



Environmental
Protection
Authority

Optimised Mardie Project – Revised Proposal

Mardie Minerals Pty Ltd (ACN)

Report 1795

November 2025

This assessment report has been prepared by the Environmental Protection Authority (EPA) under s. 44 of the *Environmental Protection Act 1986* (WA). It describes the outcomes of the EPA's assessment of the Optimised Mardie Project – Revised Proposal by Mardie Minerals Pty Ltd.

This assessment report is for the Western Australian Minister for Environment and sets out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented and, if it recommends that implementation be allowed, the conditions and procedures, if any, to which implementation should be subject
- other information, advice and recommendations as the EPA thinks fit.



Darren Walsh

Chair

Environmental Protection Authority

10 November 2025

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Summary

Proposal

The Optimised Mardie Project – Revised Proposal (the proposal) is a significant amendment to the approved Optimised Mardie Project (approved project) which is authorised under Ministerial Statement (MS) 1211. The proponent for the proposal is Mardie Minerals Pty Ltd.

Mardie Minerals Pty Ltd has approval to develop a greenfield, high-quality salt and Sulphate of Potash (SoP) project and associated export facility at Mardie, approximately 80 km south-west of Karratha, in the Pilbara region of WA.

The original Mardie Project was referred to the Environmental Protection Authority (EPA) in April 2018. The proposal was approved subject to conditions in Ministerial Statement 1175 on 24 November 2021. Ministerial Statement 1175 authorised a high-quality salt and SoP project and associated export facility. Production rates under the Mardie Project include four million tonnes per annum (Mtpa) of salt, 100 kilotonnes per annum (ktpa) of SoP, and up to 300 ktpa of other salt products, sourced from a 150 gigalitre per annum (GL/a) seawater intake.

The Optimised Mardie Project expanded the original Mardie Project via a significant amendment, referred to the EPA in January 2022. The Optimised Mardie Project expanded concentrator and crystalliser ponds, increased the terrestrial development envelope by 3,978 hectares (ha), increased the disturbance within the terrestrial development envelope by 2,334 ha, increased project throughput, increased the dredge footprint by 10 ha and altered the methodology within the dredge channel development envelope, and increased the dredge channel development envelope by 3.5 ha. The proposal was approved subject to conditions in Ministerial Statement 1211 on 19 October 2023, replacing Ministerial Statement 1175.

The proposal incorporates the following proposed changes to the approved project:

- Undertake offshore disposal of dredge spoil from approved capital and maintenance dredging activities within a new defined dredge material placement area (DMPA4).
- Reduce capital dredge volume from within the defined dredge channel, from 800,000 cubic metres (m³) currently authorised, to 355,000 m³ (including 10% over dredge).
- Expand the terrestrial development envelope to allow upgrades to the existing abandoned airstrip, which is intended to be used strictly for emergency purposes only.
- Undertake groundwater abstraction.

Assessment of key environmental factors

The EPA has assessed the key environmental factors listed below for consistency with the EPA environmental factor objectives. The EPA assessed the residual impacts of the proposal on the environmental values and considered whether the environmental outcomes are likely to be consistent with the EPA environmental factor objectives (below).

As the proposal is a significant amendment to an existing proposal the EPA's assessment has been undertaken in the context of the existing approved proposal, having regard to the combined and cumulative effects on the environment. The EPA has also considered whether to inquire into the implementation conditions for the existing proposal.

Environmental factor: Marine environmental quality	
Residual impact on key value	Assessment finding/ environmental outcome (summary)
Temporary reduction in marine environmental quality (MEQ) from increased turbidity and suspended sediments associated with disposal of dredge spoil. Reduction in MEQ due to seabed disturbance which may mobilise contaminants. Risk of spillages of dredge spoil or hydrocarbons from vessels travelling between the dredge channel and DMPA4.	The proposed disposal of dredge spoil will result in a temporary increase in turbidity, suspended sediments, and reduced water clarity within the vicinity of DMPA4. Sediment plume modelling predicts that the proposal will indirectly impact a 355 ha zone of high impact (ZoHI) and a 720 ha zone of moderate impact (ZoMI). These plumes will be temporary and water quality is expected to return to pre-disposal (baseline levels) in a relatively short timeframe once dredge disposal ceases. The EPA recommends an outcome-based condition to ensure there are no impacts on the environmental values of MEQ. Investigations suggest low contamination risk from dredge spoil, and similar sediments in the dredge channel disturbance footprint and DMPA4. The proponent will manage impacts to MEQ from spoil disposal through implementation of a Dredge and Spoil Disposal Management Plan (DSDMP), which includes a marine water quality monitoring program. The EPA recommends limits on the extent of direct and indirect impacts associated with the dredge spoil disposal (B1-1) to protect benthic communities and habitats. Subject to these recommended conditions, the environmental outcome is likely to be consistent with the EPA's objective for this factor.

Environmental factor: Benthic communities and habitats	
Residual impact on key value	Assessment finding/ environmental outcome (summary)
Permanent loss of up to 385.3 ha of benthic communities and habitats (BCH) comprising sparse to moderate filter feeders from smothering and sedimentation, associated with dredge spoil disposal. Recoverable impacts to up to 720 ha of BCH comprising sparse to moderate filter feeders from dredge spoil disposal. Introduction of invasive marine species from vessel movement.	The proposal will result in a loss of up to 385.3 ha (30.3 ha DMPA4 and 355 ha ZoHI) of subtidal BCH. The combined effect of the approved proposal and the significant amendment is the loss of up to 506 ha of subtidal BCH within the Local Assessment Unit (LAU) 7. The EPA notes that the modelled impacts to BCH associated with spoil disposal at DMPA4 represent a worst-case impact and considers that the approximately 5% increase in disturbed subtidal BCH in LAU 7 associated with the proposal is unlikely to present a significant impact on a regional scale. Impacts to BCH associated with spoil disposal will be managed through implementation of the DSDMP, which includes a benthic habitat monitoring program. Limits on potential impacts to BCH are recommended, to ensure the proposal does not impact BCH outside authorised zones (recommended condition B1-1). While investigations have not identified any introduced marine pests to date, the EPA considers it appropriate to apply an outcome-based condition ensuring the proposal does not introduce marine pests in state waters (B2-1), as well as require the proponent implement a Marine Pest Management Procedure (B2-2). Subject to the recommended conditions (B1-1, B1-2 and B1-3) the environmental outcome for BCH is likely to be consistent with the EPA's objective for this factor.

Environmental factor: Marine fauna	
Residual impact on key value	Assessment finding/ environmental outcome (summary)
Alteration of marine fauna behaviour from artificial light and underwater noise from dredge vessel movements and dredge spoil disposal activities. Potential injury or death of marine fauna due to vessel movement (strike) from dredge vessel movement. Loss of marine fauna habitat as a result of dredge spoil disposal.	The proposed vessel route from dredge channel to DMPA4 will pass offshore islands with known turtle nesting beaches, however no dredging activities will occur during the key ecological windows for turtle nesting, hatching and post-hatching (recommended condition B5-8). The proponent will manage risk to marine turtles through implementation of the Mardie Project Illumination Plan and marine turtle monitoring program. The EPA recommends condition B5-3 to ensure this is implemented. The EPA has also applied a condition to ensure no change in marine turtle orientation because of artificial light emissions, and no prevention or deterrence of significant marine fauna undertaking critical behaviours in biologically important areas (BIA) (B5-1). DMPA4 and the transport route overlaps with the migration pathway and BIA of humpback whales. The key ecological window for humpback whales in the area (migration; including southward migration with calves; June to November) overlaps with the scheduled dredging activities

Environmental factor: Marine fauna	
Residual impact on key value	Assessment finding/ environmental outcome (summary)
Introduction of invasive marine species from vessel movement.	(April to September inclusive). Risks to marine fauna from spoil disposal and transport will be managed through implementation of the DSDMP (recommended condition B5-4), which includes mitigation measures to minimise risks from vessel strike and underwater noise. The EPA considers it appropriate to apply an outcome-based condition to ensure no disturbance to humpback whales during their migration (recommended condition B5-1). Recommended condition B5-2 requires the proponent to minimise risks from vessel strikes, minimise impacts from underwater noise, and applies speed limits on all project vessels including disposal vessels transiting to DMPA4. Condition B5-7 requires implementation of marine fauna observation and exclusion zones associated with all dredge and spoil disposal activities. The EPA considers these recommended conditions are appropriate to ensure achievement of its marine fauna environmental objective.

Holistic assessment

The EPA considered the connections and interactions between relevant environmental factors and values to inform a holistic view of impacts to the whole environment. The EPA formed the view that the holistic impacts would not alter the EPA's conclusions about consistency with the EPA factor objectives.

Conclusion and recommendations

The EPA has taken the following into account in its assessment of the proposal:

- environmental values which may be significantly affected by the proposal
- assessment of key environmental factors, separately and holistically (this has included considering cumulative impacts of the proposal where relevant)
- likely environmental outcomes which can be achieved with the imposition of conditions
- consistency of environmental outcomes with the EPA's objectives for the key environmental factors
- the EPA's confidence in the proponent's proposed mitigation measures
- whether other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment
- principles of the *Environmental Protection Act 1986* (EP Act).

The EPA has recommended that the proposal may be implemented subject to conditions recommended in Appendix A.

1 Proposal

The Optimised Mardie Project – Revised Proposal (the proposal) is a significant amendment to the approved Optimised Mardie Project (approved project) which is authorised under Ministerial Statement 1211. The proposal is located 80 kilometres (km) southwest of Karratha, in the Pilbara region of Western Australia (Figure 1).

The proponent for the proposal is Mardie Minerals Pty Ltd.

The proposal incorporates the following proposed changes to the Optimised Mardie Project:

- undertake offshore disposal of dredge spoil from approved capital and maintenance dredging activities within a new defined dredge material placement area (DMPA4)
- reduction in capital dredge volume from within the defined dredge channel, from 800,000 to 355,000 cubic metres (m³) (including 10% over dredge)
- expand the terrestrial development envelope to allow upgrades to the existing abandoned airstrip
- undertake groundwater abstraction.

The proponent referred the proposal to the EPA on 30 April 2025. The referral information was published on the EPA website for seven days public comment. On 3 June 2025, the EPA decided to assess the proposal at the level 'Referral Information'.

The proposal is set out in section 1 of the proponent's referral supporting report (Preston Consulting 2025), which is available on the EPA website.

The EPA has assessed the residual impacts of the significant amendment by considering the changes which are now proposed in the context of the approved proposal. The EPA has also considered the combined impacts of the approved proposal and the significant amendment, and cumulative impacts with other proposals in the region. The EPA has not reassessed the approved proposal.

The proponent has referred the proposal under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is being assessed separately (EPBC 2024/10054) by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

The elements of the proposal which have been subject to the EPA's assessment are included in Table 1.

Table 1 Proposal content elements (based on information supplied by the Mardie Minerals)

Proposal element	Location	Approved extent	Significant amendment	Combined proposal
<i>Physical elements</i>				
Terrestrial development envelope	Figure 1	Up to 19,645 ha. Clearing of no more than 3,014 ha vegetation in 'good' to 'excellent' condition native vegetation.	Up to 19,763 ha. No change to clearing of 'good' to 'excellent' condition native vegetation.	Up to 19,763 ha. Clearing of no more than 3,014 ha vegetation in 'good' to 'excellent' condition native vegetation.
Concentrator ponds and crystalliser ponds	Figure 1	Combined area of up to 11,368 ha.	No change	Combined area of up to 11,368 ha.
Horseflat PEC		Disturbance of up to 145 ha from direct and 20 ha indirect impacts to Horseflat PEC within the development envelope.	No change	Disturbance of up to 145 ha from direct and 20 ha indirect impacts to Horseflat PEC within the development envelope.
Landward samphire		Disturbance of up to 863 ha within the development envelope.	No change	Disturbance of up to 863 ha within the development envelope.
Coastal Samphire		Disturbance of up to 330 ha within the development envelope.	No change	Disturbance of up to 330 ha within the development envelope.
Algal mat		Disturbance of no more than 880 ha within development envelope.	No change	Disturbance of no more than 880 ha within development envelope.
Direct disturbance to mangrove habitat outside of Robe River Delta Mangrove Management Area (RRDMMA)		No more than 13 ha within the development envelope.	No change	No more than 13 ha within the development envelope.

Proposal element	Location	Approved extent	Significant amendment	Combined proposal
Direct disturbance to mangrove habitat inside the RRDMMA		No more than 4 ha of clearing within the RRDMMA, subject to the requirements of condition B3-4.	No disturbance within the RRDMMA.	No disturbance within the RRDMMA.
Marine development envelope	Figure 1	Up to 53 ha	No change	Up to 53 ha
Dredge development envelope	Figure 1	Up to 307.5 ha	No change	Up to 307.5 ha
Dredging	Figure 1	Up to 800,000 m ³ directly disturbing no more than 65 ha within the 307.5 ha dredge development envelope. Disturbance of 10 ha subtidal BCH.	A decrease in dredge volume. No change to dredge development envelope.	Up to 355,000 m ³ , directly disturbing no more than 65 ha within the 307.5 ha dredge development envelope. Disturbance of 10 ha subtidal BCH.
Offshore capital dredge spoil disposal at dredge material placement area (DMPA4)	Figure 2		Up to 355,000 m ³ , directly disturbing no more than 30.3 ha at DMPA4.	Up to 355,000 m ³ , directly disturbing no more than 30.3 ha at DMPA4.
Foraging habitat for the pilbara leaf-nosed bat (<i>Rhinonicteris aurantia</i>)		Clearing no more than 3,254 ha	No change	Clearing no more than 3,254 ha
Foraging habitat for the northern coastal free-tailed bat (<i>Ozimops cobourgiensis</i>)		Clearing no more than 1,186 ha.	No change	Clearing no more than 1,186 ha.
Habitat for the Pilbara olive python (<i>Liasis olivaceus barroni</i>)		Clearing no more than 6 ha	No change	Clearing no more than 6 ha.

