it is unlikely the cumulative impacts would result in an exceedance of the EPA annual TSP criterion;
- Predicted maximum 24-hour ($1.2\mu\text{g}/\text{m}^3$) and annual average ($0.1\mu\text{g}/\text{m}^3$) PM_{10} concentrations attributed to WA were found to be relatively small when compared to the maximum 24 hour criterion of $50\mu\text{g}/\text{m}^3$ and annual average criterion of $25\mu\text{g}/\text{m}^3$. When accounting for the proposed BRF and background concentrations:
 - The PM_{10} 24 hour data predicts a cumulative concentration of $48.7\mu\text{g}/\text{m}^3$ which is below the criterion of $50\mu\text{g}/\text{m}^3$. Predicted contributions from both the WA and BRF facilities were relatively small (totalling $3.3\mu\text{g}/\text{m}^3$) compared to the existing background concentration ($45.4\mu\text{g}/\text{m}^3$);
 - The combined predicted annual average PM_{10} from the WA and proposed BRF facilities was found to be $0.6\mu\text{g}/\text{m}^3$ and when added to the annual background concentration of $19.3\mu\text{g}/\text{m}^3$ resulted in a cumulative concentration of $19.9\mu\text{g}/\text{m}^3$ which is below the annual average criterion of $25\mu\text{g}/\text{m}^3$; and
 - Predicted incremental contribution of PM_{10} from both the WA and the BRF are conservative based on continuous operations at maximum capacity and at proposed design limits respectively and thus while not considered significant are likely to be lower than reported.
- Predicted maximum 24-hour ($0.0019\mu\text{g}/\text{m}^3$) and annual average ($0.00017\mu\text{g}/\text{m}^3$) $\text{PM}_{2.5}$ concentrations attributed to WA were found to be negligible compared to the maximum 24 hour ($25\mu\text{g}/\text{m}^3$) and annual average ($8\mu\text{g}/\text{m}^3$) criteria. When accounting for the proposed BRF and background concentrations:
 - The $\text{PM}_{2.5}$ 24 hour data predicts a cumulative concentration of $20.5\mu\text{g}/\text{m}^3$ equating to 82 percent of the criterion of $25\mu\text{g}/\text{m}^3$. Predicted contributions from both the WA and BRF facilities were relatively small (totalling $1.5\mu\text{g}/\text{m}^3$) compared to the existing background concentration ($19\mu\text{g}/\text{m}^3$);

- The combined predicted annual average $PM_{2.5}$ from the WA and proposed BRF was relatively small at $0.3\mu g/m^3$ and when added to the background concentration of $7.5\mu g/m^3$ was below the EPA criteria of $8\mu g/m^3$; and
- Predicted incremental $PM_{2.5}$ contributions from both the WA and the BRF are conservative based on continuous operations at maximum capacity and at proposed design limits respectively and thus while not considered significant are likely to be lower than reported.
- Predicted maximum 1-hour and 8-hour CO contribution from the WA plant are well below the criterion. Cumulative impacts for the maximum 8-hour CO concentration at nearby sensitive receptors were also found to be well below the criterion. No data on the 1-hour CO background was available however based on the low 8-hour background concentration recorded at Beresfield, cumulative 1-hour CO impacts are also likely to be relatively low;
- Modelled incremental SO_2 concentrations under normal operations for all averaging periods were well below the EPA criterion. When added to the predicted incremental impacts of the adjacent BRF and recorded background concentrations, cumulative maximum 1 hour, 24 hour and annual average SO_2 concentrations at nearby sensitive receptors remain well below the criteria;
- As a conservative assumption, all WA NO_x emissions were assumed to be in the form of NO_2 . Predicted maximum 1-hour ($21.9\mu g/m^3$) and annual average ($0.3\mu g/m^3$) NO_2 concentrations attributed to WA were found to be relatively small when compared to the maximum 24 hour criterion of $246\mu g/m^3$ and annual average criterion of $62\mu g/m^3$. When accounting for the proposed BRF emissions and background concentrations:
 - The maximum 1-hour NO_2 contribution from WA equates to approximately 9 percent of the criterion, but when added to emissions of the BRF facility³ ($168.5\mu g/m^3$) and background concentration ($73.3\mu g/m^3$), the cumulative NO_2 concentration ($263.7\mu g/m^3$) exceeds the criterion by 7 percent;
 - The combined predicted annual average NO_2 emissions from the WA and proposed BRF facilities were found to be $14.9\mu g/m^3$ and when added to the annual background NO_2 concentration of $16.9\mu g/m^3$ resulted in a cumulative concentration of $31.8\mu g/m^3$ which is just over half of the annual average NO_2 criterion of $62\mu g/m^3$;
 - Emission rates from WA are conservative based on continuous operation, include the thermal waste treatment facility operating at maximum capacity continuously and assume that all NO_x is converted to NO_2 . While predicted concentrations are already considered to be low, actual concentrations are expected to be lower than reported. It should be noted that the predicted worst case impacts due to the WA facility and the BRF facility are unlikely to occur at the same location within the same 24 hour period. Hence the cumulative impacts can be considered as an ultimate worst case that is likely to be an overestimate of actual worst case cumulative concentrations; and
 - In addition to the conservatism and assumptions made regarding the NO_x emissions from Stack 1, it needs to be considered that these emissions occur as part of the normal operation during the processing of Dross and SPL (which is an approved activity). As part of normal stack emissions testing required in accordance with the site's EPL, NO_x monitoring is undertaken regularly. The last three years of stack testing data showed NO_x concentrations of $16mg/m^3$, $6mg/m^3$ and $6mg/m^3$ for NO_x emissions from Stack 1. These compare with the four NO_x concentrations obtained during the trials of $6mg/m^3$, $2mg/m^3$, $7mg/m^3$ and $12mg/m^3$, of which $12mg/m^3$ was conservatively selected for the dispersion modelling of this modification. This data shows that the pharmaceutical waste contributes little to the overall NO_x load from Stack 1 (2014-2016 NO_x average of $9.3mg/m^3$ versus an average trial NO_x concentration of $6.8mg/m^3$).

³ The US EPA Ozone Limiting Method (OLM) was used to estimate predicted ground level NO_2 concentrations associated with the proposed BRF.

- Predicted incremental HF contributions from WA were small when compared to existing background concentrations. Cumulative impacts for 30, 70 and 90 day averaging periods were below the criteria. No background HF concentration was available to cumulatively assess maximum 24-hour concentrations, however the incremental impacts from the facility were found to be only 15 percent of the EPA criterion; and
- Predicted incremental annual average lead impacts from WA were found to be negligible at $0.0000143\mu\text{g}/\text{m}^3$ when compared to the EPA criterion of $0.5\mu\text{g}/\text{m}^3$ (<1% of criterion). When added to the maximum incremental impact from the BRF, the cumulative lead concentration equated to $0.1\mu\text{g}/\text{m}^3$ or, 20 percent of the EPA criterion.

Predicted modelled impacts for air toxics are presented in **Table 10** as 99.9th percentile concentrations at the highest point at or beyond the site boundary.

Table 10 Modelling Results for Air Toxic 1 hour (99.9th percentile) Ground Level Concentrations

Pollutant	WA Predicted Incremental Contribution ($\mu\text{g}/\text{m}^3$)	BRF Max Incremental Impact	Cumulative Impact ($\mu\text{g}/\text{m}^3$)	Criteria ($\mu\text{g}/\text{m}^3$)
H ₂ SO ₄	3.68	7.9	11.68	18
HCl	2.09	No Data	-	140
VOCs (as benzene)	5.35	0.0056*	5.36	29
Sb	0.000119	No Data	-	9
As	0.0000348	0.083	0.083	0.09
Cd	0.00218	No Data	-	0.018
Hg (as organic mercury)	0.00587	No Data	-	0.18
Be	0.0000346	No Data	-	0.004
Cr (as Chromium VI compounds)	0.00365	No Data	-	0.09
Co	0.0000342	No Data	-	0.2
Mn	0.00252	No Data	-	18
Ni	0.00173	No Data	-	0.18
Se	0.000337	No Data	-	2
Sn	0.000715	No Data	-	1
V	0.000169	No Data	-	2
Cu (as copper fumes)	0.000878	No Data	-	3.7
Dioxins and Furans	1.40×10^{-9}	3.7×10^{-7}	3.71×10^{-7}	2×10^{-6}
PAHs (as benzo[α]pyrene)	0.14	No Data	-	0.4
Cyanide	0.15	No Data	-	90

¹ Total VOC's based on sum of predicted maximum concentrations for benzene, toluene, xylene and ethylbenzene.
² 1 hour maximum reported values in accordance with TCEQ (See **Appendix D**).

The air dispersion modelling predicts that all assessed pollutants would meet their respective EPA criterion, based on predicted offsite 99th percentile concentrations. Where relevant⁴, a cumulative assessment of pollutant concentrations inclusive of the predicted BRF offsite pollutant concentrations has also been provided. A summary of the modelling results in **Table 10** is as follows:

- Predicted 1-hour 99.9th percentile incremental impacts for H₂SO₄ were below EPA criterion at 3.68µg/m³ equating to 20 percent of the criteria of 18µg/m³. Cumulative concentrations accounting for the predicted BRF impact cumulative impacts would also be below the EPA criteria at 11.6µg/m³;
- Predicted 1-hour 99.9th percentile incremental impacts for HCl (2.09µg/m³) were less than two percent of the EPA criterion of 140µg/m³;
- Incremental (5.35 µg/m³) and cumulative impacts (5.36 µg/m³) from total VOCs were predicted to be below the adopted criterion equating to approximately 18 percent of the adopted criterion;
- Predicted 1-hour 99.9th percentile⁵ incremental impacts for all modelled Type 1 and Type 2 heavy metals were below the relevant EPA criterion; with predicted impacts generally less than one percent of the EPA criterion with the exception of Cd, Hg and Cr which were found to be only 12, 3 and 4 percent of the criteria respectively;
- Predicted 1-hour 99.9th percentile incremental impacts for Cu were found to be less than one percent of the EPA criterion of 3.7µg/m³;
- Predicted 1-hour 99.9th percentile incremental impacts for dioxins and furans were found to be 1.4x10⁻⁹µg/m³, which is three orders of magnitude below the EPA criterion of 2.0x10⁻⁶µg/m³. Predicted offsite cumulative impacts were found to be 3.7 x10⁻⁷µg/m³ also well below the criterion;
- Incremental impacts for total PAHs were predicted to be 0.14µg/m³ which equates to 34 percent of the adopted EPA criterion of 0.4 µg/m³; and
- Predicted incremental impacts for cyanide show an offsite 1-hour 99.9th percentile concentration of up to 0.15 µg/m³ which is less than one per cent of the EPA criterion of 90 µg/m³.

Summary of results

Dispersion modelling demonstrated that the WA facility's incremental contribution for all pollutants and air toxics assessed under conservative, worst-case operating conditions would meet their respective EPA criterion for all averaging periods. The cumulative assessment identified that all assessed pollutants and air toxics with the exception of NO₂ would be below the relevant EPA criteria.

With regard to the modelling results for maximum 1-hour NO₂ concentrations, while the WA contribution equated to only nine percent of the EPA criterion, the cumulative NO₂ concentration (263.7µg/m³) exceeded the EPA criterion by seven percent – attributable to existing background and predicted worst-case contribution from the BRF. The cumulative annual average was predicted to be well below the EPA criterion, equating to just over half of the annual average criterion. Emission rates from WA facility operations are conservative as they are based on continuous operation, include the thermal waste treatment facility operating at maximum capacity continuously and assume that all NO_x is converted to NO₂. Therefore, actual concentrations are expected to be lower than reported and the predicted cumulative impacts can be considered to be an overestimate of actual worst case cumulative concentrations.

⁴ Cumulative assessment for Air Toxics is only required where there is the potential for significant background concentrations to be present in the area around a site.

⁵ 100th percentile concentrations were adopted for Se, Sn and V in accordance with the TCEQ.

6.1.4 Mitigation Measures

The WA facility already includes a number of existing safeguards designed to manage air quality impacts from the site. As defined in WA's Air Quality Monitoring Program (WA, 2017), these existing safeguards, mitigation and management commitments include the following:

- Operation of best-practice Pollution Control Devices - fabric filter baghouses and premium-media scrubbers and associated PLC controls;
- Operation of real-time continuous emissions monitoring, feedback and recording systems;
- Plant & equipment (process) operation in accordance with Standard Operating Procedures;
- Routine furnace burner tuning and optimisation;
- Maintenance of air quality systems – preventative maintenance (mechanical, electrical and telemetry systems), routine inspections, and continuous improvement upgrades/modifications;
- Routine, independent NATA certified emissions compliance monitoring and reporting in accordance with NSW EPA approved methodologies;
- Staff communication and training;
- Regulatory reporting and independent auditing; and
- Management review.

The Project is not expected to result in substantial changes to existing air emissions from the facility and is not expected to result in significant impacts to the local airshed. As such, no additional mitigation measures are proposed.

WA commits to the ongoing operation of its existing air quality monitoring and management practices for the existing development and proposed Project.

6.2 Hazard and Risk

6.2.1 Existing Environment

The pharmaceutical and illicit drug waste processing operation being trialled at the site has development consent approval to treat 1,000 tonnes of pharmaceutical waste and 200 tonnes of illicit drug waste over a two year period, ending in October 2017. Proposed commercial processing post trial would be consistent with trial operations as explained below.

Pharmaceutical waste is delivered to the site in covered wheelie bins or palletised loads packed in cardboard boxes or other suitable containers, depending on the nature of the wastes. Materials received during the trial period are a mixture of R120 finished products (e.g. tablets, capsules, puffers, etc.) including expired, unused or off-spec medication products, and R140 bulk waste materials (e.g. powders, liquids) from the production of pharmaceuticals. Pharmaceutical wastes are stored at the facility pending processing and disposal.

Illicit drug wastes are also currently processed as part of the trial, and are provided in evidence satchels by the NSW Police Force. Illicit drug wastes are not stored at the facility, and are immediately processed in the presence of the NSW Police.

The safeguards recommended by the Environmental Assessment for the Pharmaceutical Waste Processing Trial (WA, 2015) are currently in place at the facility; in particular management measures relating to R120 and R140 applicable to this modification are currently in place. Further detail in relation to these safeguards is provided in **Section 6.2.3**. Through the trial periods WA has enacted these safeguards and has not recorded any incidents or hazardous events during the course of its pharmaceutical and illicit drug waste processing trial.

It is noted that a PHA (AECOM, 2017) has also been completed to accompany the Medical Waste Thermal Processing Facility (SSD_7396) proposed at the site. The PHA included a whole of site risk assessment for the proposed Medical Waste Processing project and the existing facility, including the pharmaceutical and illicit drug waste processing trials. Therefore the risks and hazards associated with this project are considered in the Medical Waste PHA to the extent that they are already stored or treated at WA, and as they are proposed to be stored and treated as part of SSD_7396.

6.2.2 Potential Impacts

6.2.2.1 Proposed Modification

WA is proposing to implement ongoing commercial-scale processing of pharmaceutical and illicit drug wastes, as a continuation of the current trial process. The proposal would increase the overall processing capacity of pharmaceutical and illicit drug wastes. WA proposes to process up to 5,000 tonnes per annum of pharmaceutical wastes, and up to 5 tonnes per annum of illicit drug wastes. The proposed increase to the processing capacity is expected to be achieved through an increase in processing up-time using available furnace capacity, rather than significant process modifications or the installation of alternative technologies. It is noted that the proposed increase in pharmaceutical and illicit drug waste processing capacity is to be achieved within the current 40,000 tonne per annum waste processing approval in effect at the site.

The existing pharmaceutical waste storage area would provide storage space for approximately 100 pallets of waste, which may be stored in cardboard packages, plastic containers, bulk pallet quantities or other containers as appropriate to the waste.

The Project does not propose to change the materials to be processed or introduce new or amended treatment processes not addressed as part of the environmental assessments and approvals issued for the existing facility.

To ensure potential hazards and risks associated with the Project are captured, the Project was assessed against the requirements of SEPP 33 using a preliminary hazard screening. A gap analysis against the existing PHA (AECOM, 2017) was then completed. The intent of the assessment was to determine the extent to which the existing hazard identification and associated consequence analysis remain applicable for the Project, and whether the existing mitigation measures provide sufficient protection.

6.2.2.2 Preliminary Risk Screening

The Project was assessed against the criteria for Potentially Offensive Developments and Potentially Hazardous Developments provided in SEPP 33 and *Applying SEPP 33* (NSW DP&I, 2011) respectively. Classification as Potentially Offensive or Potentially Hazardous guide the requirements with regard to hazard management, and would form the basis for hazard assessments completed as part of this modification.

Potentially Offensive Development

SEPP 33 defines a “Potentially Offensive Development” as:

“a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.”

A detailed description of the quantity, nature and significance of impacts likely to be caused by the Project is provided in **Sections 6.1** and **6.3** of this EA. These assessments also detail the safeguards that would remain in place to ensure potential impacts can be controlled to a level which is not significant. Compliance with DP&E consent conditions and EPL 6423 as amended for the Project is sufficient to demonstrate the facility is not an ‘offensive industry’.

Potentially Hazardous Development

SEPP 33 defines a “Potentially Hazardous Development” as:

“a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

- a. to human health, life or property, or*
- b. to the biophysical environment,*

and includes a hazardous industry and a hazardous storage establishment.”

The Project proposes the ongoing processing of pharmaceutical wastes, including R120 and R140 waste types, and illicit drug materials. These wastes are generally not classified as dangerous goods, although there is the potential for the wastes to include various types of dangerous goods including cytotoxic medications, flammable liquids or aerosols and corrosive substances. Whilst the Project does not modify the nature of the dangerous goods stored and handled at the facility, an assessment against the criteria has been conducted due to the increase in capacity.

To determine the appropriate level of risk assessment for the development, a preliminary hazard screening was carried out in accordance with *Applying SEPP 33* (NSW DP&I, 2011). Both the storage and handling of hazardous chemicals at the facility as well as transport considerations were applied.

Dangerous Goods Storage

The facility would receive and temporarily store various pharmaceutical wastes, which may include quantities of dangerous goods. Illicit drug wastes would not be stored at the facility, but would be immediately processed under supervision of the NSW Police.

An assessment against the threshold quantities provided in *Applying SEPP 33* for the types and quantities of dangerous goods which may be present as part of the Project is described below:

- **Class 3 Flammable Liquids:**

The potential for significant off site risk for Class 3 is assessed based on the distance to the boundary and storage quantity. Figure 9 of *Applying SEPP33* outlines:

- Storage of less than 5 tonne of Class 3 is not considered to have significant off-site risk;
- Storage of up to 50 tonne of Class 3 that is 13m from the site boundary is not considered to have significant off-site risk; and
- Storage of up to 200 tonne of Class 3 that is 20m from the site boundary is not considered to have significant off-site risk.

Pharmaceutical and illicit drug wastes are not usually dangerous goods and only a small percentage of pharmaceutical wastes to be stored on site are potentially Class 3 materials. While the exact quantities of Class 3 materials to be stored are not known, the total storage of Class 3 materials is not expected to exceed a conservative 50 tonnes. It is noted that no Class 3 materials were encountered during 2015-2017 trial processing activities, and only minor (kilogram) quantities, if any, are anticipated for future processing. Nevertheless, the Project would use existing storage buildings that are a minimum of 40m from the nearest site boundary. Therefore, the development is not considered to be potentially hazardous with regard to the storage of Class 3 materials.

Any pharmaceutical wastes classified as Class 3 materials would be stored in accordance with *AS1940 The storage and handling of flammable and combustible liquids* and *AS3833 The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*.

- **Class 6.1 Toxic Substances:**

The development is potentially hazardous if the facility plans to store greater than 2.5 tonne of class 6.1 (PG II or III) and 0.5 tonne of class 6.1 (PG I) at any one time.

The proposed modification is expected to store less than 2.5 tonnes of class 6 and less than 0.5 tonnes of class 6.1 (PG I) at any one time meaning it would not be potentially hazardous. Therefore with respect to Class 6.1 Dangerous Goods, the Project is not considered to be potentially hazardous. Pharmaceutical wastes are generally not considered to be Class 6 dangerous goods. Quantities of toxic goods shall generally be prioritised to reduce on-site storage and inventories.

It is acknowledged that the Medical Waste Thermal Processing Project EIS has indicated there is potential for the storage of up to 20 tonnes of toxic or 2 tonnes of very toxic substances at any one time. Potential hazards have been separately assessed in the Medical Waste project PHA (AECOM, 2017). Should the Medical Waste Thermal Processing project be approved, a range of measures as detailed in the PHA (AECOM, 2017) would need to be implemented to appropriately manage risks associated with that project. It is noted that the PHA (AECOM, 2017) concluded that with the proposed measures in place risks would be acceptable. A summary of the relevant sections of the PHA is provided in **Section 6.2.2.3**.

It is noted that quantities of illicit substances destroyed at the facility may be classified as Class 6.1 dangerous goods, however these goods would not be stored at the facility and would be immediately processed in the presence of the NSW Police.

- Class 5.2 Organic Peroxides:

The development is potentially hazardous if the facility plans to store greater than 10 tonne of class 5.2 at any one time.

It is considered that Class 5.2 materials could be present in the R140 pharmaceutical waste processed at the facility, as potential precursors during pharmaceutical manufacture. Significant quantities are not expected to be present simultaneously, and the proposed modification would store less than 10 tonnes at any one time. As such, the proposed modification is not considered to be potentially hazardous.

Any pharmaceutical wastes classified as Class 5.2 (organic peroxide) would be stored in accordance with AS2714 *The storage and handling of organic peroxides* and AS3833 *The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*.

- Class 8 Corrosive Substances:

Table 3 of *Applying SEPP33* shows the threshold for Class 8 corrosive substances. The storage of Class 8 is not considered to be potentially hazardous if storing quantities of less than:

- PGI: 5 tonne;
- PGII: 25 tonne; and
- PGIII: 50 tonne.

Pharmaceuticals and illicit drug wastes are not usually Dangerous Goods. A small percentage of pharmaceutical wastes to be stored on site are potentially Class 8 materials. The quantity of Class 8 corrosive substances stored on site is not expected to exceed the threshold quantity and it can be assumed there is unlikely to be a significant off-site risk. Illicit drug wastes are not stored on site and are immediately processed in the presence of the NSW Police.

Any pharmaceutical wastes classified as Class 8 (corrosive) would be stored in accordance with AS3780 *The storage and handling of corrosive substances* and AS3833 *The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*.

Table 11 Dangerous Goods Storage Screening

Chemical	DG Class and Packing Group	Threshold*	Quantity on Site	Potentially Hazardous?
Pharmaceutical Agents	Class 3	50 tonnes, > 13 m from boundary	< 50 tonnes at ≥ 40 m from boundary	No
	Class 5.2	10 tonnes	< 10 tonnes	No
	Class 6.1	0.5 tonnes (PG I) 2.5 tonnes (PG II & III)	< 0.5 tonnes (PG I) < 2.5 tonnes (PG II & III)	No
	Class 8	5 tonne (PG I) 25 tonne (PG II) 50 tonne (PG III)	< 5 tonnes	No
Illicit Drug Waste	Class 6.1	5 tonne (PG I) 25 tonne (PG II) 50 tonne (PG III)	< 5 tonne per annum. No storage – all illicit waste immediately processed. Quantities expected not to exceed threshold.	No

*Threshold quantities as per *Applying SEPP33*.

Based on the potential quantities and profile of pharmaceuticals processed and stored as part of the Project as detailed in **Table 11** (which may include varying amounts of dangerous goods), the Project is not considered to be a Potentially Hazardous Development for the storage of dangerous goods.

Dangerous Goods Transport

The Project is expected to increase the number and frequency of truck deliveries of pharmaceutical waste. Based on an expected truck volume of 8 tonnes of waste, up to 825 additional vehicle movements are expected per year for the facility to meet the increased pharmaceutical waste processing capacity.

It is noted that the proposed increase in pharmaceutical processing capacity falls within the currently approved facility waste processing capacity of 40,000 tpa. Truck movements for the modification would offset other movements of material up to the 40,000 tpa limits. As such, the truck movements associated with this modification are considered to be within the currently approved limits, and the Project is considered to be not potentially hazardous with regards to transport.

6.2.2.3 Preliminary Hazard Analysis

The NSW guidelines are considered to provide the most comprehensive and robust assessment approach in the context of development control and land use planning within Australian jurisdictions.

In the context of new and upgraded / expanded development proposals, such as the Project, the following guidelines are relevant:

- *Hazardous and Offensive Development Guidelines: Applying SEPP 33* (DoP, 2011) – this guideline provides threshold requirements for dangerous goods and hazardous substances, above which a significant land use risk may be expected (and by corollary, below which no such significant risk is expected);
- *Assessment Guideline: Multi-Level Risk Assessment* (DoP, 2011) – this guideline includes a tiered approach to the assessment of land use planning risk depending on the likely significance of potential risks;
- *Hazardous Industry Planning Advisory Paper No. 3 – Risk Assessment* (DoP, 2011) – this guideline provides a general outline of the risk assessment approach, consistent with the requirements of AS/NZS ISO 31000;
- *Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Planning* (DoP, 2011) – this guideline specifies land use safety criteria according to affected land use, to be met at the proposed development boundary; and

- *Hazardous Industry Planning Advisory Paper No. 6 – Hazard Analysis* (DoP, 2011) – this guideline provides further detail in relation to the identification of hazards, the estimation of likelihood and consequence, and the quantification of risk.

Hazardous Industry Planning Advisory Papers (HIPAPs) other than those listed above relate to studies to be undertaken during the detailed design, implementation and operation of a development.

Based on the quantities and types of wastes to be processed under the Project, and the associated surrounding land uses, a qualitative assessment was considered appropriate based on a determination of the facility as a Potentially Hazardous Development and the criteria presented in *Applying SEPP 33* (NSW DP&I, 2011):

“A qualitative PHA may be sufficient in the following circumstances:

- *where the materials are relatively non-hazardous (for example, corrosive substances and some classes of flammables);*
- *where there are no major worst-case consequences;*
- *where the technical and management safeguards are self-evident and readily implemented; and*
- *where the surrounding land uses are relatively non-sensitive.”*

As the Project is not introducing additional hazardous materials or processes, the Project has been assessed as a gap analysis against the Environmental Assessment for the pharmaceutical and illicit drug waste trial program and the PHA prepared for the proposed Thermal Waste Processing Project being implemented at the facility. The PHA (AECOM, 2017) was conducted in accordance with *HIPAP No. 6 – Guidelines for Hazard Analysis* and applied the methodology described in the *DP&E Multi-Level Risk Assessment* for a level 2 analysis.

The gap analysis considered potential impacts of the hazardous materials, hazardous incidents and a review of the existing consequence assessment against the guidelines. The gap analysis is presented in **Table 12**.

Table 12 Gap Analysis Against Existing Environmental Assessment and PHA

Element / Consideration (AECOM PHA Reference)	Gap Analysis	Does the proposed modification impact the risk profile?
Gap Analysis Against Environmental Assessment for Trial Program (WA, 2015)		
Air Quality	The proposed commercial operations do not introduce additional release scenarios, and would utilise furnaces and emissions control infrastructure currently in place at the facility. The increase in processing rates is within the current approvals.	No Refer AQIA, Section 6.1
Water Quality	Existing measures are in place to prevent the interaction of stormwater with any waste stored or processed at WA. Receipt, storage, handling and processing of wastes occur within the Plant Buildings. Operating procedures are currently in place for identification and control of liquid wastes if generated onsite. The proposed increase to rates is not considered to introduce any new risks with regard to water quality.	No
Noise	The existing facility has regulatory approval for plant operations 24-hours per day, 7-days a week. The proposed commercial operations do not introduce a new source of noise, as the operations use existing processing equipment concurrently with normal operations.	No
Waste Management	The proposed commercial operations would not change the nature of waste produced at the site, and is intended to treat current waste streams. Waste management procedures and controls are currently in place and have been demonstrated for the trial process.	No
Hazards – Furnace explosion, material properties	The Project would not change the treatment equipment or procedures. Procedures are currently in place for the identification and management of liquid wastes, including provisions for treatment in empty furnaces. Procedures for the management and treatment of wastes have been demonstrated during the trial. Pharmaceutical wastes would be stored in a dedicated area and appropriately controlled based on its classification, as required. Processing rates are within current approval limits.	No
Greenhouse Gases	Emissions control equipment is currently in place at the site, with monitoring and tuning of burners undertaken on a regular basis. Greenhouse gas emissions are considered to be typical of furnace operation, and the processing of pharmaceutical wastes would be conducted within currently approved limits.	No
Community	Operations are to be undertaken within currently approved operating hours and processing limits. An information session and consultation period has been conducted with representation from the community and commercial industry. The proposed commercial operations are not expected to materially change the operation of the existing facility.	No

Element / Consideration (AECOM PHA Reference)	Gap Analysis	Does the proposed modification impact the risk profile?
Gap Analysis Against Medical Waste Treatment Project PHA (AECOM, 2017)		
Gas Piping – Ignition of leak in gas piping (Hazard ID 3)	The proposed commercial processing of these wastes is not considered to impact the risk of ignition of gas leaks. The processing of pharmaceutical and illicit drug wastes would be completed within the currently approved processing limits and facility operating times.	No
Dangerous Goods Storage Area – Fire involving dangerous goods (Class 3 / Class 6.1) (Hazard ID 4)	Generally, large quantities of Class 3 or Class 6.1 goods are not expected. Whilst these goods may be stored as part of larger pharmaceutical waste deliveries, the quantities are generally expected to be minor. Wastes would be stored and processed in accordance with the relevant Australian Standard. Procedures are currently in place to identify and adequately manage the presence of specific dangerous goods in deliveries. Procedures are established to allow for processing of materials requiring special attention, such as liquids and aerosols.	No
Dangerous Goods Storage Area - Storage, loading, unloading on-site – Escape of dangerous goods (Class 6.1 / 6.2) from containment (Hazard ID 5)	All packages are inspected on delivery, and packages not conforming to the ADG code are not accepted. The existing housekeeping, receipt and storage procedures are considered to adequately manage the risk of loss of containment. In addition, it is noted that the surrounding land use is not sensitive. In the event of a potential release it is considered that the existing emergency response and evacuation procedures are sufficient to prevent significant effects. It is also noted that the material generally does not contain significant amounts of Class 6.1 materials.	No
Kiln (Furnace) Processing – Loss of containment of toxic emissions (Hazard ID 6)	The Project is not considered to impact the operation of the furnace, as the increased processing capacity falls within the currently approved limits. The existing furnace control system and emissions control systems, including the baghouses, are considered to remain effective at managing the risk of emissions. Procedures are in effect to allow for processing of materials requiring special attention, such as liquids and aerosols.	No Refer Air Quality Monitoring Section 6.1
Dangerous Goods Storage Area - Flooding (Hazard ID 7)	A site specific flood risk assessment has been completed for the facility. The pharmaceutical waste storage area would be located to control flood risks, and wastes would generally be stacked on pallets. The design of the existing facility is considered to be sufficient to control the risk of flood effects and loss of containment.	No

6.2.3 Mitigation Measures

Based on the analysis conducted in the PHA (AECOM, 2017) and the Preliminary Screening Analysis prepared for the Project in **Section 6.2.2.2** herein, the hazards associated with the proposed commercial-scale processing of pharmaceutical and illicit drug waste at the WA facility do not result in a change to the existing risk profile.

Despite the existing safeguards being deemed suitable for the management of hazards and risk at the site, WA commits to the ongoing operation of existing and proposed site safeguards identified for the facility for the duration of operation of the Project, including:

- Bag-houses – all bag-houses would be fitted with real-time, continuous particulate monitoring systems⁶ (existing);
- Bag-houses – all bag-houses would be fitted with high differential pressure detection to activate bag pulsing and cleaning processes (existing);
- Baghouse No.1 – Exhaust gases from the furnaces would be directed to Baghouse No. 1 for treatment prior to release to atmosphere (existing);
- The existing site Environmental Management System would be updated to incorporate the increased capacity with regards to pharmaceutical and illicit drug wastes. Change management procedures have been completed for the introduction of the processing trial, and prior to full scale commercial treatment the following documents would be updated:
 - Safety Management System; and
 - Environmental mitigation measures.
- The Safety Management System Manual would be updated to include the operations and materials associated with the Project prior to the commencement of operation in accordance with the requirements of the *NSW Work Health and Safety Regulation 2011*;
- The Emergency Response Plan would be updated to include specific responses to the hazard scenarios identified for this Project;
- WA would continue to comply with the conditions of the EPL issued by the EPA under the POEO Act;
- WA would update the SafeWork NSW Notification of Dangerous Goods for manifest quantities, where the storage of DG materials is anticipated;
- The transport of dangerous goods to and from site would be in accordance with the Australian Dangerous Goods Code of Practice / NZ 5433; and
- As a part of the update to the safety management system manual, WA's dangerous goods policy, plans and procedures would be updated to include the requirement to store and handle all dangerous goods in accordance with the relevant Australian Standard for each class outlined in **Table 13** below.

The following additional safeguards have been identified in protecting against the accumulation of flammable gases within the furnace in the event of a flameout:

- During normal operation, the temperature of the furnaces would operate in the order of 900-1000°C;
- In the event of burner failure, the furnace automatically undergoes a purge cycle as part of reset conditions (as per Australian Standard requirements), eliminating the potential for the accumulation of flammable gases; and
- The operating temperatures would be well above the auto-ignition temperature of methane and also that of any hydrocarbon solvents that could be introduced in the waste stream that might be a potential source of flammable gases. Therefore it would not be possible for flammable gases to

⁶ It is noted that the bag house emissions control systems are currently operating at the plant. These systems have proven successful in preventing the release of uncontrolled process emissions from the operational areas of the plant.

accumulate within the furnaces regardless of whether the burners were on or off. Many furnaces, once at operational temperatures, can operate for extended periods of time without the use of any auxiliary fuel burners utilising the energy release of the waste materials incinerated and residual hot ash to maintain the required combustion temperatures.

Table 13 Australian Standards for Dangerous Goods

Class of Material	Type of Materials on site	Relevant Australian Standard for Storage and Handling
Class 3 Flammable (and combustible) Materials	Some types of Pharmaceutical wastes can be class 3 flammable substances Diesel	AS 1940 – The Storage and Handling of Flammable and Combustible Liquids.
Class 2 Gases	Refrigerant Natural Gas	AS 4332 The storage and handling of gases in cylinders.
Class 6 Toxic Substances	Some types of Pharmaceutical wastes can be class 6.1 toxic substances	- AS/NZS 4452, The storage and handling of toxic substances. - AS/NZS 3816, Management of clinical and related wastes. - HB 202, A management system for clinical and related wastes – Guide to the application of AS/NZS 3816, Management of clinical and related wastes.
Class 8 Corrosive Substances	Some types of pharmaceutical wastes can be class 8 corrosive substances	AS 3780 – The storage and handling of corrosive substances.
Class 9 Miscellaneous Dangerous Goods	Some types of pharmaceutical wastes can be class 9 miscellaneous dangerous goods	AS/NZS 4681 – The storage and handling of Class 9 miscellaneous dangerous goods.
Mixed classes of dangerous goods	Areas where various classes are stored on site such as waste preparation areas	AS/NZS 3833 – The Storage and Handling of Mixed Classes of Goods, in Packages and Intermediate Bulk Containers.

6.3 Other Environmental Issues

Other environmental aspects that were identified in **Section 5.0** as having a ‘very low’ or ‘no anticipated impact’ level of potential impacts include:

- Traffic and transport;
- Soil and Water;
- GHG Emissions;
- Noise;
- Waste Management;
- Social and Economic;
- Visual;
- Heritage;
- Land use; and
- Fauna and Flora.

Consideration of these matters is provided in **Table 14**.

Table 14 Other Environmental Issues

Issue	Consideration
Traffic and Transport	Access to site is currently undertaken via Mitchell Avenue and this access would remain unchanged for the Project. Transport of illicit drug wastes would be facilitated by NSW Police. Transport of pharmaceutical wastes would be undertaken by licensed waste transport contractors. Transport routes (including the utilisation of the Hunter Expressway; thereby reducing traffic burden through the township of Kurri Kurri), material handling and quality control documentation protocols established and implemented for existing trial waste movements would be adopted for the transport and handling of these wastes for the duration of the Project. Conservatively the Project may generate the following traffic movements: • Illicit Drug Wastes – NSW Police; light vehicle (Note: independent verifiers also travel in the Police vehicle); approximately 5 vehicles per week; and • Pharmaceutical Wastes; Licenced Contractor; vehicle type a combination of Pantech and flat-top semi-trailers; approximately 10 vehicles per week. These are the same types of vehicles that already access the WA site. As the Project is not proposing to increase or change its overall processing tonnage limits, no significant increase in truck movements beyond those associated with the existing facility operation are expected to be generated. Therefore it is considered that the Project would have a negligible impact on traffic and transport. The existing management measures currently in place at WA are considered appropriate for the ongoing management of traffic associated with the Project.
Soil and Water	The Project would be undertaken within existing facilities on site. There is no proposed change to the existing site footprint, and no excavations or ground disturbance would occur. There would be no construction activities associated with the Project and as such there would be no immediate impact on soils and local water quality. All pharmaceutical and illicit drug waste truck delivery loads would be covered by tarpaulin or in sealed bins to prevent spillages, as per current process material deliveries. All operations would be performed within enclosed buildings to mitigate against external spills. Should a spill occur, site personnel would recover materials in accordance with established spill response procedures. Spilt material would be returned to storage for processing and thermal destruction (i.e. not disposed of). WA already has in place a first flush stormwater control system on site which consists of a drainage network, pond storage and constructed wetland system. The Stormwater control system segregates off-site stormwater entering the site, uncontaminated on-site stormwater and potentially contaminated on-site stormwater as follows: • Off-site stormwater entering the site is directed to a grass swale catch drain and directly discharged into Swamp Creek; • Uncontaminated on-site stormwater is directed to a swale pond, allowed to settle, and then discharged directly to the wetland; and • Potentially contaminated first flush water is fed through a constructed wetland to remove contaminants, and the resulting clean water is irrigated on site from the main pond storage, which holds the water from the wetland system and acts as a first flush containment facility for the development. Annual water quality monitoring of the Main Pond is undertaken in accordance with EPL 6423. Samples are taken to monitor the concentrations of aluminium, fluoride, total suspended solids, cyanide, conductivity and pH and the results are

Issue	Consideration
	reported to EPA, DP&E and CCC annually. WA's existing stormwater management measures would continue to be implemented for the Project. The existing management measures in place at WA to manage potential impacts to soil and water are considered adequate for the Project. Potential impacts to soil and water quality as a result of the Project would therefore be minimal.
GHG Emissions	Emission of GHGs is expected to be typical of normal furnace operation. Furnace burners are routinely tuned to optimise burner efficiencies and minimise GHG emissions resulting from inefficient burning operations. Furnace burners would be maintained to ensure complete combustion of furnace off-gases. The potential for excessive GHG emissions is considered to be negligible.
Noise	As construction activities would not be required by the Project, there would be no construction noise generated. WA has approval to operate 24 hours per day, 7 days per week, with specific receptor noise limits prescribed for daytime, evening and night time periods. The Project operations would be the same as existing plant operations and would typically occur during normal operating hours (10pm Sunday to 10pm Friday). No new plant, machinery or equipment is proposed as part of the Project. The Project would utilise existing equipment that is currently used for the processing of aluminium dross and SPL at WA. Therefore, there would no change to the previously assessed and approved noise limits for the site. As the Project would continue to process within the approved tonnage limits, there would be no significant change in the number of truck movements beyond those associated with the existing operation and as a consequence traffic noise impact from the Project would be negligible. Truck movements would continue to be restricted to between the hours of 7am and 10am in accordance with Condition L5.1 of the EPL.
Waste Management	<i>Waste inputs</i> Transport of pharmaceutical waste would be undertaken by licensed waste transport operators and the waste would be formally tracked in accordance with the NSW EPA's Online Waste Tracking protocol. Transport of illicit drug wastes would be facilitated by NSW Police and relevant Chain of Custody procedures would apply. WA standard operating procedures for material receipt, inspection and delivery record keeping would continue to apply for pharmaceutical and illicit drug wastes. Prior to storage and/or processing, wastes would be inspected and details recorded on the relevant inspection sheet, including the date and time, the nature of the consignment, packaging type, mass / volume and the source. <i>Wastes generated</i> The primary waste stream generated from the processing of pharmaceutical and illicit drug wastes would comprise of ash materials. The Project would only result in a small component of total ash production. As the pharmaceutical and illicit drug waste would be co-processed with WA's existing SPL and dross operations, ash residues from the thermal treatment processes would be beneficiated for reuse as is currently undertaken with WA's ash materials. No landfilling of the ash residues would occur. Other wastes produced on site include general sewage and regulated trade wastewater (from excess cooling water, truck washdown facilities, toilet and showering amenities and crib facilities), wastes from general maintenance activities (waste oil (recycled), scrap steel (recycled) and other general waste)

Issue	Consideration
	and office waste. The Project would have a negligible impact on the amount of these wastes generated from the site. There would be no other additional wastes generated by the Project.
Social and Economic	The Project would have the positive economic impact of using spare capability within the existing approved development which would provide greater employment security for the existing workforce and associated Contractors. The Project also provides a local and cost-effective solution to the issue of disposal of pharmaceutical and illicit drug wastes, thereby circumventing the need for interstate transport and disposal. While the processing of pharmaceutical and illicit drug waste would provide a secure, established disposal option for these wastes, potential impacts may include unwanted criminal attention. The potential for social impact and crime associated with the processing of these waste sources was previously considered as part of the environmental assessment of the trial program. WA has protocols in place which would be implemented to minimise and manage these issues. NSW Police would be responsible for the secure transport of illicit drug wastes to the facility, and would supervise the handling and complete destruction of these wastes immediately upon receipt. There would be no storage of illicit drugs on site. These processes would be thoroughly controlled and documented by NSW Police. The presence of pseudoephedrine and other precursors to illicit drug manufacture amongst pharmaceutical waste deliveries would be negligible and hence such wastes should not attract or stimulate criminal activity. In the event that pharmaceutical wastes requiring disposal do contain small quantities of precursors, WA would require formal prior notification from waste suppliers and would insist that such materials be segregated for either immediate processing upon receipt or secure onsite storage. Storage and processing of such wastes would be under the direct supervision of WA management and waste generator / agent representatives, as required. The following site security features are also present at the facility: • Operating hours and site manning; • Boundary fencing and main gate operation; • Back-to-base security monitoring; • Network of site security cameras; and • Regime of regular contractor Security Patrols. NSW Police has indicated that it has no particular concerns regarding site security. Existing security features operating at the WA facility are considered to be more than adequate for the Project and to ensure the protection and wellbeing of employees and the wider community.
Visual	No new plant or equipment is proposed as part of the Project and as a consequence the Project would not have a visual impact on the receiving environment.
Heritage	No new construction works or ground disturbance would be required by the Project. All proposed activities would be undertaken within the existing WA site and building footprints. No items of heritage significance have been identified. Impact to heritage would therefore be negligible.
Land use	As the Project proposes to use an existing process within the confines of an existing facility and within the existing tonnages limits, impacts to land use would

Issue	Consideration
	be negligible.
Fauna and Flora	The Project would be undertaken within the existing WA facility. Impact to flora and fauna would be negligible.

