

Enquiries: Jane O'Malley  
Our Ref: 0083\_2025\_08\_18  
File No.: CM\_CS\_110



20 August 2025

Dear Sir/Madam

**PHCC Submission for**

- 1. Assessment 2253, Alcoa of Australia Limited, Pinjarra Alumina Refinery Revised Proposal, and**
- 2. Assessment 2385, Alcoa of Australia Limited, Bauxite mining on the Darling Range in the southwest of WA for the years 2023 to 2027.**

The Peel-Harvey Catchment Council, Inc. (PHCC) submits the following to the Environmental Protection Authority of Western Australia.

**The EPA should recommend that both proposals are not implemented, due to the significant impact the proposals will have on the EPA's factors and objectives including flora and vegetation, terrestrial environmental quality, terrestrial fauna, inland waters, air quality, social surroundings and human health.**

**The EPA should also recommend that there be no further mining in the Northern Jarrah Forest, and the State facilitates an orderly exit of the existing mining operations, starting with Alcoa.**

Should the EPA be unable or unwilling to recommend that both proposals are not implemented, it should recommend comprehensive conditions that limit the proposal extent and that safeguard our environment for future generations. Conditions should include:

- Permanent exclusion from those areas identified by Alcoa as being avoided or excluded in these assessments, to prevent these areas from being subject to future mining proposals
- Additional permanent exclusion from drinking water catchments
- Rehabilitation standards that meet contemporary practise, including transparent and auditable completion criteria that ensure rehabilitation results in a functional jarrah forest ecosystem
- Imposition of a significant financial bond to be forfeited when rehabilitation is not achieved
- Prevention of any further clearing until rehabilitation has been successfully completed to contemporary standards, and
- Restricting the area of Alcoa's tenement that is subject to mining and exploration.

PHCC acknowledges that changes to the State Agreement Acts that enable the above proposals can not be enacted through the environmental impact assessment process. It is therefore critical that the EPA makes recommendations that the State Agreement Acts are amended to make them contemporary and fit-for-purpose, and that the areal extent of the mining lease granted under the

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*We acknowledge the Noongar people as Traditional Custodians  
of this land and pay our respects to all Elders past and present*

State Agreements (known as ML1SA) is curtailed to only those areas where bauxite mining can occur without significant environmental and social impact.

PHCC considers that a strategic assessment of the Northern Jarrah Forest is essential and must be initiated immediately, with a moratorium on further clearing in the Northern Jarrah Forest until this is completed and areas identified as having high or at-risk environmental values are securely protected.

PHCC further considers that the misinformation provided by Alcoa, over time and more prominently through their recent communication and engagement campaign, purposely misinforms the community about their economic importance to the community, their operations and their ability to rehabilitate the Jarrah Forest.

At the very last minute, further information has come to hand about Alcoa's conduct and performance with the publication of the 2024 – 2028 Mining and Management Program Compliance Assessment Report for 2025. Despite signing off on the report on 20 June 2025, Alcoa did not publish this report until 19 August 2025 and even then, did not publish it in a way that was accessible to the public until journalist Peter Milne published a blog post highlighting the situation. This report identifies non-compliances with six separate conditions of Alcoa's 2024 – 2028 Mining and Management Plan, with one of those non-compliances (drilling within ten metres of black cockatoo nesting or significant trees) occurring on six separate occasions. These non-compliances were not reported in the relevant monthly compliance reports (September 2024 and April 2025), and only discovered by Alcoa during 'internal data reconciliation process'. Another non-compliance related to clearing vegetation outside of the endorsed Forest Clearing Advice area. Two of the non-compliances relate to Alcoa's failure to develop and submit a 'Full Mining Cycle and Cumulative Catchment Scale Risk Assessment' and another document containing risk assessment methodology, drainage design manual and rehabilitation design manual.

It is extremely concerning to PHCC and the wider community that despite the extraordinary efforts in place to manage Alcoa's activities in the Northern Jarrah Forest, basic non-compliances have still occurred. It is even more concerning that these non-compliances were initially not reported, and that they were later reported in a way that demonstrates lack of transparency and honesty to the people of WA. A reputable company would have publicly reported these non-compliances immediately with no effort to obscure or hide them.

With respect to the breaches of Condition 5 of the 2024 – 2028 Mining and Management Program, PHCC is aware that this condition replicates clause 4(2)(d) of the exemption order under section 6 of the Environmental Protection Act 1986. This exemption order provides for Alcoa to continue implementation of a proposal that is being assessed under Part IV of that Act, where otherwise a proponent is required to await authorisation (section 41A). Clause 3 of section 6 of the Environmental Protection Act 1986 clearly states that if any condition of an exemption order is breached then the order ceases to have effect. In other words, by clearing within 10 metres of a black cockatoo breeding or significant tree, Alcoa has voided the exemption order. In the absence of the exemption order, Alcoa is subject to section 41A of the Environmental Protection Act 1986 and may not implement either the 2022-2026 or the 2023-2027 Mining and Management Programs that

are under assessment. PHCC calls on the EPA to ensure that Alcoa submits to the Environmental Protection Act in the same way as any other citizen of WA, and that there is a full assessment of compliance and appropriate enforcement response.

PHCC provides this submission based on regional environmental knowledge and community interests. PHCC is a community based not for profit Natural Resource Management (NRM) regional body working across the Peel-Harvey Catchment, covering over 1.1 million hectares of the Serpentine, Murray, Hotham, Williams and Harvey River catchments. PHCC's core aim is to be agents for change towards a healthier Peel Harvey catchment. As environmental stewards we aim to encourage and enable effective catchment management to create a healthier natural environment through collaborative partnerships for on ground works and research, building community capacity and awareness, influencing and leading critical thought and practice and exemplifying best practice. With funding provided through the Australian Government's National Landcare Program, PHCC's current projects support a suite of activities and actions that closely align with the Peel-Harvey NRM Strategy – Bindjareb Boodja Landscapes 2025 and the Australian Government's Threatened Species Recovery Plans and Conservation Advice. Our focus is working with the community, landholders and other relevant stakeholders to improve the trajectory of a range of threatened species, including threatened Black Cockatoos across the Peel-Harvey Catchment. PHCC's projects<sup>1</sup> have the objective of improving the health, biodiversity and ecosystem services of the Peel-Harvey Catchment.

With cumulative development pressure as well as other threats to the Northern Jarrah Forest (e.g. climate change and biosecurity), PHCC is deeply concerned about the impacts of these proposals and calls on the EPA to uphold the objects and principles of the Environmental Protection Act, and protect the biological diversity of the Northern Jarrah Forest, for now and future generations.

Should you wish to discuss this submission please contact me on 08 6369 8800 or by email [admin@peel-harvey.org.au](mailto:admin@peel-harvey.org.au).

Yours sincerely



Jane O'Malley  
Chief Executive Officer

*Encl: PHCC Submission*

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<sup>1</sup> <https://peel-harvey.org.au/what-we-do/projects/>

## 1 PHCC SUBMISSION

Environmental Review Document section	PHCC Comments	Outcome sought
<b>Cover page</b> <b>Document control</b> <b>Invitation to make a submission</b> <b>Executive Summary</b> <b>Scoping checklist</b>	<p><i>Refinery ERD – Proposal Content Document p1-2</i>  <i>Bauxite mining ERD – Proposal Content Document p1-3</i>  <i>Bauxite mining ERD – Ch01 Overview of Proposal p66</i></p> <p>The descriptions of the proposal in Tables 1 and 2 of the refinery proposal content document and in Table 2 of the bauxite mining proposal content document, as well as Table 1-2 of the bauxite mining overview of proposal are not straight forward, and are difficult to understand. There are numerous footnotes and disclaimers. The format is confusing and misleading, with different categories of clearing (e.g. Low Disturbance Area, Avoidance Zone) described as if they are not clearing.</p>	<p>The EPA assessment should ensure that the total area of clearing is defined in a way that is simple and transparent, allowing for the full scale of clearing to be apparent and for compliance to be readily demonstrated.</p>
	<p><i>Refinery ERD – Executive Summary pvii</i></p> <p>Under the heading ‘Clearing and rehabilitation of the Huntly Mine’, Alcoa makes a commitment that in any three consecutive rehabilitation season periods, the hectares of rehabilitation within the Huntly mine will be equal to or greater than the hectares of clearing for active areas. It is not clear why this should be achieved in any three consecutive years and not in every year.</p>	<p>The commitment to rehabilitate more area than is cleared should apply for each year, and should be restated so that the outcome is specified. The definition of rehabilitation that is used by Alcoa throughout the ERD is not consistent with the community’s understanding of the process.</p> <p>Alcoa’s repeated claim that it has rehabilitated more than 75% of the areas cleared for mining is misleading and demonstrates why auditable definitions should be included in the EPA’s assessment. Despite 5 decades of what Alcoa describes as world’s best practice and world-leading research, Alcoa has yet to deliver a single hectare</p>

