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17 March 2015

Karen Marler
Head Regional Operations Unit – Hunter Region
Environment Protection Authority
PO Box 488G NEWCASTLE NSW 2300

**Re: Weston Aluminium – Application for Consent Modification and Licence Variation - Proposed Processing Trial of Pharmaceutical and Illicit Drug Wastes**

Dear Mrs Marler,

Further to our discussions with Mr Bill George of the NSW EPA (22 January 2015) and Mr Chris Ritchie of the NSW DPE (23 January 2015), Weston Aluminium Pty Limited (Weston Aluminium) wishes to explore the feasibility of waste processing opportunities (beyond our traditional processing activities) at its Kurri Kurri facility, with particular focus upon the treatment and processing of pharmaceutical and illicit drug wastes. Accordingly, Weston Aluminium seeks a modification to its Development Consent and variation to its Environmental Protection Licence to enable proposed processing trials of these wastes to be undertaken at our Kurri Kurri premises.

Note: Weston Aluminium similarly continues to explore and evaluate opportunities in relation to the trial processing of quarantine wastes. Application for trial processing of quarantine wastes may be sought in future pending the outcome of further desktop studies.

In support of our Licence Variation Application, Weston Aluminium has prepared the enclosed briefing in relation to pharmaceutical and illicit drug processing, including research and development background, proposed trial project overview and associated environmental assessment.

We trust the information provided is suitable for your consideration. Should you require additional information, please do not hesitate to contact the undersigned on 4936 2166.

Yours sincerely,

**Weston Aluminium Pty Ltd**

**Christopher McClung**
Plant Manager

CC: NSW Department of Planning and Environment (12 March 2015)

## BACKGROUND

### Company Operations

Weston Aluminium is a services company that provides innovative solutions to the aluminium and steel industries. Created in 1996 by Managing Director Garbis Simonian (and in partnership with Asahi Seiren Co. Ltd of Japan), an opportunity was identified to process and recycle aluminium by-products in an environmentally efficient and responsible manner.

Operations commenced at our Kurri Kurri facility with the reprocessing of aluminium-bearing smelter wastes from local, domestic and international primary smelter generators. Using the 'non salt' processing technology adopted from our sister company in Japan as a core, Weston Aluminium has developed technologies to process all forms of aluminium bearing by-products from the aluminium manufacturing sector. In 2001, Weston Aluminium commissioned a Reverbatory furnace for the reprocessing of aluminium scrap and base metals for the production of de-oxidant puck and specialist alloyed ingot for the steel manufacturing and die-cast industries, respectively.

Through various value-add processes, and in response to Weston Aluminium's central and foundation involvement with the Australasian Industrial Ecology Network (represented by like-minded industry, academics and Government regulators, eager to encourage the recovery of industrial by-products as valuable resources, and thereby achieve the diversion of large material volumes from landfill and/or overseas treatment), non-metallic residues generated by these core processes have been beneficiated and marketed to various industrial and manufacturing-based end-users as substitutes to conventional virgin raw materials (e.g. fluxes, desulfurising agents, slag conditioners and other raw material feedstock). In doing so, Weston Aluminium has diverted significant quantities of otherwise by-product residues from landfill disposal, thereby achieving a zero-waste position.

Further diversification of the business' service provision and product profile has occurred more recently in response to the Global Financial Crisis and contraction in the manufacturing sector, with the installation and commissioning of our Briquetting Plant and the extension of service provision to primary smelter clientele through the reprocessing of spent potlining wastes. It is apparent, however, that further diversification of the business is required to meet the processing capacity of plant and equipment to sustain the business into the future – hence our interest in the thermal treatment and processing of pharmaceutical and illicit drug wastes.

**Trial Conception and Demand**

Weston Aluminium has historically provided illicit drug waste thermal destruction services to the NSW Police. This activity has, to date, been performed as a community service. Weston Aluminium understands that, while this activity (provided to end 2014 by a number of facilities within the Newcastle-Hunter Valley region) has been tolerated by the Environment Protection Authority (EPA), premises must now be formally licenced to undertake this specific activity. The NSW Police Force now has very limited storage capacity and avenues for the controlled destruction of illicit drugs, and in many circumstances must default to their only other option of open-air burning. This position is not ideal, particularly when established industrial facilities have suitable processing and environmental control mechanisms in place. Accordingly, the NSW Police Force has approached Weston Aluminium regarding this issue, is strongly supportive of Trial activities and subsequent amendments to our statutory and regulatory approvals (refer **Attachment 1**).