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7.0 Summary of Management Measures

Weston WA commits to the update of its Environmental Management System to incorporate the management measures listed in **Table 15**.

Table 15 Summary of Management Measures

Issue	Mitigation Measures
Air Quality	• All existing air quality monitoring and management systems will continue to be operated for the duration of the Project; and • Monitoring of air emission parameters currently assessed for processing operations will continue to be undertaken in accordance with the existing emissions monitoring regimes.
Hazards and Risk	WA commits to the ongoing operation of existing and proposed site safeguards identified for the facility for the duration of operation of the Project: • Bag-houses – all bag-houses will be fitted with real-time, continuous particulate monitoring systems (existing); • Bag-houses – all bag-houses will be fitted with high differential pressure detection to activate bag pulsing and cleaning processes (existing); • Baghouse No.1 – Exhaust gases from the furnaces will be directed to Baghouse No.1 for treatment prior to release to atmosphere (existing); • The existing site Environmental Management System will be updated to incorporate the increased capacity with regards to pharmaceutical and illicit drug wastes. Change management procedures have been completed for the introduction of the processing trial, and prior to full scale commercial treatment the following documents will be updated: - Safety Management System; and - Environmental mitigation measures. • The Safety Management System Manual will be updated to include the operations and materials associated with the Project prior to the commencement of operation in accordance with the requirements of the <i>NSW Work Health and Safety Regulation 2011</i>; • The Emergency Response Plan will be updated to include specific responses to the hazard scenarios identified for this Project; • WA will continue to comply with the conditions of the EPL issued by the EPA under the POEO Act; • WA will update the SafeWork NSW Notification of Dangerous Goods for manifest quantities where the storage of DG materials is anticipated; • The transport of dangerous goods to and from site will be in accordance with the Australian Dangerous Goods Code of Practice / NZ 5433; and • As a part of the update to the safety management system manual, WA's dangerous goods policy, plans and procedures will be updated to include the requirement to store and handle all dangerous goods in accordance with the relevant Australian Standard for each class including: - AS 1940 – The Storage and Handling of Flammable and Combustible Liquids; - AS 4332 The storage and handling of gases in cylinders; - AS/NZS 4452, The storage and handling of toxic substances; - AS/NZS 3816, Management of clinical and related wastes; - HB 202, A management system for clinical and related wastes – Guide to the application of AS/NZS 3816, Management of clinical and related wastes; - AS 3780 – The storage and handling of corrosive substances; - AS/NZS 4681 – The storage and handling of Class 9 miscellaneous dangerous goods; and - AS/NZS 3833 – The Storage and Handling of Mixed Classes of Goods, in Packages and Intermediate Bulk Containers.

Issue	Mitigation Measures
	The following additional safeguards have been identified in protecting against the accumulation of flammable gases within the furnace in the event of a flameout: • During normal operation, the temperature of the furnaces would operate in the order of 900-1000°C; • In the event of burner failure, the furnace automatically undergoes a purge cycle as part of reset conditions (as per Australian Standard requirements), eliminating the potential for the accumulation of flammable gases; and • The operating temperatures would be well above the auto-ignition temperature of methane and also that of any hydrocarbon solvents that could be introduced in the waste stream that might be a potential source of flammable gases. Therefore it would not be possible for flammable gases to accumulate within the furnaces regardless of whether the burners were on or off. Many furnaces, once at operational temperatures, can operate for extended periods of time without the use of any auxiliary fuel burners utilising the energy release of the waste materials incinerated and residual hot ash to maintain the required combustion temperatures.
Traffic	• Transport of illicit drug wastes will be facilitated by NSW Police; • Transport of pharmaceutical wastes will be undertaken by licensed waste transport operators; and • Transport routes, material handling and quality control documentation protocols established and implemented for existing waste movements will be adopted for the transport and handling of these wastes.
Soil and Water	• All raw material truck delivery loads will be covered by tarpaulin or in sealed bins to prevent spillages, as per current process material deliveries; • All operations will be performed within enclosed buildings to mitigate against external spills; • Should a spill occur, site personnel will recover materials in accordance with established spill response procedures. Spilt material will be returned to storage for processing (i.e. not disposed of); and • The water quality monitoring program will continue to be implemented.
Greenhouse Gas	• Practices currently in place at the plant to reduce GHG emissions, including the routine tuning and maintenance of furnace burners, will continue to be undertaken.
Noise	• Truck movements will continue to be restricted to between the hours of 7am and 10am in accordance with Condition L5.1 of the EPL.
Waste Management	• Transport of pharmaceutical waste will be undertaken by licensed waste transport operators and the waste will be formally tracked in accordance with the NSW EPA's Online Waste Tracking protocol; • Transport of illicit drug wastes will be facilitated by NSW Police and relevant Chain of Custody procedures will apply; • WA standard operating procedures for material receipt and delivery record keeping will continue to apply for pharmaceutical and illicit drug wastes; • Prior to storage and/or processing, wastes will be inspected and details recorded on the relevant inspection sheet, including the date and time, the nature of the consignment, packaging type, mass / volume and the source; • Bulk bag wastes will be disposed of to an appropriately licensed facility in conjunction with routine site disposal protocols; and • No landfilling of the ash residues will occur.
Social and Economic	• The site will be secure at all times and security will be maintained in accordance with defined protocols; • NSW Police will be responsible for the secure transport of illicit drug wastes

Issue	Mitigation Measures
	to the facility, and will supervise the handling and complete destruction of these wastes immediately upon receipt. There will be no storage of illicit drugs on site. These processes will be thoroughly controlled and documented by NSW Police; and • In the event that pharmaceutical wastes requiring disposal do contain small quantities of precursors, WA will require formal prior notification from waste suppliers and will insist that such materials be segregated for either immediate processing upon receipt or secure onsite storage. Storage and processing of such wastes will be under the direct supervision of WA management and waste generator / agent representatives, as required.

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8.0 Conclusion

This Environmental Assessment presents details of the Project, assesses the existing natural and social environments, describes the potential impacts on the environment and describes management measures designed to minimise or avoid the identified impacts.

The Project seeks approval for the ongoing commercial processing of pharmaceutical and illicit drug wastes following the successful 24 month trial program. The Project would utilise the existing infrastructure, operational protocols and emission control systems in place at WA to process pharmaceutical and illicit drug wastes. The footprint of the development would remain unchanged as a result of the Project.

WA has historically provided thermal destruction services to the NSW Police for the disposal of illicit drug wastes as a non-commercial, community service. However, facilities must now be licensed and approved by the EPA to provide these services. In addition, disposal of pharmaceutical wastes is also constrained, with only one suitable facility in NSW offering thermal destruction services. The Project would offer a local and cost-effective solution to the disposal of pharmaceutical and illicit drug wastes. The Project would also result in improved market versatility and would assist in securing the ongoing operation of the WA site and employment for its workers and associated contractors.

Air quality and hazard screening investigations, along with the assessment of other environmental factors undertaken as part of this EA, revealed that the potential impacts of the Project would be minor. With the implementation of the mitigation measures proposed, it is expected that impacts would be eliminated or minimised and the Project can proceed accordingly.

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9.0 References

AECOM (2017) *Weston Aluminium Thermal Waste Processing Project – Preliminary Hazard Analysis (PHA)*, 15 February 2017.

AECOM (2016) Thermal Waste Processing Project, Environmental Impact Statement – SSD_15_7396, 26 August 2016.

AECOM (2012) 60250493-RPTFinal(Rev0)-20Apr12, *Processing of Spent Potlining – Weston Aluminium Pty Limited, Preliminary Hazard Analysis*, 20 April 2012.

AECOM (2012) *Environmental Assessment: Spent Potlining Processing: Modification to DA 86_04_01 & DA_10397 of 1995*, 6 September 2016.

DP&E (2011a) *Applying SEPP 33, Hazardous and Offensive Development Application Guidelines*

DP&E (2011b) *Hazardous Industry Planning Advisory Paper No.6, Hazard Analysis*.

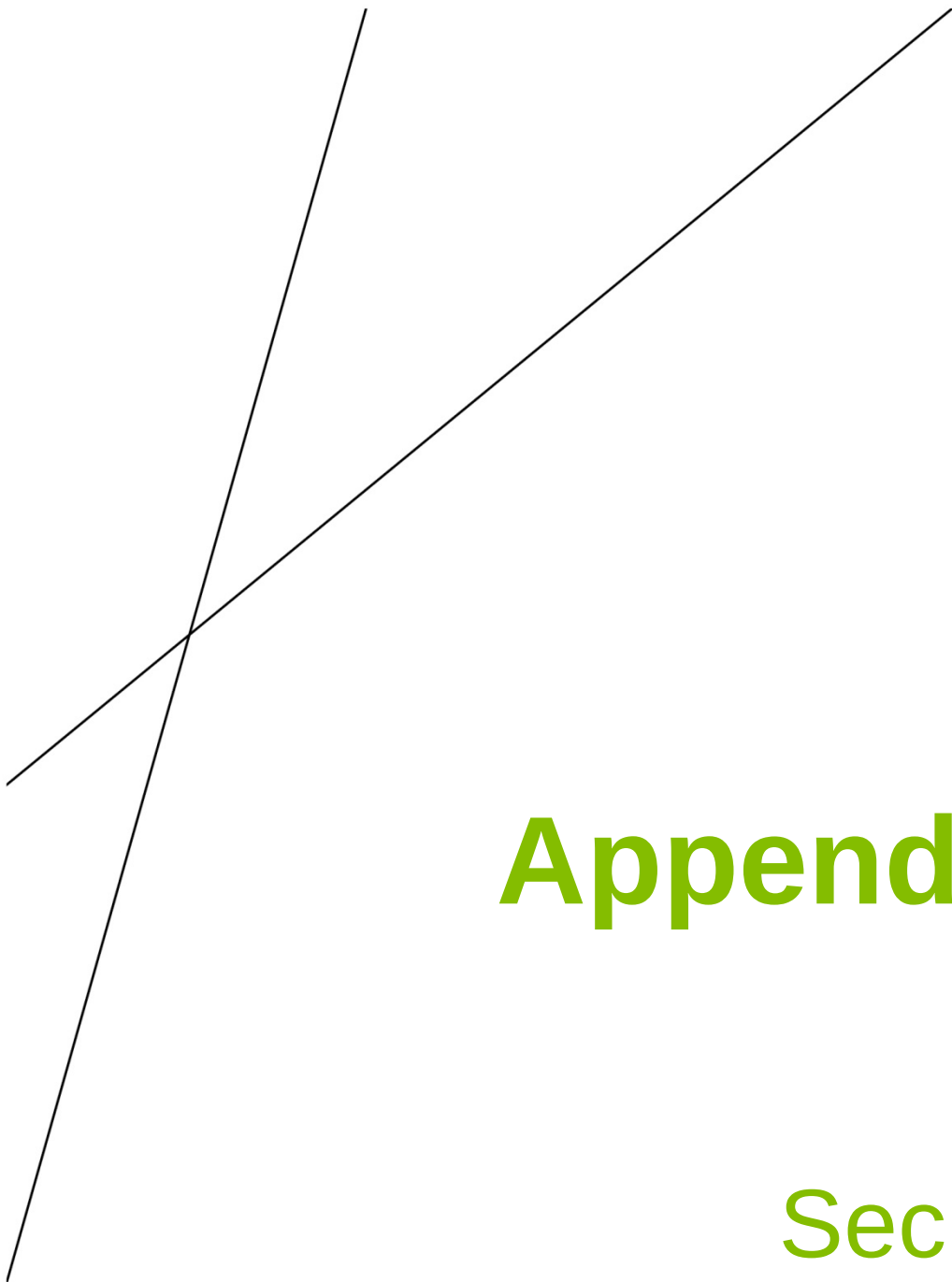
DP&E (2011c) *Hazardous Industry Planning Advisory Paper No.4, Risk Criteria for Land Use Safety Planning*.

DP&E (2011d) *Multi-Level Risk Assessment*.

Weston Aluminium (2015) *Application for Consent Modification and Licence Variation – Proposed Processing Trial of Pharmaceutical and Illicit Drug Wastes*, 17 March 2015.

Weston Aluminium (2017) *Air Quality Monitoring Program*, Revision 7, March 2017

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Appendix A

Secretary's Environmental Assessment Requirements

Appendix A Secretary's Environmental Assessment Requirements

Mr Chris McClung
Weston Aluminium
PO Box 295
Kurri Kurri NSW 2327

Dear Mr McClung

Weston Aluminium Dross Recycling Facility (DA 86_04_01 MOD 12 and DA 10397 of 1995 MOD 10) Secretary's Environmental Assessment Requirements (SEARs)

I refer to your email of 31 January 2017 seeking Secretary's environmental assessment requirements (SEARs) for a modification request to both the Minister's and Land and Environment Court's consents for the Weston Aluminium Dross Recycling Facility under section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

In accordance with S75(3) of the EP&A Act, the SEARs for the request are included below. The SEARs have been prepared in consultation with the Environment Protection Authority, Cessnock City Council and Hunter New England Population Health (see **Attachment 1**) and are based on the information provided to date.

Your modification request should be accompanied by an Environmental Assessment (EA) which includes the following:

- **Description of the modification;**
- **Need and justification for the modification;**
- **Other approvals** – Identification of any proposed variations to Weston Aluminium's current Environment Protection Licence and *Environmentally Hazardous Chemicals Act (1985)* Licence;
- **Identification of the environmental impacts of the modification** – including a more detailed assessment of the following:
 - **Air Quality** – including a review of the data accumulated during the trial processing of illicit drug and pharmaceutical waste and allowance for the variation in feedstock;
 - **Traffic and Transport** – including details of any revised traffic movements;
 - **Any proposed safety protocols;**
 - **Hazard and Risk** – including a Preliminary Hazard Analysis in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis and Multi-Level Risk Assessment* and in particular:
 - identify the hazards associated with all the dangerous goods to be stored on-site and the proposed storage quantities;
 - demonstrate that the proposed development complies with the criteria set out in *Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning*; and
 - estimate the cumulative impacts from the overall site and the surrounding potentially hazardous developments in the area and demonstrate that the proposed development does not increase the cumulative risk of the area to unacceptable levels;
 - **Water;**
 - **Waste Management;**
 - **Noise;** and
 - **Identification of conditions to be modified.**

Following the provision of the EA, the Department will advise you of the applicable fee (under Division 1A, Part 15 of the *Environmental Planning and Assessment Regulation 2000*) and consultation requirements.

If you have any enquiries about these requirements, please contact Emma Barnett on the above details.

Yours sincerely

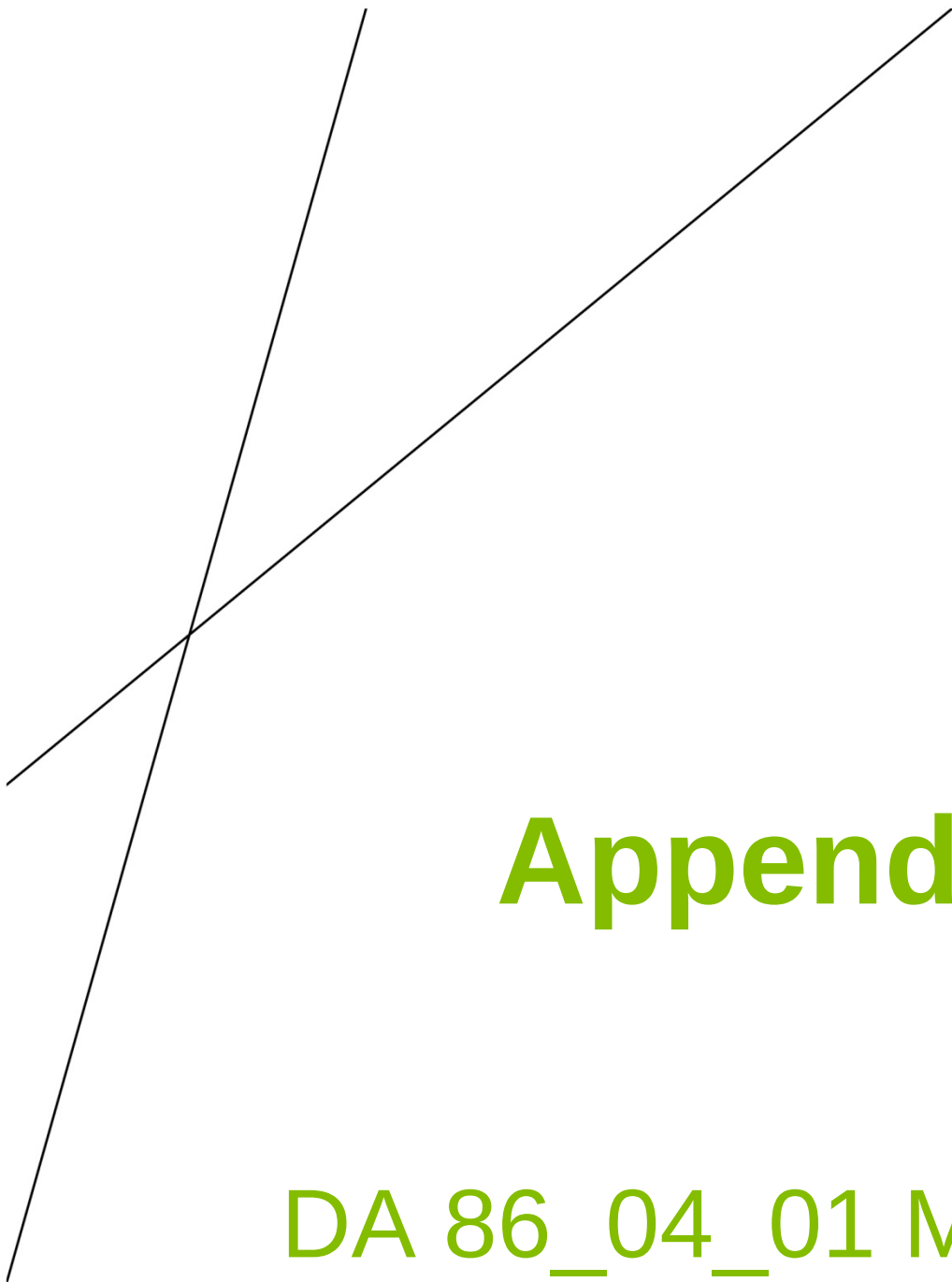


Chris Ritchie

Director

Industry Assessments

8/3/17



Appendix B

DA 86_04_01 MOD 10
& DA_10397 MOD 8

Appendix B DA 86_04_01 MOD 10 & DA_10397 MOD 8

**DETERMINATION OF A DEVELOPMENT APPLICATION
FOR STATE SIGNIFICANT, DESIGNATED AND INTEGRATED DEVELOPMENT
UNDER SECTION 80 OF THE
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979**

I, the Minister for Urban Affairs and Planning, under Section 80 of the *Environmental Planning and Assessment Act 1979* ("the Act") and clause 8 of *State Environmental Planning Policy No. 34 - Major Employment-Generating Industrial Development*, determine the development application ("the Application") referred to in Schedule 1 by granting consent subject to the conditions set out in Schedule 2. The reason for the imposition of conditions is to minimise any adverse environmental impacts associated with the development.

DA 86-04-01 Mod 3 – determined 4 September 2009
DA 86-04-01 Mod 4 – determined 5 August 2010
DA 86-04-01 Mod 5 – determined 7 February 2011
DA 86-04-01 Mod 6 – determined 25 October 2011
DA 86-04-01 Mod 7 – determined 7 September 2012
DA 86-04-01 Mod 8 – determined 17 February 2013

Andrew Refshauge MP
Deputy Premier
Minister for Urban Affairs and Planning
Minister for Aboriginal Affairs
Minister for Housing

Sydney,

2001

File No. S00/00975

SCHEDULE 1

Application made by:	Weston Aluminium Pty Ltd ("the Applicant");
To:	The Minister for Urban Affairs and Planning ("the Minister");
In respect of:	Lot 796 DP 39877, Parish of Heddon, Cessnock local government area;
For the following:	Additions and extensions to an existing aluminium dross recycling plant including: a) construction of an open scrap storage and sorting pad and an enclosed scrap storage warehouse; b) extension of the existing plant building to allow for ingot casting, molten aluminium handling and aluminium alloying; c) construction of an ingot storage and loading facility; d) construction of an enclosed ALDEX storage and dispatch facility, incorporating a workshop area; and e) extensions to the existing administration building, carpark and dross off-loading and sorting areas ("the development"). f) construction of a briquetting facility within the ALDEX building
Development Application:	Integrated DA No. 86-04-01, lodged with the Department of Urban Affairs and Planning on 30 April 2001;
State Significant Development	Under Section 76A(7) of the Act, the proposed development is classified as State Significant development because it is a type of development (metals, minerals or extractive materials processing) listed in Schedule 1 of <i>State Environmental Planning Policy No. 34 - Major Employment Generating Industrial Development</i> and has a capital investment in excess of \$20 million.
BCA Classification:	Class 5 - administration building Class 8 - plant building bag houses ALDEX building Class 10a - warehouse
Note:	1) To ascertain the date upon which this consent becomes effective, refer to Section 83 of the Act.

- 2) To ascertain the date upon which this consent is liable to lapse, refer to Section 95 of the Act.
- 3) If the Applicant is dissatisfied with this determination, Section 97 of the Act grants him or her a right of appeal to the Land and Environment Court, which is exercisable within 12 months of receiving notice of this determination.

DEFINITIONS

AEMR	Annual Environmental Management Report
Applicant	Weston Aluminium Pty Ltd
BCA	Building Code of Australia
Council	Cessnock City Council
Court	Land and Environment Court
Day	The period from 7 am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
DECCW	Department of Environment, Climate Change and Water
Department	Department of Planning and Infrastructure
Development	Establishment of a dross recycling facility and associated infrastructure (as described in the EIS and SEE, see below)
Director-General	Director-General of the Department (or delegate)
EIS	Environmental Impact Statement prepared by URS for Weston Aluminium Pty Ltd entitled <i>Additions to the Kurri Kurri Aluminium Refining and Recycling Facility</i> , Volumes 1-3 (dated 23 April 2001), including the following supporting documentation: • Preliminary Hazard Analysis, prepared by Granherne Pty Ltd (dated 25 October 1999); • Molten Metal Transportation Risk Assessment, prepared by Granherne Pty Ltd (dated 25 October 1999); • Additional Information Requested by EPA for Noise Impact Assessment, prepared by URS (dated 19 June 2001); • Additional Information Requested by EPA for Noise Impact Assessment - Supplement 1, prepared by URS (dated 3 July 2001); • Additional Information Requested by EPA for Noise Impact Assessment - Supplement 2, prepared by URS (dated 3 July 2001); • Response to EPA Request for Information in respect of air quality impacts, prepared by URS (dated July 2001); • Flora and Fauna Habitat Investigations for Proposed Extensions to Existing Aluminium Recycling Facility, Kurri Kurri, NSW, prepared by HLA-Envirosciences Pty Ltd (dated 25 June 2001); and Environmental Impact Statement prepared by Envirosciences Pty Ltd for Weston Aluminium Pty Ltd entitled <i>Environmental Impact Statement for an Aluminium Dross Recycling and Alloying Plant at Kurri Kurri</i> (dated July 1994), including the following supporting documentation: • Inspection Protocol for Imported Dross, approved by the Land and Environment Court on 7 April 2000; • Attachment A, entitled Supplementary Information Relating to Plant Design Refinements and Improvements to a Proposed Aluminium Dross Recycling and Alloying Plant at Kurri Kurri (exhibited from 10 July 1995 to 9 August 1995); • Waste Management Plan, prepared by Mr P.C. Raymond (dated 2 August and approved by EPA on 5 May 1995); and • Preliminary Hazard Analysis prepared by BHP Engineering (dated July 1994);
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning & Assessment Regulation 2000</i>
EPA	Environment Protection Authority
EPL	Environmental Protection Licence
Evening	The period from 6pm to 10pm
Extended Spent Potlining Material Processing Trial	The proposed 12 month trial of processing spent potlining material, as described in the Modification Application DA-86-04-01 Mod 6 and 10397 Mod 4, and Environmental Assessment dated June 2011
First cut spent potlining	spent potlining material originating from the carbon lining of aluminium reduction cells (pots)
LEC	Land and Environment Court
Minister	Minister for Planning and Infrastructure
Mixed spent potlining	Combination of first and second cut spent potlining material

DA-86-04-01-Mod 1	Alternations to the administration building extension, as approved by the Minister on 4 October 2001
DA-86-04-01-Mod 2	Addition of an annex on the process building, as approved by the Minister on 8 August 2002
DA-86-04-01-Mod 3	Addition of new process and storage areas, and increased operational efficiency of the existing development, as described in the Statement of Environmental Effects to Support Modification Applications for Aluminium Dross Recycling Facility, prepared by ENRS Australia Pty Ltd for Weston Aluminium Pty Ltd (dated 21 November 2007)
DA-86-04-01-Mod 5	Construction and operation of a briquetting facility to process Aldex ash into briquettes in the existing Aldex building, as described in the assessment prepared by GHD and dated November 2010
DA-86-04-01 Mod 8	A 12 month trial processing mixed spent potlining in existing rotary furnaces as described in the assessment prepared by Weston Aluminium and dated 30 November 2012
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Reasonable and Feasible	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering considerations and what is practical to build.
Second cut spent potlining	Spent potlining material originating from the refractory lining of aluminium reduction cells (pots)
SEE	Statement of Environmental Effects provided to support Modification Applications for Aluminium Dross Recycling Facility, prepared by ENRS Australia Pty Ltd for Weston Aluminium Pty Ltd (dated 21 November 2007)
Site	Land to which the development application applies
SPL	Spent Potlining
Spent Potlining Material Processing Trial	The proposed 2 week trial of processing spent potlining material, as described in the Modification Application DA-86-04-01 Mod 4 and 10397 Mod 2, and the enclosed Letter dated 26 May 2010 and Attachments 1, 2 and 3.

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Applicant shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction and/or operation of the development.

Terms of Approval

2. The Applicant shall carry out the development generally in accordance with the:
 - a) EIS as modified by the SEE;
 - b) site plans (see Appendix A);
 - c) conditions of this approval; and, during the spent potlining material processing trial,
 - d) modification application DA-86-04-01 Mod 4 and 10397 Mod 2, and the enclosed Letter dated 26 May 2010 and Attachments 1, 2 and 3.
 - e) Modification application DA-86-04-01 Mod 5 and 10397 Mod 3, and the enclosed SEE, dated November 2010, prepared by GHD; and
 - f) during the extended spent potlining material processing trial, modification application DA-86-04-01 Mod 6 and 10397 Mod 4, and the enclosed Environmental Assessment, dated June 2011 and the Response to Submissions dated 17 August 2011, prepared by Weston Aluminium.
 - g) Modification application DA-86-04-01 Mod 7 and 10397 DA 10397 of 1995 Mod 5, and the enclosed Environmental Assessment, dated 10 May 2012, prepared by AECOM and the Response to Submissions dated 21 June 2012, prepared by Weston Aluminium.
 - h) Modification application DA-86-04-01 Mod 8 and DA 10397 of 1995 Mod 6, and the enclosed Environmental Assessment, dated 30 November 2012, prepared by Weston Aluminium.

If there is any inconsistency between the above, the conditions of this approval shall prevail to the extent of any inconsistency.

3. The Applicant shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
 - a) any reports, plans, strategies, programs or correspondence that are submitted in accordance with this approval; and
 - b) the implementation of any actions or measures contained in these reports, plans, strategies, programs or correspondence.
4. Prior to each of the events listed below, or within such period otherwise agreed by the Director-General, the Applicant shall certify in writing to the satisfaction of the Director-General, that it has complied with all conditions of this consent applicable prior to that event:
 - a) commencement of any physical works associated with the development; and
 - b) commencement of operations.

Limits on Approval

5. The Applicant shall not process on site more than a combined total of 40,000 tonnes of dross aluminium and Second Cut SPL and 35,000 tonnes of scrap aluminium metal per year.
6. The Applicant shall not process more than 15,000 tonnes per year of dross aluminium sourced from overseas smelters and secondary aluminium processors.
- 6A The Applicant shall ensure that the combined total of Second Cut SPL and aluminium dross stored on site does not exceed 5,000 tonnes at any time.
- 6B The Applicant shall ensure that DA-86-04-01 Mod 8:
 - a) is undertaken over a period of 12 months only; and
 - b) during the operation of DA-86-04-01 Mod 8:
 - i. no more than 3,000 tonnes of mixed spent potlining material is received on site over the 12 month trial period; and
 - ii. no more than 1,000 tonnes of mixed SPL is stored on site at any one time.

Management Plans/Monitoring Programs

7. With the approval of the Director-General, the Applicant may submit any management plan or monitoring program required by this approval on a progressive basis.

Structural Adequacy

8. Within six months of the commencement of DA-86-04-01-Mod 3, the Applicant shall obtain and provide copies of all necessary building certificate(s) from Cessnock City Council to the Director-General, for the following works:
 - a) extension of the ALDEX building;
 - b) eight dross storage bays within the ALDEX building;
 - c) pre-processing plant within the ALDEX building;
 - d) annex to the Plant Building;
 - e) covered conveyor between the ALDEX building and the Plant Building;
 - f) Workshop in the north-western corner of the site; and
 - g) Stack 6.
9. The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the Building Code of Australia.

Notes:

- Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.
- Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.

Operation of Plant and Equipment

10. The Applicant shall ensure that all plant and equipment used on the site is maintained and operated in an efficient manner, and in accordance with relevant Australian Standards.

Spent Potlining Material Processing Trial

- ~~10.A Prior to the commencement of the Spent Potlining Material Processing Trial, the Applicant must:~~
- ~~a) obtain an updated EPL allowing the Spent Potlining Material Processing Trial to proceed; and~~
 - ~~b) notify the Director-General, Council and EPA's Regional Manager Hunter in writing, 1 week prior to the commencement of the trial and within 2 days of the conclusion of the trial.~~

Extended Spent Potlining Material Processing Trial

- ~~10.A Prior to the commencement of the extended Spent Potlining Material Processing Trial, the Applicant must:~~
- ~~a) obtain an updated EPL allowing the Spent Potlining Material Processing Trial to proceed; and~~
 - ~~b) notify the Director-General, Council and EPA's Regional Manager Hunter in writing, 1 week prior to the commencement of the trial and within 2 days of the conclusion of the trial.~~
- 10A. Prior to the commencement of the DA-86-04-01 Mod 8, the Applicant must:
- a) obtain an updated EPL allowing DA-86-04-01 Mod 8 to proceed; and
 - b) notify the Director-General, Council and the EPA's Regional Manager Hunter in writing, 1 week prior to the commencement of DA-86-04-01 Mod 8 and within 2 days of the conclusion of the trial.

SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS

AIR

Emission Limits

11. ¹The Applicant shall ensure that the emissions from discharge points serving the facility do not exceed the emission limits in Table 1.

Table 1: Air Emission Limits

Parameter/ Pollutant	Unit of Measure	100% Limit	Discharge Point ¹
Nitrogen Oxides	grams per cubic metre	2.5	1
		0.1	6, 13
Hydrogen Chloride	milligrams per cubic metre	400	1
		10	13
Solid Particles	milligrams per cubic metre	25	1
		35	2
		20	3
		15	7
		24	4
		10	6, 13
	kilograms per hour	5.43	Total plant emissions
Sulfuric acid mist and sulfur trioxide (as SO ₃)	milligrams per cubic metre	100	1, 6, 13
Carbon monoxide	parts per million	100	1
	milligrams per cubic metre	125	6
		125 ²	13
Gaseous fluoride	milligrams per cubic metre	2	1
	milligrams per cubic metre	1.4 ²	1
	kilograms per hour	0.25	Total plant emissions
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	10	1
		5	13
Volatile organic compounds	milligrams per cubic metre	77 ³	13
		40	6
Dioxins & Furans	nanograms per cubic metre	0.1 ⁴	13
Cyanide	Milligrams per cubic metre	0.5	1

Notes:

- Discharge points 1, 2, 3, 4, and 13 as defined in the EPL. Discharge points 6 and 7 as defined in the SEE.
- Limit value is a rolling 1 hour average.
- Limit value is a rolling 1-hour average. VOC as n-hexane (dry, 273 K, 101.3 kPa).
- Limit value is a rolling annual average. Polychlorinated-dibenzo-p-dioxins (PCDD) and polychlorinated-dibenzofurans (PCDF) as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalent calculated in accordance with the procedures included in Part 4, Clause 29 of the Protection of the Environment Operations (Clean Air) Regulation 2002, (dry, 273 K, 101.3 kPa).

Monitoring

12. ²Unless EPA specifies otherwise, the Applicant shall monitor the concentration of each parameter specified in Table 2 at the discharge points serving the facility.

Table 2: Source Emissions Monitoring Requirements

Pollutant/ Parameter	Units of Measure	Frequency	Discharge Point ¹
Carbon monoxide	parts per million	Yearly	1
Gaseous fluoride	milligrams per cubic metre	Continuous	1
Hydrogen chloride	milligrams per cubic metre	Yearly	1

¹ EPA General Term of Approval

² EPA General Term of Approval

		Quarterly	6, 13
Nitrogen Oxides	milligrams per cubic metre	Yearly	1, 6, 13
Solid Particles	milligrams per cubic metre	Yearly	1, 2, 3, 4, 7
		Quarterly	6, 13
Sulfuric acid mist and sulphur trioxide (as SO ₃)	milligrams per cubic metre	Yearly	1, 6, 13
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	Yearly	1, 6, 13
Dioxins & Furans	milligrams per cubic metre	Quarterly	6, 13
Fluorides	milligrams per cubic metre	Yearly	6, 13
Volatile organic compounds	milligrams per cubic metre	Quarterly	6, 13
Velocity	metres per second	Quarterly	6, 13
Volumetric flow rate	Normal cubic metres per second	Quarterly	6, 13
Dry gas density	kilograms per cubic metre	Quarterly	6, 13
Moisture content in stack gases	percent	Quarterly	6, 13
Temperature	Degrees Celsius	Quarterly	6, 13
Oxygen in stack gases	percent	Quarterly	6, 13
Cyanide	milligrams per cubic metre	Special Frequency 1	1

Notes:

1. Discharge points 1, 2, 3, 4, and 13 as defined in the EPL. Discharge points 6 and 7 as defined in the SEE.
2. The EPA will specify the sampling methods for this monitoring in the EPL for the development.
3. Where Special frequency 1 means quarterly testing frequency for the first year of SPL processing operations. Following four consecutive tests demonstrating compliance with the concentration limit and stable emission parameters, the licensee can apply to EPA for a reduced monitoring frequency.

13. ³The Applicant shall update its existing Air Quality Monitoring Program for the development to the satisfaction of the Director-General. This program must:
- a) be prepared in consultation with the EPA;
 - b) be submitted to the Director-General for approval within one month from the commencement of DA-86-04-01-Mod 7; and
 - c) include:
 - a program to validate the air emissions of the development, which involved carrying out monitoring of the emissions from the development;
 - mitigation measures and timeframe for their implementation in case of non-compliances with the emission limits referred to in condition 11; and
 - a program to monitor the ongoing performance of the development.
- 13A The Applicant shall:
- (a) undertake additional Stack Testing at point 15 (as specified in EPL 6423) within 90 days from the commencement of DA-86-04-01- Mod 5;
 - (b) submit a report which contains the results of the stack testing to the Director-General and EPA; and
 - (c) describe, in the report, actions that will be implemented to ensure compliance with air emission limits for Stack 7 if air emission limits referred to in condition 11 are exceeded.
14. ⁴The Applicant shall ensure that discharge points serving the facility are designed, constructed and operated generally in accordance with the parameters outlined in the EPL for the Development.

Construction

15. During construction, the Applicant shall ensure that:
- a) all trucks entering or leaving the site with loads have their loads covered;
 - b) trucks associated with the development do not track dirt onto the public road network; and
 - c) the public roads used by these trucks are kept clean.

Operation

16. The Applicant shall implement all reasonable and feasible measures to minimise the dust generated by the development.
17. Within three months of the commencement of DA-86-04-01-Mod 3, the Applicant shall isolate each of the eight dross storage bays by curtains to improve the collection efficiency of dust from the localised area.

³ EPA General Term of Approval

⁴ EPA General Term of Approval

18. Within 6 months of the commencement of DA-86-04-01-Mod 3, the Applicant shall certify to the Director-General that it has installed and commenced the operation of bag house No 7 in accordance with the SEE.
 19. Within 9 months of the commencement of DA-86-04-01-Mod 3, the Applicant shall certify to the Director-General that it has installed and commenced the operation of bag house No 3 in accordance with the SEE, should the air quality monitoring referred to in condition 13 indicate that the air emission limit for BH No 7 referred to in condition 11 is exceeded.
 20. Within 6 months of the commencement of DA-86-04-01-Mod 3, the Applicant shall certify to the Director-General that bag house No 2 has being detached from the ALDEX building and is servicing the dross storage area in the Plant Building only.
 21. ⁵The Applicant must maintain a continuous fluoride emission monitoring system, which in the event that the concentration of fluoride emitted to atmosphere exceeds the limit value of 1.4 milligrams per cubic metre must activate visible and audible alarms.
 22. ⁶If the one hour average concentration of gaseous fluoride emitted to atmosphere exceeds 1.4 milligrams per cubic metre at discharge point 1, then the plant or the section of the plant where the exceedance occurred, must cease operating until the Applicant is able to ensure compliance with the emission limits specified in the EPL for the Development.
 23. ⁷A continuous recording and alarmed bag leak detector must be installed in each stack servicing the facility, excluding the stack 6, with calibration to detect bag failure. The results shall be included in the annual report required under condition 58 of this consent. In the event of a bag failure the failed bag shall be repaired or replaced as soon as possible within the current operational cycle.
- 23A The Applicant must ensure all SPL is appropriately bunded and covered to prevent the emission of SPL dust, flammable gases and the contamination of stormwater

Health Impact Assessment

24. The Applicant shall participate and implement recommendations from any regional Health Impact Assessment to the satisfaction of the Director-General.

SOIL AND WATER

Discharge Limits

25. ⁸Except as may be expressly provided in an EPL for the development, the Applicant shall comply with Section 120 of the *Protection of the Environment Operations Act 1997*.