		<p>of successful native jarrah forest ecosystem rehabilitation and only 12% of their rehabilitation has been established under agreed completion criteria that will replicate a functioning native jarrah forest.</p> <p>A similar commitment is not included in the bauxite mining proposal and there is no justification for its absence.</p>
	Alcoa's commitment to exclude areas within their tenement and to limit the proportion of unrehabilitated cleared areas within water sub-catchments can be considered as interim measures, evidenced by the use of terms such as 'deferred'.	Where areas have been excluded from mining for this assessment, the commitment should be cemented with conditions that genuinely protect those areas in perpetuity.
	Alcoa's commitment to biodiversity offsets in addition to rehabilitation across 19,000 ha within the Northern Jarrah Forest is inadequate for the scale of the impact. It will result in a net loss of biodiversity and it is unlikely that the offsets will succeed. Alcoa commits to working collaboratively with all relevant stakeholders to achieve positive environmental, conservation and social outcomes. This action is not a biodiversity offset; it should be considered part of the company's social licence to operate in the community which is presently minimal.	The EPA's assessment should provide detailed description of the biodiversity offsets required by this proposal and not include unrelated actions such as working collaboratively with stakeholders.
<b>1. Proposal</b>	<p><i>Refinery ERD S01 Scoping</i></p> <p>This section contains references to the WA Government's actions to improve the environmental assessment and regulation of Alcoa's operations that have previously been enabled by the State Agreement Acts covering the Kwinana, Pinjarra and Wagerup alumina refineries. Alcoa misrepresents the WA government's Alcoa transitional approvals framework as its own initiative, its own</p>	The EPA should maintain an overt position that Alcoa's mining operations falling within the EPA's remit is not a commitment made willingly by Alcoa. Alcoa's role in the transition from State Agreement Act processes to contemporary environmental assessment and regulation is as a reluctant subject of government action not as a good corporate citizen.

	<p>commitment and meeting evolving requirements and expectations. This is in contrast to Alcoa's objection to the EPA assessing its bauxite mining on the Darling Range (Assessment 2385), where it states that Alcoa is not the proponent, and does not accept the validity of third party referrals (to the EPA).</p>	
	<p>Sections 1.7 and 1.8 are not relevant to the assessment and are not within the scope described in section 1.5 Purpose and scope of this document. They add no information to the environmental review document that is relevant to the assessment.</p> <p>Likewise section 1.11 does not present a factual description of the proposal alternatives, and instead assume that continuing mining for bauxite to produce alumina is 'vital'. Under the do nothing scenario, an orderly exit from mining on Katta Moorda (the Darling Range) would see the Pinjarra alumina refinery close down and Alcoa have reduced profits along with expenses associated with proper rehabilitation and mine closure as well as decommissioning of the Kwinana and Pinjarra refineries. This is a preferred alternative to the people of Western Australia.</p> <p><u>Preferential mining of existing cleared lands and alternate economies</u></p> <p>While the Proponent discusses the aim in mining bauxite and economic contributions, no proposed alternatives are discussed in detail, including discussion of the value of the social and environmental benefit in conserving the remaining native vegetation and biodiversity in the region. Nor is there consideration of preferentially mining existing cleared and degraded lands in the proposal area before further clearing of mature native vegetation and State Forest, or development of alternate economies. On this,</p>	<p>The EPA should not take into account any of the information in sections 1.7 and 1.8, or section 1.11.</p>

	<p>the Proposal fails to adequately address proposed alternatives as required by the EPA. In instructions on <i>How to prepare an Environmental Review Document</i>, the EPA (2021) states “An ERD must include the following information: Proposed alternatives: – to the extent reasonably practicable, describe any feasible alternatives to the proposal, including a comparative description of the environmental impacts of each alternative, and enough detail to make it clear why any alternative is preferred to another”.</p> <p>Furthermore, the proposal fails to align with the ESD ‘integration principle’ of Section 3A of the EPBC Act (“a) <i>Decision-making processes should effectively integrate both long-term and short term economic, environmental, social and equitable considerations</i>”).</p>	
2. Legislative context	<p><i>Refinery ERD Legislative context</i></p> <p><i>2.1.1.2 Implementation Conditions</i></p> <p>Alcoa requests that conditions are removed from the current Ministerial Statement, saying this “is considered appropriate given Alcoa’s demonstrated compliance in air quality under both MS646 and L5271/1983/14”. This statement is an example of the fundamental misrepresentation by Alcoa of its own environmental impact. In relation to impacts on air quality in Pinjarra, the Pinjarra Refinery is one of a handful of premises in WA that is so problematic it has its own Community Update page on DWER’s website and has been the subject of a dedicated ambient dust monitoring campaign. Table 2-3 at page 2-18 refers to the licence granted under Part V of the EP Act for the Huntly mine and states that “Regulation by DWER will ensure that environmental factor objectives are not compromised due to emissions and discharges from the Proposal”. This is incorrect. Regulation by DWER using the prescribed premises</p>	<p>The EPA should not remove conditions from MS646 in relation to air quality, and particularly fugitive dust emissions from area sources such as the refinery tailings storage facilities and from activity sources including exploration, clearing, mining, and transport of ore. The licences granted to Alcoa under Part V of the EP Act only apply to dust generated from the activities within the prescribed premises that make those premises prescribed, which is crushing ore. This is only a small part of the dust generated by this proposal. If simplified and unified regulation of air quality is the desired outcome it is more appropriate to incorporate all sources of air pollutants into one air quality management plan under the Part IV assessment, and for that management plan to meet the needs of the Part V licensing process.</p>

	<p>licence will not address emissions from clearing, mining, ancillary activities such as the conveyor and haul roads as it only applies to processing of bauxite ore.</p>	
	<p><i>Refinery ERD 2.2.1 State Agreements</i>  <i>Bauxite mining ERD 2.1.1 State Agreements and 2.1.2.2 Exemption order</i></p> <p>The State Agreements for all of Alcoa’s operations are dated and no longer appropriate in the current environmental context:</p> <ul style="list-style-type: none"> <li>• Cumulative threats to the Northern Jarrah Forest, with an increasing number of threatened species and communities occurring within the ML1SA tenement</li> <li>• Additions to the list of threatened species and communities as well as reduced effectiveness of threat mitigation processes</li> <li>• Climate change impacts to the local environment including flora and vegetation, inland waters, fauna, and terrestrial environmental quality as well as much of WA’s drinking water supply</li> <li>• Globally, improved understanding of the importance of preserving and protecting the natural environment, and the value of ecosystem services provided by intact and functioning ecosystems.</li> <li>• Internationally there are more intergovernmental agreements and treaties that better protect the natural environment, with the Ramsar Convention (protecting wetlands) and the Kunming-Montreal Global Biodiversity Framework (protecting at least 30% of areas of high</li> </ul>	<p>The EPA’s assessment should include an analysis of the environmental factors that have changed since the State Agreement Acts were legislated to demonstrate to government that these Acts are no longer appropriate and should be repealed.</p>



	<p>biodiversity and ecosystem functions) both being directly relevant to the area of the current state agreement tenement.</p> <ul style="list-style-type: none"> <li>• Climate change is impacting the whole world, and large scale deforestation to mine common minerals is now understood to be both a significant cause of carbon emissions and a significant reduction in our capacity to mitigate those emissions.</li> </ul> <p>Other changes also combine to reduce the present day importance of the state agreements:</p> <ul style="list-style-type: none"> <li>• WA's much larger population driving economic activity and sustaining employment</li> <li>• WA's robust and diverse mining sector, and very healthy economy including strong and growing markets for local tourism and adventure trails.</li> <li>• A labour shortage meaning that the jobs created by Alcoa are not critical to the State's economy, along with a proven pathway for a 'just transition' out of unsustainable economic activity in rural areas (e.g. Collie).</li> <li>• WA's legislation has improved over time so there is now a system of Acts and Regulations that adequately addresses the needs of the WA population without bespoke pieces of legislation required for individual business operations.</li> <li>• WA's population, and Perth and Peel in particular, has grown so that most of the State Agreement Act tenement is no longer at some distance from residential areas and there is</li> </ul>	
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	<p>now far less other natural areas to buffer and offset the loss of forest to mining.</p>	
	<p><i>Refinery ERD 2.2.1.3 State Agreement – Environmental approvals and assessment</i></p> <p>The Independent Technical Advisory Group (ITAG) does not include any representatives of the community or experts outside of State Government. In the final position paper <i>Bauxite State Agreements – administrative framework review</i> produced by the Department of Jobs, Tourism, Science and Innovation in August 2024 and made available through a Freedom of Information request by journalist Peter Milne, the composition of ITAG was described as including relevant academic and research institutions and catchment councils.</p> <p><sup>1</sup>This position paper was endorsed by the Premier as Minister for State and Industry Development, Jobs and Trade on 10 August 2024. To date, PHCC as the relevant catchment council, has not received any information about the ITAG and we question whether it has been established as intended.</p>	<p>The EPA should note that the composition of ITAG has not to date been established as intended including PHCC. The EPA should determine if the ITAG has been established as intended and is serving its intended function.</p>
	<p><i>2.3.1 Corporate standards</i></p> <p>The ERD includes reference to Alcoa receiving certification under the Aluminium Stewardship Initiative (ASI) and cites Alcoa’s environmental policies and management systems. PHCC considers that ASI certification is an exercise in self-recognition and does not carry any weight. PHCC has participated in ASI certification processes and considers that Alcoa does not meet the governance principles listed on the ASI website as follows.</p>	<p>The EPA should note that the Aluminium Stewardship Initiative should not be considered a reputable credentialled or substantive process that lends any credibility to certified entities.</p>

