Alcoa of Australia Limited

Bauxite Mining on the Darling Range in the Southwest of WA – 2023 to 2027

Environmental Review Document

Assessment 2385

7 May 2025

Document Control

Version	Description of Changes	Author	Approved by		Issue Date	Submitted to
			Name	Signature		
Rev0	Preparation of draft ERD for EPA review.	WSP Australia	K. Moyle		29 Nov 2024	EPA
Rev1	Update following DMA review.	WSP Australia	K. Moyle		28 Feb 2025	EPA
Rev2	Update following EPAS review.	L Whitley	K. Moyle		7 May 2025	EPA

Invitation to Make a Submission

The Environmental Protection Authority (EPA) invites people to make a submission on the environmental review for this proposal.

On 28 February 2023, the Western Australian Forest Alliance Inc (WAFA) made two referrals to the Environmental Protection Authority (EPA) under Section 38, Part IV of the *Environmental Protection Act 1986* (EP Act). The two referrals referenced Alcoa of Australia Limited's (Alcoa) 2022 to 2026 Mining and Management Program (MMP) (Assessment 2384) and 2023 to 2027 MMP (Assessment 2385). Alcoa submitted a request to amend the proposal during assessment (EP Act s43A application) to consolidate the two referrals under Assessment 2385 (the Proposal). This Environmental Review Document (ERD) has been prepared in accordance with the EPA's ***Procedures Manual.*** The ERD is the report by the proponent on their environmental review which describes this proposal and its likely effects on the environment.

The ERD is available for a public review period of ten (10) weeks from XXDATEXX, closing on XXDATEXX.

Information on the proposal from the public may assist the EPA to prepare an assessment report in which it will make recommendations on the proposal to the Minister for the Environment.

Why write a submission?

The EPA seeks information that will inform its consideration of the likely effect of the proposal, if implemented, on the environment. This may include relevant new information that is not in the ERD, such as alternative courses of action or approaches.

In preparing its assessment report for the Minister for the Environment, the EPA will consider the information in submissions, the proponent's responses, and other relevant information.

Submissions will be treated as public documents unless provided and received in confidence, subject to the requirements of the *Freedom of Information Act 1992*.

Why not join a group?

It may be worthwhile joining a group or other groups interested in making a submission on similar issues. Joint submissions may help to reduce the workload for an individual or group. If you form a small group (up to 10 people) please indicate the names of each participant. If your group is larger, please indicate how many people your submission represents.

Developing a submission

You may agree or disagree with, or comment on information in the ERD.

When making comments on specific elements in the ERD:

- clearly state your point of view and give reasons for your conclusions
- reference the source of your information, where applicable
- suggest alternatives to improve environmental outcomes.

What to include in your submission

Include the following in your submission to make it easier for the EPA to consider your submission:

- Your name and address
- Date of your submission
- Whether you want your contact details to be confidential
- A summary of your submission, if it is long
- A list of points so that issues raised are clear, preferably by environmental factor
- Refer each point to the page, section and if possible, paragraph of the ERD
- Attach any reference material, if applicable. Make sure your information is accurate.

  The closing date for public submissions is: XXDATEXX

The EPA prefers submissions to be made electronically via the EPA's Consultation Hub at https://consultation.epa.wa.gov.au/.

Alternatively, submissions can be:

- posted to: Chairman, Environmental Protection Authority, Locked Bag 10, Joondalup DC WA 6919, or
- delivered to: Environmental Protection Authority, Prime House, 8 Davidson Terrace, Joondalup 6027.

If you have any questions on how to make a submission, please contact EPA Services at the Department of Water and Environmental Regulation on 6364 7000.

Scoping – Required Work

The table below provides the scoping checklist in accordance with the Environmental Scoping Document (ESD) (EPA, 2024a), developed and approved by the EPA. The table below outlines the specific and/or additional required work for the Proposal and includes a cross-reference to sections of this Environmental Review Document (ERD) that address each task.

Table: Required work as outlined in the ESD

Task No.	Required work	Section
All Environmental Factors		
1	Work to be consistent with the requirements in the *Instructions and Template: How to prepare an Environmental Review Document* and provided for each factor: • Factor objective, including discussion on how the Proposal can be implemented consistent with the EPA factor objective • Relevant policies and guidance, where practicable for this to have been met in the timeframe in table 2 • Receiving environment • Potential environmental impacts • Mitigation, including offsets where relevant • Assessment and significance of residual impact • Environmental outcomes. In the case that the relevant policies and guidance is impracticable to meet in the timeframe in table 2, provide alternate justification that demonstrates that implementation of the Proposal is likely to meet the EPA's factor objectives, including but not limited to: • Proposed avoidance areas for key significant environmental values including pre-clearance surveys which will ensure identification and protection of key significant environmental values • Measurable environmental outcomes which will be met for key significant environmental values • Identification of offsets to counter-balance significant residual impacts on key environmental values • Offsets should be identified for all relevant impacts of the 2022 to 2026 and 2023 to 2027 Proposal, regardless of whether the impact occurred while the section 6 exemption was operating and before the issue of any final approvals.	Sections 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8.
2	Demonstrate application of the EPA's mitigation hierarchy, prioritising the avoidance of impacts to environmental values and achievement of positive environmental outcomes in the first instance. Thereafter, where additional mitigation measures are required, any proposed environmental management plans (and outcomes and objectives therein) should be: • Limited in scope to detailing proposed monitoring activities to meet clear and measurable environmental outcomes	Sections 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8.

Task No.	Required work	Section
	• Prepared in accordance with the EPA's Instructions • Provided in complete form at ERD stage. If such a plan is provided, the ERD should explain why the plan is being included (and why an outcomes-based condition is not considered practical).	
3	Clearly set out the status of the Proposal as at the time of the EPA's decision to assess the Proposal (i.e., what had yet to be implemented) and the effect of the s.6 exemption order as it applies to each proposal area by status (e.g., already disturbed vs yet to be disturbed).	Sections 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8.
Flora and vegetation; Terrestrial fauna		
4	Prepare the ERD with reference to relevant recovery plans, Statewide Vegetation Statistics, conservation advice and/or threat abatement plans and local and region management plans for conservation significant species, ecological communities, and habitat (supporting, significant, and critical) that is known or likely to occur, in the vicinity of the Proposal areas. Any instances where published guidance is not followed must be justified.	Sections 5.2.2.3, 5.2.2.4, 5.2.4.8, 5.2.5.2, 5.3.2.2, 5.3.4.4, 5.3.9.1, and 5.3.9.3.
5	Provide an analysis of the significance of identified key environmental values, and anticipated impact(s) of the Proposal to values, in a local and regional context. Key environmental values to be considered include: • State-listed threatened, priority, and conservation significant flora (including locally endemic flora, flora associated with restricted habitats, range-end populations, and specific /subspecies with unique taxonomical features) including, but not limited to *Anthocercis gracilis* (Vulnerable), *Diuris drummondii* (Endangered), *Diuris micrantha* (Vulnerable), *Lasiopetalum pterocarpum* (Critically Endangered), *Verticordia fimbrilepis* subsp. *fimbrilepis* (Vulnerable), *Andersonia* sp. *Saxatilis* (Critically Endangered), *Hibbertia hortiorum* (P1), *Paracaleana granitica* (P1), *Paracaleana gracilicordata* (P1), *Bossiea modesta* (P2); *Grevillea crowleyae* (P2), *Grevillea ornithoopoda* (P2) and *Andersonia* sp. *Audax* (P3). • State-listed threatened and priority ecological communities (TEC/PECs) including, but not limited to the granite communities of the Northern Jarrah Forest PEC (P3) and litter dependent invertebrate community of the Northern Jarrah Forest PEC (P2). • State-listed threatened, priority, and conservation significant fauna (and key habitat) including, but not limited to Carnaby's Cockatoo (Endangered), Baudin's Cockatoo (Endangered), Forest Red-tailed Black Cockatoo (Vulnerable), Quokka (Vulnerable), Numbat (Endangered), Chuditch (Vulnerable),Malleefowl (Vulnerable), Woylie (Critically Endangered), Western Ringtail Possum (Critically Endangered), Rakali (P4), Quenda (*Isoodon Fusciventer*) (P4), Carter's Freshwater Mussel (Vulnerable), Pouched Lamprey (P3), Western	Sections 5.2.3, 5.2.4, 5.2.5, 5.2.6, 5.3.3, 5.3.4, 5.3.5, 5.3.6, and 5.3.7.

Task No.	Required work	Section
	Brush Wallaby (P4), Tammar Wallaby (P4), Woma (P1), Inornate trapdoor spider (P3), Masked owl (P3), Southern death adder (P3), Dell's skink (P4), Western false pipistrelle (P4), Southwestern Brush-tailed Phascogale (Conservation Dependent) • Fauna species with restricted range or with degree of historical impact from threatening process. • Short-range endemic (SRE) invertebrates • Regionally and locally significant vegetation, including but not limited to the Northern Jarrah Forest, granite outcrop vegetation and wetland vegetation • Groundwater dependent ecosystems • Old growth forests • Ecological linkages and wildlife corridors • Protected areas or conservation areas under the *Conservation and Land Management Act 1984* and the 2024-2033 Forest Management Plan • Local and regional reserves identified in planning schemes and strategies • Retained or protected areas under existing Ministerial Statements • Areas previously cleared and rehabilitated by the Alcoa.	
6	A consolidated report should be provided that includes the integrated results of all historic and recent surveys and identification of areas where surveys have not been previously undertaken, or surveys that are not recent, representative and/or do not meet EPA guidance. The consolidated data from historical and recent surveys should be sufficient to place the impacts of the proposal into local and regional context.	Appendix 14 (Huntly and Willowdale Flora and Vegetation Values Summary Report), and Appendix 27 (Terrestrial Fauna Desktop Assessment – Huntly and Willowdale Mines).
7	Demonstrate, with evidence, the success of current mitigation and management measures and describe how they have been adapted based on outcomes and result.	Sections 5.2.7, and 5.3.8.
8	Notwithstanding the provisions at clauses 2 – 4 of *Division 2 – Controls on activities* in schedule 1 of the exemption order, provide information to clarify: • The rate of clearing (ha/per annum) within the Proposal areas • The average and range of intervening time period from the clearing of vegetation to commencement of rehabilitation works • Pre-clearing activities that will be undertaken to ensure maximum avoidance and/or management of impacts to key significant native vegetation, and priority and threatened flora and fauna species, including Black Cockatoos and associated habitat(s) • With reference to clause 4(1) of the exemption order, the methodology for identification of Black Cockatoo nesting trees and Huntly Mine Black Cockatoo significant trees • With reference to clause 4(2)(d) and 4(2)(e) of the exemption order, any additional measures to ensure avoidance of impacts to Black Cockatoos as part of	Sections 5.2.3.4, 5.2.7.2, 5.2.9, 5.3.8, 5.3.4.4.3, 5.3.10, 6.1, 6.3, and 10.3.8.7.

