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KURRI KURRI ALUMINIUM SMELTER DECOMMISSIONING, DEMOLITION AND REMEDIATION WASTE MANAGEMENT PLAN

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Checked by **S Taylor**
Approved by **F Robinson**
Description **Ramboll was engaged by Hydro Aluminium Kurri Kurri Pty Ltd to
prepare a Remediation Works Environmental Management Plan
(RWEMP) to describe how environmental management will be
undertaken at the former Hydro Aluminium Kurri Kurri aluminium
smelter at Hart Road Loxford, NSW and the surrounding land owned
by Hydro. This Waste Management Plan (WMP) forms a component
of the RWEMP.**

Ramboll Australia
Level 2, Suite 18
50 Glebe Road
PO Box 435
The Junction
NSW 2291
Australia
T +61 2 4962 5444
www.ramboll-environ.com

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Appendix A

Waste Inventory

ACRONYMS AND ABBREVIATIONS

DA	Development Application
EHC Act	<i>Environmentally Hazardous Chemicals Act 1985</i>
EMP	Environmental Management Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment Protection Licence
Hydro	Hydro Aluminium Kurri Kurri Pty Ltd
LMP	Leachate Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
POEO Waste Regulation	<i>Protection of the Environment Operations (Waste) Regulation 2005</i>
RAP	Remediation Action Plan
RWEMP	Remediation Works Environmental Management Plan
SEPP 55	State Environmental Planning Policy No, 55: Remediation of Land
SPL	Spent Pot lining
SSD	State Significant Development
SWMP	Soil and Water Management Plan
TCLP	Toxicity Characteristic Leaching Procedure
VENM	Virgin Excavated Natural Material
WHS	Workplace Health and Safety
WMP	Waste Management Plan

GLOSSARY

Council	Cessnock City Council
General Solid Waste (non-putrescible)	Includes: Wastes (other than special waste, liquid waste, hazardous waste, restricted solid waste or general solid waste (putrescible)) are pre-classified as 'general solid waste (non-putrescible)', e.g. Waste with a leachable fluoride level of less than 150mg/L Toxicity Characteristic Leaching Procedure (TCLP)
General Solid Waste (putrescible)	Includes: household waste that contains putrescible organics waste from litter bins collected by or on behalf of local councils; manure and night soil; disposable nappies; incontinence pads or sanitary napkins; food waste; animal waste; grit or screenings from sewage treatment systems that have been dewatered so that the grit or screenings do not contain free liquids; any mixture of the wastes referred to above.
Hazardous Waste	Includes: containers, having previously contained a substance of Class 1, 3, 4, 5 or 8 within the meaning of the Transport of Dangerous Goods Code; coal tar or coal tar pitch waste; lead-acid or nickel-cadmium batteries; lead paint waste arising otherwise than from residential premises or educational or child care institutions; any mixture of the wastes referred to above. eg. Waste with a leachable fluoride level of greater than 600mg/L TCLP.
Hydro	Hydro Aluminium Kurri Kurri Pty Ltd
Hydro Land	The land owned by Hydro Aluminium Kurri Kurri Pty Ltd which includes the Smelter and surrounding land.
Liquid Waste	Includes: Any waste that has an angle of repose of less than 5 degrees above horizontal; becomes free-flowing at or below 60 degrees Celsius or when it is transported; is generally not capable of being picked up by a spade or shovel or is classified as liquid waste under an EPA gazettal notice.
Remediation	Remediation of contaminated land and soils at the Smelter and on Hydro Land, including the construction of a Containment Cell as addressed in the State Significant Development application to the Department of Planning and Environment SSD 6666.
Restricted Solid Waste	The highest classification of solid waste which must be chemically assessed. E.g. Waste with a leachable fluoride level of greater than 150mg/L TCLP but less than 600mg/L TCLP
Special Waste	Includes: clinical and related waste; asbestos waste; waste tyres; anything classified as special waste under an EPA gazettal notice.

Stage 1 Demolition	Demolition of Smelter buildings addressed in the development application to Cessnock City Council 8/2015/399/1.
Stage 2 Demolition	Demolition of Smelter buildings, three concrete stacks, one water tower, subsurface structures to 1.5m below ground surface and operation of a concrete crushing plant addressed in the development application to Cessnock City Council 8/2018/46/1.
The Smelter	The former Hydro Aluminium Kurri Kurri Pty Ltd aluminium smelter at Hart Road, Loxford

1. INTRODUCTION

1.1 Background

This Waste Management Plan (WMP) has been prepared by Ramboll Australia Pty Ltd on behalf of Hydro Aluminium Kurri Kurri Pty Ltd (Hydro) to support the Remediation Works Environmental Management Plan (RWEMP) which addresses the decommissioning, demolition and remediation activities at the former Hydro Aluminium Kurri Kurri Smelter (the Smelter) at Hart Road Loxford and the management of the surrounding land owned by Hydro (the Hydro Land).

1.2 Objectives

The objectives of this Waste Management Plan (WMP) are to:

- Prevent or minimise any adverse environmental impacts from waste generation.
- Detail the controls to be implemented to mitigate waste impacts.
- Provide a mechanism to assess performance against regulatory requirements and impact assessment criteria.
- Provide commitments and strategies to maximise reuse and recycling of wastes.
- Establish requirements for the safe disposal of all wastes.
- Establish the roles and responsibilities of all personnel involved in waste management.
- Establish supervision, monitoring and reporting framework for the WMP.

1.3 Purpose and Scope

The purpose of the WMP is to:

- Specify procedures for management of waste and waste related issues and impacts during activities at the Smelter and the Hydro Land; and
- Satisfy the relevant conditions of the development consent for demolition activities (DA 8/2015/399/1 and DA 8/2018/46/1) and remediation (SSD 6666).
- Satisfy the relevant conditions of the Environment Protection Licence (EPL) 1548.