<sup>1</sup> <https://www.documentcloud.org/documents/25537022-bauxite-state-agreements-administrative-framework-review-premier-endorsed-final-position-paper-august-2024/?ref=boilingcold.com.au>

	<p>Governance principles 1-4 business integrity, policy and management, transparency, and material stewardship.</p> <p>It is PHCC's opinion that Alcoa does not operate with integrity, by continuing to make public claims that they have rehabilitated 75% of all cleared areas and that they are a recognised world leader in mine site rehabilitation. While policy and management is publicly available, it is not effective – otherwise Alcoa would not be mining in drinking water catchments and clearing black cockatoo habitat. Alcoa has not consulted with or invited participation of affected populations and organisations regarding closure and decommissioning. In relation to transparency and a complaints resolution mechanism, PHCC does not consider that Alcoa meets the performance standard. Alcoa's approach to tailings storage facilities in WA demonstrates that it does not meet the standard for material stewardship, as there is no plan for closure and decommissioning of these facilities that does not result in significant and long term contamination of groundwater.</p> <p>Governance principles 5-8 greenhouse gas emissions, emissions, effluent and waste, water stewardship, and biodiversity and ecosystem services. At face value, Alcoa's operations do not meet the performance standard. This ERD demonstrates many instances of environmental impact including significant greenhouse gas emissions, dust emissions, permanent tailings storage, and large scale clearing of vegetation that impacts biodiversity and ecosystem services.</p> <p>Governance principles 9 – 11: human rights; labour rights; and occupational health and safety. PHCC makes no comment on these principles.</p>	
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PHCC's experience with the ASI certification process was that it did not meet our expectations of balance and transparency. PHCC was not provided with information that outlined the proposed process, identified the parties involved, or provided any opportunity for clarification. The onus had been on PHCC to find information about the process. At a minimum, PHCC expected to be provided information about ASI, the audit and certification process (including timelines), who was participating in the audit, who was undertaking the audit and the role of the auditor. We would also expect to be informed of the complaints provisions regarding accredited auditors or the audit process.

In order to make well-informed and accurate comments about the entity's operations relative to the ASI performance standard, PHCC considers it reasonable that the entity provides information to support the audit process. It is not enough to assume that third parties such as PHCC can seek this information for themselves, particularly when it may only be available through separate documents or sources that have been produced for other purposes. PHCC also considers that it is appropriate that the self-assessment completed by the entity is provided to PHCC along with links to all other information relied upon by the entity to substantiate their self-assessment, where that is publicly available. Where that information is not publicly available, its existence should be disclosed with justification of why that information is not public.

PHCC also notes that the general information published on the ASI website states that all discussions between affected populations and organisations are held in confidence between the population/organization, the auditors, and ASI. In our experience in

	<p>ASI audit process, the audited entity was present in the discussions, clearly demonstrating that the audit process is aspirational rather than substantial.</p>	
	<p><i>Refinery ERD 2.4 Rehabilitation program</i>  <i>All native vegetation cleared for mining will be rehabilitated to a native Jarrah forest ecosystem, using Alcoa's rehabilitation methods developed over five decades of research and practice</i>  This information is not relevant to this section of the ERD.  It contains 24 pages of information about rehabilitation of mined areas. This information was required to address the EPA's factor of flora and vegetation in tasks 17 and 18 of the Environmental Scoping Document. It has not been included in section 5 and 6 where the mitigation of impacts to flora and vegetation (part 5) and fauna (part 6) should be included.  Notwithstanding, comments on rehabilitation can be provided here.  <i>Section 2.4.12 Independent peer review of rehabilitation methods and success to date, p2-49</i>  The peer review is quoted referring to Alcoa's rehabilitation practices to be 'as sophisticated and comprehensive as any mining operation globally. In addition, the process of development and sequential refinements of publicly available completion criteria, commencing more than 30 years ago, exceeds that of other mining operations in WA, if not globally.' This is incorrect: the rehabilitation completion criteria have not been publicly available for more than 30 years and the first time they were published was when the s6 exemption order was provided to Alcoa. Prior to this, rehabilitation completion criteria were not freely available even to members of the</p>	<p>The EPA should find that rehabilitation methods and success to date and proposed ongoing rehabilitation methods, taking into account the proposed key biodiversity indicators, are inadequate and inconsistent with the ongoing ecological integrity of the Northern Jarrah Forest.</p>

	<p>Mining and Management Plan Liaison Group. The peer review also stated that <i>“While an assessment of vegetation establishment against agreed completion criteria are provided below, Stantec was unable to complete a thorough assessment of success of the rehabilitation against all agreed completion criteria, such as those for creation of fauna habitat structures, timber production, water catchment and recreation values”</i> (p2).</p> <p>Alcoa states that the peer review identified several areas of improvement. In fact the peer review identified four main areas, which were the four points of review – that is to say, each of the four areas of question found that rehabilitation is inadequate and needs to be improved:</p> <ol style="list-style-type: none"> <li>1 Assessment of rehabilitation success to date – vegetation</li> <li>2 Alignment of rehabilitation methods and success with proposed Northern Jarrah Forest post-mining land use</li> <li>3 Consistency with ongoing ecological integrity of the Northern Jarrah Forest</li> <li>4 Conclusions on current and proposed rehabilitation methods.</li> </ol> <p>There is ample evidence including the peer review at Appendix D1 that the rehabilitation established by Alcoa is inadequate. It has never met the completion criteria for biodiverse forest established in a process that existed specifically to facilitate Alcoa’s operations (the Mining and Management Plan Liaison Group process through the State Agreement Acts). It does not meet the standards established by the Society for Ecological Restoration in the International Principles and Standards for Ecological Restoration and Recovery of Mine Sites. The peer review has identified that:</p>	
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	<p><i>Despite the sequential improvements in rehabilitation methods, differences in compositional similarity between rehabilitation and unmined forest remain. Furthermore, rehabilitation does not aim to reinstate the specific upland SVTs that were cleared (P, S and T), as the subtle differences in soil profile and landscape that defined the vegetation types are lost with the mining and rehabilitation process (Koch 2007). Accordingly, while rehabilitation achieves comparable species richness and cover, it is expected to cause a partial loss in the diversity of vegetation types compared to native jarrah forest.</i></p> <p><i>P2-47 Table 2.8 comparison of unmined forest and rehabilitation in the context of the Biodiversity Indicators</i></p> <p>The ERD identifies a reduction in species richness within rehabilitated areas for conservation significant vegetation communities, and for upland vegetation. There are no specific rehabilitation completion criteria for stream and swamp vegetation. There is also no evidence that species richness will increase with more time. Rehabilitated forest has higher canopy cover, impacting understory composition.</p> <p>The peer review found that there are knowledge gaps relating to the severity, duration and scale of the potential impact that may remain as a result of the Proposal and whether these impacts can be realistically and credibly managed through rehabilitation (p28). Another independent study<sup>2</sup> made clearer findings about Alcoa's rehabilitation performance:</p>	
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<sup>2</sup> Campbell, et al (2024) <https://onlinelibrary.wiley.com/doi/10.1111/rec.14236>

