



Weston Aluminium Dross Recycling Facility Modifications 12 and 14

Weston Aluminium Emission Reconfiguration
State Significant Development Modification Assessment (DA
10397 of 1995 MOD 12 and DA 86-04-01 MOD 14)

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Cover image: View of a Baghouse Weston Aluminium Dross Recycling Facility

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Glossary

Abbreviation	Definition
Council	Cessnock City Council
Department	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
LEP	Local Environmental Plan
Minister	Minister for Planning and Public Spaces
Planning Secretary	Secretary of the Department of Planning, Industry and Environment
SEE	Statement of Environmental Effects
SEPP	State Environmental Planning Policy
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
SSD	State Significant Development

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1 Introduction

This report provides the NSW Department of Planning, Industry and Environment's (the Department's) assessment of an application to modify the State significant development (SSD) consents for the Aluminium Dross Recycling Facility (the development) in Kurri Kurri.

The development was originally approved by the NSW Land and Environment Court under Part 4 of the *Environment Planning & Assessment Act 1979 (EP&A Act)* in 1996. The development also operates under an approval granted by the then Minister for Planning under *State Environmental Planning Policy No. 34 - Major Employment-Generating Industrial Development* in 2001. Under these approvals, the development can process up to 40,000 tonnes of dross aluminium, 35,000 tonnes of scrap aluminium per year and destroy expired pharmaceutical and illicit drug wastes.

The Applicant has identified that due to the current health crisis, the mix of waste accepted at its Thermal Waste Treatment Plant has changed leading to a strain on its cool room. The modification applications (the modifications) seek approval for the redirection of process air from the Reverberatory Furnace to an existing stack and baghouse complex shared by the Rotary Furnace. This would allow the full-time operation of the Thermal Waste Treatment Plant, which currently shares a baghouse complex with the Rotary Furnace enabling it to operate at full capacity rather than on a campaign basis. This would ensure less putrescible waste requiring storage and thereby relieving storage issues.

The modifications were lodged on 11 June 2020 and 12 August 2020 by Weston Aluminium Pty Ltd (the Applicant) pursuant to section 4.55(1A) **EP&A Act**.

1.1 Background

The Applicant owns and operates an aluminium recycling facility at 129 Mitchell Avenue, Kurri Kurri in the Cessnock local government area, approximately 31 kilometres (km) north-west of the Newcastle CBD and 11 km north-east of Cessnock (see Figure 1). The facility currently recycles aluminium dross, aluminium scrap metal and spent potlining (SPL) and processes pharmaceutical and illicit drug wastes.

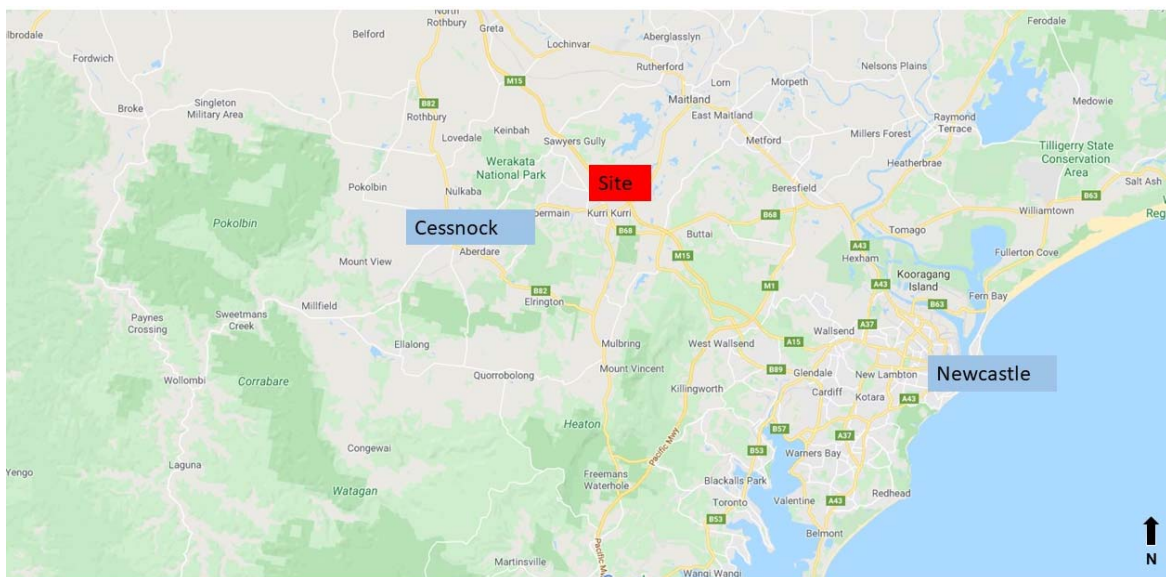


Figure 1 | Regional Context Map

In response to the contraction in the manufacturing sector in Australia over the past few years, particularly the steel and aluminium industry, Weston Aluminium has been looking for opportunities to diversify its business. To this end, an application to process pharmaceutical and illicit drug waste in existing furnaces was approved on 2 August 2019 and an SSD application, to construct and operate a thermal processing facility to treat medical and other waste, was approved at the site under a separate SSD development consent on 12 December 2018.

The site is located in an existing industrial area approximately 600 metres (m) to the north of Kurri Kurri, a small town with a population of approximately 5,700. Weston, with a population of approximately 3,600, is located 1 km to the west (see Figure 2). A wastewater treatment plant is located 750 m to the north-east and the decommissioned Hydro aluminium smelter is 1.3 km to the north. Vacant industrially zoned land is located to the west, with cleared, unused land located to the east.

The nearest residences are located approximately 360 m to the southeast and 320 m to the south, within the industrial zone. Kurri Kurri High School is located approximately 1 km to the south-east of the site.

Adjacent landuses are industrial in nature, with AllightSykes, a mining and construction equipment supplier, located adjacent to the southern side of the site and the approved, but unconstructed, Pymore Battery Recycling is adjacent to the eastern side of the site. A steel strapping manufacturer, engineering company, wine storage warehouse, and pet and rural supply firm are located opposite the site entrance on Mitchell Avenue. Swamp Creek runs along the northern boundary of the wider Weston Aluminium site.