Task No.	Required work	Section
	implementing the Proposal, and contingency measures should accidental impacts occur.	
9	Additional to the requirements of Divisions 3 and 4 of the exemption order, identify and describe monitoring strategies and governance arrangements for the ongoing management of impacts within the Proposal areas, including draft monitoring plans if applicable.	Sections 5.2.7, 5.3.8, 5.4.6, 5.6.5, 5.7.5, 5.8.5, 6.1, and 6.3.
10	Provide information in the ERD or in the *Pinjarra Alumina Refinery Revised Proposal* (Assessment 2253) ERD about proposed rehabilitation within the Proposal areas, including information on: • The prioritisation of areas for rehabilitation • The anticipated spatial extent (ha) of rehabilitated areas per annum • The rehabilitation plan, including (but not limited to) selected species, proposed density, estimation of time to returned benefit (including consideration for impacts associated with climate change and indirect impacts from ongoing mining operations in locality), estimated fatality risk, and contingency measures, biodiversity outcomes and practices to achieve these outcomes (including measurement against biodiversity indicators, evaluation of current practices, adaption and improvement actions). • Any supplementary measures to enhance the value of rehabilitated areas for fauna species (e.g., installation of artificial habitats, management of feral and predator species).	Statements have been made throughout as relevant. Link to Assessment 2253 provided: *Pinjarra Alumina Refinery Revised Proposal*
11	Provide in the ERD or in the *Pinjarra Alumina Refinery Revised Proposal* (Assessment 2253) ERD criteria for demonstrating whether rehabilitated areas are self-sustaining ecosystems. Include information about how self-sustaining areas are being/will be monitored and detail the potential contingency actions that will apply when self-sustaining ecosystems are unable to be established, or begin to decline.	Statements have been made throughout as relevant. Link to Assessment 2253 provided: *Pinjarra Alumina Refinery Revised Proposal*
12	Where knowledge or survey gaps are to be addressed in the *Pinjarra Alumina Refinery Revised Proposal* (Assessment 2253) this should clearly be stated in the ERD with justification.	Statements have been made throughout as relevant. Link to Assessment 2253 provided: *Pinjarra Alumina Refinery Revised Proposal*
13	Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model and WA Environmental Offsets Guideline (2014, or any subsequent revisions). Where significant residual impacts remain, propose an appropriate well defined offsets package with due consideration to the WA Environmental Offsets Policy (2011, or any subsequent revision) and guidelines. Consideration may be given to the EPA Public Advice on Offsets at a regional scale.	Sections 8.4, 8.5, 8.6, and 8.7.

Task No.	Required work	Section
Inland waters		
14	Provide an analysis of the significance of key significant identified environmental values, and anticipated impact(s) of the Proposal to values, in a local and regional context. Key significant environmental values to be addressed include, but are not limited to: • Conservation category wetlands, resource enhancement wetlands and associated buffers. • Major waterways, rivers, creeks, and tributaries including, but not limited to the Murray River, Serpentine River, South Dandalup River, North Dandalup River, Upper Wungong Brook, Gooralong Brook, Big Brook, Drakes Brook, Harvey River, Harris River, and Canning River or tributaries of those. • Lakes, riparian areas and associated buffers including, but not limited to Lake Brockman, Lake Navarino, Lake Moyanup, Lake Kabbamup, Yourdamung Lake, and Lake Banksiadale. • Groundwater and surface water resources, including proclaimed and unproclaimed areas under the *Rights in Water and Irrigation Act 1914.* • Public Drinking Water Source Areas (PDWSAs) and water catchment areas including, but not limited to the Serpentine Dam Catchment, Serpentine Pipehead Dam Catchment, Gooralong Brook Catchment, North Dandalup Catchment, North Dandalup Pipehead Dam Catchment, South Dandalup Dam Catchment, Pinjarra Water Supply Catchment, Murray River Water Reserve, Harvey Dam Catchment, and Stirling Dam Catchment, and the relevance of these water sources in context of the Integrated Water Supply Scheme. • Waterbodies providing habitat for threatened, priority, or conservation significant aquatic fauna such as Carter's Freshwater Mussel. • Dams/reservoirs including, but not limited to Harvey Dam, Serpentine Dam, South Dandalup Dam, North Dandalup Dam, Stirling Dam and other dams/reservoirs sited along the major waterways (or tributaries of those).	Sections 5.4.4, 5.5.7, and 5.5.9. Appendix 48 (Baseline Inland Waters Assessment). Appendix 51 (Public Drinking Water Risk Assessment).
15	Undertake a public drinking water catchment assessment within the relevant Development Envelopes for the Proposal. The assessment should consider the key risks to significant values from the proposal and any associated mitigation measures.	Appendix 51 (Public Drinking Water Risk Assessment).
16	Notwithstanding the provisions at clauses 2 – 6 of *Division 2 – Controls on activities* in the exemption order, provide information to clarify: • The baseline hydrological regime, including existing surface and groundwater quality and quantity. This should be supported by an ecohydrological conceptual model which demonstrates the interactions between water streams and the environment and provides a qualitative	Sections 5.5.7, 5.5.9, 6.1, and 6.3. Appendix 48 (Baseline Inland Waters Assessment).

Task No.	Required work	Section
	assessment of the predicted impacts, inclusive of groundwater mounding and drawdown. • Beneficial use and assess the potential impacts to inland water values associated with surface water abstraction (licenced under RIWI Act) and any groundwater abstraction (potentially associated with dewatering activities), and measures to address impacts. Potential impacts, from construction and operation to water quality, storage and distribution system of the Integrated Water Supply Scheme (IWSS). • pre-disturbance activities that will be undertaken to ensure maximum avoidance and/or management of impacts to the above-listed key significant environmental values within the Proposal areas • with reference to clauses 4(2)(a) – 4(2)(c) of the exemption order, any additional measures to ensure avoidance and management of impacts to water reservoirs and the Serpentine Pipehead Dam Catchment Area as part of implementing the Proposal • with reference to clause 4(2)(a) of the exemption order, assessment of the environmental outcome of the provisioned 1 km setback in preventing adverse impacts to inland water values • with reference to clause 5 of the exemption order, provide information detailing the rehabilitation of stabilised areas, and how it has been successful, to ensure impacts to inland water values are minimised and catchment function restored • if impacts to the inland water values are expected, provide information consistent with the EPA's mitigation hierarchy, to demonstrate that the EPA factor objective can be met.	
17	Additional to the requirements of Divisions 3 *Compliance* and 4 *Miscellaneous* of the exemption order, identify and describe monitoring strategies and governance arrangements for the ongoing management of impacts within the Proposal areas, including draft monitoring and management plans if applicable. With reference to clause 6(2)(c) of the exemption order, provide detail about the likely measures that may be adopted to rectify a drainage incident, and measures that may be implemented to avoid or minimise the environmental impact of such an incident. Where measures are already being implemented, demonstrate how they are successful in minimising impacts to inland water values.	Section 5.5.8.
Terrestrial environmental quality		
18	With reference to the terms of the exemption order, clarify: • any additional measures to those in the exemption order to avoid or reduce the annual number of drill holes bored, or spatial footprint of drilling activities, within the Proposal areas • the proposed management of areas post-clearing and drilling, to ensure the retention of soil integrity, condition and quality within the Proposal areas	Sections 1.4.8, 2.2.4, 5.4.5, 5.4.6, 6.1, 6.3, 7.1, 7.2.3, and 7.4.

Task No.	Required work	Section
	• the proposed measures to ensure soil stabilisation during and after implementation of the Proposal • with reference to clause 5, in the event of a de-stabilisation or drainage incident, the proposed measures to return terrestrial environmental quality to pre-disturbance baseline condition.	
Greenhouse gas emissions		
19	Provide all information required in accordance with the EPA guidance for this factor.	Section 5.8 (Greenhouse Gas Environmental Management Plan for the Huntly and Willowdale Mines).
20	Provide a Greenhouse Gas Environmental Management Plan (GHG EMP), prepared in accordance with the EPA's template, that includes proposed emissions from the combined existing and ongoing Proposal (MS 646, 728, the Pinjarra Revised proposal and any future mining Proposal until 2045) and evaluates these emissions for consistency with the EPA's guidance, including consideration of best practice technology, a linear trajectory to net zero emissions by 2050, and impact of the application of Commonwealth or State GHG law and policy. (Note: Consideration of related proposal emissions such as emissions from refineries, or emission for operations in the Proposal area beyond 2027, may be more effectively assess under Assessment 2253, in which case the Proponent will justify this).	(Greenhouse Gas Environmental Management Plan for the Huntly and Willowdale Mines). Greenhouse Gas Environmental Management Plans detailing combined existing and ongoing proposal emissions are included with Assessment 2253.
21	Provide the GHG EMP to an independent third-party expert for peer review to evaluate: • The calculations, assumptions, methodology and analysis of GHG emissions. • Whether best practice emissions reduction technologies have been adopted. • Whether offsets are likely to be credible and available.	The Greenhouse Gas Environmental Management Plan for the Huntly and Willowdale Mines will be provided to an independent third party expert for peer review evaluation, post draft ERD submission to the EPA.
Social surroundings		
22	Provide relevant information as outlined in the EPA's guidance for Aboriginal cultural heritage.	Sections 3, 5.6, 7.2.5, 8.8, 10.7, and 10.8.
23	Take reasonable consultation steps to identify any physical or biological impacts to significant Aboriginal cultural heritage values that cannot/will not be regulated under the *Aboriginal Heritage Act 1972* to meet the EPA factor objective.	Sections 3, 5.6.4, 7.2.5, and 8.8.

Task No.	Required work	Section
24	Characterise and describe the key significant amenity, including visual/aesthetic and social/intrinsic and natural or historic heritage values within and adjacent to the Proposal areas and any sensitive receptors that may be significantly impacted as a result of the Proposal. Key significant values may include, but are not limited to: • The nearby townsites of Jarrahdale, Keysbrook, North Dandalup, Pinjarra, Dwellingup, Waroona, Hamel, Yarloop and Harvey • Rural properties located within the Proposal areas or nearby • Recreational trails and facilities such as government managed campgrounds and its amenities and the Munda Biddi and Bibbulmun Tracks • Tourism attractions, including tourist drives and lookouts • State registered heritage places, including the Marrinup Prisoner of War Camp (ID: 3103), Asquith Bridge (ID: 15424), Mill Manager's Residence (ID: 4615), Spencer's Cottage (ID:3302) and Barton's Mills Prison ruins (1D:3580).	Sections 5.7.3, 5.7.4, 5.7.6, 7.2.5.3, and 10.8.
25	Clarify the potential impacts (direct and indirect) as a result of construction and operational elements of the Proposal on important key significant amenity values.	Section 5.7.4.
26	Describe how significant impacts to the identified significant amenity key values from the modification of physical and biological surroundings will be avoided and/or mitigated consistent with recognised methodologies and guidance. Consideration should be given to the impacts on economic surroundings resulting from alteration to the physical or biological environment. Outline the reasonable steps of consultation undertaken to identify relevant actions and determine appropriate mitigation for those values, in the timeframe identified in table 2.	Sections 5.7.4, 5.7.5, and 8.8.
27	Describe and justify measures to avoid, mitigate, and manage significant impacts to nearby sensitive receptors from potential noise, light, dust, and odour emissions and detail the likely environmental outcomes.	Sections 5.7.5, 5.7.6, and 5.7.7.