1.4 Regulatory Requirements

A list of the development consent conditions related to waste management and where they are addressed in this document are outlined in **Table 1-1**.

Table 1-1: Project Approval Conditions

No.	Condition	Location in WMP
SSD 6666		
WASTE MANAGEMENT		
Statutory Requirements		
B25	All waste materials removed from the site must only be directed to a waste management facility or premises lawfully permitted to accept the materials.	Table 3-2
B26	Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal, except as expressly permitted by an EPL.	Table 3-2
B27	The Applicant must assess and classify all liquid and non-liquid wastes to be taken off site in accordance with the <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (NSW EPA, November 2014), or its latest version and dispose of all wastes to a facility that may lawfully accept the waste.	Table 3-2
B28	The Applicant must retain all sampling and waste classification data in accordance with the requirements of the EPA.	Table 3-2

No.	Condition	Location in WMP
DA 8/2015/399/1		
10	Submit to Council an Environmental Management Plan (EMP) for review and written authorisation. The EMP shall contain, but not be limited to, the following specialist plans: Air Quality Management Plan, Noise and Vibration Management Plan, Waste Management , Soil and Water Management Plan, Demolition Strategy, Traffic Management Plan, Stakeholder Engagement and Notification Plan; Work Health and Safety Management Plan; and Heritage Management Measures and shall include, among other things, legislative and regulatory requirements; responsibilities for implementation of the management measures; and the monitoring, recording and improvement for environmental management performance.	This WMP
11	<p>The Waste Management Plan (WMP) shall describe the waste management measures to be implemented as part of the proposal and should include details on:</p> <p>the transportation of metal to a licensed waste recycling facility;</p> <p>the storage of crushed concrete and bricks to be used for future reuse at the Smelter; and</p> <p>and the safe and secure temporary storage of hazardous and non-recyclable wastes at the development site.</p> <p>The plan shall also include the management of any unexpected hazardous waste.</p>	<p>Table 3-2</p> <p>Section 2.3, Table 3-2, Figure 2.1 and Figure 2.2</p> <p>Section 2.3.2, Table 3-2 and Figure 2.2</p> <p>Section 2.1.4</p>
DA 8/2018/46/1		
12	Submit to Council an Environmental Management Plan (EMP) for review and written authorisation. The EMP must contain, but not be limited to, the following revised specialist plans: Waste Management , Soil and Water Management Plan, Demolition Strategy, Traffic Management Plan, Stakeholder Engagement and Notification Plan; Work Health and Safety Management Plan; and Heritage Management Measures	This WMP
14	Toilet facilities are to be provided prior to works commencing, at or in the vicinity of the work site on which work involved in the demolition of a building is being carried out, at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. Each toilet provided must be a sewage management facility approved by the NSW Department of Health and/or Council, and operation in an environmentally responsible manner, free of nuisance or offence, and be appropriately serviced.	Noted
EPA General Terms of Approval for DA 8/2018/46/1		
1	The proponent must not demolish any building used for the storage of Aluminum Smelter Waste, as defined in the ' <i>Chemical Control Order in relation to Aluminum Smelter Wastes containing fluoride and/or cyanide</i> ' (1986) issued under the <i>Environmentally Hazardous Chemicals Act 1985</i> (note: this only applied until the Aluminium Smelter Waste has been removed from the building and it has been independently certified that all has been removed)	Noted
3	No waste generated from the proposed stage 2 demolition activities is to be disposed of at the premises (note: this only applied prior to approval of SSD 6666)	Table 3-2
4	No waste generated from the proposed stage 2 demolition activities is to be stored at the premises except if allowed by and in accordance with the conditions of the Environmental Protection Licence for this premises.	Discussed with the EPA, not applicable

In addition the plan aims to comply with:

- *Environmentally Hazardous Chemicals Act 1985* (EHC Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- Protection of the Environment Operations (Waste) Regulation 2005 (POEO Waste Regulation)
- State Environmental Planning Policy No, 55: Remediation of Land (SEPP 55).
- *Waste Avoidance and Resource Recovery Act 2001* and associated Regulations.
- Waste Classification Guidelines (EPA, 2014).

1.4.1 Environmental Protection Licence

The POEO Act requires any person carrying out scheduled work (as described in Schedule 1 of the POEO Act) to obtain an EPL that authorises that work to be carried out at the premises.

Hydro holds EPL No. 1548 for the Smelter operations. The EPL authorises the carrying out of the scheduled activity:

- Chemical storage – chemical storage waste generation

A list of the EPL conditions specifically related to waste management and where they are addressed in this document are outlined in **Table 1-2**.

Table 1-2: EPL Conditions

No.	Condition	Where Addressed
L2	Waste limit (no waste from outside the scheduled premise to be received)	Noted
O1	Activities must be carried out in a competent manner	Section 3
O5	Processes and management	Section 2.1.2 and Section 3
O6	Waste Management	Section 3
R1.8	Annual return documents (Waste Management Report)	Section 3
E2	Removal of Spent Pot Lining (Works and Programs)	Section 3

1.4.2 Chemical Control Order Licence

Hydro manages spent pot lining in accordance with a Licence (Licence Number 05) issued under the EHC Act. The licence was issued for the management of the appropriate aluminium smelter wastes, including the capped waste stockpile.

The key requirements of the Chemical Control Order (CCO) are:

- Spent pot lining kept on site must be: secured so that no waste and/ or leachate can escape from the site; in a facility that is maintained in good condition; and in a secure manner that prevents unauthorized access.
- Materials can be processed: to research environmentally acceptable methods that reduce levels of leachable fluoride and/or cyanide; at the Smelter for the recovery of components, the making of other products, or to reduce levels of leachable fluoride and/or cyanide; at the Smelter with waste, water or other materials (except those with of leachable fluoride and/or cyanide) to facilitate disposal.
- Materials can be conveyed (following EPA approval) to another location for treatment to reduce levels of leachable fluoride and/or cyanide.
- Materials can be disposed: if certified as approved aluminium smelter waste (which is smelter waste that does not contain leachable fluoride or leachable cyanide) under the EHC Act, and in accordance with POEO Act (as general solid waste).