Figure 2 | Local Context Map

1.2 Approval history

The development operates under two identical development consents:

- a consent issued by the Land and Environment Court in 1996 (DA 10397 of 1995) (DA 1995)
- a consent issued by the then Minister for Planning in 2001 (DA-86-04-01) (DA 2001).

Under these consents, the Applicant is permitted to process up to 40,000 tonnes of dross aluminium and 35,000 tonnes of scrap aluminium per year for reuse in various industrial sectors as well as a small volume of illicit drugs and pharmaceutical wastes.

The development consents have been modified 11 and 9 times respectively (see **Table 1**).

Table 1 | Summary of Modifications

Mod No.	Summary of Modifications	Approval Authority	Type	Approval Date
DA 2001 MOD 1	<ul style="list-style-type: none"> • Alter the administration building. 	Minister	Then 96(1A)	4 October 2001
DA 2001 MOD 2	<ul style="list-style-type: none"> • Alter the process building to include an annex. 	Minister	Then 96(1A)	8 August 2002
DA 2001 MOD 3 and DA 1995 MOD 1	<ul style="list-style-type: none"> • Construct eight dross storage bays in an extension to the approved ALDEX building. • Install a pre-processing facility within the western end of the existing approved ALDEX building. • Include a new exhaust stack to service the Reverberatory Furnace. • Extend the administration and workshop buildings, relocate baghouse 3. • Undertake some administrative amendments to allow for the Minister's and the Court's consents to be consistent. 	DPI&E (the Department)	Then 96(2) and 96AA	4 September 2009
DA 2001 MOD 4 and DA 1995 MOD 2	<ul style="list-style-type: none"> • Trial processing of up to 40 tonnes of SPL. 	Department	Then 75W	5 August 2010
DA 01 MOD 5 and DA 1995 MOD 3	<ul style="list-style-type: none"> • Construct and operate a briquetting plant to enable the Proponent to process and 	Department	Then 75W	7 February 2011

Mod No.	Summary of Modifications	Approval Authority	Type	Approval Date
	compress ALDEX dust generated on-site into briquettes.			
DA 2001 MOD 6 and DA 1995 MOD 4	<ul style="list-style-type: none"> Trial processing of up to 200 tonnes of Second Cut SPL over a 12-month period. 	Department	Then 75W	25 October 2011
DA 01 MOD 7 and DA 1995 MOD 5	<ul style="list-style-type: none"> Commercial scale processing of up to 40,000 tonnes of Second Cut SPL per year. Upgrade the crushing plant. Install a new rotary cooler. Re-duct Baghouse 3 to service the new cooler. 	Department	Then 75W	7 September 2012
DA 2001 MOD 8 and DA 1995 MOD 6	<ul style="list-style-type: none"> Trial processing of up to 3,000 tonnes of mixed SPL over a 12-month period. 	Department	Then 75W	17 February 2013
DA 2001 MOD 9 and DA 1995 MOD 7	<ul style="list-style-type: none"> Trial processing of up to 200 tonnes of illicit drug and 1,000 tonnes of pharmaceutical waste over a two-year period (the 2016/17 trial). 	Department	Then 75W	14 September 2015
DA 2001 MOD 10 and DA 1995 MOD 8	<ul style="list-style-type: none"> Commercial scale processing of up to 40,000 tonnes of First Cut SPL per year. 	Department	Then 75W	1 March 2017
DA 2001 MOD 11 and DA 1995 MOD 9	<ul style="list-style-type: none"> Trial processing of up to 1,000 tonnes of quarantine waste over a two-year period. 	Department	Then 75W	Withdrawn
DA 2001 MOD 12 and DA 1995 MOD 10	<ul style="list-style-type: none"> Commercial scale processing of illicit drug and pharmaceutical waste. 	Department	Then 75W	2 August 2019
DA 2001 MOD 13 and DA	<ul style="list-style-type: none"> Extension of trial processing of illicit drug and pharmaceutical waste 	Department	Then 75W	Withdrawn

Mod No.	Summary of Modifications	Approval Authority	Type	Approval Date
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**1995 MOD
11**

In addition, on 12 December 2018, the then Executive Director, Key Sites and Industry Assessments, approved a State significant development application (SSD 7396) by Weston Aluminium to thermally treat up to 8,000 tonnes per year (tpy) of medical, research, quarantine, pharmaceutical and illicit drug, and other problematic wastes such as oily rags and security wastes. This treatment occurs in a new building and rotary kiln at the northern end of the facility [the Medical Waste Processing Facility or Thermal Waste Treatment Plant (TWTP)]. The TWTP connects to one of the existing baghouses (5) to manage air emissions. The Applicant has advised the new TWTP has been constructed and commissioning has commenced.

SEARs have also been sought for a new SSD to be located within the site, which would propose to accept and treat a variety of aqueous and solvent based liquid wastes and consolidate a range of other wastes.

The existing facility is also regulated through an Environment Protection Licence (EPL No. 6423) from the Environment Protection Authority (EPA).

1.3 Existing Site

The existing site, under three different SSD development consents, has the capacity to process up to 40,000 tonnes of aluminium dross, SPL material, pharmaceutical waste (2,000 tonnes) and illicit drugs (5 tonnes) in Rotary Furnaces and up to 35,000 tonnes of scrap aluminium in its Reverberatory Furnace. It also has the capacity to incinerate up to 8,000 tonnes of medical and other problem wastes. The site also includes a carpark, administration building, two large industrial buildings for deoxidant production, dross, SPL and ALDEX processing, a truck loading dock, workshop, a 10 m wide two-way driveway off Mitchell Avenue and other ancillary structures such as bulk materials storage bunds, stacks and bag houses (see Figure 3) including:

- Baghouse and stack 1: servicing the Rotary Furnaces
- Baghouse and stack 2: servicing the storage area
- Baghouse and stack 3: servicing the coolers
- Baghouse and stack 4: capturing fugitive dust, servicing the coolers, and servicing the ball mill at various times during its operation
- Baghouse and stack 5: serving the Reverberatory Furnace and the TWTP
- Baghouse and stack 6: servicing the gas combustion side of the Reverberatory Furnace
- Baghouse and stack 7: servicing the crushing plant