Executive Summary

Introduction

Alcoa of Australia Limited (Alcoa) has been mining and refining bauxite in Western Australia since 1963. Alcoa currently operates two bauxite mines, located approximately 100 km southeast of Perth; the Huntly Mine, established in 1972, and the Willowdale Mine, established in 1984; which operate within Mineral Lease 1SA. Alcoa is obliged to prepare and submit a Mining and Management Program (MMP) for all its mining operations as required under the *Alumina Refinery (Wagerup) Agreement and Acts Amendment Act 1978*.

On 28 February 2023, a third party made two referrals to the Environmental Protection Authority (EPA) under Section 38, Part IV of the *Environmental Protection Act 1986* (EP Act). The two referrals referenced Huntly and Willowdale Mines – Mining and Management Program 2022 to 2026 (Assessment 2384) and 2023 to 2027 (Assessment 2385). Following ongoing consultation with EPA services, on 28 February 2025 Alcoa submitted an EP Act Section 43A application to combine Assessment 2384 and Assessment 2385 into a single Proposal (Assessment 2385).

Alcoa's Huntly Mine is currently approved under Part IV of the EP Act via Ministerial Statement (MS) 646. The Huntly Mine's physical elements outlined in MS 646 include pits, haul roads, topsoil stockpiles, conveyors, supporting infrastructure, and rehabilitation. MS 646 does not define an associated disturbance footprint (i.e., amount of clearing) and does not define an associated Development Envelope, within which the clearing must occur. Operational elements (i.e., annual bauxite ore production rate, water abstraction rates, bauxite crushing rates, bauxite conveying and transport rates) are also not currently defined within MS 646 for the Huntly Mine. In determining to assess the Proposal, the EPA validated that three operational mine areas at the Huntly Mine (White and portions of McCoy and Myara) have been previously referred. This area currently includes 7,712.4 ha of disturbance (inclusive of rehabilitation) and 800 ha proposed disturbance footprint (inclusive of 33 ha previously approved clearing and not cleared under historical Forest Clearing Advice (FCA))

Alcoa's Willowdale Mine is currently approved under Part IV of the EP Act via MS 728. The Willowdale Mine's physical elements outlined in MS 728 include pits, haul roads, topsoil stockpiles, conveyors, supporting infrastructure, and rehabilitation. MS 728 does not define an associated disturbance footprint (i.e., amount of clearing) and does not define an associated Development Envelope, within which the clearing must occur. In determining whether to assess the Proposal, the EPA validated that two operational mine areas at the Willowdale Mine (Mt William/Arundel/portion of Larego and Willowdale North/portion of Orion) have been previously referred. This area currently includes 6,047.3 ha of disturbance (inclusive of rehabilitation) and 3,003 ha proposed disturbance footprint (inclusive of 637 ha previously approved clearing and not cleared under historical FCAs. The Willowdale Mine's bauxite ore annual production rate of up to 16 Mtpa is defined within MS 728. Other operational elements (i.e., annual water abstraction rates, bauxite crushing rates, bauxite conveying and transport rates) are not currently defined within MS 728 for the Willowdale Mine.

Overview of the Proposal

The Mining and Management Program (MMP) is a rolling five-year approval document, submitted annually to the Western Australian Minister for State and Industry Development, outlining Alcoa's proposed mining locations, and its mining and rehabilitation methodology for the associated five-year period for the Huntly and Willowdale mines. The Huntly and Willowdale mine elements include mine pits, haul roads, topsoil stockpiles, conveyors, supporting infrastructure, rehabilitation activities, clearing of native vegetation, existing mine infrastructure and facilities, operations associated with the mining, crushing and screening of bauxite ore, and exploration activities.

For the purpose of the combined assessment (Assessment 2385), the Proposal comprises:

- 13,788 ha of disturbance (inclusive of 6,044 ha of rehabilitation) within a 39,047 ha Mine Development Envelope (DE) at Huntly;
- 846 ha of disturbance (inclusive of 417 ha of rehabilitation) within a 2,137 ha Mine DE at Willowdale; and
- No more than 105,000 drill holes per annum within a 178,340 ha Exploration DE.

On 14 December 2023, the *Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023* (Exemption Order) was issued, permitting Alcoa to continue its bauxite mining operations covered by the 2022 to 2026 and 2023 to 2027 MMPs, under specified conditions. The Exemption Order permits Alcoa to undertake clearing endorsed under the approved MMPs until 31 December 2027, allowing Alcoa to continue with the operations described above while the Proposal is assessed under Part IV of the EP Act. The Proposal excludes the processing of bauxite ore to alumina which occurs at Alcoa's Pinjarra, Wagerup, and Kwinana (currently curtailed) refineries.

Proposal Content

Following ongoing consultation with EPA services, on 28 February 2025 Alcoa submitted an EP Act Section 43A application to combine Assessment 2384 and Assessment 2385 into a single Proposal (Assessment 2385).

The general proposal content description for the proposed Bauxite Mining on the Darling Range in the southwest of WA for the Years 2023 to 2027 is provided in ES Table 1. The proposal content elements are provided in ES Table 2 respectively. Alcoa has consolidated these Proposal into a single Environmental Review Document (ERD), for which a summary of potential impacts, proposed mitigation and proposed environmental outcomes as they relate to each of the Key Environmental Factors is provided in ES Table 3.

ES Table 1: General proposal content description (Huntly and Willowdale Mines – Mining and Management Program 2022–2026 and 2023–2027 (Third Party Referral)

Proposal title	Huntly and Willowdale Mines Bauxite mining on the Darling Range 2023 to 2027 (third party referral)
Proponent name	Alcoa of Australia Limited (Alcoa)
Short description	Alcoa's mining operations (2022 to 2027) within the Huntly and Willowdale areas located in the Peel region of Western Australia (WA), approximately 100 km southeast of Perth.

ES Table 2: Proposal content elements (Huntly and Willowdale Mines – Bauxite mining on the Darling Range 2023 to 2027 (third party referral)*

Proposal element	Location / description	Existing Proposal extent, capacity or range	Proposed Significant Amendment – Content of ERD	Combined extent, capacity, or range
Physical elements				
Huntly Mine elements including: • Pits • Haul Roads • Topsoil stockpiles • Conveyors • Supporting infrastructure • Rehabilitation	Figure 1 (Appendix 3)	Clearing[1] to occur within a **27,574 ha**[2] Mine Development Envelope.	**+13,788 ha** Disturbance Footprint within a **+39,047 ha** Mine Development Envelope. Disturbance Footprint consists of: • **+4,042 ha** of disturbance[3]. • **+6,044 ha** of rehabilitation • **+3,702 ha** of open areas.	**22,478 ha** Disturbance Footprint within a **66,621 ha** Mine Development Envelope. Disturbance Footprint[4] consists of: • **5,054 ha** of disturbance. • **13,385 ha** of rehabilitation. • **4,039 ha** of open areas. •
Willowdale Mine elements including: • Pits • Haul Roads • Topsoil stockpiles • Conveyors • Supporting infrastructure • Rehabilitation	Figure 2 (Appendix 3)	Clearing[5] to occur within a **25,012 ha**[2] Mine Development Envelope.	**+846 ha** Disturbance Footprint within a **2,137 ha** Mine Development Envelope. Disturbance Footprint consists of: • **+77 ha** of disturbance[6]. • **+417 ha** of rehabilitation • **+352 ha** of open areas.	**9,186 ha** of Disturbance Footprint within a **27,149 ha** Mine Development Envelope. Disturbance Footprint[7] consists of: • **2,357 ha** of disturbance. • **5,157 ha** of rehabilitation. • **1,672 ha** of open areas.
Low impact exploration activities	Figure 3 (Appendix 3)	Not defined[8].	Low impact exploration activities to occur within a **+178,340 ha** Exploration Development Envelope and no more than 105,000 drill holes per annum	Low impact exploration activities to occur within a **178,340 ha** Exploration Development Envelope and no more than 105,000 drill holes per annum

1. *Ministerial Statement (MS) 646 (Huntly Mine) does not define the associated Disturbance Footprint. However, it currently includes 7,678 ha of disturbance (inclusive of rehabilitation) and 1,012 ha proposed disturbance footprint (inclusive of 29 ha previously approved clearing and not cleared under historical Forest Clearing Advice (FCA))*
2. *MS 646 (Huntly Mine) and MS728 (Willowdale Mine) does not define the associated Development Envelope, this area is based on the EPA's Section 38(G)7 Public Advice regarding the Bauxite mining on the Darling Range in the southwest of WA for the years 2022 to*

Proposal element	Location / description	Existing Proposal extent, capacity or range	Proposed Significant Amendment – Content of ERD	Combined extent, capacity, or range
2026 proposal (Assessment 2384) and Bauxite mining on the Darling Range in the southwest of WA for the years 2023 to 2027 proposal (Assessment 2385). 3. *Includes 926 ha previously approved clearing and not cleared under historical FCA.* 4. *Existing Proposal Disturbance Footprint (7,678 ha of disturbance (inclusive of rehabilitation) and 1,012 ha proposed disturbance footprint) is administered and approved by the Bauxite Strategic Executive Committee (BSEC), therefore are out of scope of this PCD.* 5. *MS 728 (Willowdale Mine) does not define the associated Disturbance Footprint. However, it currently includes 6,060 ha of disturbance (inclusive of rehabilitation) and 2,280 ha proposed disturbance footprint (inclusive of 429 ha previously approved clearing and not cleared under historical FCA)* 6. *Includes 77 ha previously approved clearing and not cleared under historical FCA.* 7. *Existing Proposal Disturbance Footprint (6,060 ha of disturbance (inclusive of rehabilitation) and 2,280 ha proposed disturbance footprint) is administered and approved by the Bauxite Strategic Executive Committee (BSEC), therefore are out of scope of this PCD.* 8. *MS 646 (Huntly Mine) and MS 728 (Willowdale Mine) do not currently define the extent of exploration activities.*				
Operational elements				
Bauxite production	Huntly Mine	Not defined[9]	Production of up to **+26.5** Mtpa (wet) of bauxite ore	Production of up to **26.5** Mtpa (wet) of bauxite ore
	Willowdale Mine	Production of up to 16 Mtpa of bauxite ore	Production of up to 16 Mtpa (wet) of bauxite ore	Production of up to 16 Mtpa (wet) of bauxite ore
Water abstraction	Huntly Mine	Not defined	Abstraction of 1.095 GL/annum[10]	Abstraction of 1.095 GL/annum[10]
Bauxite Crushing	Huntly Mine	Not defined	Processing of up to **+26.5** Mtpa (wet) of bauxite ore	Processing of up to **26.5** Mtpa (wet) of bauxite ore
	Willowdale Mine	Not defined	Processing of up to 16 Mtpa (wet) of bauxite ore	Processing of up to 16 Mtpa (wet) of bauxite ore
Bauxite conveying and transport	Huntly Mine	Not defined	Transport of up to **+26.5** Mtpa (wet) of bauxite ore	Transport of up to **26.5** Mtpa (wet) of bauxite ore
	Willowdale Mine	Not defined	Transport of up to 16 Mtpa (wet) of bauxite ore	Transport of up to 16 Mtpa (wet) of bauxite ore
9 – Production of up to 22.6 Mtpa bauxite ore removed as regulated under the Mining Act 1978 through a Change to Proposal approved under Section 45C EP Act on 21 September 2015				