Preliminary research and industry consultation indicated that domestic processing and disposal options for other wastes (including pharmaceutical wastes) were also heavily constrained. In accordance with NSW legislation, these wastes must be incinerated. It is evident that the majority of these wastes generated within NSW are actually exported to Queensland and/or Victoria as there is only one suitable NSW-based facility offering thermal destruction services, and such a service is very expensive.

Quantities of these wastes requiring treatment appear to be increasing nationally at a rate of approximately 3% per annum. Hence, management and disposal of these wastes continues to represent a major issue faced by industry within NSW and throughout Australia. Generators and managers of pharmaceutical wastes are highly supportive of proposed trial activities and the prospect of competition development and the availability of alternative service providers in the industry (refer **Attachment 1**).

In response to preliminary research, Weston Aluminium engaged MRA Consulting Group to prepare a more detailed analysis of type, source location and generation quantities of wastes that require thermal treatment, and for which our plant, equipment, processes and environmental controls are considered to be compatible. Input for the report was sourced from various publically-available databases, industry codes of practice, Environment Trust, Department of Health, NSW Procurement, NSW Environment Protection Authority and via interviews with various industry experts.

A summary of these data is presented in **Table 1**, and demonstrates the strong demand for this service provision within NSW and other eastern states.

**Table 1:** Summary of Material Type, Source and Generation Rate of Pharmaceutical and Illicit Drug Wastes.

| Waste Category | Waste Description | Source | Estimated Annual Generation (tonnes) |
|---|---|---|---|
| **Pharmaceutical** | • Derived from Council and Government return / collection schemes, hospitals, dental service providers, Medical Centres, chemists / pharmacist recalls, aged-care facilities and medical clinics.<br>• Wastes include expired, superceded, unwanted / unused, and/or off-specification medications.<br>• Packagings of pharmaceuticals include cardboard boxes containing plastic blister packs with aluminium foil seals.<br>• In NSW, these wastes must be incinerated.<br>• Incineration typically achieves 75 – 90% original weight reduction. | Nationally | 10,000 |
| | | NSW | 5,000 |
| | | QLD | 1,500 |
| | | VIC | 1,000 |
| **Illicit Drug** | • Derived from confiscated and evidentiary materials management by NSW Police.<br>• Plant material, including stems, foliage, seeds and roots. Residual soils may also be present.<br>• Pill-form drugs (e.g. MDMA, amphetamines, etc.) in either paper or plastic ‘evidence’ satchels. | Nationally | 150 |
| | | NSW | 50 |

## TRIAL PROJECT OVERVIEW

Weston Aluminium is seeking to trial the processing of pharmaceutical and illicit drug wastes in conjunction with existing plant feedstock at a scale appropriate to evaluate the variability of waste streams, and to assess and verify the performance of the treatment sequence. The trials will also determine additional process requirements which may be required to achieve the manufacture of a consistent value-added product specification suitable for end-use market consumption. Accordingly, Weston Aluminium is seeking approval to trial the processing of up to 1,000 tonnes each of pharmaceutical and illicit drug waste over an interval of up to two years from Approval.

Consistent with prior trial activities, Weston Aluminium proposes a treatment process based on the following elements:

1. Input characterisation; and segregated storage;
2. Furnace feedstock formulation;
3. Thermal treatment;
4. Crushing and blending; and
5. Dispatch to Customers.

It is proposed that existing plant and equipment currently employed for the handling and processing of conventional Plant inputs will be used for the treatment of pharmaceutical and illicit drug wastes. Existing infrastructure and associated controls will be employed for material containment and compliance with regulatory environmental requirements.

### Trial Objectives

Trials are proposed to establish the following:

- Variability of waste consignment density, packaging type, moisture content and storage and handling requirements;
- Verification of technology and infrastructure compatibility and performance on a relatively large-scale (storage and containment, treatment, and environmental control systems);
- Optimal furnace operating conditions, including identifying suitable batch composition, batch/residence time, burner protocol and required operating temperature for the processing of pharmaceutical and illicit drug wastes;
- Verification of the performance of the existing pollution control systems;
- Verification of the performance of various feedstock formulations;
- Assessment and confirmation of process and procedural controls relating to occupational exposures and safety performance;
- Generation of treatment product quantities and, in conjunction with other inputs, formulation of the manufacture of a value-added product which serves as a direct substitute for conventional industrial raw material feedstock; and
- Energy demand requirements.