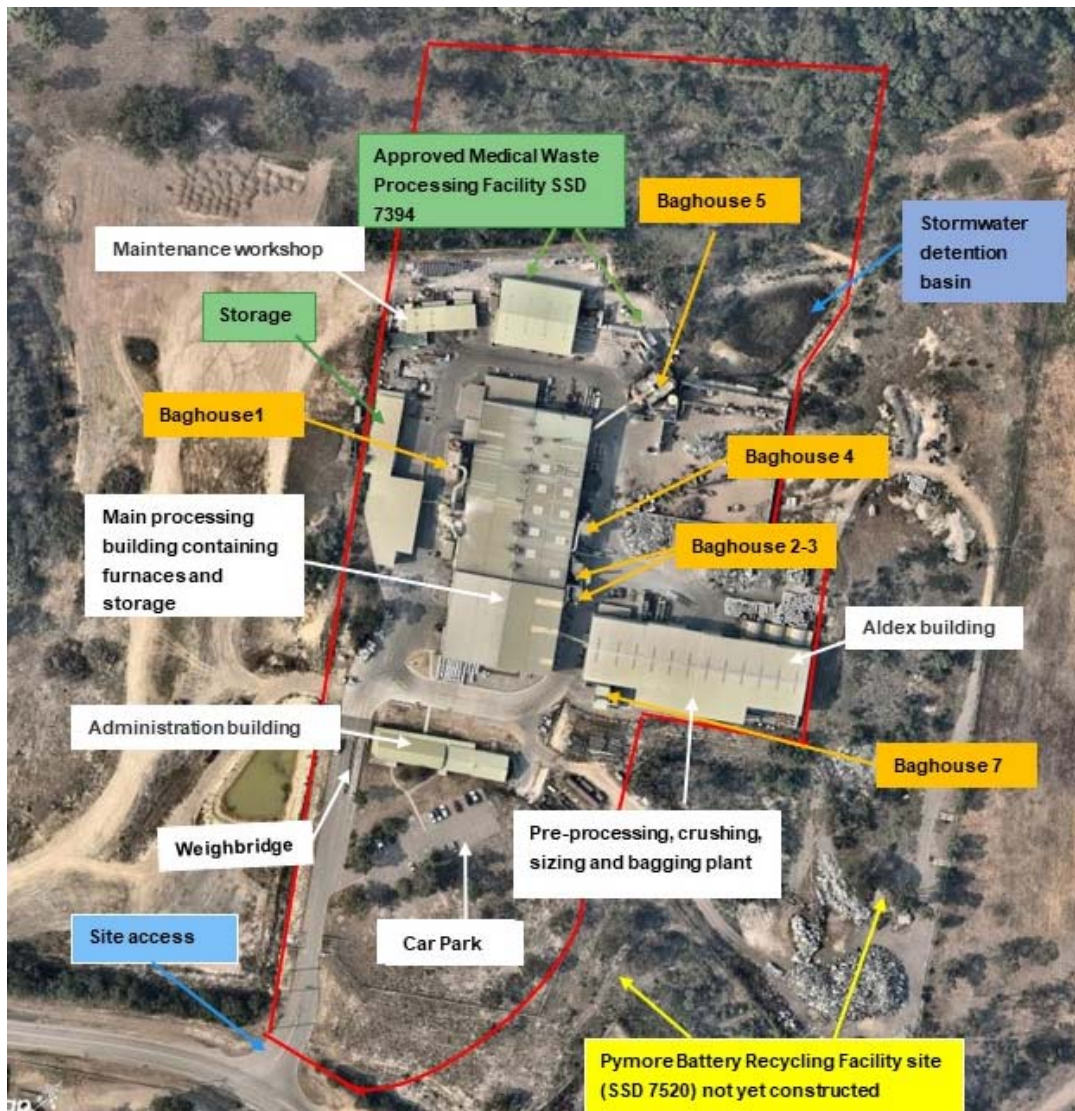


Figure 3 | Existing Site

1.4 Existing Operations

As described above, the site has various approvals to process up to 40,000 tonnes of aluminium dross and SPL per year and 35,000 tpy of scrap metal and up to 2,000 tpy of pharmaceutical waste and 5 tpy of illicit drug waste.

Aluminium Dross

Aluminium dross is a waste produced in the aluminium refining process. Aluminium dross is classified as a class 4.3 dangerous good as it contains substances that emit a flammable gas when in contact with water. It can contain between 30-75 % metallic aluminium, along with aluminium oxide, other metal oxides, traces of sodium aluminium fluoride and alloying metals. The dross is pre-processed to remove non-metallic material and impurities; it is then processed in Rotary Furnaces prior to casting.

Scrap Aluminium

Scrap aluminium consists of materials such as cuttings, cast aluminium, sheeting and wiring which is sorted and then remelted in a Reverberatory Furnace prior to casting. The processing of scrap aluminium is vented through Baghouse number 5.

Spent Potlining

SPL is a hazardous waste by-product of aluminium production. Aluminium is produced from alumina, in large electrolytic cells known as pots. Molten aluminium is regularly syphoned out of the pots and more alumina is then added to start the process again. Over time, the carbon lining of the pots deteriorates and becomes contaminated with a range of materials including aluminium, cyanide and fluoride, culminating in the need to replace the pots every 6-7 years. SPL is generated from the periodic de-lining of the pots.

SPL is divided into two portions, First Cut and Second Cut. Second Cut SPL is the refractory insulation lining (brick liner from aluminium reduction cells) whereas First Cut originates from the carbon cathode.

SPL material contains cyanide and fluoride and can react with water to give off explosive gases. The material is classified as environmentally hazardous waste and a dangerous good (it has the same dangerous good classification as aluminium dross) and is not permitted to be sent to landfill.

1.5 Previous Trials

As discussed in Table 1, the Proponent has received modification approvals to undertake a number of trials for the processing of SPL and other materials as detailed below:

- *Small scale trial of mixed SPL (August 2010 undertaken 2011) DA 2001 MOD 4 and DA 1995 MOD 2*

On 5 August 2010, the then Executive Director, Major Projects Assessment, under delegated authority, approved a modification request to trial the processing of up to 40 tonnes of mixed SPL at the Kurri Kurri facility. The objective of this trial was to verify operations and to demonstrate emission control performance and compliance. The Department and the EPA recommended a range of conditions designed to monitor and report on the trial outcomes and minimise any potential impacts.