Erosion and Sediment Control

26. Prior to commencement of construction, the Applicant shall implement erosion and sediment controls in accordance with the Department of Housing and Landcom's *Managing Urban Stormwater: Soils and Construction*.
27. The Applicant shall prepare and implement its Erosion and Sediment Control Plan, Site Rehabilitation Plan and Water Management Plan detailing monitoring requirements and measures to control runoff from the site, contain spillages, minimise stormwater contamination, and dispose of contaminated water and process effluent. These plans shall be submitted to Council and EPA for approval prior to the commencement of construction of the development.

NOISE

Operating Hours

28. ⁹The Applicant shall comply with the restrictions in Table 3, unless otherwise agreed by the Director-General.

Table 3: Construction Hours for the Development

⁵ EPA General Term of Approval
⁶ EPA General Term of Approval
⁷ EPA General Term of Approval
⁸ EPA General Term of Approval
⁹ EPA General Term of Approval

Activity	Day	Time
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 1:00pm
	Sunday and Public Holidays	Nil

Note: Construction activities may be conducted outside the hours in Table 3 provided that the activities are not audible at any residence beyond the boundary of the site.

Noise Limits

29. ¹⁰The Applicant shall ensure that the noise from the operation of the development does not exceed the noise limits presented in Table 4.

Table 4: Development Noise Limits (dB(A))

Location	Daytime	Evening		Night time		
	L _{Aeq} (15 minute) (dB(A))	L _{Aeq} (15 minute) (dB(A))	L _{Aeq} (evening) (dB(A))	L _{Aeq} (15 minute) (dB(A))	L _{Aeq} (night) (dB(A))	L _{Aeq} (1 minute) (dB(A))
Residences at the corner of Government Street and 10 th Street	48	48	40	47	35	57
Residences on Northcote Street	44	44	-	44	40	57
Residences in the Light Industrial Zone on Mitchell Avenue and Railway Road	43	43	-	43	41	55

Note: Condition 30 of this consent does not impose maximum allowable noise limits for residences on Horton Road and McCarva Road as the Applicant has established a negotiated agreement with the landowner of those properties in regard to noise.

Operating Conditions

30. ¹¹The Applicant shall ensure that trucks are not entering and leaving the site outside the hours of 7.00am to 10.00pm.

30A All doors adjacent the briquetting plant are to be closed at all times

Noise Monitoring

31. ¹²The Applicant shall prepare and implement a Noise Monitoring Program, in consultation with the EPA. The Program shall be submitted for the approval of the Director-General within three months of the commencement of operation of the development, and must include a noise monitoring protocol to evaluate compliance with development noise limits specified in Condition 28 and management measures to address any exceedances.

31A If noise limits specified in Condition 28 are exceeded as a result of the briquetting plant modification, the Applicant shall fully enclose the concrete slab on the southern side of the Aldex building to the satisfaction of the Director-General.

HAZARDS

Pre-construction Studies

32. At least one month prior to construction of the development (except for construction of preliminary works that are outside the scope of the hazard studies), the Applicant shall submit for the approval of the Director General, the following studies:
- a Hazard and Operability Study for the process operations and fuel supply. This shall include the rotary cooler cooling water system, safeguards for hydrogen fluoride release, rotary furnaces and holding furnaces. The study shall be chaired by an independent qualified person approved by the Director-General;
 - a Final Hazards Analysis (FHA) prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.6 'Guidelines for Hazard Analysis'*; and
 - arrangements covering the transport of hazardous materials including details of routes to be used for the movement of trucks. Further, the applicant shall enter into contractual arrangements with contract drivers to

¹⁰ EPA General Term of Approval

¹¹ EPA General Term of Approval

¹² EPA General Term of Approval

require the use of routes determined under this condition except where necessary for local deliveries. This should include a management plan and emergency procedures.

Pre-commissioning Studies

33. At least two months prior to commissioning of the development, the Applicant shall prepare and submit for the approval of the Director-General a Preliminary Hazards Implementation Update, certifying that the recommendations made in following studies have been fully implemented:
- a) Dross Processing Plant Additions at Weston Kurri Kurri, NSW - Preliminary Hazard Analysis, prepared by Granherne and dated 25 October 1999; and
 - b) Proposed Additional Facilities at the Weston Dross Processing Plant Weston, NSW - Molten Metal Transportation Risk Assessment.

Where it has been decided not to implement a particular recommendation, the reasons shall be clearly stated.

Pre-operation Emergency Services Cooperation Agreement

34. Prior to the commencement of operation of the development, the Applicant shall develop an Emergency Services Cooperation Agreement in consultation with the emergency response teams relevant to the site and proposed haulage routes for molten aluminium (NSW Fire Brigades, State Emergency Services and local bushfire fighting services, where relevant). The Agreement shall provide, but not necessarily be limited to:
- a) policies and procedures for the on-going supply of hazards information to the emergency response teams in relation to the site, molten aluminium transport and dross transport, including quantities and locations of hazardous materials and possible hazardous events associated with the site and dross/ molten aluminium haulage;
 - b) policies and procedures for communication with the emergency response teams, and notification in the event of an emergency;
 - c) any agreement for access to water stores at the development in the event of a bushfire; and
 - d) any agreement for the provision of suitably qualified and appropriately trained employees from the site to assist where relevant in the event of a bushfire or emergency.

The Emergency Services Cooperation Agreement shall be consistent with the Emergency Plan required under this consent. The Applicant shall supply a copy of the Emergency Services Cooperation Agreement to the Director-General prior to the commencement of operation.

Dross Importation Protocol

35. Dross sourced from overseas smelters and secondary aluminium processors must be inspected prior to processing in accordance with the Inspection Protocol for Imported Dross, approved by the Land and Environment Court on 7 April 2000.

Dangerous Goods

36. The Applicant shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with:
- a) all relevant Australian Standards;
 - b) a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
 - c) the EPA's Environment Protection Manual Technical Bulletin *Bundling and Spill Management*.

Emergency Stop System

37. At the commencement of DA-86-04-01-Mod 3, The Applicant shall have in operation emergency stop systems in ALDEX and Plant buildings, including a temperature sensor and an alarm, in the event of a fire.

TRANSPORT

Road Network and Parking

38. The Applicant shall ensure that that haulage of molten aluminium is via Main Road 588 (Renshaw Drive) when travelling towards the Sydney- Newcastle Freeway (F3), rather than via Main Road 195 (Kurri Kurri-Mulbring Road) and Main Road 220 (Lake Road).
39. The Applicant shall ensure that all parking generated by the development is accommodated on site. No vehicles associated with the development shall park on the public road system at any stage.

Vehicle Queuing

40. During the development, the Applicant shall ensure that the development does not result in any vehicles queuing on the public road network.

Transport Code of Conduct

41. Prior to the commencement of operation of the development, the Applicant shall submit for the approval of the Director-General a Transport Code of Conduct to outline management of traffic impacts associated with the site and minimum requirements for the movement of heavy vehicles to and from the site. The Code shall meet the requirements of Council and the RTA, should there be any. The Code shall include, but not necessarily be limited to:
- a) restrictions to routes, consistent with condition 37 of this consent;
 - b) restrictions to the hours of transport operations, consistent with condition 29 of this consent, to avoid travelling built-up areas late at night or at times of high traffic flows in those areas;
 - c) speed limits to be observed along routes to and from the site, in particular through built-up areas;
 - d) minimum requirements for vehicle maintenance to address noise and exhaust emissions;
 - e) load coverage requirements; and
 - f) behavioural requirements for vehicle drivers.

VISUAL

Lighting

42. The Applicant shall ensure that the lighting associated with the development:
- a) complies with the latest version of Australian Standard AS 4282(*INT*) - *Control of Obtrusive Effects of Outdoor Lighting*; and
 - b) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.

Landscape Management Plan

43. The Applicant shall prepare a Landscape Management Plan in consultation with Council prior to the commencement of construction of the development and provide details of existing and proposed tree and shrub species, finish of exposed surfaces (including paved areas), and outline a program for implementation.

WASTE

Operating Conditions

44. ¹³The Applicant shall ensure that all waste generated on the site during construction and operation of the development is classified in accordance with the EPA's Waste Classification Guidelines and disposed of to a facility that may lawfully accept the waste.
45. ¹⁴Except as expressly permitted by an EPL, the Applicant shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing or disposal, or any waste generated at the site to be disposed of at the site.

Waste Recycling Investigation

46. The Applicant shall investigate recycling options for ash and fume wastes and submit findings to Council and EPA within 12 months of the commissioning of the development, and every 12 months thereafter, until a feasible recycling alternative is found and implemented.
47. The Applicant shall maximise on site waste recycling, in particular packaging materials, paper and any other such wastes.

FLORA AND FAUNA

48. The Applicant shall not clear any native vegetation beyond the limits defined in Figure 4.1 of Additions to the *Kurri Kurri Aluminium Refining and Recycling Facility - Volume II Construction Environmental Plan*, prepared by URS and dated 23 April 2001.
49. Clearing for the development shall be restricted to areas of the site covered by the Angophora/Stringybark/Grey Gum community. The Forest Red Gum, (*Eucalyptus tereticornis*) community shall be preserved for its habitat value and ecological significance.

¹³ EPA General Term of Approval

¹⁴ EPA General Term of Approval

50. The Typha swamp in the north-western corner of the site and Swamp Creek (and its associated drainage lines) shall be protected from siltation by appropriate means detailed in the Erosion and Sediment Control Plan.
51. The Applicant shall implement a program to minimise the presence and spread of weeds, in particular camphor laurel, on the site.

ABORIGINAL CULTURAL HERITAGE

52. In the event that Aboriginal objects are uncovered during the course of the development, the Applicant shall cease all works in the immediate areas, notify the EPA and implement any reasonable and feasible measures recommended by the EPA.

GREENHOUSE GAS

Energy Savings Action Plan

53. The Applicant shall prepare and implement an Energy Savings Action Plan for the development to the satisfaction of the Director-General. This plan must be prepared in accordance with the requirements of the EPA and the *Guidelines for Energy Savings Action Plans, DEUS 2005*, and be submitted to the Director-General for approval within six months from the commencement of DA-86-04-01-Mod 3.

Monitoring and Reporting

54. The Applicant shall, to the satisfaction of the Director-General:
 - a) monitor the greenhouse gas emissions generated by the development;
 - b) investigate ways to reduce greenhouse gas emissions generated by the development; and
 - c) report on greenhouse gas monitoring and abatement measures and energy efficiency measures identified in the Energy Savings Action Plan.

EXTENDED SPENT POTLINING MATERIAL PROCESSING TRIAL

Monitoring and Verification Reporting

- ~~54A For the duration of the Spent Potlining Material Processing Trial, the Applicant must:~~
 - ~~b) monitor and record, air emissions, including cyanide, hydrogen cyanide, fluoride, particulates and all pollutants and parameters specified in the EPL;~~
 - ~~c) monitor and record all processing conditions for the trial, including:~~
 - ~~i. the quantity and characteristics of all inputs;~~
 - ~~ii. the processing methods, including the rotary furnace temperature profile and the duration of thermal treatment;~~
 - ~~d) undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify EPA and the Director-General, should any exceedance of the limits in the EPL occur;~~
 - ~~e) ensure all spent potlining material is appropriately banded and covered to prevent the emission of spent potlining dust, flammable gases and the contamination of stormwater.~~
- ~~54A For the duration of the Extended Spent Potlining Material Processing Trial, the Applicant must:~~
 - ~~a) monitor and record, air emissions, including cyanide, hydrogen cyanide, fluoride, particulates and all pollutants and parameters specified in the EPL;~~
 - ~~b) cease processing, and notify the EPA and the Director-General, should laboratory results indicate emissions of cyanide are greater than 0.09 mg/m3;~~
 - ~~c) monitor and record all processing conditions for the trial, including:~~
 - ~~i. the quantity and characteristics of all inputs;~~
 - ~~ii. the processing methods, including the rotary furnace temperature profile and the duration of thermal treatment;~~
 - ~~d) undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify the EPA and the Director-General, should any exceedance of the limits in the EPL occur;~~
 - ~~e) ensure all spent potlining material is appropriately banded and covered to prevent the emission of spent potlining dust, flammable gases and the contamination of stormwater.~~
- 54A. For the duration of the DA-86-04-01 Mod 8, the Applicant must:
 - a) monitor and record, air emissions, including cyanide, hydrogen cyanide, fluoride, particulates and all pollutants and parameters specified in the EPL;
 - b) cease processing, and notify the EPA and the Director-General, should laboratory results indicate emissions of cyanide are greater the limits in the EPL or the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
 - c) monitor and record all processing conditions for the trial, including:
 - i. the quantity and characteristics of all inputs;
 - ii. the processing methods, including the rotary furnace temperature profile and the duration of thermal treatment; and

- d) undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify the EPA and the Director-General, should any exceedance of the limits in the EPL occur.

~~54B The Applicant must prepare a detailed monitoring report, on the outcomes of the Spent Potlining Material Processing Trial, to the satisfaction of EPA and the Director-General. The report must:~~

- ~~a) be submitted to EPA, Council and the Director-General within 90 days of the completion of the Spent Potlining Material Processing Trial;~~
- ~~b) detail the results of the monitoring required in condition 0 above;~~
- ~~c) compare the results of the trial to the laboratory results described in the report dated 30 April 2010 prepared by K2 Environmental Limited, the limits in the EPL and EPA's air quality impact assessment criteria specified in the "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW" (DEC 2005);~~
- ~~d) describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;~~
- ~~e) characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;~~
- ~~f) summarise the findings of the trial;~~
- ~~g) recommend any actions that could be taken to minimise emissions during any future processing; and~~
- ~~h) discuss the likely options for any future processing.~~

~~54B The Applicant must prepare a detailed monitoring report, on the outcomes of the Extended Spent Potlining Material Processing Trial, to the satisfaction of EPA and the Director-General. The report must:~~

- ~~a) be submitted to EPA, Council and the Director-General within 90 days of the completion of the Extended Spent Potlining Material Processing Trial;~~
- ~~b) detail the results of the monitoring required in condition 0 above;~~
- ~~c) compare the results of the trial to the laboratory results described in the report dated 30 April 2010 prepared by K2 Environmental Limited, the limits in the EPL and EPA's air quality impact assessment criteria specified in the "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW" (DEC 2005);~~
- ~~d) describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;~~
- ~~e) characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;~~
- ~~f) summarise the findings of the trial;~~
- ~~g) recommend any actions that could be taken to minimise emissions during any future processing; and~~
- ~~h) discuss the likely options for any future processing.~~

54B The Applicant must prepare a detailed monitoring report, on the outcomes of DA-86-04-01 Mod 8, to the satisfaction of the EPA and the Director-General. The report must:

- a) be submitted to EPA, Council and the Director-General within 90 days of the completion of DA-86-04-01 Mod 8;
- b) detail the results of the monitoring required in condition 54A above;
- c) compare the results of the trial to, the limits in the EPL and the EPAs air quality impact assessment criteria specified in the "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW" (DEC 2005);
- d) describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;
- e) characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;
- f) summarise the findings of the trial;
- g) recommend any actions that could be taken to minimise emissions during any future processing; and
- h) discuss the likely options for any future processing.

SCHEDULE 4 ENVIRONMENTAL MANAGEMENT AND MONITORING

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

55. The Applicant shall implement the following Plans for the development:
- Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume II Construction Environmental Management Plan, prepared by URS and dated 23 April 2001;
 - Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume II Construction Environmental Management Plan Appendices, prepared by URS and dated 23 April 2001; and
 - Construction Safety Study, prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 7 - Construction Safety Study Guidelines*.

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

56. The Applicant shall update the following Plans/Studies to reflect the requirements of this consent and submit the amended Plans for the approval of the Director-General within three months from the commencement of DA-86-04-01-Mod 3:
- Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume III Operational Environmental Management Plan, prepared by URS and dated 23 April 2001;
 - Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume III Operational Environmental Management Plan Appendices, prepared by URS and dated 23 April 2001;
 - Fire Safety Study prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 2 'Fire Safety Study Guidelines'* and the New South Wales Government's *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems*. The study shall also be submitted to the NSW Fire Brigade for approval;
 - Emergency Plan detailing emergency procedures for the development, including detailed procedures for the safety of people outside of the development who may be at risk from the development. The Emergency Plan must be prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 1 'Industry Emergency Planning Guidelines'*; and
 - Safety Management System covering all on-site operations and associated transport activities involving hazardous materials. The Safety Management System must specify all safety related procedures, responsibilities and policies, along with mechanisms for ensuring adherence to the procedures.

56A The Applicant shall update the studies required in Conditions 56 c), d) and e), above to reflect the requirements of this consent. The Applicant shall submit the amended Plans for the approval of the Director-General within three months from the commencement of DA-86-04-01-Mod 7.

ENVIRONMENTAL REPORTING

Incident Reporting

57. Within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) harm to the environment, the Applicant shall notify the Department and other relevant agencies of the exceedance/incident.
58. Within 7 days of notifying the Department and other relevant agencies of an exceedance/incident, the Applicant shall provide the Department and these agencies with a written report that:
- describe the date, time, and nature of the exceedance/incident;
 - identify the cause (or likely cause) of the exceedance/incident;
 - describe what action has been taken to date; and
 - describe the proposed measures to address the exceedance/incident.

Annual Reporting

59. Within 12 months of this approval, and annually thereafter, the Applicant shall submit an AEMR to the Director-General and relevant agencies. This report must:
- identify the standards and performance measures that apply to the development;
 - describe the works carried out in the last 12 months;
 - describe the works that will be carried out in the next 12 months;
 - include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
 - include a summary of the monitoring results for the development during the past year;
 - include an analysis of these monitoring results against the relevant:
 - impact assessment criteria/limits;
 - monitoring results from previous years; and
 - predictions in the EA;
 - identify any trends in the monitoring results over the life of the development;

- h) identify any non-compliance during the previous year; and
- i) describe what actions were, or are being, taken to ensure compliance.

AUDITING

Independent Environmental Audit

60. Within 12 months of the commencement of operations, and every 3 years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
 - a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been endorsed by the Director-General;
 - b) be undertaken in consultation with EPA, and Council;
 - c) include a Hazard Audit in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 5 – Hazard Audit Guidelines*. The audit shall include a review of the Safety Management System and of all incidents recorded and be accompanied by a program for the implementation of all recommendations made in the audit report. If the Applicant intends to defer the implementation of a recommendation, justification must be included.
 - d) assess whether the development is being carried out in accordance with industry best practice;
 - e) assess the environmental performance of the development, and its effects on the surrounding environment and sensitive receivers;
 - f) assess whether the development is complying with the relevant standards, performance measures, and statutory requirements;
 - g) review the adequacy of any strategy/plan/program required under this approval; and, if necessary,
 - h) recommend measures or actions to improve the environmental performance of the development, and/or any strategy/plan/program required under this approval.
61. Within 6 weeks of completing this audit, or as otherwise agreed by the Director-General, the Applicant shall submit a copy of the audit report to the Director-General with a response to any recommendations contained in the audit report.
62. Within 3 months of submitting an audit report to the Director-General, the Applicant shall review and if necessary revise the strategy/plans/programs required under this approval to the satisfaction of the Director-General.

COMPLAINTS MANAGEMENT

63. Prior to the commencement of construction works, the Applicant shall ensure that the following are available for community complaints:
 - a) a telephone number on which complaints about operations on the site may be registered;
 - b) a postal address to which written complaints may be sent; and
 - c) an email address to which electronic complaints may be transmitted.

The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the site, in a position that is clearly visible to the public. These details shall also be provided on the Applicant's internet site.

64. The Applicant shall record details of all complaints received through the means listed under condition 62 of this consent in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:
 - a) the date and time, where relevant, of the complaint;
 - b) the means by which the complaint was made (telephone, mail or email);
 - c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
 - d) the nature of the complaint;
 - e) any action(s) taken by the Applicant in relation to the complaint, including any follow-up contact with the complainant; and
 - f) if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the Director-General and/or EPA upon request.

ACCESS TO INFORMATION

65. Within 3 months of the approval of any strategy/plan/program required under this approval (or any subsequent revision of these strategies/plans/programs), or the completion of the audits or AEMRs required under this approval, the Applicant shall provide a copy of the relevant document/s to:
 - a) the relevant agencies, and
 - b) any interested party upon request.

**APPENDIX A
SITE PLAN**

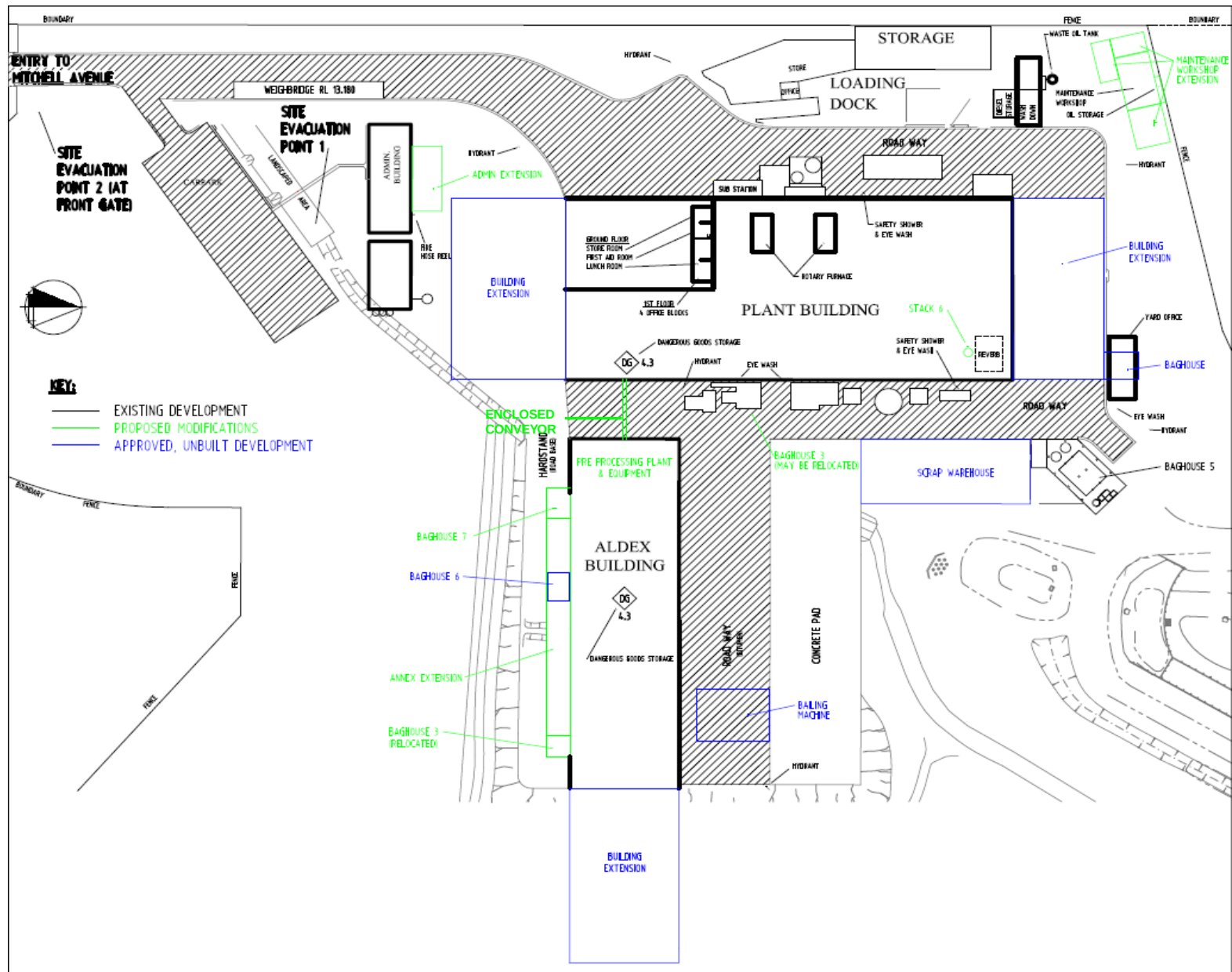


Figure 1: Site layout plan

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, under the delegation dated 16 February 2015, I hereby modify the development consent referred to in Schedule 1, subject to conditions as set out in Schedule 2.



Daniel Keary
A/Executive Director
Infrastructure and Industry Assessments

Sydney 15th SEPTEMBER 2015

SCHEDULE 1

Application Number:	DA 86-04-01
Applicant:	Weston Aluminium Pty Limited
Approval Authority:	Minister for Planning
Land:	Lot 796 DP 39877 129 Mitchell Avenue, Kurri Kurri
Project:	Extensions to an existing aluminium dross recycling plant
Modification Number:	DA 86-04-01 Mod 9
Modification:	A 24 month trial processing illicit drug and pharmaceutical wastes

SCHEDULE 2

This development consent is modified as follows:

In the definitions table:

1. Deleting the definition for Department, Director-General and Minister and inserting the following definitions in alphabetical order:

Department	The Department of Planning and Environment or its successors in title
Minister	The Minister for Planning
Secretary	The Secretary of the Department of Planning and Environment, or nominee

2. Inserting the following definitions in alphabetical order:

DA-86-04-01 Mod 9	A 24 month trial processing illicit drug and pharmaceutical waste in existing furnaces as described in the assessment prepared by Weston Aluminium and dated 12 March 2015 and the Response to Submissions prepared by Weston Aluminium and dated 15 July 2015
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In Schedules 2, 3 and 4:

3. Deletion of all instances of the word Director-General and replacing with the word Secretary.
4. Deletion of all instances of the words NSW Fire Brigade and replacing with the words NSW Fire and Rescue.
5. Inserting the following Condition 2i) after Condition 2h) of Schedule 2:

- 2i) Modification request DA 86-04-01 Mod 9 and DA 10397 of 1995 Mod 7 and the enclosed Environmental Assessment, dated 12 March 2015, prepared by Weston Aluminium and the Response to Submissions, dated 15 July 2015, prepared by Weston Aluminium.

6. Inserting the following Condition 6C after Condition 6B:

- 6C The Applicant shall ensure that DA 86-04-01 Mod 9:
- a) is undertaken over a trial period of not more than 24 consecutive months only; and
 - b) during the operation of DA 86-04-01 Mod 9:
 - i. no more than 200 tonnes of illicit drug waste is received or processed on site over the 24 month trial period; and
 - ii. no more than 1,000 tonnes of pharmaceutical waste is received, stored or processed on site over the 24 month trial period.

7. Inserting the following Condition 25A after Condition 25 of Schedule 3:

- 25A All pharmaceutical waste must be stored in an enclosed (appropriately banded and covered) area to prevent the contamination of stormwater.

Illicit Drug Waste and Pharmaceutical Waste Processing Trial (DA 86-04-01 Mod 9)

8. Inserting the following Condition 10B after Condition 10A in Schedule 2:

- 10A. Prior to the commencement of DA 86-04-01 Mod 9, the Applicant must:
- a) obtain an updated EPL allowing DA 86-04-01 Mod 9 to proceed; and
 - b) notify the Secretary, Council and the EPA's Regional Manager Hunter in writing, two weeks prior to the commencement of DA 86-04-01 Mod 9 and within two weeks of the conclusion of the trial.

9. Inserting the following Condition 54C with the following Condition 54B in Schedule 3:

- 54C For the duration of the DA 86-04-01 Mod 9, the Applicant must:
- monitor and record, air emissions and all pollutants and parameters specified in the EPL. All air quality monitoring must occur on a quarterly basis and whenever Pharmaceutical and Illicit Drug Waste material is being processed;
 - ensure air quality emissions testing is completed in accordance with the EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in NSW*
 - cease processing, and notify the EPA and the Secretary, should laboratory results indicate emissions are greater than the limits in the EPL or the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
 - monitor and record all processing conditions for the trial, including:
 - the names, contact details and qualifications and experience of the person(s) conducting and supervising the trial;
 - the source facility, a description of the waste type, amount and date received of each load of waste accepted for disposal as part of the trial;
 - all process conditions for the trial including the quantity of pharmaceutical and/or illicit drug waste in each batch processed, any other materials/additives processed in each batch, the temperature profile of the furnace during each batch processed and the residence time of the material within the furnace; and
 - undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify the EPA and the Secretary, should any exceedance of the limits in the EPL occur.

10. Inserting the following Condition 54D in after Condition 54C in Schedule 3:

- 54D The Applicant must prepare a detailed monitoring report, on the outcomes of DA 86-04-01 Mod 9, to the satisfaction of the EPA and the Secretary. The report must:
- be submitted to EPA, Council and the Secretary within 90 days of the completion of DA 86-04-01 Mod 9;
 - detail the results of the monitoring required in condition 54C above;
 - compare the results of the trial to, the limits in the EPL and the EPA's air quality impact assessment criteria specified in the "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW" (DEC 2005);
 - describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;
 - characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;
 - summarise the findings of the trial;
 - recommend any actions that could be taken to minimise emissions during any future processing; and
 - discuss the likely options for any future processing.

11. Replacing condition 56A with the following Condition 56A in Schedule 3:

- 56A Within three months of each of the modifications listed below, the Applicant shall submit, for approval of the Secretary, the relevant updated studies (as required by Condition 56 and described in table 5) to reflect the requirements of that modification.

Modification	Plans
DA 86-04-01 Mod 7	56 c, d and e
DA 86-04-01 Mod 9	56 d and e

12. Inserting the following Condition 56B after 56A in Schedule 3:

The Applicant shall prepare a Security Protocol for the management of pharmaceutical drug waste. The Protocol shall:

- be implemented for the duration of DA 86-04-01 Mod 9;
- be incorporated into the updated Safety Management System required by Condition 56B;
- describe the measures to be undertaken to ensure the secure transport, storage and processing of pharmaceutical waste; and

- d) include the security measures described in the Response to Submissions Report dated 15 July 2015.

13. Inserting the following condition 56C after Condition 56B in Schedule 3:

POST-STARTUP COMPLIANCE REPORT

- 56C Three months after the commencement of operation of DA 86-04-01 Mod 9, the Applicant shall submit to the Secretary, a report verifying that:
- a) the updated Emergency Plan required under condition 56B is effectively in place and that at least one emergency exercise has been conducted; and
 - b) the updated Safety Management System required under condition 56B has been fully implemented and that records required by the system are being kept.
-

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, under the instrument of delegation executed on 16 February 2015, I hereby approve the modification of the development consent referred to in Schedule 1, subject to conditions in Schedule 2.



Anthea Sargeant
Executive Director
Key Sites and Industry Assessments

Sydney 1 March 2017

SCHEDULE 1

Application Number:	DA 86-04-01
Applicant:	Weston Aluminium Pty Limited
Approval Authority:	Minister for Planning
Land:	Lot 796 DP 39877 129 Mitchell Avenue, Kurri Kurri
Project:	Extensions to an existing aluminium dross recycling plant
Modification Number:	DA 86-04-01 Mod 10
Modification:	To allow the commercial scale processing of First Cut SPL

SCHEDULE 2

This development consent is modified as follows:

In the definitions table:

1. Inserting the following definition in alphabetical order:

DA-86-04-01 Mod 10 Removing the distinction between spent potlining types thereby allowing the commercial scale processing of First Cut and Second Cut spent potlining as well as a mixture of both as described in the assessment prepared by AECOM and dated 8 September 2016 and the Response to Submissions prepared by AECOM and dated 13 December 2016

First Cut spent potlining Spent potlining originating from the refractory lining of aluminium reduction cells (pots)

In Schedule 2:

2. Inserting the following Condition 2j) after Condition 2i) of Schedule 2:

2j) Modification request DA 86-04-01 Mod 10 and DA 10397 of 1995 Mod 8 and the enclosed Environmental Assessment, dated 8 September 2016, prepared by AECOM and the Response to Submissions, dated 13 December 2016, prepared by AECOM.

3. Delete Condition 5 and replace with the following in Schedule 2:

5 The Applicant shall not process on site more than a combined total of 40,000 tonnes of dross aluminium and SPL and 35,000 tonnes of scrap aluminium metal per year.

4. Delete Condition 6A and replace with following in Schedule 2:

6A The Applicant shall ensure that the combined total of SPL and aluminium dross stored on site does not exceed 5,000 tonnes at any time.

**DETERMINATION OF A DEVELOPMENT APPLICATION
FOR STATE SIGNIFICANT, DESIGNATED AND INTEGRATED DEVELOPMENT
UNDER SECTION 80 OF THE
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979**

I, the Minister for Urban Affairs and Planning, under Section 80 of the *Environmental Planning and Assessment Act 1979* ("the Act") and clause 8 of *State Environmental Planning Policy No. 34 - Major Employment-Generating Industrial Development*, determine the development application ("the Application") referred to in Schedule 1 by granting consent subject to the conditions set out in Schedule 2. The reason for the imposition of conditions is to minimise any adverse environmental impacts associated with the development.

DA 86-04-01 Mod 3 – determined 4 September 2009
DA 86-04-01 Mod 4 – determined 5 August 2010

Andrew Refshauge MP
Deputy Premier
Minister for Urban Affairs and Planning
Minister for Aboriginal Affairs
Minister for Housing

Sydney,

2001

File No. S00/00975

SCHEDULE 1

Application made by:	Weston Aluminium Pty Ltd ("the Applicant");										
To:	The Minister for Urban Affairs and Planning ("the Minister");										
In respect of:	Lot 796 DP 39877, Parish of Heddon, Cessnock local government area;										
For the following:	Additions and extensions to an existing aluminium dross recycling plant including: a) construction of an open scrap storage and sorting pad and an enclosed scrap storage warehouse; b) extension of the existing plant building to allow for ingot casting, molten aluminium handling and aluminium alloying; c) construction of an ingot storage and loading facility; d) construction of an enclosed ALDEX storage and dispatch facility, incorporating a workshop area; and e) extensions to the existing administration building, carpark and dross off-loading and sorting areas ("the development").										
Development Application:	Integrated DA No. 86-04-01, lodged with the Department of Urban Affairs and Planning on 30 April 2001;										
State Significant Development	Under Section 76A(7) of the Act, the proposed development is classified as State Significant development because it is a type of development (metals, minerals or extractive materials processing) listed in Schedule 1 of <i>State Environmental Planning Policy No. 34 - Major Employment Generating Industrial Development</i> and has a capital investment in excess of \$20 million.										
BCA Classification:	<table><tr><td>Class 5 -</td><td>administration building</td></tr><tr><td>Class 8 -</td><td>plant building</td></tr><tr><td></td><td>bag houses</td></tr><tr><td></td><td>ALDEX building</td></tr><tr><td>Class 10a -</td><td>warehouse</td></tr></table>	Class 5 -	administration building	Class 8 -	plant building		bag houses		ALDEX building	Class 10a -	warehouse
Class 5 -	administration building										
Class 8 -	plant building										
	bag houses										
	ALDEX building										
Class 10a -	warehouse										
Note:	1) To ascertain the date upon which this consent becomes effective, refer to Section 83 of the Act. 2) To ascertain the date upon which this consent is liable to lapse, refer to Section 95 of the Act. 3) If the Applicant is dissatisfied with this determination, Section 97 of the Act grants him or her a right of appeal to the Land and Environment Court, which is exercisable within 12 months of receiving notice of this determination.										

DEFINITIONS

AEMR	Annual Environmental Management Report
Applicant	Weston Aluminium Pty Ltd
BCA	Building Code of Australia
Council	Cessnock City Council
Court	Land and Environment Court
Day	The period from 7 am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
DECCW	Department of Environment, Climate Change and Water
Department	Department of Planning
Development	Establishment of a dross recycling facility and associated infrastructure (as described in the EIS and SEE, see below)
Director-General	Director-General of the Department (or delegate)
EIS	Environmental Impact Statement prepared by URS for Weston Aluminium Pty Ltd entitled <i>Additions to the Kurri Kurri Aluminium Refining and Recycling Facility</i> , Volumes 1-3 (dated 23 April 2001), including the following supporting documentation: • Preliminary Hazard Analysis, prepared by Granherne Pty Ltd (dated 25 October 1999); • Molten Metal Transportation Risk Assessment, prepared by Granherne Pty Ltd (dated 25 October 1999); • Additional Information Requested by EPA for Noise Impact Assessment, prepared by URS (dated 19 June 2001); • Additional Information Requested by EPA for Noise Impact Assessment - Supplement 1, prepared by URS (dated 3 July 2001); • Additional Information Requested by EPA for Noise Impact Assessment - Supplement 2, prepared by URS (dated 3 July 2001); • Response to EPA Request for Information in respect of air quality impacts, prepared by URS (dated July 2001); • Flora and Fauna Habitat Investigations for Proposed Extensions to Existing Aluminium Recycling Facility, Kurri Kurri, NSW, prepared by HLA-Envirosciences Pty Ltd (dated 25 June 2001); and Environmental Impact Statement prepared by Envirosciences Pty Ltd for Weston Aluminium Pty Ltd entitled <i>Environmental Impact Statement for an Aluminium Dross Recycling and Alloying Plant at Kurri Kurri</i> (dated July 1994), including the following supporting documentation: • Inspection Protocol for Imported Dross, approved by the Land and Environment Court on 7 April 2000; • Attachment A, entitled Supplementary Information Relating to Plant Design Refinements and Improvements to a Proposed Aluminium Dross Recycling and Alloying Plant at Kurri Kurri (exhibited from 10 July 1995 to 9 August 1995); • Waste Management Plan, prepared by Mr P.C. Raymond (dated 2 August and approved by EPA on 5 May 1995); and • Preliminary Hazard Analysis prepared by BHP Engineering (dated July 1994);
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning & Assessment Regulation 2000</i>
EPL	Environmental Protection Licence
Evening	The period from 6pm to 10pm
LEC	Land and Environment Court
Minister	Minister for Planning
DA-86-04-01-Mod 1	Alternations to the administration building extension, as approved by the Minister on 4 October 2001
DA-86-04-01-Mod 2	Addition of an annex on the process building, as approved by the Minister on 8 August 2002
DA-86-04-01-Mod 3	Addition of new process and storage areas, and increased operational efficiency of the existing development, as described in the Statement of Environmental Effects to Support Modification Applications for Aluminium Dross Recycling Facility, prepared by ENRS Australia Pty Ltd for Weston Aluminium Pty Ltd (dated 21 November 2007)
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Reasonable and Feasible	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering considerations and what is practical to build.

SEE	Statement of Environmental Effects provided to support Modification Applications for Aluminium Dross Recycling Facility, prepared by ENRS Australia Pty Ltd for Weston Aluminium Pty Ltd (dated 21 November 2007)
Site	Land to which the development application applies
Spent Potlining Material Processing Trial	The proposed 2 week trial of processing spent potlining material, as described in the Modification Application DA-86-04-01 Mod 4 and 10397 Mod 2, and the enclosed Letter dated 26 May 2010 and Attachments 1, 2 and 3.

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Applicant shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction and/or operation of the development.

Terms of Approval

2. The Applicant shall carry out the development generally in accordance with the:
 - a) EIS as modified by the SEE;
 - b) site plans (see Appendix A);
 - c) conditions of this approval; and, during the spent potlining material processing trial,
 - d) modification application DA-86-04-01 Mod 4 and 10397 Mod 2, and the enclosed Letter dated 26 May 2010 and Attachments 1, 2 and 3.

If there is any inconsistency between the above, the conditions of this approval shall prevail to the extent of any inconsistency.

3. The Applicant shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
 - a) any reports, plans, strategies, programs or correspondence that are submitted in accordance with this approval; and
 - b) the implementation of any actions or measures contained in these reports, plans, strategies, programs or correspondence.
4. Prior to each of the events listed below, or within such period otherwise agreed by the Director-General, the Applicant shall certify in writing to the satisfaction of the Director-General, that it has complied with all conditions of this consent applicable prior to that event:
 - a) commencement of any physical works associated with the development; and
 - b) commencement of operations.

Limits on Approval

5. The Applicant shall not process more than 40,000 tonnes of dross aluminium and 35,000 tonnes of scrap aluminium metal per year on site.
6. The Applicant shall not process more than 15,000 tonnes per year of dross aluminium sourced from overseas smelters and secondary aluminium processors.
- 6A. The Applicant shall ensure that:
 - a) no more than 40 tonnes of spent potlining material is received on site;
 - b) spent potlining material is stored on site for no more than 3 weeks; and
 - c) spent potlining material is only processed during the 2 week spent potlining material processing trial period.

Management Plans/Monitoring Programs

7. With the approval of the Director-General, the Applicant may submit any management plan or monitoring program required by this approval on a progressive basis.

Structural Adequacy

8. Within six months of the commencement of DA-86-04-01-Mod 3, the Applicant shall obtain and provide copies of all necessary building certificate(s) from Cessnock City Council to the Director-General, for the following works:
 - a) extension of the ALDEX building;
 - b) eight dross storage bays within the ALDEX building;
 - c) pre-processing plant within the ALDEX building;
 - d) annex to the Plant Building;
 - e) covered conveyor between the ALDEX building and the Plant Building;
 - f) Workshop in the north-western corner of the site; and
 - g) Stack 6.
9. The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the Building Code of Australia.

Notes:

- Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.

- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*

Operation of Plant and Equipment

10. The Applicant shall ensure that all plant and equipment used on the site is maintained and operated in an efficient manner, and in accordance with relevant Australian Standards.

Spent Potlining Material Processing Trial

- 10.A Prior to the commencement of the Spent Potlining Material Processing Trial, the Applicant must:
 - a) obtain an updated EPL allowing the Spent Potlining Material Processing Trial to proceed; and
 - b) notify the Director-General, Council and DECCW's Regional Manager Hunter in writing, 1 week prior to the commencement of the trial and within 2 days of the conclusion of the trial.

SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS

AIR

Emission Limits

11. ¹The Applicant shall ensure that the emissions from discharge points serving the facility do not exceed the emission limits in Table 1.

Table 1: Air Emission Limits

Parameter/ Pollutant	Unit of Measure	100% Limit	Discharge Point ¹
Nitrogen Oxides	grams per cubic metre	2.5	1
		0.1	6, 13
Hydrogen Chloride	milligrams per cubic metre	400	1
		10	13
Solid Particles	milligrams per cubic metre	25	1
		35	2
		20	3
		15	7
		24	4
		10	6, 13
	kilograms per hour	5.43	Total plant emissions
Sulfuric acid mist and sulfur trioxide (as SO ₃)	milligrams per cubic metre	100	1, 6, 13
Carbon monoxide	parts per million	100	1
	milligrams per cubic metre	125	6
		125 ²	13
Gaseous fluoride	milligrams per cubic metre	2	1
	milligrams per cubic metre	1.4 ²	1
	kilograms per hour	0.25	Total plant emissions
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	10	1
		5	13
Volatile organic compounds	milligrams per cubic metre	77 ³	13
		40	6
Dioxins & Furans	nanograms per cubic metre	0.1 ⁴	13

Notes:

- Discharge points 1, 2, 3, 4, and 13 as defined in the EPL. Discharge points 6 and 7 as defined in the SEE.
- Limit value is a rolling 1 hour average.
- Limit value is a rolling 1-hour average. VOC as n-hexane (dry, 273 K, 101.3 kPa).
- Limit value is a rolling annual average. Polychlorinated-dibenzo-p-dioxins (PCDD) and polychlorinated-dibenzofurans (PCDF) as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalent calculated in accordance with the procedures included in Part 4, Clause 29 of the Protection of the Environment Operations (Clean Air) Regulation 2002, (dry, 273 K, 101.3 kPa).

Monitoring

12. ²Unless DECCW specifies otherwise, the Applicant shall monitor the concentration of each parameter specified in Table 2 at the discharge points serving the facility.

Table 2: Source Emissions Monitoring Requirements

Pollutant/ Parameter	Units of Measure	Frequency	Discharge Point ¹
Carbon monoxide	parts per million	Yearly	1
Gaseous fluoride	milligrams per cubic metre	Continuous	1
Hydrogen chloride	milligrams per cubic metre	Yearly	1
		Quarterly	6, 13

¹ DECCW General Term of Approval

² DECCW General Term of Approval

Nitrogen Oxides	milligrams per cubic metre	Yearly	1, 6, 13
Solid Particles	milligrams per cubic metre	Yearly	1, 2, 3, 4, 7
		Quarterly	6, 13
Sulfuric acid mist and sulphur trioxide (as SO ₃)	milligrams per cubic metre	Yearly	1, 6, 13
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	Yearly	1, 6, 13
Dioxins & Furans	milligrams per cubic metre	Quarterly	6, 13
Fluorides	milligrams per cubic metre	Yearly	6, 13
Volatile organic compounds	milligrams per cubic metre	Quarterly	6, 13
Velocity	metres per second	Quarterly	6, 13
Volumetric flow rate	Normal cubic metres per second	Quarterly	6, 13
Dry gas density	kilograms per cubic metre	Quarterly	6, 13
Moisture content in stack gases	percent	Quarterly	6, 13
Temperature	Degrees Celsius	Quarterly	6, 13
Oxygen in stack gases	percent	Quarterly	6, 13

Notes:

1. Discharge points 1, 2, 3, 4, and 13 as defined in the EPL. Discharge points 6 and 7 as defined in the SEE.
2. DECCW will specify the sampling methods for this monitoring in the EPL for the development.

13. ³The Applicant shall update its existing Air Quality Monitoring Program for the development to the satisfaction of the Director-General. This program must:
 - a) be prepared in consultation with DECCW;
 - b) be submitted to the Director-General for approval within six months from the commencement of DA-86-04-01-Mod 3; and
 - c) include:
 - a program to validate the air emissions of the development, which involved carrying out monitoring of the emissions from the development;
 - mitigation measures and timeframe for their implementation in case of non-compliances with the emission limits referred to in condition 11; and
 - a program to monitor the ongoing performance of the development.
14. ⁴The Applicant shall ensure that discharge points serving the facility are designed, constructed and operated generally in accordance with the parameters outlined in the EPL for the Development.

Construction

15. During construction, the Applicant shall ensure that:
 - a) all trucks entering or leaving the site with loads have their loads covered;
 - b) trucks associated with the development do not track dirt onto the public road network; and
 - c) the public roads used by these trucks are kept clean.

Operation

16. The Applicant shall implement all reasonable and feasible measures to minimise the dust generated by the development.
17. Within three months of the commencement of DA-86-04-01-Mod 3, the Applicant shall isolate each of the eight dross storage bays by curtains to improve the collection efficiency of dust from the localised area.
18. Within 6 months of the commencement of DA-86-04-01-Mod 3, the Applicant shall certify to the Director-General that it has installed and commenced the operation of bag house No 7 in accordance with the SEE.
19. Within 9 months of the commencement of DA-86-04-01-Mod 3, the Applicant shall certify to the Director-General that it has installed and commenced the operation of bag house No 3 in accordance with the SEE, should the air quality monitoring referred to in condition 13 indicate that the air emission limit for BH No 7 referred to in condition 11 is exceeded.
20. Within 6 months of the commencement of DA-86-04-01-Mod 3, the Applicant shall certify to the Director-General that bag house No 2 has being detached from the ALDEX building and is servicing the dross storage area in the Plant Building only.

³ DECCW General Term of Approval

⁴ DECCW General Term of Approval

21. ⁵The Applicant must maintain a continuous fluoride emission monitoring system, which in the event that the concentration of fluoride emitted to atmosphere exceeds the limit value of 1.4 milligrams per cubic metre must activate visible and audible alarms.
22. ⁶If the one hour average concentration of gaseous fluoride emitted to atmosphere exceeds 1.4 milligrams per cubic metre at discharge point 1, then the plant or the section of the plant where the exceedance occurred, must cease operating until the Applicant is able to ensure compliance with the emission limits specified in the EPL for the Development.
23. ⁷A continuous recording and alarmed bag leak detector must be installed in each stack servicing the facility, excluding the stack 6, with calibration to detect bag failure. The results shall be included in the annual report required under condition 58 of this consent. In the event of a bag failure the failed bag shall be repaired or replaced as soon as possible within the current operational cycle.

Health Impact Assessment

24. The Applicant shall participate and implement recommendations from any regional Health Impact Assessment to the satisfaction of the Director-General.

SOIL AND WATER

Discharge Limits

25. ⁸Except as may be expressly provided in an EPL for the development, the Applicant shall comply with Section 120 of the *Protection of the Environment Operations Act 1997*.

Erosion and Sediment Control

26. Prior to commencement of construction, the Applicant shall implement erosion and sediment controls in accordance with the Department of Housing and Landcom's *Managing Urban Stormwater: Soils and Construction*.
27. The Applicant shall prepare and implement its Erosion and Sediment Control Plan, Site Rehabilitation Plan and Water Management Plan detailing monitoring requirements and measures to control runoff from the site, contain spillages, minimise stormwater contamination, and dispose of contaminated water and process effluent. These plans shall be submitted to Council and DECCW for approval prior to the commencement of construction of the development.

NOISE

Operating Hours

28. ⁹The Applicant shall comply with the restrictions in Table 3, unless otherwise agreed by the Director-General.

Table 3: Construction Hours for the Development

Activity	Day	Time
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 1:00pm
	Sunday and Public Holidays	Nil

Note: Construction activities may be conducted outside the hours in Table 3 provided that the activities are not audible at any residence beyond the boundary of the site.

Noise Limits

29. ¹⁰The Applicant shall ensure that the noise from the operation of the development does not exceed the noise limits presented in Table 4.

⁵ DECCW General Term of Approval

⁶ DECCW General Term of Approval

⁷ DECCW General Term of Approval

⁸ DECCW General Term of Approval

⁹ DECCW General Term of Approval

¹⁰ DECCW General Term of Approval

Table 4: Development Noise Limits (dB(A))

Location	Daytime	Evening		Night time		
	L _{Aeq} (15 minute) (dB(A))	L _{Aeq} (15 minute) (dB(A))	L _{Aeq} (evening) (dB(A))	L _{Aeq} (15 minute) (dB(A))	L _{Aeq} (night) (dB(A))	L _{Aeq} (1 minute) (dB(A))
Residences at the corner of Government Street and 10 th Street	48	48	40	47	35	57
Residences on Northcote Street	44	44	-	44	40	57
Residences in the Light Industrial Zone on Mitchell Avenue and Railway Road	43	43	-	43	41	55

Note: Condition 30 of this consent does not impose maximum allowable noise limits for residences on Horton Road and McCarva Road as the Applicant has established a negotiated agreement with the landowner of those properties in regard to noise.

Operating Conditions

30. ¹¹The Applicant shall ensure that trucks are not entering and leaving the site outside the hours of 7.00am to 10.00pm.

Noise Monitoring

31. ¹²The Applicant shall prepare and implement a Noise Monitoring Program, in consultation with the DECCW. The Program shall be submitted for the approval of the Director-General within three months of the commencement of operation of the development, and must include a noise monitoring protocol to evaluate compliance with development noise limits specified in Condition 28 and management measures to address any exceedances.

HAZARDS

Pre-construction Studies

32. At least one month prior to construction of the development (except for construction of preliminary works that are outside the scope of the hazard studies), the Applicant shall submit for the approval of the Director General, the following studies:
- a Hazard and Operability Study for the process operations and fuel supply. This shall include the rotary cooler cooling water system, safeguards for hydrogen fluoride release, rotary furnaces and holding furnaces. The study shall be chaired by an independent qualified person approved by the Director-General;
 - a Final Hazards Analysis (FHA) prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.6 'Guidelines for Hazard Analysis'*; and
 - arrangements covering the transport of hazardous materials including details of routes to be used for the movement of trucks. Further, the applicant shall enter into contractual arrangements with contract drivers to require the use of routes determined under this condition except where necessary for local deliveries. This should include a management plan and emergency procedures.

Pre-commissioning Studies

33. At least two months prior to commissioning of the development, the Applicant shall prepare and submit for the approval of the Director-General a Preliminary Hazards Implementation Update, certifying that the recommendations made in following studies have been fully implemented:
- a) Dross Processing Plant Additions at Weston Kurri Kurri, NSW - Preliminary Hazard Analysis, prepared by Granherne and dated 25 October 1999; and
 - b) Proposed Additional Facilities at the Weston Dross Processing Plant Weston, NSW - Molten Metal Transportation Risk Assessment.

Where it has been decided not to implement a particular recommendation, the reasons shall be clearly stated.

Pre-operation Emergency Services Cooperation Agreement

34. Prior to the commencement of operation of the development, the Applicant shall develop an Emergency Services Cooperation Agreement in consultation with the emergency response teams relevant to the site and proposed haulage routes for molten aluminium (NSW Fire Brigades, State Emergency Services and local bushfire fighting services, where relevant). The Agreement shall provide, but not necessarily be limited to:

¹¹ DECCW General Term of Approval

¹² DECCW General Term of Approval

- a) policies and procedures for the on-going supply of hazards information to the emergency response teams in relation to the site, molten aluminium transport and dross transport, including quantities and locations of hazardous materials and possible hazardous events associated with the site and dross/ molten aluminium haulage;
- b) policies and procedures for communication with the emergency response teams, and notification in the event of an emergency;
- c) any agreement for access to water stores at the development in the event of a bushfire; and
- d) any agreement for the provision of suitably qualified and appropriately trained employees from the site to assist where relevant in the event of a bushfire or emergency.

The Emergency Services Cooperation Agreement shall be consistent with the Emergency Plan required under this consent. The Applicant shall supply a copy of the Emergency Services Cooperation Agreement to the Director-General prior to the commencement of operation.

Dross Importation Protocol

- 35. Dross sourced from overseas smelters and secondary aluminium processors must be inspected prior to processing in accordance with the Inspection Protocol for Imported Dross, approved by the Land and Environment Court on 7 April 2000.

Dangerous Goods

- 36. The Applicant shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with:
 - a) all relevant Australian Standards;
 - b) a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
 - c) the DECCW's Environment Protection Manual Technical Bulletin *Bunding and Spill Management*.

Emergency Stop System

- 37. At the commencement of DA-86-04-01-Mod 3, The Applicant shall have in operation emergency stop systems in ALDEX and Plant buildings, including a temperature sensor and an alarm, in the event of a fire.

TRANSPORT

Road Network and Parking

- 38. The Applicant shall ensure that that haulage of molten aluminium is via Main Road 588 (Renshaw Drive) when travelling towards the Sydney- Newcastle Freeway (F3), rather than via Main Road 195 (Kurri Kurri-Mulbring Road) and Main Road 220 (Lake Road).
- 39. The Applicant shall ensure that all parking generated by the development is accommodated on site. No vehicles associated with the development shall park on the public road system at any stage.

Vehicle Queuing

- 40. During the development, the Applicant shall ensure that the development does not result in any vehicles queuing on the public road network.

Transport Code of Conduct

- 41. Prior to the commencement of operation of the development, the Applicant shall submit for the approval of the Director-General a Transport Code of Conduct to outline management of traffic impacts associated with the site and minimum requirements for the movement of heavy vehicles to and from the site. The Code shall meet the requirements of Council and the RTA, should there be any. The Code shall include, but not necessarily be limited to:
 - a) restrictions to routes, consistent with condition 37 of this consent;
 - b) restrictions to the hours of transport operations, consistent with condition 29 of this consent, to avoid travelling built-up areas late at night or at times of high traffic flows in those areas;
 - c) speed limits to be observed along routes to and from the site, in particular through built-up areas;
 - d) minimum requirements for vehicle maintenance to address noise and exhaust emissions;
 - e) load coverage requirements; and
 - f) behavioural requirements for vehicle drivers.

VISUAL

Lighting

42. The Applicant shall ensure that the lighting associated with the development:
- a) complies with the latest version of Australian Standard AS 4282(*INT*) - *Control of Obtrusive Effects of Outdoor Lighting*; and
 - b) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.

Landscape Management Plan

43. The Applicant shall prepare a Landscape Management Plan in consultation with Council prior to the commencement of construction of the development and provide details of existing and proposed tree and shrub species, finish of exposed surfaces (including paved areas), and outline a program for implementation.

WASTE

Operating Conditions

44. ¹³The Applicant shall ensure that all waste generated on the site during construction and operation of the development is classified in accordance with the DECCW's Waste Classification Guidelines and disposed of to a facility that may lawfully accept the waste.
45. ¹⁴Except as expressly permitted by an EPL, the Applicant shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing or disposal, or any waste generated at the site to be disposed of at the site.

Waste Recycling Investigation

46. The Applicant shall investigate recycling options for ash and fume wastes and submit findings to Council and DECCW within 12 months of the commissioning of the development, and every 12 months thereafter, until a feasible recycling alternative is found and implemented.
47. The Applicant shall maximise on site waste recycling, in particular packaging materials, paper and any other such wastes.

FLORA AND FAUNA

48. The Applicant shall not clear any native vegetation beyond the limits defined in Figure 4.1 of Additions to the *Kurri Kurri Aluminium Refining and Recycling Facility - Volume II Construction Environmental Plan*, prepared by URS and dated 23 April 2001.
49. Clearing for the development shall be restricted to areas of the site covered by the Angophora/Stringybark/Grey Gum community. The Forest Red Gum, (*Eucalyptus tereticornis*) community shall be preserved for its habitat value and ecological significance.
50. The Typha swamp in the north-western corner of the site and Swamp Creek (and its associated drainage lines) shall be protected from siltation by appropriate means detailed in the Erosion and Sediment Control Plan.
51. The Applicant shall implement a program to minimise the presence and spread of weeds, in particular camphor laurel, on the site.

ABORIGINAL CULTURAL HERITAGE

52. In the event that Aboriginal objects are uncovered during the course of the development, the Applicant shall cease all works in the immediate areas, notify the DECCW and implement any reasonable and feasible measures recommended by the DECCW.

GREENHOUSE GAS

Energy Savings Action Plan

53. The Applicant shall prepare and implement an Energy Savings Action Plan for the development to the satisfaction of the Director-General. This plan must be prepared in accordance with the requirements of the DECCW and the

¹³ DECCW General Term of Approval

¹⁴ DECCW General Term of Approval

Guidelines for Energy Savings Action Plans, DEUS 2005, and be submitted to the Director-General for approval within six months from the commencement of DA-86-04-01-Mod 3.

Monitoring and Reporting

54. The Applicant shall, to the satisfaction of the Director-General:
- monitor the greenhouse gas emissions generated by the development;
 - investigate ways to reduce greenhouse gas emissions generated by the development; and
 - report on greenhouse gas monitoring and abatement measures and energy efficiency measures identified in the Energy Savings Action Plan.

SPENT POTLINING MATERIAL PROCESSING TRIAL

Monitoring and Verification Reporting

- 54A. For the duration of the Spent Potlining Material Processing Trial, the Applicant must:
- monitor and record, air emissions, including cyanide, hydrogen cyanide, fluoride, particulates and all pollutants and parameters specified in the EPL;
 - monitor and record all processing conditions for the trial, including:
 - the quantity and characteristics of all inputs;
 - the processing methods, including the rotary furnace temperature profile and the duration of thermal treatment;
 - undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify DECCW and the Director-General, should any exceedance of the limits in the EPL occur;
 - ensure all spent potlining material is appropriately banded and covered to prevent the emission of spent potlining dust, flammable gases and the contamination of stormwater.
- 54B. The Applicant must prepare a detailed monitoring report, on the outcomes of the Spent Potlining Material Processing Trial, to the satisfaction of DECCW and the Director-General. The report must:
- be submitted to DECCW, Council and the Director-General within 90 days of the completion of the Spent Potlining Material Processing Trial;
 - detail the results of the monitoring required in condition 54A above;
 - compare the results of the trial to the laboratory results described in the report dated 30 April 2010 prepared by K2 Environmental Limited, the limits in the EPL and DECCW's air quality impact assessment criteria specified in the *"Approved Methods for the Modelling and Assessment of Air Pollutants in NSW"* (DEC 2005);
 - describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;
 - characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;
 - summarise the findings of the trial;
 - recommend any actions that could be taken to minimise emissions during any future processing; and
 - discuss the likely options for any future processing.

SCHEDULE 4 ENVIRONMENTAL MANAGEMENT AND MONITORING

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

55. The Applicant shall implement the following Plans for the development:
- a) Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume II Construction Environmental Management Plan, prepared by URS and dated 23 April 2001;
 - b) Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume II Construction Environmental Management Plan Appendices, prepared by URS and dated 23 April 2001; and
 - c) Construction Safety Study, prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 7 - Construction Safety Study Guidelines*.

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

56. The Applicant shall update the following Plans/Studies to reflect the requirements of this consent and submit the amended Plans for the approval of the Director-General within three months from the commencement of DA-86-04-01-Mod 3:
- a) Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume III Operational Environmental Management Plan, prepared by URS and dated 23 April 2001;
 - b) Additions to the Kurri Kurri Aluminium Refining and Recycling Facility - Volume III Operational Environmental Management Plan Appendices, prepared by URS and dated 23 April 2001;
 - c) Fire Safety Study prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 2 'Fire Safety Study Guidelines'* and the New South Wales Government's *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems*. The study shall also be submitted to the NSW Fire Brigade for approval;
 - d) Emergency Plan detailing emergency procedures for the development, including detailed procedures for the safety of people outside of the development who may be at risk from the development. The Emergency Plan must be prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 1 'Industry Emergency Planning Guidelines'*; and
 - e) Safety Management System covering all on-site operations and associated transport activities involving hazardous materials. The Safety Management System must specify all safety related procedures, responsibilities and policies, along with mechanisms for ensuring adherence to the procedures.

ENVIRONMENTAL REPORTING

Incident Reporting

57. Within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) harm to the environment, the Applicant shall notify the Department and other relevant agencies of the exceedance/incident.
58. Within 7 days of notifying the Department and other relevant agencies of an exceedance/incident, the Applicant shall provide the Department and these agencies with a written report that:
- a) describe the date, time, and nature of the exceedance/incident;
 - b) identify the cause (or likely cause) of the exceedance/incident;
 - c) describe what action has been taken to date; and
 - d) describe the proposed measures to address the exceedance/incident.

Annual Reporting

59. Within 12 months of this approval, and annually thereafter, the Applicant shall submit an AEMR to the Director-General and relevant agencies. This report must:
- a) identify the standards and performance measures that apply to the development;
 - b) describe the works carried out in the last 12 months;
 - c) describe the works that will be carried out in the next 12 months;
 - d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
 - e) include a summary of the monitoring results for the development during the past year;
 - f) include an analysis of these monitoring results against the relevant:
 - impact assessment criteria/limits;
 - monitoring results from previous years; and
 - predictions in the EA;
 - g) identify any trends in the monitoring results over the life of the development;
 - h) identify any non-compliance during the previous year; and
 - i) describe what actions were, or are being, taken to ensure compliance.

AUDITING

Independent Environmental Audit

60. Within 12 months of the commencement of operations, and every 3 years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
- a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been endorsed by the Director-General;
 - b) be undertaken in consultation with DECCW, and Council;
 - c) include a Hazard Audit in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 5 – Hazard Audit Guidelines*. The audit shall include a review of the Safety Management System and of all incidents recorded and be accompanied by a program for the implementation of all recommendations made in the audit report. If the Applicant intends to defer the implementation of a recommendation, justification must be included.
 - d) assess whether the development is being carried out in accordance with industry best practice;
 - e) assess the environmental performance of the development, and its effects on the surrounding environment and sensitive receivers;
 - f) assess whether the development is complying with the relevant standards, performance measures, and statutory requirements;
 - g) review the adequacy of any strategy/plan/program required under this approval; and, if necessary,
 - h) recommend measures or actions to improve the environmental performance of the development, and/or any strategy/plan/program required under this approval.
61. Within 6 weeks of completing this audit, or as otherwise agreed by the Director-General, the Applicant shall submit a copy of the audit report to the Director-General with a response to any recommendations contained in the audit report.
62. Within 3 months of submitting an audit report to the Director-General, the Applicant shall review and if necessary revise the strategy/plans/programs required under this approval to the satisfaction of the Director-General.

COMPLAINTS MANAGEMENT

63. Prior to the commencement of construction works, the Applicant shall ensure that the following are available for community complaints:
- a) a telephone number on which complaints about operations on the site may be registered;
 - b) a postal address to which written complaints may be sent; and
 - c) an email address to which electronic complaints may be transmitted.

The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the site, in a position that is clearly visible to the public. These details shall also be provided on the Applicant's internet site.

64. The Applicant shall record details of all complaints received through the means listed under condition 62 of this consent in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:
- a) the date and time, where relevant, of the complaint;
 - b) the means by which the complaint was made (telephone, mail or email);
 - c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
 - d) the nature of the complaint;
 - e) any action(s) taken by the Applicant in relation to the complaint, including any follow-up contact with the complainant; and
 - f) if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the Director-General and/or DECCW upon request.

ACCESS TO INFORMATION

65. Within 3 months of the approval of any strategy/plan/program required under this approval (or any subsequent revision of these strategies/plans/programs), or the completion of the audits or AEMRs required under this approval, the Applicant shall provide a copy of the relevant document/s to:
- a) the relevant agencies, and
 - b) any interested party upon request.

**APPENDIX A
SITE PLAN**

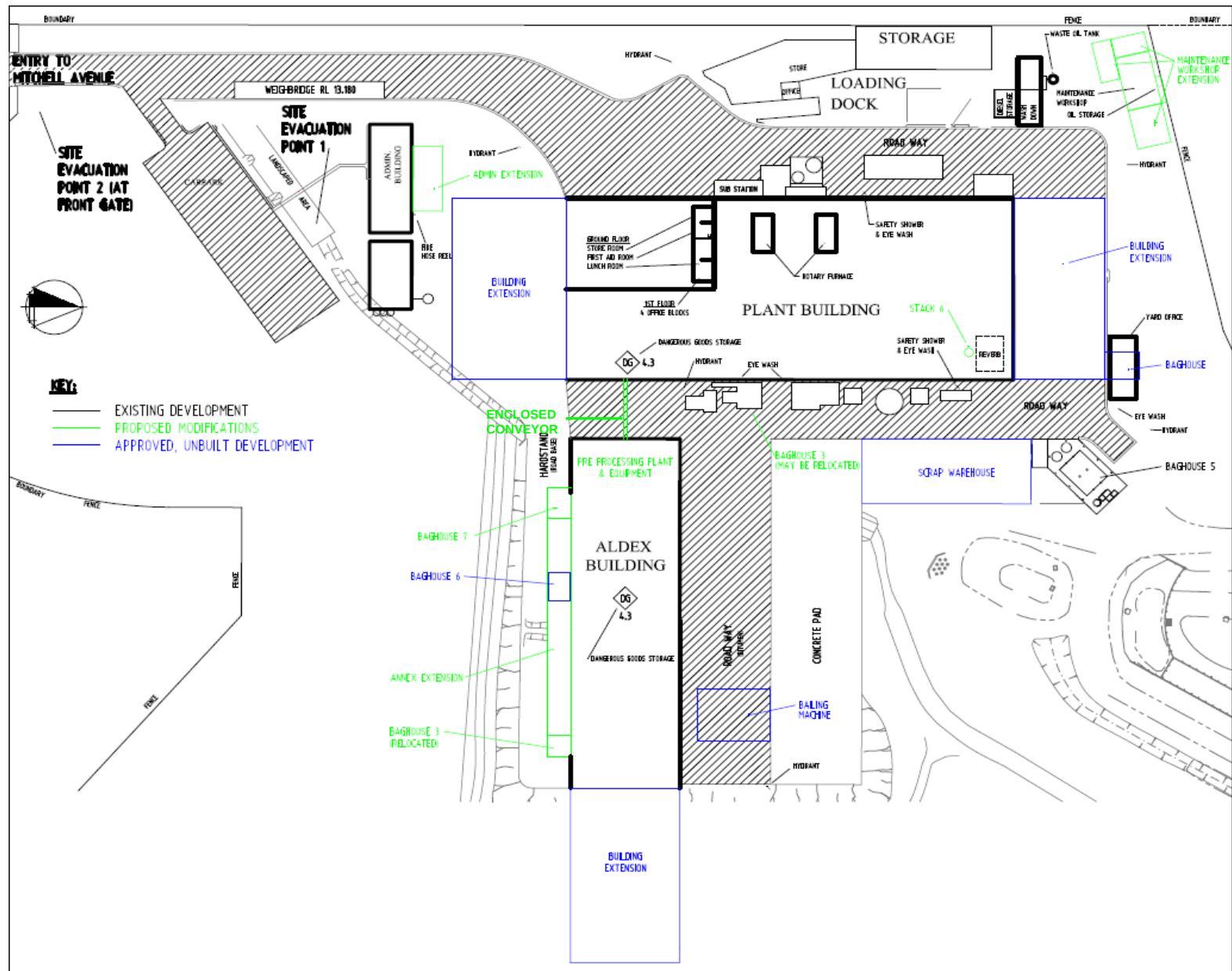
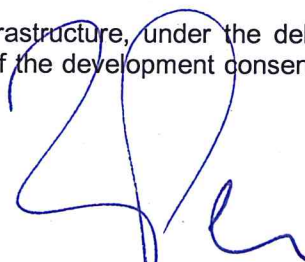


Figure 1: Site layout plan

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure, under the delegation executed on 14 September 2011, I hereby modify the conditions of the development consent referred to in Schedule 1, subject to the conditions in Schedule 2.



Richard Pearson
Deputy Director-General
Development Assessment and Systems
Performance

Sydney

7 September 2012

File No: 10/01769

SCHEDULE 1

Application Number:	DA 10397 of 1995
Applicant:	Weston Aluminium
Approval authority:	Land and Environment Court
Project:	Aluminium Recycling Facility
Date of original approval:	30 August 1996
Modification:	DA 10397 of 1995 Mod 5 commercial scale processing of spent potlining

SCHEDULE 2

1. Replace all references to the OEH in the conditions of approval with EPA
2. Delete OEH from the definitions
3. Insert the following definitions in the definitions list in alphabetical order

EPA	Environment Protection Authority
SPL	Spent Potlining
4. Replace condition 2, Schedule 2 with the following Condition 2:
 - 2 The Applicant shall carry out the development generally in accordance with the:
 - a) EIS as modified by the SEE;
 - b) site plans (see Appendix A);
 - c) conditions of this approval; and, during the spent potlining material processing trial;
 - d) modification application DA-86-04-01 Mod 4 and 10397 Mod 2, and the enclosed Letter dated 26 May 2010 and Attachments 1, 2 and 3;

- e) Modification application DA-86-04-01 Mod 5 and 10397 Mod 3, and the enclosed SEE, dated November 2010, prepared by GHD;
- f) during the extended spent potlining material processing trial, modification application DA-86-04-01 Mod 6 and 10397 Mod 4, and the enclosed Environmental Assessment, dated June 2011 and the Response to Submissions dated 17 August 2011, prepared by Weston Aluminium; and
- g) Modification application DA-86-04-01 Mod 7 and DA 10397 of 1995 Mod 5, and the enclosed Environmental Assessment, dated 10 May 2012, prepared by AECOM and the Response to Submissions dated 21 June 2011, prepared by Weston Aluminium.

If there is any inconsistency between the above, the conditions of this approval shall prevail to the extent of any inconsistency.

5. Replace condition 5, Schedule 2 with the following condition 5:

- 5 The Applicant shall not process on site more than a combined total of 40,000 tonnes of dross aluminium and Second Cut SPL and 35,000 tonnes of scrap aluminium metal per year.

6. Replace condition 6A, Schedule 2 with the following Condition 6A

- 6A. The Applicant shall ensure that the combined total of Second Cut SPL and aluminium dross stored on site does not exceed 5,000 tonnes at any time.

7. Insert the following row into Table 1 in Condition 11, Schedule 3

Parameter/Pollutant	Unit of Measure	100% Limit	Discharge point
Cyanide	Milligrams per cubic metre	0.5	1

8. Replace Condition 12, Schedule 3 with the following Condition 12

- 12 Unless the EPA specifies otherwise, the Applicant shall monitor the concentration of each parameter specified in Table 2 at the discharge points serving the facility.

Table 2: Source Emissions Monitoring Requirements

Pollutant/ Parameter	Units of Measure	Frequency	Discharge Point ¹
Carbon monoxide	parts per million	Yearly	1
Gaseous fluoride	milligrams per cubic metre	Continuous	1
Hydrogen chloride	milligrams per cubic metre	Yearly	1
		Quarterly	6, 13
Nitrogen Oxides	milligrams per cubic metre	Yearly	1, 6, 13
Solid Particles	milligrams per cubic metre	Yearly	1, 2, 3, 4, 7
		Quarterly	6, 13
Sulfuric acid mist and sulphur trioxide (as SO ₃)	milligrams per cubic metre	Yearly	1, 6, 13
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	Yearly	1, 6, 13
Dioxins & Furans	milligrams per cubic metre	Quarterly	6, 13
Fluorides	milligrams per cubic metre	Yearly	6, 13
Volatile organic compounds	milligrams per cubic metre	Quarterly	6, 13
Velocity	metres per second	Quarterly	6, 13
Volumetric flow rate	Normal cubic metres per second	Quarterly	6, 13
Dry gas density	kilograms per cubic metre	Quarterly	6, 13
Moisture content in stack gases	percent	Quarterly	6, 13
Temperature	Degrees Celsius	Quarterly	6, 13
Oxygen in stack gases	percent	Quarterly	6, 13

Cyanide	milligrams per cubic metre	Special Frequency 1	1
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Notes:

1. Discharge points 1, 2, 3, 4, and 13 as defined in the EPL. Discharge points 6 and 7 as defined in the SEE.
2. The EPA will specify the sampling methods for this monitoring in the EPL for the development.
3. Where Special frequency 1 means quarterly testing frequency for the first year of SPL processing operations. Following four consecutive tests demonstrating compliance with the concentration limit and stable emission parameters, the licensee can apply to EPA for a reduced monitoring frequency.

9. Replace Condition 13, Schedule with the following Condition 13

- 13 The Applicant shall update its existing Air Quality Monitoring Program for the development to the satisfaction of the Director-General. This program must:
- a) be prepared in consultation with the EPA;
 - b) be submitted to the Director-General for approval within one month from the commencement of DA 10397 of 1995 Mod 5; and
 - c) include:
 - a program to validate the air emissions of the development, which involved carrying out monitoring of the emissions from the development;
 - mitigation measures and timeframe for their implementation in case of non-compliances with the emission limits referred to in condition 11; and
 - a program to monitor the ongoing performance of the development.

10. Insert the following Condition 23A after Condition 23, Schedule 3

- 23A The Applicant must ensure all SPL is appropriately banded and covered to prevent the emission of SPL dust, flammable gases and the contamination of stormwater

11. Insert the following Condition 56A after Condition 56, Schedule 4

- 56A The Applicant shall update the studies required in Conditions 56 c), d) and e), above to reflect the requirements of this consent. The Applicant shall submit the amended Plans for the approval of the Director-General within three months from the commencement of DA 10397 of 1995 Mod 5.

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure, under the delegation executed on 14 September 2011, I hereby modify the conditions of the development consent referred to in Schedule 1, subject to the conditions in Schedule 2.

Richard Pearson
**Deputy Director-General
Development Assessment and Systems
Performance**

Sydney 17 February 2013 File No: 10/01769

SCHEDULE 1

Application Number:	DA 10397 of 1995
Applicant:	Weston Aluminium
Approval authority:	Land and Environment Court
Project:	Aluminium Recycling Facility
Date of original approval:	30 August 1996
Modification:	DA 10397 of 1995 Mod 6 a 12 month trial processing mixed spent potlining material

SCHEDULE 2

1. Insert the following definitions in the definitions list in alphabetical order

DA 10397 of 1995 Mod 6	A 12 month trial processing mixed spent potlining in existing rotary furnaces as described in the assessment prepared by Weston Aluminium and dated 30 November 2012
First cut spent potlining	spent potlining material originating from the carbon lining of aluminium reduction cells (pots)
Mixed spent potlining	combination of first and second cut spent potlining material
Second cut spent potlining	spent potlining material originating from the refractory lining of aluminium reduction cells (pots)
2. Replace condition 2 with the following condition 2 in Schedule 2:
 - 2 The Applicant shall carry out the development generally in accordance with the:
 - a) EIS as modified by the SEE;
 - b) site plans (see Appendix A);

- c) conditions of this approval; and, during the spent potlining material processing trial;
- d) modification application DA-86-04-01 Mod 4 and 10397 Mod 2, and the enclosed Letter dated 26 May 2010 and Attachments 1, 2 and 3;
- e) Modification application DA-86-04-01 Mod 5 and 10397 Mod 3, and the enclosed SEE, dated November 2010, prepared by GHD;
- f) during the extended spent potlining material processing trial, modification application DA-86-04-01 Mod 6 and 10397 Mod 4, and the enclosed Environmental Assessment, dated June 2011 and the Response to Submissions dated 17 August 2011, prepared by Weston Aluminium;
- g) Modification application DA-86-04-01 Mod 7 and DA 10397 of 1995 Mod 5, and the enclosed Environmental Assessment, dated 10 May 2012, prepared by AECOM and the Response to Submissions dated 21 June 2011, prepared by Weston Aluminium; and
- h) Modification application DA-86-04-01 Mod 8 and DA 10397 of 1995 Mod 6, and the enclosed Environmental Assessment, dated 30 November 2012, prepared by Weston Aluminium.

If there is any inconsistency between the above, the conditions of this approval shall prevail to the extent of any inconsistency.

3. Insert the following condition 6B after condition 6A in Schedule 2

- 6B. The Applicant shall ensure that DA 10397 of 1995 Mod 6:
- a) is undertaken over a period of 12 months only and;
 - b) during the operation of DA 10397 of 1995 Mod 6:
 - i. no more than 3,000 tonnes of mixed spent potlining material is received on site over the 12 month trial period; and
 - ii. no more than 1,000 tonnes of mixed SPL is stored on site at any one time.

Mixed Spent Potlining Material Processing Trial (DA 10397 of 1995 Mod 6)

4. Replace condition 10A with the following condition 10A in Schedule 2:

- 10A. Prior to the commencement of DA 10397 of 1995 Mod 6, the Applicant must:
- a) obtain an updated EPL allowing DA 10397 of 1995 Mod 6 to proceed; and
 - b) notify the Director-General, Council and the EPA's Regional Manager Hunter in writing, 1 week prior to the commencement of DA 10397 of 1995 Mod 6 and within 2 days of the conclusion of the trial.

5. Replace condition 54A with the following Condition 54A, in Schedule 3:

- 54A. For the duration of the DA 10397 of 1995 Mod 6, the Applicant must:
- a) monitor and record, air emissions, including cyanide, hydrogen cyanide, fluoride, particulates and all pollutants and parameters specified in the EPL;
 - b) cease processing, and notify the EPA and the Director-General, should laboratory results indicate emissions of cyanide are greater the limits in the EPL;
 - b) monitor and record all processing conditions for the trial, including:
 - i. the quantity and characteristics of all inputs;
 - ii. the processing methods, including the rotary furnace temperature profile and the duration of thermal treatment; and
 - c) undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify the EPA and the Director-General, should any exceedance of the limits in the EPL occur.

6. Replace condition 54B with the following condition 54B in Schedule 3:

- 54B. The Applicant must prepare a detailed monitoring report, on the outcomes of DA 10397 of 1995 Mod 6, to the satisfaction of the EPA and the Director-General. The report must:

- a) be submitted to EPA, Council and the Director-General within 90 days of the completion of the DA 10397 of 1995 Mod 6;
- b) detail the results of the monitoring required in condition 54A above;
- c) compare the results of the trial to, the limits in the EPL and the EPAs air quality impact assessment criteria specified in the "*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*" (DEC 2005);
- d) describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;
- e) characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;
- f) summarise the findings of the trial;
- g) recommend any actions that could be taken to minimise emissions during any future processing; and
- h) discuss the likely options for any future processing.

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, under the delegation dated 16 February 2015, I hereby modify the development consent referred to in Schedule 1, subject to conditions as set out in Schedule 2.



Daniel Keary
A/Executive Director
Infrastructure and Industry Assessments

Sydney 15th SEPTEMBER 2015

SCHEDULE 1

Application Number:	DA 10397 of 1995
Proponent:	Weston Aluminium Pty Limited
Approval Authority:	Minister for Planning
Land:	Lot 796 DP 39877 129 Mitchell Avenue, Kurri Kurri
Project:	Extensions to an existing aluminium dross recycling plant
Modification Number:	DA 10397 of 1995 Mod 7
Modification:	A 24 month trial processing illicit drug and pharmaceutical wastes

SCHEDULE 2

This development consent is modified as follows:

In the definitions table:

1. Deleting the definition for Department, Director-General and Minister and inserting the following definitions in alphabetical order:

Department	The Department of Planning and Environment or its successors in title
Minister	The Minister for Planning
Secretary	The Secretary of the Department of Planning and Environment, or nominee

2. Inserting the following definitions in alphabetical order:

DA 10397 of 1995 Mod 7	of	A 24 month trial processing illicit drug and pharmaceutical waste in existing furnaces as described in the assessment prepared by Weston Aluminium and dated 12 March 2015 and the Response to Submissions prepared by Weston Aluminium and dated 15 July 2015
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In Schedules 2, 3 and 4:

3. Deletion of all instances of the word Director-General and replacing with the word Secretary.
4. Deletion of all instances of the words NSW Fire Brigade and replacing with the words NSW Fire and Rescue.
5. Inserting the following Condition 2i) after Condition 2h) of Schedule 2:
 - 2i) Modification request DA 86-04-01 Mod 9 and DA 10397 of 1995 Mod 7 and the enclosed Environmental Assessment, dated 12 March 2015, prepared by Weston Aluminium and the Response to Submissions, dated 15 July 2015, prepared by Weston Aluminium.
6. Inserting the following Condition 6C after Condition 6B:
 - 6C The Applicant shall ensure that DA 10397 of 1995 Mod 7:
 - a) is undertaken over a trial period of not more than 24 consecutive months only; and
 - b) during the operation of DA 10397 of 1995 Mod 7 :
 - i. no more than 200 tonnes of illicit drug waste is received or processed on site over the 24 month trial period; and
 - ii. no more than 1,000 tonnes of pharmaceutical waste is received, stored or processed on site over the 24 month trial period.
7. Inserting the following Condition 25A after Condition 25 of Schedule 3:
 - 25A All pharmaceutical waste must be stored in an enclosed (appropriately banded and covered) area to prevent the contamination of stormwater.

