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**Planning &
Infrastructure**

ASSESSMENT REPORT

Section 75W Modification Weston Aluminium Spent Potlining Material Processing Trial

1. BACKGROUND

Weston Aluminium Pty Ltd owns and operates an aluminium dross recycling facility on 22 hectares of land at Kurri Kurri, in the Cessnock Local Government Area (see Figure 1).

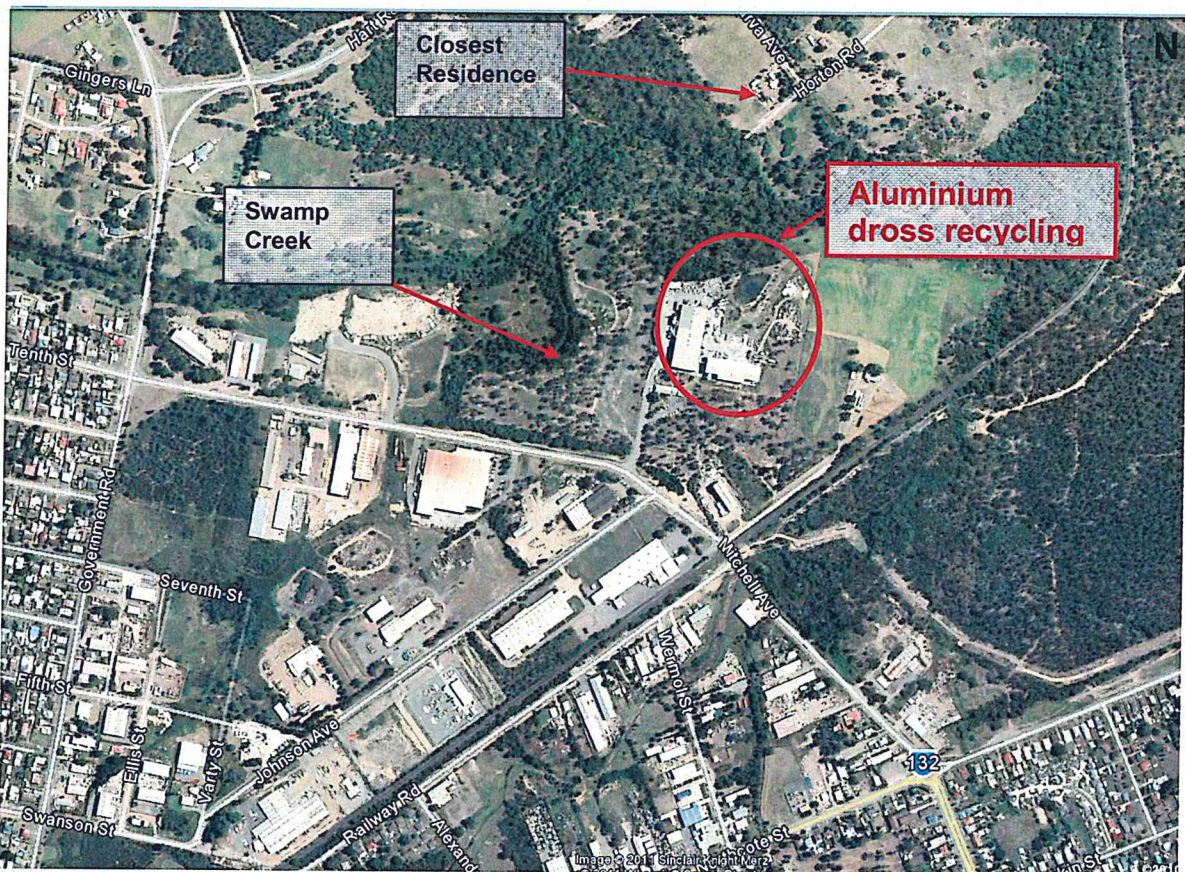


Figure 1 – Site Location

The plant has approval to process up to 40,000 tonnes of dross aluminium and 35,000 tonnes of scrap aluminium a year, for various industrial uses.

Aluminium dross is a waste produced in the aluminium refining process. It can contain between 30-75 percent 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 is sorted and then remelted in a reverbaratory furnace prior to casting.