Hydro is implementing a process to identify and use recycling opportunities for the spent pot lining at the Smelter. The objective is for all the spent pot lining at the Smelter to be transported off site for direct reuse and/or processing prior to reuse. As required by the CCO, EPA approval will be sought prior to transporting the spent pot lining from the Smelter.

2. EXISTING ENVIRONMENT AND POTENTIAL IMPACTS

2.1 Smelter Waste Streams

This section provides a description of the waste streams to be managed at the Smelter Land during the decommissioning, demolition and remediation activities. More specific details on the types and quantities of wastes, and the waste management measure, are in the Waste Inventory included in **Appendix A**.

2.1.1 Machinery and Equipment

There are a number of mobile and fixed machinery and equipment throughout the Smelter. This includes in offices (such as computers and printers), kitchens and amenities (such as fridges and microwaves), workshops (such as tools, machinery and other equipment) and manufacturing areas. There is also a number of mobile plant (such as forklifts and vehicles).

Where appropriate these items have been made available for reuse either via a procurement process, or donated to community groups.

Where items are not suitable for reuse, or are not purchased or accepted for reuse where practicable and safe to do so these items (or part thereof) will be made suitable for recycling (such as scrap metal) or disposal.

2.1.2 Process Materials

A number of process materials are stockpiled at the Smelter. This includes:

- Spent pot lining (as discussed in **Section 1.4.2**)
- Green carbon anodes
- Baked carbon anodes
- Cathode blocks
- Packing coke
- Anode cover material and ledge bath
- Transformer and hydraulic oils
- Bake furnace refractories
- Pot lining materials
- Casting raw materials
- Various residues and fines

Hydro continues to investigate the reasonable and feasible recycling and reuse opportunities for these materials: the objective is to maximise recycling and reuse, and thereby minimise the amount of material requiring disposal. These investigations will continue until the reasonable and feasible recycling and reuse opportunities are exhausted.

2.1.3 Site Wastes

Site wastes at the Smelter include:

- Hazardous materials: A number of hazardous materials (such as asbestos containing materials and synthetic mineral fibres) are within the buildings. A removal program is being implemented prior to building demolition. Hazardous materials will be temporarily stored at the stockpile area or within an existing Smelter building with appropriate temporary containment to protect human health and the environment. Permanent disposal of these materials is detailed within the Smelter remediation activities (detailed in **Section 2.1.5**).
- Hazardous materials contained within the Capped Waste Stockpile (detailed in **Section 2.1.5**)
- Spent pot lining
- Liquid waste oils from site hydraulic and electrical infrastructure
- Bake furnace scrubber tailings
- Bitumen (from road surfaces)
- Alumina and other fines
- Potline and carbon plant scrubber bags
- Dust collector elements
- Transformer units
- Air conditioning units

2.1.4 Demolition Wastes

The demolition activities at the Smelter will generate the following key waste streams:

- Concrete and bricks: Approximately 212,000 tonnes of concrete and bricks will be generated during demolition.
Concrete and bricks will be processed by a crushing plant, and stockpiled (with environmental controls) for future use at the Smelter in the proposed Smelter remediation activities.
- Metals: approximately 45,000 tonnes of metals (ferrous, aluminium and copper) will be collected for recycling.
These metals will be sorted and sized prior to transportation off site for recycling. Further details are provided in **Section 3**.
- Hazardous materials: There is the potential that inaccessible or previously unidentified hazardous materials (such as asbestos and synthetic mineral fibres) may need to be managed during demolition.
Any additional hazardous materials will be temporarily stored within an existing Smelter building with appropriate temporary containment to protect human health and the environment. Further details are provided in **Section 3**. Permanent disposal of these materials is detailed in **Section 2.1.5**.
- Non-recyclable materials: plastics, plasterboard, fittings and other materials will be generated during demolition.
Non-recyclable materials will be stored at the stockpile area appropriate temporary containment and environmental controls. Further details are provided in **Section 3**. Permanent disposal of these materials is detailed in **Section 2.1.5**.
- Green waste: landscaped and grassed areas within the site will be removed prior to commencing demolition.
This material will either be mulched onsite for reuse or transported to a licensed waste management facility.
- General waste: demolition personnel will generate waste such as food wrapping and office materials.
Disposal facilities for general wastes will be made available within the Smelter. Wastes at the facilities will be removed by a licensed waste contractor. Waste removal contractors will be required to provide dockets to confirm that waste was disposed at a licensed waste management facility. Further details are provided in **Section 3**.
- Sewerage: the Smelter Office, contractor's compound and ancillary facilities will include amenities either connected to the sewerage system or a collection system managed by a licensed contractor. Portable toilets will be provided at safe locations within the Smelter for personnel. Temporary amenities will be serviced by a licensed contractor. Further details are provided in **Section 3**.

2.1.5 Remediation

The Capped Waste Stockpile, areas of contaminated soils and additional hazardous materials identified in **Section 2.1.4** within the Smelter and Hydro Land will be remediated in accordance with the EMP. Permanent disposal of these materials will be within the Containment Cell.

The hazardous waste streams to be remediated include:

- Capped Waste Stockpile: approximately 320,000 tonnes of mixed Smelter waste classified as hazardous waste.
- Contaminated soils: approximately 137,000 tonnes originating from contaminated sites, stockpiled contaminated soils, dam sediments and contaminated soils from within the Smelter and Hydro Land (refer **Section 2.2.1**).