Illicit Drug Waste and Pharmaceutical Waste Processing Trial (DA 10397 of 1995 Mod 7)

8. Inserting the following Condition 10B after Condition 10A in Schedule 2:
 - 10A. Prior to the commencement of DA 10397 of 1995 Mod 7, the Applicant must:
 - a) obtain an updated EPL allowing DA 10397 of 1995 Mod 7 to proceed; and
 - b) notify the Secretary, Council and the EPA's Regional Manager Hunter in writing, two weeks prior to the commencement of DA 10397 of 1995 Mod 7 and within two weeks of the conclusion of the trial.

9. Inserting the following condition 54C after Condition 54B in Schedule 3:

- 54C For the duration of DA 10397 of 1995 Mod 7, the Applicant must:
- monitor and record, air emissions and all pollutants and parameters specified in the EPL. All air quality monitoring must occur on a quarterly basis and whenever pharmaceutical and illicit drug waste material is being processed;
 - ensure air quality emissions testing is completed in accordance with the EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in NSW*
 - cease processing, and notify the EPA and the Secretary, should laboratory results indicate emissions are greater than the limits in the EPL or the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
 - monitor and record all processing conditions for the trial, including:
 - the names, contact details and qualifications and experience of the person(s) conducting and supervising the trial;
 - the source facility, a description of the waste type, amount and date received of each load of waste accepted for disposal as part of the trial;
 - all process conditions for the trial including the quantity of pharmaceutical and/or illicit drug waste in each batch processed, any other materials/additives processed in each batch, the temperature profile of the furnace during each batch processed and the residence time of the material within the furnace; and
 - undertake real-time monitoring of fluoride and particulate emissions and immediately cease processing, and notify the EPA and the Secretary, should any exceedance of the limits in the EPL occur.

10. Inserting the following condition 54D in after Condition 54C in Schedule 3:

- 54D The Applicant must prepare a detailed monitoring report, on the outcomes of DA 10397 of 1995 Mod 7, to the satisfaction of the EPA and the Secretary. The report must:
- be submitted to EPA, Council and the Secretary within 90 days of the completion of DA 10397 of 1995 Mod 7 ;
 - detail the results of the monitoring required in condition 54C above;
 - compare the results of the trial to, the limits in the EPL and the EPA's air quality impact assessment criteria specified in the "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW" (DEC 2005);
 - describe any anomalies in the monitoring data, and any exceedances of the limits or assessment criteria;
 - characterise the trial outputs and describe how these products are to be managed and disposed of, demonstrating compliance with condition 44;
 - summarise the findings of the trial;
 - recommend any actions that could be taken to minimise emissions during any future processing; and
 - discuss the likely options for any future processing.

11. Replacing condition 56A with the following Condition 56A in Schedule 3:

- 56A Within three months of each of the modifications listed below, the Applicant shall submit, for approval of the Secretary, the relevant updated studies (as required by Condition 56 and described in table 5) to reflect the requirements of that modification.

Modification	Plans
DA 10397 of 1995 Mod 5	56 c, d and e
DA 10397 of 1995 Mod 7	56 d and e

12. Inserting the following Condition 56B after 56A in Schedule 3:

- 56B The Applicant shall prepare a Security Protocol for the management of pharmaceutical drug waste. The Protocol shall:
- be implemented for the duration of DA 10397 of 1995 Mod 7;
 - be incorporated into the updated Safety Management System required by Condition 56B;

- c) describe the measures to be undertaken to ensure the secure transport, storage and processing of pharmaceutical waste; and
- d) include the security measures described in the Response to Submissions Report dated 15 July 2015.

13. Inserting the following Condition 56C after Condition 56B in Schedule 3:

POST-STARTUP COMPLIANCE REPORT

- 56C Three months after the commencement of operation of DA 10397 of 1995 Mod 7, the Applicant shall submit to the Secretary, a report verifying that:
- a) the updated Emergency Plan required under condition 56B is effectively in place and that at least one emergency exercise has been conducted; and
 - b) the updated Safety Management System required under condition 56B has been fully implemented and that records required by the system are being kept.
-

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, under the instrument of delegation executed on 16 February 2015, I hereby approve the modification of the development consent referred to in Schedule 1, subject to conditions in Schedule 2.



Anthea Sargeant
Executive Director
Key Sites and Industry Assessments

Sydney

1 March

2017

SCHEDULE 1

Application Number:	DA 10397 of 1995
Proponent:	Weston Aluminium Pty Limited
Approval Authority:	Minister for Planning
Land:	Lot 796 DP 39877 129 Mitchell Avenue, Kurri Kurri
Project:	Extensions to an existing aluminium dross recycling plant
Modification Number:	DA 10397 of 1995 Mod 8
Modification:	To allow the commercial scale processing of First Cut SPL

SCHEDULE 2

This development consent is modified as follows:

In the definitions table:

1. Inserting the following definitions in alphabetical order:

DA 10397 of 1995 Mod 8	Removing the distinction between spent potlining types thereby allowing the commercial scale processing of First Cut and Second Cut spent potlining as well as a mixture of both as described in the assessment prepared by AECOM and dated 8 September 2016 and the Response to Submissions prepared by AECOM and dated 13 December 2016
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First Cut spent potlining	Spent potlining originating from the refractory lining of aluminium reduction cells (pots)
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In Schedule 2:

1. Inserting the following Condition 2j) after Condition 2i) of Schedule 2:

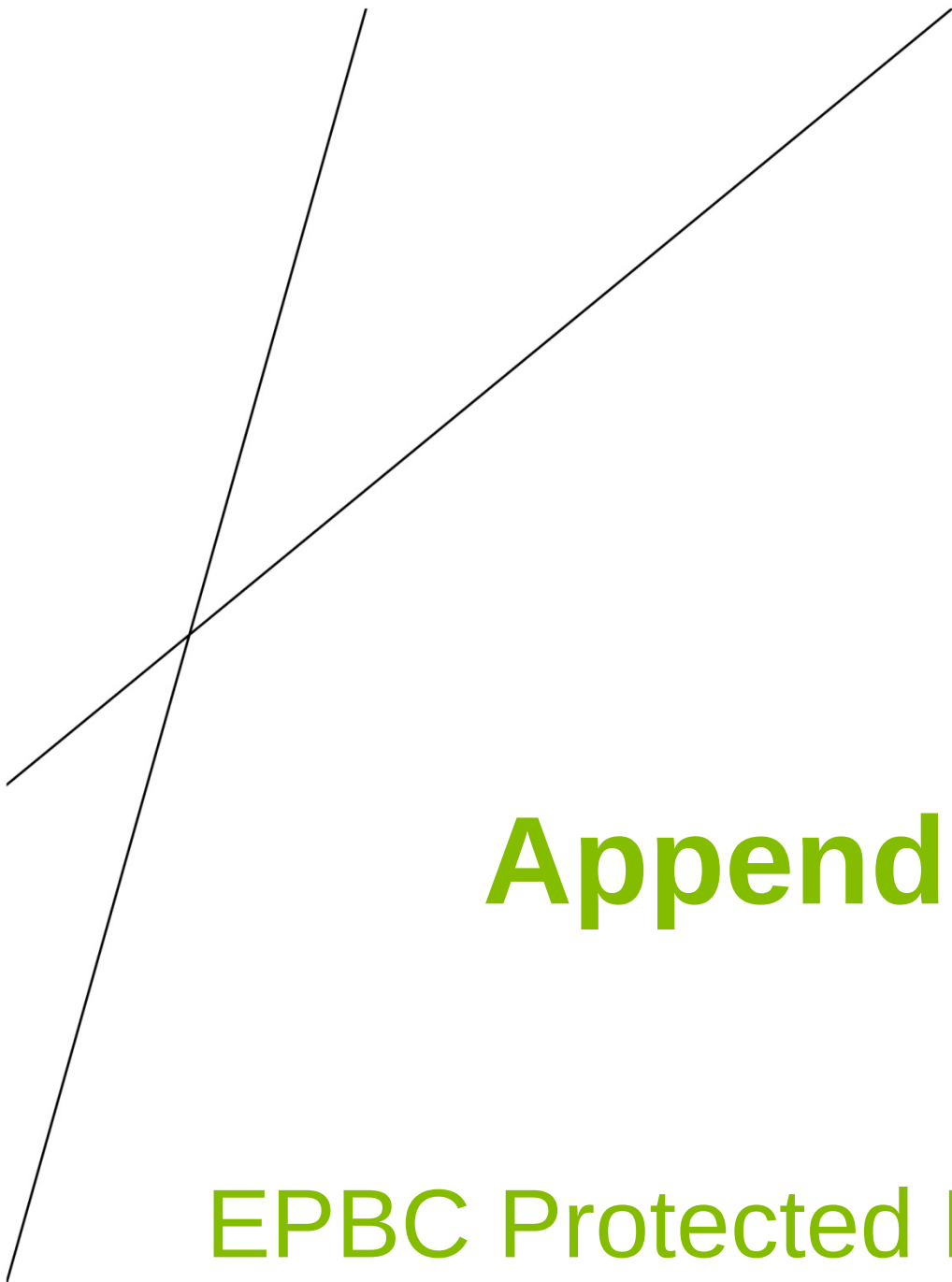
2j)	Modification request DA 86-04-01 Mod 10 and DA 10397 of 1995 Mod 8 and the enclosed Environmental Assessment, dated 8 September 2016, prepared by AECOM and the Response to Submissions, dated 13 December 2016, prepared by AECOM.
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2. Delete Condition 5 and replace with the following in Schedule 2:

5	The Applicant shall not process on site more than a combined total of 40,000 tonnes of dross aluminium and SPL and 35,000 tonnes of scrap aluminium metal per year.
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3. Delete Condition 6A and replace with following in Schedule 2:

6A	The Applicant shall ensure that the combined total of SPL and aluminium dross stored on site does not exceed 5,000 tonnes at any time.
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Appendix C

EPBC Protected Matters
Search

Appendix C 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: 20/04/17 10:37:28

[Summary](#)

[Details](#)

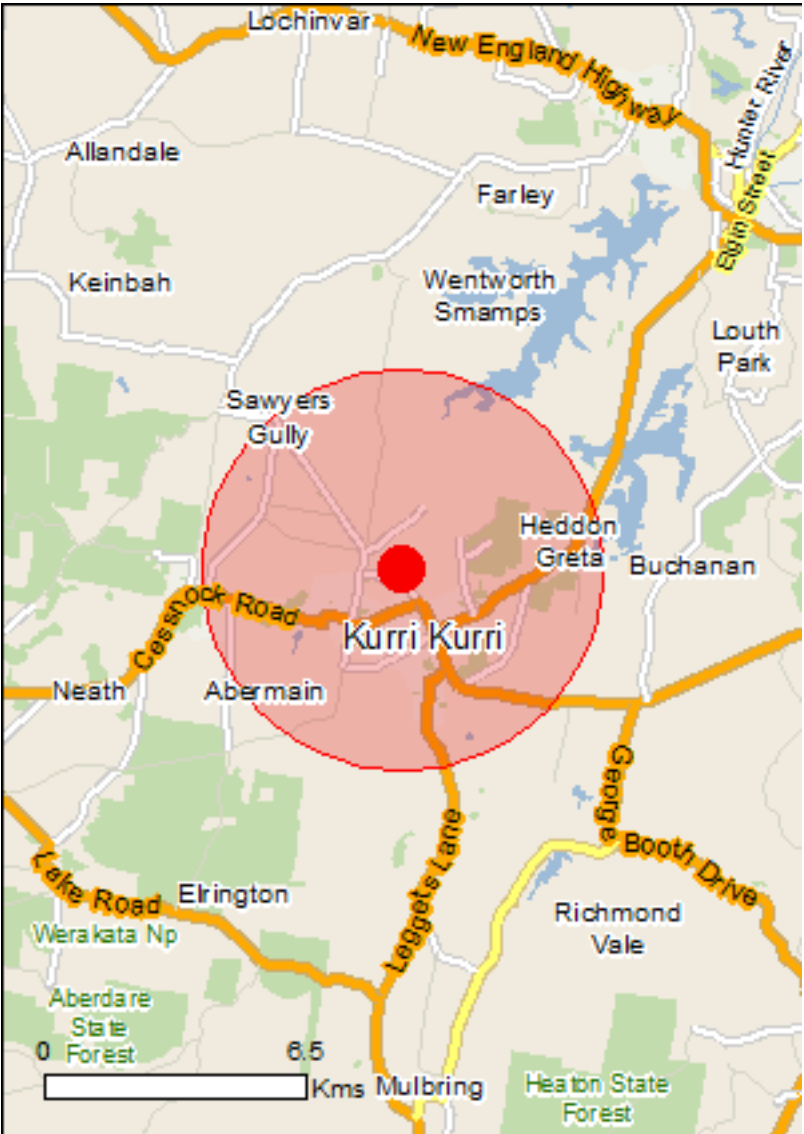
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

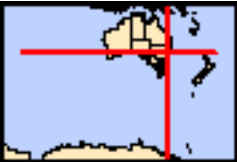
[Acknowledgements](#)



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Buffer: 5.0Km



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:	3
Listed Threatened Species:	30
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:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	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:	1
Regional Forest Agreements:	1
Invasive Species:	49
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
Hunter Valley Weeping Myall (Acacia pendula) Woodland	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 known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may 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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
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 likely to occur within area
Frogs		

Name	Status	Type of Presence
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 likely to occur within area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to 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 likely 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
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat likely 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
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 likely to occur

Name	Status	Type of Presence
within area		
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
Tetratheca juncea Black-eyed Susan [21407]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat likely to 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]		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 likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely 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

Name	Threatened	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	area Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land	[Resource Information]
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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 - 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]		Species or species habitat 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 likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat may 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]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely 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 likely 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 likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves		[Resource Information]
Name	State	
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 Resouces 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 likely to occur

Name	Status	Type of Presence
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 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

Name	Status	Type of Presence
		habitat may 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 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 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
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to 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		Species or species

Name	Status	Type of Presence
Groundsel [2624]		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

-32.80519 151.47573

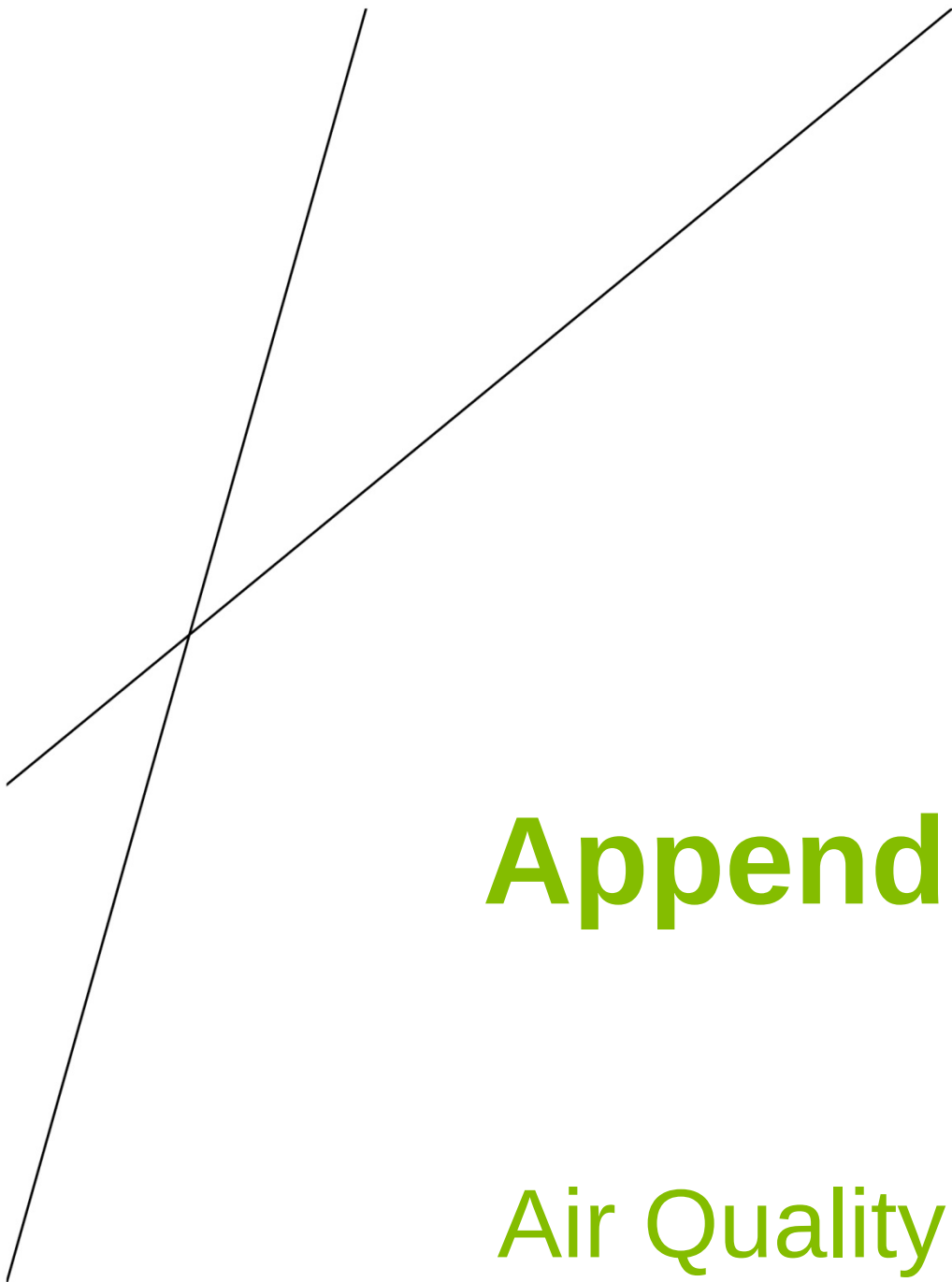
Acknowledgements

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.

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Appendix D

Air Quality Impact Assessment

Environmental Assessment Modification - Pharmaceutical & Illicit Drug Waste

Air Quality Impact Assessment

Environmental Assessment Modification - Pharmaceutical & Illicit Drug Waste

Air Quality Impact Assessment

Client: Weston Aluminium Pty Ltd

ABN: 91 075 245 108

Prepared by

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Quality Information

Document Environmental Assessment Modification - Pharmaceutical & Illicit Drug Waste

Ref 60486360

Date 29-Jun-2017

Prepared by Kristen Clarke

Reviewed by David Rollings

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	19-May-2017	Draft for Client Review	Simon Murphy Project Manager	
B	16-Jun-2017	Revised Draft	Simon Murphy Project Manager	
0	29-Jun-2017	Final	Simon Murphy Project Manager	

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Acronyms

Term	Description
Airshed	Part of the atmosphere that shares a common flow of air and to similar influences.
Ambient	Ambient/background pollutant concentrations refer to the concentrations of pollutants in the air, which are generated by all local pollutant sources.
As	Arsenic
Be	Beryllium
BRF	Battery recycling facility
BOM	Bureau of Meteorology
Cd	Cadmium
Co	Cobalt
CO	Carbon monoxide
Cr	Chromium
Cu	Copper
Cumulative assessment	The cumulative assessment was undertaken by summing the project contributions with the ambient pollutant concentrations where relevant.
EPA	Environment Protection Authority
H ₂ SO ₄	Sulphuric acid mist
HCl	Hydrogen chloride
HF	Hydrogen fluoride
Hg	Mercury
Mn	Manganese
Ni	Nickel
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen, including nitric oxide (NO) and NO ₂
OEHL	Office of Environment and Heritage
Particulate matter	Very small solid particles or liquid droplets, which may become suspended in air.
Pb	Lead
PM ₁₀	Particulate matter with an equivalent aerodynamic diameter of 10 micrometres or less.
PM _{2.5}	Particulate matter with an equivalent aerodynamic diameter of 2.5 micrometres or less.
Receivers	Discrete receivers are identified by the EPA as anywhere someone works or resides or may work or reside
Sb	Antimony
Se	Selenium
SPL	Spent pot lining
Sn	Tin
TCEQ	Texas Commission on Environmental Quality

Term	Description
tpa	Tonnes per annum
TSP	Total suspended particulates; a type of particulate matter.
VOCs	Volatile organic compounds with a high vapour pressure at room temperature.
WA	Weston Aluminium
V	Vanadium

Executive Summary

On 15 September 2015, the NSW Department of Planning and Environment (DPE) granted Weston Aluminium (WA) Development Approval for a 24 month trial processing of illicit drug and pharmaceutical waste within existing rotary furnaces at their Kurri Kurri facility. The trial program commenced on 14 October 2015 and is nearing completion. In response to Trial successes and ongoing demand by the waste management sector and the NSW Police, WA is now seeking to modify the existing Development Consent to provide for the ongoing processing of pharmaceutical and illicit drug wastes at a commercial-scale within the existing rotary furnace operation – i.e. up to a combined 40,000 tpa in conjunction with aluminium dross and Spent Potlining (SPL). This Modification is sought in parallel with WA's SSD Application for Medical and Other Waste Thermal Processing (inputs for which also include illicit drug and pharmaceutical wastes), allowing for optimal versatility and flexibility of the plant with respect to pharmaceutical and illicit drug waste destruction.

In accordance with project Secretary's Environmental Assessment Requirements (SEARs), issued by the DPE on 8 March 2017, AECOM was commissioned by WA to prepare an Air Quality Impact Assessment (AQIA) for inclusion in an Environmental Assessment as part of the Project. A Level 2 AQIA was conducted in accordance with the SEARs requirements and *NSW Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (DEC 2005). This report provides an assessment of the potential ground level air quality impacts associated with the operation of the Project.

Dispersion modelling was undertaken for the AQIA using the Lagrangian model CALPUFF. A single modelling scenario, representative of typical operating conditions was undertaken for this assessment. The modelled scenario included:

- Continuous operation of the rotary furnaces processing pharmaceutical and illicit drug waste in conjunction with the existing operations aluminium dross and SPL processing – i.e. as per Trial processing conditions;
- Continuous operation of the proposed thermal processing plant (SSD15_7396) currently undergoing assessment by the Department of Environment and Planning, operating at maximum operational capacity of 800kg/h with emissions at expected concentrations (subject to separate assessment); and
- Continuous operation of all other existing point sources under normal operating conditions.

Cumulative impacts were also examined as part of the project, including predicted air quality impacts associated with the operation of the proposed battery recycling facility (BRF) on adjoining lands (by Pymore Recyclers International Pty Ltd (Pymore)) as well as background air quality data from the nearest OEH monitoring station in Beresfield.

Results of the modelling showed no exceedances of the relevant air quality criteria for all pollutants examined with the exception to the maximum 1-hour NO₂ cumulative concentration.

The predicted maximum 1-hour NO₂ concentration attributed to WA operations was found to be relatively small (approx. 9% of the criteria) when compared to incremental contribution from both the BRF and the maximum background concentration. Predicted emission rates from WA are conservative based on continuous operation, include the thermal waste treatment facility operating at maximum capacity and assume that all NO₂ is converted to NO_x. Thus, while not considered significant, actual concentrations are likely to be much lower than reported. Furthermore, predicted worst case impacts associated with the WA facility, the BRF facility and the maximum 24-hour NO₂ background concentration, are unlikely to occur within the same 24 hour period.

The assessed PM₁₀ and PM_{2.5} cumulative values, whilst elevated due to existing background concentrations, predicted that there would be no additional exceedances of the EPA criteria due to facility operation. The contribution of the WA operations to particulate levels is relatively minor.

The results of the assessment indicate that there would be no adverse air quality impacts from the operation of pharmaceutical and illicit drug waste processing activity, and the proposed emission concentrations associated with operation of the plant are unlikely to result in any additional exceedances of local air criteria for all pollutants examined.

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1.0 Introduction

1.1 Background

AECOM Australia Pty Ltd (AECOM) was commissioned by Weston Aluminium Pty Ltd (WA) to prepare an Environmental Assessment (EA) to accompany an application under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to modify existing Development Consent DA 86-04-01 and Land and Environment Court (LEC) 10397 of 1995. The modification seeks Development Approval for the commercial-scale processing of pharmaceutical and illicit drug wastes within the existing rotary furnace operation – i.e. up to a combined 40,000 tpa in conjunction with aluminium dross and Spent Potlining (SPL) at WA's Kurri Kurri facility (the Project) to address current thermal destruction services shortfalls faced by the waste management sector.

On 15 September 2015, WA was granted approval for a 24 month trial processing of illicit drug and pharmaceutical waste within existing furnaces. The trial program commenced on 14 October 2015 and is nearing completion. In response to Trial successes and ongoing demand by the waste management sector and the NSW Police, WA is now seeking to modify the existing Development Consents to provide for the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes.

As part of the EA, an Air Quality Impact Assessment (AQIA) is required to assess the potential air quality impacts associated with the proposed modification in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DP&E). The SEARs for the project concerning air quality impacts are discussed in **Section 1.2**.

1.2 SEARs Requirements

The Project SEARs for the modification were issued by the DP&E on 8 March 2017. The SEARs state the requirement for an AQIA "...including a review of the data accumulated during the trial processing of illicit drug and pharmaceutical waste and allowance for the variation in feedstock".

1.3 Purpose of this Report

The Purpose of this Report is to undertake an AQIA for the proposed modification, to assess potential air quality impacts associated with the commercial-scale processing of pharmaceutical and illicit drug wastes at WA for inclusion in the EA. This Report aims to address the SEARs described in **Section 1.2** and has been prepared in accordance with the following guidelines:

- Air quality impact assessment guidelines:
 - *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005); and
 - *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into Approved Methods for Modelling (sic) and Assessments of Air Pollutants in NSW, Australia* (TRC 2011).

1.4 Project Scope

The AQIA includes air dispersion modelling using the Lagrangian puff model CALPUFF to quantitatively assess the potential operational air quality impacts associated with the Project.

In summary, the scope of this Report includes:

- A description of the proposed modification;
- A description of the existing environment, including local meteorology, climatic conditions, terrain, land use and sensitive receptors;
- Preparation of an AQIA including:
 - Identification of relevant ambient air quality criteria;

- Description of methodology used to develop emissions inventory;
- Description of modelling methodology;
- Assessment of potential air quality impacts associated with the Project, including emissions from the Proposed operation thermal waste processing equipment;
- Assessment of cumulative impacts associated with the proposed Kurri Kurri Recycled Battery Facility; and
- Discussion and recommendations.

2.0 Project Description

2.1 Location

The WA facility is located on Lot 796, 129 Mitchell Avenue, within the Kurri Kurri industrial area of NSW. Residences are located approximately 600 metres to the south (Kurri Kurri) and southwest (Weston) of the site.

Dispersion modelling undertaken for the AQIA covered an area of 13 km by 13 km surrounding the WA facility. **Figure 1** shows the location of the study area.

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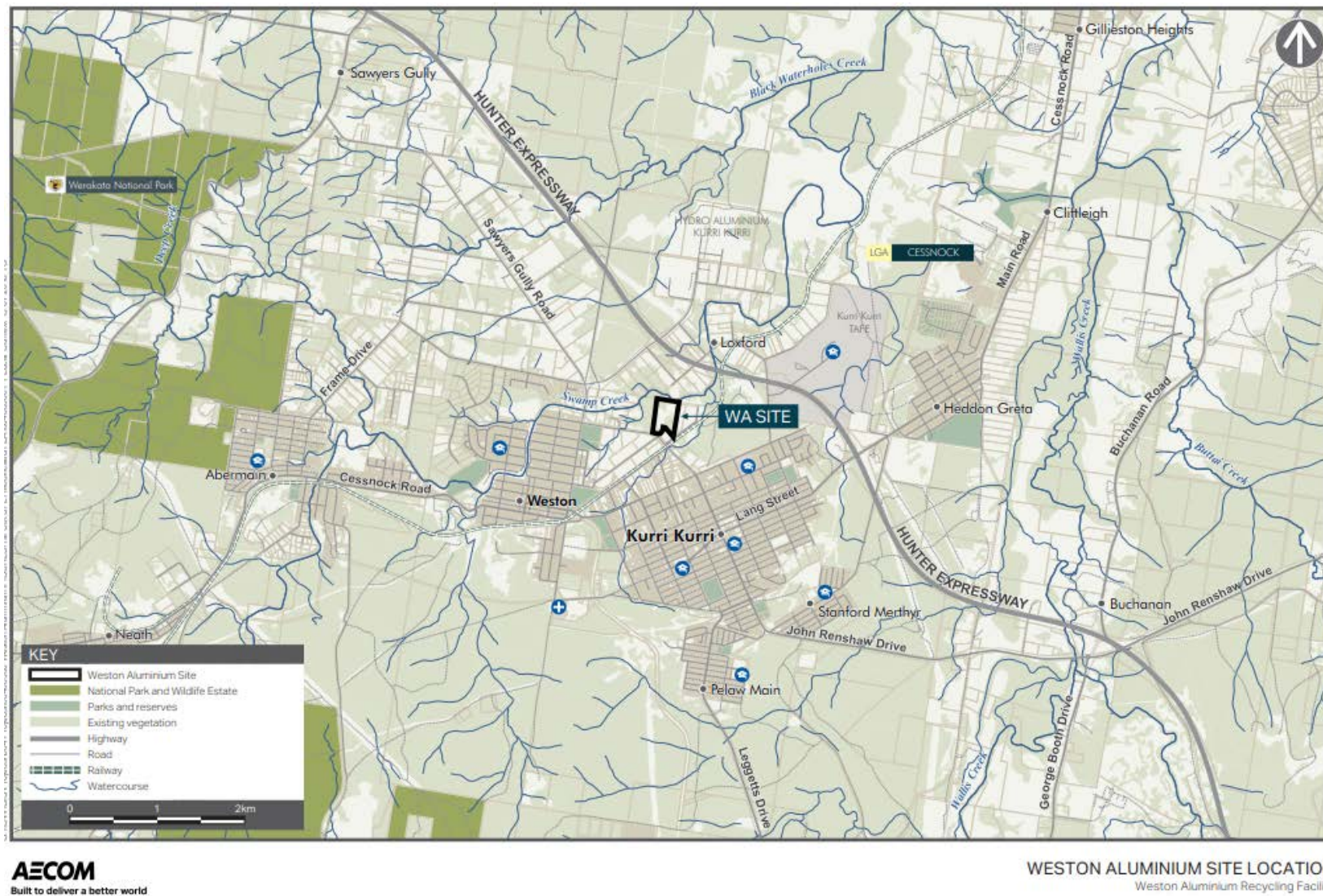


Figure 1 Location of Study Area

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2.2 Existing Operations

The current WA facility recovers aluminium from dross, a by-product of the aluminium smelting process, sourced from aluminium smelters across Australia and New Zealand. The facility also processes SPL wastes, which is a hazardous by-product of primary aluminium production generated from the periodic de-lining of electrolytic cells.

The facility is currently approved to process up to a combined 40,000 tonnes of aluminium dross and SPL, and processing of up to 35,000 tonnes of scrap aluminium metal per annum. The facility also has approval for the processing of up to 200 tonnes of illicit drug waste and up to 1,000 tonnes of pharmaceutical waste over a 24 month trial period, expiring in October 2017.

2.2.1 Pharmaceutical and Illicit Drug Wastes Trial Program

The pharmaceutical and illicit drug wastes trial program commenced in October 2015 and includes processing of up to 200 tonnes of illicit drug wastes and up to 1,000 tonnes of pharmaceutical wastes. Consistent with prior trial activities, the trial program includes a treatment process based on the following elements:

- Input characterisation and segregated storage where required;
- Furnace feedstock formulation;
- Thermal treatment;
- Crushing and blending of minor ash residues with existing ash streams; and
- Dispatch to customers.

The processing of pharmaceutical and illicit drug wastes utilises existing plant and equipment at the WA facility. Existing infrastructure and associated controls are utilised for material containment and compliance with regulatory requirements. No additional plant or equipment was required for the trial.

The 24 month trial program will be completed in October 2017. Preliminary results from monitoring undertaken throughout the trial program indicate that regulatory requirements and environmental compliance obligations were met during the trial period, with no exceedances of existing emission concentration limits. The results indicate that the infrastructure, processes, and control measures at the existing WA facility are suitable for the processing of pharmaceutical and illicit drug wastes.

2.3 Proposed Modification

As a result of the successful trials, WA is seeking Development Consent for the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes at its Kurri Kurri facility. Consistent with in-progress Trial protocols, the Project would use existing technologies and processes including:

- The delivery of pharmaceutical wastes from domestic sources would be undertaken by a licensed transport contractor. Transport routes, material handling and quality control / quality assurance documentation protocols already established and implemented for existing waste movements would be adopted for the transport and handling of these wastes;
- Pharmaceutical waste feedstock deliveries would be stored in existing enclosed and secured storage bays until processing. As illicit drug wastes would be processed immediately upon receipt in the presence of NSW Police - temporary storage of these inputs would not be required;
- Thermal processing of waste blends (small-quantity combinations (typically < 100 kg) with conventional dross, SPL and/or scrap furnace additions) would occur within existing natural gas-fired furnaces under a batch-style process. These furnaces are capable of attaining the required elevated temperatures to efficiently and safely oxidise combustible components;
- Process emissions would be ventilated, controlled and monitored using existing emission controls systems, including extraction hoods, lime scrubber, fabric-filter baghouse complexes, and real-time continuous emissions monitoring systems;

- Processed material would be removed from the furnace and processed in the cooler. Once sufficiently cooled, the ash residue would be stored undercover awaiting laboratory assessment and future beneficiation into end-use products; and
- The storage, handling and dispatch of finished product to customers under existing quality control procedures.

Potential air quality emissions from the proposed pharmaceutical processing operations along with the emissions from the normal processing of dross and SPL would be emitted from Stack 1. The combined processing of both normal dross and SPL, as well as potential pharmaceutical and illicit drug waste processing, may potentially generate the following pollutants:

- | | |
|--|---|
| • Total Suspended Particulates (TSP) | • Lead (Pb) |
| • Particulates $\leq 10\mu\text{m}$ in diameter (PM_{10}) | • Mercury (Hg) |
| • Particulates $\leq 2.5\mu\text{m}$ in diameter ($\text{PM}_{2.5}$) | • Beryllium (Be) |
| • Carbon Monoxide (CO) | • Chromium (Cr) |
| • Sulphur Dioxide (SO_2) | • Cobalt (Co) |
| • Sulphur Trioxide (SO_3) | • Manganese (Mn) |
| • Sulphuric Acid Mist (H_2SO_4) | • Nickel (Ni) |
| • Oxides of Nitrogen (NO_x) | • Selenium (Se) |
| • Hydrogen Chloride (HCl) | • Tin (Sn) |
| • Hydrogen Fluoride (HF) | • Vanadium (V) |
| • Volatile Organic Compounds (VOCs) | • Copper (Cu) |
| • Antimony (Sb) | • Dioxins and Furans |
| • Arsenic (As) | • Polycyclic Aromatic Hydrocarbons (PAHs) |
| • Cadmium (Cd) | • Cyanide (CN^-) |

2.4 Concurrently Proposed Development and Operations

2.4.1 Proposed Weston Aluminium Thermal Waste Treatment Facility

Concurrently to this Application, WA has submitted a State Significant Development (SSD15_7396) Application and associated Environmental Impact Statement (EIS) to the DP&E for the construction and operation of a Medical and Other Waste thermal treatment facility. The EIS was placed on public exhibition between 8 September 2016 and 24 October 2016. WA is currently finalising a response to the submissions received during the public exhibition before assessment and determination of the Project by the DP&E.

The project involves construction and operation of a thermal waste treatment facility for medical and other problem wastes processing up to 8000 tonnes per year. The proposed processing equipment would include:

- Solid waste loader and bin tipper;
- Primary combustion chamber;
- Ash discharge system;
- Secondary combustion chamber;
- Emergency bypass; and
- Waste bin washing machine.

The EIS for the project included an Air Quality Impact Assessment (AECOM 2016) to assess the potential air quality impacts associated with the operation of the thermal waste treatment facility, specifically air emissions from Stack 5. The air quality impact assessment identified the following potential air quality emissions from the proposed operations:

- | | |
|--|----------------|
| • Total Suspended Particulates (TSP) | • Cadmium (Cd) |
| • Particulates $\leq 10\mu\text{m}$ in diameter (PM_{10}) | • Lead (Pb) |
| • Particulates $\leq 2.5\mu\text{m}$ in diameter ($\text{PM}_{2.5}$) | • Mercury (Hg) |

- Carbon Monoxide (CO)
- Sulphur Dioxide (SO₂)
- Sulphur Trioxide (SO₃)
- Sulphuric Acid Mist (H₂SO₄)
- Oxides of Nitrogen (NO_x)
- Hydrogen Chloride (HCl)
- Hydrogen Fluoride (HF)
- Volatile Organic Compounds (VOCs)
- Antimony (Sb)
- Arsenic (As)
- Beryllium (Be)
- Chromium (Cr)
- Cobalt (Co)
- Manganese (Mn)
- Nickel (Ni)
- Selenium (Se)
- Tin (Sn)
- Vanadium (V)
- Copper (Cu)
- Dioxins and Furans

Cumulative air quality impacts from the operation of the thermal waste treatment facility and the Project have been addressed in **Section 5.0** of this report. Stack 5 emissions from the operation of the proposed thermal waste treatment facility have been based on expected, normal operating conditions at the facility's maximum operating capacity and are discussed in **Section 3.2.4**. Further information regarding emissions estimation and incremental impacts associated with the thermal waste treatment facility are discussed in detail in the *Weston Aluminium Thermal Waste Processing Project, Air Quality Assessment* (AECOM 2016).

Emissions from the proposed emergency bypass stack (Stack 8) have been excluded from the AQIA, as this source would only be operational in emergencies (and subsequent plant shutdown), and as such its contribution to local air emissions is limited. Additional information regarding the bypass stack is discussed in the AQIA and Health Risk Assessment reports for the Thermal Waste Processing Project (AECOM 2016). The bypass stack would not be connected to, or utilised by the portion of the plant subject to the pharmaceutical and illicit drug waste modification.

2.4.2 Surrounding Developments

A review of Cessnock City Council and DP&E databases was conducted on 10 May 2017. No nearby developments of significance to this assessment were listed on Cessnock City Councils website. Three projects were listed on the DP&E Major Project website may have a cumulative influence on air quality within the regional air shed.

Kurri Kurri Battery Recycling Facility

Pymore Recyclers International Pty Ltd (Pymore) lodged a Request for SEARs for the proposed development of a battery recycling facility (BRF) with the DP&E in February 2016. SEARs were issued by DP&E on 18 March 2016 and Pymore submitted an EIS to DP&E in November 2016, which included an AQIA. The draft EIS was on exhibition from 17 November to 16 December 2016 and Pymore is currently responding to submissions on the proposed development, before assessment and determination of the proposal by the DP&E.

The BRF would be located at 129 Mitchell Avenue, Kurri Kurri, and would occupy approximately 3.4ha of the lot on which WA is sited. The proposed facility would recycle approximately 60,000 tpa of used-lead-acid batteries (ULABs) using a system that combines hydrometallurgical and pyro metallurgical process for the recovery of lead and associated by-products. ULAB recycling at the facility would be comprised of four main processes: crushing screening and separation; desulphurisation; crystallisation; and lead smelting (EMM, 2016).

The following pollutants were identified and assessed as part of the AQIA for the proposed BRF (Ramboll Environ, 2016):

- Particulates ≤10µm in diameter (PM₁₀)
- Particulates ≤2.5µm in diameter (PM_{2.5})
- Oxides of Nitrogen (NO_x)
- Sulphur Dioxide (SO₂)
- Sulphur Trioxide (SO₃)
- Sulphuric Acid Mist (H₂SO₄)
- Lead (Pb)
- Arsenic (As)
- Dioxins and Furans
- Volatile Organic Compounds (VOCs)

Cumulative impacts of the proposed facility have been assessed in this report using the predicted maximum incremental air quality impacts at sensitive receptors identified in the Ramboll Environ 2016 AQIA, and are addressed in **Section 5.0**.

Hydro Aluminium

Metal and cast house product production at the Hydro Aluminium Kurri Kurri plant ceased in 2012, and the plant was permanently closed in 2014. This closure would have resulted in a reduction in ambient air quality concentrations of some pollutants within the local air shed. SEARs have currently been issued by DP&E for the proposed demolition and remediation of the site including demolition of buildings and structures, soil and ground water remediation and design and construction of a waste management facility. An EIS (Ramboll Environ, 2016) for these works was placed on public exhibition in August 2016, and the proponent is currently in the process of responding to comments received during the exhibition period.