The facility receives aluminium dross from the Hydro Aluminium Smelter, which is located approximately 2km to the north. This facility's buffer zone extends to the northern boundary of Weston Aluminium's site. The Tomago Aluminium Smelter is approximately 20 kilometres east of the site and also sends aluminium dross to this facility.

The site is surrounded by vacant land acting as a buffer between the residential areas and the plant. The buffer area assists with the management of potential noise and air quality impacts.

The closest residential area is about 600m to the south east of the site, while the closest residence is 270m to the north (in the Hydro Aluminium Smelter buffer zone). Swamp Creek runs along the northern boundary of the site.

The facility operates under two development consents, one issued by the Land and Environment Court in 1996 (10397 of 1995) and one issued by the Minister for Planning in 2001 (DA-86-04-01). These consents have been modified on a number of occasions to:

- alter and extend various buildings;
- install a pre-processing facility within the western end of the existing approved ALDEX building;
- construct eight dross storage bays by extending a section of the approved ALDEX building to the south and to make the Minister's and the Court's consents consistent;
- relocate Bag House 3;
- undertake a short spent potlining processing trial; and
- construct and operate a briquetting plant to enable the Proponent to process and compress the Aldex dust generated on-site into briquettes.

The facility is also regulated through an Environmental Protection Licence (EPL No. 6423) by the Office of Environment and Heritage (OEH).

Spent Potlining Material

Spent potlining (SPL) material 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. Pots are replaced every 6-7 years, with the nearby Tomago Aluminium Smelter producing approximately 10,000 tonnes of SPL material a year.

Both First Cut SPL (originating from the carbon cathode) and Second Cut SPL material (originating from the refractory lining) contain 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.

Historically SPL material has been sent overseas for processing, due to the lack of available treatment technologies in Australia.

2. PROPOSED MODIFICATION

Weston Aluminium has been researching available technologies for the treatment of SPL material in Australia since 2005. Its research has included a series of trials, (including a laboratory trial in New Zealand and a recent trial at its Kurri Kurri facility), undertaken to

establish the suitability of its processing technologies and to confirm that Weston Aluminium's existing environmental controls are suitable.

On 16 February 2011, the Proponent requested a modification to both the Minister's and Court's consent under 75W of the EP&A Act.

Weston Aluminium is now proposing to conduct a series of trials to process up to 200 tonnes of 2nd Cut SPL material over a twelve month period. The trials, aimed at developing end use market opportunities for the 2nd Cut treated material, are expected to take up to 4 weeks, spread over the twelve month period.

The SPL material would be sourced from local aluminium smelters, Tomago Aluminium and Hydro Aluminium. The processing of SPL material would be similar to the process employed for the previous trial. The trial would be undertaken during normal operating hours 7am – 6pm Monday to Saturday in the existing natural gas fired rotary furnaces. The spent potlining material would be processed in 2.5-3.5 tonne batches alone and with other feedstock such as cullet (crushed glass) and iron oxide, at temperatures above 650°C, to ensure complete cyanide destruction.

The processed SPL material would be tapped from the furnace into existing molds. Once set the product would be analysed to confirm destruction of cyanide has occurred and contaminants have been immobilised before being sent to prospective customers for product evaluation.

3. STATUTORY CONTEXT

Approval Authority

Under clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000*, both the Court's and the Minister's consents are taken to be approvals under Part 3A of the Act and can be modified by the Minister under section 75W of the Act.

The Department notes that the Proponent has made political donations, however, not in respect of the current application.

Notwithstanding the political donations, the Director-General may determine this application on behalf of the Minister in accordance with the Minister's delegation of 14 September 2011, subject to the following:

- the local Council not objecting;
- where a political donation statement has been made, but only in respect of a previous related application; and
- there are less than 10 public submissions in the nature of objection.

The Department is satisfied that the application meets the terms of the delegation and that the Director-General may determine the application under delegated authority, subject to the report being made publicly available for 7 days prior to determination.

Section 75W – EP&A Act 1979

Under Section 75W of the EP&A Act, the Minister is obliged to be satisfied that what is proposed is indeed a modification of the original proposal, rather than being a new project in its own right.

The Department has reviewed the scale and nature of the proposed modification, and is satisfied that it can be characterised as a genuine modification to the original project as it would use existing plant to process a waste product from the aluminium refining process similar to existing approval.