Weston Aluminium's Monitoring and Verification Report, submitted in accordance with the conditions of consent, concluded that the trial was successful. All the measured emission concentrations were below regulatory compliance limits and the laboratory results showed negligible discharge concentrations.

- *Large scale trial of Second Cut SPL (November 2011) DA 2001 MOD 6 and DA 1995 MOD 4*

On 25 October 2011, the then Acting Director-General, under delegated authority, approved a second modification request for a large-scale trial to process up to 200 tonnes of Second Cut SPL. The objective of this larger trial was to confirm processing requirements and explore potential beneficial end use opportunities for the treated material for different industrial processes.

The EPA and the Department were satisfied with the results of the trial verified in the post approval Verification Report (submitted in accordance with the conditions of consent), which concluded that emissions satisfied the regulatory compliance limits.

- *Large scale trial of mixed SPL (February 2013 undertaken in 2015-16) DA 2001 MOD 8 and DA 1995 MOD 6*

On 17 February 2013, the then Deputy Director-General, under delegated authority approved a third modification request from Weston Aluminium for a large scale (up to 3,000 tonnes) mixed SPL processing trial. The objective was to evaluate the performance of the proposed treatment sequence, and to determine whether any additional processes are required to achieve a consistent product suitable for end-use market consumption.

Weston Aluminium's Monitoring and Verification Report, submitted in accordance with the conditions of consent, concluded the trial was successful. As with the previous trials, all the measured emission concentrations were below regulatory compliance limits and the laboratory results showed negligible discharge concentrations.

The performance of the existing operating systems included a 98% reduction in cyanide load, and negligible (exceptionally low) cyanide residuals. Emissions were generally of the same order of magnitude, or lower, than reported for previous trials.

- *Illicit drug and Pharmaceutical Waste Trial (September 2015 trial undertaken 2016/17) DA 2001 MOD 9 and DA 1995 MOD 7*

On 15 September 2015, the then Executive Director, Infrastructure and Industry Assessments, under delegated authority, approved a two-year trial for the processing of up to 200 tonnes of illicit drug and 1,000 tonnes of pharmaceutical waste, in existing furnaces. Pharmaceutical wastes would be derived from council and government return schemes, hospitals, dental service providers, medical centres, aged care centres and other similar facilities. Illicit drugs would be derived from confiscated and evidentiary material managed by the NSW Police Force.

Weston Aluminium's Monitoring and Verification Report, submitted in accordance with the conditions of consent, concluded that although only 141 tonnes of pharmaceutical waste and 1.9 tonnes of illicit drug wastes were processed, the trial was successful and environmental and operating performance was verified across all five monitoring events.

2 Proposed modification

2.1 Amendments to the Development

On 11 June 2020 and 12 August 2020, the Applicant lodged two modifications under section 4.55(1A) of the EP&A Act to modify the Aluminium Dross Recycling Facility. The modifications originally sought to enable the removal of the existing unused Baghouse 4, which was associated with the now decommissioned ball mill and screen decks, and installation of a new baghouse complex. The new baghouse complex would have been connected to the Reverberatory Furnace operation, which presently shares a connection to Baghouse 5 with the TWTP.

The original proposal would have provided independent, dedicated baghouses for each of the two operational processes, the TWPF and the Reverberatory Furnace, allowing them to operate at the same time rather than on a campaign basis.

Following review of the application and associated assessment, the EPA raised concerns about potential exceedances of cadmium in air emissions. The Applicant undertook additional air emission impact assessments, internal capacity review and consultation with the EPA and subsequently requested an amendment to the application. Since lodgement of the amended application, the Department has held a number of meetings with the EPA and Applicant to resolve outstanding air quality issues.

Key elements changed since the original application:

- baghouse 4 complex to remain in situ
- no new baghouse
- installation of new ducting between the Reverberatory Furnace and the Baghouse 1 scrubber complex
- upgrading of Baghouse 1.

Key element to remain the same:

- dedication of Baghouse 5 for the operation of the TWPF.

2.2 Proposed Amended Modification

On 12 March 2021, the Applicant lodged an amendment to the application. The new proposal would still enable the dedication of the existing Baghouse 5 to the TWTP enabling the full-time operation of the TWPP, reducing the strain on its cold storage room. However, the Applicant is now proposing to divert the process air emissions from the Reverberatory Furnace to the existing Baghouse 1 complex which provides compatible infrastructure and has available capacity. Baghouse 1, which currently services the Rotary Furnace operations, would then service both the Rotary Furnace and Reverberatory Furnace operations on a non-concurrent basis ensuring that the two processes which emit the highest cadmium air emissions would not operate simultaneously.

The Applicant is also proposing to amend the Stack 1 licence limit for cadmium.

Baghouses are pollution control devices which consist of one or more isolated compartments containing rows of fabric bags. Process air passes up along the surface of the bags then through the fabric.

Particles are retained on the face of the bags, and the cleaned air stream is vented to the atmosphere (see Figure 4).

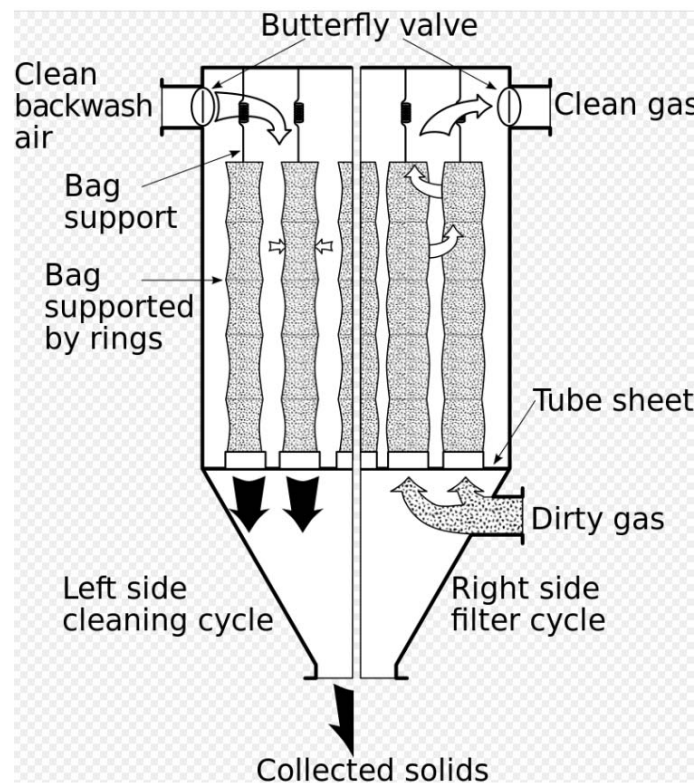


Figure 4 | Cross-section of a typical Reverse Air Baghouse

The modification is described in full in the Modification Report Addendum included in Appendix B and is illustrated on **Figure 5**.