The demolition and construction works would potentially result in temporary air quality impacts to the local area, particularly in relation to particulate matter concentrations. As the demolition and redevelopment activities are expected to be short term with low levels of pollution generated, they have not been included in this assessment.

3.0 Methodology

The following subsections provide a description of the relevant EPA criteria for ambient air quality and stack concentrations and the modelling methodology.

3.1 Air Quality Criteria and Licence Limits

3.1.1 Ambient Air Quality Criteria

As discussed in **Section 2.3**, potentially major contributing air pollutants from the existing and proposed operations may include particulates (TSP, PM₁₀ and PM_{2.5}), CO, SO₂, H₂SO₄, NO₂, HCl, HF, VOCs, PAHs, heavy metals, dioxins and furans and cyanide. **Table 1** summarises the NSW EPA's impact assessment criteria as detailed in the *NSW Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2017) for the pollutants included in the assessment. In general, these criteria relate to the total burden of air pollutants in the airshed and not just the air pollutants from Project-specific sources. Therefore, some consideration of background levels needs to be made when using these criteria to assess impacts. A discussion of background levels in the study area is provided in **Section 4.3**.

No ambient air quality criterion is administered for heavy metals cobalt, selenium, tin and vanadium under the NSW Approved Methods, NEPM or relevant authorities for other Australian states. As such for the purpose of this assessment, 1 hour short term exposure limits listed by the Texas Commission on Environmental Quality (TCEQ) under the *Effects Screening Level (ESL) List* (TCEQ, 2015) used in the review of air permitting data have been adopted for the purpose of this assessment.

Table 1 NSW EPA Air Quality Impact Assessment Criteria

Pollutant	Averaging Period	Criteria (µg/m ³)	Reference
TSP	Annual Average	90	NSW EPA
PM ₁₀	24 Hour Maximum	50	NSW EPA
	Annual Average	25	NSW EPA
PM _{2.5}	24 Hour Maximum	25	NSW EPA
	Annual Average	8	NSW EPA
CO	1 Hour Maximum	30,000	NSW EPA
	8 hour Maximum	10,000	NSW EPA
SO ₂	10 Minute Maximum	712	NSW EPA
	1 Hour Maximum	570	NSW EPA
	24 Hour Maximum	228	NSW EPA
	Annual Average	60	NSW EPA
H ₂ SO ₄	1 Hour (99.9 th Percentile)	18	NSW EPA
NO ₂	1 Hour Maximum	246	NSW EPA
	Annual Average	62	NSW EPA
HCl	1 Hour (99.9 th Percentile)	140	NSW EPA
HF (General land use)	90 days	0.5	NSW EPA
	30 days	0.84	NSW EPA
	7 days	1.7	NSW EPA
	24 hours	2.9	NSW EPA

Pollutant	Averaging Period	Criteria ($\mu\text{g}/\text{m}^3$)	Reference
TVOCs (as benzene) ¹	1 Hour (99.9 th Percentile)	29	NSW EPA
Sb	1 Hour (99.9 th Percentile)	9	NSW EPA
As	1 Hour (99.9 th Percentile)	0.09	NSW EPA
Cd	1 Hour (99.9 th Percentile)	0.018	NSW EPA
Pb	Annual Average	0.5	NSW EPA
Hg (as organic mercury)	1 Hour (99.9 th Percentile)	0.18	NSW EPA
Be	1 Hour (99.9 th Percentile)	0.004	NSW EPA
Cr (as Chromium VI compounds)	1 Hour (99.9 th Percentile)	0.09	NSW EPA
Co	1 Hour maximum	0.2	TCEQ
Mn	1 Hour (99.9 th Percentile)	18	NSW EPA
Ni	1 Hour (99.9 th Percentile)	0.18	NSW EPA
Se	1 Hour maximum	2	TCEQ
Sn (as organic compounds)	1 Hour maximum	1	TCEQ
V	1 Hour maximum	2	TCEQ
Cu (as copper fumes)	1 Hour (99.9 th Percentile)	3.7	NSW EPA
Dioxins and Furans	1 Hour (99.9 th Percentile)	2×10^{-6}	NSW EPA
PAHs (as benzo[α]pyrene)	1 Hour (99.9 th Percentile)	0.4	NSW EPA
Cyanide	1 Hour (99.9 th Percentile)	90	NSW EPA

3.1.2 Environment Protection Licence

3.1.2.1 Stack Concentration Limits

Under the *Protection of the Environment Operations Act 1997 (NSW)* (POEO Act), WA holds an EPL (No. 6423) administered by the NSW EPA. Section 3, Condition 3.3 of the EPL details the stack concentration limits for the existing plant for Point 1, Point 2, Point 3, Point 4, Point 13, Point 14 and Point 15.

Existing EPL stack concentration limits for all stacks, including for Stack 1 (Point 1) associated with the emissions from the thermal treatment of pharmaceutical and illicit drug waste, are presented in **Table 2**. There are no proposed changes to existing EPL limits associated with this Project.

The proposed WA Thermal Waste Processing Project however includes changes to the EPL limits for Point 13 (Stack 5) during the operation of thermal processing equipment. These proposed changes are shown in **Table 3** and discussed in detail in Section 2.1.2 of the *Weston Aluminium Thermal Waste Processing Project, Air Quality Impact Assessment* (AECOM, 2016). Despite these changes, the Project would continue to be assessed against the current stack emissions limits that currently apply to the site.

¹ Under the Approved Methods (DEC 2005) there is no ambient air quality criteria for TVOCs as such the EPA criterion for benzene has been adopted for this assessment.

Table 2 Existing EPL Stack Concentration Limits for All Stacks

EPL Point ID	WA Site ID	TSP (mg/m ³)	NO _x (g/m ³)	H ₂ SO ₄ and SO ₃ (mg/m ³)	CO (ppm)	Gaseous Fluoride (mg/m ³)	HCl (mg/m ³)	Cyanide (mg/m ³)	Type 1 & Type 2 Substances (mg/m ³)
Point 1	Stack 1 Rotary furnace	25	2.5	100	100	2	400	0.5	10
Point 2	Stack 2 Materials Storage	35	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Point 3	Stack 3 MRM-Cooler	20	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Point 4	Stack 4 MRM-Cooler	24	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Point 13	Stack 5 Reverbatory furnace	10	0.1	100	100*	No Limit	10	No Limit	5
Point 14	Stack 6 Gas combustion of reverbatory furnace	10	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Point 15	Stack 7 Pre-processing plant and briquetting plant	15	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
* provided in EPL as 125 mg/m ³ , Dry, 273K, 101.3kPa, as a rolling 1-hour average.									

Table 3 EPL Stack 13 (Stack 5) Existing EPL Stack Concentration limits during Reverb Furnace Operations and Proposed Rotary Furnace Operations

Operations	TSP (mg/m ³)	NOx (mg/m ³)	H ₂ SO ₄ and SO ₃ (mg/m ³)	CO (mg/m ³)	HCl (mg/m ³)	Type 1 & Type 2 Substances (mg/m ³)	VOCs (mg/m ³)	Dioxins and Furans (ng/m ³)
Reverb Furnace	10	100	100	125 ¹	10	5	77 ¹	0.1 ²
Proposed Thermal Waste Processing³	20	200	100	125	30	1	40	0.1
Group 6 General Activities⁴	50	350	100	125	100	1	40	0.1
¹ – Rolling 1 hour average ² – Limit value is a rolling annual average ³ – Stack concentrations limits for the proposed project operating from Stack 5. ⁴ – Taken from the <i>Protection of the Environment Operations (Clean Air) Regulation 2010</i>								

² Limit value is a rolling annual average.

3.2 Method of Impact Assessment

3.2.1 Modelling Scenario

A single modelling scenario, representative of typical operating conditions, was undertaken for this assessment, and is described in **Table 4**.

Table 4 Modelled Scenario

Scenario ID	Scenario Name	Description
1	Normal Operating Conditions	- Proposed pharmaceutical and illicit drug waste processed continuously in conjunction with aluminium dross and SPL within the rotary furnace (per Trial conditions). - Proposed thermal processing plant operating continuously at maximum operational capacity of 800kg/h. - All other existing point sources modelled continuously using average source emission data³

3.2.2 Dispersion Models

This assessment made use of TAPM, the CALMET meteorological processor and the CALPUFF dispersion model. A brief description of each model is provided in **Section 3.2.2.1 to Section 3.2.2.3**. A summary of the data and parameters used for both the meteorological and air dispersion modelling is described in **Table 5**. The model setup is the same as that used for the Thermal Waste treatment AQIA prepared in 2016 which has been subject to recent clarifications to the NSW EPA. Comments and recommendations made in the clarifications to NSW EPA have been incorporated into the methodology of this assessment. Where relevant, reference has been made to clarifications provided to NSW EPA in relation to the methodology.

3.2.2.1 TAPM

The Air Pollution Model (TAPM) is a prognostic meteorological and air pollution model developed by CSIRO. The model can be used to predict three-dimensional meteorology, including terrain-induced circulations and is connected to databases of terrain, vegetation and soil type, leaf area index, sea-surface temperature, and synoptic-scale meteorological analyses for various regions around the world. TAPM was used in this assessment to generate a gridded three dimensional meteorological file for input into the CALMET model.

3.2.2.2 CALMET

CALMET is a meteorological model that develops hourly wind and temperature fields on a three-dimensional gridded modelling domain. Associated two-dimensional fields such as mixing height, surface characteristics and dispersion properties are also included in the file produced by CALMET. CALMET produces a meteorological file that is used within the CALPUFF model to predict the movement of air pollution.

TAPM prognostic three-dimensional meteorological data were used to simulate the three-dimensional complex meteorological patterns that exist within the modelling domain, accounting for the effects of local topography and changes in land surface characteristics. Gridded three-dimensional TAPM data were input into the CALMET model to generate the initial guess wind field⁴ in CALMET and to generate the final three-dimensional wind fields for use in CALPUFF. The dispersion modelling was undertaken using one year of meteorological data (January 2014 – December 2014; also refer **Section 3.2.3.1**).

³ For the purpose of this assessment, all other stacks are assumed to be operating continuously. This is a conservative estimate and typical stack operations are outlined in AECOM's accepted response to EPA submission documentation provided on the AECOM 2016 AQIA for the thermal waste treatment plant.

⁴ CALMET uses a two-step procedure in developing final wind fields. The "initial guess" wind field is developed based on a domain-average wind profile, and this domain-average profile of winds is adjusted for terrain effects and divergence minimisation to produce a 'Step 1' wind field. The second step in the processing of the wind field is the introduction of observational data into the terrain adjusted Step 1 field.

3.2.2.3 CALPUFF

CALPUFF is a non-steady-state, three-dimensional Gaussian puff model developed for the US Environmental Protection Agency (USEPA) for use in situations where basic Gaussian plume models are not effective. These situations include areas where stagnation conditions occur, which are characterised by calm or very low wind speeds with variable wind direction. The CALPUFF modelling system (and associated CALMET program) has the ability to model spatially varying winds and turbulence fields that are important in complex terrain, long range transport and near calm conditions. As such, CALPUFF was selected as the appropriate dispersion model for this assessment.

A summary of the data and parameters used for both the meteorological and air dispersion modelling is described in **Table 5** while additional information regarding meteorology, local terrain and land use, building wake effects and air emissions are described in **Section 3.2.3.1**, **Section 3.2.3.2**, **Section 3.2.3.3** and **Section 3.2.4** respectively.

The CALPUFF suite of programs, including meteorological (CALMET), dispersion (CALPUFF) and post processing modules (CALPOST), is an advanced non-steady state modelling system designed for meteorological and air quality modelling. CALPUFF is approved for use in NSW by the EPA, particularly in applications involving complex terrain, non-steady-state conditions, in areas where coastal effects may occur, and/ or when there are high frequencies of stable or calm meteorological conditions. CALPUFF was selected for use in this assessment based on the modelling system's ability to model low wind speeds and calm hours by simulating stagnant puffs and puff transport caused by divergence or slope flow.

3.2.3 Model Input Parameters

A summary of the data and parameters used as inputs to TAPM, CALMET and CALPUFF is provided in **Table 5**.

Table 5 Summary of Model Input Parameters

Parameter	Input
TAPM	
TAPM Version	v4.04
Number of grids (spacing)	4 (30 km, 10 km, 3 km, 1km)
Number of grid points	40 x 40 x 30
Simulation period	2014
Terrain information	AUSLIG 9 second (horizontal resolution 9")
Centre of analysis	32°81 S, 151°46 E
Local data assimilation	None
Mode	Meteorology mode only
CALMET (v6.42)	
Meteorological grid domain	37.5 km x 37.5 km
Meteorological grid resolution	250 metre resolution (150 x 150 grid cells)
Reference grid coordinate of SW corner	338600 E, 6350552 S
Cell face heights in vertical grid	0, 20, 50, 100, 150, 300, 600, 1000, 1500 and 3000 m
Simulation length	1 year (2014)
Surface meteorological stations	N/A
Upper air meteorological station	The threex10-dimensional gridded prognostic data from TAPM (M3d) were used as the initial guess wind-field for CALMET.
Terrain data	Terrain elevations were extracted from the NASA Shuttle Radar Topography Mission data set (SRTM 90 metre, 3-arc sec).
CALPUFF (v7.02)	
Modelling domain	Computation grid: 23 km x 23 km Sampling Grid: 13 km x 13 km <i>MGA SW Coordinates (km):</i> 347.100 E, 6357.800 S <i>MGA NE Coordinates (km):</i> 360.100 E, 6270.800 S Nested Grid: 1.5 km x 1.5 km <i>MGA SW Coordinates (km):</i> 356.500 E, 6268.550 S <i>MGA NE Coordinates (km):</i> 338.000 E, 6270.050 S
Modelling grid resolution	Sampling grid resolution of 250m. Nesting grid resolution of 50m.
Number of sensitive receptors	184 Discrete receptors and 12 boundary receptors
Dispersion algorithm	PG coeff. (Rural, ISC curves) and MP coeff. (Urban)
Meteorological modelling period	1 January 2014 – 31 December 2014

3.2.3.1 Dispersion Meteorology

Meteorology in the area surrounding WA is affected by several factors, such as terrain and land use. Wind speed and direction are largely affected by topography at a small scale, while factors such as

synoptic scale winds and complex valley drainage flows that develop during night hours, affect wind speed and direction on the larger scale.

The CALMET meteorological model uses actual or prognostic meteorological observations to generate three-dimensional wind fields on an hourly time step at a grid of points covering the area under investigation. Topographical features and land use factors are then used to further refine the wind fields, which are subsequently used in the CALPUFF dispersion model.

Meteorological data for the period January – December 2014 were used in this assessment. Prognostic meteorological data were generated using TAPM for surface and upper air conditions for a grid roughly centred on the WA facility. The TAPM output (processed using CALTAPM) was then used as input into the CALMET meteorological module to compute the wind fields used by CALPUFF. Analyses of the meteorological data used in the modelling are provided in **Appendix A**.

It should be noted that the meteorology used for this assessment is the same meteorology used for the assessment of the Thermal Waste treatment facility. The same meteorology was used to ensure consistency between the two assessments under consideration. In addition, the same meteorology was also used in the air quality assessment of the recently approved Modification to remove restrictions on processing SPL (DA86-04-01 Mod 10).

3.2.3.2 Dispersion modelling Terrain Data

Digital terrain data used to generate the upper air prognostic meteorological data were obtained from the TAPM 9 second DEM database covering the meteorological domain. For the CALMET model, the geophysical processor was used to convert land use and terrain data from WebGIS (SRTM3 for terrain at approximately a 90 metre resolution) and GLCC Australia Pacific (approximate 1 kilometre resolution).

3.2.3.3 Building Wake Effects

The dispersion of pollutants around WA is likely to be affected by aerodynamic wakes generated by winds having to flow around the production and storage buildings. Building wakes generally decrease the distance downwind at which the plume comes into contact with the ground. This may result in higher ground level pollutant concentrations closer to the emission source. The Building Profile Input Program (BPIP) was used to assess building wake effects from the Plant and ALDEX buildings on site.

3.2.4 Emissions Estimation

Stack parameters for each of the seven modelled point sources are presented in **Table 6** and modelled emission rates for the modelling scenario described in **Section 3.2.1** are presented in **Table 8**.

Stack temperature and velocity data for Stack 1 have been derived from monitoring performed during four trial pharmaceutical and illicit drug waste processing events between December 2015 and September 2016 (AECOM 2015c, AECOM 2016a, AECOM 2016b and AECOM 2016c). Stack temperature and velocity data for Stack 5 (Thermal Waste processing operations) shown in **Table 6** have been based on existing stack data and design parameters provided by Advanced Combustion Engineering Pty Ltd. For all other stacks, temperature and velocity data have been obtained from monitoring performed between 2013 and 2015 (AECOM 2013, AECOM 2014 and AECOM 2015a).

Table 6 Stack Parameters for Weston Aluminium

Stack ID	Diameter (m)	Velocity (m/s)	Temp (K)	Height AGL (m)	MGA 56 Coordinates (m)	
					X	Y
Stack 1	1.65	15.4	349.5	15	357265	6369322
Stack 2	1.265	12.0	302.4	15	357310	6369262
Stack 3	1.0	12.6	305.2	15	357310	6369272
Stack 4	1.395	17.0	312.4	15	357314	6369296
Stack 5	1.49	14.7	423.2	30	357347	6369347
Stack 6	0.58	18.4	557.6	18	357302	6369325
Stack 7	1.5	8.8	301.4	15	357325	6369226

A conservative estimate of emission rates presented in **Table 8** has been assumed for the modelled scenario whereby all plant operations, including proposed operations, would be operating continuously 24 hours a day seven days per week. The methodology outlined in **Table 7** was used to estimate emission rates from each source.

Table 7 Emission Estimate Methodology

Stack	Methodology
Stack 1	Emission rates were based on the average stack emission data collected during the trial monitoring events conducted between December 2015 and September 2016 (AECOM 2015c, AECOM 2016a, AECOM 2016b and AECOM 2016c). The trial processing events involved co processing of pharmaceutical and illicit drug waste with dross and SPL in the rotary furnace. The maximum measured concentration for each pollutant was used for the assessment to add a level of conservatism to the emission estimates.
Stack 5	For consistency, emission rates adopted in the <i>Weston Aluminium Thermal Waste Processing Project, Air Quality Assessment</i> (AECOM, 2016) were used in this assessment. Emission estimates were: - Largely derived from the <i>AP 42 Compilation of Air pollutant Emission Factors</i> (US EPA 1995) emission factors for thermal processing medical waste. - Where possible emission factors for rotary kiln waste thermal waste processors were used and where available, emission factors for pollutants where lime/carbon injection and fabric filters were also adopted; and - Particulate emissions for PM₁₀ and PM_{2.5} were calculated from TSP using particulate size distribution ratios for controlled air thermal waste processors. - Calculated from AP-42 (US EPA 1995) emission factors using the maximum operating capacity for the thermal processing plant of 800kg/h; - Calculated from AP-42 emission factors. Suitable publically available emission data were not available for dioxins and furans and selected heavy metals (Co, Se, Sn and V). Emissions data were estimated as follows: - An emission concentration for dioxins and furans was estimated based on a stack concentration of 10 percent of the maximum stack concentration for dioxins and furans under the Group 6 standards of concentration listed under Schedule 4 of the POEO (Clear Air) Regulation 2010⁵; and - While information gaps exist for heavy metals Co, Se, Sn and V under the normal operating scenario, these are covered by the emission limit scenario

⁵ Publically available stack emission data from other similar sources was limited to the Daniels Health Pty Ltd (formerly SteriHealth Pty Ltd) plant located in Silverwater, NSW. The Daniels Health plant would likely have higher emissions (SteriHealth 2015) than the proposed WA Plant attributed to both the size of the plant and control measures employed, which is limited to a wet scrubber installed in 1994 (DoE 2015).

Stack	Methodology
	(Scenario 2). Predicted impacts in Scenario 2 would be considered worst case impacts and predicted ground level concentrations during operation of the plant at maximum capacity are likely to be less than the proposed limit. Detailed information on emissions estimation for this source is outlined in AECOM 2016 AQIA and responses to EPA submission documentation.
All other stacks	Stack emissions for all other stacks have been based on average stack emission data collected between 2013 and 2015 at the WA Facility (AECOM 2013, AECOM 2014 and AECOM 2015a). This is consistent with the emission rates adopted in the <i>Weston Aluminium Thermal Waste Processing Project, Air Quality Assessment</i> (AECOM 2016). Emission estimates were: Gaseous fluoride, emissions from stacks have been determined from total fluoride concentrations based on previous testing undertaken in January to March 2012 to determine the ratio of particulate to gaseous fluoride at WA. Average stack pollutant concentrations were used for the estimate of normal operations rather than using the EPL limits. Assuming average emissions at all times is considered a more realistic estimate of the background than assuming the emissions at their EPL limits.

Table 8 Pollutant Emission Rates for Weston Aluminium

Pollutant (g/s)	Stack 1	Stack 2	Stack 3	Stack 4	Stack 5	Stack 6	Stack 7
TSP	0.1271	0.0054	0.0064	0.0331	0.0084	0.0139	0.1023
PM ₁₀	0.0519	0.0029	0.0037	0.0146	0.0060	0.0010	0.0644
PM _{2.5}					0.0008		
CO	2.2665				0.0056	0.0018	
SO ₂	0.1245				0.0333	0.0421	0.1967
H ₂ SO ₄	0.1102				0.3311	0.0025	0.0393
NO _x	0.3112				0.5444	0.1020	0.0718
HCl	0.1206				0.0398		
HF	0.0036	0.0066	0.0028	0.0135	0.0033	0.0083	0.0062
VOCs	0.135					0.0002	0.0718
Sb	0.0000022				0.000016		
As	0.0000022				0.0000016		
Cd	0.00013				0.0000027		
Pb	0.000034				0.0000082		
Hg	0.0000048				0.00087		
Be	0.0000022				0.00000065		
Cr	0.00021				0.0000086		
Co	0.0000022						
Mn	0.00015				0.00014		
Ni	0.0001				0.000004		
Se	0.000012						
Sn	0.000039						
V	0.000006						
Cu	0.000087				0.000046		
Dioxins and Furans	7.00 x10 ⁻¹⁴				2.1x10 ⁻¹⁰		
PAHs	0.0075						
CN ⁻	0.0091						

3.2.5 Limitations

The atmosphere is a complex, physical system, and the movement of air in a given location is dependent on a number of different variables, including temperature, topography and land use, as well as larger-scale synoptic processes. Dispersion modelling is a method of simulating the movement of air pollutants in the atmosphere using mathematical equations. The model equations necessarily involve some level of simplification of these very complex processes based on our understanding of the processes involved and their interactions, available input data, and processing time and data storage limitations.

These simplifications come at the expense of accuracy, which particularly affects model predictions during certain meteorological conditions and source emission types. For example, the prediction of pollutant dispersion under low wind speed conditions (typically defined as those wind speeds less than 1 m/s) or for low-level, non-buoyant sources, is problematic for most dispersion models. To accommodate these known deficiencies, the model outputs tend to provide conservative estimates of pollutant concentrations at particular locations.

While the models contain a large number of variables that can be modified to increase the accuracy of the predictions under any given circumstances, the constraints of model use in a commercial setting, as well as the lack of data against which to compare the results in most instances, typically precludes extensive testing of the impacts of modification of these variables. With this in mind, model developers typically specify a range of default values for model variables that are applicable under most modelling circumstances. These default values are recommended for use unless there is sufficient evidence to support their modification.

As a result, the findings of dispersion modelling provide an indication of the likely level of pollutants within the modelling domain. While the models, when used appropriately and with high quality input data, can provide very good indications of the scale of pollutant concentrations and the likely locations of the maximum concentrations occurring, their outputs should not be considered to be representative of exact pollutant concentrations at any given location or point in time. As stated above, however, the model predictions are typically conservative, and tend to over predict maximum pollutant concentrations at receiver locations.

This assessment was undertaken with the data available at the time of the assessment. Should changes to the Project be made, further assessment may be required to determine if the findings of this assessment are still applicable.

4.0 Existing Environment

4.1 Dispersion Meteorology

4.1.1 Wind Speed and Direction

Meteorology in the area surrounding the WA Facility is affected by several factors such as terrain and land use. Wind speed and direction are largely affected by topography at the small scale, while factors such as synoptic scale winds affect wind speed and direction on the larger scale. Wind speed and direction are important variables in assessing potential air quality impacts, as they dictate the direction and distance air pollutant plumes travel. The CALMET meteorological model has been used to generate meteorological data for the WA Facility for the year 2014. Prognostic meteorological data for the site and surrounding area were generated using TAPM for surface and upper air conditions for a grid roughly centred on the WA facility. This methodology is further detailed in **Section 3.2.3.1**.

A wind speed frequency distribution table for the 2014 CALMET data is presented in **Table 9**, while annual and seasonal wind roses are presented in **Figure 2**. It can be seen from **Table 9** and **Figure 2** that on an annual basis the dominant wind direction is from the south west, occurring for 12 percent of the time, with winds also frequenting from the east and west northwest. The annual average wind speed was found to be 2.35 metres per second (m/s) a light to moderate wind speed. Calms (<0.5m/s) were found to occur for just over two percent of the year.

Seasonally, the highest average wind speed during 2014 was observed during the winter months (2.55 m/s) and the lowest average wind speed occurring in autumn (1.91 m/s). The occurrence of easterly winds is frequent from spring through to autumn, while south westerlies are common from autumn through to spring. During the winter months there is also a predominance of west north-westerly winds. A comparison of the CALMET 2014 meteorological data with data collected from the Hydro Aluminium meteorological station for January to September 2014 (the available data from Hydro Aluminium) is presented in **Appendix B**.

The meteorological data set has been chosen for consistency with the AECOM 2016 AQIA for the proposed thermal waste treatment facility at WA. Additional data validation is discussed as part of AECOM's approved responses to EPA's submission documentation associated with the 2016 report.

Table 9 Wind Speed Frequency Distribution of CALMET 2014 data (%)

Wind Direction	Wind Speed Class (m/s)						Total
	0.5-2.1	2.1-3.6	3.6-5.7	5.7-8.8	8.8-11.1	≥11.1	
N	3.58	0.39	0.14	0.00	0.00	0.00	4.11
NNE	1.96	0.34	0.14	0.00	0.00	0.00	2.44
NE	2.35	0.92	0.65	0.00	0.00	0.00	3.91
ENE	3.71	2.03	1.45	0.10	0.00	0.00	7.29
E	5.19	3.64	1.45	0.05	0.00	0.00	10.33
ESE	3.47	3.07	1.00	0.02	0.00	0.00	7.55
SE	2.90	2.69	1.42	0.15	0.00	0.00	7.15
SSE	2.94	2.29	1.12	0.08	0.00	0.00	6.43
S	1.36	1.74	1.25	0.05	0.00	0.00	4.40
SSW	3.11	1.29	0.60	0.10	0.00	0.00	5.11
SW	8.85	2.16	0.78	0.14	0.00	0.00	11.93
WSW	2.11	1.85	0.85	0.17	0.02	0.00	5.00
W	1.60	1.50	0.78	0.40	0.05	0.00	4.33
WNW	1.82	3.85	2.42	0.84	0.07	0.00	8.99
NW	2.85	1.66	1.75	0.48	0.00	0.00	6.74
NNW	1.39	0.45	0.26	0.02	0.00	0.00	2.12
Sub-Total	49.18	29.86	16.05	2.60	0.14	0.00	97.83
Annual (Jan to Dec, 2014). Total periods = 8,736; Valid periods = 8,735; Calm wind periods = 189; Calm winds: 2.16 %							

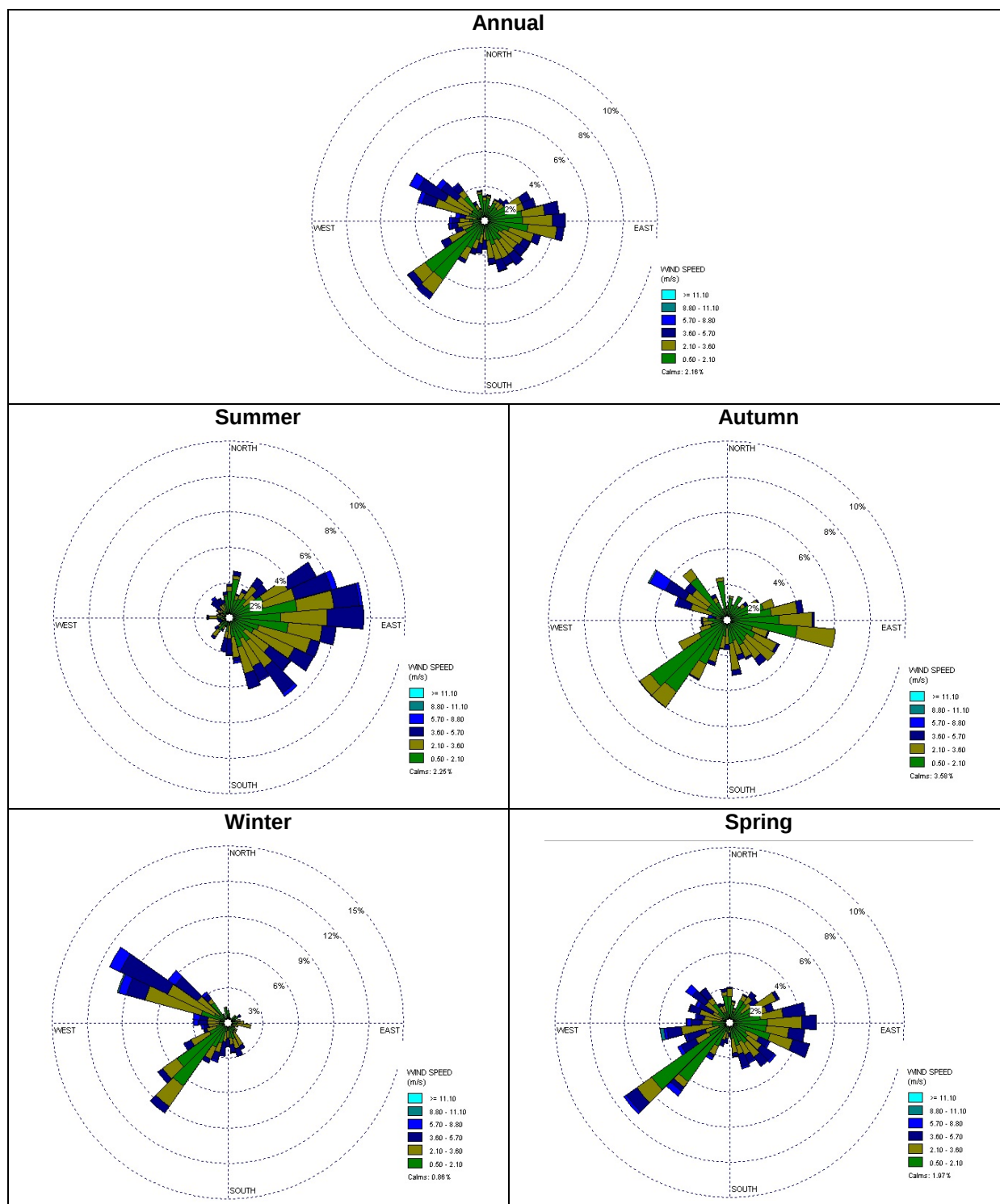


Figure 2 Annual and Seasonal Wind Roses at Weston Aluminium, Kurri Kurri. Generated by CALMET 2014

4.1.2 Atmospheric Stability

In dispersion modelling, atmospheric stability describes the rate at which a plume will disperse, represented by typically six classes; A to F (that is, unstable through to very stable conditions). For the WA site, stability class was calculated by CALMET for each hour in the 2014 calendar year. **Table 10** shows the frequency of occurrence of the stability categories expected in the area.

Table 10 Frequency of Occurrence of Stability Categories at Kurri Kurri (2014)

Stability Class	Frequency of Occurrence (%)
A	3
B	16
C	19
D	13
E	5
F	44
Total	100

The most common stability class was determined to be F class. This suggests that the dispersion conditions are such that air emissions will disperse slowly for a significant proportion of the time.

4.2 Local Climate

The BoM meteorological station located at Cessnock Airport (Station Number 061260) approximately 12.5 km west of the site records climate data for a range of meteorological parameters including temperature, humidity, rainfall, wind speed and wind direction. A summary of the long-term data recorded at this station between 1968 and 2017 is shown in **Table 11**. The data provides an indication of the regional climate of the area.

Table 11 Climate Summary, BOM Monitoring Station at Cessnock Airport, 1968 to 2017 (BoM 2017)

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean maximum temperature (°C)	30.1	29.2	27.3	24.2	20.7	17.8	17.3	19.4	22.5	25.3	26.9	28.9	24.1
Mean minimum temperature (°C)	6.9	16.9	14.7	10.5	7.5	5.8	4.1	4.5	7	9.7	13	15	10.5
Mean rainfall (mm)	81	98	73	58	42	59	29	35	45	51	74	80	743
Decile 5 (median) rainfall (mm)	63	93	60	45	40	36	21	27	33	44	63	75	750
Mean number of days of rain $\geq$ 1 mm	6	8	7	6	5	5	4	5	6	6	7	7	73
Mean 9am temperature (°C)	23.2	22.2	20.2	17.8	14.1	11	10.1	12.2	16.2	19.1	20.2	22.2	17.4
Mean 9am relative humidity (%)	68	76	80	76	79	80	76	69	63	60	65	65	71
Mean 9am wind speed (km/h)	11.5	10.2	8.7	10.1	10.4	11.5	11.5	13	14	13.7	12.7	11.8	11.6
Mean 3pm temperature (°C)	28.7	27.3	25.7	23	19.6	16.8	16.4	18.6	21.2	23.4	25	27.3	22.8
Mean 3pm relative humidity (%)	46	53	53	52	54	55	49	42	42	44	47	46	49
Mean 3pm wind speed (km/h)	18.5	17.3	15.7	14.6	14.2	15.1	15.3	17.3	19.1	18.7	18.6	18.3	16.9

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Station Number: 061260, Latitude: 32.79 °S, Longitude: 151.34 °E, Elevation: 61 m, Latest available data: 4 May 2017													

As shown in **Table 11**, the study area experiences a warm to moderate climate. The warmest temperatures occur during the summer months, with the highest average maximum temperature (30.1°C) occurring in January. July is the coldest month, with a recorded average minimum temperature of 4.1°C.

The annual average rainfall for the area is 743 millimetres (mm) over 73 days a year. February is the wettest month, with an average rainfall of 98 mm, while July is the driest month with an average rainfall of just 29mm. Humidity follows a diurnal cycle, with higher humidity in the morning compared to the afternoon.

Daytime wind speeds were found to be moderate, with higher wind speeds occurring in the afternoon compared to the morning. The annual average 9am wind speed recorded is 11.6 kilometres per hour (km/h) and the annual average 3pm wind speed was 16.9 km/h. Seasonally, wind speeds are higher during the warmer months with the highest average wind speed occurring in September at 19.1 km/h.

4.3 Existing Air Quality

The EPA operates a number of air quality monitoring stations in the Lower Hunter. The closest monitoring station site to the proposed development is located at Beresfield (17km east of the site). This station records hourly PM₁₀ and PM_{2.5} concentrations using a Tapered Element Oscillating Microbalance (TEOM), as well as NO₂ and SO₂. Ambient air quality monitoring data for 2014 at Beresfield is presented in **Table 12** as sourced from the Office of Environment and Heritage (OEH) website⁶. All other pollutants assessed in the AQIA are not measured and as such no background data is available for use in the cumulative assessment. Notable nearby emission sources, however, have been included in the assessment.

To ensure the background data from Beresfield was contemporaneous with the meteorology used in the modelling, the Beresfield data for 2014 was used for this assessment.

The maximum PM₁₀ 24-hour concentration measured at Beresfield in 2014 was 45.4µg/m³ which is approximately 90 percent of the EPA 24 hour maximum criterion of 50µg/m³ (DEC 2005). The annual average PM₁₀ concentration recorded at 19.3µg/m³ for 2014 was also under the EPA annual average criterion of 25µg/m³ (NSW EPA, 2017).

The maximum PM_{2.5} 24-hour concentration measured at Beresfield in 2014 (19.0µg/m³) was below the EPA standard of 25µg/m³. The PM_{2.5} annual average recorded for 2014 was found to be slightly below the EPA annual average criterion of 8µg/m³ with a concentration of 7.5 µg/m³ recorded for the reporting year.

In 2014, the maximum 1 hour NO₂ concentration was 73.3µg/m³ - approximately 30 percent of the EPA criterion. The annual average NO₂ concentration was also well below the criterion recorded at 16.9 µg/m³. Similarly recorded background concentrations for SO₂ for all averaging periods were well below the relevant criteria.

Ground level concentrations for CO are not recorded at the Beresfield EPA monitoring station, however 8-hour averages for CO are recorded at the EPA monitoring station in the more populated area of Newcastle, located approximately 31km southeast of the site. The maximum 8-hour average for CO recorded at Newcastle for 2014 was found to be 3,000µg/m³ which is just under a third of the EPA criterion of 10,000µg/m³.

No measurements of local TSP ambient air quality concentrations were available. In the absence of existing annual TSP concentration data, the annual PM₁₀ concentration can be assumed to be 40% of the annual TSP concentration. This is a conservative approach as reported by the NSW Minerals Council (2000) for the measurement of PM₁₀ in TSP in the Hunter Valley and is considered to be

⁶ <http://www.environment.nsw.gov.au/AQMS/search.htm> accessed May 2016

applicable in Kurri Kurri. This equates to an annual average TSP concentration of $48.3\mu\text{g}/\text{m}^3$, which is below the NSW EPA criterion of $90\mu\text{g}/\text{m}^3$.

OEH does not currently undertake ambient air quality monitoring for air toxics (such as HCl, H_2SO_4 etc.). Previous ambient air quality monitoring for air toxics undertaken between 1996 and 2001 indicated low levels of pollutants within the Greater Metropolitan Region (GMR) and as such background concentrations of air toxics are not considered to be a primary issue of concern.

A summary of the background pollutant concentrations used in the assessment have been listed in **Table 12**.

Table 12 Ambient Air Monitoring in Beresfield, NSW for 2014

Pollutant	Averaging Period	Concentration ($\mu\text{g}/\text{m}^3$)	EPA Criteria ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24 Hour Maximum	45.4	50
	Annual Average	19.3	30
PM _{2.5}	24 Hour Maximum	19.0	25
	Annual Average	7.5	8*
NO ₂	1 Hour Maximum	73.3	246
	Annual Average	16.9	62
SO ₂	1 Hour Maximum	81.2	570
	24 Hour Maximum	18.3	228
	Annual Average	2.6	60
* NEPM Standard			

Table 13 presents ambient hydrogen fluoride ground level concentrations within the study area recorded between the cessation of Hydro Aluminium smelter operation in October 2012 and 2014. Since the shutdown of Hydro Aluminium, the highest HF concentrations have been recorded at McLeod Road. The McLeod Road station is located in proximity to the WA site, and Hydro Aluminium staff indicated that the concentrations recorded at this station were influenced by WA's emissions. As such, if ambient data from this station were used in the cumulative HF concentration calculations, the contribution from WA would likely be substantially overestimated due to the potential double counting of emissions from WA being counted as background concentrations. To avoid that overconservative situation, the ambient data used to calculate the total cumulative HF concentrations at receptors were the highest measured HF concentrations at any monitoring station other than McLeod Road.