Proposal element	Location	Approved extent	Significant amendment	Combined proposal
Foraging habitat for the northern quoll (<i>Dasyurus hallucatus</i>)		Clearing no more than 80 ha	No change	Clearing no more than 80 ha
Zone of High Impact (marine)		Up to 121 ha within the dredge development envelopment.	Additional 355 ha at the offshore dredge spoil disposal area.	Up to 121 ha at the dredge development envelope. Up to 355 ha at the offshore dredge spoil disposal area.
Level of ecological protection areas (marine environmental quality)		Moderate ecological protection area (MEPA) not to exceed 53.9 ha. Low ecological protection area (LEPA) not to exceed 20.2 ha	No change	Moderate ecological protection area (MEPA) not to exceed 53.9 ha. Low ecological protection area (LEPA) not to exceed 20.2 ha
Distance between crystallisers and Mardie pool		Minimum distance of 1000 metres to be maintained between crystalliser ponds and Mardie pool.	No change	Minimum distance of 1000 metres to be maintained between crystalliser ponds and Mardie pool.
Drainage corridors		Minimum of two drainage corridors of a minimum of 200 metres wide to be established and aligned with existing natural drainage lines	No change	Minimum of two drainage corridors of a minimum of 200 metres wide to be established and aligned with existing natural drainage lines
Operational elements				
Discharge of bitterns, including desalinisation plant bitterns		No greater than 5.5 GL/a with a specific gravity no more than 1.25 via diffuser into the designated LEPA	No change	No greater than 5.5 GL/a with a specific gravity no more than 1.25 via diffuser into the designated LEPA

Proposal element	Location	Approved extent	Significant amendment	Combined proposal
Groundwater abstraction			Groundwater abstraction not to exceed 0.7 GL/yr.	Groundwater abstraction not to exceed 0.7 GL/yr
Airstrip	Figure 1		Utilised in emergencies only	Utilised in emergencies only
Seawater intake		Up to 0.15 m/s through intake pipes fitted with four-side screens.	No change	Up to 0.15 m/s through intake pipes fitted with four-side screens.
Maintenance dredging			Within dredge development envelope	Within dredge development envelope
Offshore maintenance dredge disposal	Figure 2		Within DMPA4	Within DMPA4
<i>Proposal elements with greenhouse gas emissions</i>				
<i>Construction elements</i>				
Scope 1		57,847 tCO ₂ -e per year	No change	57,847 tCO ₂ -e per year
Scope 2		None	No change	None
Scope 3		Unlikely to be significant	No change	Unlikely to be significant
<i>Operational elements</i>				
Scope 1		64,798 tCO ₂ -e per year	Additional 1,830 tCO ₂ -e per year associated with maintenance dredge spoil disposal.	66,628 tCO ₂ -e per year
Scope 2			No change	None

Proposal element	Location	Approved extent	Significant amendment	Combined proposal
Scope 3			No change	Unlikely to be significant
<i>Timing elements</i>				
Mine life		Up to 63 years from issue of 1175	Up to 61 years from issue of this statement	Up to 61 years from issue of this statement

Units and abbreviations

GL/yr – gigalitres per annum

ha – hectare

tCO₂-e – tonnes carbon dioxide equivalentm³ - cubic metres

Proposal alternatives

Dredge spoil disposal

MS 1211 authorises onshore dredge spoil disposal. However, through implementing the approved project, the proponent identified that the onshore option was likely to be technically challenging due to the shallow inshore water depths and the associated pumping distance from dredge channel to the disposal site (with slurry being pumped approximately 5 km) (Preston Consulting 2025). The proponent also considered that there was additional risk of spillage and significant water requirements related to this method.

The proponent therefore evaluated alternatives for an offshore disposal approach with various disposal sites investigated. Some options were ruled out based on their distance from the proposal, or proximity to Stewart, Fortescue, Scholl and Mardie Islands and the sensitive benthic habitats which would likely be impacted by sediment plumes from dredge spoil disposal.

The proponent chose DMPA4 as the preferred disposal location as compared to the other options, it is closer to the approved proposal to limit vessel movement, it is further from Scholl Island and areas with sensitive marine fauna, and preliminary investigations indicated the BCH within DMPA4 has limited regional or conservation value compared to other habitats in the broader Mardie / Pilbara region.

Expansion to the TDE

The 'no development' option was originally considered for the airstrip, however, the proponent considered it necessary to provide safe access for emergency services. The airstrip is existing infrastructure, and the proposed upgrades are intended to enable its use by Royal Flying Doctor Service for emergency purposes only.

Groundwater abstraction

Sourcing water from external sources and an onsite desalination plant was originally considered and has been implemented, however, the small volume requirements and availability of brackish and saline water onsite meant that groundwater abstraction has become a viable additional water supply option.

Proposal context

The approved project was originally referred in April 2018 as the Mardie Project, which was assessed by the EPA under Part IV of the EP Act at the level of Public Environmental Review (EPA Assessment No. 2167). Implementation of the Mardie Project was approved on 24 November 2021 via Ministerial Statement MS 1175.

The proponent subsequently referred the Optimised Mardie Project to the EPA as a significant amendment to the Mardie Project, to expand the approved Mardie Project. The EPA assessed the proposal at the level of Public Environmental Review (EPA Assessment No. 2336). Implementation of the Optimised Mardie Project (approved project) was approved via MS 1211 on 19 October 2023, which superseded MS 1175.

Approved proposal implementation

The proponent advised that construction commenced in 2022.

Annual compliance assessment reports have been submitted since commencement of the proposal as required by MS 1175 and MS 1211.

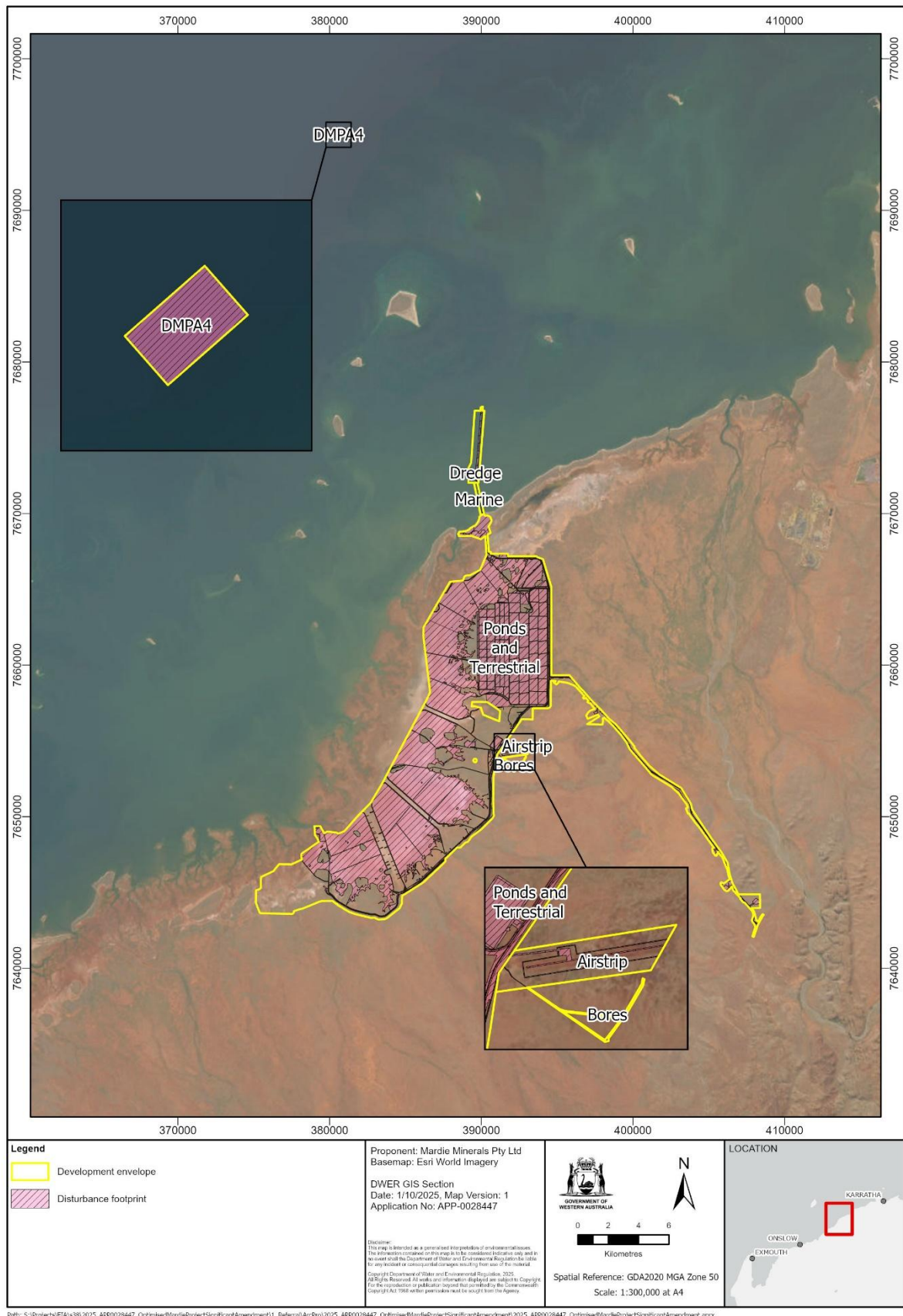


Figure 1: Project location and development envelope

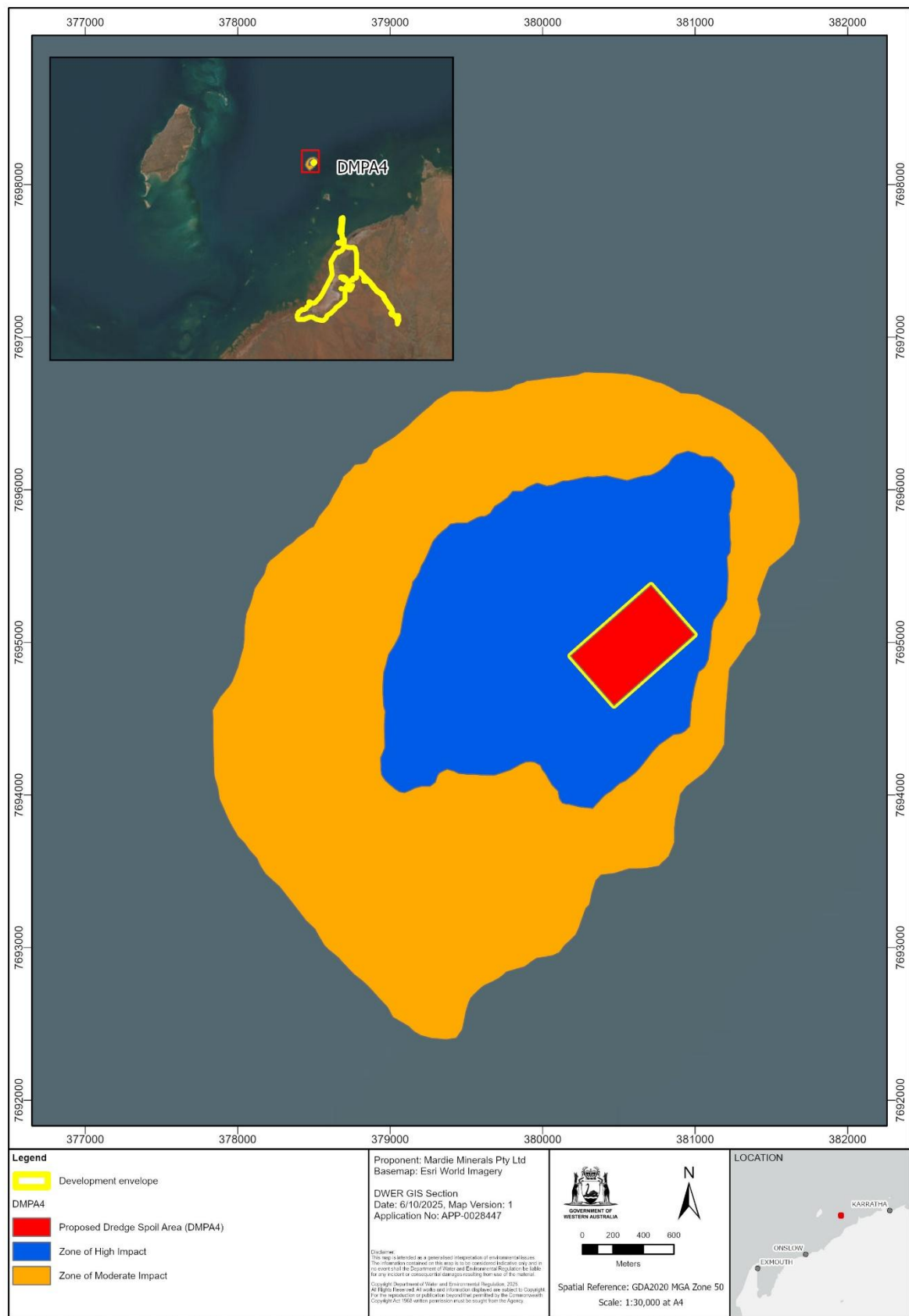


Figure 2: DMPA4 with associated zones of High and Moderate impact

2 Assessment of key environmental factors

This section includes the EPA's assessment of the key environmental factors. The EPA also evaluated the impacts on other relevant environmental factors, namely flora and vegetation, terrestrial fauna, inland waters, greenhouse gas, and social surroundings, and concluded they were not key factors for the assessment. This evaluation is included in Appendix E.

The EPA has assessed the proposal in the context of the approved project as authorised in Ministerial Statement 1211, while having regard to the combined and cumulative effect that the implementation of the proposal may have on the following environmental factors.

2.1 Marine environmental quality

2.1.1 Environmental objective

The EPA environmental objective for marine environmental quality (MEQ) is *to maintain the quality of water, sediment and biota so that environmental values are protected* (EPA 2016b).

2.1.2 Assessment context – previous assessment and authorised extents

EPA Report 1704 identified the following potential impacts and risks to MEQ from the original Mardie project:

- sedimentation and increased turbidity associated with dredging up to 800,000 m³ of sediment within the dredge development envelope.

EPA Report 1740 did not identify any additional potential impacts or risks to MEQ from the Optimised Mardie project.

The proposal involves a change in dredge spoil disposal that may result in additional predicted impacts to MEQ through offshore disposal at a proposed location DMPA4.

2.1.3 Investigations and surveys

The EPA advises the following investigations were used to inform the assessment of the potential impacts to MEQ:

- Preston Consulting 2025, *Optimised Mardie Project Section 40AA Referral Supporting Document, Offshore Dredge Spoil Disposal/ Airstrip / Groundwater Abstraction*, Prepared for Mardie Minerals. 29 April 2025
- O2 Marine 2025, *Dredge and Spoil Disposal Management Plan. Prepared for BCI Minerals Ltd.* Revision 4, July 2025

- Baird 2024a, *Mardie Dredge Plume Modelling DMPA4 – Model Results Summary*. 20 September 2024
- Baird 2024b, *Mardie Dredge Plume Modelling DMPA1 – Model Results Summary*. 5 August 2024

The EPA notes that the information presented in relation to MEQ was mostly consistent with the *EPA's Technical guidance – Environmental Factor Guideline: Marine Environmental Quality* (EPA 2016e). While there is some uncertainty due to model calibration data being sourced inshore of DMPA4, the modelling applied conservative assumptions, including sensitive coral-based thresholds for more resilient filter feeders. The EPA considers the information sufficient to proceed with its assessment.