**Trial Proposal**

The following activities are proposed:

1. As for prior processing trials, Weston Aluminium will facilitate a Community and Stakeholder Information Session prior to trial commencement to outline details of the proposal to interested parties. Session invitations will be issued in writing to government regulators, industry stakeholders and representatives of local environmental and interest groups. This session is to take place at Weston Aluminium's Kurri Kurri premises, and will occur around 2 weeks prior to trial commencement;

2. The transportation of pharmaceutical wastes from sources to Weston Aluminium's Kurri Kurri facility by licensed Transport Contractors. Weston Aluminium 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 of the destruction of illicit drug wastes will be managed by NSW Police and their independent verifiers;

3. Up to 1,000 tonnes of each waste type (pharmaceutical and illicit drug wastes) will be sourced domestically. It is anticipated that input materials will be sourced primarily from New South Wales;

4. Due to the expected sporadic nature of supply, trial processing of these wastes will occur at our Kurri Kurri facility over a period up to 24 months from Approval;

5. The proposed processing sequence is as follows:

    - The delivery of pharmaceutical wastes from domestic sources will 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 will be adopted for the transport and handling of these wastes;
    - Pharmaceutical waste feedstock deliveries will be stored in existing enclosed storage bays until processing. As illicit drug wastes will be processed immediately upon receipt, temporary storage of these inputs will not be required;
    - Thermal processing of waste blends [small-quantity combinations (typically <100 kg) with conventional dross, SPL and/or scrap furnace additions] will 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;

- Current Plant operations occur during the approved 24 h/day, 7 days/week. It is anticipated that processing trials will principally be undertaken during typical hours of operation (10 pm Sunday – 10 pm Friday), although trial activities may also occur during weekend periods, as dictated by Plant production and maintenance scheduling requirements;
- Process emissions will be ventilated, controlled and monitored by existing best-practice emission controls systems, including extraction hoods, lime scrubber-fabric-filter baghouse complexes, and real-time continuous emissions monitoring systems;
- Processed material will be tapped from the furnace into existing sow molds or product bins. Once sufficiently cooled, the ash residue will be stored undercover awaiting laboratory assessment and future beneficiation into trial end-use products; and
- The storage, handling and dispatch of finished product to Customers will occur under existing quality control procedures.

## REGULATORY APPROVAL AND ASSESSMENT OF ENVIRONMENTAL IMPACT

In response to preliminary meetings and discussions with representatives of the NSW Department of Planning and Environment (DPE) and the NSW EPA, and for consistency with prior research and development trials and regulatory approvals, Weston Aluminium has prepared Applications to modify Development Consents, vary our Environment Protection Licence, and an assessment of environmental impact. This assessment describes proposed operations, safeguards and emission control technologies designed to ensure compliance with existing regulatory standards.

### Regulatory Approvals

Approval is sought from the NSW DPE to modify Weston Aluminium's existing Development Consents (DA-86-04-01-MOD 8 and 10397 of 1995-Mod 6, as consolidated), authorising the carrying out of necessary trial activities to assess the storage, handling, treatment and beneficial end use opportunities for the products of pharmaceutical and illicit drug waste processing. Applications to Modify Development Consents were issued to the DPE on 12 March 2015.

Concurrently, Weston Aluminium is also seeking a Variation of its Environment Protection Licence (EPL 6423) with the NSW EPA to authorise the carrying out of the processing trials, including the inclusion of a new scheduled licencing activity *"Waste Processing (thermal treatment)"* under the Protection of the Environment Operations Act 1997. It is noted that the wastes may contain precursors to dioxins and furan formation, and in order to allow for the wastes to be processed in either of Weston Aluminium's furnaces, the Variation also seeks an air concentration limit of 0.1 ng/$m^3$ for dioxin/furan emissions from Stack 1 (EPL Point 1) **– valid for the trial period only.** This limit reflects our regulatory limit already established for for Stack 5 (Point 13), and is consistent with the most stringent air emissions criteria (Group 6) applicable for NSW regulation.