	<ul style="list-style-type: none"> <li>• Restoration quality was scored at two stars from a possible five, which does not meet the objective of four stars</li> <li>• Rehabilitation does not achieve a state similar to the native reference ecosystem</li> <li>• Rehabilitation does not improve over longer timeframes</li> <li>• Sustained improvements are not shown after adaptive management interventions</li> <li>• Two-thirds of indicator plant species were significantly under-represented in early-stage restoration and declined with age</li> <li>• Most plant species were effectively absent, including key structural species</li> <li>• Invasive plants and native legumes were persistently overabundant</li> <li>• Rehabilitation is restricted in its capacity to develop the distinctive structure of mature, high-quality jarrah trees</li> <li>• Rehabilitation does not restore the three different jarrah-marri vegetation complexes that are removed by mining.</li> </ul>	
<b>3. Stakeholder engagement</b>	<p><i>Refinery ERD Stakeholder engagement</i></p> <p>PHCC is listed as a stakeholder under the heading Community and non-government organisations. As the regional NRM organisation, PHCC has not been invited to any real stakeholder or community consultation.</p> <p><i>Section 3 Table 3-2 Summary of key issues raised by stakeholders during consultation and Alcoa's response</i></p>	<p>The EPA should note that stakeholders do not feel they have been adequately consulted or that their concerns have been addressed by Alcoa. Further, Alcoa's statement that 'protection and preservation of the environment is core to our values and drives our commitment to the highest standards of environmental performance' is nonsense when compared to many of the organisations listed as stakeholders who actually work to protect and preserve the environment. This statement should not</p>



	<p>Alcoa repeatedly states that “<i>Alcoa has successfully coexisted with other land uses, including recreational forest use/environmental values/private properties... for more than half a century</i>”. PHCC does not agree with this statement on the grounds that Alcoa has prevented other land uses including and especially recreational forest use through excluding access to the jarrah forest. There are many examples of public access being limited through Alcoa’s mining. The Munda Biddi Trail, which is listed in the WA Mountain Bike Strategy 2022-2032 as one of the world’s top cycling trails, has been relocated because of mining. This does not equate to successful coexistence – it is displacement.</p> <p><i>Refinery ERD Appendix F1 Stakeholder Engagement Register</i></p> <p>PHCC is listed at page 48 of this document. PHCC has no record of the listed consultations, except for an email dated 17 March 2021 and another dated 14 September 2022.</p> <p>With regard to the meeting in August 2022 PHCC notes that the concerns raised at the meeting were specifically about Alcoa’s clearing in the jarrah forest and advising that PHCC does not support any further clearing by Alcoa, as well as cumulative impacts of mining; PHCC also disputes the statement that “PHCC had no major issue with the quality of mine site rehabilitation”. PHCC staff including two PhD qualified ecologists raised concerns with many of the technical elements of Alcoa’s rehabilitation. There was no response listed in the register from Alcoa – we received a follow up email providing a link to Alcoa’s website.</p> <p><i>Bauxite mining proposal ERD</i></p>	<p>carry any weight in the EPA’s assessment of these proposals.</p>
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	<p>The stakeholder engagement listed in the 4 pages of Chapter three and three pages of Appendix 12 (or Appendix XX as it is titled) is inadequate. It is clear that Alcoa had no intention of consulting with stakeholders other than those directly involved in the State Agreement Process when they were not required to.</p> <p>PHCC is not listed as a stakeholder under the heading Neighbouring landowners, businesses and interest groups. As the regional NRM organisation, PHCC has not been invited to any form of stakeholder or community consultation on these proposals. This is inadequate and demonstrates clear disregard for the community.</p>	
<p><b>4. Object and principles of the EP Act</b></p>	<p><i>Refinery ERD S04 Objects and Principles of the EP Act Table 4.1 page 4-5</i></p> <p><i>Bauxite mining ERD Ch04 Objects and Principles of the EP Act Table 4.1 pp123-125</i></p> <p>Principle 4 (refinery) and principle 3 (bauxite mining) conservation of biological diversity and ecological integrity: “Mining will not occur in granite outcrops, biodiverse vegetation fringing granite outcrops or in swamps or riparian vegetation. These vegetation types represent important habitats for conservation significant flora and fauna and potential priority ecological communities.”</p> <p>Bauxite occurs in the upper to mid slopes of the Darling Plateau and is generally absent from lower slopes, streams and swamps as well as granite outcrops; accordingly, mining does not occur in these landforms. (ERD S01 Scoping, p1-56). There is no bauxite present, there is no mining, so claiming these areas as avoidance or reduction is misleading.</p>	<p>The EPA should recognise that Alcoa’s claims of avoidance and minimisation are related to the absence of bauxite in these areas (granite outcrops, streamlines and swamps). These areas are not at risk of being mined because there is no bauxite present. It is misleading and inaccurate to identify this as a strategy for avoidance and minimisation of environmental impact.</p>
	<p>The removal of reservoir protection zones is stated as avoiding impacts to the biodiversity values within them, but the same section</p>	<p>The EPA should discount the avoidance areas including reservoir protection zones in its assessment as it is clear</p>

	<p>indicates that future mine plans will include reservoir protection zones once the new water management and drainage control practices that have been put in place in accordance with the 2023-2024 MMP approval and s6 Exemption Order have been demonstrated to be effective.</p>	<p>that Alcoa intends to mine those areas in the future. Alternatively the EPA should codify that avoidance and ensure that the areas are permanently protected through conditions that prohibit any form of clearing disturbance in the drinking water catchment.</p>
	<p><i>All native vegetation cleared for mining will be rehabilitated to a native Jarrah forest ecosystem, using Alcoa's rehabilitation methods developed over five decades of research and practice.</i></p> <p>This statement does not provide any certainty that rehabilitation will achieve an appropriate end point, as discussed above in section 2. Despite 5 decades of what Alcoa describes as world's best practice and world-leading research. Alcoa has yet to deliver a single hectare of successful native jarrah forest ecosystem rehabilitation. This statement does not evidence a commitment to the principle of conservation of biological diversity and ecological integrity.</p> <p><i>Section 4.3.3 Impact avoidance framework</i></p> <p><i>After the consideration of regulator comments on a draft of this ERD, and community concerns, mining of bauxite within Reservoir Protection Zones (RPZ) was removed from the Proposal. The mine DEs for Myara North and Holyoake were amended to remove the RPZs and the Infrastructure Corridor DEs altered to encompass all critical infrastructure within the RPZs. Alcoa's commitment to excluding mining activities in the RPZs from the Proposal will allow the new water management and drainage control practices which Alcoa has put in place in accordance with the 2023-27 MMP approval and Section 6 Exemption Order conditions to be monitored over a longer period. This will enable Alcoa to confirm and demonstrate the</i></p>	<p>The EPA should not credit the avoidance areas of mature forest (&gt;70 years) in its assessment as Alcoa only applies this avoidance where no bauxite ore deposits exist. Alternatively the EPA should codify that avoidance and ensure that mature growth forest areas are permanently protected through conditions that prohibit any form of clearing disturbance.</p> <p>Buffer distances</p> <p>At a minimum, buffer distances for human values (recreation sites, heritage locations) should be determined so that noise from mining operations does not intrude on quiet enjoyment of the values present. For environmental values, a more appropriate buffer distance should be set taking the precautionary principle into account. Minimum patch size for vegetation to be retained to protect environmental values such as black cockatoo nesting trees should be based on evidence that the long term viability of the patch will be resilient to the surrounding bauxite mining. It is unlikely that a 30 metre buffer around a mature tree is adequate to ensure the survival of that tree, and the value of isolated trees as habitat is questionable.</p>

*effectiveness of the new water management and drainage control practices before any future mine plans within these RPZ areas are contemplated. The removal of mining activities within the RPZs avoids impacts to the biodiversity values within them. (p4-12).*

This statement makes clear that the avoidance claimed by Alcoa with respect to reservoir protection zones is temporary and that they intend to mine within those zones in the future.

One of the categories of high environmental value used by Alcoa to define avoidance zones is “Mature Forest (age since last harvested >70 yrs) where not underlain by an economically viable bauxite ore deposit.” (p4-13). This is not an effective or real category of avoidance because of the caveat that it does not apply where there is an economically viable bauxite deposit.

Avoidance zones are listed as buffers around significant environmental, social and heritage values but they are inadequate. A buffer of 10 m around Aboriginal heritage sites will not be effective in protecting those sites from the impacts of mining. Similarly a buffer of 30 m around black cockatoo nesting trees is manifestly inadequate to protect the nesting site. It will result in isolated trees with potential or actual nesting hollows surrounded by bauxite mining, making the nesting site unsuitable for black cockatoos. Cockatoo nesting trees need to be surrounded by a significant buffer of intact vegetation that is far larger than 30 m.