Table 2 Assessment of marine environmental quality

Key environmental values and context	
DMPA4 is located approximately 25 km offshore of the mainland (and the approved project) within the Pilbara coastal zone (Figure 1). Water depths at DMPA4 are approximately 20 m, and with depth variation less than 2 m across the approximately 30.3-ha area. Baseline water quality data collected and analysed for the approved project indicates that turbidity (as NTU) and Suspended Sediment Concentrations (SSC) are higher in nearshore waters compared to offshore waters (noting that this ‘offshore’ location was further inshore of DMPA4) (Preston Consulting 2025). Derived daily light integral (DLI) was lower at the inshore compared to the offshore location. Preston Consulting (2025) notes that waters within the vicinity of DMPA4 are broadly characterised as having naturally elevated turbidity and a reduced light climate, heavily influenced by weather events such as cyclone activity. Sediment sampling in the dredge channel and surrounding sediments was undertaken for the approved project (O2 Marine 2019). Generally, contaminants were below <i>Revised method for deriving Australian and New Zealand water quality guideline values for toxicants</i> (Warne et al. 2025) and <i>National Australian Guidelines for Dredging</i> (NAGD) ISQG-low screening levels, and the sediment was considered suitable for unconfined ocean disposal (Preston Consulting 2025). Site-specific environmental quality criteria (EQC) were developed for the approved project (O2 Marine 2019). Sediment at DMPA4 was below NAGD screening levels or comparable to concentrations previously recorded in Pilbara marine sediments (O2 Marine 2024). Sediment samples from DMPA4 and the dredge channel demonstrate similar sediment particle size distribution (PDS) (Preston Consulting 2025, O2 Marine 2024). In the Pilbara, marine levels of ecological protection (LEPs) are established in the <i>Pilbara Coastal Water Quality Consultation Outcomes</i> (DoE 2006). The offshore waters, encompassing DMPA4 and surrounds, have been assigned a ‘high’ level of ecological protection.	
Impacts from the proposal	Assessment finding, environmental outcome and recommended conditions
Potential impacts Temporary reduction in MEQ from increased turbidity and suspended sediments associated with disposal of dredge spoil.	Assessment finding and environmental outcomes The EPA has assessed the disposal of capital dredging spoil, estimated at 355,000 m³ (including 10% over dredge), and intermittent maintenance dredge spoil over the life of the project. This volume reflects a reduction from the previously approved 800,000 m³, following refinements to the dredging design. Offshore disposal is considered a temporary

• Temporary reduction in MEQ due to seabed disturbance which may mobilise contaminants. • Risk of spillages of dredge spoil or hydrocarbons from vessels travelling between the dredge channel and DMPA4. Avoidance and minimisation measures (including regulation by other DMAs) Implementing a Dredge and Spoil Disposal Management Plan (DSDMP) incorporating: • marine water quality monitoring • chemical/oil spill controls The EPA notes that a permit under the <i>EPBC (Sea Dumping) Act 1981</i> is required for sea dumping activities. The EPA understands that the proponent has submitted an application for a sea dumping permit, which is currently under assessment by DCCEEW. Consultation Submissions received during the 7-day public comment period raised concerns about the size of DMPA4 and potential	activity, with capital dredge spoil disposed of over several months and maintenance spoil disposed of less frequently and at lower volumes (Preston Consulting 2025). The key environmental values related to MEQ are water and sediment quality. Sediment plume modelling predicts a temporary increase in turbidity, elevated SSC, and reduced water clarity within the vicinity of DMPA4 (Baird 2024). These changes may temporarily affect environmental values and the ability to meet levels of ecological protection during dredge disposal. Given the temporary nature of disposal activities, and the predicted recovery of water quality parameters following completion, the EPA considers that environmental values associated with MEQ will not be compromised in the long term, and the proposal is expected to remain consistent with the levels of ecological protection. The EPA considers there is a level of uncertainty regarding the boundaries of the modelled plume as data used for model calibration was collected from a location inshore of DMPA4, however, it also acknowledges that the model is conservative as it used impact thresholds for coral rather than the more resilient filter feeders present, and therefore represents a ‘worst-case’ impact (see BCH section 2.2). <u>Water quality</u> Turbid plumes are expected in the DMPA4’s predicted ZoHI and ZoMI during disposal of capital and maintenance dredge spoil, resulting in reduction of light at the seafloor. Turbid plumes are likely to cause indirect impacts to BCH and may temporarily impact fish resources in the water column. The EPA notes that these plumes are temporary and localised and water quality is expected to return to pre-disposal (baseline levels) in a relatively short timeframe once dredge disposal ceases (Preston Consulting 2025). The EPA notes that the proponent will manage spoil disposal through implementation of the DSDMP. The proponent’s marine water quality monitoring program related to DMPA4 includes project specific water quality thresholds and trigger levels to protect BCH and marine fauna. The EPA has recommended condition B4-1 to ensure there is no impacts on the environmental values of MEQ, and the spoil disposal must not result in impacts to BCH outside predicted zones of impact (recommended condition B1-1). <u>Sediment quality</u>
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impacts to commercial fisheries from turbidity and sedimentation of the water column.	Dredging and spoil disposal can impact MEQ by altering the physical characteristics of adjacent sediments and mobilising contaminants. Based on both the contaminant sampling and particle size distribution results (O2 Marine 2024), sediment characteristics between the dredge channel and DMPA4 were found to be similar. Modelling indicates that sediment will settle in waters deeper than 16 metres and remain within the designated disposal area (Baird 2024). This outcome demonstrates that the disposal ground is physically stable and unlikely to result in ongoing turbidity impacts to MEQ. As such, no significant impacts to MEQ or BCH are anticipated as a result of disposal of dredge spoil at DMPA4. With the implementation of the monitoring program for both water quality and BCH, and subject to the implementation of recommended conditions B2 (marine pests) and B4 (MEQ), the EPA considers that the objective for MEQ can be met. Cumulative impact Impacts to MEQ from the proposal in the context of past, present, and reasonably foreseeable future activities, were considered by the EPA. The EPA has recommended limits on dredging volumes (A1) and outcome-based condition B1-1 to limit the impacts to BCH from sedimentation and turbidity associated with the proposal. Subject to implementation of the proponent's mitigation measures including implementation of a monitoring program as part of the DSDMP, and compliance with the EPA's recommended conditions, significant residual impacts from the proposal to MEQ are unlikely. Due to the short-term nature of the impacts, the EPA considers that the proposal will not contribute to existing or foreseeable threats or pressures in the region. Recommended conditions to ensure consistency of environmental outcome with EPA objective Condition A1 • Limits on extent of disturbance and volume to be dredged Condition B1 • No direct loss of BCH outside DMPA4, no irreversible loss outside the ZoHI and no detectable change outside of the ZoHI and ZoMI
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	• No adverse impact on the ecological function of subtidal BCH Condition B4 • No impacts on the environmental values of Ecosystem Health, Fishing and Aquaculture, Recreation and Aesthetics, Industrial Water Supply, Cultural and Spiritual Condition B5 • Implement the DSDMP
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2.2 Benthic communities and habitats

2.2.1 Environmental Objective

The EPA environmental objective for benthic communities and habitats (BCH) is *to protect benthic communities and habitats so that biological diversity and ecological integrity are maintained (EPA 2016a).*

2.2.2 Assessment context – previous assessment and authorised extents

EPA report 1740 identified the following potential impacts and risks to BCH from the approved project:

- discharge of waste product (bittern) from the evaporation ponds and desalination plant to the marine environment
- direct disturbance, sedimentation, smothering and increased turbidity associated with dredging up to 800,000 m³ of sediment
- introduction of marine pests
- risk of altering groundwater flows with indirect impacts to intertidal BCH
- risk of altering surface water flows and quality with indirect impacts to intertidal BCH
- loss of 121 ha of subtidal BCH.

While the proposal involves no changes to discharge of waste product, groundwater or surface water flows, it includes a change in dredge spoil disposal that will result in additional predicted impacts to BCH through offshore disposal at the proposed location DMPA4.

2.2.3 Investigations and surveys

The EPA advises the following investigations and surveys were used to inform the assessment of the potential impacts to benthic communities and habitats:

- Preston Consulting 2025, *Optimised Mardie Project Section 40AA Referral Supporting Document, Offshore Dredge Spoil Disposal/ Airstrip / Groundwater Abstraction*, Prepared for Mardie Minerals. 29 April 2025
- O2 Marine 2020a, *Mardie Project Benthic Communities & Habitat Cumulative Loss Assessment*
- O2 Marine Group 2024, *DMPA4 – Benthic communities and habitats report*. Prepared for BCI Minerals Ltd. Revision 0, 13 November 2024
- O2 Marine Group 2025, *Dredge and spoil disposal management plan*. Prepared for BCI Minerals Ltd. Revision 6, 17 July 2025 (DSDMP)

- Baird 2024, *Mardie Dredge Plume Modelling DMPA4 – Model Results Summary*. 20 September 2024

The EPA notes that the information presented in relation to BCH was largely consistent with the EPA's *Technical guidance – Protection of Benthic Communities and Habitats* (EPA 2016d). The EPA determined it could proceed with its assessment as sufficient information has been provided to inform the assessment.

Table 3: Assessment of benthic communities and habitats

Key environmental values and context

DMPA4 covers an approximately 30.3 ha area of sea floor, approximately 25 km offshore of the mainland (Figure 1). Water depths at the site are around 20 m, and bathymetric data indicates minimal depth variation of less than 2 m (ranging from -20.2 m to - 21.6 m) across DMPA4.

In accordance with the EPA *Technical guidance - Protection of the benthic communities and habitats* (EPA 2016d), the EPA considers that based on the local marine environment and the functional ecology of the marine ecosystem, the subtidal BCH of the proposal is consistent with local assessment unit 7 (LAU 7), as defined in the previous assessment. Subtidal LAU 7 contains three broad habitat classes, bare sand, filter feeder/macroalgae/seagrasses, and coral/macroalgae (EPA Report 1740).

Field surveys by O2 Marine in 2024 using a multibeam echosounder, a side scan sonar, towed video survey and sediment sampling confirmed existing bathymetry and BCH extent and distribution at DMPA4 and surrounds. DMPA4 and the predicted ZoHI and ZoMI, as modelled by Baird (2024), are characterised as relatively homogenous, unconsolidated sediment and sand-veneered low-profile reef. The habitat supports sparse to moderate cover sessile filter feeders (including soft corals, gorgonians, sponges, hydroids, and ascidians), alongside a mixture of macroalgae, isolated hard corals, and ephemeral seagrass (O2 Marine 2024). The benthos of DMPA4 and the predicted zones of impact are classified as 'sparse to moderate filter feeders' (O2 Marine 2025). Such sessile filter feeder assemblages are typical of sand-veneered and exposed pavements, which are prevalent on the inner Northwest Shelf and represent one of the most widespread benthic community types in the Pilbara region.

BCH of the Pilbara supports important life stages of fish and prawn species targeted by commercial fisheries. Spawning adult bluespotted emperor and prawns may be found in the waters of DMPA4 and surrounds, although DMPA4 does not represent preferred habitat for these species (see Marine fauna section 2.3). It is unlikely that the BCH at DMPA4 and predicted zones of impact represent regionally significant marine habitats compared to other areas in vicinity of Mardie and the wider Pilbara region, where BCH of greater diversity and density are recorded. They are also not representative of critical or unique habitat for significant marine fauna species (O2 Marine 2024)(see Marine fauna section 2.3).

Impacts from the proposal	Assessment finding, environmental outcome and recommended conditions
Potential impacts • Permanent loss of up to 385.3 ha of sparse to moderate filter feeders from disposal of dredge spoil • Recoverable impacts to up to 720 ha of sparse to moderate filter feeders from disposal of dredge spoil • Introduction of invasive marine pests (IMP) from vessel movement Avoidance and minimisation measures (including regulation by other DMAs) Implementing a DSDMP incorporating: • Pre- and post-dredge disposal bathymetric surveys • BCH and marine water quality monitoring • Chemical/oil spill controls • IMP control measures	Assessment finding and environmental outcomes The EPA has assessed the disposal of up to 355,000 m³ (including 10% over dredge) of capital dredge material and the disposal of maintenance dredge material, into a new offshore location. The EPA considers that the key environmental values associated with BCH for the proposal are subtidal filter feeders, and their associated values. <u>Dredge spoil disposal</u> The approved project involves capital and maintenance dredging with inshore disposal, with MS 1211 authorising disturbance of up to 121 ha of subtidal BCH. Modelling indicates direct loss of BCH within the 30.3 ha DMPA4 footprint due to smothering, and indirect impacts across an additional 355 ha from sedimentation (conservatively assumed as a complete loss in the ZoHI) (O2 Marine 2025). A recoverable impact within the ZoMI of up to 720 ha is also expected. The plume generated by disposal of sediments at DMPA4 will be temporary, confined to deep waters of greater than 16 m. The plume is predicted to extend from the DMPA4 in a northeast-southwest direction, which mimics the movement of the tidal flow (Baird 2024). The EPA notes that the zones of impact as modelled by the predicted ZoHI and ZoMI for DMPA4 are conservative, and likely larger than the actual impacts to BCH from disposal (O2 Marine 2025). In addition, the proponent's surveys (O2 Marine 2024) indicate that BCH across the ZoHI and ZoMI is relatively homogenous, resilient and widespread in the region (O2 Marine 2024). The EPA notes that impacts to BCH at DMPA4 will be managed through implementation of the DSDMP (O2 Marine 2025), which includes a benthic habitat monitoring program for the dredge channel and DMPA4. The EPA considers this to be important as it allows the proponent to detect any additional impacts and has recommended condition B5-4 to ensure implementation of the DSDMP. To limit the extent of impacts, limits are placed on capital dredge spoil volumes (A1). To ensure the cumulative loss of subtidal BCH does

The potential impacts of IMP through ballast water and/or biofouling are minimised through the requirements under the <i>Commonwealth Biosecurity Act 2015, Fish Resource Management Act 1994</i>, and in accordance with International Maritime Organisation requirements. The EPA also notes the proponent is required to apply for a sea dumping permit under <i>Environment Protection (Sea Dumping) Act 1981</i> to use DMPA4 as a spoil disposal area and this is currently under assessment by DCCEEW. Consultation Submissions received during the 7-day public comment period raised concerns regarding the capacity of DMPA4 to accommodate the proposed spoil volume, and potential impacts to fish resources, including species such as bluespotted emperor. The EPA has considered these matters in its assessment of MEQ and BCH.	not pose a risk to the ecological integrity and biological diversity of BCH, the EPA has recommended outcome-based condition B1-1, which will ensure there is no direct or irreversible loss of BCH outside the specified zones of impact. The disposal of dredge spoil at a new offshore location does not warrant additional offsets, as the affected benthic habitat, characterised by sparse to moderate filter feeders, is regionally extensive, well-represented, and of low conservation significance. The predicted residual impacts are not significant when considered in the context of BCH distribution in LAU 7 and remain consistent with the EPA's objective to maintain the ecological integrity and representativeness of benthic communities and habitats. <u>Indirect impacts to commercial fisheries</u> Stakeholder consultation raised concerns about the loss of habitat on species targeted by commercial fishing. Bluespotted emperor juveniles are unlikely to occur in the DMPA4 due to the depth. Adults may pass through the DMPA4 but it is not considered to hold any greater significance than other similar habitats within the wider area. The EPA recommends condition B1-2(2) requiring no adverse impact on the ecological processes or habitat that sustain the bluespotted emperor. Western king prawns and brown tiger prawns may spawn within the DMPA4 during their August to May spawning period; however the proponent will not dredge/dispose during October to March inclusive, largely avoiding this key ecological window. The EPA considers the risk of impact to the fish and prawn stocks to be low. The EPA also notes that the existing offset condition which will be maintained (condition B10 intertidal and subtidal research offsets), will improve the understanding of the link between BCH and fisheries and guide strategic management of ecological values of habitats in the region. <u>Introduced marine pests</u> The introduction of marine pests presents a risk to the health and ecological integrity of BCH. The proposal will utilise vessels to transport dredge spoil from the dredge channel to DMPA4, which has the potential to introduce and or transport marine pests. While BCH surveys by O2 Marine have not identified any introduced marine pests to date, the
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	EPA considers it appropriate to apply an outcome-based condition ensuring the proposal does not introduce marine pests in state waters (B2-1), and require the proponent implement a Marine Pest Management Procedure (B2-2). Cumulative impact The EPA considered the cumulative impact of the proposal in the context of total historical losses, and the total direct and indirect loss of the combined approved project and proposal. Disturbance of up to 121 ha subtidal BCH is authorised by MS 1211 and represents approximately 1.5% of LAU 7. The proposal will result in an additional loss of 385.3 ha (30.3 ha DMPA4 and 355 ha ZoHI) of subtidal BCH. Therefore, the total cumulative loss of subtidal BCH in LAU 7 is 506 ha. The EPA considers that the approximately 5% increase in disturbed subtidal BCH in LAU 7 associated with the proposal is unlikely to result in a significant residual impact on a regional scale, as the disturbance occurs in areas of lower ecological value and is not expected to compromise ecological integrity or key ecosystem processes. The EPA accepts that there are no historical losses of BCH, and no other proposals or developments proposed to occur within LAU 7. Therefore, subject to implementation of the proponent's mitigation measures and the EPA's recommended conditions, cumulative impacts from the proposal to BCH are unlikely. Recommended conditions to ensure consistency of environmental outcome with EPA objective Condition A1 • Limits on extent of proposal Condition B1 • No direct loss outside DMPA4, no irreversible loss outside ZoHI, and no detectable change outside ZoHI and ZoMI • No adverse impact on the ecological function of subtidal BCH • No adverse impact on bluespotted emperor fishery as a result of the proposal • No introduction or establishment of marine pests as a result of the proposal
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	Condition B2 • Implementation of the marine pest management procedure Condition B5 • Implement the DSDMP
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2.3 Marine fauna

2.3.1 Environmental objective

The EPA environmental objective for marine fauna is *to protect marine fauna so that biological diversity and ecological integrity are maintained* (EPA 2016c).