Proposal element	Location / description	Existing Proposal extent, capacity or range	Proposed Significant Amendment – Content of ERD	Combined extent, capacity, or range
10 – Alcoa holds five Rights in Water and Irrigation Act 1914 5C Surface Water Licences (SWL) authorising the abstraction of 1.095 GL/annum. The predicted water demand for the Proposal is 3.7 GL/annum. The gap requirement is to be obtained through commercial agreement with Water Corporation.				
Greenhouse Gas Emissions				
Peak annual average				
Scope 1	Huntly Mine	Not defined	**124,900 t CO_2e peak annual gross emissions.** **≤ 100,000 t CO_2e annual net emissions as managed by the Safeguard Mechanism[12].**	**124,900 t CO_2e peak annual gross emissions.** **<100,000 t CO_2e annual net emissions as managed by the Safeguard Mechanism[12].**
			1,827,798 t CO_2e cumulative non-NGERs related gross emissions at 2050 (initial estimate)[13]	**1,827,798 t CO_2e cumulative non-NGERs related gross emissions at 2050 (initial estimate)[13]**
	Willowdale Mine		**48,900 t CO_2e peak annual gross emissions**	**48,900 t CO_2e peak annual gross emissions**
			1,175,443 t CO_2e cumulative non-NGERs related gross emissions at 2050 (initial estimate)[13]	**1,175,443 t CO_2e cumulative non-NGERs related gross emissions at 2050 (initial estimate)[13]**
Scope 2	Huntly Mine	Not defined	**65,495 t CO_2e peak annual emissions**	**65,495 t CO_2e peak annual emissions**
	Willowdale Mine		**13,973 t CO_2e peak annual emissions**	**13,973 t CO_2e peak annual emissions**
Scope 3	Huntly Mine	Not defined	**Approximately 44.9 MtCO_2e per year[14]**	**Approximately 44.9 MtCO_2e per year[14]**
	Willowdale Mine		**Approximately 20.8 MtCO_2e per year[14]**	**Approximately 20.8 MtCO_2e per year[14]**

Proposal element	Location / description	Existing Proposal extent, capacity or range	Proposed Significant Amendment – Content of ERD	Combined extent, capacity, or range
11 - Peak emissions subject to date of approval decision and finalisation of mine plan. *12 - Net emissions arise following the application of any Safeguard Mechanism credit units/carbon offsets as required by the SGM* *13 - Non-NGERs reported Scope 1 emissions are those not covered by the National Greenhouse and Energy Reporting Act 2007, and in this instance relate to the potential release of carbon stored in the forest ecosystem. These matters are addressed in the ERD for Assessment 2253.* *14 - Peak annual Scope 3 emissions for year with forecast highest production during the Proposal. Scope 3 emissions related to downstream smelting are calculated using the 2022 International Aluminium Institute average. Scope 3 emissions for the categories and sources included in the calculation are consistent with the International Aluminium Institute's (IAI) cradle-to-gate primary aluminium life cycle assessment.*				
Rehabilitation				
All clearing within the Development Envelope will be rehabilitated to Alcoa's rehabilitation objective to '*Establish, and return to the State, a self-sustaining Jarrah Forest ecosystem, planned to enhance or maintain water, timber, recreation, conservation and other nominated forest values. Rehabilitated areas must become amenable to similar management practices employed in the surrounding Jarrah Forest*'. This objective has been developed with, and approved by, the Department of Biodiversity, Conservation and Attractions and endorsed by the MMPLG as part of the 2016 onwards Completion Criteria.				
Other elements which affect extent of effects on the environment				
Proposal time	Maximum project life – Huntly Mine	> 45 years	**31 December 2027 for Proposed Disturbance Footprint and Exploration Development Envelope.**	> 45 years
Proposal time	Maximum project life – Willowdale Mine	Not defined	**31 December 2027 for Proposed Disturbance Footprint and Exploration Development Envelope.**	**31 December 2027 for Proposed Disturbance Footprint and Exploration Development Envelope.**

** Proposed changes to Ministerial Statements are shown in **bold**. These proposed changes also include previously undefined elements within the Ministerial Statements.*

ES Table 3: Summary of potential impacts, proposed mitigation, and proposed environmental outcomes (Huntly and Willowdale Mines – Bauxite Mining on the Darling Range 2023 to 2027 (third party referral)

Flora and Vegetation	

Potential impacts	The following Proposal activities have the potential to impact flora and vegetation:
	• Construction of mine access and haul roads, conveyors and facilities;
	• Extension of mining activities; and
	• Operation of mining and haulage equipment.
	The Proposal may result in the following potential direct and indirect impacts to flora and vegetation:
	• Direct impacts as a result of clearing of native vegetation;
	• Indirect impacts (include those to flora, vegetation and communities outside the proposed clearing areas) as a result of:
	  ○ Fragmentation of vegetation;
	  ○ Introduction and/or spread of weeds;
	  ○ Introduction and/or spread of *Phytophthora* dieback or other forest diseases;
	  ○ Spills and/or leaks from storage and handling of hazardous materials and waste;
	  ○ Dust emissions;
	  ○ Use of saline water use for dust suppression;
	  ○ Altered hydrology/groundwater regimes; and
	  ○ Change in fire regimes.

Mitigation hierarchy	Avoid:
	• Provision of Mining Avoidance Zones (MAZs), whereby no clearing activities for mining or infrastructure will occur, no clearing (i.e., disturbance) of the following:
	  ○ Threatened flora species;
	  ○ Threatened Ecological Communities;
	  ○ National Parks, Conservation Reserves; and
	  ○ Old Growth Forest.
	• Pre-clearance Targeted flora and vegetation surveys will occur in potential habitat prior to clearing to identify conservation significant flora and TECs/PECs with MAZs implemented for identified and confirmed matters as above.
	• Avoid the introduction of the Myrtle Rust and Polyphagous Shot-hole Borer into exploration areas by following recommendations, to the extent practicable, for Zone B within Department of Primary Industries and Regional Development's guidance notes.
	Minimise:
	• Provision of Limited Disturbance Areas (LDAs) for stream zone vegetation (with 100 m buffer), confirmed PEC and granite outcrops greater than 1 ha, whereby clearing activities for infrastructure may occur;
	• Minimise clearing of priority flora and potential PEC as far as practicable;
	• Minimise clearing of streamzone vegetation and rock outcrops;

Flora and Vegetation	
	• Minimise fragmentation by retaining ecological corridors and linkages, such as streamzone vegetation, and by prioritising and sequencing rehabilitation areas to enhance habitat connectivity as far as practicable; • Implement the Ground Disturbance Permit process to ensure clearing markup and demarcation processes; • Construction and operational vehicle and equipment movements limited to designated roads, access tracks and cleared areas; • Pre-clearing weed surveys to be conducted to inform weed management measures; • All identified Declared Pests and Weeds of National Significance treated in accordance with their Control Codes, with the aim of eradication where possible but as a minimum prevent offsite movement; • Inspection of operational vehicles and equipment for soil and vegetative material prior to entry to undisturbed Mine DE areas and off-site; • Prior to ground-breaking activity within the Mine Development Envelope, conduct a *Phytophthora* dieback assessment by a registered *Phytophthora* dieback interpreter in accordance with DBCA guidelines; • Manage entry into Disease Risk Areas via delegated Permits; and • Dust suppression for conveyor belts (through utilisation of covers), haul roads and other key operational areas. Rehabilitate: • Progressive rehabilitation within the Mine DE will be undertaken in line with Alcoa's Rehabilitation Management Plan and Schedule which prioritises areas based on level of risk; and • Seeds for rehabilitation are collected from within defined provenance zones in the Northern Jarrah Forest (NJF).
Residual impacts, including assessment of significance	• Clearing and rehabilitation of 4,119 ha within the Mine DEs may cause a significant residual impact due to partial loss of floristic diversity, ecosystem diversity and structural complexity of predominantly widespread vegetation complexes that are well retained within the Northern Jarrah Forest. The impact will occur in the context of more widespread cumulative impacts from past timber harvesting, climate change, fire and dieback; and • The Proposal may cause a significant direct impact to one potential Threatened and one potential Priority Ecological Community in the NJF.
Proposed environmental outcomes	• Clearing of no more than 4,042 ha and 77 ha of native vegetation within the Huntly and Willowdale Mine DEs respectively; • No disturbance or adverse impacts to Old Growth Forest within the Mine DEs; • No disturbance or adverse impacts to National Parks or formal conservation reserves; • No direct impacts (excluding monitoring and management activities) in defined MAZs; • Pre-clearance surveys for Threatened and Priority flora, TECs and PECs considered likely to occur will be undertaken. Prior to undertaking any clearing, pre-clearance surveys are completed, where required, and outcomes, mitigation measures and monitoring proposed and impacts provided to Minister for State Development for endorsement through the State Agreement Administrative Framework; • No disturbance or adverse impacts to TECs within the Mine DEs; • No disturbance or adverse impacts to confirmed PECs, except for only for the purposes of construction and operation of haul roads, services roads, transport corridors, mine water supply and other infrastructure; • No disturbance or adverse impacts to more than 55 ha of granite vegetation;