Alcoa has identified large areas of clearing that are ‘necessary’ and that ‘must be undertaken’ and has termed these ‘low disturbance

	<p>areas’ even though they have already been identified as ‘Avoidance Zones’. The commitment to locate these areas within the mine development zones is meaningless when the subsequent statement is considered “it will be necessary to undertake them within the Avoidance Zones for various design reasons e.g., to connect the pits and provide a route to the crushers, connect facility areas to the public highway, construct a conveyor spur to the proposed Holyoake crusher”. Similarly, designating these areas as Avoidance Zones – when they will not in fact be avoided if it is not convenient to Alcoa – is misleading. The distinction between Avoidance Zones and Low Disturbance Zones is nonsensical for factors including flora and vegetation and fauna because the clearing will destroy the environmental values that have been ‘avoided’.</p>	
	<p><i>Refinery ERD 4.4 Development of Biodiversity indicators and Assessment and Monitoring Framework, p4-24</i></p> <p>Alcoa have cited the key threats to the Northern Jarrah Forest, quoting the Forest Management Plan 2024-2033 (Conservation and Parks Commission 2023). Section 4.4.1 lists those threats as climate change, habitat loss and fragmentation, weeds and pest animals, altered hydrological regimes, and inappropriate fire regimes. The Forest Management Plan includes one other threat, minerals and resource development. It is misleading and unethical for Alcoa to misquote the Forest Management Plan in this way. Similarly the Recovery Plans for all three species of Black Cockatoos and chuditch also identify mining as an additional threat. It is again misleading for Alcoa to quote other threatening processes in the Northern Jarrah Forest and not mention mining. The same list of threats has been repeated in Appendix 24 (the report by GHD).</p>	<p>In the absence of a peer review commissioned by the proponent, the EPA should complete this task and include the outcomes in its assessment report for these proposals. If the biodiversity indicator framework is found to be inadequate, the EPA should contemplate whether it is possible for such a framework to ensure that the EPA’s objectives can in fact be met and the Northern Jarrah Forest can maintain its ecological integrity, or whether the precautionary principle ought to apply.</p>

	<p>Two of the proposed forest ecosystem indicators measuring vegetation condition appear similar, with one measuring vegetation structure and composition at large scale and the other an unspecified measure of vegetation health within areas of shallow groundwater. These measures should be targeted towards assessing the ecological function of the small remnants of vegetation that will be left surrounded by mining and other disturbance, to demonstrate whether the very small buffer zones identified are effective.</p> <p>The three threatening processes selected under Group 4 has not identified the major threats to the forest ecosystem. Climate change and clearing of native vegetation for other proposals or purposes should be included here. Dieback infection is important but could be included within the existing category of extent and impact of invasive species.</p> <p>Selection of threatening processes other than climate change is likely to render the BI less useful. The indicators selected for Targeted bio-indicator groups appear to have been selected on the basis that they will demonstrate the least impact from mining and the most favourable comparisons between rehabilitated and unmined vegetation.</p> <p>Item 105 in the ESD addendum requires that Alcoa commissions an independent peer review of the biodiversity indicators. This has not been included and the utility of the proposed biodiversity indicators therefore requires validation. The indicators have not been reviewed to determine if they are adequate, scientifically robust, and appropriate to assess and monitor environmental outcomes for the whole life of mine including post-closure, whether the EPA's</p>	
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	objectives can be met, and whether the proposal is likely to be consistent with the ongoing ecological integrity of the Northern Jarrah Forest.	
5. Flora and Vegetation	The mine expansion involves an increase of the mine and infrastructure footprints and clearing. Potential impacts and risks include further loss and fragmentation of native vegetation in the local area from clearing including threatened species, habitat loss for fauna species, spread of weeds and dieback and introduction of pathogens into new unaffected areas, and changes to vegetation structure and composition through altered surface drainage flow patterns and water use associated with the proposal.	<p>The EPA should find that the objective ‘to protect flora and vegetation so that biological diversity and ecological integrity are maintained’ will not be met if this proposal is approved.</p> <p>Further surveys of the Northern Jarrah Forest are required to understand the regional context of Priority species (and MNES).</p>
	There is insufficient data to address the regional significance of species and under-reporting of site vegetation types. Peer review of the data and reports is also lacking throughout the application. The Proponent has determined whether flora species recorded are significant but have not provided a thorough analysis of the regional context of significant flora. The quantitative assessment of impact for significant flora and vegetation units is flawed due to low survey effort of the surrounding Northern Jarrah Forest and major under-reporting of site vegetation types, which makes it impossible to assess the regional context of significant flora and vegetation and demonstrates a lack of consideration for the regional and cumulative impacts (confounded not only by the lack of consideration or data provided on the impact of climate change on the Northern Jarrah Forest).	<p>The EPA should note that the information provided to justify the clearing of large tracts of the Northern Jarrah Forest is not adequate to properly assess the direct and indirect impacts to flora and vegetation.</p> <p>Given the extent of past and planned future clearing, high rehabilitation deficit, heavy reliance on undefined offsets and inability to reinstate vegetation diversity and structure, the EPA should find that its objective for this factor cannot be met.</p> <p>The EPA should not consider absence of mining in areas where there is no bauxite present as a measure of avoidance or minimisation of environmental impacts.</p>
	There is a failure to address indirect impacts to significant flora, particularly for shallow-rooted species like <i>Pimelea rara</i> (Summer	The conservation significance of PECs should be determined at Alcoa’s cost before any clearing occurs,