2.3.2 Assessment context – previous assessment and authorised extents

EPA Report 1740 identified the following residual impacts or risks to marine fauna from the approved project:

- direct and indirect impacts to marine fauna during construction from underwater noise (dredging and piling)
- potential impacts to nesting adult and hatchling orientation and sea finding success or adult nesting utilisation as a result of operational lighting
- indirect impacts of loss marine fauna from modification of tidal creek habitat
- risk of entrainment for marine fauna from seawater intake
- Vessel strike risk for marine fauna.

Activities proposed to be carried out in the proposal have the potential to cause greater impacts and changes to marine fauna in the proposal area than those described above.

2.3.3 Investigations and surveys

The EPA advises the following investigations were used to inform the assessment of the potential impacts to marine fauna:

- Preston Consulting 2025, *Optimised Mardie Project Section 40AA Referral Supporting Document, Offshore Dredge Spoil Disposal/ Airstrip / Groundwater Abstraction*, Prepared for Mardie Minerals. 29 April 2025
- O2 Marine 2020b, *Mardie Project: Marine Fauna Review*, Prepared for BCI Minerals Ltd
- O2 Marine 2025, *Dredge and Dredge Spoil Management Plan*, Rev6, 17 July 2025 Prepared for BCI Minerals Ltd (DSDMP)

The EPA notes that the information presented in relation to marine fauna was largely consistent with the EPA's *Environmental Factor Guideline: Marine Fauna* (EPA 2016c). While the proponent did not provide additional surveys to support the referral, the EPA considered that the existing data from the Mardie Project (as assessed in EPA Report 1704 and 1740) was sufficient to inform the assessment and evaluate the potential impacts to marine fauna. On this basis, the EPA determined it could proceed with its assessment using the information provided.

Table 4: Assessment of marine fauna

Key environmental values and context

The proposal is within the North Coast Bioregion and Pilbara coastal zone, which represents a range of habitat types, including intertidal mangroves, algal mats, mudflats, and subtidal bare sand, seagrass and isolated hard corals. DMPA4 is approximately 25 km from the mainland, 10.5 km northwest of Sholl Island (Figure 1 and Figure 2), in water depths of approximately 20 m.

The marine waters surrounding the proposal support a variety of fauna, including species protected under State and Commonwealth legislation. Several of these species are of particular interest for the proposal, as they have a high likelihood of occurrence within or around the DMPA4, including the transport route from the dredge channel to the DMPA4. These species are documented in the proponent's supporting information (Preston Consulting 2025) and DSDMP (O2 Marine 2025) and include the humpback whale (*Megaptera novaeangliae*) (Conservation Dependent), loggerhead turtle (*Caretta caretta*) (Endangered), flatback turtle (*Natator depressus*) (Vulnerable), green turtle (*Chelonia mydas*) (Vulnerable), hawksbill turtle (*Eretmochelys imbricata*) (Vulnerable).

Cetaceans

The proposal coincides with biologically important areas (BIA) for the humpback whale (O2 Marine 2025). The approved dredge area (under MS1211) occurs within a shallow embayment and while the dredge footprint does not represent critical habitat for any whale species, DMPA4 overlaps with the humpback whale migration pathway (O2 Marine 2025). Humpback whales have been observed milling and resting within 35 km of the coast, and as close as 5 km to the approved project. Mother-calf pairs are closest to the Mardie coastline during their southern migration from late June to November (O2 Marine 2025).

Previous surveys have also recorded dugongs, Australian humpback dolphins, and Indo-pacific bottlenose dolphins in proximity to DMPA4 (O2 Marine 2025). While DMPA4 does not represent critical habitat for any of these species, they may transit through DMPA4 and the transport route to forage in nearby waters with suitable habitats. No ecological window has been identified for these species, and therefore they may be present any time of year (O2 Marine 2025).

Marine Reptiles

The island chain from Mangrove Islands to Cape Preston that runs offshore from the approved project is recognised as a BIA for green, hawksbill and flatback turtles (Pendoley Environmental 2019). Recent surveys have observed turtle nesting activity on Sholl and Long islands (Pendoley Environmental 2023), and it is likely that green, hawksbill, and flatback turtles, including hatchlings, will use the waters in and around DMPA4 and the transport route for foraging, nesting / inter-nesting (O2 Marine

2025). The key ecological window for nesting and hatchlings is October to March, however green turtles can nest and emerge at any time of year (EPA 2010).

Elasmobranchs

Giant manta rays and short-nosed and leaf-scaled sea snakes may also be present in the area year round (O2 Marine 2025).

Commercial fisheries

The proposal area supports habitat for fish species that are important for commercial fisheries, such as adult bluespotted emperor, western king prawns and brown tiger prawns which may pass through the DMPA4 disturbance footprint (O2 Marine 2025).

Impacts from the proposal	Assessment finding, environmental outcome and recommended conditions
Potential impacts • Potential injury or death of marine fauna due to vessel movement (strike). • Alteration of marine fauna behaviour from artificial light and underwater noise from dredge vessel movement and dredge spoil disposal activities. • Loss of marine fauna habitat as a result of dredge spoil disposal (see also BCH). • Introduction of invasive marine species (IMP) from vessel movement.	Assessment finding and environmental outcomes The EPA has assessed the transport and disposal of dredge spoil at DMPA4. The EPA considers that the key environmental values for marine fauna likely to be impacted by the proposal are humpback whales and marine turtles related vessel movement and spoil disposal. <u>Artificial light</u> Baseline artificial light assessments have found that the overhead skies at the approved project and proposal are typically very dark and representative of pristine, natural dark skies unaffected by artificial light. The only light source visible from all mainland and offshore light monitoring sites is Sino Iron, located approximately 30 km away on the easterly horizon (O2 Marine 2025). Marine turtles can be impacted by artificial light via disruption of hatchling emergence (which usually occurs at night) and orientation. Turtles are known to nest on nearby Sholl Island, and the proposed vessel route from dredge channel to DMPA4 will pass at a distance of approximately 4 km (Figure 2). The EPA notes that the proponent proposes mitigation and management measures to avoid and reduce potential artificial light impacts. Consistent with the <i>National Light Pollution Guidelines for Wildlife</i> (DCCEW 2023), no

Avoidance and minimisation measures (including regulation by other DMAs) Implementing a DSDMP incorporating: • Avoid the key ecological window for turtle nesting, hatching and post-hatching during 1 October and 31 March. • Deploy dedicated Marine Fauna Observers on vessels and implement observation and exclusion zones. • Implement soft starts and stop-work procedures, and reduce run-time of vessel engines, thrusters dredging. • Limit speed of vessels • Implement noise management protocols and procedures • Avoid unnecessary light sources • Marine turtle monitoring • Operate vessels in accordance with <i>EPBC Regulations 2000 - Part 8, Division 8.1 (Interacting with Cetaceans)</i> during transit.	dredging activities will occur during the turtle nesting, hatching and post-hatching window (October-March), and the proponent has committed to avoiding any nighttime light sources that are not required for safe operations. <i>The National Light Pollution Guidelines for Wildlife</i> recommends maintaining a darkness zone (a zone where artificial lighting is not visible to nesting or hatchling turtles) within at least 1.5 km of significant nesting beaches (DCCEW 2023). Marine turtles are more influenced by permanent cues and continuous sources of light than lights that may go on and off (Mrosovsky 1978). On this basis, given DMPA4 and the transport route are more than 1.5 km away from nesting beaches, and the light source from dredge spoil disposal vessels would represent a transient and temporary source of artificial lighting, it is not expected that light from the proposal would result in a significant environmental impact to marine turtles. The EPA notes that impacts to marine turtles from artificial light will be managed through implementation of the Mardie Project Illumination Plan and marine turtle monitoring program. To ensure the proposal does not result in light impacts to marine turtles and other marine fauna, the EPA has applied a condition to ensure the plan is implemented, and an outcome-based condition to ensure there is no change in marine turtle orientation as a result of artificial light emissions from the proposal (B5-1). The EPA considers that with application of industry standard light mitigation and management procedures, combined with recommended outcome-based conditions, the EPA's objective for marine fauna can be met. <u>Vessel strike</u> DMPA4 and the transport route for disposal vessels overlaps with the migration pathway of humpback whales. Of particular concern is the potential for resting and milling mother-calf pairs on their southern migration. The EPA notes that the key ecological window for humpback whales in the BIA overlaps with the scheduled dredging activities. Humpback whales are most prone to collisions with vessels of whales, and calves and juveniles are especially vulnerable (Victoria L. G. Todd 2015).
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The EPA also notes vessel collision risk during operation of the proposal will be managed through adherence to safe navigation practices and any applicable vessel requirements, as designated by the Department of Transport. Consultation Submissions received during the 7-day public comment period raised concerns regarding the impact on commercial fisheries, including the cumulative impacts of development in the region. The issues raised about potential impacts to marine fauna, including species targeted by commercial fisheries, have been considered in the assessment of marine fauna and benthic habitats and communities.	The EPA also notes that dugongs, marine turtles, dolphins and manta rays also have the potential to occur in the area, however the DMPA4 does not provide preferred or critical habitat for these species, and the habitat present is widespread in the region. The EPA acknowledges the proponent has developed and will implement the DSDMP (O2 Marine 2025). The proponent has proposed mitigation and management measures to reduce potential impacts to marine fauna if they are in the vicinity of dredging, dredge spoil transport or disposal, including observation and exclusion zones around dredging and disposal activities. Vessel speed is known to affect the incidence and severity of a collision with a whale, marine turtle or dugong (DoEE 2017), and therefore speed limits are an important mitigation measure. In this regard, the EPA notes that the proponent has committed to vessel speed limits of 8 knots within 5 km of the export jetty and 12 knots beyond port boundaries. Based on the additional risk from the proposal, the EPA considers that the 8 knot speed limit should also apply to vessels transiting to DMPA4 (B5-5). The EPA also notes that the proponent intends to operate dredging activities 24 hours a day. The effectiveness of the dedicated Marine Fauna Observer (MFO) identifying marine fauna at night is uncertain, particularly given the necessity to avoid unnecessary light impacts. However, additional speed limits have been applied to reduce the occurrence and severity of strikes. In assessing the impacts to marine fauna, the EPA has had regard for the temporary and local nature of spoil disposal activities including transport, and that while marine fauna may traverse the proposal area, the proponent will implement a range of measures to reduce the risk of vessel strike or disturbance if they are present. The EPA also considered it appropriate to apply outcome-based conditions, including no disturbance to humpback whales during their migration of this BIA (recommended condition B5-1), and requiring the proponent to minimise risks from vessel strikes (B5-2) to ensure its environmental objectives are met.
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	<u>Underwater noise</u> Underwater noise emissions have the potential to impact marine fauna through changes in their behaviours and habitat use. The EPA considers that vessel movements and disposal of spoil associated with the proposal may result in additional underwater noise impacts to marine fauna compared to the approved project. EPA Report 1740 identified that dredging activities (dredging and piling) will generate underwater noise which may impact hearing or behaviour of marine fauna. While the EPA considered there was a level of uncertainty in predicting impacts, it recognised that the duration of impacts from dredging activities is relatively short, and the impacts could be managed with the application of industry standard mitigation. The proponent has not provided underwater noise modelling that relate to vessel movement and disposal activities in relation to DMPA4. Disposal activities are expected to be short in duration, using a split hopper barge or similar, so that the associated noise and disturbance impacts are likely to be lower compared to the approved dredging activities (O2 Marine 2025). The EPA notes that the proponent will limit speed of vessel movement, minimise use of vessel engines, thrusters and dredging vessel use, and will comply with marine noise management zones in <i>EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales</i> (DEWHA 2008). The EPA recognises the ecological significance of this area for humpback whales and has recommended outcome-based conditions to ensure no disruption of humpback whales migrating through the BIA (B5-1), minimisation of impacts of underwater noise (B5-2), and implementation marine fauna observation and exclusion zones (B5-7). The EPA considers these recommended conditions are appropriate to ensure achievement of its marine fauna environmental objective. <u>Loss of habitat</u>
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	The EPA notes that increased turbidity may temporarily reduce the feeding efficiency for some marine fauna, and sedimentation will result in the loss of filter feeding habitat from smothering. Up to 385.3 ha of potential habitat will be lost as a result of the proposal. Outside of the ZoHI, the turbidity effects are expected to be localised, of limited duration and minor. While the EPA notes that marine turtles and dugongs may forage in the waters surrounding DMPA4 and along the transport route, the BCH field surveys show the predominant BCH present at the DMPA4 is sparse to moderate filter feeders, which are widespread in the region and not preferred foraging habitat for dugongs or marine turtles (O2 Marine 2025). Therefore, both the permanent and temporary loss of habitat associated with the proposal is unlikely to have a significant impact on these species. Cumulative impacts The EPA has considered the successive, incremental and interactive impacts to marine fauna from the proposal in the context of past, present and reasonably foreseeable future activities. While the EPA notes that the proposal involves activities within BIAs for significant marine fauna species, the surrounding area is subject to limited development. The EPA also notes that the spoil disposal activities are temporary in nature and will avoid the key ecological windows of some significant marine fauna species (i.e. marine turtles). Additional controls will be implemented to reduce the impacts to humpback whales. Nighttime vessel movement associated with the proposal will increase the cumulative impact of artificial light emissions in combination with the Sino Iron light emissions. However, the EPA notes that this activity will not be undertaken during key ecological windows of key sensitive receptors (marine turtle nesting). Monitoring of turtle behaviour will identify if adaptive management is required. The EPA notes the recent marine heatwave that has impacted the Pilbara, Kimberley and northern Gascoyne coasts, with sea surface temperatures 4 to 5 degrees above the long-term average for the North Coast bioregion. Marine heatwave events put additional pressures on marine fauna in conjunction with development pressures and further contribute to the decline in suitable habitat. The EPA considers that, with appropriate conditions, the residual impacts of the proposal in addition to the approved project will not
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	significantly cumulatively impact marine fauna; and as such, with the proposed conditions, the EPA objective for marine fauna can be met. Recommended conditions to ensure consistency of environmental outcome with EPA objective Condition A1 • Limitations on the extent Condition B1 • No adverse impact on bluespotted emperor fishery Condition B2 • No introduction or establishment of marine pests • Implement the marine pest management procedure Condition B5 • No mortality, injury, disturbance or displacement of humpback whales • No change in marine turtle orientation as a result of artificial light emissions • Significant marine fauna not prevented/deterred from undertaking critical behaviours in biologically important areas • Minimise vessel strike on significant marine fauna • Minimise the risk of underwater noise • Implement the Mardie Illumination Plan and marine turtle monitoring program • Implement the DSDMP • Speed limit of 8 knots on all project related vessels • Implement a significant marine fauna observation zone and undertake observations for significant marine fauna prior to the commencement of dredging and/or offshore spoil disposal • Implement significant marine fauna exclusion zones • No dredging or spoil disposal to occur during the period October–March (inclusive)
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3 Holistic assessment

While the EPA assessed the impacts of the proposal against the key environmental factors and environmental values individually in the key factor assessments above, given the link between MEQ, BCH and marine fauna, the EPA also considered connections and interactions between them to inform a holistic view of impacts to the whole environment.