Remediation of the Capped Waste Stockpile and development of the Containment Cell will result in leachate generation. Management of leachate is addressed within the Leachate Management Plan (LMP), a sub-plan of the Soil and Water Management Plan (SWMP).

Remediation activities will also generate green waste, general waste and sewerage as identified in **Section 2.1.4**.

2.2 Hydro Land

2.2.1 Contaminated Soils

Contaminated site investigations have identified several small areas within the Hydro Land that require remediation. This will involve the excavation and removal of contaminated soils in accordance with the Remediation Action Plan (RAP) (Ramboll, 2018). This includes:

- The former Municipal Landfill on Hart Road
- The Dickson Road Landfill
- Asbestos contaminated soils at former residential properties

The excavated soils will either be temporarily stored at the stockpile area with appropriate temporary containment to protect human health and the environment, or transported directly to the Containment Cell (depending on the overall works program). Remediation of these areas will be undertaken as category 2 remediation under SEPP 55 in accordance with the RWEMP.

2.2.2 Wastes

Due to the isolation of much of the Hydro Land, illegal dumping has previously occurred within the Hydro Land. Such areas are identified during regular inspection of the Hydro Land by Hydro personnel or reported to Hydro. This has included general solid waste as well as asbestos containing materials.

In any event that such stockpiles are identified in the Hydro Land, Hydro personnel will collect this material and transport it to the Smelter site for temporary storage at a suitable location prior to disposal in the Containment Cell.

2.2.3 Demolition within Hydro Land

Minor demolition will occur within the Hydro Land involving demolition of houses or other small structures. Demolition will be undertaken following the management measures outlined in **Section 2.1.4**. Any demolition waste will be transported either to a licensed waste facility for disposal, or brought to the Smelter site for temporary storage at a suitable location prior to disposal in the Containment Cell.

2.3 Waste Management

2.3.1 Waste Classification

Waste classification will be undertaken in accordance with the *Waste Classification Guidelines* (EPA, 2014). Under the guidelines waste is classified into six classes:

- Special waste
- Liquid waste
- General solid waste (putrescible)
- General solid waste (non-putrescible)
- Hazardous waste
- Restricted solid waste

Any waste to be transported from the Smelter or Hydro Land for off site management will be classified prior to removal to the licenced waste facility.

2.3.2 Waste Storage

A large stockpile area will be progressively developed in south western area of the Smelter site as demolition progresses and area becomes available. This is shown in **Figure 2-1**.

Hazardous materials will be stored with appropriate temporary containment to protect human health and the environment. This includes:

- Handling the material in accordance with SafeWork NSW standard procedures (such as double wrapping of asbestos containing materials).
- These materials will be stored in one of the following conditions:
 - Within Smelter buildings (Buildings 31A, 53C, 74C and 7A) not to be demolished.
Materials will be stored on an undercover, hardstand and secured area. As a result, they

are unlikely to be subject to water ingress or unauthorised disturbance. This will include smelter process-associated hazardous materials (such as bath, fluoride-contaminated alumina and other fluoride-containing dusts).

- Stored on open hardstand areas. Materials such as double-wrapped asbestos containing materials and stockpiled materials with contaminants of low leachability will be stored in such conditions. As the material is wrapped or of low leachability, and the storage area secured, the potential for contamination of the storage area will be minimised. The material will be stored in areas known to be free of overland water flows.

Permanent disposal of these materials will be within the Containment Cell.

Spent pot lining is stored within ten purpose-built storage sheds at the Smelter. The storage buildings comply with the requirements of DA 1/2015/399/1 and the CCO pursuant to the EHC Act. The spent pot lining will continue to be stored in the dedicated buildings until contractual and commercial negotiations are finalised and (if required) the receiving facility/ facilities have all required approvals and licences in place.

Remaining demolition material that cannot be recycled or processed for reuse will be stockpiled within the stockpile area. Permanent disposal of these materials will be within the Containment Cell.

2.3.3 Waste Tracking, Transport and Disposal

Any wastes (as specified in Schedule 1 of the POEO Waste Regulation) requiring transportation from the Smelter or Hydro Land to a licensed facility will be subjected to waste tracking in accordance with the POEO Waste Regulation and the *Waste Classification Guidelines* (EPA, 2014). Such wastes must be tracked if being transported within NSW or interstate.

Waste can only be removed by a licenced waste contractor and transported to a licenced waste facility. A Waste Consignment Authorisation must be obtained, prior to transporting waste, for each type of waste to be disposed of. The licenced waste contractor, who removes the waste, is responsible for completing the Waste Consignment Authorisation. Further details are provided in **Section 3**.