	<p>Pimelea – P4), <i>Stylidium ireneae</i> (P4), <i>Tetratheca phoenix</i> (P2), <i>Lepyrodia curvescens</i> (P2) and <i>Grevillea dissectifolia</i> (P3). Several of these priority species have an extremely restricted range, occurring only in the Jarrah Forest. <i>Acacia drummondii</i> subsp. <i>affinis</i> is also likely to be indirectly impacted by altered groundwater levels. There is an isolated population of <i>Banksia recurvistylis</i> (P2) less than 1.5 km east of the Huntley 5-year clearing zone. Little is known about this rare Banksia species, particularly on its responses to alterations in groundwater levels. Similarly for shallow-rooted species around the Willowdale 5-year clearing zone, there is no attempt to address indirect impacts to <i>Actinotus repens</i> (P3) and <i>Grevillea prominens</i> (P3) which generally occurs only along creeklines suggesting it may not tolerate alterations to groundwater levels. Both <i>Schizaea rupestris</i> (P2) and <i>Cyathochaeta teretifolia</i> (P3) was previously recorded along areas cleared around the Willowdale mine – these haven't been found locally since this clearing and further clearing in this area will likely cause similar losses of other priority and threatened flora mentioned above.</p> <p>Impacts of progressive and accumulative clearing on the Northern Jarrah Forest's resilience to climate change, and the hydrological impacts from this on-going clearing have not been analysed. There is also no attempt to address indirect impacts in the context of edge effects, which is important given the number of 'Protected Areas' nearby with minimal buffer zones to protect vegetation. Rehabilitation in a drying climate is more difficult and takes longer, but these risks appear to not be considered. Cleared areas have greater evaporative water loss, but the impact of increased</p>	<p>noting the recent finding of the Auditor General that this function within DBCA has not been resourced adequately to deliver the required outcomes. In the absence of knowledge about these PECs the precautionary principle should apply.</p> <p>At a minimum, buffer zones of no clearing around TECs/PECs should be extended to a suitable size determined by research, particularly for groundwater dependent or waterlogged ecosystems. In the absence of research the buffer zones should be far larger than the minimum 50 metre buffer stated. Bores should be established close to any Threatened and Priority Ecological Communities to assess and monitor the impacts of reduced groundwater levels.</p> <p>Hazard dispersal mapping (or agent-based modelling of the movement of soil-borne pathogens such as <i>Phytophthora spp.</i>) should be undertaken and outline (and address) data gaps regarding the susceptibility analysis of the uninfested landscape. Given many plant species in the Northern Jarrah Forest are highly susceptible to <i>Phytophthora</i> dieback and there is a likelihood of spreading dieback to uninfested areas, Alcoa should submit a detailed dieback management plan specific to the proposed expansion and allow the community (and experts) time to review and respond to their plan. The EPA should conduct an external review of Alcoa's existing</p>
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	<p>evaporation on groundwater levels has not been considered throughout the proposal.</p> <p>Impacts to TECs: Empodisma peatlands of the Northern Jarrah Forest are not comprehensively mapped and ground-truthed throughout the Proposal. For peats to remain waterlogged and the ecological community to function, inputs from precipitation must exceed evaporation and transpiration. Ecological communities that depend on periodic or permanent waterlogging (inc. Claypans and Peatlands) and the most vulnerable to land clearing activities that alter water regimes. These impacts, which will be exaggerated with climate change, have not been adequately assessed in the Proposal.</p> <p>Mount Saddleback Heath Communities (P1) occur 4.6 km southeast from the proposed 5-year clearing plan for the Huntley site. Potential impacts from increased groundwater drawdown to the Mount Saddleback Heath Communities (P1) as a result of indirect impacts associated with abstraction are not predicted as the bores are located some distance from the Priority Ecological Community.</p> <p>Banksia Woodlands (P3) occur as small, fragmented patches only 5km west of the proposed clearing and are considered groundwater dependent ecosystems. Any changes to groundwater availability in this area will likely cause further losses of the woodland and will undermine existing projects that work to protect this Threatened Ecological Community, in turn reducing foraging resources for Carnaby Black Cockatoos. As mentioned above, there is a failure to</p>	<p>dieback management plan, including a thorough assessment of how Alcoa's activities have contributed to spread of dieback in the jarrah forest and surrounding woodlands. This review should be commissioned by the EPA at Alcoa's expense to prevent Alcoa influencing the outcome of the review.</p> <p>Mining operations should not be allowed to occur near any dieback infested areas, and particularly where it occurs west of the existing mining footprint towards the western edge of the Forest.</p> <p>The EPA should require Alcoa to harvest all possible seed and propagules from vegetation before it is cleared, and treat and store that material at its own cost and make available to not-for-profit and scientific research entities. Alcoa should also support seed banking and nursery developments and expansions in the Peel-Harvey Catchment to ensure seedlings are available for local restoration project and Landcare groups.</p> <p>Protected areas must be expanded to include woodlands and forests with high quality vegetation, including wandoo forest.</p> <p>'Old Growth Forests' should be redefined to include good condition vegetation that is transitioning towards</p>
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	<p>address how increased groundwater abstraction will impact significant flora, including shallow-rooted species mentioned above.</p> <p>Granite communities of the Northern Jarrah Forest (P3): These outcrops support unique and diverse plant communities and tend to harbour relict and endemic plant species and fauna (frogs and reptiles) – see comments for fauna below.</p> <p>There is insufficient information to determine how the Proponent will mitigate the impacts of altered groundwater levels on conservation significant species and communities. Water availability will decrease significantly because of – a) significantly greater mine water required for continuation of all mining activities causing reduction in groundwater and streamflows, b) climate change – rainfall reduction rainfall in Southwest WA has declined by about 20% since the 1970s, warming temperatures, changing of isohyets marginal areas already, and c) rehabilitation vegetation. The proposal does not demonstrate how the proponent will arrest or improve groundwater and/or streamflow to conservation significant flora, communities and ecosystems, despite increased water use in mine operations and within rehabilitation areas.</p> <p>There is unacceptable risk of spreading dieback to surrounding woodlands. Some of the actions described to prevent introducing dieback to adjacent protected and conservation areas are vague and unrealistic. For example, they provide no detailed plans about how they will achieve no new introduction of forest diseases as a result of mining operations and fail to address the control of surface run-off</p>	<p>classification of Old Growth Forest, given that it is the next best thing we have to actual Old Growth Forest.</p>
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	<p>during high rainfall events. Evidence that current hygiene practices are successful in preventing <i>P. cinnamomi</i> from spreading into uninfested forests is not provided.</p> <p>The impacts of <i>Phytophthora</i> dieback are prolific along the western edge of the Northern Jarrah Forest, around areas proposed for clearing. While the proponent downplays the ecological value of areas impacted by dieback, they also ignore the core principle of dieback management which is to minimise any disturbance to infested soils and plants. If this area is cleared or degraded any further, despite the current condition of vegetation, there is serious risk of enhanced edge effects as the buffering vegetation is lost or further degraded. This would also expose nearby banksia woodlands (and community members) to dust, noise, and visual and pollution impacts from mining activities. It will also reduce forest resilience to climate change.</p> <p>There is widespread failure to address the lack of seedling supply available for Landcare groups due to Alcoa draining supply resources. PHCC and other similar Landcare and community groups are finding it increasingly difficult to source seedlings for restoration projects from nurseries as they reserve space for Alcoa orders. Nurseries in the Peel-Harvey catchment can no longer meet demands with supply, which impacts local revegetation projects.</p> <p>The rehabilitation shortfall is unacceptable and there has been no attempt to address the cumulative impact of this shortfall. The Rehabilitation and Closure Plans do not address the impacts</p>	
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associated with restoration lag times (i.e., with temporal delays between clearing, rehabilitation and restoring ecological function, there will be long periods where critical ecological values are missing from the landscape). There are also few analogue sites in the Northern Jarrah Forest which has impacts for their baseline restoration targets and completion criteria. Few survey plots in the Northern Jarrah Forest mean potential under-reporting of vegetation units and significant flora.

Given the high conservation value and ecological importance of the Northern Jarrah Forest and high-quality jarrah, marri and wandoo forests likely to be impacted, it should be given the same protection as Old Growth Forest areas (i.e., avoid disturbance to very high-quality Jarrah, marri and wandoo forests).

Bauxite occurs in the upper to mid slopes of the Darling Plateau and is generally absent from lower slopes, streams and swamps as well as granite outcrops; accordingly, mining does not occur in these landforms. (ERD S01 Scoping, p1-56). There is no bauxite present, there is no mining, so claiming these areas as avoidance or reduction is misleading.

*Section 5.4.3.6 p5-133*

*Chart 5-8 presents predicted changes in depth to groundwater at selected potential GDEs in the Holyoake DE, represented by vegetation types AC (swamp), C (stream zone) and D (lower slope). Predictions for other potential GDEs are detailed in GHD (2023a). As presented, climate has a major effect on depth to groundwater for*

	<p><i>the potential GDEs, with depth varying by approximately 10 m between dry and wet climatic conditions. The Proposal is predicted to cause an average increase of approximately 2-5 m in groundwater levels at potential GDEs in Holyoake, peaking around 2035-2040 and then slowly subsiding to approximately 0.5-1 m by 2060. Some small areas of potential GDEs may be subject to rises of more than 5 m. The predicted modest rise in groundwater levels due to the Proposal is expected to partially offset the decline in levels observed since the 1990s (see Section 8.4.3.3), creating groundwater conditions that benefit potential GDEs, particularly shallower rooted vegetation.</i></p> <p>This statement demonstrates that there is no clear understanding of the likely impacts to groundwater-dependent ecosystems, with at best a guess that they may benefit from disturbance to their environment.</p> <p><i>Section 5.6 Environmental Outcomes, p5-193</i></p> <p><i>Table 5.50, p5-194</i></p> <p>The table states an environmental outcome for the factor of flora and vegetation that:</p> <p>All cleared areas rehabilitated to jarrah forest ecosystem in accordance with approved completion criteria. This outcome is not appropriate because it is not specific and measurable. It does not specify the timeframe over which this is to be achieved and it does not specify the parameters that are to be met, only that ‘approved completion criteria’ will apply.</p>	
<b>6. Terrestrial Fauna</b>	<p>Chuditch</p> <p>The continual reference to the retained stream reserves being all chuditch need is incorrect. Woylies and chuditch are spread across</p>	<p>Contrary to the claims in the ERD, chuditch and woylie are NOT associated with water systems, thus excluding only stream zones does not protect their habitat. If Alcoa have</p>