Marine Fauna – Marine Environmental Quality –Benthic Communities and Habitat

There is a high level of connectivity between MEQ, BCH and marine fauna. The maintenance of MEQ supports healthy BCH. BCH is sensitive to changes in MEQ, particularly turbidity, nutrient enrichment, and sedimentation. Marine fauna rely on healthy BCH for habitat and resources and may also be affected by turbidity in the water column and other impacts to MEQ values. The EPA's assessment found that the proposed disposal of dredge spoil into DMPA4 will result in short-term turbidity and sedimentation, which may have indirect impacts to BCH and marine fauna. The proposal will also directly and indirectly impact BCH which may affect habitats for marine fauna.

Through the proponent's application of appropriate avoidance and minimisation measures and the recommended conditions, it is expected that potential impacts to these factors individually will not be significant, and objectives can be met. The EPA also considers that the controls related to BCH and MEQ will mean the inter-related impacts to the health of marine fauna will ensure that the proposal can be consistent with the EPA objective for each factor.

Summary of holistic assessment

When the separate environmental factors and values affected by the proposal were considered together in a holistic assessment, the EPA formed the view that the impacts from the proposal would not alter the EPA's views about consistency with the EPA's factor objectives as assessed in section 2.

The EPA recommends that a ten yearly environmental performance report should be required from the proponent, given the interconnected environmental values in the area likely to be affected by the proposal, and the total 63- year life of the proposal. This environmental performance reporting will provide the proponent and the Minister with renewed and current information about the performance of the proposal with respect to environmental values over the life of the project.

4 Offsets

Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual impacts of a proposal. Consistent with the WA Environmental Offsets Guidelines (Government of Western Australia 2014), the EPA may consider the application of environmental offsets to a proposal where it determines that the residual impacts of a proposal are significant, after avoidance, minimisation and rehabilitation have been pursued.

Based on the assessment of the proposal, the EPA considers that the proposed amendments will not result in a significant residual impact and therefore additional environmental offsets are not considered necessary.

The EPA notes that in its previous assessment of the approved project (EPA Report 1740), significant residual impacts that were identified were associated with the Optimised Mardie Project related to flora and vegetation values, significant fauna habitat values, and intertidal and marine values. The EPA applied the residual impact significance model (Government of Western Australia 2014) and considered the approved project would result in a significant residual impact to terrestrial values as follows:

- ‘Good’; to ‘Excellent’ condition native vegetation
- supporting habitat (foraging and dispersal) habitat for the Pilbara leaf-nosed bat
- supporting habitat (foraging and dispersal) habitat for the northern quoll
- supporting habitat (foraging and dispersal) habitat for the grey falcon
- supporting habitat (foraging and dispersal) habitat for the northern coastal free tailed bat.

To counterbalance the above, Ministerial Statement 1211 includes condition B9 ‘Offsets under the PEOF’ imposed on the proponent to provide an offset in the form of a contribution to the Pilbara Environmental Offsets Fund (PEOF).

The EPA also considered the approved project would result in a significant residual impact to the following marine and intertidal values:

- algal mat
- mangrove habitat
- intertidal coastal samphire habitat.

To counterbalance this impact, Ministerial Statement 1211 includes condition B10 ‘Intertidal and Subtidal Research Offsets’ requiring the proponent provide an offset in the form of a contribution to the WAMSI-led Mardie Marine Intertidal Research Study. The Mardie Offset Marine and Intertidal Research Program has significantly improved the regional environmental baseline by mapping the extent and condition of intertidal habitats and confirming their ecological importance for species such as green sawfish and migratory shorebirds. It has identified the vulnerability of

mangrove and microbial mat systems to climate change and highlighted the ecological connectivity across intertidal zones. The integration of Traditional Owner knowledge has provided valuable insights into long-term environmental change (WAMSI, 2025). These findings contribute to improved understanding of ecosystem processes, inform offset planning, and support more robust environmental assessments.

These conditions remain relevant to the approved aspects of the proposal and therefore the EPA has recommended the existing offset conditions be retained in an amended ministerial statement.

5 Recommendations

The EPA has taken the following into account in its assessment of the proposal:

- environmental values which may be significantly affected by the proposal
- assessment of key environmental factors, separately and holistically (this has included considering cumulative impacts of the proposal where relevant)
- likely environmental outcomes which can be achieved with the imposition of conditions
- consistency of environmental outcomes with the EPA's objectives for the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- whether other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment
- principles of the EP Act.

The EPA recommends that the proposal may be implemented subject to the conditions recommended in Appendix A.

Appendix A: Recommended conditions

Section 44(2)(b) of *Environmental Protection Act 1986* specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This appendix contains the EPA's recommended conditions and procedures.

Recommended Environmental Conditions

STATEMENT THAT A SIGNIFICANT AMENDMENT TO AN APPROVED PROPOSAL MAY BE IMPLEMENTED (*Environmental Protection Act 1986*)

OPTIMISED MARDIE PROJECT – REVISED PROPOSAL

Proposal:	The Proposal is to develop a solar salt and sulphate of potash production plant and associated export facility at Mardie, approximately 80 km south-west of Karratha. The proposal includes two seawater intakes, brine discharge, evaporation and crystalliser ponds, processing plant, causeway, trestle jetty with associated dredge channel, offshore disposal of dredge material, and supporting infrastructure.
Proponent:	Mardie Minerals Pty Ltd Australian Company Number 152 574 457
Proponent address:	Level 2, 1 Altona Street West Perth WA 6005
Assessment number:	2500

Report of the Environmental Protection Authority: 1795

Introduction: The proposal is a significant amendment to the existing 'Optimised Mardie Project' approved proposal which was agreed to be implemented under Ministerial Statement 1211.

Pursuant to section 45 of the *Environmental Protection Act 1986*, it is now agreed that:

1. the significant amendment proposal described and documented in the proponent's Proposal Content Document (September 2025), may be implemented;
2. Ministerial Statement 1211 for the existing 'Optimised Mardie Project' approved proposal is superseded under section 40AA(6)(b) of the *Environmental Protection Act 1986*; and
3. the implementation of the significantly amended proposal (being the existing

approved proposal as amended by the significant amendment proposal) is subject to the following implementation conditions and procedures.

Conditions and procedures

Part A: Proposal extent

Part B: Environmental outcomes, prescriptions, and objectives

Part C: Environmental management plans and monitoring

Part D: Compliance and other conditions

PART A: PROPOSAL EXTENT

A1 Limitations and extent of proposal

A1-1 The proponent must ensure that the proposal is implemented in such a manner that the following limitation or maximum extents / capacities / ranges are not exceeded:

Proposal element	Location	Maximum extent
Physical elements		
Development envelope	Figure 1 Figure 4	Terrestrial development envelope not to exceed 19,763 ha. Marine development envelope not to exceed 53 ha. Dredge development envelope not to exceed 307.5 ha. Combined area of concentrator ponds and crystalliser ponds not to exceed 11,368 ha.
Disturbance footprint	Figure 1	Terrestrial disturbance not to exceed 13,476 ha within 19,763 ha development envelope.
Direct disturbance of native vegetation	Figure 1	Clearing of no more than 3,014 ha vegetation in ‘good’ to ‘excellent’ condition native vegetation. Clearing of no more than 863 ha landward samphire. Clearing of no more than 330 ha of coastal samphire.
Impacts on PEC and Mangrove Habitat	Figure 2	No more than 145 ha direct disturbance and 20 ha indirect impacts to Horseflat PEC. No more than 13 ha of direct disturbance to mangrove habitat outside of the RRDMMA. No direct disturbance within the RRDMMA.

Proposal element	Location	Maximum extent
Direct disturbance to Algal mats	Figure 4	No more than 880 ha of direct impact to algal mats.
Capital Dredging	Figure 3	No more than 355,000 cubic metres, directly disturbing no more than 65 ha within the 307.5 ha dredge development envelope.
Offshore Dredge Spoil Disposal	Figure 6	Capital dredging of no more than 355,000 cubic metres, directly disturbing no more than 30.3 ha at Dredge Material Placement Area DMPA4 .
Foraging habitat for the Pilbara leaf-nosed bat (<i>Rhinonicteris aurantia</i>)	Figure 1	Clearing no more than 3,254 ha .
Foraging habitat for the Northern coastal free-tailed bat (<i>Ozimops cobourgianus</i>)	Figure 1	Clearing no more than 1,186 ha .
Habitat for the Pilbara Olive Python (<i>Liasis olivaceus barroni</i>)	Figure 1	Clearing no more than 6 ha .
Foraging habitat for the Northern Quoll (<i>Dasyurus hallucatus</i>)	Figure 1	Clearing no more than 80 ha .
Zone of High Impact (e.g. marine)	Figure 3 Figure 6	Marine zone of high impact to be no more than 121 ha at the dredge channel, and 355 ha at the offshore dredge spoil disposal DMPA4 .
Level of ecological protection areas (marine environmental quality)	Figure 4	Moderate ecological protection area (MEPA) not to exceed 53.9 ha . Low ecological protection area (LEPA) not to exceed 20.2 ha .
Distance between crystallisers and Mardie pool	Figure 1	Minimum distance of 1000 metres to be maintained between crystalliser ponds and Mardie pool.
Drainage corridors	Figure 1	Minimum of two drainage corridors of a minimum of 200 metres wide to be established and aligned with existing natural drainage lines.

Proposal element	Location	Maximum extent
Operational elements		
Groundwater abstraction	Figure 7	Groundwater abstraction not to exceed 0.7 GL per annum
Marine discharge rate	Figure 4	Brine discharge not to exceed 5.5 GL per annum with a specific gravity of no more than 1.25 via diffuser.
Seawater intake	-	Seawater intakes to be fitted with four-sided screens designed to ensure a rate not exceeding 0.15 metres per second through the screen. Primary seawater intake is to not exceed 180 GL per annum .
Airstrip	Figure 1	To be utilised for emergencies only.
Offshore maintenance dredge spoil disposal	Figure 6	Within DMPA4 only
Timing elements		
Mine life	-	Up to 61 years from issue of this statement.
Seawater intake	-	Abstract seawater from primary and secondary intake only when tides are at or above Mean Sea Level .

PART B – ENVIRONMENTAL OUTCOMES, PRESCRIPTIONS AND OBJECTIVES

B1 Benthic communities and habitats

B1-1 The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

- (1) no direct loss of benthic communities and habitats from **dredging activities** outside of the dredge **disturbance** footprint defined in Figure 3 and the boundary of **DMPA4** defined in Figure 6;
- (2) no **irreversible loss** of benthic communities and habitats outside of the authorised **Zone of High Impact** as spatially defined in Figure 3 and Figure 6;
- (3) no **detectable** decrease from the baseline state of benthic communities and habitats outside of the authorised **Zone of Moderate Impact** as spatially defined in Figure 3 and Figure 6;
- (4) no **detectable** decrease in the health, extent of coverage, or species diversity of intertidal benthic communities more than 100 m seaward of the pond walls as shown in Figure 2 and as described and recorded in the **BCHMMP**;
- (5) **adverse impacts** to intertidal benthic communities attributable to groundwater processes are confined to an area within 100 m of the pond wall defined in Figure 2 and as described and recorded in the **BCHMMP**; and
- (6) no long-term (greater than five (5) years) net detectable loss of algal mat outside of the proposal footprint.

B1-2 The proponent shall ensure the implementation of the proposal achieves the following environmental objectives:

- (1) no development that would have an **adverse impact** on the ecological function of the **RRDMMA** or the maintenance of ecological processes which sustain mangrove habitats within the **RRDMMA** (shown in figure 2);
- (2) no development that would have an **adverse impact** on the ecological processes or habitats that sustain the bluespotted emperor (*Lethrinus punctulatus*) fishery; and
- (3) changes to the health, diversity, and extent of benthic communities and habitat (including subtidal macroalgae) as a result of changes to surface water, groundwater quality, groundwater regimes, and marine

environmental quality associated with the proposal.

B1-3 The proponent must:

- (1) implement the **BCHMMP** environmental management plan, with the purpose of ensuring the benthic communities and habitat environmental outcomes in conditions B1-1 and B3-1 (1) to (3) and the environmental objectives in condition B1-2 are achieved, monitored and substantiated;
- (2) the **BCHMMP** environmental management plan, must include:
 - a) specific measures to monitor the health and biodiversity of benthic communities, in addition to monitoring of extent;
 - b) specific measures to monitor, whether there are **adverse impacts** on ecological process or habitats that sustain the bluespotted emperor (*Lethrinus punctulatus*) fishery and prawn fishery;
 - c) best practice management, mitigation and **contingency measures** and remediation actions, including commitments to amend and reduce operations to ensure environmental outcomes and objectives are achieved; and
 - d) the relationship between the **BCHMMP** environmental management plan and the **GMMP** environmental management plan and how these plans work together to ensure overlapping and holistic impacts are managed and monitored, to ensure the environmental outcomes and objectives relevant to both plans are achieved;
- (3) include an independent expert peer review of the **BCHMMP** environmental management plan within three years or once preliminary results from the Mardie Project Marine Intertidal Research Offset Program have been released, whichever occurs sooner, for the purpose of reviewing whether the plan remains fit for purpose for achieving, monitoring and substantiating outcomes specified in conditions B1-1 and B3-1 (1) to (3) and the environmental objectives in condition B1-2; and
- (4) update the **BCHMMP** to address all recommendations from the peer review.