The modification would involve the following:

- decommissioning of existing ductwork between the Reverberatory Furnace and the Baghouse 5 complex
- installation of new ducting between the Reverberatory Furnace and the Baghouse 1 scrubber complex (including isolation dampers and associated controls)
- increasing the height of Stack 1 from 20m to 30m
- upgrading of Baghouse 1 internal components (filters, cages and tubesheets)
- commissioning.

Construction would be undertaken in three stages over the course of three weeks:

- Stage 1 site preparation and decommissioning
- Stage 2 installation of internal components and modification of Stack1 height
- Stage 3 commissioning.

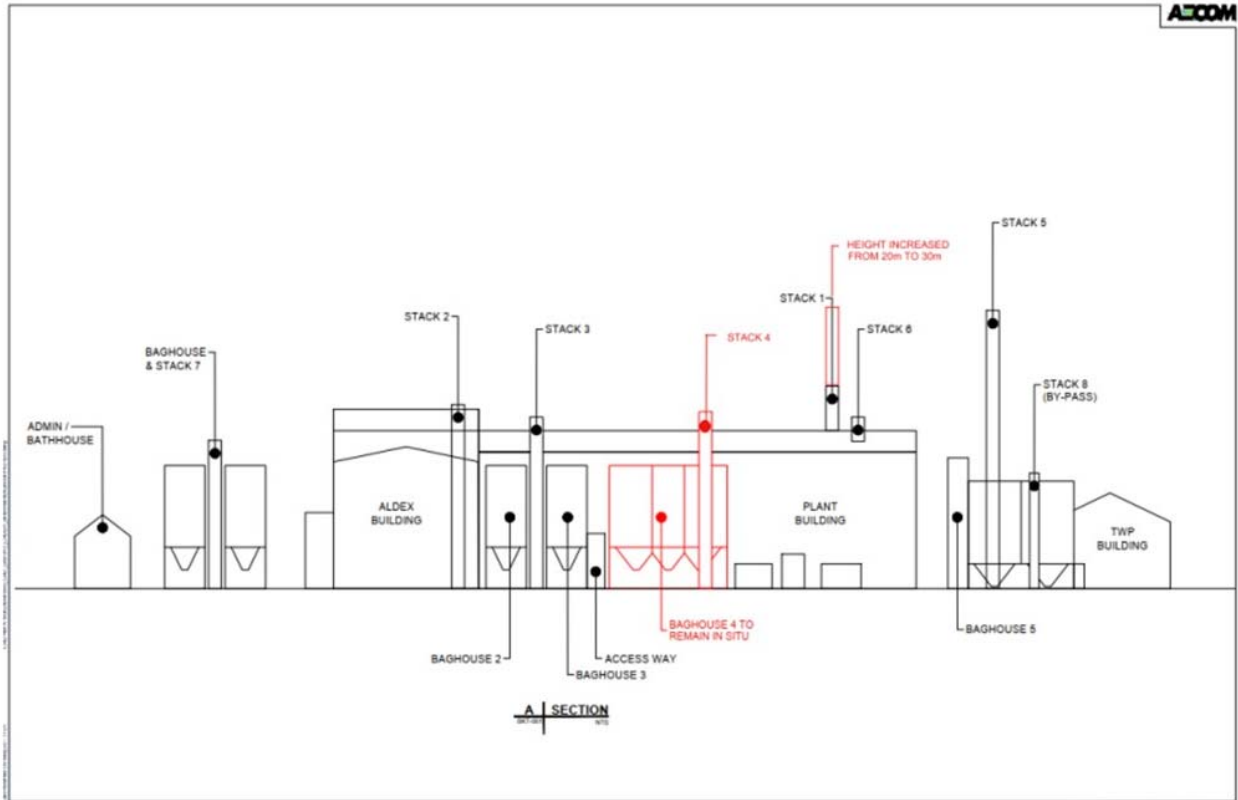


Figure 5 | Indicative Site Elevations

As per original application, the modification would not involve an increase in the approved processing limits, hours of operation, traffic loads, wastes received or generated or noise limits

2.3 Applicant's justification for the Proposed Modification

The approval of SSD 7396 required Baghouse 5 to be shared between operation of the TWTP and the Reverberatory Furnace. Due to the downturn of the scrap metal market, operation of the Reverberatory Furnace was anticipated to be undertaken on an alternating campaign basis with the TWTP when there was available capacity at Baghouse 5. The two processes would not have operated simultaneously.

The Applicant has advised that market demand for TWTP services has since increased from what was originally forecast. Also, the proposed input waste profile now more closely resembles 90% putrescible waste (clinical) and 10% other waste, which places a strain on storage capacity in the approved cool room. In addition, markets are developing to enable the development to reach its approved scrap metal melting capacity which would require the operation of Baghouse 5 more often than anticipated.

In order to meet the increased demands, Weston Aluminium needs to enable full time operation of the TWTP. Without the ability to undertake continuous operation, the site would need to increase the amount of putrescible medical waste stored which is unable to be done safely without sufficient cold storage.

3 Strategic context

3.1 Hunter Regional Plan 2036

The development is consistent with the goals, directions and actions outlined in the Hunter Regional Plan 2036, which provides a strategic direction for the region's need for housing, jobs, infrastructure and a healthy environment. Kurri Kurri is considered a regionally significant centre in the Plan. The development would be consistent with Goal 4 (greater housing choice and jobs) as it would be located within an existing industrial precinct close to the Hunter's inter-regional transport network and allow for the continued employment of current staff.