	<p>upland as much, or more, as stream zones. Chuditch have large home ranges which may overlap, and require habitats of suitable size that are not excessively fragmented and adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows). To be suitable as dens logs must have a diameter &gt;30 cm and a hollow with 7 – 20 cm in diameter and a minimum length of 1 m but preferably 3 m.</p> <p>Woylies</p> <p>Although habitat suitability varies across the woylie's range, where home ranges vary between male and females (pending densities), woylies may persist where there is adequate fox and cat controls, within tall eucalypt forest and woodland, dense Myrtaceous shrubland (or kwongan or mallee heath).</p> <p>Western ringtail possum</p> <p>There is no consideration or mention of the western ringtail possum. Just because they were not recorded doesn't mean they are not there. Ringtail possums are notoriously hard to survey with conventional methods and by inexperienced consultants. This is a significant oversight for a conservation significant species.</p> <p>Brush-tailed phascogales occur at low densities in the Northern Jarrah Forest in dry sclerophyll forest and open woodlands that contain hollow-bearing trees but a sparse groundcover, with home ranges varying in size from 20 to 70 ha. There are few known records of this species from across the project area, but they are highly likely to be present as it is their preferred vegetation type: high value habitat of bullich forest and jarrah-marri forest.</p>	<p>updated research and knowledge about chuditch and woylie habitat it must be provided here to justify the claims. If this research can not be provided, the EPA should find that its objective to protect terrestrial fauna so that biological diversity and ecological integrity are maintained, cannot be met.</p> <p>Conditions should be imposed to protect and avoid impacts to the preferred vegetation type for chuditch (high value habitat includes: blackbutt forest, bullich forest, granite outcrop, and jarrah-marri forest and woylies (high value habitat including blackbutt forest, bullich forest, and flooded gum woodland).</p> <p>The EPA should require further assessment of western ringtail possums with conditions to limit any clearing unless it is clearly established that they are not present.</p> <p>Given the conservation status and threats to black cockatoos, all known AND potential nesting trees for black cockatoos should be protected from clearing, with appropriate buffer zones retained.</p> <p>The creation of habitat by returning log and rock piles to mine pits needs to be increased significantly to much more than the 1 per 2 ha suggested. At a minimum, this should approximate the density of habitat within unmined forest.</p>
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	<p>Quenda inhabit a variety of forest, woodlands, shrub and heath. The main habitat requirement is dense ground cover at ground level. For shelter, quenda build a nest consisting of leaf litter over a shallow depression concealed next to or under logs, shrubs or piles of debris. They will also use burrows of other species.</p> <p>Preferred vegetation types include high value habitat areas of blackbutt forest, bullich forest, flooded gum woodland and melaleuca dampland.</p> <p>The western brush wallaby is widespread and found in open forest and woodland, particularly with open seasonally wet flats, low grasses and open scrubby thickets. Their preferred vegetation types as high value habitat includes blackbutt forest, bullich forest, flooded gum woodland, granite outcrop, jarrah-marri forest and melaleuca dampland.</p> <p>The Proposal will destroy critical habitat for black cockatoo roosting, breeding and foraging, pushing them closer towards extinction. It is likely to result in the further decline of Carnaby's black cockatoo roost sites. The Northern Jarrah Forest is a critical refuge for Baudin's black cockatoos. With approximately 145,000 nesting trees potentially impacted by the 7,500 ha proposed clearing, over 30% of the mapped Black Cockatoo habitat will occur within the mine development area. No offsets or rehabilitation can mitigate this loss for black cockatoos. Breeding and roosting sites are rapidly becoming a scarcity for Carnaby and Baudin's black cockatoos, with an increasing number of birds suffering starvation and malnutrition</p>	<p>Granite outcrops should be excluded from the development envelope regardless of the desired location for 'critical infrastructure' for their significance to native fauna and rare flora (frogs and reptiles).</p>
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	<p>collected by local wildlife rescue groups. Not all species of black cockatoos use artificial nests (red-tails tend not to). Hollow development is delayed in revegetation sites with high stem density (as occurs with Alcoa's rehabilitation) and these lag times in key habitat resources have not been considered for all species.</p> <p><i>Appendix 5 in the Fauna Management Plan, Table 2.2</i></p> <p>Throughout the fauna management plans, there is a lacking knowledge of fauna specific high value habitats and potential impacts. For example, the assumption that preservation of stream zones is sufficient for species movement and persistence is flawed, as is the assumption that fauna surveys undertaken are adequate given the cryptic habits of some of the species recorded. The assumption that chuditch den logs can be firstly, found, and then identified as such is a stretch. Any disturbance in the July to December period is likely to harmfully impact on lactating mothers and highly vulnerable young, including relocating animals.</p> <p>Species specific survey techniques are required (e.g., for phascogales, rakali and quokka) for many ground-dwelling species in the jarrah forest, which are wide-ranging and require associated high value habitats (brush-tailed phascogale, chuditch, quenda, western brush wallaby, woylie).</p> <p>Appendix 5 in the Fauna Management Plan Table 2.2 is misleading in that it downplays the fact that jarrah-marri forest is the prime habitat for several conservation significant species. The proposal mentions bullich and blackbutt (even flooded gum) which occur in miniscule amounts, however, jarrah-marri is the prime habitat for</p>	
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	<p>these species yet it is either missing or listed down the order. It should be front and centre and highlighted. Unlike marri, bullich trees almost never form hollows.</p> <p>Alcoa's focus is purely on species of national conservation significance, which gives no importance to tree hollows for a myriad of other species. Standing trees with hollows also eventually become ground hollows that support another suite of species. This critical refugia takes hundreds of years to develop. Whether they be assessed as "cockatoo trees" or not there, there should be more retention of habitat trees included in any clearing prescription.</p> <p>Alcoa also downplay the significance of granite outcrops for fauna. The granite outcrop size criteria is way too big given these are very significant fauna habitats. In general, the focus is entirely on species of significance and ignores the multitude of other more common species that depend on granite outcrops, including frogs and reptiles.</p>	
<b>7. Terrestrial Environmental Quality</b>	<p>Removing the lateritic bauxite deposits and replacing it with topsoil and sandy gravel overburden makes a permanent alteration to the terrestrial environmental quality. The landscape is permanently changed with rehabilitation unable to restore the original contours, geology and soil profile. Bauxite mining preferentially targets upland areas, thus creating impacts to all landforms downslope and downstream of mining pits. Loss of landforms on this scale equates to a transformation of the landscape that has not been identified as an impact to terrestrial environmental quality.</p> <p>There is no way to avoid or minimise this impact.</p>	<p>The EPA should find that the proposal is inconsistent with the EPA's objective to maintain the quality of land and soils so that environmental values are protected.</p>

<p><b>8. Inland Waters</b></p>	<p>The hydrology and hydrogeology of the area subject to these proposals is complex, and has been altered over a long period of time through mining, forestry, clearing for other purposes, drinking water catchment management and climate change. The impacts of past practices are only just beginning to be detected and understood in the context of regional groundwater recharge and the complex relationship between surface and groundwater, overlain by climate change.</p> <p>Section 4 of the Refinery ERD identifies potential changes to the Peel-Yalgorup System Ramsar site through potential changes to water quality and changes to the hydrological regime of the region, but the ERD does not identify these impacts at the local scale within the mine development envelopes. As with terrestrial environmental quality, the hydrology of mined areas is permanently changed with rehabilitation unable to restore the original contours, geology and soil profile that combine to result in local hydrology. There is no way to avoid or minimise this impact.</p> <p>For the Serpentine River in particular, almost 63% of the catchment will be impacted by the mine development envelope. For a river that is already impacted by climate change, drinking water catchment and agricultural nutrient pollution, this represents an unacceptable level of impact.</p> <p>PHCC considers that the impact to drinking water catchment is separate to the impact to inland water quality and defers comment on this matter.</p>	<p>The EPA should find that the proposal is inconsistent with the EPA's objective to maintain the hydrological systems and quality of groundwater and surface water so that environmental values are protected.</p> <p>When considering the potential impact of altered hydrology and particularly changes to groundwater levels, the precautionary principle should be invoked given the complex effects of changes to geology and topography, regional water abstraction and diversion, and climate change.</p>
<p><b>9. Air Quality</b></p>	<p>In general the quality of the ERD is poor with many omissions and errors including legends missing, receptors not shown on maps, incorrect cross references in text and linking errors.</p>	<p>The EPA's assessment report should include an objective analysis of the air quality impact assessments rather than rely on the proponent's summaries.</p>

	<p>At Myara North, modelling predicts significant exceedances of relevant air quality standards at numerous receptors under all modelled scenarios. The impacts have been dismissed or minimised in the ERD with statements such as '<i>..a degree of double counting of dust from mine operations</i>' and '<i>...are considered highly conservative</i>'. Yet the dispersion modelling did not include the existing Myara crusher as a source because it is represented in the Yamba dust monitoring data (p36, B11-1). In discussion of the likely exceedances the frequency is dismissed as less than 5 days a year, and 5-18 days of the year. In B11-1 GHD Air Quality Impact Assessment for Huntly Mine – Myara North, the executive summary refers to these as major exceedances and attributes them to the close proximity of active mining pits. The impact is further dismissed by stating that the dust emissions will be reduced during winter and spring when there is rainfall. Yet Table 5.2 of B11-1 shows that the majority of high dust levels recorded that are 'likely due to Alcoa operations' occur in winter and spring. No effective mitigation has been proposed.</p> <p>At O'Neil, modelling predicts several exceedances of relevant air quality standards at several receptors under both modelled scenarios. The impacts have not been addressed at all and no mitigation has been proposed.</p> <p>Table 9.28 lists the avoidance and minimisation of potential impacts to air quality. This table lists only basic practices and does not include several which would be considered standard practice such as: blast stemming and stockpile orientation.</p> <p>The table states the location of infrastructure within the DE gives consideration to separation distances from sensitive receptors. This</p>	<p>The proponent should be using a far better standard of dust management including blast stemming, passive (design) and active (practice) controls at point and area sources of dust emissions including haul roads, conveyors, stockpiles, crushers, transfer points and open areas.</p>
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	<p>does not demonstrate avoidance and minimisation of emissions and relies on natural attenuation over distance to reduce impacts. It is not considered best practice in managing dust emissions.</p>	
<p><b>10. Greenhouse gas emissions</b></p>	<p>P10-7 of s10 Greenhouse Gases states that  <i>“No clearing is included in the Proposal for the Pinjarra Refinery and therefore emissions related to vegetation clearing are not considered for the refinery component of the Proposal”</i>. This is incorrect.</p> <p>Alumina refining is WA’s second most carbon polluting industry, emitting almost twice the volume of carbon dioxide than coal-fired power stations in the State. The carbon emissions from the refinery proposal are significant and not mitigated, along with the carbon emissions from clearing native vegetation and the future carbon fixing that will be sacrificed if clearing is approved.</p>	<p>This proposal is clearly inconsistent with the EPA’s stated objective to minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable.</p>
<p><b>11. Social Surroundings (Heritage)</b></p>	<p>The ERD states that the majority of Aboriginal Heritage places that are known within the mine development envelopes have been discovered as a result of Alcoa’s heritage investigations undertaken with Gnaala Karla Booja Aboriginal Corporation (GKB). As GKB was only formed in 2021, this indicates that Aboriginal Heritage within the area of Alcoa’s operations has not been systematically identified or protected by Alcoa for most of the time that they have been operating.</p> <p>The extent of survey and identification of registered sites that has been completed is likely to be inadequate given the historical operation of Alcoa under State Agreement Acts that provided exemption to other legislation such as the <i>Aboriginal Heritage Act 1972</i>.</p>	<p>The EPA should find that the unquantified impacts to Aboriginal Cultural Heritage from the proposals are inconsistent with the EPA’s objective to protect social surroundings from significant harm. The EPA should take advice from all Traditional Owners in this area as well as GKB as the Prescribed Body Corporate.</p>