B2 Marine pests

B2-1 The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

- (1) no introduction or establishment of **marine pests** in the State Waters as a result of the proposal.

B2-2 The proponent must implement the **Marine Pest Management Procedure** environmental management plan with the purpose of ensuring the benthic communities and habitats environmental outcomes in condition B1-1 and marine pest environmental outcomes in condition B2-1 are achieved, monitored and substantiated.

B3 Inland waters

B3-1 The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

- (1) no **adverse impact** to water levels or water quality in Mardie Pool as a result of changes to groundwater regimes or groundwater quality;
- (2) no **adverse impact** to water levels or water quality in Mardie Pool as a result of changes to surface water flows associated with the proposal;
- (3) no changes to the extent of surface water flooding during a one (1)-year **ARI** or changes to tidal inundation as a result of the construction of the intertidal causeway that are greater than predicted in *Causeway Tidal Inundation Assessment – technical memorandum* (Advisian 2022);
- (4) no changes to the health, extent or diversity of intertidal benthic communities and habitat, including mangrove, **coastal samphire** and algal mat as a result of changes to groundwater regimes or groundwater quality associated with the proposal;
- (5) decreased freshwater inundation attributable to the project to no more than 40.2 **ha** of **coastal samphire**;
- (6) decreased freshwater inundation attributable to the project to no more than 1.8 **ha** mangroves within the **RRDMMA**;
- (7) decreased freshwater inundation attributable to the project to no more than 4.8 **ha** mangroves outside of the **RRDMMA**, subject to the requirements of condition A1-1;
- (8) decreased freshwater inundation attributable to the project of no more than 195.2 **ha** algal mat; and
- (9) no changes to the health, extent or diversity of intertidal benthic communities and habitat, including mangrove, **coastal samphire** and algal mat as a result of erosion.

B3-2 The proponent must:

- (1) implement the **GMMP** environmental management plan, once updated and approved in accordance with condition B3-3, and subject to the

requirements of condition C1-1(2), with the purpose of ensuring the environmental outcomes in conditions B3-1 (1) and (4) and condition B1-2 are achieved, monitored, substantiated and satisfy the requirements of conditions C4 and condition C5; and

- (2) the **GMMP** environmental management plan must include:
 - (a) the relationship between the **GMMP** environmental management plan and the **BCHMMP** environmental management plan, and how these plans work together to ensure overlapping and holistic impacts are managed and monitored, to ensure the environmental outcomes and objectives relevant to both plans are achieved.

B3-3 The **GMMP** environmental management plan required by condition B3-2 is to be updated with project specific trigger values at the completion of baseline data collection.

B4 Marine environmental quality

B4-1 The proponent must ensure the implementation of the proposal achieves the following environment objective:

- (1) no **adverse** impacts on the **marine environmental values**.

B4-2 The proponent must ensure the implementation of the proposal achieves the following environmental outcome:

- (1) the levels of ecological protection to be achieved inside of the:
 - (a) **Low Ecological Protection Area** shown in Figure 4 and described in the spatial data in schedule 1;
 - (b) **Moderate Ecological Protection Area** shown in Figure 4 and described in the spatial data in schedule 1;
 - (c) **High Ecological Protection Area** described in the spatial data in schedule 1;
 - (d) Maximum Ecological Protection Area described in the spatial data in schedule 1; and

are consistent with the method for deriving **Environmental Quality Guidelines** and **Environmental Quality Standards** for the corresponding level of ecological protection described in Appendix 1, Table 1 of the **Marine Water Quality Technical Guidance**.

B4-3 The proponent must:

- (1) implement the **MEQMMP** environmental management plan, with the purpose of ensuring the Marine Environmental Quality and Benthic Communities and Habitat environmental objectives in conditions B4-1 and B1-2, and outcomes in B4-2 and B1-1 are achieved, monitored and substantiated and satisfies the requirements of conditions C4 and condition C5; and
- (2) if directed by the **CEO**, in consultation with **DWER**, revise the trigger and threshold values, EQG and EQS within the **MEQMMP** environmental management plan required under condition B4-3(1) to ensure they are defined in a manner consistent with the **Marine Water Quality Technical Guidance**.

B4-4 Within five (5) years of cessation of mining activities, the proponent must ensure that all infrastructure associated with the proposal, including the trestle jetty, bitterns diffuser, boat launching facilities and loading facilities, is decommissioned and removed from the development envelopes, in accordance with relevant legislation and in a manner that prevents environmental harm, unless:

- (1) the infrastructure is located on a mining tenement administered under the *Mining Act 1978*; and
- (2) the **CEO** has provided written approval for the infrastructure to remain in place following transfer of responsibility to another **authorised operator** or **responsible authority**.

B5 Marine fauna

B5-1 The proponent shall implement the proposal to achieve the following environmental outcomes:

- (1) no mortality, injury, **disturbance** or displacement of humpback whales (*Megaptera novaeangliae*) within the migration of the **biologically important area**;
- (2) no **adverse** change in marine turtle orientation (i.e. misorientation or disorientation) nesting beach utilisation, nesting success or hatchling survivorship as a result of artificial light emissions at both sandy beach habitat adjacent to the development and Long Island, Sholl Island and the Passage Islands (Angle, Middle and Round); and
- (3) **significant marine fauna** are not prevented/deterred from undertaking critical behaviours in **biologically important areas**.

B5-2 The proponent shall implement the proposal to achieve the following environmental objectives:

- (1) minimise the risk of physical injury or mortality from vessel strike on **significant marine fauna as low as reasonably practicable**; and
- (2) minimise the risk of behavioural changes, health impacts, physical injury or mortality from underwater noise emissions from construction or operations to **significant marine fauna** (including temporary or permanent hearing loss) **as low as reasonably practicable**.

B5-3 The proponent must in consultation with **DWER**:

- (1) implement a **Mardie Illumination Plan** environmental management plan that satisfy the requirements of condition C4 and demonstrates how achievement of the **significant marine fauna** outcomes in B5-1(2-3) will be monitored and substantiated, and submit it to the **CEO**; and
- (2) implement the **Marine Turtle Monitoring Program** environmental management plan that satisfy the requirements of condition C4 and demonstrates how achievement of the **significant marine fauna** outcomes in B5-1(2-3) will be monitored and substantiated, and submit it to the **CEO**.

B5-4 The proponent must implement the **DSDMP** environmental management plan with the purpose of ensuring that marine fauna, benthic communities and habitats and marine environmental quality environmental outcomes in conditions B5-1(1) and (3), B1-1 and objectives in conditions B4-1, B5-2, and B1-2 are achieved, monitored and substantiated.

B5-5 The proponent must impose a speed limit of eight (8) knots on all **project related vessels, and** export vessels within a five (5) kilometre radius of the export jetty.

B5-6 The proponent must undertake the following during pile driving activities:

- (1) soft start-up procedures for a period of at least thirty (30) minutes prior to the commencement of each pile driving event, including recommencement after suspension of piling activities;
- (2) pile driving activities to take place during daylight hours only;
- (3) implement a **significant marine fauna** observation zone consisting of at least a two (2) kilometre radius from the noise emitting source whereby a suitably qualified and experienced **marine fauna observer** must undertake continuous **significant marine fauna** observation for a minimum of thirty (30) minutes prior to the commencement of pile driving and at all times during pile driving activities;
- (4) implement an exclusion zone consisting of at least one (1) kilometre radius from the noise emitting source whereby:
 - (a) pile driving cannot commence should **significant marine fauna**

be within the exclusion zone; and

- (b) pile driving activities to cease should **significant marine fauna** enter the exclusion zone during pile driving are not to recommence until the animal(s) have moved outside the exclusion zone.
- (5) must engage suitably **qualified** and experienced **marine fauna observer** who has a demonstrated knowledge of **significant marine fauna** in the North-West region to undertake continuous observations in the observation zone and exclusion zone;
- (6) maintain a log of recorded sightings, locations and behaviours indicative of stress or **disturbance** of **significant marine fauna**, and submit these to the **National Marine Mammal Data Portal**; and
- (7) document and report to **the CEO, DCCEEW** and **DBCA** any incidents relating to **significant marine fauna** injury / mortality.

B5-7 During dredging and seabed levelling activities, the proponent shall:

- (1) implement measures to avoid vessel strikes with **significant marine fauna**;
- (2) implement measures to minimise direct entrainment impacts to **significant marine fauna**, including not operating dredge pumps during transit and dredge cutterhead lowered to surface before commencement of soft start procedure;
- (3) install overflow screen on dredgers to visually assess for turtles and/or turtle remains that may have been entrained during dredging after each load;
- (4) implement a **significant marine fauna** observation zone consisting of at least three (3) kilometre radius from the **dredging activity** whereby an observer must undertake **significant marine fauna** observation for a minimum of thirty (30) minutes prior to the commencement of dredging and at all times during **dredging activities**;
- (5) implement an exclusion zone consisting of at least 500 metre radius from the **dredging activity** whereby:
 - (a) dredging cannot commence should a **significant marine fauna** be within the exclusion zone; and
 - (b) **dredging activities** to cease should a **significant marine fauna** enter the exclusion zone during dredging and are not to recommence until the **significant marine fauna** have moved outside the exclusion zone;

- (6) engage a suitably qualified and experienced **marine fauna observer** who has a demonstrated knowledge of **significant marine fauna** in the North-West region to undertake observations in the observation zone and exclusion zone;
- (7) maintain a log of recorded sightings, locations and behaviours indicative of stress or **disturbance** of **significant marine fauna** and submit these to the **National Marine Mammal Data Portal**; and
- (8) document and report to relevant regulators:
 - (a) any incidents relating to **significant marine fauna** injury / mortality; and
 - (b) where turtles are a consideration the effectiveness of mitigation measures to prevent turtle injury and mortality.

B5-8 The proponent shall not conduct **dredging activities** during the period October–March (inclusive) or pile driving during the period September–January (inclusive), unless the **CEO** has confirmed otherwise by notice in writing.

B5-9 Clearing in the fauna habitat type identified as low-quality turtle nesting habitat (sandy beach habitat) in the Mardie Project – Environmental Review Document (June 2020) is limited to a width of fifty (50) metres, parallel to the high water mark.

B6 Terrestrial fauna

B6-1 The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

- (1) no **detectable** decrease in the abundance and diversity of migratory shorebirds utilising **coastal samphire** and mudflat habitats;
- (2) no **detectable** decrease in the nesting density of grey falcons (*Falco hypoleucos*);
- (3) maintain habitat connectivity, retention of a vegetation corridor between exclusion zone/s and similar habitat outside the impact area fifty (50) m exclusion zone around one (1) record of short range endemic fauna as shown in Figure 5;
- (4) no direct or indirect **disturbance** within the fifty (50) m short range endemic exclusion zone as shown in Figure 5; and
- (5) **disturbance** within the northern quoll (*Dasyurus hallucatus*) foraging habitat to only occur during daylight hours;

B6-2 The proponent must implement the proposal to meet the following environmental

objectives:

- (1) minimise the risk of physical injury or mortality from construction or operation on native fauna **as low as reasonably practicable**.
- B6-3 During construction and operation, vehicle and machinery speed limits shall not exceed:
- (1) forty (40) **km/hr** within the northern quoll (*Dasyurus hallucatus*) foraging habitat on Mardie Road from dusk to dawn and sixty (60) **km/hr** during daylight hours.
- B6-4 The proponent must, in consultation with **DWER, DCCEE** and a biostatistician who is nominated or approved by the **CEO**, prepare a Migratory Shorebird Monitoring and Management plan (environmental management plan) that satisfies the requirements of condition C4 and demonstrates how achievement of the terrestrial fauna environmental outcomes in condition B6-1(1) will be monitored and substantiated, and submit it to the **CEO**.
- B6-5 The proponent must implement the **Mardie Illumination Plan** with the purpose of ensuring that terrestrial fauna environmental outcomes in condition B6-1(1), B6-1(2) are achieved, monitored and substantiated and that condition B5-3(1) is met.
- B6-6 The proponent shall avoid clearing any areas designated as having moderate or high prospectivity for short range endemic invertebrates in the Mardie Project – Response to Submissions (March 2021), until the **CEO** has **confirmed** by notice in writing that:
- (1) the proponent has demonstrated avoidance and minimisation of impacts to any **confirmed** short range endemic habitat such that the outcome of condition B6-1(4) has been met including:
 - (a) avoidance of taking construction material from any mudflat islands **confirmed** to be habitat for short range endemic species.

B7 Flora and vegetation

- B7-1 The proponent must implement the proposal to meet the following environmental outcomes:
- (1) no more than 165 **ha** of cumulative impacts to the Horseflat **PEC** as a result of the proposal, including direct impacts of no more than 145 **ha**;
 - (2) no direct impacts or indirect impacts to any known locations of the sterile, potentially rare or novel *Tecticornia* Taxa, identified within Phoenix – Detailed Flora and Vegetation Survey for the Mardie Project (2020), unless the **CEO** has **confirmed** by notice in writing that further

investigations have demonstrated that the specimens represent adequately widespread species such that **disturbance** of the known specimens would not be inconsistent with EPA's objective for flora and vegetation;

- (3) no **disturbance** associated with the proposal to more than thirty (30) per cent of the currently mapped extent (256 ha) of the **landward samphire** vegetation described in Mardie Project – Response to Submissions (March 2021), until the **CEO** has **confirmed** by notice in writing that:
 - (a) the supplementary surveys have mapped additional vegetation consistent with the description of the **landward samphire** in Mardie Project – Response to Submissions (March 2021); and
 - (b) the additional *Tecticornia* vegetation mapped in the supplementary surveys is sufficiently widespread in the region that clearing of up to 863 ha of this vegetation would not be inconsistent with the EPA's objectives for Flora and Vegetation.

B7-2 The proponent must undertake weed control and management during the life of the proposal to prevent the introduction or spread of environmental weeds.

B8 Aboriginal cultural heritage

B8-1 The proponent must implement the proposal to meet the following environmental outcomes:

- (1) no disturbance of the **Aboriginal sites** or to **Aboriginal cultural heritage** in the proposal **disturbance footprint** other than where consent is granted for the use of the land under the *Aboriginal Heritage Act 1972*;
- (2) subject to reasonable health and safety requirements, no interruption of ongoing access to land utilised for traditional use or custom by the **Native title party/ies**; and,
- (3) no direct **disturbance** of the **Aboriginal cultural heritage** exclusion zones for Peters Creek as shown in Figure 5 and described in the spatial data in schedule 1; and

B8-2 The proponent must implement the proposal to meet the following environmental objectives:

- (1) avoid, and where unavoidable, minimise direct **disturbance** to **Aboriginal cultural heritage** within and surrounding the proposal development envelope;

B8-3 The proponent must undertake ongoing consultation and engagement with the **Native title party/ies** about achievement of the outcomes in condition B8-1 and

objectives in condition B8-2 for the life of the proposal.