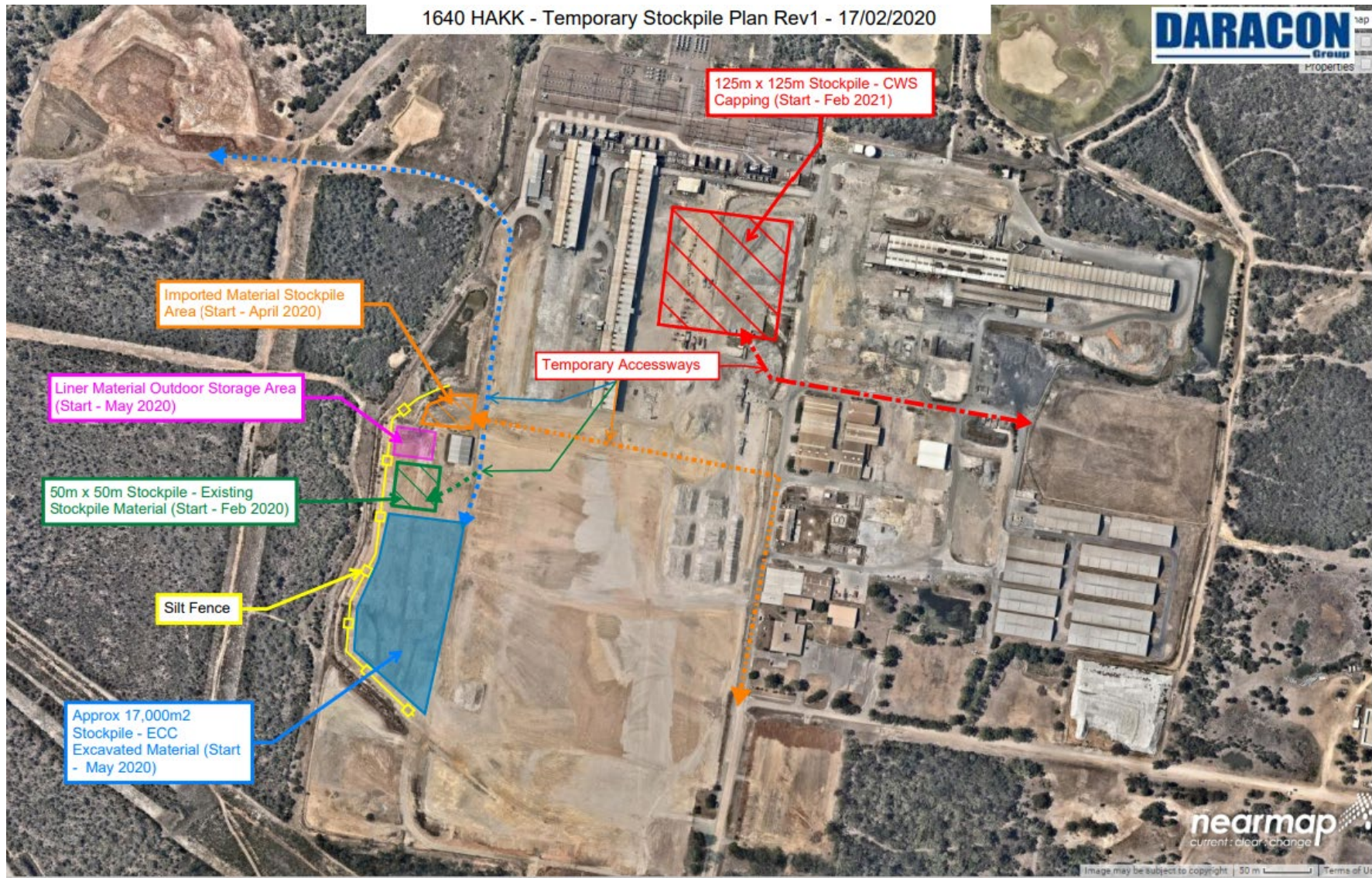


Figure 2-1 Stockpile Locations

3. IMPLEMENTATION

3.1 Roles and Responsibilities

Key personnel responsible for implementation of this WMP are in **Table 3-1** and consistent with the overall EMP.

Table 3-1: Hydro Personnel and Environmental Management Responsibilities

Position	Responsibilities
OVERALL SITE MANAGEMENT	
Managing Director	<p>Make certain that the Hydro Team and contractors are implementing this WMP.</p> <p>Provide adequate resources and funding for the implementation of this WMP.</p> <p>Review and approve RWEMP (including this WMP).</p>
Principal Environmental Consultant	<p>Provide advice on and assistance in implementation, monitoring and auditing of environmental management and performance.</p> <p>Review and modify the WMP as directed by the Managing Director and/or Project Manager.</p>
Principal Communications Consultant	<p>Manage the mechanisms available for the community to receive information and to make enquiries or complaints about activities</p>
SMELTER DECOMMISSIONING AND DEMOLITION ACTIVITIES	
Project Manager	<p>Make certain that any proposed works or changes to existing activities, that may have an impact on the environment or the community (including waste management), have the necessary legislative approval prior to the commencement of works.</p> <p>Make certain that the environmental aspects and issues, associated with proposed works or changes to existing activities, are adequately addressed in the WMP.</p> <p>Review and approve the WMP on an annual basis or when changes to activities at the Smelter occur.</p> <p>Facilitate implementation of the WMP.</p>
Construction Manager	<p>Verify that the work of contractors and Hydro personnel on the Project are undertaken in accordance with this WMP, relevant environmental management plans, procedures and standards.</p> <p>Provide appropriate training to contractors and Hydro personnel on the Project regarding environment and community requirements and responsibilities.</p> <p>Review and approve the contractors' environmental management documentation prior to commencement of activities and inform contractors of changes to the WMP.</p>
Contract Administrator	<p>Provide relevant environmental legislative, regulatory and management requirements in tender documentation.</p> <p>Verify that the work of contractors is undertaken in accordance with this WMP and other relevant environmental procedures and standards.</p>
Workplace Health and Safety Manager	<p>Provide Hydro personnel with the necessary tools and training to enable effective implementation of the RWEMP.</p> <p>Implement and maintain an induction package to be provided to all personnel working at the Smelter and Hydro Land, which will include information relevant to the environmental and community management (including waste management).</p> <p>Undertake a weekly inspection of the Project activities at the Smelter, for the duration of the Project.</p> <p>Maintain a record of personnel induction and training records.</p>