**Consistent with prior Consent Modifications, Application is not sought to vary existing environmental performance requirements, nor to increase emission limits established for the premises.** Weston Aluminium is committed to maintaining its high standard of emissions compliance, and is confident that existing emission control technologies and practices will be sufficient to maintain this high performance standard.

Our Application for Environment Protection Licence Variation is provided as **Attachment 2**.

### Potential Key Environmental Issues and Proposed Management, Monitoring and Mitigation Measures

A review of potential environmental issues associated with the proposed pharmaceutical and illicit drug waste processing trials is provided in **Table 2**. Proposed management and mitigation measures designed to address these potential issues are also tabulated.

**Table 2: Potential Key Environmental Issues and Proposed Management and Mitigation Measures**

| Environmental Aspect | Potential Environmental Issue | Management and Mitigation Measure | Potential Environmental Impact |
|---|---|---|---|
| Air Quality | • Generation of fugitive dust emissions<br>• Non-compliance with existing regulatory compliance stack air emission limits (including particulates and products of combustion)<br>• Generation of odour | • Operations historically performed at our Kurri Kurri premises verify the performance of existing pollution control systems, operating to effectively control emissions to within acceptable levels.<br>• All trial operations will be performed within enclosed buildings. Storage bays are to be maintained under negative pressure to mitigate fugitive emission and odour generation.<br>• Deliveries of raw materials will occur by truck. All delivery loads will be covered as per existing delivery practices.<br>• All relevant facilities / unit operations (storage bays, furnace melting and casting) are serviced by existing pollution control systems (also see below).<br>• Existing fabric filter baghouses to be operated for the control and removal of particulate matter and other particulate-bound pollutants. The existing particulate emission monitoring systems will be operated to provide continuous, real-time assessment of particulate emissions.<br>• Existing lime scrubber systems will be operated for the control and removal of acid-gases and dioxins/furans which may be present within furnace exhaust gases.<br>• Wastes are to be processed in small batches so as to minimise pollutant generation and thereby ensure control by emission control systems.<br>• Furnace burners are routinely tuned to ensure optimal operating combustion efficiencies.<br>• Ongoing implementation of our Air Quality Monitoring Program, which defines operational, maintenance and validation protocols to assess and ensure compliance with regulatory requirements.<br>• Monitoring of emission parameters, including flow conditions (velocity, temperature, dry gas density, moisture content), solid particulates, hydrogen chloride, metals, dioxins & furans, polycyclic aromatic hydrocarbons, carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of sulfur and volatile organic compounds will be conducted during the trial on a six-monthly basis. Emission testing will be performed by a NATA-accreddited emissions testing service provider. Monitoring methodologies employed will be in strict accordance with licencing requirements. | Emission performance is expected to be similar to that of normal site operations, and remain within existing compliance limits. The potential impact on local air emissions is, therefore, considered to be low. |

| Environmental Aspect | Potential Environmental Issue | Management and Mitigation Measure | Potential Environmental Impact |
|---|---|---|---|
| Water Quality | • Spills of raw materials to site catchment and pollution of local water ways | • All raw material truck delivery loads will be covered by tarpaulin to prevent spillages, as per current process material deliveries.<br>• All trial inputs are non-hazardous and non-dangerous goods materials.<br>• All trial operations will be performed within enclosed buildings to mitigate against external spills.<br>• 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).<br>• The onsite stormwater management system (drainage network, pond and wetland) captures and contains all runoff from potentially dirty areas, including hardstand and traffic ways, for subsequent onsite irrigation reuse. Only waters impinging on the catchment after this first flush is contained are directed to the adjacent Swamp Creek (north-west corner of site). The pond and wetland will similarly contain any spills, should they occur. It is expected, however, that this system will not be relied upon due to other controls proposed for the trial (i.e. all storage and processing activities occurring within buildings). Nevertheless, routine monitoring of water quality will be maintained to assess the presence of any associated contaminants, including particulates, oil & grease, acids & alkalis and salt residues. | The potential impact on local water ways is considered to be low. |
| Noise | • Exceedance of regulatory compliance noise limits | • Weston Aluminium has Regulatory approvals for plant operation 24-hours a day, 7-days per week. Specific receptor noise limits are prescribed for daytime, evening and night time periods. Weston Aluminium continues to comply with these limits.<br>• Trial operations will be identical to normal Plant operations, and will typically occur within normal operating hours (10 pm Sunday to 10 pm Friday).<br>• All operations will occur within the enclosed Plant Building. | The potential impact on noise amenity is expected to be negligible. |
| Waste Management | • Generation of waste requiring disposal | • Pharmaceutical and illicit drug waste materials will be delivered in bulk or in polypropylene bulka bags. It is anticipated that up to 1000 kg of bulka bag waste may be generated. These bags will be disposed of to an approved landfill facility in conjunction with routine site disposal protocols following trial completion.<br>• Ash residues of thermal treatment processes are to be beneficiated for reuse. No landfilling of these residues will occur. | No hazardous waste will be generated by the proposed trial process. |