3.2 Waste Avoidance and Resource Recovery Strategy 2014-2021 (WARR Strategy)

Reducing waste and keeping material circulating within the economy are priorities of the NSW government. To meet this important challenge, the government has prepared a state-wide WARR Strategy. In addition to setting waste recovery and diversion targets for waste, the WARR Strategy emphasises the importance of managing problem wastes better. The development would help to optimise the processing of medical waste— while ensuring air emissions remain under consent criteria – consistent with the WARR Strategy.

The proposed modification would also allow the development to operate at its approval limits for waste processing.

4 Statutory context

4.1 Scope of Modifications

The Department has reviewed the scope of the modification applications and considers that the application can be characterised as a modification involving minimal environmental impacts as the proposal:

- would not significantly increase the environmental impacts of the project as approved
- the primary function and purpose of the approved development would not change as a result of the proposed modification
- any potential environmental impacts would be minimal and appropriately managed through the existing or modified conditions of consent
- is substantially the same development as originally approved.

Therefore, the Department is satisfied the proposed modification is within the scope of section 4.55(1A) of the EP&A Act and does not constitute a new development application. Accordingly, the Department considers that the application should be assessed and determined under section 4.55(1A) of the EP&A Act rather than requiring a new development application to be lodged.

4.2 Consent Authority

The Minister for Planning and Public Spaces (Minister) is the consent authority for the application under section 4.5(a) of the EP&A Act. Under the Minister's delegation of 26 April 2021 the Director, Industry Assessments, may determine the application under delegation as:

- the application has not already been referred by the Planning Secretary to the Independent Planning Commission as at the date of the delegation
- a political disclosure statement has not been made and
- there are fewer than ten public submissions in the nature of objections.

5 Engagement

5.1 Department's engagement

Clause 117(3B) of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) specifies that the notification requirements of the EP&A Regulation do not apply to section 4.55(1A) modifications with minimal environmental impact. Accordingly, the application was not notified or advertised. However, the original applications were made publicly available on the Department's website on 12 June 2020, and were referred to the EPA, Cessnock City Council (Council) and NSW Health Service for comment, the revised applications were made available on the Department's website on 12 March 2021 and also referred to the EPA and NSW Health Services for comment.

5.2 Summary of Submissions on the application

The EPA did not object to the modification, however, it requested additional information in relation to air quality impacts, in particular consideration of a regulatory worst-case scenario, the provision of emissions monitoring reports used in the assessment and additional technical information about the baghouse.

Council did not object to the modification and raised no concerns.

Hunter New England did not object and considered the modifications would have minimal health impacts.

5.3 Response to submissions

On 24 July 2020, the Applicant submitted additional information in response to the EPA's questions (RtS). The RtS was made publicly available on the Department's website and referred to the EPA for comment. The RtS included consideration of reasonable worst-case scenarios in regards to air impacts and technical information about the proposed new stack and baghouse.

Following review of the RTS, the EPA sought additional information in relation to air impacts, which was received on 8 October 2020. However, this information was considered to be insufficient as it did not demonstrate the modification would not result in an exceedance of the relevant air quality criteria and a meeting was held on 26 October 2020, between the Department, EPA and the Applicant, to resolve the outstanding issues. Further assessment was then provided on 5 and 20 November 2020 however, the outstanding concerns were not addressed.

On 12 March 2021, the Applicant lodged an amended application which included an amended Air Quality Impact Assessment and a Human Health Impact Assessment, the application was made publicly available and referred to the EPA and NSW Health.

The EPA advised that it was still concerned with cadmium emissions in Scenario 2, which modelled all stacks emitting at licence limits, it advised that although the HHRA showed there would be *no short or long term health impacts, the assessment was not undertaken in accordance with the EPA's Approved*

Methods for Modelling and Assessment of Air Pollutants (Approved methods) which require cadmium, a principal air toxic, to be reduced to the maximum extent achievable.

Following discussions with the EPA, including a meeting held between the Department, EPA and the Applicant on 29 June 2021, Weston Aluminium provided additional information which proposed a lower cadmium limit for Stack 1. Revised modelling demonstrated the modified facility would comply with the ground level criteria for cadmium. The EPA advised it was satisfied with the revised modelling and provided recommended conditions of consent.

6 Assessment

The Department has assessed the merits of the proposed modification. During this assessment, the Department has considered the:

- the SEE and additional information provided to support the proposed modification (see **Appendix B**)
- the assessment report for the original development application and subsequent modification application(s)
- submissions from, State government authorities and Council (**Appendix C**)
- relevant environmental planning instruments, policies and guidelines
- requirements of the EP&A Act, including the objects of the EP&A Act.

The Department considers the key assessment issue is Air quality.

The Department's assessment of other issues is provided Table 3..

6.1 Air Quality

The operation of the Reverberatory Furnace and the TWTP simultaneously has the potential to impact offsite air quality. As an existing facility, Weston Aluminium has a range of control systems in place to manage air emissions from all components of its operations.

Existing Emission Control

The Applicant's existing emission control systems include baghouse filters to control emissions from the storage and crushing areas, and baghouse complexes which operate to control emissions from the following parts of the facility (see Figure 2):

- Stack 1: Rotary Furnace
- Stack 2: servicing the storage area
- Stack 3-servicing the coolers
- Stack 4: has serviced the cooler, captured fugitive dust and serviced the ball mill but isto be decommissioned
- Stack 5: Reverberatory Furnace and the TWTP
- Stack 6: gas combustion side of the Reverberatory Furnace.

The baghouse units are fitted with high differential pressure alarms, spare bag sets and bag breakthrough detection systems. Weston Aluminium also has real time continuous fluoride and particulate monitoring systems in place. The modification would enable the TWTP to be connected to its own baghouse and thereby to operate simultaneously with the Reverberatory Furnace which would operate on a non-concurrent basis with the Rotary Furnace, the two highest cadmium generating processes. The baghouse is, and would continue to be managed through:

- Standard Operating Procedures
- strict temperature control
- preventative maintenance programs
- real-time emissions monitoring and feedback systems.