Position	Responsibilities
Demolition Contractor	<p>Comply with the requirements of the WMP as it applies to Smelter demolition activities.</p> <p>Implement the environmental measures and actions as described in the WMP through a Demolition EMP, supporting sub-plans and specific procedures that comply with this WMP.</p> <p>Develop and implement procedures for self-checking environmental management compliance with the Demolition Contractor's procedures and this WMP.</p> <p>Report potential or actual environmental incidents associated with demolition activities at the Smelter, and assist as required in the investigation, implementation of corrective actions and recording of the incident.</p>
Remediation Contractor	<p>Comply with the requirements of the SWMP as it applies to Smelter and relevant Hydro Land remediation activities.</p> <p>Implement the environmental measures and actions as described in the WMP through a Remediation EMP, supporting sub-plans and specific procedures that comply with this WMP.</p> <p>Develop and implement procedures for self-checking management compliance with the Remediation Contractor's procedures and this WMP.</p> <p>Report potential or actual environmental incidents associated with remediation activities at the Smelter and relevant Hydro Land, and assist as required in the investigation, implementation of corrective actions and recording of the incident.</p>
Waste Removal Contractor	<p>Transport of waste not to be disposed of in the Containment Cell or reused on site in accordance with the POEO Waste Regulation and the <i>Waste Classification Guidelines</i>.</p>
CARE, MAINTENANCE AND HYDRO LAND MANAGEMENT ACTIVITIES	
Environmental Officer/ Hydro Land Manager	<p>Coordinate and implement the environmental monitoring program</p> <p>Verify that the work of contractors and Hydro personnel on Hydro Land are undertaken in accordance with this WMP and relevant environmental procedures and standards.</p> <p>Undertake a weekly inspection of activities on the Hydro Land that will occur for two weeks or more.</p>
ALL AREAS AND ACTIVITIES	
Contractors	<p>Comply with the requirements of the WMP as it applies to site environmental management and control.</p> <p>Implement the environmental measures and actions as described in the WMP through procedures and management plans that comply with this WMP.</p> <p>Develop and implement procedures for self-checking management compliance with Contractor's procedures and this WMP.</p>
All Personnel	<p>Implementation of the relevant environmental measures described in this WMP applicable to their activities.</p>

3.2 Management Measures

Hydro will implement a number of controls to manage waste generation, handling, transportation and placement resulting from demolition and remediation activities. The waste management mitigation measures to be implemented are outlined in **Table 3-2**.

Table 3-2: Waste Management Measures

Mitigation Measures	Action	Timing / Frequency	Responsibility	Further Detail
All Smelter personnel will be informed during the site induction of the waste management hierarchy and the measures to be implemented.	Waste obligations and management measures to be communicated to personnel during site induction.	Prior to and during activities	WHS Manager	Section 3.3.2 of the RWEMP (inductions and training)
Promotion of efficient resource use, waste avoidance and waste minimisation will be undertaken.	Where possible recyclable wastes generated at the contractor's compound and Hydro Office (paper and cardboard, cans and bottles) will be collected by a recycling contractor. Remaining wastes will be collected for disposal at a licensed waste management facility.	Prior to and during activities	WHS Manager Remediation Contractors Demolition Contractors Waste Removal Contractor	Remediation EMP Appendix 4 Demolition CEMP Appendix F
	Wherever reasonable and feasible, reuse or recycling opportunities for decommissioning and demolition wastes will be investigated and implemented.	Prior to and during activities	Project Manager	Remediation EMP Appendix 4 Demolition CEMP Appendix F
No waste generated outside of the EPL 1548 scheduled premise is to be brought onto the site	Hydro personnel, the Demolition Contractor and Remediation Contractor are to ensure that no waste is to be imported to the site.	During activities	Project Manager Remediation Contractors Demolition Contractors	
A designated waste storage and stockpile area will be maintained.	The waste stockpile area will be maintained in an organised condition, with waste materials to be transported to and stockpiled in the designated storage area as shown in Figure 2-1 .	During activities	Project Manager Remediation Contractors Demolition Contractors	Figure 2-1
	The area/s used for the storage of hazardous waste as shown in Figure 2-1 and described in Section 2.3.2 will be secured to prevent unauthorised access to those wastes.	During activities	Project Manager Remediation Contractors Demolition Contractors	Figure 2-1 and Section 2.3.2 (waste storage)
	Waste storage areas will be inspected as part of building maintenance inspections that will be undertaken at the Smelter.	During activities	WHS Manager Remediation Contractors Demolition Contractors	Section 2.3.2 (waste storage)
	Any repairs or improvements to the storage conditions deemed necessary during these inspections will be immediately undertaken, and the source of the issue identified and addressed.	During activities	WHS Manager Remediation Contractors Demolition Contractors	

Mitigation Measures	Action	Timing / Frequency	Responsibility	Further Detail
<p>Wastes will be classified and managed in accordance with the <i>Waste Classification Guidelines</i>.</p> <p>Wastes transported from the Smelter or Hydro Land to be managed in accordance with the POEO Waste Regulation and the <i>Waste Classification Guidelines</i>.</p>	<p>Incompatible wastes will not be mixed and/or transported together on any vehicle used by the person to transport the waste.</p>	<p>During activities</p>	<p>Project Manager Remediation Contractors Demolition Contractors</p>	<p>Section 2.3.1 (waste classification) Remediation EMP Appendix 4 Demolition CEMP Appendix F</p> <p>Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F</p> <p>Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F</p> <p>Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F</p> <p>Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F</p>
	<p>All wastes generated on site (whether transported off site for disposal or stockpiled on site) will be classified prior to removal from the Smelter or transported to its stockpile location.</p>	<p>Prior to and during activities</p>	<p>Project Manager Remediation Contractors Demolition Contractors</p>	
	<p>Any wastes (as specified in Schedule 1 of the POEO Waste Regulation) requiring transportation from the Smelter or Hydro Land to a licensed facility will be subjected to waste tracking.</p>	<p>Prior to and during activities</p>	<p>Project Manager Remediation Contractors Demolition Contractors</p>	
	<p>Waste will be removed from the Smelter or Hydro Land to a licensed facility by a licenced waste contractor and transported to a licenced waste facility.</p>	<p>Prior to and during activities</p>	<p>Project Manager Waste Removal Contractor</p>	
	<p>A Waste Consignment Authorisation must be obtained, prior to transporting waste, for each type of waste to be disposed of. The licenced waste contractor who removes the waste is responsible for completing the Waste Consignment Authorisation.</p>	<p>Prior to and during activities</p>	<p>Project Manager Waste Removal Contractor</p>	