	<p>Waangaamaap Bilya (the Serpentine River) and its tributaries are a Mythological site of Aboriginal Heritage which have been degraded over time with respect to barriers to river flow (dams), changes to vegetation, and water quality. Extensive mining in the catchment of this river will continue to degrade the physical parameters of the river and its Country, impacting the Aboriginal Cultural Heritage values. Imposing a buffer of several hundred metres to one kilometre around tributaries is likely inadequate to protect Noongar values.</p>	
<b>12. Offsets</b>	<p>It should be noted at the outset that the WA offsets policy acknowledges that “some environmental values are not readily replaceable” and offsets are not appropriate for all projects” (DWER 2019). It is PHCC’s view that offsets are not appropriate in this case due to the environmental unacceptability of the Proposal and difficulty in replacing environmental values.</p> <p>PHCC has the following overarching comments on the offsets proposed.</p> <p>Western Australian and Australian policy maintain that offsets will only be considered once avoidance and mitigation measures have been exhausted. Offsets are the least preferred option under the mitigation hierarchy, however rather than demonstrating adequate avoidance and mitigation, these proposals rely heavily on an offsets package. The WA Offsets Policy (2011) expects "positive environmental outcomes" to be delivered while the associated guidelines (2014) state that " Proponents/applicants should demonstrate how a proposed offset counterbalances the significant</p>	<p>The EPA should take a precautionary approach to offsets by prescribing the governance arrangements so that Alcoa is not the decision-maker. With appropriate governance and funding, an independent entity delivering offsets in the Northern Jarrah Forest is preferable to enable genuine and transparent stakeholder involvement.</p> <p>The contribution proposed by Alcoa at a rate of \$3,500 per hectare cleared will not result in enough funding for proper biodiversity conservation management actions across the scale of offsets that are required for these proposals. The EPA should review the costs associated with biodiversity conservation in the Northern Jarrah Forest to determine an independent benchmark for the rate per hectare. From PHCC’s experience delivering on-ground conservation projects, this rate is not enough to fund basic feral animal control and is not enough to fund installation of even one permanent drinking water point for black cockatoos. The EPA should seek advice from</p>

	<p>residual impact of its project and how it will deliver long term environmental benefits".</p> <p>International best practice in biodiversity offsetting is similarly founded on net environmental benefit, not residual adverse impact and net loss.</p> <p>The offset strategy provides a minimal enhancement and protection of habitat for conservation significant fauna species. There are many flaws with the proposed strategy.</p> <p>The offset areas are within Alcoa's tenement so there is a lack of certainty or permanence that these offsets will be secure from the threat of future mining.</p> <p>The offset areas are within State Forest, which should be managed for conservation so there is a lack of additionality. Alcoa is proposing to fund DBCA to conduct biodiversity conservation work which should be permanently and well funded by the State and Australian governments to achieve the objectives of international agreements on biodiversity conservation. It is inappropriate to allow Alcoa to buy out government to offset the significant residual impacts of their proposals.</p> <p>The governance framework for the offset strategy is deeply flawed, placing Alcoa in a position where it has complete control over its offset actions. Alcoa's corporate record with respect to environment is poor, and this is further demonstrated by Alcoa's poor record in safety, Aboriginal engagement, stakeholder engagement and government relations.</p>	<p>organisations with experience in delivering on-ground conservation works and offsets projects to determine an appropriate rate at which offsets should be funded.</p>
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<p><b>13. Holistic impact assessment</b></p>	<p>The overall scale of impact from the proposals represents unacceptable loss and destruction to EPA factors including flora and vegetation, terrestrial environmental quality, terrestrial fauna, inland waters, and social surroundings.</p> <p>It is not possible to simply add up the individual impacts to these factors and then subtract the promised rehabilitation and offsets and determine that the holistic impact is acceptable.</p> <p>Each of these impacts has been understated through the ERDs, the proposed avoidance has been overestimated, the rehabilitation has been assumed to be effective even though it has not been shown to be effective, and the significant residual impact has been ticked off by promised offsets.</p> <p>In reality, clearing and mining in the jarrah forest will remove the old, stable, complex, biodiverse, functioning ecosystem and replace a cheap facsimile of it. The landscape will not have the same contours, the water will not move through the landscape, and biogeochemical processes including soil nutrient and carbon cycles will not re-establish. The flora and vegetation will take hundreds of years to return to a mature, self-sustaining and resilient forest that provides habitat for the fauna. The surface and groundwater will be depleted and probably never return to their current extent, let alone the pre-mining extent.</p> <p>It is in this context that holistic impact assessment should be undertaken. Clearing such a large expanse of native vegetation, AND</p>	<p>The EPA should find that the environmental impact from the proposals is far greater than the impact to each individual factor and represents unacceptable impacts when considered at a holistic level. The level and scale of interference with the jarrah forest ecosystem result in significant impacts that cannot be avoided, mitigated, rehabilitated or offset.</p>
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	<p>killing or moving on all the fauna, AND mining the substrate, AND using all the water, AND emitting all the greenhouse gases and pollutants, AND excluding people from their environment has a far greater combined synergistic negative effect on the environment than any one of these actions.</p> <p>The holistic impact assessment in the ERDs concludes that there is likely to be significant environmental effects to the jarrah forest ecosystem and potentially significant environmental effects to social surroundings (recreational, tourism, and Aboriginal cultural values). It also dismisses those impacts in the context of other impacts to the Northern Jarrah Forest, which is unacceptable, and there are no additional mitigation or offsets are proposed. The holistic impact assessment in the ERD also fails to consider the length of time that ecological impacts will continue for, estimating that impacts will continue for 20-30 years until rehabilitation establishes and develops. The rehabilitation peer review clearly shows that 25 year old rehabilitation does not achieve generous completion criteria let alone approximate a pre-mining forest.</p>	
<b>14. Cumulative environmental impact assessment</b>	<p>The jarrah forest has suffered under enormous cumulative pressure from a variety of sources including mining, native forest logging, agriculture, urban development, water supply, dieback, prescribed burning and climate change. It is also highly susceptible to the predicted future impacts of climate change, and further land clearing increases its vulnerability<sup>3</sup>. The primary cause of deforestation in Western Australia's southwest forests is currently bauxite mining.</p>	<p>The cumulative impact assessment should find that the greatest cumulative threat to the EPA's factors is clearing for mining, noting that the other forms of clearing are no longer acceptable and that other major threats (climate change) remain.</p>

<sup>3</sup> <https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-11/>



	<p>The appropriate baseline for assessment of cumulative impacts is the pre-mining environment before any bauxite mining occurred.</p> <p>The ERDs do not include areas subject to exploration for future bauxite mining in the cumulative impact assessment. The area within Alcoa's tenement and subject to 'low impact' exploration activity is 178,340 ha and it is unrealistic to discount this area from cumulative impact assessment.</p> <p>The proponent downplays and dismisses impacts from mining in the total cumulative impact referring to the widespread impacts from clearing for agriculture and forest timber harvesting. Neither of these activities continue in the Northern Jarrah Forest, with the State Government's announcement of the end of native logging clearly prioritising climate change and biodiversity protection, reducing deforestation and forest degradation. The impacts from clearing for mining are the same as those from clearing for agriculture or for timber harvesting.</p>	<p>Given the significant knowledge gaps, multiple past, present and foreseeable activities impacting the Northern Jarrah Forest, and biased nature of proponent self-assessment, it is more appropriate for cumulative impact assessment to be considered more closely through strategic assessment rather than on a piecemeal project by project basis.</p>
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