The stack of the existing baghouse would also be raised by 10 m and the internal components would be upgraded. There would be no changes to the emissions released from the development.

Air Quality Impact Assessment

The Modification Report Addendum included an Air Quality Impact Assessment (AQIA), prepared by Todoroski's Air Sciences in accordance with the NSW EPA's *Approved methods for Modelling and Assessment of Air Pollutants in NSW* (the Approved Methods).

The AQIA, which modelled cumulative operations across two scenarios, assessed the potential ground level concentrations of the range of air pollutants expected to be generated by the development using dispersion model CALPUFF and climate data derived from the Bureau of Meteorology Station at Cessnock Airport. Point source stack emissions for the existing operations were derived from average monitoring results from 2013-2019. Stack 1 was modelled with an extended height.

The two modelling scenarios are:

- Scenario 1 which modelled the maximum measured emission concentrations from all stacks
- Scenario 2 which modelled all stacks emitting at the EPL limits, used to demonstrate what emissions would look like if the facility operates at its licensed limits.

Model results were then added to the background data for, PM10, PM2.5, sulfur dioxide, nitrogen dioxide, which were derived from the nearest OEH monitoring station at Beresfield and for carbon monoxide, Newcastle, to predict the potential for off-site air quality impacts on the surrounding area due to operation of the Project. These results were then compared to the assessment criterion in the EPA's Approved Methods,

The results of Scenario 1 demonstrated the incremental contribution by the development would be relatively small and there would be no exceedances of the relevant criteria at the worst-affected sensitive receptor or off-site location.

However, the EPL limit scenario, the results of which was used to inform the Human Health Impact Assessment, indicated that there would be exceedances of cadmium and sulfuric acid. However, the HHRA demonstrates the exceedances would cause negligible acute or chronic health risks. The Applicant also regards this scenario as unrealistic.

On review of the amended AQIA, the EPA advised it was inconsistent with the EPA's Approved Methods as:

- predicted impacts exceeded the criteria
- cadmium, which is a principal air toxic, had not been minimised to the maximum extent achievable through application of best-practice design or emission controls for the TWTP
- the use of A HHRA to assess impacts is inconsistent with section 7.3 of the Approved Methods.

The EPA suggested the Applicant propose a reduction of the licence limits for cadmium at the TWTP and remodel existing stacks at worst case monitored concentrations then undertake a reassessment based on the revised inputs. It would then be able to review licence limits where necessary.

In response, the Applicant advised it considered Stack 1 can meet lower limits due to the proposed upgrades. It therefore proposed alternative cadmium limits for both the TWTP (which is not a component of this modification) and Stack 1 and undertook revised modelling, using these lowered EPL limits (see Table 2), which demonstrated that the Scenario 2 (which is the most conservative scenario as all stacks have been modelled operating at their licence limits 24 hours a day seven days a week), would comply with the relevant ground level criteria for cadmium (see Figure 6).

Table 2 | Existing EPL limits for Cadmium versus Proposed

Discharge point	EPL Limits (Cadmium)	Proposed
	Existing	
Stack 1	No limit	0.02 mg/m ³
Stack 5	0.2 mg/m ³	0.18 mg/m ³