Table 13 Maximum Ambient Fluoride Concentrations; October 2012 – 2014 (Hydro Aluminium)

Site	7 days ($\mu\text{g}/\text{m}^3$)	30 days ($\mu\text{g}/\text{m}^3$)	90 days ($\mu\text{g}/\text{m}^3$)
Yawarra	0.20	0.16	0.11
Heddon Greta	0.16	0.12	0.11
Lot 103	0.16	0.11	0.08
Wangara	0.13	0.09	0.07
Bish Bridge	0.13	0.10	0.07
Kurri Kurri	0.13	0.10	0.08
Wandin Valley	0.13	0.09	0.06
Janannie	0.14	0.10	0.08
Allandale	0.14	0.08	0.06
Hope Estate	0.13	0.09	0.07
McWilliams	0.09	0.07	0.05
Wyndham Estate	0.12	0.09	0.07
Maximum	0.20	0.16	0.11
General land use criteria	1.7	0.84	0.5

4.4 Terrain and Land Use

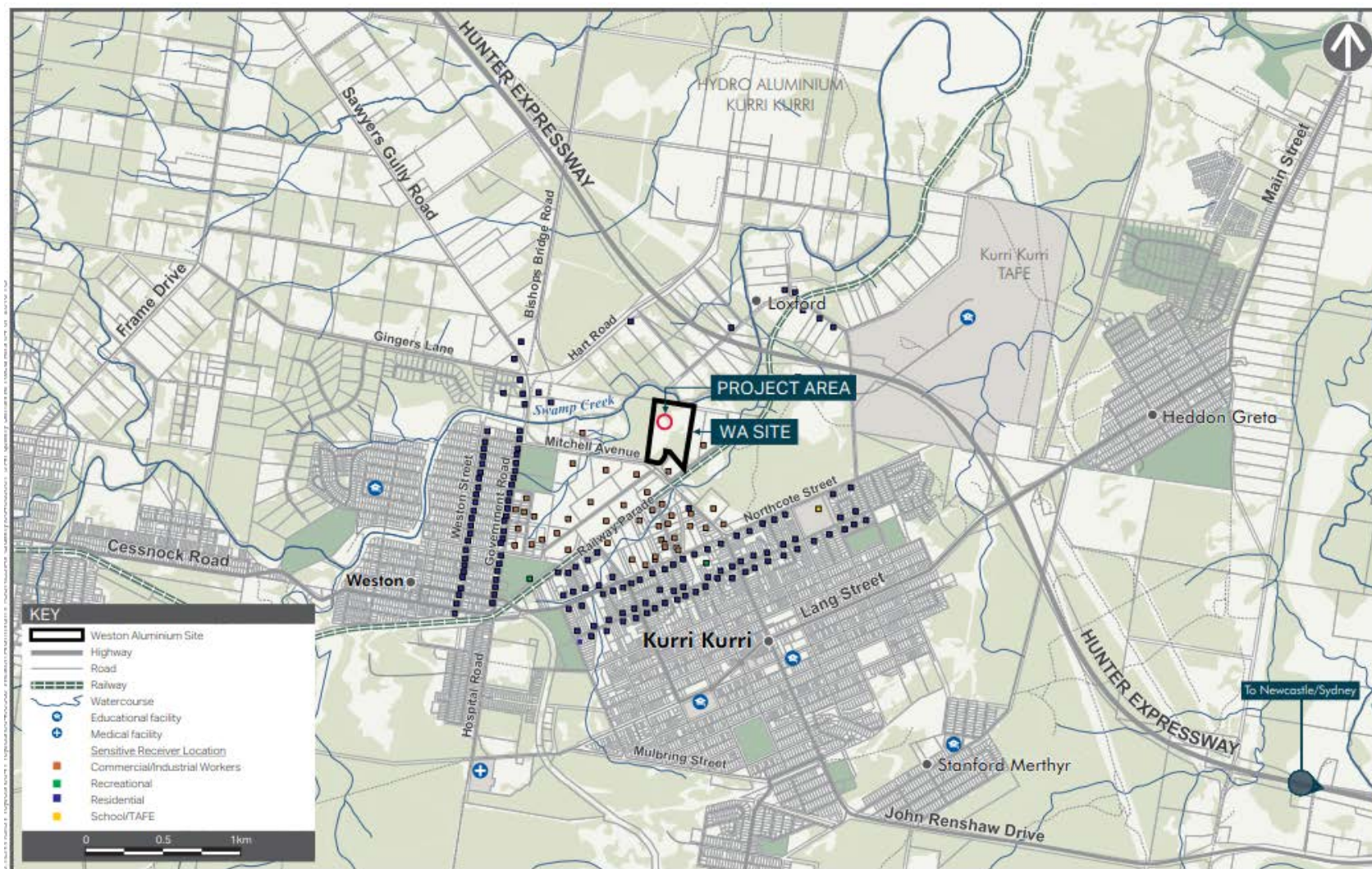
4.4.1 Terrain

The WA site lies approximately 17m above Mean Sea Level (MSL) and the immediate terrain surrounding the area is relatively flat. In the wider context, the study area lies approximately 30km to the northwest of the East Australian coastline and terrain height within the study area range from between 0 and 520 metres with higher elevations to the southwest.

4.4.2 Land Use and Sensitive Receptors

The WA facility is located within the Kurri Kurri industrial area of NSW. Land use surrounding the WA facility is largely comprised of small to medium industrial premises (predominantly to the south of the site) and native vegetation. Residences are located approximately 600 metres to the south (Kurri Kurri) and west (Weston) of the site. A total of 184 sensitive receptors were included in the dispersion modelling and their location is shown in **Figure 3**. A description and coordinates for all sensitive receptors are tabulated in **Appendix B**.

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LOCATION OF AIR QUALITY SENSITIVE RECEIVERS

Figure 3 Location of Sensitive Receptors

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5.0 Impact Assessment

The following provides a Level 2 quantitative air quality impact assessment of the proposed pharmaceutical and illicit drug waste processing under normal operating conditions. The assessment also included the cumulative impacts associated with the predicted impacts from the proposed thermal waste processing plant (AECOM, 2016) and the proposed BRF.

Results from the dispersion modelling are presented in **Table 14** for particulates, CO, SO₂, NO₂, HF and Pb, and in **Table 15** for air toxics. Values presented in **Table 14** are reported maximum ground-level concentrations reported at sensitive receptor locations (refer to **Figure 3**) in accordance with the Approved Methods (DEC 2005).

Maximum predicted incremental concentrations from the WA facility include both the operation of the proposed processing of pharmaceutical and illicit drug wastes and operation of the proposed thermal waste treatment facility at maximum capacity. These values have then been added to the predicted incremental impacts of the proposed BRF Facility⁷ (Ramboll Environ) and the existing background concentration to determine the cumulative impacts.

Table 14 Modelling Results for Predicted TSP, PM₁₀, PM_{2.5}, CO, SO₂, NO₂, HF and Pb Ground Level Concentrations

Pollutant	Averaging Period	Concentration (µg/m³)				Criteria (µg/m³)
		WA Incremental Impact	Cumulative Assessment			
			BRF Max Incremental Impact	Background	Cumulative	
TSP	Annual Average	0.2	No Data	48.3	48.5	90
PM ₁₀	24 Hour Maximum	1.2	2.1	45.4	48.7	50
	Annual Average	0.1	0.5	19.3	19.9	25
PM _{2.5}	24 Hour Maximum	0.00193	1.5	19.0	20.5	25
	Annual Average	0.00017	0.3	7.5	7.8	8
CO	1 Hour Maximum	54	No Data	-	-	30,000
	8 hour Maximum	34	No Data	3000	3034	10,000
SO ₂	10 Minute Maximum ¹	46.6	318.0	116.2	480.9	712
	1 Hour Maximum	32.6	222.3	81.2	336.1	570
	24 Hour Maximum	3.2	72.1	18.3	93.6	228
	Annual Average	0.2	14.5	2.6	17.3	60
NO ₂ ²	1 Hour Maximum	21.9	168.5	73.3	263.7	246
	Annual Average	0.3	14.6	16.9	31.8	62

⁷ Cumulative impacts were calculated using the highest predicted maximum concentration for the proposed BRF at nearby sensitive receivers for each pollutant.

Pollutant	Averaging Period	Concentration (µg/m³)				Criteria (µg/m³)
		WA Incremental Impact	Cumulative Assessment			
			BRF Max Incremental Impact	Background	Cumulative	
HF	90 days	0.07	No Data	0.11	0.18	0.5
	30 days	0.12	No Data	0.16	0.28	0.84
	7 days	0.22	No Data	0.20	0.42	1.7
	24 hours	0.44	No Data	-	-	2.9
Pb	Annual Average	1.43 x10 ⁻⁵	0.1	-	0.1	0.5

¹ The SO₂ 10 minute predicted ground level impacts (including background value) have been calculated from the 1-hour predictions using the power law equation provided in the Victorian EPA model guidance document (2013)

² Conservatively assumed total conversion of NO_x to NO₂

The air dispersion modelling predicts that all assessed pollutants would meet their respective EPA criterion for all averaging periods incrementally (WA alone). All assessed pollutants were also found to be below the relevant criteria cumulatively with the exception of NO₂ which is discussed below. A summary of the modelling results and the findings of a comparison with EPA criteria are as follows:

- The predicted annual average TSP incremental and cumulative concentrations (background only) were below the EPA criteria ($90\mu\text{g}/\text{m}^3$) with a maximum cumulative annual average concentration of $48.5\mu\text{g}/\text{m}^3$ at the sensitive receptors. Predicted TSP values for the BRF were unavailable however given the relatively small contribution of PM₁₀ at nearby sensitive receivers it is unlikely the cumulative impacts would result in an exceedance of the EPA annual TSP criterion; and
- Predicted maximum 24-hour ($1.2\mu\text{g}/\text{m}^3$) and annual average ($0.1\mu\text{g}/\text{m}^3$) PM₁₀ concentrations attributed to WA were found to be relatively small when compared to the maximum 24 hour criterion of $50\mu\text{g}/\text{m}^3$ and annual average criterion of $25\mu\text{g}/\text{m}^3$. When accounting for the proposed BRF and background concentrations:
 - The PM₁₀ 24 hour data predicts a cumulative concentration of $48.7\mu\text{g}/\text{m}^3$ which is below the criterion of $50\mu\text{g}/\text{m}^3$. Predicted contributions from both the WA and BRF facilities were relatively small (totalling $3.3\mu\text{g}/\text{m}^3$) compared to the existing background concentration ($45.4\mu\text{g}/\text{m}^3$);
 - The combined predicted annual average from the WA and proposed BRF facilities were found to be $0.6\mu\text{g}/\text{m}^3$ and when added to the annual background concentration of $19.3\mu\text{g}/\text{m}^3$ resulted in a cumulative concentration of $19.9\mu\text{g}/\text{m}^3$ which is below the annual average criterion of $25\mu\text{g}/\text{m}^3$; and
 - Predicted incremental contribution from both the WA and the BRF are conservative based on continuous operations at maximum capacity and at proposed design limits respectively and thus while not considered significant are likely to be lower than reported.
- Predicted maximum 24-hour ($0.0019\mu\text{g}/\text{m}^3$) and annual average ($0.00017\mu\text{g}/\text{m}^3$) PM_{2.5} concentrations attributed to WA were found to be negligible compared to the maximum 24 hour ($25\mu\text{g}/\text{m}^3$) and annual average ($8\mu\text{g}/\text{m}^3$) criteria. When accounting for the proposed BRF and background concentrations:
 - The PM_{2.5} 24 hour data predicts a cumulative concentration of $20.5\mu\text{g}/\text{m}^3$ equating to 82 percent of the criterion of $25\mu\text{g}/\text{m}^3$. Predicted contributions from both the WA and BRF facilities were relatively small (totalling $1.5\mu\text{g}/\text{m}^3$) compared to the existing background concentration ($19\mu\text{g}/\text{m}^3$);
 - The combined predicted annual average from the WA and proposed BRF was relatively small at $0.3\mu\text{g}/\text{m}^3$ and when added to the background concentration of $7.5\mu\text{g}/\text{m}^3$ was below the EPA criteria of $8\mu\text{g}/\text{m}^3$; and

- Predicted incremental contributions from both the WA and the BRF are conservative based on continuous operations at maximum capacity and at proposed design limits respectively and thus while not considered significant are likely to be lower than reported.
- Predicted maximum 1-hour and 8-hour CO contribution from the WA plant are well below the criterion. Cumulative impacts for the maximum 8-hour CO concentration at nearby sensitive receptors were also found to be well below the criterion. No data on the 1-hour CO background was available however based on the low 8-hour background concentration recorded at Beresfield, cumulative 1-hour CO impacts are also likely to be relatively low;
- Modelled incremental SO₂ concentrations under normal operations for all averaging periods were well below the EPA criterion. When added to the predicted incremental impacts of the adjacent BRF and recorded background concentrations, cumulative maximum 1 hour, 24 hour and annual average concentrations at nearby sensitive receptors remain well below the criteria; and
- As a conservative assumption, all WA NO_x emissions were assumed to be NO₂. Predicted maximum 1-hour (21.9µg/m³) and annual average (0.3µg/m³) NO₂ concentrations attributed to WA were found to be relatively small when compared to the maximum 24 hour criterion of 246µg/m³ and annual average criterion of 62µg/m³. When accounting for the proposed BRF and background concentrations:
 - The maximum 1-hour contribution from WA equates to approximately 9 percent of the criterion, but when added to impacts of the BRF facility⁸ (168.5µg/m³) and background concentration (73.3µg/m³) the cumulative concentration (263.7µg/m³) exceeds the criterion by 7 percent;
 - The combined predicted annual average from the WA and proposed BRF facilities were found to be 14.9µg/m³ and when added to the annual background concentration of 16.9µg/m³ resulted in a cumulative concentration of 31.8µg/m³ which is just over half of the annual average criterion of 62µg/m³; and
 - Emission rates from WA are conservative based on continuous operation, include the thermal waste treatment facility operating at maximum capacity continuously and assume all NO_x is converted to NO₂, thus while predicted concentrations are already considered to be low, actual concentrations are expected to be lower than reported. It should be noted that the predicted worst case impacts due to the WA facility and the BRF facility are unlikely to occur at the same location within the same 24 hour period. Hence the cumulative impacts can be considered as an ultimate worst case that is likely to be an overestimate of actual worst case cumulative concentrations.
 - In addition to the conservatism and assumptions made regarding the NO_x emissions from Stack 1, it needs to be considered that these emissions occur as part of the normal operation during the processing of Dross and SPL (which is an approved activity). As part of normal stack emissions testing required in accordance with the site's EPL, NO_x monitoring is undertaken regularly. The last 3 years of stack testing data showed NO_x concentrations of 16mg/m³, 6mg/m³ and 6mg/m³ for NO_x emissions in Stack 1. These compare with the four NO_x concentrations obtained during the trials of 6mg/m³, 2mg/m³, 7mg/m³ and 12mg/m³, of which 12mg/m³ was conservatively selected for the dispersion modelling of this modification. This data shows that the pharmaceutical waste contributes little to the overall NO_x load from Stack 1 (2014-2016 NO_x average of 9.3mg/m³ versus an average trial NO_x concentration of 6.8mg/m³).
- Predicted incremental HF contributions from WA were small when compared to existing background concentrations. Cumulative impacts for 30, 70 and 90 day averaging periods were below the criteria. No background concentration was available to cumulatively assess maximum 24-hour concentrations, however the incremental impacts from the facility were found to be only 15 percent of the EPA criterion; and

⁸ The US EPA Ozone Limiting Method (OLM) was used to estimate predicted ground level NO₂ concentrations associated with the proposed BRF.

- Predicted incremental annual average lead impacts from WA were found to be negligible at $0.0000143\mu\text{g}/\text{m}^3$ when compared to the EPA criterion of $0.5\mu\text{g}/\text{m}^3$ (<1% of criterion). When added to the maximum incremental impact from the BRF, the cumulative impact equated to $0.1\mu\text{g}/\text{m}^3$ or 20 percent of the EPA criterion.

Predicted modelled impacts for air toxics are listed in **Table 15**. In accordance with the Approved Methods these are the 99.9th percentile concentrations at the highest point at or beyond the site boundary.

Table 15 Modelling Results for Air Toxic 1 hour (99.9th percentile) Ground Level Concentrations

Pollutant	WA Predicted Incremental Contribution ($\mu\text{g}/\text{m}^3$)	BRF Max Incremental Impact	Cumulative Impact ($\mu\text{g}/\text{m}^3$)	Criteria ($\mu\text{g}/\text{m}^3$)
H ₂ SO ₄	3.68	7.9	11.68	18
HCl	2.09	No Data	-	140
VOCs (as benzene)	5.35	0.0056*	5.36	29
Sb	0.000119	No Data	-	9
As	0.0000348	0.083	0.083	0.09
Cd	0.00218	No Data	-	0.018
Hg (as organic mercury)	0.00587	No Data	-	0.18
Be	0.0000346	No Data	-	0.004
Cr (as Chromium VI compounds)	0.00365	No Data	-	0.09
Co	0.0000342	No Data	-	0.2
Mn	0.00252	No Data	-	18
Ni	0.00173	No Data	-	0.18
Se	0.000337	No Data	-	2
Sn	0.000715	No Data	-	1
V	0.000169	No Data	-	2
Cu (as copper fumes)	0.000878	No Data	-	3.7
Dioxins and Furans	1.40×10^{-9}	3.7×10^{-7}	3.71×10^{-7}	2×10^{-6}
PAHs (as benzo[α]pyrene)	0.14	No Data	-	0.4
Cyanide	0.15	No Data	-	90
¹ Total VOC's based on sum of predicted maximum concentrations for benzene, toluene, xylene and ethylbenzene.				
² 1 hour maximum reported values in accordance with TCEQ (See Section 3.1.1.).				

The air dispersion modelling predicts that all assessed pollutants would meet their respective EPA criterion, based on predicted offsite 99th percentile concentrations. Where relevant⁹, a cumulative assessment of pollutant concentrations inclusive of the predicted BRF offsite pollutant concentrations has also been provided. A summary of the modelling results in **Table 15** is as follows:

- Predicted 1-hour 99.9th percentile incremental impacts for H₂SO₄ were below EPA criterion at 3.68µg/m³ equating to 20 percent of the criteria of 18µg/m³. Cumulative concentrations accounting for the predicted BRF impact cumulative impacts would also be below the EPA criteria at 11.6µg/m³;
- Predicted 1-hour 99.9th percentile incremental impacts for HCl (2.09µg/m³) were less than two percent of the EPA criterion of 140µg/m³;
- Incremental (5.35 µg/m³) and cumulative impacts (5.36 µg/m³) from total VOCs were predicted to be below the adopted criterion equating to approximately 18 percent of the adopted criterion;
- Predicted 1-hour 99.9th percentile¹⁰ incremental impacts for all modelled Type 1 and Type 2 heavy metals were below the relevant EPA criterion; with predicted impacts generally less than one percent of the EPA criterion with the exception to Cd, Hg and Cr which were found to be only 12, 3 and 4 percent of the criteria respectively;
- Predicted 1-hour 99.9th percentile incremental impacts for Cu was found to be less than one percent of the EPA criterion of 3.7µg/m³;
- The predicted 1-hour 99.9th percentile offsite concentration for dioxins and furans was found to be 1.4x10⁻⁹µg/m³, which is below the EPA criterion of 2.0x10⁻⁶µg/m³. Predicted offsite cumulative impacts were found to be 3.7 x10⁻⁷µg/m³ also well below the criterion;
- Incremental impacts for total PAHs were predicted to be 0.14µg/m³ which equates to 34 percent of the adopted EPA criterion of 0.4 µg/m³; and
- Predicted incremental impacts for cyanide show an offsite 1-hour 99.9th percentile concentration of up to 0.15µg/m³ which is less than one per cent of the EPA criterion of 90µg/m³.

⁹ Cumulative assessment for Air Toxics is only required where there is the potential for significant background concentrations to be present in the area around a site.

¹⁰ 100th percentile concentrations were adopted for Se, Sn and V in accordance with the TCEQ.

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6.0 Mitigation, Management and Monitoring

The WA facility already includes a number of existing safeguards designed to manage air quality impacts from the site. The Project is not expected to result in any substantial changes to existing air emissions from the facility and is not expected to result in any significant impacts to the local airshed. As such, no additional mitigation measures are proposed.

WA is committed to the ongoing operation of its existing air quality monitoring and management practices for the existing development and proposed Project.

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7.0 Conclusion

AECOM was commissioned by WA to prepare an AQIA for inclusion into an Environmental Assessment as part of the Project. A Level 2 AQIA was conducted in accordance with the *NSW Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (DEC 2005). This report provides an assessment of the potential ground level air quality impacts associated with the operation of the Project.

Dispersion modelling was undertaken for the AQIA using the Lagrangian model CALPUFF. A single modelling scenario, representative of typical operating conditions was undertaken for this assessment. The modelled scenario included continuous operation of the rotary furnaces processing pharmaceutical and illicit drug waste in conjunction with aluminium dross and SPL (i.e. per earlier Trial activities) and operation of the proposed thermal processing plant operating continuously at maximum operational capacity of 800kg/h. Cumulative impacts were also examined by adding predicted incremental impacts from the proposed BRF and background air quality data from the nearest OEH monitoring station in Beresfield.

Results of the modelling showed no exceedances of the relevant air quality criteria for all examined pollutants with the exception to the maximum 1-hour NO₂ cumulative concentration.

The predicted maximum 1-hour NO₂ concentration attributed to WA was found to be small when compared to incremental contribution from both the BRF and the maximum background concentration. Predicted emission rates from WA are conservative based on continuous operation, include the thermal waste treatment facility operating at maximum capacity, and assume that all NO_x is converted to NO₂, thus while not considered significant are likely to be lower than reported. Furthermore predicted worst case impacts associated with the WA facility, the BRF facility and the maximum 24-hour NO₂ background concentration are unlikely to occur within the same 24 hour period.

The assessed PM₁₀ and PM_{2.5} cumulative values, while elevated, predicted that there would be no additional exceedances of the EPA criteria attributed to the Project. The contribution of the WA operations to particulate levels was relatively minor.

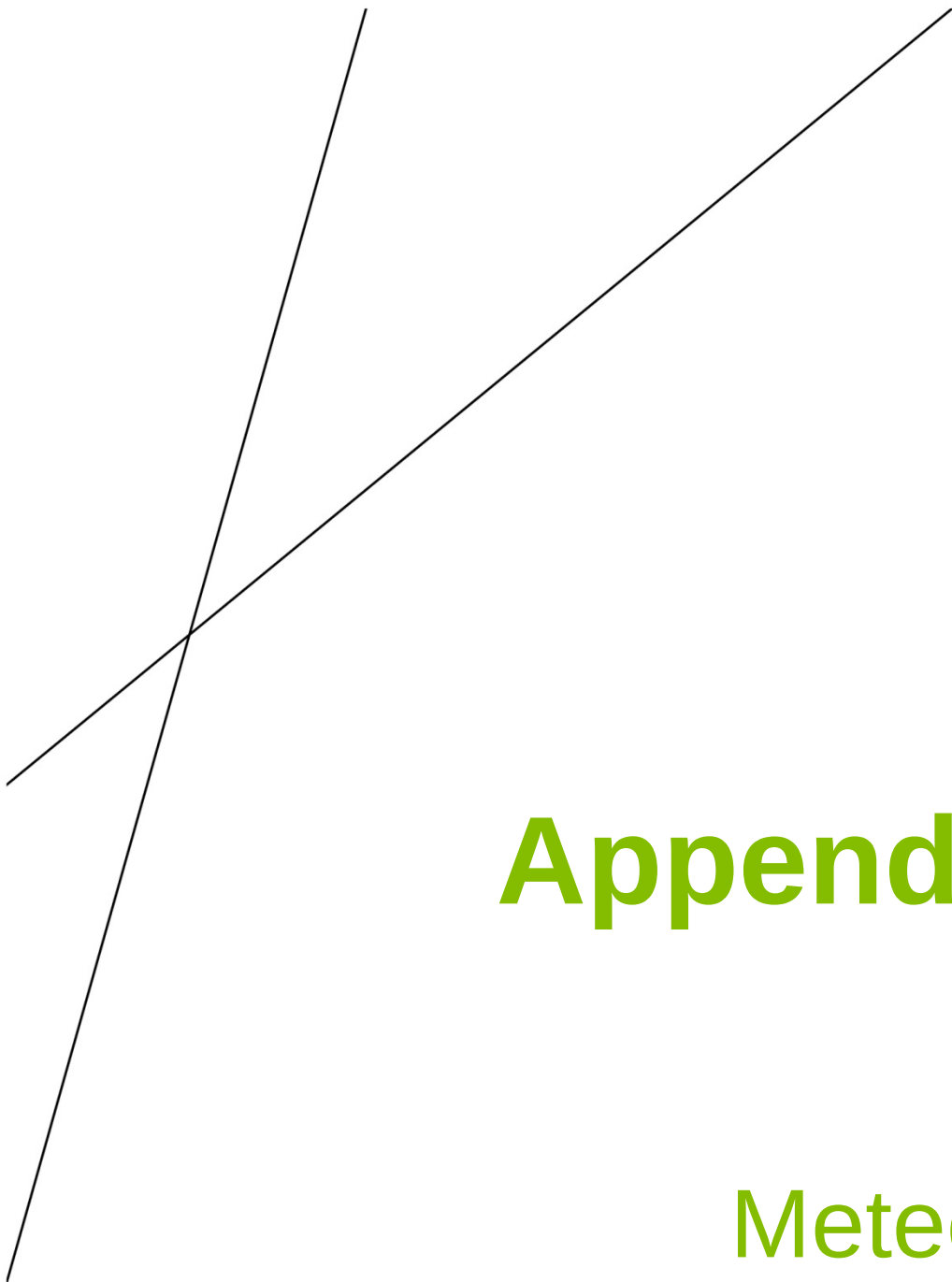
In conclusion, the results of the assessment indicate there would be no substantial air quality impacts from the operation of pharmaceutical and illicit drug waste processing, and the proposed emission concentrations associated with operation of the plant are unlikely to result in any additional exceedances of local air criteria for all pollutants examined.

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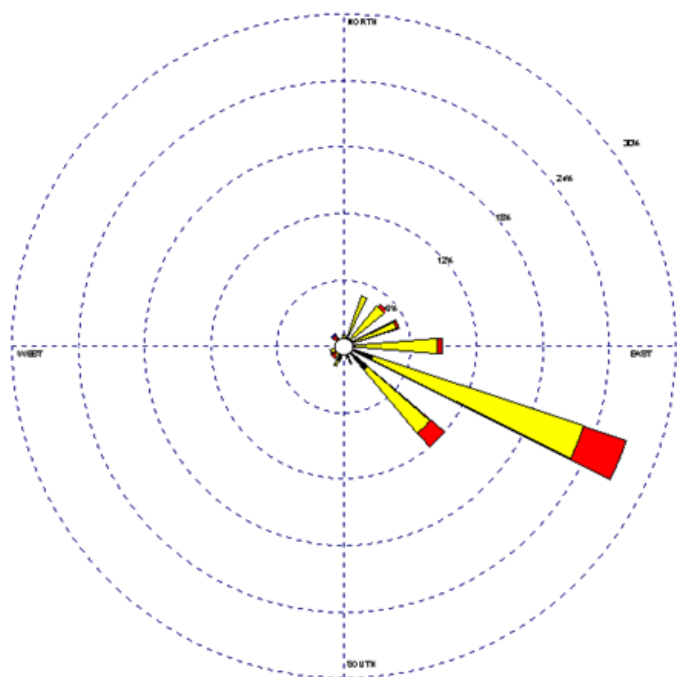
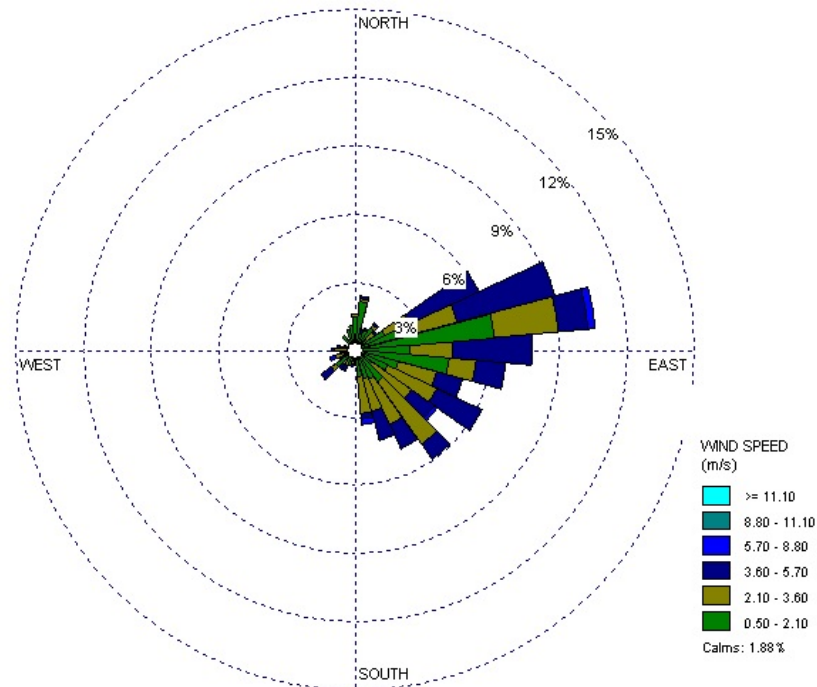
Appendix A

Meteorology

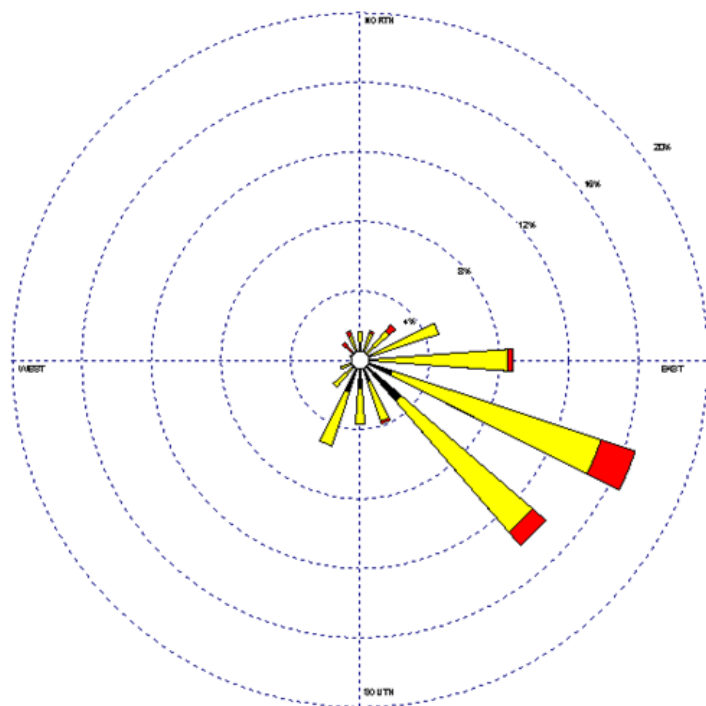
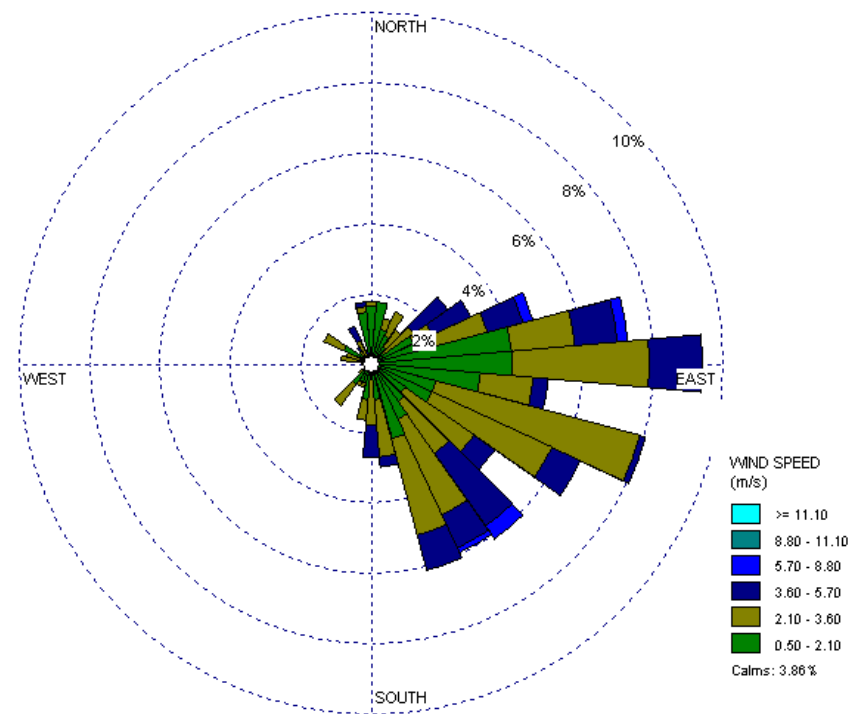
Appendix A Meteorology

Wind roses prepared from the CALMET data used in the modelling were compared to the wind roses from the Hydro Aluminium meteorological station for January – September 2014 (the available data from Hydro Aluminium). As shown in the following plots, there was good agreement between the data sets in terms of wind direction and wind speed. Wind patterns for the full year predominantly occurred within the north-easterly quadrant for both the Hydro Aluminium (measured) and Weston Aluminium (prognostic) data. The Hydro Aluminium data occurred more on the southerly side, while the Weston Aluminium data had a higher proportion of north-easterly winds

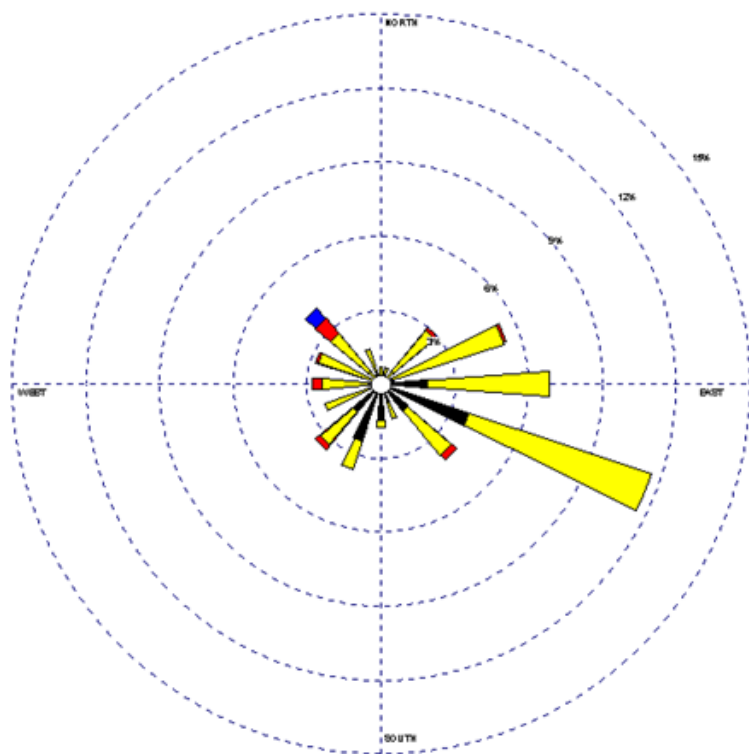
There was a large difference between the data sets in terms of the percentage of calm conditions, with the CALMET data predicting substantially lower calm periods. This was expected as the prognostic data were developed using TAPM, which typically predict fewer calm wind conditions than are measured at a given location. The percentage of calm conditions recorded at Hydro Aluminium are, however, much higher than would be expected for a site affected by valley drainage flow. Calm wind conditions typically produce poor dispersion conditions, resulting in greater pollutant concentrations close to the point of emission. As there are few receptors located close to the Weston Aluminium facility, the pollutant plumes are expected to be relatively dispersed and diluted before reaching most receptors.

Wind Roses: Hydro Aluminium v CALMET**JANUARY 2014****Hydro Aluminium****Calms: 26.21%****CALMET****Calms: 1.88 %**

FEBRUARY 2014

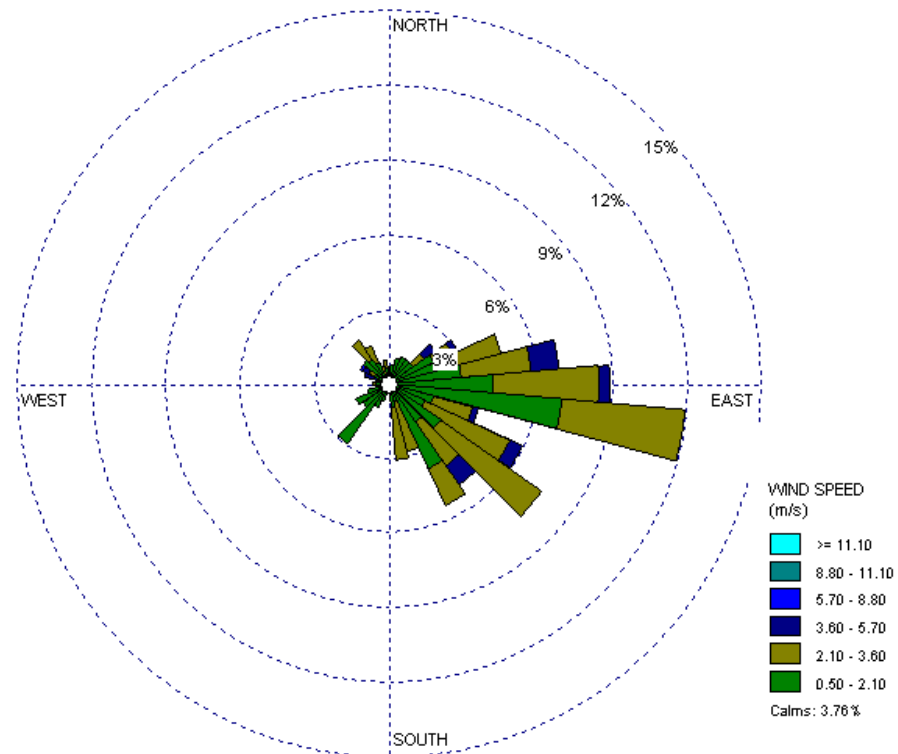
**Hydro Aluminium****Calms: 29.61 %****CALMET****Calms: 3.86 %**