Mitigation Measures	Action	Timing / Frequency	Responsibility	Further Detail
	The types, quantity and receiving location for all wastes transported from the Smelter will be recorded within a database.	During activities	Project Manager Waste Removal Contractor	Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F
Records will be taken of wastes transported within the Smelter and Hydro Land for stockpiling at the Smelter.	The type of waste, location source and destination of each truck load of waste will be recorded.	During activities	Project Manager Remediation Contractors Demolition Contractors	Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F
Wastes will be managed to minimise the potential for windblown wastes spreading within or beyond the stockpile area, including into watercourses.	Trucks transporting materials on public roads will be loaded and managed required by the POEO Waste Regulation.	Prior to and during demolition	Remediation Contractors Demolition Contractors Waste Removal Contractor	Section 2.3.3 (waste tracking, transport and disposal) Remediation EMP Appendix 4 Demolition CEMP Appendix F
	Wastes with high potential to become windblown (such as light plastics and paper) will be contained within waste bins and not stockpiled.	During activities	Project Manager	
	Waste stockpiles will be covered if materials become windblown.	Prior to and during activities	Project Manager	
	In the event that waste becomes windblown, the windblown wastes will be removed and contained within a suitable waste bin.	Prior to and during activities	Project Manager	

Mitigation Measures	Action	Timing / Frequency	Responsibility	Further Detail
Asbestos containing material (ACM) is to be handled and managed in accordance with WorkCover NSW practices and guidelines.	The Remediation and Demolition Contractors are required to possess a Class A friable asbestos removal licence issued by WorkCover NSW or an equivalent asbestos removal licence issued in another Australian jurisdiction.	Prior to activities	Project Manager Remediation Contractors Demolition Contractors	Daracon IPMP Appendix 6
	WorkCover NSW is to be notified of the asbestos removal five days prior to commencement of works.	Prior to activities	Remediation Contractors Demolition Contractors	Daracon IPMP Appendix 6
	The Contractor is to develop and implement an Asbestos Removal Control Plan consistent with <i>How to Safely Remove Asbestos: Code of Practice</i> (WorkCover NSW, 2011).	Prior to remediation activities	Project Manager Remediation Contractors Demolition Contractors	Daracon IPMP Appendix 6
	Where asbestos containing material (ACM) is to be disposed of off site, the appropriately licenced waste management facility is to be notified of the ACM material prior to transportation of the material to the facility.	During activities	Site Services Manager Remediation Contractors Demolition Contractors Waste Removal Contractor	Daracon IPMP Appendix 6
	Where ACM (excluding that within the Capped Waste Stockpile) is to be disposed of within the Containment Cell, it is to be handled, wrapped and temporarily stored in accordance with <i>How to Safely Remove Asbestos: Code of Practice</i> (WorkCover NSW, 2011) in a designated building.	During activities	Remediation Contractors Demolition Contractors	Daracon IPMP Appendix 6
Before disposing of any used anode butt wastes, Hydro must prepare, to the satisfaction of the EPA, a written protocol describing the procedures that will be followed for the treatment, storing, transporting, assessing, record keeping and reporting on the management of used anode butt wastes.	Undertake a review of the previously prepared protocol for the treatment, storage, transport, assessment, record keeping and reporting on the management of used anode butt wastes.	Prior to activities	Project Manager	
	Provide the protocol to the EPA for review and approval prior to commencing removal.	Prior to activities	Project Manager	
	Used anode butt wastes to be treated, stored and transported (with appropriate records) in accordance with the approved protocol	Prior to and during activities	Project Manager	

Mitigation Measures	Action	Timing / Frequency	Responsibility	Further Detail
Carry out regular site inspections to monitor compliance with the WMP, record inspection results, and make an inspection log available to the EPA and/or Cessnock City Council when asked.	The environmental controls and containment measures placed on waste stockpiles will be inspected and maintained (if required) on a weekly basis and after rain and strong wind events.	Prior to and during activities Weekly	WHS Manager Environmental Officer Remediation Contractors Demolition Contractors	Section 5.2 of the RWEMP (inspections)
	Undertake environmental inspections of the Smelter and Hydro Land to assess compliance with the WMP.	Prior to and during activities Monthly	WHS Manager Environmental Officer	Section 5.2 of the RWEMP (inspections)
	Provide evidence of inspection to Cessnock City Council and/or the EPA upon request.	When requested	WHS Manager Environmental Officer	
Record any waste related incidents, either on or off site, and the action taken to resolve the situation in the log book.	Record waste related incidents in the incident register and implement corrective actions.	Prior to and during activities As required	WHS Manager Environmental Officer Remediation Contractors Demolition Contractors	Section 3.5.4 of the RWEMP (incidents)
	Review corrective actions.	Prior to and during activities Monthly	WHS Manager Environmental Officer Remediation Contractors Demolition Contractors	Section 5.4 of the RWEMP (corrective action)