B9 Pilbara Environmental Offset Fund

B9-1 The proponent must contribute funds to the **Pilbara Environmental Offsets Fund** calculated pursuant to condition B9-2, to achieve the objective of counterbalancing the significant residual impacts to:

- (1) **‘Good’ to ‘Excellent’ condition native vegetation;**
- (2) Priority 3 **PEC** - Horseflat Land System of the Roebourne Plains;
- (3) critical habitat for the Pilbara olive python (*Liasis olivaceus barroni*) riparian and freshwater pool habitat; and
- (4) supporting habitat for northern quoll (*Dasyurus hallucatus*), grey falcon (*Falco hypoleucos*), northern coastal freetail bat (*Ozimops cobourgianus*), Pilbara leaf-nosed bat (*Macroderma gigas*).

B9-2 The proponent’s contribution to the **Pilbara Environmental Offsets Fund** must be paid biennially, with the amount to be contributed calculated based on the clearing undertaken in each year of the biennial reporting period in accordance with the rates in condition B9-3. The first biennial reporting period must commence from **ground disturbing activities** of the environmental value(s) identified in condition B9-3.

B9-3 Calculated on the 2024–2025 financial year, the contribution rates are:

- (1) \$960 AUD (excluding GST) per hectare of **‘Good’ to ‘Excellent’ condition native vegetation** cleared as a result of the proposal within the Chichester IBRA subregion;
- (2) \$1,016 AUD (excluding GST) per hectare of **‘Good’ to ‘Excellent’ condition native vegetation** cleared as a result of the proposal within the Roebourne **IBRA** subregion;
- (3) \$2,031 AUD (excluding GST) per hectare of Priority 3 PEC - Horseflat Land System of the Roebourne Plains cleared or indirectly impacted for the proposal within the Roebourne **IBRA** subregion;
- (4) \$1780 (excluding GST) per hectare of the following values cleared as a result of the proposal:
 - (a) Pilbara olive python (*Liasis olivaceus barroni*) critical habitat
- (5) \$890 AUD per hectare of the following values cleared as a result of the proposal:

- (a) Pilbara leaf-nosed bat (*Macroderma gigas*) supporting habitat;
- (b) northern quoll (*Dasyurus hallucatus*) supporting habitat;
- (c) grey falcon (*Falco hypoleucos*) supporting habitat; and
- (d) northern coastal freetailed bat (*Ozimops cobourgianus*) supporting habitat.

B9-4 The rates in condition B9-3 change annually each subsequent financial year in accordance with the percentage change in the **CPI** applicable to that financial year.

B9-5 Where offsets are required for an area of land under condition B10 that is also subject to offsets under condition B9-3, the higher amount shall apply.

B9-6 To achieve the objective in condition B9-1, the proponent must implement the **Mardie Project Impact Reconciliation Procedure**. This procedure must:

- (1) spatially define the environmental value(s) identified in condition B9-1
- (2) spatially define the areas where offsets required by condition B9-1 are to be exempt;
- (3) include a methodology to calculate the amount of clearing undertaken during each year of the biennial reporting period for each of the **environmental values** identified in condition B9-3;
- (4) state that clearing calculation for the first biennial reporting period will commence from **ground disturbing activities** in accordance with condition B9-2 and end on the second 30 June following commencement of **ground disturbing activities**;
- (5) state that clearing calculations for each subsequent biennial reporting period will commence on 1 July of the required reporting period, unless otherwise agreed by the **CEO**;
- (6) indicate the timing and content of the Impact Reconciliation Reports; and
- (7) be prepared in accordance with Instructions on how to prepare *Environmental Protection Act 1986* Part IV Impact Reconciliation Procedures and Impact Reconciliation Reports (or any subsequent revisions).

B9-7 The proponent must submit an Impact Reconciliation Report in accordance with the **confirmed** Impact Reconciliation Procedure in condition B9-6.

B9-8 The Impact Reconciliation Report required pursuant to condition B9-7 must

provide the location and spatial extent of the clearing undertaken as a result of the proposal during each year of each biennial reporting period.

B9-9 The proponent may apply in writing and seek the written approval of the **CEO** to reduce all or part of the contribution payable under condition B9-3 where:

- (1) a payment has been made to satisfy a condition of an approval under the *Environment Protection and Biodiversity Conservation Act 1999* in relation to the proposal; and
- (2) the payment is made for the purpose of counterbalancing impacts of the proposal on matters of national environmental significance.

B9-10 The **CEO** may grant approval to discount the amount payable under condition B9-1 (2), condition B9-1(3) and condition B9-1 (4) if the **CEO** is satisfied that the payment will offset the significant residual impacts of the proposal.

B9-11 Condition C2 applies to the **confirmed** Impact Reconciliation Procedure required by condition B9-6 as if it were an environmental management plan.

B9-12 Failure to implement a **confirmed** Impact Reconciliation Procedure or submit an Impact Reconciliation Report as required by condition B9-7 represents a non-compliance with these conditions.

B10 Intertidal and Subtidal Research Offsets

B10-1 Given the significant residual impacts and risks of the proposal to mangroves, algal mat, and **coastal samphire**, and the potential for indirect impacts to subtidal habitats, the proponent shall undertake the following offset measures for the purpose of guiding the strategic protection and management of the ecological values of these habitats on the **west Pilbara coast**, which include migratory bird habitat and ecological maintenance of marine fauna habitat, consistent with the financial, governance and accountability arrangements described in schedule 2:

- (1) contribution to the Mardie Project Marine Intertidal Research Offset Program, on the basis described in schedule 2 (Project A) which has the purpose of mapping the original and current extent of **coastal samphire** and Algal mat on the **west Pilbara coast**;
- (2) contribution to a relevant scientific initiative, on the basis described in schedule 2 (Project B), which has the aim of identifying and quantifying the potential effects of sea level rise on the values of mangroves, **coastal samphire**, and Algal mat on the **west Pilbara coast**, and identifying the significance of salt projects in preventing the adaptation of intertidal benthic communities and habitat to sea-level rise;
- (3) contribution to a relevant scientific initiative, on the basis described in

schedule 2 (Project C(i)), for the purposes of funding research with the aim of identifying the ecological roles, values and functions of intertidal benthic communities and habitat;

- (4) maintenance of relevant scientific initiative, on the basis described in schedule 2 (Project C (ii)) for the purposes of funding research with the aim of identifying the ecological roles, values and functions of intertidal benthic communities and habitat, to be paid in the event that loss of intertidal benthic communities and habitat, or loss of health, percent cover or diversity of intertidal benthic communities and habitat is identified by the **BCHMMP** environmental management plan required by condition B1-3;
- (5) maintenance of a contingency fund, on the basis described in schedule 2 (Project D) for the purposes of funding research with the aim of identifying the potential impacts to bluespotted emperor (*Lethrinus punctulatus*), to be paid in the event that loss of intertidal and subtidal benthic communities and habitat, or loss of health, percent cover or diversity of intertidal and subtidal benthic habitat and communities is identified by the **BCHMMP** environmental management plan required by condition B1-3; and
- (6) contribution to a relevant scientific initiative, on the basis described in schedule 2 (Project C (iii)) for the purposes of funding research with the aim of identifying the ecological roles, values and functions of intertidal benthic habitat, to be paid in the event that **disturbance** to mangrove habitat in the **RRDMMA** occurs subject to the requirements of condition B1-2.

B10-2 The proponent shall ensure that the real funding for Projects A, B, C and D will be maintained through indexation to the Perth consumer price index (**CPI**) with the first indexation occurring on 30 June 2021.

B10-3 The proponent shall select a third party to carry out the work required to meet the outcomes of condition B10-1 to the satisfaction of the **CEO**, on advice of **DPIRD** and **DBCA**. In applying to the **CEO** for endorsement of the selected third parties, the proponent shall provide:

- (1) demonstration of the track record, experience, qualifications and competencies of the proposed third party to carry out the work and achieve the outcomes in the intertidal and marine environment.

B10-4 The proponent shall ensure that the financial arrangements described in schedule 2 and under condition B10-2 are maintained to achieve the outcomes of Projects A, B, C and D to the extent that:

- (1) funding between projects is transferred as agreed by the **CEO**;

- (2) additional funds up to a maximum of ten (10) per cent are contributed to complete project outcomes;
- (3) provide the objectives, timing (deliver outcomes within three (3) years of issue of Ministerial Statement or as otherwise agreed with the **CEO**), milestones and methodology of the proposed research and management programs to meet the outcomes in condition B10-1;
- (4) prior to the commencement of **ground disturbing activities**, unless otherwise agreed by the **CEO**, the proponent shall prepare and submit to the **CEO** a Summary Offset Plan, on advice of **DPIRD** and **DBCA**, that provides the design for the proposed research and management programs and completion criteria for each project to meet the outcomes of condition B10-1;
- (5) set out that the Summary Offset Plan will be made available publicly, within a reasonable time period in a manner agreed by the **CEO**; and
- (6) identify how outcomes of the proposed programs will be made available publicly.

PART C – ENVIRONMENTAL MANAGEMENT PLANS AND MONITORING

C1 Environmental Management Plans: Conditions Related to Commencement of Implementation of the Proposal

C1-1 The proponent must not undertake:

- (1) **dredging activities marine construction or operations** associated with the **Mardie Project** until the **CEO** has **confirmed** in writing that the environmental management plan required by condition B5-3 meet the requirements of that condition and condition C4;
- (2) **transfer of seawater, brine and/or waste product** associated with the **Mardie Project** until the **CEO** has **confirmed** in writing that the environmental management plan required by condition B3-2 has been updated in accordance with condition B3-3 and meets the requirements of condition C4;
- (3) **dredging activities, marine construction or operations** associated with the **Mardie Project** until the **CEO** has **confirmed** in writing that the environmental management plan required by condition B2-2 meets the requirements of that condition and condition C4; and,
- (4) **brine discharge** to the marine environment associated with the **Mardie Project** until the **CEO** has **confirmed** in writing that the baseline data collection outlined in the environmental management plan required by condition B4-3 has been completed.

C2 Environmental Management Plans: Conditions Relating to Approval, Implementation, Review and Publication

C2-1 Upon being required to implement an environmental management plan under Part B, or after receiving notice in writing from the **CEO** under condition C1-1 that the environmental management plan(s) required in Part B satisfies the relevant requirements, the proponent must:

- (1) implement the most recent version of the **confirmed** environmental management plan; and
- (2) continue to implement the **confirmed** environmental management plan referred to in condition C2-1(1) other than for any period which the **CEO confirms** by notice in writing that it has been demonstrated that the relevant requirements for the environmental management plan have been met, or are able to be met under another statutory decision-making process, in which case the implementation of the environmental management plan is no longer required for that period.

C2-2 The proponent:

- (1) may review and revise a **confirmed** environmental management plan provided it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan;
- (2) must review and revise a **confirmed** environmental management plan and ensure it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan, as and when directed by the **CEO**: and
- (3) must revise and submit to the **CEO** the **confirmed** environmental management plan if there is a material risk that the outcomes or objectives it is required to achieve will not be complied with, including but not limited to as a result of a change to the proposal.

C2-3 Despite condition C2-1, but subject to conditions C2-4 and C2-5, the proponent may implement minor revisions to an environmental management plan if the revisions will not result in new or increased **adverse impacts** to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.

C2-4 If the proponent is to implement minor revisions to an environmental management plan under condition C2-3, the proponent must provide the **CEO** with the following at least twenty (20) business days before it implements the revisions:

- (1) the revised environmental management plan clearly showing the minor revisions;
- (2) an explanation of and justification for the minor revisions; and
- (3) an explanation of why the minor revisions will not result in new or increased **adverse impacts** to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.

C2-5 The proponent must cease to implement any revisions which the **CEO** notifies the proponent (at any time) in writing may not be implemented.

C2-6 **Confirmed** environmental management plans, and any revised environmental management plans under condition C2-4(1), must be published on the proponent's website and provided to the **CEO** in electronic form suitable for on-line publication by the **DWER** within twenty (20) business days of being implemented, or being required to be implemented (whichever is earlier).

C3 Conditions Related to Monitoring

C3-1 The proponent must undertake monitoring capable of:

- (1) substantiating whether the proposal limitations and extents in Part A are exceeded; and
- (2) **detecting** and substantiating whether the environmental outcomes identified in Part B are achieved (excluding any environmental outcomes in Part B where an environmental management plan is expressly required to monitor achievement of that outcome).

C3-2 The proponent must submit as part of the Compliance Assessment Report required by condition D2, a compliance monitoring report that:

- (1) outlines the monitoring that was undertaken during the implementation of the proposal;
- (2) identifies why the monitoring was capable of substantiating whether the proposal limitation and extents in Part A are exceeded;
- (3) for any environmental outcomes to which condition C3-1(2) applies, identifies why the monitoring was scientifically robust and capable of **detecting** whether the environmental outcomes in Part B are met;
- (4) outlines the results of the monitoring;
- (5) reports whether the proposal limitations and extents in Part A were exceeded and (for any environmental outcomes to which condition C3-1 (2) applies) whether the environmental outcomes in Part B were achieved, based on analysis of the results of the monitoring; and reports any actions taken by the proponent to remediate any potential non-compliance.

C4 Environmental Management Plans: Conditions Relating to Monitoring and Adaptive Management for Outcomes Based Conditions

C4-1 The environmental management plans required under condition B1-3, condition B2-2, condition B3-2, condition B4-3, condition B5-3, condition B5-4 and condition B6-4 must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include:

- (1) **threshold criteria** that provide a limit beyond which the environmental outcomes are not achieved;
- (2) **trigger criteria** that will provide an early warning that the environmental outcomes are not likely to be met;
- (3) monitoring parameters, sites, control/reference sites, methodology, timing and frequencies which will be used to measure **threshold criteria**

and **trigger criteria**. Include methodology for determining alternative monitoring sites as a contingency if proposed sites are not suitable in the future;

- (4) baseline data;
- (5) data collection and analysis methodologies;
- (6) adaptive management methodology;
- (7) **contingency measures** which will be implemented if **threshold criteria** or **trigger criteria** are met; and
- (8) reporting requirements.

C4-2 The environmental management plan required under condition B5-3 is also required to:

- (1) be updated to include **management actions**, **management targets** and **contingency measures** that will establish whether the proposal is having a **detectable** difference on marine turtle orientation (i.e. misorientation or disorientation), and nesting beach utilisation as described in condition B5-1(2).
- (2) include a commitment to annually compare cumulative results against the baseline assessment (Pendoley Environmental 2019, Mardie Salt Project Marine Turtle Monitoring Program 2018/2019. Rev 0, Report No. RP-59001);
- (3) include a monitoring plan that is in accordance with the recommendations published in the National Light Pollution Guidelines (2020);
- (4) provide criteria for when the Mardie Illumination Plan will be revised in response to outcomes of the monitoring required by condition B5-3 and B6-5; and
- (5) continue to be implemented until the **CEO** has **confirmed** by notice in writing, on advice from **DBCA** and **DWER**, that the outcome of condition B5-1(1-3) has been, and will continue to be met.

C4-3 The environmental management plan required under condition B6-4 is also required to:

- (1) be conducted at the ponds and in proximity to the trestle jetty (impact areas) and in representative habitats in control areas, as per the requirements of the EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species;

- (2) continue for a minimum of five (5) years to capture construction and post construction phases of the project;
- (3) include a commitment and timing for the results of each completed survey to be submitted to the 'Shorebirds 2020' initiative, **DCCEEW** and **DBCA**;
- (4) include trigger and **threshold criteria** and **management actions** to be implemented if change in the richness and abundance of migratory shorebirds and other birds are identified; and
- (5) unless otherwise agreed by the **CEO**, the proponent shall not commence any construction of evaporation ponds, crystalliser ponds, intertidal causeway or trestle jetty until the **CEO** has **confirmed** by notice in writing that the Migratory Shorebird Monitoring Program (environmental management plan) meets the requirements of condition B6-4.