Flora and Vegetation	
	• No disturbance or adverse impacts to more than 579 ha of potential GDE vegetation; • All cleared areas rehabilitated to Jarrah forest ecosystem in accordance with approved completion criteria; • No disturbance or adverse impacts to Threatened Flora species; • No uplift to the listing status of threatened or priority flora species; • No uplift to the listing status of threatened or priority ecological communities; and • No disturbance or adverse impacts to more than 2% of the known population of Priority listed flora species, until it can be demonstrated that more than 100 individuals have been recorded, in which case 10% of the known population.
Assessment of offsets (if relevant)	Not applicable. No offsets are proposed.
Terrestrial Environmental Quality	
Potential impacts	The following Proposal activities have the potential to impact terrestrial environmental quality: • Clearing of native vegetation; • Alteration of natural drainage regimes; • Waste disposal; • Storage and handling of contaminants; and • Closure and decommissioning. The Proposal may result in the following potential impacts to terrestrial environmental quality: • Soil salinisation as a result of mining-induced saline groundwater rise; • Ground disturbing activities; • Disturbance of potential acid sulphate soils; • Erosion of post-mining landforms; and • Contamination from spills and/or leaks from storage and handling of hazardous materials and waste.
Mitigation hierarchy	Avoid: • Construction and operational vehicles and equipment will use PFAS free fire-fighting foams; and • All wastes apart from treated sewage effluent will be transported off-site for recycling or disposal at a licenced waste facility. Minimise: • Haul roads, conveyors, and other infrastructure within the Mine DE planned to limit crossing of mapped swamp and stream zones, to the minimum required for safe mining, as far as practicable; • Where excavation of 100 m^3 or more or dewatering of swamp sediments is required a PASS investigation will be undertaken in accordance with Identification and investigation of acid sulphate soils and acidic landscapes (DER, 2015a); • Where ASS is confirmed as present within the excavation or groundwater drawdown area, construction will be reviewed to avoid disturbance as far as practicable. Where ASS disturbance is not avoidable, an ASS management plan (ASSMP) will be prepared in accordance with Treatment and management of soil and water in acid sulphate soil landscapes (DER, 2015a);

Flora and Vegetation	
	• Haul trucks and light vehicles will be refuelled as far as practicable at designated fuel bays; • Mobile fuel tankers that service heavy equipment in the field will be limited to 15 m^3 capacity; • Storage of all hydrocarbons, chemicals and dangerous goods within the Mine DE will be undertaken within appropriately sized secondary containment in accordance with Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 1997 as applicable to specific materials. Storage will take into consideration the requirements of WQPN 56 Tanks for fuel and chemical storage near sensitive water resources (DWER, 2018); • Planned major maintenance of operations and construction vehicles and equipment will occur within workshops, as far as practicable; • All wastes will be temporarily stored in designated containers and compounds prior to transport off-site for recycling or disposal at a licenced waste facility; • Construction and operations will have an emergency response plan that includes the requirements of WQPN 10 Containment spills – emergency response plan (DWER, 2020); and • Incident reporting and investigation will be conducted in accordance with Alcoa's procedures to reduce the likelihood of similar incidents occurring. Rehabilitate: • Vertical faces re-shaped to achieve acceptable grades that blend in with the surrounding natural forest landscape (< 18º slope). Slopes must always be less than 18 degrees; • No landscaped pit is to have a slope greater than 15 degrees for more than 20 m unless it is on contour of the surrounding forest floor; • Rehabilitation ripping carried out on contour with a multi-tyne. Some batters and banks need not be deep ripped, but must be scarified or shallow ripped, to avoid bringing up rocks. Interceptor banks constructed during contour ripping on steeper areas to assist in erosion control; • Establishment of a soil profile resembling undisturbed areas, as far as practicable, which includes an approximately 1.5 m thick, friable layer of topsoil, overburden and ripped substrate; • Ripping (pre-landscaping, post-landscaping and contour ripping) of rehabilitated areas occurs to improve infiltration and control surface water run-off; • Post rehabilitation UAV survey and analysis – collected in the second winter to identify any erosion that does not meet completion criteria or effects trafficability of the area; • Where salinity risk has been identified through previous data, rehabilitation will be completed as soon as practicable after mining has been completed; • Rehabilitation targets ensure open areas are minimised, with a prioritisation process utilised and increase rehabilitation area completed each consecutive year, to achieve a minimum of 3,159 ha between 2024 to 2027; • Rehabilitation pit slope storage capacity is designed utilising the rehabilitation water model based upon 1% AEP 24-hour design event, whereby any surface water run-off and associated erosion is contained within the pit; • Progressive rehabilitation within the Mine DEs will be undertaken in line with Alcoa's Rehabilitation Management Plan and Schedule which prioritises areas based on level of risk;
Residual impacts,	• The Proposal is unlikely to result in any significant residual impacts following rehabilitation;

Flora and Vegetation	
including assessment of significance	• The Proposal is unlikely to result in widespread salinity impacts to soils. This is due to the predominantly freshwater quality of groundwater however, there are likely to be pockets of saline groundwater within the DE. The modest groundwater mounding expected near valleys that may result in shallow groundwater depths is likely to return soil salinity to past levels; • Mining is not expected to result in oxidation of PASS. Mining occurs above the groundwater table and no dewatering will be undertaken of mine pits. Any potential acid forming materials in the regolith are therefore expected to already be oxidized at the depths to which mining occurs. PASS may potentially be presented in swamps, which will not be subject to mining, but may be disturbed for infrastructure crossings such as haul roads and conveyors; • Rehabilitation of cleared areas is expected to provide long-term protection of soils from erosion. Rehabilitation materials (topsoil and overburden) are appropriately stored and used in rehabilitation activities as soon as practicable to reduce the risk of soil degradation and improve rehabilitation outcomes; and • The potential for soil contamination will be substantially mitigated through all storage and most of the handling of hazardous materials and wastes occurring at designated construction compounds and mine facilities. There is the potential for spills to occur which may result in localised environmental impacts.
Proposed environmental outcomes	• Ensure no ASS contamination within the Mine DE or elsewhere attributable to the proposal. • All cleared areas within Mine DE rehabilitated to Jarrah forest ecosystem in accordance with approved completion criteria. • No operational waste disposal areas located within the Mine DEs, with the exception of mine facilities treated sewage effluent irrigation area. • PASS study is undertaken for any PASS areas and if required, Management Plans developed.
Assessment of offsets (if relevant)	Not applicable. No offsets are proposed.
Terrestrial Fauna	

Potential impacts	The following Proposal activities have the potential to impact terrestrial fauna:
	• Construction of mine access and haul roads, conveyors and facilities;
	• Extension of mining and operation of mining and haulage equipment; and
	• Clearing of vegetation.
	The Proposal may result in the following potential direct and indirect impacts to terrestrial fauna:
	• Direct impacts to fauna as a result of:
	  ○ Clearing of fauna habitat types leading to potential loss of fauna habitat; and
	  ○ Loss of fauna individuals as a result of fauna entrapment or vehicle/equipment collisions.
	• Indirect impacts to fauna as a result of:
	  ○ Introduction and/or spread of weeds;
	  ○ Introduction and/or spread of *Phytophthora cinnamomi* Dieback potentially leading to habitat degradation;
	  ○ Attraction of feral animals potentially leading to increased predation by introduced fauna species;

Flora and Vegetation	
	○ Altered hydrological regimes potentially leading to degradation/alteration of foraging and dispersal habitat; ○ Disturbance from light, noise and/or vibration, and possible displacement of fauna associated with construction activity and mining operations; ○ Spills and/or leaks from storage and handling of hazardous materials and waste; ○ Habitat fragmentation and barriers to fauna movement; and ○ Habitat degradation associated with construction activities or mining activities and/or increased human activity including transmission of weeds and dust.
Mitigation hierarchy	Avoid: • Pre-clearance Targeted Black Cockatoo surveys will occur in potential habitat to identify nest, significant and habitat trees; • Pre-clearance Targeted Fauna surveys will occur in Threatened Fauna potential habitat; and • Provision of Mining Avoidance Zones (MAZs), whereby no clearing activities for mining or infrastructure will occur: ○ Black Cockatoo Protection Zones may be developed for areas which include high quality foraging habitat, high density of nest and/or habitat trees or permanent water sources; ○ Black Cockato nest, confirmed night roosting and significant trees ○ known Woylie populations; ○ identified active breeding Chuditch dens; and ○ where Numbat or Western Ringtail Possum (WRP) populations have been determined by surveys, the population will be avoided and contiguous suitable habitat provided. Minimise: • Provision of Limited Disturbance Areas whereby no clearing activities for mining will occur, however clearing for haul roads and infrastructure may occur; • Pre-clearance surveys within the Mine Development Envelope of all proposed waterway crossings (100 m downstream and 50 m upstream) for Carter's Freshwater Mussel and Minute Freshwater Snail; • Haul roads, conveyors, and other infrastructure are planned to minimise the area of disturbance within stream zone fauna habitats. • Provision of Limited Disturbance Areas (LDAs) for stream zone vegetation, confirmed PEC and granite outcrops greater than 1 ha, whereby clearing activities for infrastructure may occur; • Minimise clearing of potential PEC as far as practicable; • Minimise clearing of streamzone vegetation and rock outcrops; • Avoid or minimise fragmentation by retaining ecological corridors and linkages, such as streamzone vegetation, and by prioritising and sequencing rehabilitation areas to enhance habitat connectivity as far as practicable; • Implement the Ground Disturbance Permit process to ensure clearing markup and demarcation processes; and • Construction and operational vehicle and equipment movements limited to designated roads, access tracks and cleared areas. Rehabilitate: • Progressive rehabilitation within the Mine DEs will be undertaken in line with Alcoa's Rehabilitation Management Plan and Schedule which prioritises areas based on level of risk.

Flora and Vegetation	
Residual impacts, including assessment of significance	• Clearing of 4,042 ha within the Huntly Mine DE and 77 ha within the Willowdale Mine DE will result in a partial loss of fauna diversity and ecological integrity over the medium to long term. This area represents 0.4% of native fauna habitat remaining within the NJF subregion; • The loss of high-quality habitat in the period between clearing and establishment of rehabilitation may cause a significant impact to local populations of threatened Black Cockatoos, Woylie and Chuditch, but is unlikely to significantly impact State listed priority or conservation dependent fauna species due to the extent and diversity of habitats remaining in the NJF subregion; and • Fragmentation of Jarrah-Marri Forest habitat over a period of 15-20 years in each mine region may cause a significant impact to local populations of Chuditch and Woylie. Quokka dispersal along streamzones may be disrupted by clearing for haul road crossings and may also be subject to higher feral predator activity. Mammal populations impacted by fragmentation are expected to recover in the medium-term following establishment of rehabilitation and removal of haul road crossings.
Proposed environmental outcomes	• No direct impacts (excluding monitoring and management activities) in defined Mining Avoidance Zones • Clearing of no more than 4,042 ha and 77 ha of native fauna habitat within the Huntly and Willowdale Mine DEs respectively. • No clearing within 30 m of Black Cockatoo nest, significant or confirmed night roosting trees within the Mine DE, unless required for critical infrastructure, groundwater bores, rehabilitation or low-impact exploration • Pre-clearance surveys for Threatened fauna species and SRE invertebrates considered likely to occur will be undertaken. Prior to undertaking any clearing, pre-clearance surveys are completed, where required, and outcomes, mitigation measures & monitoring proposed and impacts provided to Minister for State Development through the State Agreement Administrative Framework • Ensure no fauna species or ecological community is placed into a higher category of threat as a result of the Proposal • Clearing of up to 4,101.2 ha of suitable habitat for Chuditch • Clearing of up to 95.6 ha of critical habitat for Quokka • Clearing of up to 4,117 ha of potentially suitable habitat for Woylie • Clearing of up to 3,931.8 ha of high quality foraging habitat for FRTBC • Clearing of up to 3,918.5 ha of high quality foraging habitat for Baudin's Cockatoo • Clearing of up to 3,918.5 ha of high quality foraging habitat for Carnaby's Cockatoo • Each confirmed WRP population extent will be placed in a 2.7 ha MAZ of contiguous suitable habitat for the species. • Each confirmed Numbat population extent will be placed in a 50 ha MAZ of contiguous suitable habitat for the species. • Clearing will be avoided within a 50 m buffer of a mapped Quokka population extent, unless this is not viable due to clearing for Critical Infrastructure. • Fauna underpasses established for all infrastructure crossings adjacent to recorded Quokka populations. • Each confirmed Woylie population extent will be placed in a 6 ha MAZ of contiguous suitable habitat for the species. • No clearing within a 100m buffer of a mapped population extent of Carter's Freshwater Mussel, unless this is not viable due to clearing for Critical Infrastructure, whereby the population will be permanently translocated in accordance with the FMP. • All cleared areas within Mine DE rehabilitated to Jarrah Forest ecosystem in accordance with approved completion criteria. • Ensure ongoing viability of any Woylie or Chuditch populations recorded within the Mine DE is not loss due to the Proposal • No clearing of active breeding Chuditch dens