Mitigation Measures	Action	Timing / Frequency	Responsibility	Further Detail
<p>The collated waste records will be compiled into the Waste Management Report required by EPL 1548 to be submitted with the Annual Return.</p>	<p>The Waste Management Report is required to include:</p> <ul style="list-style-type: none"> a) the quantity and the production and process sources of hazardous and/or restricted solid wastes kept on the premises during the licence year. b) the quantity and the production and process sources of hazardous and/or restricted solid wastes generated at the premises during the licence year. c) details of investigations into methods of recycling and treatment of hazardous and restricted solid wastes carried out by the Licensee or reported by others on behalf of the Licensee during the licence year. d) the amount of hazardous and/or restricted solid waste disposed of during the licence year. e) details of the disposal method and location of disposal for hazardous and/or restricted solid wastes. f) the results of any monitoring carried out to detect the occurrence of environmental contamination potentially resulting from the disposal of any hazardous or restricted solid waste. g) any other details required by this licence 	<p>Annually (January)</p>	<p>Environmental Officer</p>	<p>Section 4.1 (reporting)</p>

4. MONITORING AND REVIEW

4.1 Monitoring

Monitoring of waste will be undertaken as follows:

- Inspections to monitor adequacy of controls implemented to manage environmental impacts.
- Record keeping and waste tracking:
 - Quantity and type of liquid and non-liquid waste generated, handled, stockpiled, processed or disposed of on and off site.
 - Details of waste disposal including the quantity, tracking, handling, stockpiling, reuse/recycling and proposed strategies for confirming that waste treatment and/or disposal facilities can lawfully accept waste generated.

The waste monitoring program is outlined in **Table 4-1**.

Table 4-1: Waste Monitoring Commitments

Monitoring Details	Frequency	Locations	Parameters	Person/s Responsible
Tracking of wastes for offsite disposal in accordance with EPA requirements.	As required	Main gate (off-site disposal)	Quantity and type of liquid and non-liquid waste generated, handled, stockpiled, processed or disposed of off-site.	Environmental Officer WHS Manager Contractors
Recording of waste movements for onsite storage and final disposal in the Containment Cell.	As required	Waste removal location Waste stockpile areas Containment Cell	The type of waste, location source and destination of each truck load of waste will be recorded.	Environmental Officer WHS Manager Contractors

4.1 Reporting

All internal and external environmental reporting requirements will be undertaken in accordance with the RWEMP.

Reporting will also be undertaken in accordance with relevant legislation, guideline and notification requirements, as outlined in **Section 1.4**.

The key external report is the Waste Management Report required by EPL 1548 to be submitted with the Annual Return (as described in **Table 1-2**).

4.2 Non-conformances

The need for preventative or corrective action arises from the identification of non-conformance with environmental legal requirements, Hydro environmental requirements or the potential for non-conformances to occur.

Non-conformances will be resolved and recorded in accordance with the RWEMP.

4.3 Complaints

Community complaints are considered environmental incidents and are investigated and documented accordingly. This will include any complaints relating to Smelter- related waste.

Investigations will be conducted by the Environment Officer, including provision of feedback to the complainant. Corrective actions will be documented and regularly reviewed until completion and signed off.

Handling of complaints will be undertaken in accordance with the RWEMP.

4.4 Review and Improvement

Continual improvement of the WMP will be achieved by the continual evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The Environmental Officer is responsible for ensuring that a regular review of the RWEMP and specialist management plans is undertaken.

Reviews will be recorded in the document control section of this plan.

5. REFERENCES

Department of Planning and Infrastructure. "Development consent [Waste and Remediation]".

EPA. 2014. "Waste Classification Guidelines"

Ramboll Environ. 2015. "Statement of Environmental Effects - Demolition of Former Aluminium Smelter Buildings at Kurri Kurri".

Ramboll Environ, 2016. "Environmental Impact Statement - Former Hydro Aluminium Kurri Kurri Smelter Demolition and Remediation".

Ramboll. 2018. "Remedial Action Plan – Hydro Aluminium Smelter Kurri Kurri".

Ramboll Australia. 2018. "Response to Submissions Report – Former Hydro Aluminium Kurri Kurri Smelter Remediation".

WorkCover NSW. 2011. "How to Safely Remove Asbestos: Code of Practice".

6. LIMITATIONS

Ramboll Australia Pty Ltd prepared this report in accordance with the scope of work as outlined in our proposal to Hydro Aluminium Kurri Kurri Pty Ltd dated 20 July 2018 and in accordance with our understanding and interpretation of current regulatory standards.

A representative program of sampling and laboratory analyses was undertaken as part of this investigation, based on past and present known uses of the site. While every care has been taken, concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. We cannot therefore preclude the presence of materials that may be hazardous.

Site conditions may change over time. This report is based on conditions encountered at the site at the time of the report and Ramboll Australia Pty Ltd disclaims responsibility for any changes that may have occurred after this time.

The conclusions presented in this report represent Ramboll Australia Pty Ltd's professional judgment based on information made available during the course of this assignment and are true and correct to the best of Ramboll Australia Pty Ltd's knowledge as at the date of the assessment.

Ramboll Australia Pty Ltd did not independently verify all of the written or oral information provided to Ramboll Australia Pty Ltd during the course of this investigation. While Ramboll Australia Pty Ltd has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to Ramboll Australia Pty Ltd was itself complete and accurate.

This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

6.1 User Reliance

This report has been prepared exclusively for Hydro Aluminium Kurri Kurri Pty Ltd and may not be relied upon by any other person or entity without Ramboll Australia Pty Ltd's express written permission.

APPENDIX A
WASTE INVENTORY

Waste Management Plan

Waste	Estimated amount (t)	Estimated volume (m³)	Anticipated volume to be recycled (m³)	Anticipated volume as waste (m³)
Capped Waste Stockpile	365,000	225,008		225,008
Smelter Process Wastes	154,170	100,450	70,810	29,640
Material from Remediation of Smelter Site Impacts	119,394	46,980	30,500	16,480
Material from Remediation and Rectification of Buffer Zone Impacts	174,206	105,739	54,268	51,471
Other Wastes (asbestos, PCBs, concrete and masonry, bitumen, miscellaneous demolition materials)	20,300	88,565	57,990	30,375
TOTALS	833,070	566,742	213,568	352,974