| Environmental Aspect | Potential Environmental Issue | Management and Mitigation Measure | Potential Environmental Impact |
|---|---|---|---|
| Hazards | • Furnace explosion and expulsion of raw/product materials<br>• Hazard to the health of employees | • Weston Aluminium will maintain existing existing hazard management strategies, and operate and maintain associated infrastructure.<br>• The risk of furnace explosion and resultant expulsion of material is considered to be negligible. Nevertheless, furnace charging, melt, mixing and casting techniques established for conventional furnace operations will also be adopted. This includes loading the furnace with burners off, lowering furnace doors during the processing phase, and idling burners during mixing and casting.<br>• Existing PPE requirements are considered adequate for the handling and processing of waste materials. Nevertheless, it is proposed that a Hygiene Study will be performed prior to trial commencement to review possible hazards to health. Recommended safeguards will be adopted accordingly.<br>• Weston Aluminium has recently updated its Fire Safety Study, Safety Management System and Emergency Response Plan. These documents define appropriate operational and management strategies designed for risk and hazard assessment, mitigation and management and safe operation of the processing operation, and are considered compatible and appropriate for trial feedstock materials and activities. | The potential for fires and furnace explosion is considered to be negligible. |
| Greenhouse Gases | • Excessive generation of greenhouse gases (GHG), including carbon dioxide, methane and oxides of nitrogen | • Furnace burners are routinely tuned to optimise burner efficiencies and minimise GHG emissions. Furnace burners will be maintained to ensure complete combustion of furnace off-gases.<br>• Emission of unburnt methane and other natural gas constituents is not likely to occur due to burner tuner and set-up and furnace temperatures proposed for the trial.<br>• As described above, monitoring of GHG emission parameters, including carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of sulfur and volatile organic compounds will be conducted during the trial on a six-monthly basis. Emission testing will be performed by a NATA-accreddited emissions testing service provider. Monitoring methodologies employed will be in strict accordance with licencing requirements. | Emission of GHGs is expected to be typical of normal furnace operation. The potential for excessive GHG emissions is considered to be negligible. |

| Environmental Aspect | Potential Environmental Issue | Management and Mitigation Measure | Potential Environmental Impact |
|---|---|---|---|
| Community | • Potential interest / concern by community stakeholders in relation to the trial processing sequence, management and environmental performance | As for prior Research & Development and trial processing activities, Weston Aluminium proposes to conduct an Information Session prior to trial commencement to outline the following:<br>• Company background and trial context;<br>• Description and nature of wastes to be processed;<br>• Proposed storage, handling and processing cycle;<br>• Environmental safeguards, controls and monitoring programs; and<br>• Quality control program, including inspection and documentation, emissions management and monitoring and reporting.<br>Invitations to the Information Session will be issued in writing to appropriate stakeholders, including Government Regulators, managers/generators of pharmaceutical and illicit drug wastes, and community members and interest groups. | Impact to Community stakeholders is anticipated to be low. |

**Other Environmental Aspects**

The proposed waste processing trials are not expected to have any impact on transportation, biological values, visual amenity nor community effects (socio-economic, heritage and cultural values and land use).

**Conclusion**

Weston Aluminium wishes to explore the compatability and suitability of existing infrastructure, technologies, operational protocols and emission control systems with the effective processing of pharmaceutical and illlicit drug wastes at our Kurri Kurri premises. We are confident that the trial activities proposed will demonstrate the safe and responsible processing of such wastes, and will allow the development of sustainable end-use markets for the treated material.

# Attachment 1

# Attachment 2