4. CONSULTATION

Under Section 75W of the EP&A Act, the Department is not required to formally notify the application. However, due to the potential public interest in the proposal, the Department exhibited the application from Tuesday 5 July 2011 to Tuesday 19 July 2011:

- on the Department's website;
- at the Department's Information Centre;
- at Cessnock City Council's offices; and
- at the Nature Conservation Council's offices.

The Department also advertised the public exhibition in the Maitland Mercury, and sought comment from the Office of Environment and Heritage (OEH) and Cessnock City Council.

Following the exhibition period, the Department received eight submissions on the proposal: six from the public and two from public authorities (see Appendix B).

A summary of the issues raised in these submissions is provided below:

The OEH indicated it had no objection to the proposal and provided recommended conditions of approval.

Council also indicated it had no objection providing the modification complies with predictions and mitigation measures the Environmental Assessment.

Five submissions were received from the public, all 5 objected to the project. One submission was received from Tomago Aluminium in support of the proposed modification.

The key issues raised in public submissions include:

- air quality impacts including odour;
- health impacts; and
- hazard and risk.

The Department has fully considered the issues raised in submissions in its assessment of the project and has incorporated Council's and the OEH's requests into the recommended conditions.

5. CONSIDERATION

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

- environmental assessment and Director-General's assessment report of the original project application;
- existing conditions of approval and the environmental performance of the facility, in particular for the previous SPL trial ;
- documentation supporting the proposed modification;
- submissions received;
- relevant environmental planning instruments, policies and guidelines; and
- requirements of the EP&A Act, including the objects of the Act.

The conclusions of this assessment are summarised below.

The Department considers the key issue with the proposed modification is air quality. Other issues include waste, soil & water and hazards. These same issues were previously assessed for the 2010 trial, the outcome of which helps to quantify the expected impacts of the proposed extended trial.

Air Quality

The delivery, transfer and storage of spent potlining material on site all have the potential to generate dust emissions. The processing of spent potlining material would also generate air pollutants such as fluoride and cyanide emissions which would need to be controlled.

In relation to dust, deliveries of spent potlining material would be transferred to existing enclosed storage bays and would be covered to minimise dust. Existing baghouse filters would also be in place to control particulate emissions.

The most recent trial, approved 5 August 2010, took place on 14 August 2010 (DA 86-04-01 Mod 4) and involved the processing of 8 tonnes of second cut SPL over a one day period at its existing Kurri Kurri site.

Data collected from independent stack emission testing during the 2010 trial verified that air emissions generated during SPL processing activities could be controlled and maintained within existing regulatory limits. The success of the 2010 trial has given both the Department and OEH some assurance that the expanded trial sought in this current application could be managed by the proponent.

The results for both the real time fluoride monitoring and the stack emission sampling from the 2010 trial, (see in Table 1) show that the emissions of gaseous fluoride, Total Particulate Matter and Total hazardous substances (metals) were below licensed limits. Emissions of cyanide were similar to the results of the New Zealand trials, and below the OEH's impact assessment criteria for individual toxic air pollutants.

Table 1 – Results of 2010 Trial

Contaminant	Concentration (mg/m ³)	Licence limit
Total Particulate Matter	8.9	25
Gaseous fluoride	0.38	2
Total hazardous substances (metals)	0.017	10
Cyanide	<0.0061	NL
Gaseous Fluoride (one hour average from real time monitoring)	0.6	1.4

Fluoride has the potential to become gaseous with the SPL process. Fluoride and particulates, emitted during the facilities existing operations, are monitored by real time air emission monitoring infrastructure. The Proponent has confirmed that real time monitoring of the fluoride emissions from the stack would be in place, so that any exceedance would immediately be identified and measures would be implemented to prevent further exceedances. Stack air emissions would also be sampled and sent away for analysis; these results would be used to inform subsequent trials. The OEH are satisfied with this approach.

With regard to Cyanide, the objective of the SPL treatment process is to achieve complete destruction through a thermal oxidation process. Through the analysis of the previous trial results, Weston Aluminium is confident that there would be no release of gaseous cyanide (in the form of HCN), and only a minute residual amount of particulate cyanide would be released from the stack during processing (<0.0061 mg/m³). This is well below the OEH's impact assessment criteria of 0.09 mg/m³ for cyanide. The main product of the cyanide destruction would be harmless gaseous carbon dioxide and nitrogen. The previous trials have demonstrated that emissions of cyanide are unlikely to exceed the OEH criteria and the Department and OEH are satisfied the emissions of cyanide would be well below the regulated limits.