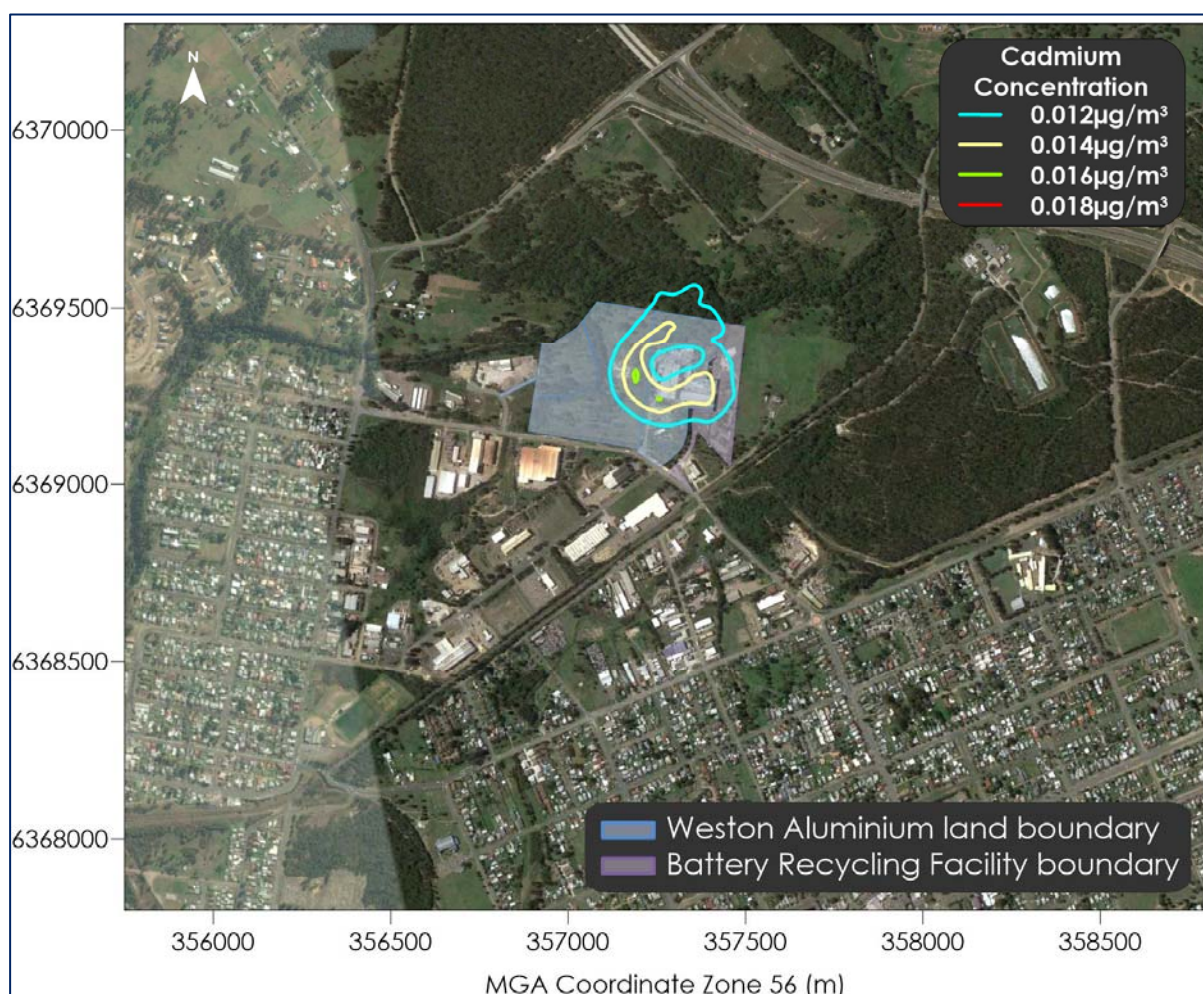


Figure 6 | Predicted Cadmium Emission Contours

Following review of the revised modelling, the EPA advised it was satisfied it could recommend conditions of consent based on the lowered cadmium limit. It also recommended the H₂SO₄ (sulfuric acid) air concentration limit be lowered for the same stacks, the Applicant did not raise any concerns with this proposal.

The Department has considered the findings of the amended AQIA, the revised modelling and the EPA's advice and considers the worst-case modelled scenario demonstrates the modified project would enable the TWTP to operate continuously and in combination with the Reverberatory Furnace, without impacting off-site air emissions.

The Department is satisfied the upgraded Baghouse, the increased height of Stack 1 and the existing management practices including implementation of the existing Operational Environmental Management Plan and Air Quality Monitoring Program, would be sufficient to ensure air impacts are minimised. In addition, the site's existing EPL contains stringent emission limits for operational processes, which are regulated by the EPA through administration of the POEO Act.

However, the Department has recommended conditions requiring the Applicant to update its Air Quality Monitoring Program, including proposed mitigation measures, prior to the commencement of operations as well as the submission of a compliance report within three months after the first year of operations. These updated conditions will ensure the modified development is operating as approved and if any issues are identified they are rectified through the identified mitigation measures. It has also recommended that Stack 1 be raised by 10 m prior to the commencement of operations.

Conclusion

The Department has reviewed the information available including advice from the EPA who regulates the emission of air pollutants in NSW in its role administering the POEO Act. The Department's assessment also considered that:

- the development is located within the site of an existing industrial development within an industrial area, with an 850 m buffer to residential areas
- the modified development would ensure the two highest cadmium generating processes (Reverberatory Furnace and Rotary Furnace) would operate non-concurrently, rather than concurrently as now permitted.

The Department considers the development could be approved subject to the recommended and existing conditions which provide for a means to verify the operation of the development as well as ongoing monitoring, reporting and management of potential issues. The Department therefore concludes the potential air impacts associated with the modification would be minimal and can be appropriately managed by the Applicant, subject to the existing and recommended conditions.

6.2 Other Issues

Table 3 | Assessment of Other Issues

Issue	Findings	Recommendations
Noise	<ul style="list-style-type: none"> • The refurbishment of Baghouse 1 and works to increase the stack height has the potential to generate noise at sensitive receivers, however, there would be no new operational noise. • Nearby receivers include the industrial receivers to the south and west of the site and residential receivers, the nearest of which is located approximately 500 m from the construction footprint, in the Industrial area. • Construction is expected to take three weeks with the primary equipment being cranes. 	The Applicant be required to prepare and implement a CEMP

Issue	Findings	Recommendations
	<ul style="list-style-type: none"> The Applicant advised noise would be managed by the implementation of standard construction hours. The Department's assessment concludes the modification is unlikely to cause additional noise impacts, however, any impacts would be limited by the construction hours and the short duration of the construction period and by the recommended CEMP. 	
Visual	<ul style="list-style-type: none"> The new 30 m high stack has the potential for visual impacts on the surrounding receivers. The WA facility is located within an established industrial area. The closest residential receiver is in the industrial zone and the residential zoned areas are located approximately 700m to the south. Although the new stack would be bigger than the existing Baghouse 1 stack, it would be the same height as the existing stack 5. Given the distance to sensitive receivers, the consistency with the existing structures on site and minimal change from the current impacts, the Department considers visual impacts as a result of the modification would be negligible and therefore no additional conditions have been recommended. 	<p>No additional conditions have been recommended</p>

7 Evaluation

The Department has assessed the proposed modification in accordance with the relevant requirements of the EP&A Act. The Department considers the proposed modification is appropriate on the basis that:

- the proposed modification will result in minimal environmental impacts beyond the approved facility
- the modified development is substantially the same development as the original development
- the modification would upgrade existing infrastructure
- existing management and monitoring systems would appropriately manage impacts to air.

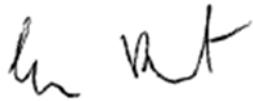
The Department is satisfied that the modification should be approved, subject to conditions.

8 Recommendation

It is recommended that the Director, Industry Assessments, as delegate of the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report
- **determines** that the applications DA 86_01-04 MOD 14 and LEC 10397 of 1995 MOD 12 falls within the scope of section 4.55(1A) of the EP&A Act
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to approve the modification
- **agrees** with the key reasons for approval listed in the draft notice of decision
- **modify** the consent [DA 86-01-04 and LEC 10397 of 1995.]
- **signs** the attached approval of the modification (**Appendix A**).

Recommended by:



02/09/21

Emma Barnet

Senior Environmental Planning Officer

Industry Assessments

9 Determination

The recommendation is Adopted by:



03/09/21

Chris Ritchie

Director

Industry Assessments

as delegate of the Minister for Planning and Public Spaces

Appendices

Appendices should follow this general layout but may be modified for specific reporting needs where necessary:

Appendix A – Notice of Modification

Attach relevant modification instrument or instrument of refusal

Appendix B – Modification Application

<https://www.planningportal.nsw.gov.au/major-projects/project/35921>

<https://www.planningportal.nsw.gov.au/major-projects/project/38411>

Appendix C – Submissions

<https://www.planningportal.nsw.gov.au/major-projects/project/35921>

<https://www.planningportal.nsw.gov.au/major-projects/project/38411>

Appendix D – Consolidated Consent