Flora and Vegetation	
	• Clearing of no more than 621 ha of high value SRE invertebrate habitat. • Ensure no clearing within 30 m of confirmed short-range endemic fauna taxa where they are only known to occur within the Mine DE, unless known to occur within a Mining Avoidance Zone
Assessment of offsets (if relevant)	Offsets to be implemented in accordance with approved Offset Strategy.
Inland Waters	
Potential impacts	The following Proposal activities have the potential to impact inland waters: • Clearing of native vegetation; • Alteration of natural drainage regimes; • Wate use for construction and mining activities; • Waste disposal; • Storage and handling of contaminants; • Mining activities and human presence within Public Drinking Water Source Areas (PDWSA) and Reservoir Protection Zones (RPZs); and • Application of chemicals (fertilisers and pesticides). The Proposal may result in the following potential impacts to inland waters: • Changes to both the surface water and groundwater regimes because of Project operations, including changes in surface water and groundwater flows and downgradient receiving environments; • Increase in the rate and salinity of groundwater discharges to catchment surface water systems; • Increased sediment loads in surface water; • Contamination of surface water and/or groundwater resources; and • Contamination of surface water or groundwater with PASS compounds.

Mitigation hierarchy	Avoid:
	• Not undertaking clearing (excluding infrastructure, rehabilitation and monitoring activities) or mining activities within:
	  ○ 1 km of the top water level of any water reservoir from 1 July 2024;
	  ○ Areas with an average pit slope greater than 16% within any RPZ from December 2023; and
	  ○ 100 m buffer zone for mapped Streamzone Vegetation.
	  ○ Confirmed Conservation Category Wetlands or Resource Enhancement Wetlands
	• No new mine pit clearing to occur within 1 km of the reservoir Top Water Level from December 2023;
	• From December 2023, not undertaking any clearing for mining or exploration, and mining and exploration activities (excluding rehabilitation activities, and access) within the Serpentine Pipehead Catchment;
	• Clearing within 2 km of Serpentine Dam top water level or within Serpentine Pipehead Catchment, must either be rehabilitated, stabilised, or have drainage controls in place within the first rehabilitation season available;

Flora and Vegetation	
	• Construction compounds and mine facilities, including sewage treatment plants and fuel farms, located outside of PDWSA reservoir protection zones; • Minimise crossing of mapped swamp and streamzones as far as practicable; and • AFFFs containing PFAS prohibited from coming to site. Minimise: • Permit to Work in Close Proximity to Water Catchment Areas for activities near a reservoir is required; • Bulk fuel tankers >15,000 L will avoid main river channels; • Maintenance and refuelling of vehicles and heavy equipment will occur in designated areas; • Hydrocarbons and chemicals will be stored with proper containment; • Hazardous materials will be stored as per regulations; • Wastewater treatment plants will be maintained and monitored; • Only PFAS-free AFFFs will be used, water supplies will be tested to meet PFAS limits, all waste will be disposed of off-site, PFAS-affected water will be treated or disposed of at licenced facilities and stored in dedicated facilities; • A 50 m buffer zone is maintained around streamzone vegetation during fertiliser application for rehabilitation activities, fertiliser application is calculated per pit, herbicide application locations are recorded and submitted to the Water Corporation, and only approved chemicals are used within the PDWSA; • Drainage Control Management Plans are developed for individual pits and haul roads within public drinking water catchments as part of FCA submissions; • Minimise surface hydrology changes by managing surface water abstraction according to RIWI Act licences and associated operating strategies; • Includes the requirements of Water Quality Protection Note 10 (WQPN 10) Containment Spills – Emergency Response Plan (DWER, 2020). Ensure spill response equipment is available where appropriate. Rehabilitate: • Rehabilitation design minimises potential for erosion and sediment movement; • Rehabilitation schedule will prioritize areas based on current monitoring trends, such as water quality, groundwater levels, and other relevant factors; • Where salinity risk has been identified through previous data, rehabilitation will be completed as soon as practicable after mining has been completed; • Rehabilitation targets ensure open areas are minimised, with a prioritisation process utilised and increase rehabilitation area completed each consecutive year, to achieve a minimum of 3,159 ha between 2024 and 2027; • Rehabilitation pit slope storage capacity is designed utilising the rehabilitation water model based upon 1% AEP 24-hour design event, whereby any surface water run-off and associated erosion is contained within the pit; • Progressive rehabilitation within the Mine DE will be undertaken in line with Alcoa's Rehabilitation Management Plan and Schedule which prioritises areas based on level of risk; and • Rehabilitation to prioritise elevated risk areas to minimise groundwater fluctuations and prevent salinity increase.

Flora and Vegetation	
Residual impacts, including assessment of significance	• The Proposal is unlikely to result in any significant residual impacts to inland waters; • The Proposal has the potential to result in temporary groundwater mounding which may increase groundwater discharge (i.e., baseflow) to surface waters, result in water logging of soils and/or alter groundwater flux to environments receiving / accessing groundwater. This may indirectly increase stream salinity through an increase in saline groundwater discharge into waterways; • The Proposal has the potential to alter runoff flow volumes and rates due to alteration of land cover and flow paths and capture of site stormwater. Increases in surface water flows are predicted to be small given the size of mining operations included under the Proposal. Following rehabilitation, surface water flows are also expected to return to near pre-mining conditions. Changes to surface waters flows may occur but are not expected to result in the loss of any significant beneficial uses at downstream receptors such as recreation, cultural heritage amenity, drinking water (quantity); • The potential consequences of erosion may indirectly deteriorate surface water quality affecting aquatic ecosystems and other beneficial uses. Impacts though are anticipated to be localised and minor; and • Small diesel or oil spills that escape detection and remediation are unlikely to result in substantial migration of contaminants that reach streams and can be transported into reservoirs.
Proposed environmental outcomes	• No Proposal-related turbidity levels exceeding criteria defined in WRMP within public drinking water reservoir or Murrary River • No clearing for mining of ore within 100 m of mapped stream zone vegetation • No disturbance or adverse impacts to more than 49 ha of streamzone vegetation and only for the purposes of construction and operation of haul roads, services roads, transport corridors, mine water supply and other infrastructure. • No clearing within 1 km of reservoir top water level (except for rehabilitation, monitoring and infrastructure purposes) • No clearing within areas of average >16% slope within the RPZ (except for rehabilitation, monitoring and infrastructure purposes) • No mining within 1 km of reservoir top water level from 1 July 2024 • No clearing within Confirmed Conservation Category Wetlands and Resource Enhancement Wetlands (except for rehabilitation, monitoring and infrastructure purposes) • Ensure the Water Resources Management Plan, once endorsed by Minister for State Development, is implemented • No Proposal-related salinity levels exceeding criteria defined in WRMP within public drinking water reservoir or Murrary River • Ensure rehabilitation commences within RPZ within 12 months following activity completion • No construction or operational waste disposal areas located within the Mine Development Envelope, with the exception of mine facilities treated sewage effluent irrigation area. • No Proposal-related water contamination exceeding ecological or health guideline criteria (defined in WRMP) within public drinking water reservoir or Murrary River • PASS study is undertaken for any PASS areas and if required, Management Plans developed.
Assessment of offsets (if relevant)	Not applicable. No offsets are proposed.

Flora and Vegetation	
Social Surrounds (Heritage)	
Potential impacts	The following Proposal activities have the potential to impact social surroundings (heritage): • Clearing of native vegetation; • Operations, mining, refining and operational activities; • Physical presence of infrastructure; and • Rehabilitation. The Proposal activities may result in the following potential impacts to social surroundings (heritage): • Disturbance (direct or indirect) to Aboriginal heritage sites, intangible cultural values or Aboriginal cultural values associated with physical or biological surroundings; and • Disturbance (direct or indirect) to European heritage sites.
Mitigation hierarchy	Avoid: • Heritage survey results will be used to inform mine planning and infrastructure design, where possible. Direct and indirect impacts to heritage will be avoided to the greatest extent practicable; • Provision of Mining Avoidance Zones (MAZs), whereby no clearing activities for mining or infrastructure will occur: o Registered Aboriginal heritage sites (buffered 10 m). o Aboriginal heritage sites identified during surveys (buffered 10 m) o European heritage sites (buffered 10 m). • Avoid direct impacts to the Local Heritage Survey Places Serpentine Dam Place ID 4174 and Marrinup Prisoner of War Camp Place ID 3103; and • Other European heritage sites and features identified by Archae-Aus (2021), including shield trees recorded by DBCA within the Mine Development Envelope, will be avoided where practicable. Minimise: • Prior to any ground disturbing activities, Alcoa provides an activity notice as per the Noongar Standard Heritage Agreement (NSHA). Where it is agreed that culture heritage surveys are required, Alcoa will undertake archaeological and ethnographic Aboriginal heritage surveys in consultation with nominated Aboriginal representations in accordance with the NSHA; • Where direct impacts of known Aboriginal heritage sites cannot be avoided, Alcoa will seek the free, prior and informed consent of Traditional Owners, document that consent and any mitigating actions agreed with Traditional Owners and seek Ministerial Consent under section 18 of the *Aboriginal Heritage Act 1972*; • An Aboriginal Cultural Heritage Management Plan (CHMP) will be developed for the Huntly and Willowdale Mine Development Envelopes, to guide management of Aboriginal heritage during construction and operations; • In certain cases, targeted CHMPs will be developed where ground disturbing activities have the potential to impact significant cultural heritage; • CHMPs will include consideration of stormwater, erosion and sediment management to prevent indirect impacts to Aboriginal heritage during construction and operations;

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	• Aboriginal cultural heritage sites located within 100 m of proposed clearing boundaries will have site specific CHMPs developed which may include the following additional controls:
	  ○ Detailed site identification level heritage assessments to confirm boundaries and establish appropriate buffer distances from development activities;
	  ○ Heritage demarcation such as fencing and signage;
	  ○ Work exclusion zones;
	  ○ Inclusion of heritage in applicable safety toolbox discussions and job hazard assessments; and
	  ○ Heritage awareness inductions of personnel and contractors;
	  ○ Gnaala Karla Booja Aboriginal Corporation (GBK AC) monitors present during agreed development activities;
	• Contractors and employees working on the project will be provided with cultural and heritage awareness training;
	• Where avoidance is not practicable for European heritage sites and features and shield trees, disturbance will be managed in accordance with a European Heritage Management Plan (EHMP) developed collaboratively with key stakeholders; and
	• The EHMP will include stormwater, erosion and sediment management to prevent indirect impacts to European heritage during construction and operations.