The Department has recommended conditions to ensure that should fluoride emissions exceed the levels prescribed in the Environmental Protection Licence, or should laboratory results show that cyanide generation is higher than 0.09 mg/m³, then processing must

cease. This should ensure that any significant deviations would be identified, processing would cease and the issue rectified, thereby minimising any potential impacts.

The OEH did not raise any concerns regarding air emissions and confirmed they are satisfied with the proposal subject to the following conditions:

- notify the OEH of the commencement of the trial;
- undertake detailed monitoring of emissions and other parameters during the trial; and
- report on the air emissions from the trial.

The Department has incorporated these requirements into the recommended conditions.

The Department is satisfied that air emissions would be managed to a satisfactory level consistent with the facility's EPL.

Table 2 – Other Issues

Issue	Consideration	Recommendation
Waste	• The trial has the potential to generate hazardous waste should processing of the Spent Potlining Material fail to cause effective destruction of cyanide. • The existing conditions require that all waste is classified and disposed of at a facility that is legally able to accept the waste. • The Department is satisfied this would ensure the waste would be appropriately disposed of.	• Require the Proponent to report on the outcomes of the trial and include a requirement to demonstrate the trial products have been appropriately disposed of.
Soil & Water	• Spent potlining material would be covered to prevent contamination of any stormwater. • Spill management procedures would be in place and existing onsite stormwater management infrastructure would capture any runoff from any spill residue or dust and this water would be reused onsite.	• Require the spent potlining material to be appropriately bundled.
Hazards	• Spent Potlining Material is a dangerous good and transport and storage of this material would need to be managed. • Spent Potlining Material has the same dangerous goods classification as Aluminium dross, which is currently processed on site. Consequently Spent Potlining Material would be managed through Weston Aluminium's existing facilities and management practices. • The proposed safeguards are the same as for the previous trials. The Department's Major Hazards Unit previously indicated that the proposed safeguards were adequate, this has been further verified by the August 2010 trial.	No change to existing conditions.

6. CONCLUSION

The Department considers that the proposal represents a real opportunity to explore a potentially viable solution for the management and reuse of 2nd Cut spent potlining material in Australia. The previous trials have demonstrated that emissions from the processing of SPL can be managed within the relevant criteria and licensed limits.

As with the previous trial, the Department has recommended conditions to limit the duration of the trial and ensure that should an exceedance of the current emission limits in the Environmental Protection Licence be identified, or laboratory results indicate that cyanide concentration is above 0.09 mg/m³, then the trial would cease. The Department is satisfied these recommendations would minimise any impacts. The OEH has also indicated that it is satisfied with the proposal and the management measures either in place or proposed.

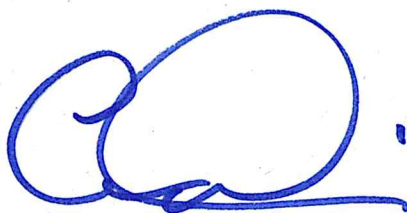
Consequently, the Department considers the proposal is in the public interest and should be approved, subject to conditions.

7. RECOMMENDATION

It is RECOMMENDED that the Director-General, as delegate for the Minister:

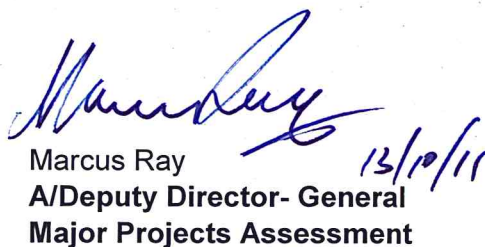
- **approve** the application to modify the development consent under section 75W of the EP&A Act, subject to conditions; and
- **sign** the attached notice of modification to the development consent (in Appendix A).

Emma Barnett
Major Projects Assessment



11.10.11

Chris Wilson
Executive Director
Major Projects Assessment



13/10/11

Marcus Ray
A/Deputy Director- General
Major Projects Assessment

**APPENDIX A – NOTICE OF MODIFICATION and CONSOLIDATED
APPROVAL WITH PROPOSED MODIFICATIONS**