MARCH 2014



Hydro Aluminium

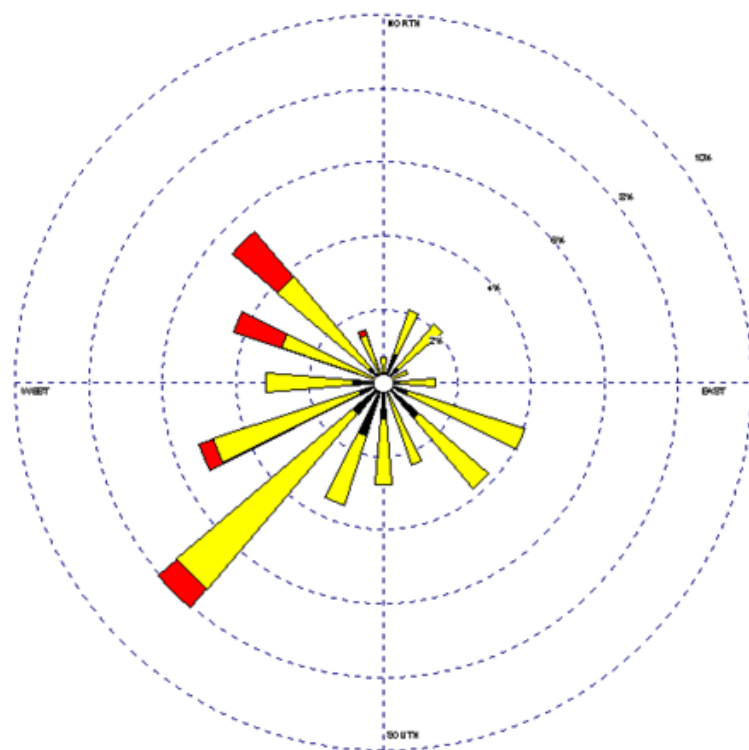
Calms: 43.95 %



CALMET

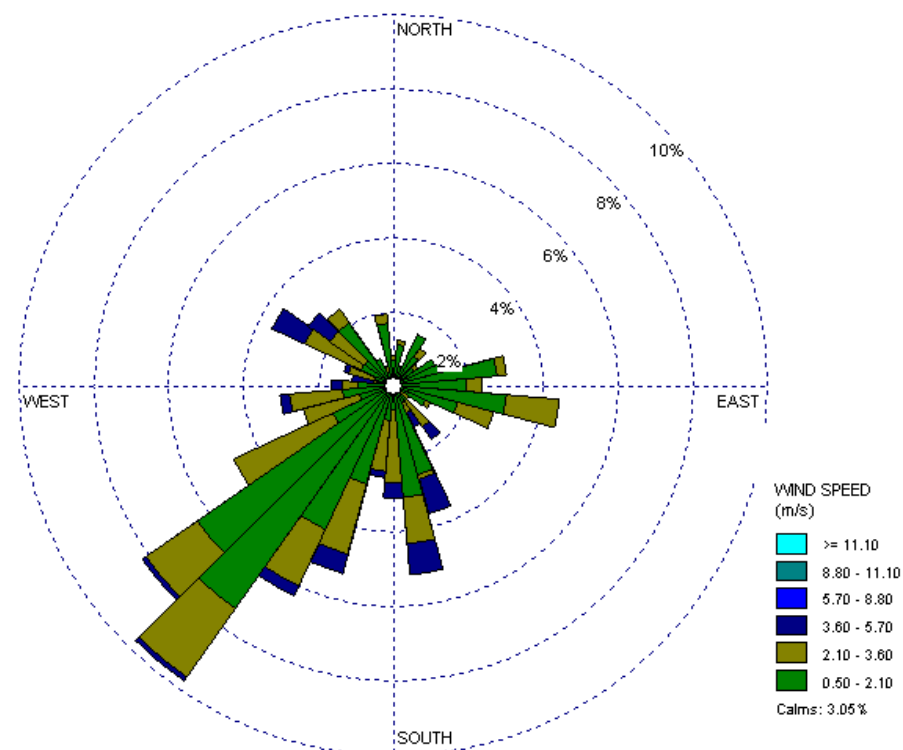
Calms: 3.76 %

APRIL 2014



Hydro Aluminium

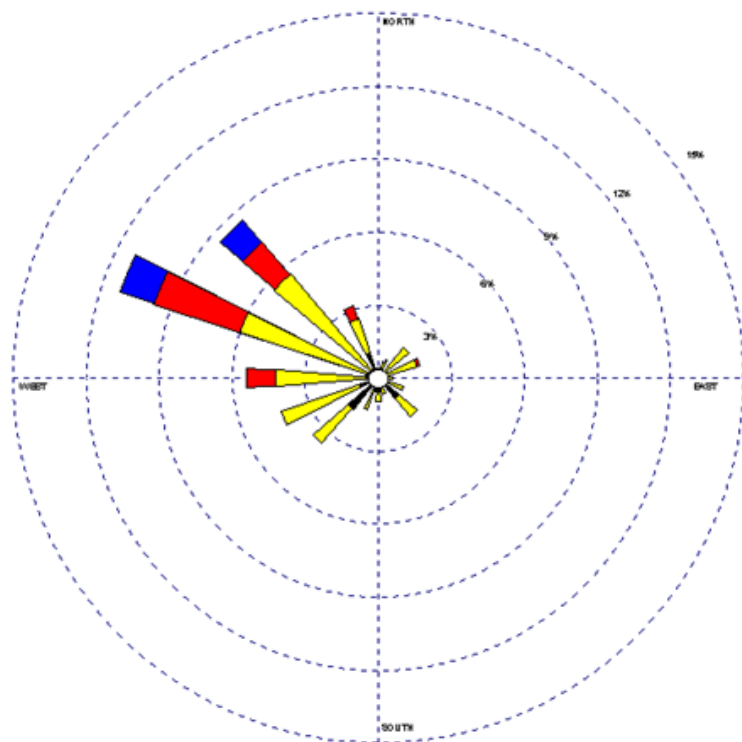
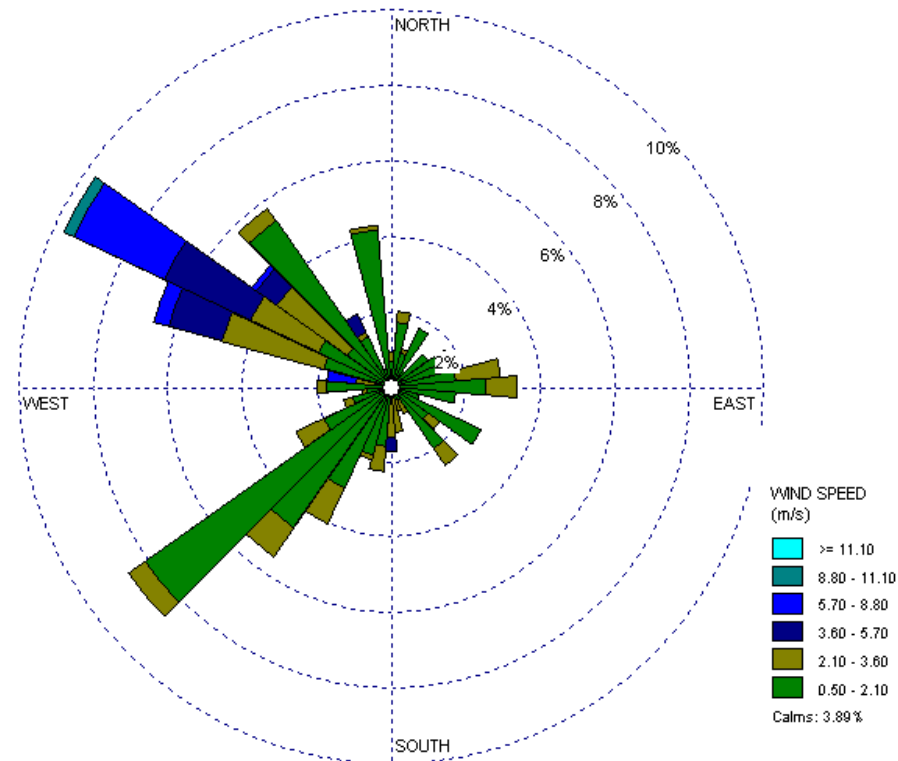
Calms: 48.89 %



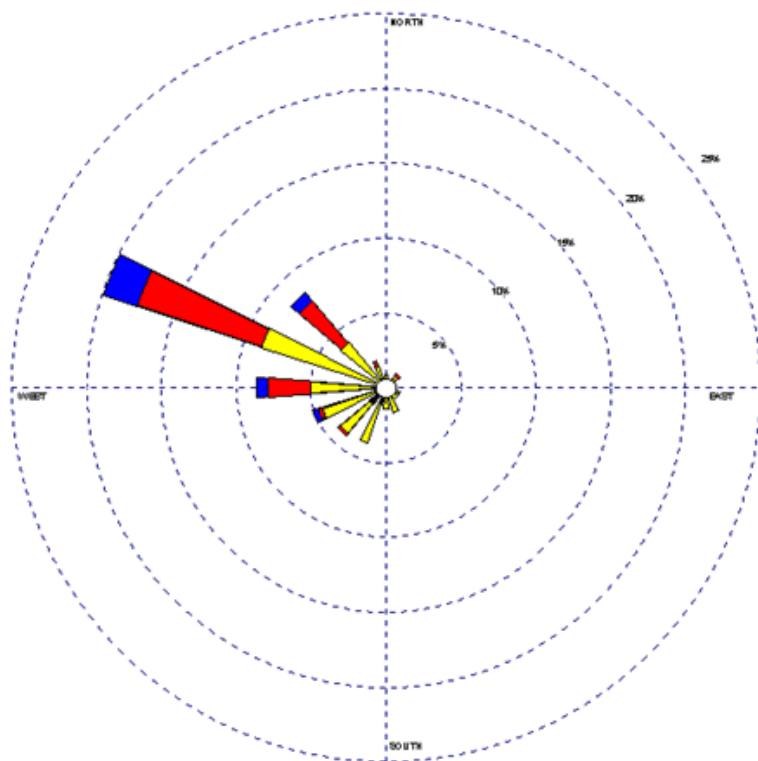
CALMET

Calms: 3.05 %

MAY 2014

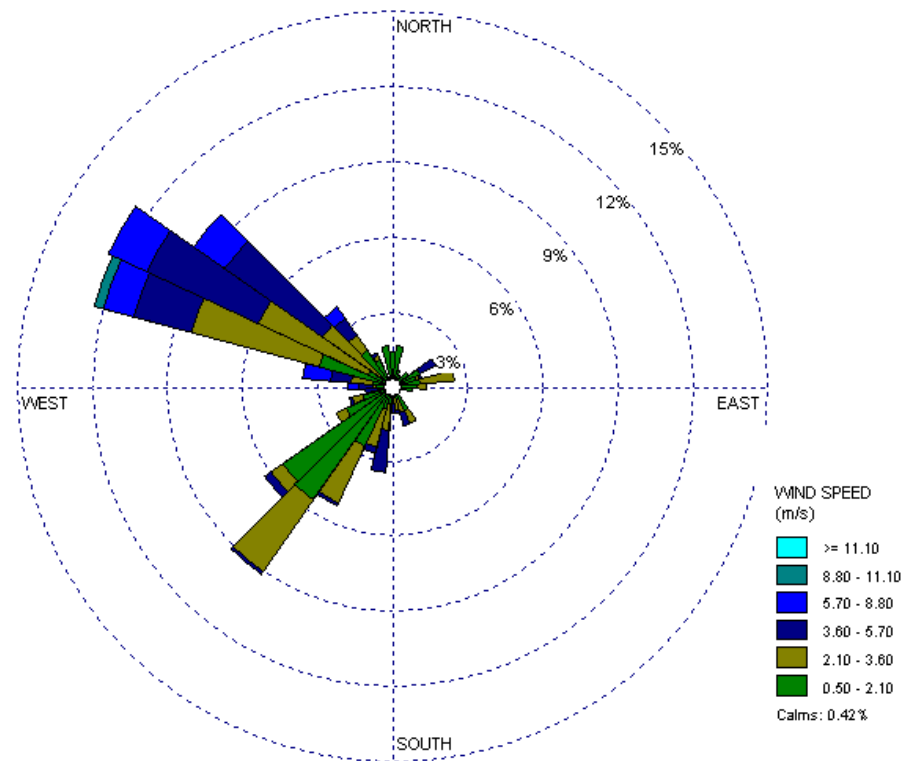
**Hydro Aluminium****Calms: 52.59 %****CALMET****Calms: 3.89 %**

JUNE 2014



Hydro Aluminium

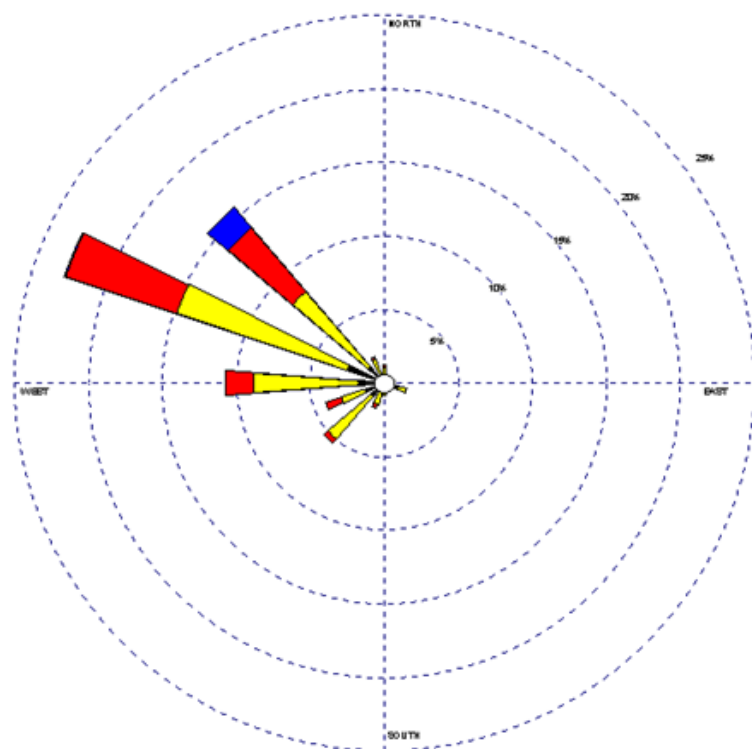
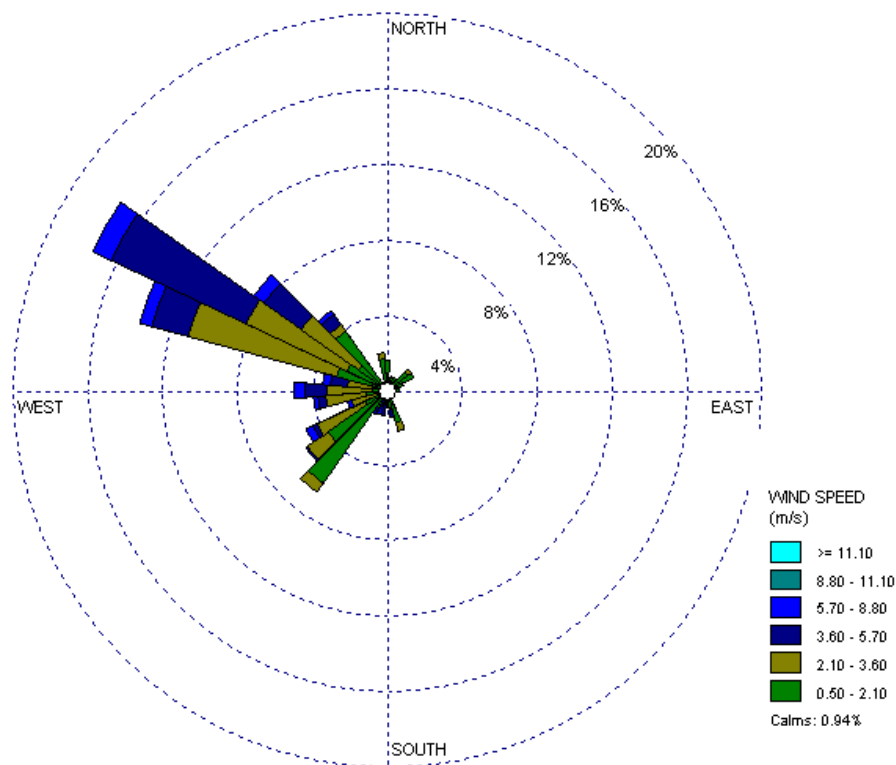
Calms: 39.44 %



CALMET

Calms: 0.42 %

JULY 2014

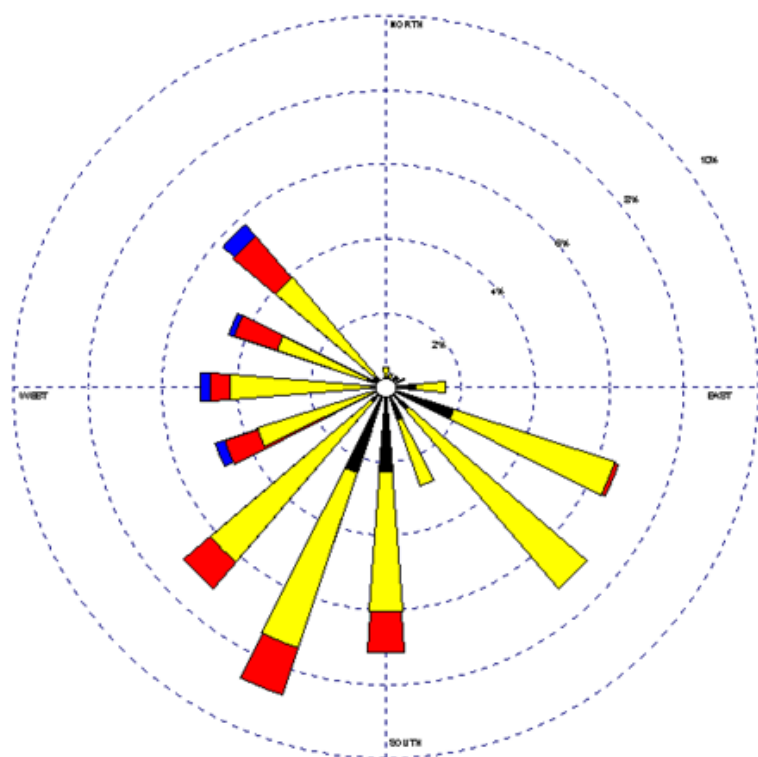
**Hydro Aluminium****Calms: 32.12 %****CALMET****Calms: 0.94 %**

WIND SPEED
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

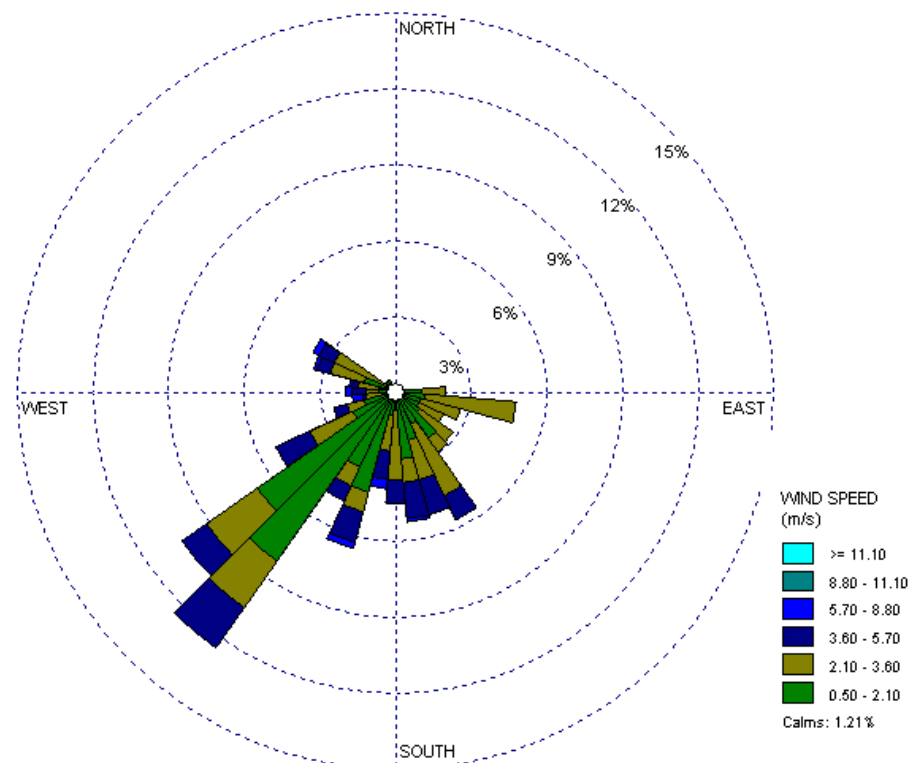
Calms: 0.94%

AUGUST 2014



Hydro Aluminium

Calms: 36.83 %



CALMET

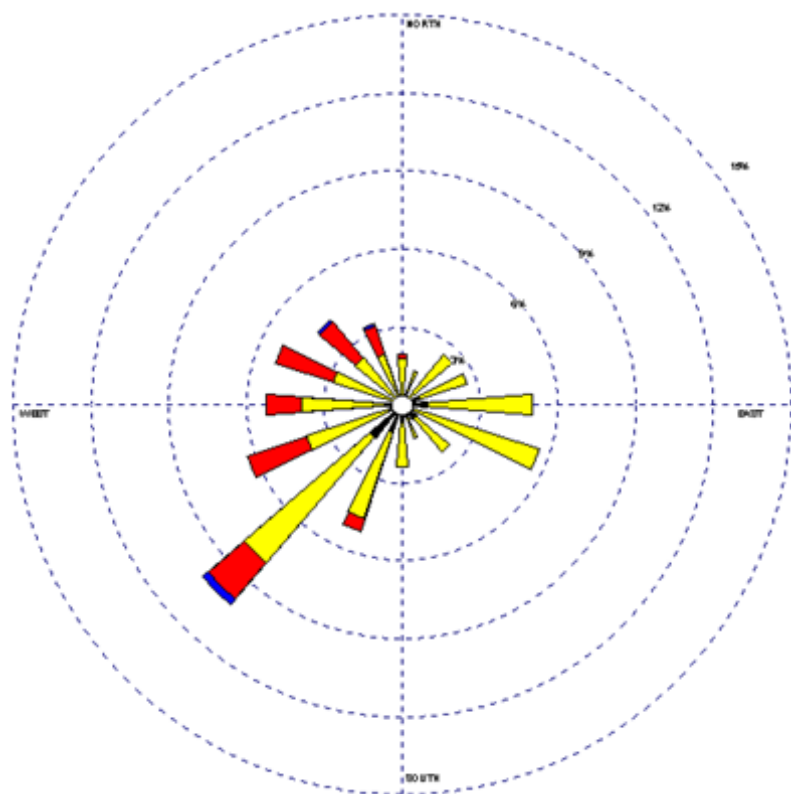
Calms: 1.21 %

WIND SPEED
(m/s)

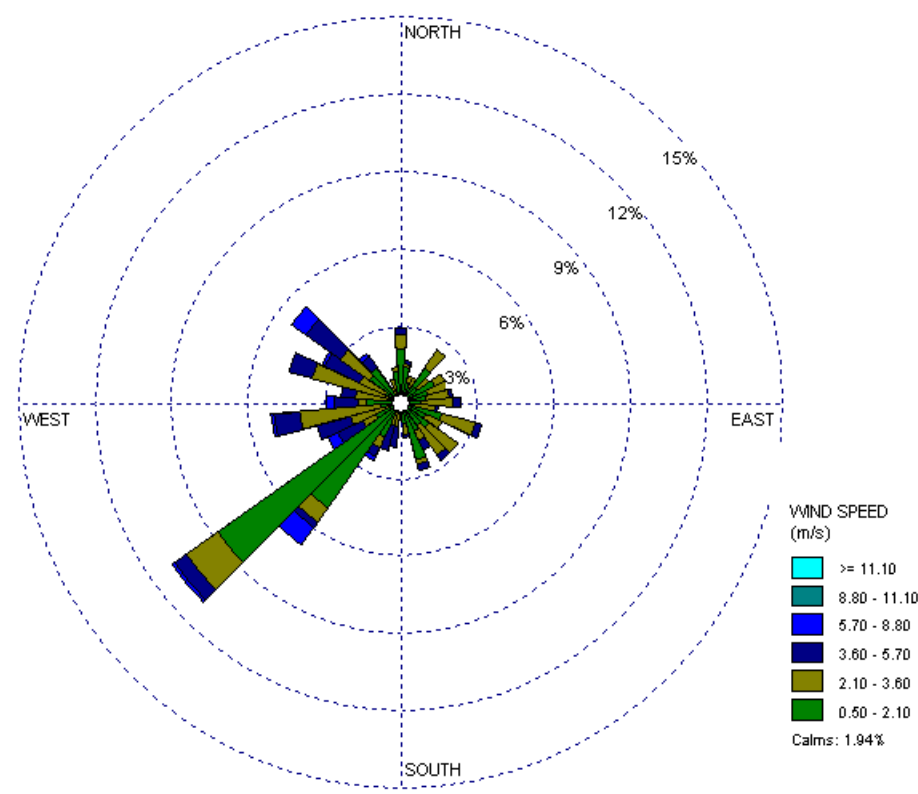
>= 11.10
8.80 - 11.10
5.70 - 8.80
3.60 - 5.70
2.10 - 3.60
0.50 - 2.10

Calms: 1.21 %

SEPTEMBER 2014



Hydro Aluminium
Calms: 35.28 %

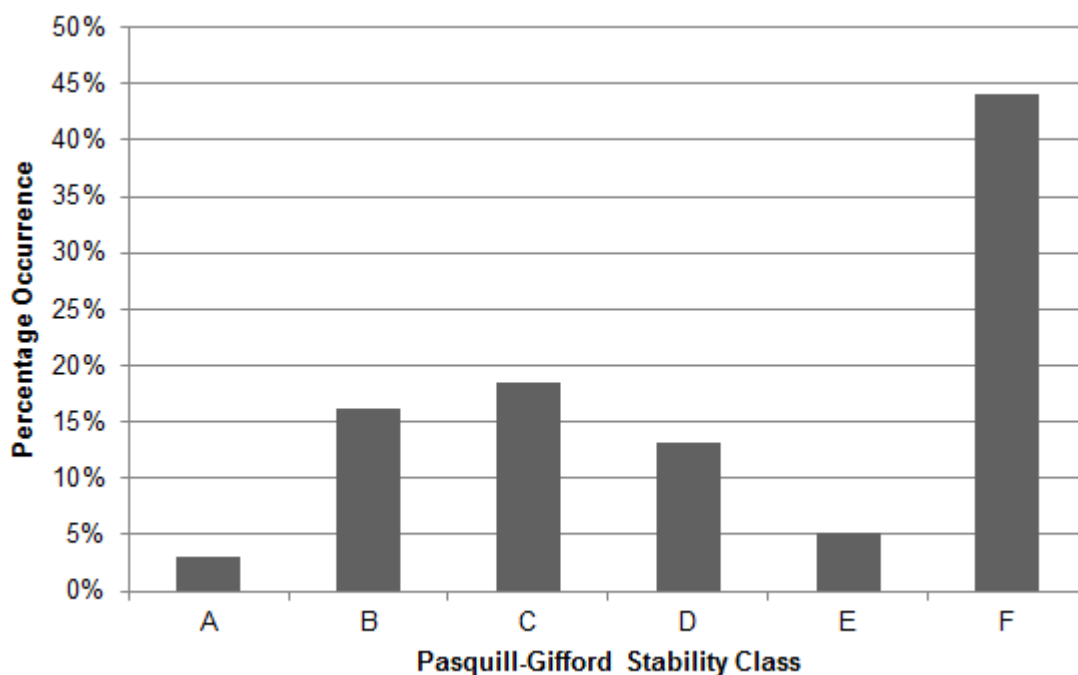


CALMET
Calms: 1.94 %

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Atmospheric stability is a measure of atmospheric turbulence and the dispersive properties of the atmosphere. The Pasquill Gifford scheme specifies seven classes of atmospheric stability, which are designated A through G; most dispersion models, however, group Classes F & G together. Class A conditions are very unstable, while Class F conditions are stable, such as occur at night. Class D conditions are neutral.

The distribution of stability classes in the CALMET data is shown in the figure below. As shown, the greatest proportion of conditions were Class F, which represented 44 % of all the hours modelled. Class F stability conditions occur at night; as such, this result is not unexpected. Class C, B and D stability conditions occurred with a similar frequency,



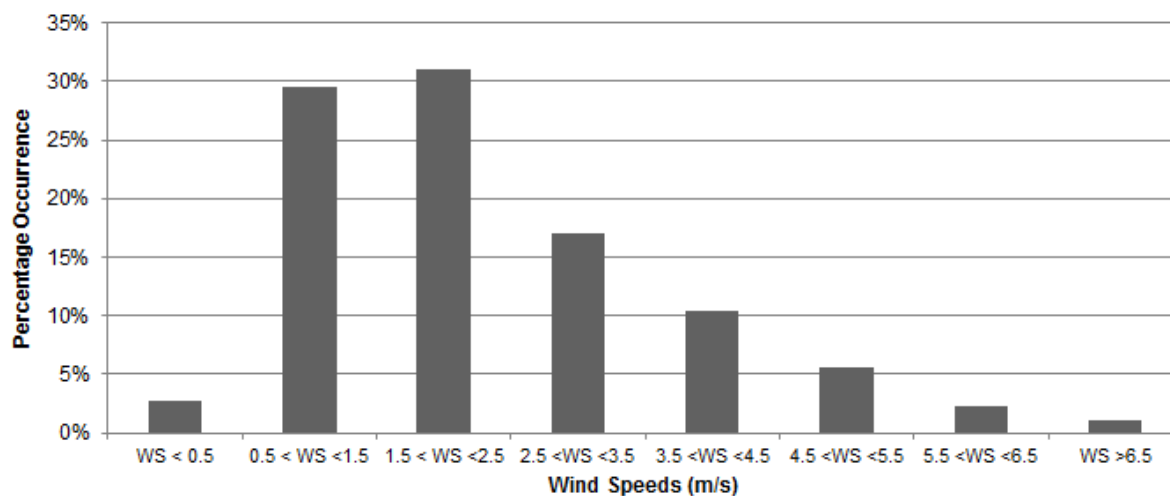
As shown below, the stability classes occurred at the expected times. Class E and F stability occurred only at night and during the early morning, while classes A, B and C occurred during the day; Class D stability (neutral conditions) occurred throughout the 24 hour period, but predominantly during daylight hours, with the highest occurrence in the late afternoon. This pattern is considered to be representative of the meteorological conditions in the area.

Stability Class by Hour of Day

Hour of Day	Stability Class					
	A	B	C	D	E	F
0	0	0	0	8	23	333
1	0	0	0	7	25	332
2	0	0	0	8	29	327
3	0	0	0	6	34	324
4	0	0	0	7	30	327
5	0	0	97	35	27	205
6	0	61	133	61	16	93
7	0	109	168	87	0	0
8	10	192	132	30	0	0
9	16	193	113	42	0	0
10	63	172	95	34	0	0
11	75	166	88	35	0	0
12	62	149	105	48	0	0
13	28	155	113	68	0	0
14	2	125	150	87	0	0
15	2	74	177	111	0	0
16	0	15	178	171	0	0
17	0	5	57	171	15	116
18	0	0	11	97	43	213
19	0	0	0	7	69	288
20	0	0	0	7	44	313
21	0	0	0	7	35	322
22	0	0	0	7	30	327
23	0	0	0	8	25	331

Stable conditions result in poorer dispersion and, subsequently, higher pollutant concentrations; as such, the high proportion of stable conditions (Class E and F combined) mean that the meteorological data used in the assessment are conservative.

The distribution of wind speeds was also reviewed. As shown below, the CALMET data contained mostly low wind speeds, with 64% of the winds in the meteorological file being less than 2.5 m/s. Low wind speeds can also result in poorer dispersion.

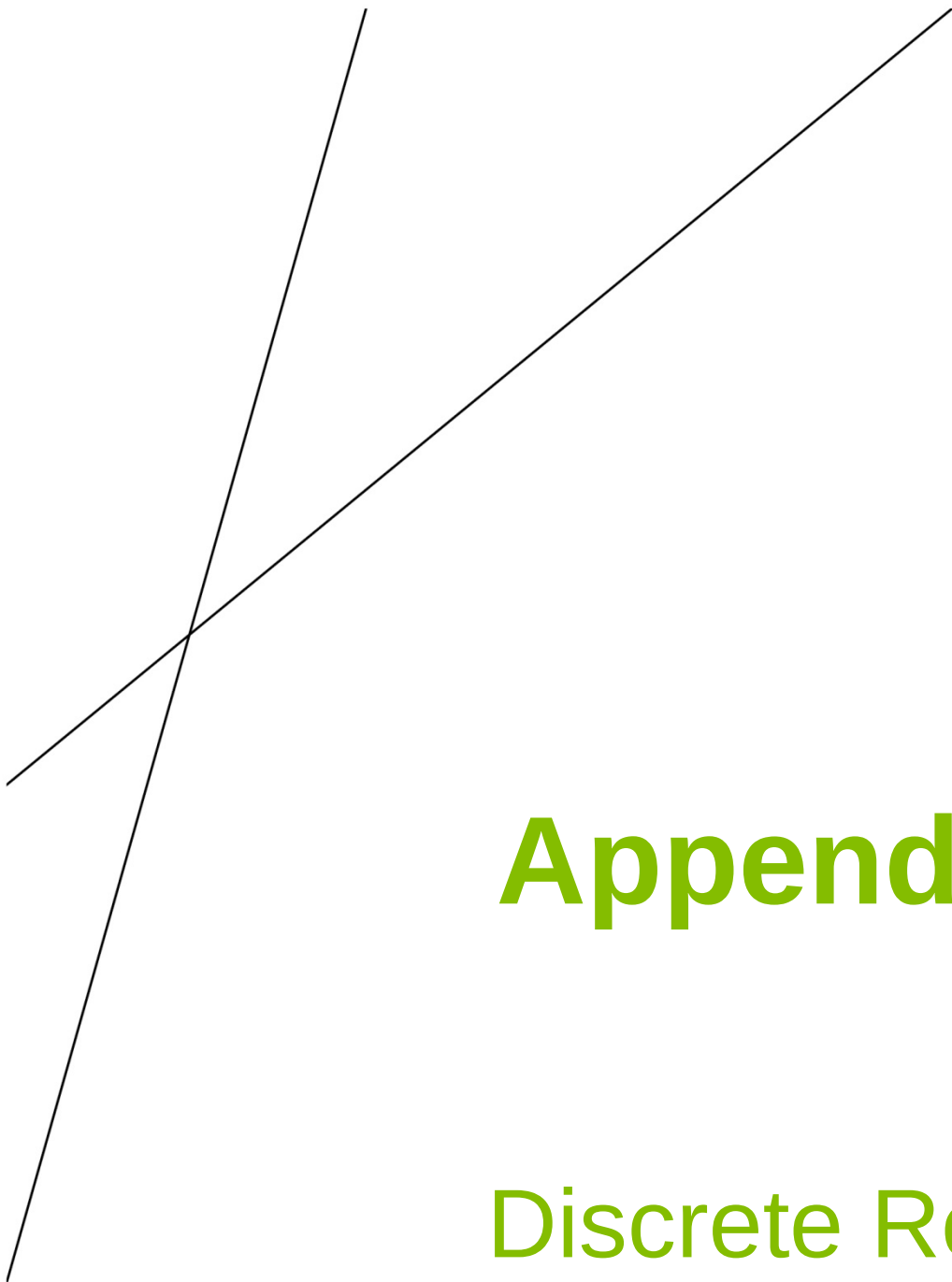


As shown in the following table, the highest wind speeds occurred during Class C and D stability, which is expected as per DEC (2005a). Also as expected, Class A and Class F stability conditions were associated with low wind speeds.

Stability Class Wind Speeds

Wind Speed (m/s)	Stability Class					
	A	B	C	D	E	F
0.5	27	33	32	0	0	147
1	48	168	109	0	0	648
1.5	32	239	142	0	0	1150
2	50	210	164	56	48	865
2.5	57	147	165	149	105	626
3	0	206	156	130	51	92
3.5	38	174	161	139	47	260
4	0	33	199	106	55	0
4.5	0	33	199	106	55	0
5	0	11	134	87	36	0
6	0	0	131	206	13	0
7	0	0	10	80	0	0
8	0	0	2	33	0	0
10	0	0	4	26	0	0
12	0	0	7	28	0	0
14	0	0	0	0	0	0

On the basis of the above analysis, the predicted meteorological conditions appear to provide a representative estimation for the local meteorology and, as such, were considered appropriate for use in this assessment.



Appendix B

Discrete Receptor Locations

Appendix B Discrete Receptor Location

Table 16 Sensitive Receptors

ID	MGA 56 (m)		Land Use	ID	MGA 56 (m)		Land Use
	X	Y			Y	Y	
1	357580.2	6368434	Recreational	93	358169.6	6368525	Residential
2	356435.7	6368332	Recreational	94	358081.5	6368483	Residential
3	358173.5	6369639	Commercial/Industrial	95	357979.7	6368446	Residential
4	357561.1	6369198	Commercial/Industrial	96	357894.1	6368403	Residential
5	356414.7	6368854	Commercial/Industrial	97	357833.5	6368376	Residential
6	357334.2	6369029	Commercial/Industrial	98	357747.9	6368336	Residential
7	357197.1	6368893	Commercial/Industrial	99	357652.8	6368335	Residential
8	357044.7	6368809	Commercial/Industrial	100	357575.4	6368281	Residential
9	356931.2	6368706	Commercial/Industrial	101	357511.7	6368247	Residential
10	356684.2	6368519	Commercial/Industrial	102	357444.1	6368222	Residential
11	357128.4	6369008	Commercial/Industrial	103	357391.6	6368197	Residential
12	356830.4	6368829	Commercial/Industrial	104	357312.5	6368175	Residential
13	356685.2	6368720	Commercial/Industrial	105	357247.7	6368141	Residential
14	356612.7	6368628	Commercial/Industrial	106	357195.5	6368110	Residential
15	356515.6	6368586	Commercial/Industrial	107	357123.9	6368078	Residential
16	356448.6	6368556	Commercial/Industrial	108	357041.7	6368056	Residential
17	356338.8	6368549	Commercial/Industrial	109	356934.4	6367994	Residential
18	356361.1	6368657	Commercial/Industrial	110	356834.4	6367961	Residential
19	356464.9	6368736	Commercial/Industrial	111	356761	6367924	Residential
20	356400.1	6368765	Commercial/Industrial	112	356971.5	6368343	Residential
21	356345.1	6368782	Commercial/Industrial	113	356884.3	6368289	Residential
22	356714.9	6369079	Commercial/Industrial	114	356796.8	6368271	Residential
23	356929	6369037	Commercial/Industrial	115	356717.5	6368248	Residential
24	356777.5	6369277	Commercial/Industrial	116	356654.5	6368226	Residential
25	356939.9	6368564	Commercial/Industrial	117	356620	6368373	Residential
26	357099.4	6368456	Commercial/Industrial	118	356684.5	6368371	Residential
27	357185.2	6368422	Commercial/Industrial	119	356732.7	6368410	Residential
28	357248.6	6368455	Commercial/Industrial	120	356810.9	6368454	Residential

ID	MGA 56 (m)		Land Use	ID	MGA 56 (m)		Land Use
	X	Y			Y	Y	
29	357147.4	6368711	Commercial/Industrial	121	356872.9	6368503	Residential
30	357230.2	6368777	Commercial/Industrial	122	357467	6368788	Residential
31	357272.7	6368674	Commercial/Industrial	123	357091	6370000	Residential
32	357289.3	6368585	Commercial/Industrial	124	357741.6	6369959	Residential
33	357309.6	6368558	Commercial/Industrial	125	358088.4	6370204	Residential
34	357312.6	6368537	Commercial/Industrial	126	358154.8	6370188	Residential
35	357249.7	6368475	Commercial/Industrial	127	358206.1	6370072	Residential
36	357292.9	6368816	Commercial/Industrial	128	358313.6	6370019	Residential
37	357354.8	6368741	Commercial/Industrial	129	358403.1	6369962	Residential
38	357330.7	6368688	Commercial/Industrial	130	356493.8	6369540	Residential
39	357374	6368597	Commercial/Industrial	131	356574.2	6369475	Residential
40	357387.2	6368535	Commercial/Industrial	132	356380.2	6369869	Residential
41	357398.5	6368518	Commercial/Industrial	133	356336.1	6369757	Residential
42	357480.4	6368755	Commercial/Industrial	134	356372.7	6369622	Residential
43	357475.6	6368674	Commercial/Industrial	135	356391.4	6369531	Residential
44	357576.9	6368661	Commercial/Industrial	136	356402.7	6369463	Residential
45	357626	6368787	Commercial/Industrial	137	356371.7	6369290	Residential
46	357691.9	6368686	Commercial/Industrial	138	356369.3	6369239	Residential
47	358307.6	6368785	School TAFE	139	356357.4	6369175	Residential
48	358516.9	6368924	Residential	140	356351.3	6369136	Residential
49	358401.8	6368881	Residential	141	356347	6369082	Residential
50	358090.6	6368748	Residential	142	356342	6369032	Residential
51	358020.6	6368715	Residential	143	356331.2	6368986	Residential
52	357944.8	6368690	Residential	144	356319	6368942	Residential
53	357860.1	6368641	Residential	145	356305.4	6368888	Residential
54	357776.9	6368612	Residential	146	356295.8	6368839	Residential
55	357674.9	6368559	Residential	147	356291.6	6368788	Residential
56	357587.4	6368523	Residential	148	356282.4	6368738	Residential
57	357503	6368490	Residential	149	356271.6	6368708	Residential
58	357428.2	6368460	Residential	150	356267.8	6368641	Residential

ID	MGA 56 (m)		Land Use	ID	MGA 56 (m)		Land Use
	X	Y			Y	Y	
59	357365.4	6368424	Residential	151	356261	6368591	Residential
60	357311.5	6368395	Residential	152	356248.3	6368564	Residential
61	357230.1	6368368	Residential	153	356249.2	6368483	Residential
62	357149	6368326	Residential	154	356238.1	6368431	Residential
63	357094.3	6368304	Residential	155	356225.6	6368382	Residential
64	357040.8	6368276	Residential	156	356218.1	6368326	Residential
65	356976.4	6368254	Residential	157	356213.3	6368278	Residential
66	356910.5	6368233	Residential	158	356206.3	6368229	Residential
67	356773.7	6368158	Residential	159	356194.2	6368176	Residential
68	356689.2	6368137	Residential	160	355951.2	6368107	Residential
69	356744.2	6367995	Residential	161	355961.9	6368172	Residential
70	356850.6	6368026	Residential	162	355977.3	6368227	Residential
71	356949.1	6368066	Residential	163	355989.9	6368271	Residential
72	357038.3	6368110	Residential	164	356000.1	6368343	Residential
73	357112.4	6368139	Residential	165	356007.8	6368378	Residential
74	357186.4	6368176	Residential	166	356012.9	6368420	Residential
75	357279.5	6368260	Residential	167	356018.1	6368464	Residential
76	357368.9	6368253	Residential	168	356021.9	6368519	Residential
77	357430.3	6368279	Residential	169	356036	6368580	Residential
78	357590.5	6368343	Residential	170	356050.3	6368626	Residential
79	357672.9	6368385	Residential	171	356054.8	6368677	Residential
80	357747.9	6368412	Residential	172	356060.1	6368725	Residential
81	357804.3	6368446	Residential	173	356073.6	6368773	Residential
82	357885.3	6368482	Residential	174	356084.2	6368828	Residential
83	357973.3	6368502	Residential	175	356089.2	6368879	Residential
84	358079.2	6368556	Residential	176	356101.8	6368923	Residential
85	358156.7	6368589	Residential	177	356107.9	6368984	Residential
86	358448.7	6368729	Residential	178	356116.1	6369022	Residential
87	358547.3	6368770	Residential	179	356128.3	6369078	Residential
88	358615.3	6368712	Residential	180	356134.3	6369126	Residential

ID	MGA 56 (m)		Land Use	ID	MGA 56 (m)		Land Use
	X	Y			Y	Y	
89	358537.9	6368684	Residential	181	356139.1	6369175	Residential
90	358477.5	6368652	Residential	182	356146.7	6369219	Residential
91	358377.5	6368620	Residential	183	356161.9	6369288	Residential
92	358277.6	6368577	Residential	184	356265.7	6369535	Residential