Residual impacts, including assessment of significance	• Further Aboriginal heritage surveys are ongoing within the Mine DE. Given avoidance measures proposed, no residual impact is expected; • No State Heritage Register sites and no Local Heritage Survey Places will be subject to physical disturbance; • The Proposal is not expected to cause cumulative impacts to Aboriginal cultural values associated with Inland Waters, which will remain substantially impacted by agriculture, water supply reservoirs, climate change and introduced aquatic fauna and weeds; and • The long-term restriction to public access and informal use over large areas of State Forest is expected to restrict access to country for Noongar people, causing an impact to associated Aboriginal cultural values. This impact will occur in the context of extensive and permanent restrictions to access to country from agricultural, urban and rural residential developments in the NJF and SCP subregions, restrictions associated with the Proposal are considered medium term.
Proposed environmental outcomes	• Aboriginal cultural heritage sites maintained in accordance with the consent and recommendations of Traditional Owners. • Ensure all Aboriginal heritage for all areas proposed to be cleared or indirectly impacted by the proposal are identified in consultation with the GKB AC. • No direct impacts (excluding monitoring and management activities) in defined Mining Avoidance Zones • No direct impact to DPLH mapped Local Heritage Survey Places.
Assessment of offsets (if relevant)	Not applicable. No offsets are proposed.
Social Surrounds (Amenity)	
Potential impacts	The following Proposal activities have the potential to impact social surroundings (amenity): • Clearing of native vegetation;

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	• Operations, mining, refining and other operational activities including transport; • The physical presence of infrastructure; and • Rehabilitation activities. The Proposal may result in the following potential impacts to social surroundings (amenity): • Impacts to visual amenity and sense of place from clearing of vegetation, mining and construction activities and dust generation; • Impacts to amenity and sense of place from construction and operational noise and audibility of machine derived tones; and • Impacts on recreational use of areas due to direct disturbance, noise, dust deposition and traffic.

Mitigation hierarchy	Avoid:
	• Provision of Mining Avoidance Zones (MAZs), whereby no clearing activities for mining or infrastructure will occur:
	  ○ Dwellingup, Kingsbury Drive area, Hoffman Mill, Bibbulmun Track, portions of Lane Poole Recreation Reserve, and other significant conservation areas as shown in relevant maps.
	  ○ 200 m public roads or recreational trails buffers (or as determined through visual impact assessments) to prevent impacts on screening vegetation within Hoffman Mill, Logue Brook Dam, Balmoral POW Camp, and Dwellingup Recreation Reserve.
	• Implement Noise and Mining Sensitivity Zones where modelling indicates unacceptable impacts, whereby an area specific management plan will be developed to ensure appropriate mitigations (avoidance and minimisation) to ensure acceptable impacts
	• Noise sensitivity zones will be established where required;
	• The main blast follows a pilot shot which produces lower levels of noise than the main blast. If the pilot blast is above internal pilot noise limits, the main blast is postponed; and
	• No clearing or mining of ore in conservation reserves.
	Minimise:
	• If mining proposed within 2 km of a sensitive receptor, then commission visual amenity assessments, noise impact assessment or dust impact assessment as appropriate. If impacts are predicted, then prepare and implement a Management Plan in consultation with key stakeholders;
	• Where possible, stagger mining activities which are visible from visually sensitive sites;
	• Minimise landscape and visual impacts to recreational facilities and road interfaces with the provision of screening corridors (based on existing vegetation density and topography) suitable to the area, where possible;
	• The material and structural finishes for all built form elements will be compatible with surrounding visual environment to assist the Proposal built form to blend in with surrounding existing vegetation when viewed from elevated distant viewing locations;
	• Neighbours are invited to be notified on blasting timing;
	• Alcoa applies internal noise limits of 110 dB at Dwellingup and the Yamba sub-division in Keysbrook, and 115 dB at all other locations;
	• Undertake modelling based on weather forecasts to predict blast overpressure during periods of peak usage. Postpone blasting if blast overpressure is predicted to exceed standard or use alternative charges to reduce overpressure to standard;
	• Alcoa's noise management system includes live noise modelling at an operation level with fixed and attended noise monitors, predictive modelling, procedures, training and audits, implemented as part of the Integrated Noise Management System;
	• Recreational Trails and Facilities Management Plans (RTFMP) has been developed in consultation with DBCA and relevant stakeholders and will be implemented; and
	• Any public road crossing will comply with all relevant standards and specifications as applied by Main Roads WA and other decision makers including relevant local governments.
	Rehabilitate:
	• Where mine pits, haul roads, and other infrastructure are proposed to be located near existing road corridors or visible from visually sensitive sites, rehabilitation will be commenced as soon as practicable, taking into account a prioritisation process; and
	• During rehabilitation of mine pits, contouring of the excavated pits will tie them into the surrounding landform and rehabilitation planting will restore the vegetated character of the area when vegetation reaches suitable coverage.

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Residual impacts, including assessment of significance	• The Proposal is unlikely to result in any significant long-term residual impacts to social surroundings; • Following implementation of appropriate management mechanisms, mining operations are not expected to result in exceedance of assigned noise levels or dust concentration limits at nearby sensitive receptors; • Mining operations are unlikely to be audible at townsites, campgrounds, or at rural properties under normal and planned operational conditions; • Permanent lighting at the new facilities is unlikely to affect nighttime amenity at sensitive receptors due to the distance from receptors; • The Proposal may cause visual impacts along roadside where screening corridors can't be adequately implemented. The impact is considered to be minor and short term being visible while people are commuting; • The Proposal will cause high to moderate visual impact to elevated viewpoints such as those associated with the Bibbulmun Track. The duration of high to moderate visual impacts to elevated viewpoints is expected to last approximately 16-17 years from the commencement of operations to allow for the establishment of rehabilitation; and • The Proposal will restrict public access to large areas of State Forest that may be used by some local residents and visitors for informal recreation outside of defined trails and facilities that are managed and promoted.
Proposed environmental outcomes	• No blasting within 1200 m of sensitive receptors to attenuate the blast overpressure to below 120dB LZ Peak maximum limit. If the limit is expected to be exceeded, consultation, development and implementation of a Noise Management Plan will occur. • A maximum blast noise limit of 110dB LZ peak in Dwellingup or Yamba; and 115dB LZ peak at any other offsite location will be established. If the limit is expected to be exceeded, consultation, development and implementation of a Noise Management Plan will occur. • No exceedance of Assigned Levels under the Noise Regulations at the nearest noise sensitive receivers due to mining operations. If the limit is expected to be exceeded, consultation, development and implementation of a Noise Management Plan will occur and may include mitigations. • Implement a 500 m daytime Do Not Mine Zone around sensitive receptors to comply with 40 dB(A). If the limit is expected to be exceeded, consultation, development and implementation of a Noise Management Plan will occur and may include mitigations. • Implement a 1,100 m nighttime Do Not Mine Zone around sensitive receptors to comply with 35 dB(A) • No clearing or direct disturbance for mining or infrastructure within the Mining Avoidance Zones (noting rehabilitation and monitoring activities may still be undertaken). • All cleared areas within the Huntly and Willowdale Development Envelope rehabilitated to Jarrah Forest ecosystem to completion criteria agreed with DBCA. • No exceedance of Assigned dust deposition levels or incremental PM10 concentration limits established by the Air NEPM (NEPC, 1998) at sensitive receptors. • No mining within 500 m of sensitive receptors to comply with 2g/m2/30 days limit • No clearing or direct disturbance within defined visual screening corridors (minimum 200 m unless an alternative determined through a visual impact assessment) at the interface with recreational facilities and public roads. • No interruption to public access or direct impact to managed recreational areas within the DE.

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Assessment of offsets (if relevant)	Not applicable. No offsets are proposed.
Greenhouse Gas Emissions	
Potential impacts	Greenhouse gas emissions are expected to be managed under the Safeguard Mechanism for Scope 1 emissions for Huntly. The Willowdale Scope 1 emissions and both Huntly and Willowdale Scope 2 emissions are expected to be lower than level that would trigger consideration by EPA.
Mitigation hierarchy	Scope 1 Emissions: • Fuel additive blended with all diesel use to realise ~5% efficiency gains. • Continuously reviewing and improving practices regarding payload size, idle times, route optimisation etc. to reduce fuel burn per trip. • Continuation of small scale trails and progression towards implementation of (but not limited to) battery electric and renewable diesel trucks. Scope 3 Emissions: • Continued investment in technology development to decarbonise the aluminium industry. • Use of renewable energy sources (where possible and practicable)
Residual impacts, including assessment of significance	Greenhouse gas emissions are expected to be managed under the Safeguard Mechanism for Scope 1 emissions for Huntly. The Willowdale Scope 1 emissions and both Huntly and Willowdale Scope 2 emissions are expected to be lower than level that would trigger consideration by EPA.
Proposed environmental outcomes	Alcoa considers that the legislative requirements of the Safeguarding Mechanism will adequately regulate the Proposal's reduction in net GHG, with standard regulatory reporting requirements (NGER) already in place.
Assessment of offsets (if relevant)	Surrender of ACCUs to offset increase emissions above Safeguard Mechanism baseline for Mine operations.

Abbreviations and Definitions

Abbreviation	Definition
µg	micrograms
µm	micrometres
ACHC	Aboriginal Cultural Heritage Council
ACMC	Aboriginal Cultural Material Committee
Administrative Framework	The Bauxite State Agreements – administrative framework review (July 2024), which endorsed a revised process to facilitate stakeholder advice to inform State Agreement decisions.
ADWG	Australian Drinking Water Guidelines
AEP	Annual Exceedance Probability
AER	Annual Environmental Review
AHD	Australian Height Datum
Air NEPM	National Environment Protection (Ambient Air Quality) Measure 1998
Alcoa	Alcoa of Australia Limited
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines for Fresh and Marine Water Quality
AQIA	Air Quality Impact Assessment
ARD	Armillaria Root Disease
ASS	Acid Sulphate Soils
Assessment 2253	Pinjarra Alumina Refinery Revised Proposal
ASSMP	Acid Sulphate Soil Management Plan
BAM Act	*Biosecurity and Agriculture Management Act 2007 (WA)*
BC Act	*Biodiversity Conservation Act 2016* (WA)
Black Cockatoo Nesting Tree	A tree (live or dead but still standing) with a diameter at breast height of at least 300–500 millimetres that contain hollows suitable for nesting. The suitable nesting tree may or may not demonstrate the evidence of breeding.
BOM	Bureau of Meteorology
BSEC	Bauxite Strategic Executive Committee
CALM	Department of Conservation and Land Management
CAR	Compliance Assessment Report
CAR reserve	Comprehensive, Adequate, and Representative reserve
CD	Conservation Dependent Fauna
CE	Critically Endangered
CER	Clean Energy Regulator
CHMP	Cultural Heritage Management Plan
CIA	Cumulative Impact Assessment
CR	Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) or *Biodiversity Conservation Act 2016* (WA)
Critical Infrastructure	Infrastructure critical to the operation of the Proposal such as conveyors, haul roads, access roads, power, water and telecommunication supply routes, stream crossings and other infrastructure where alternative alignments/locations may not be feasible.

Abbreviation	Definition
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CWA Hall	Country Women's Association Hall
CWR	Critical Weight Range
DAZ	Disturbance Avoidance Zones
DBCA	Department of Biodiversity, Conservation and Attractions
DBH	Diameter at breast height
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCMP	Drainage Control Management Plan
DE	Development Envelope
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DER	Department of Environment Regulation
Phytophthora dieback	*Phytophthora cinnamomi* dieback
DJTSI	Department of Jobs, Tourism, Science and Innovation
DMA	Decision Making Authority
DoH	Department of Health
DPLH	Department of Planning, Lands and Heritage
DRA	Disease Risk Areas
DWER	Department of Water and Environmental Regulation
DWRA	Drinking Water Risk Assessment
EHMP	European Heritage Management Plan
EIA	Environmental Impact Assessment
EN	Endangered
EP Act	*Environmental Protection Act 1986* (WA)
EPA	Environmental Protection Authority (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
ERD	Environmental Review Document
ESD	Environmental Scoping Document
Exemption Order	The Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023 is a legislative order issued by the Minister for Environment in Western Australia with the approval of the Governor under Section 6 of the *Environmental Protection Act 1986* (WA).
Fauna MP	Fauna Management Plan
FCA	Forest Clearing Advice
FDRA	Forest Disease Risk Area
FHZ	Fauna Habitat Zones
FMP	2024–2033 Forest Management Plan
FPC	Forest Products Commission
FRTBC	Forest Red-tailed Black Cockatoo's
FVMP	Flora and Vegetation Management Plan
GDA94	Geocentric Datum of Australia (GDA94)
GDE	Groundwater Dependent Ecosystems
GDV	Groundwater Dependent Vegetation

Abbreviation	Definition
GHG	Greenhouse Gas
GIS	Geographic Information System
GKB	Gnaala Karla Booja Aboriginal Corporation
GKB AC	Gnaala Karla Booja Aboriginal Corporation Adivce Comittee
GL	Gigalitres
GPS	Global Positioning System
GWRAF	Groundwater Risk Assessment Framework
ha	Hectare
HRRT	Harvey River Restoration Taskforce
HRZ	High Rainfall Zone
HVAS	High Volume Air Sampler
IAP	initial assurance program
IBRA	Interim Biogeographic Regionalisation of Australia
IBSA	Index of Biodiversity Surveys for Assessments
ICMM	International Council on Mining and Metals
ILUA	Indigenous Land Use Agreements
INMS	Integrated Noise Management System
IRZ	Intermediate Rainfall Zone
ITAG	Alcoa Independent Technical Advisory Group
IWEMP	Inland Water Environmental Management Plan
IWSS	Integrated Water Supply Scheme
JIRZRP	Joint Intermediate Rainfall Zone Research Program
JORC	Joint Ore Reserves Committee
km	Kilometres
LA1	A noise level that is exceeded for 1% of a measurement period
LA10	A-weighted noise level that is exceeded for 10% of a measurement period
LAI	Leaf Area Index
LCU	Landscape character units
LDA	Limited Disturbance Areas – Spatial area which prohibits mine pits but allows for infrastructure and haul roads (includes mapped or derived streamzone vegetation). Alcoa considers Limited Disturbance Areas to be the same as Mining Exclusion Zones.
LiDAR	light detection and ranging
LOA	Life of Asset
LOC	Loss of Containment
LOR	Limit of Reporting
Low impact Exploration activities	Exploration drilling as described in the Proposal
LPS	Local Planning Schemes
LRZ	Low Rainfall Zone
LTFMP	Long Term Fauna Monitoring Programme
LVIA	Landscape and Visual Impact Assessments
m	Meters

Abbreviation	Definition
MAZ	Mining Avoidance Zone – Spatial area which prohibits mine pits and infrastructure, with the exception of monitoring and management activities which have minimal impacts.
mbgl	metres below ground level
MDB	Minesite Drainage Book
MEZ	Mining Exclusion Zones – Spatial area which prohibits mine pits but allows for infrastructure and haul roads (includes mapped or derived streamzone vegetation). Alcoa considers Mining Exclusion Zones to be the same as Limited Disturbance Areas.
Mine DEs	Mine Development Envelopes (combination of Huntley Mine DE and Willowdale Mine DE)
ML	Megalitres
ML1SA	Mineral Lease 1SA
MMP	Mining and Management Program
MMPLG	Mining and Management Program Liaison Group
MNES	Matters of National Environmental Significance
MOG	Mine Operations Group
MS	Ministerial Statement
MS 646	Ministerial Statement 646 (Pinjarra Refinery Efficiency Upgrade, March 2004)
MS 728	Ministerial Statement 728 (Wagerup Alumina Refinery – Production to a maximum capacity of 4.7 million tonnes per annum and associated bauxite mining, September 2006)
Mtpa	Million tonnes per annum
MUSLE	Modified Universal Soil Loss Equation
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NIA	Noise Impact Assessment
NJF	Northern Jarrah Forest
NSHA	Noongar Standard Heritage Agreement
NSR	Noise Sensitive Receptors
NTU	Nephelometric Turbidity Units
NVCP	Native Vegetation Clearing Permit
OCA1	Operational Control Area 1
OCA2	Operational Control Area 2
P	Priority
P3	Priority 3 under DBCA, poorly known species
P4	Priority 4 under DBCA, rare, near threatened and species in need of monitoring
PASS	Potential Acid Sulphate Soils
PDWSA	Public Drinking Water Source Areas
PEC	Priority Ecological Community
PER	Public Environmental Review
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
Phoenix	Phoenix Environmental Sciences
PHR	Potential habitat rating

Abbreviation	Definition
Pinjarra State Agreement	*Alumina Refinery (Pinjarra) Agreement Act 1969*
PM10	Particulate Matter less than 10 micrometres in diameter
PM2.5	Particulate Matter less than 2.5 micrometres in diameter
PMLU	Post Mining Land Use
PMST	Protected Matters Search Tool
POW	Prisoner of War
PREU	Pinjarra Refinery Efficiency Upgrade
Pre-clearance survey	A survey undertaken prior to clearing being undertaken by suitably qualified persons that aligns with the applicable EPA guidance relevant to a targeted survey.
Proposed Disturbance Footprint	The Proposed Disturbance Footprint is the maximum amount of disturbance and/or clearing that Alcoa are proposing as part of the Proposal, and is located within the Huntly Mine and Willowdale Mine Development Envelopes
PRTS	Peal Regional Trails Strategy
RAMP	Recreation and Access Management Plan
RCC	Rehabilitation Completion Criteria
RCS	Respirable crystalline silica
RDD	Resource Definition Drilling
RFA	Regional Forest Agreement
RIWI	*Rights in Water and Irrigation Act 1914* (WA)
ROM	Run of Mine
RPZ	Reservoir Protection Zone
RSL Hall	The Returned and Services League Hall
RTFMP	Recreational Trails and Facilities Management Plan
RTK	Real-Time Kinematic
RUSLE	Revised Universal Soil Loss Equation
s43A	Section 43A of the *Environmental Protect Act 1986*
SCP	Swan Coastal Plain
SED	Strategic Exploration Drilling
SFM	Sustainable Forest Management
SIA	Social Impact Assessment
Simcoa	Simcoa Operations Pty Ltd
SLR	SLR Consulting Australia
SP (S7)	Schedule 7, Special Protection under the *Biodiversity Conservation Act 2016* (WA)
SPMS	Social Performance Management System
SPR	Source Pathway Receptor
SRE	Short-range Endemic Invertebrates
SRI	Significant residual impact
State Agreements	Alcoa's WA mines operate within ML1SA (Figure 1), and are granted under the following State Agreements: *Alumina Refinery Agreement Act 1961* and subsequent State Agreement Acts*; (Alumina Refinery (Pinjarra) Agreement Act 1969; Alumina Refinery (Wagerup) Agreement Act and Acts Amendment Act 1978*; and *Alumina Refinery Agreements (Alcoa) Amendment Act 1987.*

Abbreviation	Definition
State listed priority, conservation dependent or other specially protected fauna	Fauna listed as priority, conservation dependent, or other specially protected fauna under the *Biodiversity Conservation Act 2016* (WA).
Streamzone	Area containing riparian vegetation, directly associated with but not limited to rivers, creeks, streams, swamps, wetlands, and waterways.
STP	Sewage Treatment Plant
SVT	Site Vegetation Type
TARP	Trigger Action Response Plan
tCO2e	tonnes (t) of carbon dioxide (CO2) equivalent (e)
TDS	Total Dissolved Solids
TEC	Threatened Ecological Community
The Proposal	On 28 February 2023, the Western Australian Forest Alliance Inc made two referrals to the Environmental Protection Authority under Section 38, Part IV of the Environmental Protection Act 1986. The two referrals referenced: • Alcoa of Australia Limited's Bauxite mining on the Darling Range in the southwest of WA for the years 2022 to 2026 (Assessment 2384); and • Alcoa of Australia Limited's Bauxite mining on the Darling Range in the southwest of WA for the years 2023 to 2027 (Assessment 2385). Following ongoing consultation with EPA services, on 28 February 2025 Alcoa submitted an EP Act Section 43A application to consolidate Assessment 2384 under Assessment 2385 producing a single Proposal (Assessment 2385).
tpa	tonnes per annum
TPO	Target performance outcomes
TSP	Total suspended particulates
TWI	Topowetness Index
TWL	Top Water Level
UAV	Unmanned Aerial Vehicle
VT	Vegetation Type
VU	Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) or *Biodiversity Conservation Act 2016* (WA)
WA	Western Australia
WAFA	Western Australian Forest Alliance Inc
Wagerup State Agreement	*Alumina Refinery (Wagerup) Agreement and Acts Amendment Act 1978*
WC	Water Corporation
WoNS	Weed of National Significance
WQPN	Water Quality Protection Note
WRMP	Water Resource Management Plan
WWII	World War Two
WWTP	Wastewater Treatment Plant
ZTV	Zone of Theoretical Visibility