C4-4 The environmental management plan required under condition B3-2 is also required to:

- (1) when implemented, substantiate and ensure that the outcome of conditions B3 -1 (1) and B3-1 (4) will be met;
- (2) provide the details, including timing, of hydrogeological investigations to be carried out that will:
 - (a) provide a detailed understanding of the hydrological regime in the project area;
 - (b) inform the final design of monitoring that will meet the requirement of condition C4-1;
 - (c) inform the final design of management and mitigation actions that will be implemented to meet the outcomes of conditions B3 -1 (1) and B3-1 (4); and
- (3) detail the timing of monitoring bore installation and collection of baseline data, providing justification to demonstrate that data will represent baseline where it is collected after the commencement of operations.

C4-5 Without limiting condition C3-1, failure to achieve an environmental outcome, or the exceedance of a **threshold criteria**, regardless of whether threshold **contingency measures** have been or are being implemented, represents a non-compliance with these conditions.

C5 Environmental Management Plans: Conditions Related to Management Actions and Targets for Objective Based Conditions

C5-1 The environmental management plan required under condition B6-5 must

contain provisions which enable the achievement of the relevant objectives of those conditions and substantiation of whether the objectives are reasonably likely to be met, and must include:

- (1) **management actions;**
- (2) **management targets;**
- (3) **contingency measures** if **management targets** are not met; and
- (4) reporting requirements.

C5-3 Without limiting condition C2-1, the failure to achieve an environmental objective, or implement a **management action**, regardless of whether **contingency measures** have been or are being implemented, represents a non-compliance with these conditions.

C5-4 Without limiting condition C3-1, the failure to achieve an environmental objective, or implement a **management action**, regardless of whether contingency actions have been or are being implemented, represents a non-compliance with these conditions.

PART D – OTHER CONDITIONS

D1 Non-compliance Reporting

- D1-1 If the proponent becomes aware of a non-compliance or potential non-compliance, the proponent must:
- (1) report this to the **CEO** within seven (7) days;
 - (2) implement **contingency measures**;
 - (3) investigate the cause;
 - (4) investigate environmental impacts;
 - (5) advise rectification measures to be implemented;
 - (6) advise any other measures to be implemented to ensure no further impact; and
 - (7) provide a report to the **CEO** within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(1) to D1-1(6) above.
- D1-2 Failure to comply with the requirements of a condition, or with the content of an environmental management required under a condition, constitutes a non-compliance with these conditions, regardless of whether the contingency, rectification or other measures in condition D1-1 above have been or are being implemented.

D2 Compliance Reporting

- D2-1 The proponent must provide an annual Compliance Assessment Report to the **CEO** for the purpose of determining whether the implementation conditions are being complied with.
- D2-2 Unless a different date or frequency is approved by the **CEO** the first annual Compliance Assessment Report must be submitted within fifteen (15) months of the date of this Statement, and subsequent plans must be submitted annually from that date.
- D2-3 Each annual Compliance Assessment Report must be endorsed by the proponent's Chief Executive Officer, or a person approved by proponent's Chief Executive Officer to be delegated to sign on the Chief Executive Officer's behalf.
- D2-4 Each annual Compliance Assessment Report must:

- (1) state whether each condition of this Statement has been complied with, including:
 - (a) exceedance of any proposal limits and extents;
 - (b) achievement of environmental outcomes;
 - (c) achievement of environmental objectives;
 - (d) requirements to implement the content of environmental management plans
 - (e) monitoring requirements;
 - (f) requirements to implement adaptive management; and
 - (g) reporting requirements;
- (2) include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met;
- (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance;
- (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance;
- (5) be provided in a form suitable for publication on the proponent's website and online by the Department of Water and Environmental Regulation;
- (6) be prepared and published consistent with the latest version of the Compliance Assessment Plan required by condition D2-5 which the **CEO** has **confirmed** by notice in writing satisfies the relevant requirements of Part C and Part D;
- (7) an outline of the success of implementation of Projects A, B and C, including progress against completion criteria; and
- (8) the details of payments made with consideration for the requirement of conditions B10-2 and B10-4.

D2-5 The proponent must prepare a Compliance Assessment Plan which is submitted to the **CEO** at least six (6) months prior to the first Compliance Assessment Report required by condition D2-2, or prior to implementation of the proposal, whichever is sooner.

D2-6 The Compliance Assessment Plan must include:

- (1) what, when and how information will be collected and recorded to assess compliance;
- (2) the methods which will be used to assess compliance;
- (3) the methods which will be used to validate the adequacy of the compliance assessment to determine whether the implementation conditions are being complied with;
- (4) the retention of compliance assessments;
- (5) the table of contents of Compliance Assessment Reports, including audit tables; and
- (6) how and when Compliance Assessment Reports will be made publicly available, including usually being published on the proponent's website within sixty (60) days of being provided to the **CEO**.

D2-7 The proponent shall submit a ten (10) yearly Environmental Performance Report to the **CEO** within three (3) months of the expiry of the ten (10) year period commencing from the date of substantial commencement of the proposal, or such other time as may be approved in writing by the **CEO**.

D2-8 Each Environmental Performance Report shall report on proposal impacts on the following **environmental values**:

- (1) state of algal mats;
- (2) state of mangroves inside and outside the **RRDMMA**;
- (3) state of groundwater;
- (4) state of surface water;
- (5) holistic assessment of proposal impacts against **environmental values**, including a comparison of the state of each environmental value at the beginning and end of the ten (10)-year period; and
- (6) proposed adaptive management and continuous improvement strategies.

D2-9 The Environmental Performance Report may be in whole or part prepared in conjunction with other proponents where there are cumulative impacts from their proposals.

D3 Contact Details

D3-1 The proponent must notify the **CEO** of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

D4 Time Limit for Proposal Implementation

D4-1 The proposal must be **substantially commenced** within five (5) years from the date of this Statement.

D4-2 The proponent must provide to the **CEO** documentary evidence demonstrating that they have complied with condition D4-1 no later than thirty (30) days after **substantial commencement**.

D4-3 If the proposal has not been **substantially commenced** within the period specified in condition D4-1, implementation of the proposal must not be commenced or continued after the expiration of that period.

D5 Public Availability of Data

D5-1 Subject to condition D5-2, within a reasonable time period approved by the **CEO** upon the issue of this Statement and for the remainder of the life of the proposal, the proponent must make publicly available, in a manner approved by the **CEO**, all validated environmental data collected before and after the date of this Statement relevant to the proposal (including sampling design, sampling methodologies, monitoring and other empirical data and derived information products (e.g. maps)), environmental management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

D5-2 If:

- (1) any data referred to in condition D5-1 contains trade secrets; or
- (2) any data referred to in condition D5-1 contains particulars of confidential information (other than trade secrets) that has commercial value to a person that would be, or could reasonably be expected to be, destroyed or diminished if the confidential information were published.

D5-3 The proponent may submit a request for approval from the **CEO** to not make this data publicly available and the **CEO** may agree to such a request if the **CEO** is satisfied that the data meets the above criteria.

D5-4 In making such a request the proponent must provide the **CEO** with an explanation and reasons why the data should not be made publicly available.

D6 Independent Audit

- D6-1 The proponent must arrange for an independent audit of compliance with the conditions of this statement, including achievement of the environmental outcomes and/or the environmental objectives and/or environmental performance with the conditions of this statement, as and when directed by the **CEO**.
- D6-2 The independent audit must be carried out by a person with appropriate qualifications who is nominated or approved by the **CEO** to undertake the audit under condition D6-1.
- D6-3 The proponent must submit the independent audit report with the Compliance Assessment Report required by condition D2, or at any time as and when directed in writing by the **CEO**. The audit report is to be supported by credible evidence.
- D6-4 The independent audit report required by condition D6-1 is to be made publicly available in the same timeframe, manner and form as a Compliance Assessment Report, or as otherwise directed by the **CEO**.

Table 1: Abbreviations and definitions

Acronym or abbreviation	Definition or term
Aboriginal Cultural Heritage	Means the tangible and intangible elements that are important to the Aboriginal people of the state, and are recognised through social, spiritual, historical, scientific or aesthetic values, as part of Aboriginal tradition to the extent they directly affect or are affected by physical or biological surroundings.
Aboriginal site	As defined in section 4 and 5 under the <i>Aboriginal Heritage Act 1972</i> .
Adverse impact/ adversely impacted	Negative change that is neither trivial nor negligible that could result in a reduction in health, diversity or abundance of the receptor/s being impacted, or a reduction in environmental value. Adverse impacts can arise from direct or indirect impacts, or other impacts from the proposal.
ARI	Annual Recurrence Interval.
As Low As Reasonably Practicable (ALARP)	When all practicable measures to reduce environmental impacts or risks are implemented and any further measures not implemented are demonstrated to be grossly disproportionate when compared to the reduction in impact or risk reduction gained.
Authorised operator	An entity approved in writing by the CEO as having legal authority and operational capability to manage and maintain the infrastructure in accordance with applicable laws and standards.
BCHMMP	Benthic Communities and Habitat Monitoring and Management Plan Rev C, O2 Marine, March 2023
Biologically important area (BIA)	Spatially defined areas where aggregations of individuals of a species are known to display biologically important behaviour such as breeding, foraging, resting or migration.
Brine discharge	The release of brine (hypersaline water) to the environment.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or the CEO's delegate.
Confirmed	In relation to a plan required to be made and submitted to the CEO, means, at the relevant time, the plan that the CEO confirmed, by notice in writing, meets the requirements of the relevant condition. In relation to a plan required to be implemented without the need to be first submitted to the CEO, means that plan until it is revised, and then means, at the relevant time, the plan that the CEO confirmed, by notice in writing, meets the requirements of the relevant condition.

Acronym or abbreviation	Definition or term
Coastal Samphire	Samphire described as coastal in Mardie Project: Response to Submissions (29 March 2021).
Contingency measures	Planned actions for implementation if it is identified that an environmental outcome, environmental objective, threshold criteria , Environmental Quality Standard or management target are likely to be, or are being, exceeded. Contingency measures include changes to operations or reductions in disturbance or adverse impacts to reduce impacts and must be decisive actions that will quickly bring the impact to below any relevant threshold, management target and to ensure that the environmental outcome and/or objective can be met.
CPI	The All Groups Consumer Price Index numbers for Perth compiled and published by the Australian Bureau of Statistics.
DBCA	The government agency responsible for the administration of the <i>Biodiversity Conservation Act 2016</i> , which at the time of publication of this Ministerial Statement is the Department of Biodiversity, Conservation and Attractions.
DCCEEW	Department of Climate Change, Energy, the Environment and Water.
Detecting/ Detectable	The smallest statistically discernible effect size that can be achieved with a monitoring strategy designed to achieve a statistical power value of at least 0.8 or an alternative value as determined by the CEO .
Development envelope	The maximum area within which the proposal will be located, and consistent with the Proposal Content Document for the proposal as referred to in the Introduction to this Statement.
Disturb/ Disturbing/ Disturbance	Means directly has or materially contributes to the disturbance effect on health, diversity or abundance of the receptor/s being impacted or on an environmental value. In relation to flora, vegetation or fauna habitat, includes to result in the death, destruction, removal, severing or doing substantial damage to. In relation to fauna, includes to have the effect of altering the natural behaviour of fauna to its detriment.
Disturbance footprint	The location within which the physical proposal elements will occur.
DMPA4	Dredge material placement area 4 as shown in Figure 6, with the baseline condition recorded in <i>DMPA4 – Benthic Communities and Habitats Report</i> (O2 Marine, 13 November 2024).

Acronym or abbreviation	Definition or term
DPIRD	The Western Australian Department of Primary Industries and Regional Development, or any of its successors responsible for the administration of the <i>Fish Resources Management Act 1994</i> .
Dredging activity/activities	An activity or process that involves removing sediment or material from the bottom of water bodies, and includes disposal of capital and maintenance dredge spoil.
DSDMP	Dredge and Spoil Disposal Management Plan Rev 4, O2 Marine, 17 July 2025
DWER	The Western Australian Department of Water and Environmental Regulation, or any of its successors responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> .
Emergencies	Refers to the occurrence or imminent occurrence of a hazard which is of such a nature or magnitude that it requires coordinated management or response to protect life, property, or the environment, as defined under Section 3 of the <i>Emergency Management Act 2005</i> .
Environmental values	A beneficial use, or ecosystem health condition (<i>from EP Act</i>) Particular value or uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health and which require protection from the effects of pollution, waste discharges and deposits as defined in the Technical Guidance <i>Protecting the Quality of Western Australia's Marine Environment</i> , as amended from time to time, and available at www.epa.wa.gov.au .
Environmental weeds	Any plant declared under section 22(2) of the <i>Biosecurity and Agriculture Management Act 2007</i> , any plant listed on the Weeds of National Significance List and any weeds listed on the Department of Biodiversity, Conservation and Attractions' Wheatbelt Impact and Invasiveness Ratings list, as amended or replaced from time to time.
Environmental Quality Guidelines (EQG)	Threshold numerical values or narrative statements which if met indicate there is a high degree of certainty that the associated environmental quality objective has been achieved.
Environmental Quality Standards (EQS)	Threshold numerical values or narrative statements that indicate a level which if not met indicates there is a significant risk that the associated environmental quality objective has not been achieved and a management response is required.
GL per annum	Gigalitres per annum.

Acronym or abbreviation	Definition or term
‘Good’ to ‘Excellent’ condition native vegetation	Means the condition of native vegetation rated in accordance with the Technical Guidance – <i>Flora and Vegetation surveys</i> for environmental impact assessment (EPA 2016) including any revision to this technical guidance.
Ground disturbing activities	Any activity or activities undertaken in the implementation of the proposal, including any clearing, civil works or construction.
GMMP	Groundwater Monitoring and Management Plan Rev F, BCI Minerals, March 2023
Ha	Hectare
High Ecological Protection Area	All of the proximal coastal waters outside of areas defined as Low Ecological Protection Areas (blue hatching) and Moderate Ecological Protection Areas (green hatching) and shown in Figure 4, and defined in the spatial data in schedule 1.
IBRA	Interim Biogeographic Regionalisation for Australia.
Intertidal and subtidal research offsets	Western Australian Marine Science Institution (WAMSI) intertidal and subtidal research program or other suitable scientific initiative.
Irreversible loss	Adverse impact which is unlikely to or does not return to pre-impact state within five (5) years following the completion of proposal related activities that are likely to have an impact on benthic communities and habitats .
Km/hr	Kilometres per hour.
Landward Samphire	Samphire described as landward in Mardie Project: Response to Submissions (29 March 2021).
Low Ecological Protection Area	The area shown in (blue hatching) in Figure 4 as Low Ecological Protection Area and defined in the spatial data in schedule 1
Mardie Project	The existing Optimised Mardie Project and the significant amendment.
Mardie Illumination Plan	Mardie Illumination Plan Rev 3, BCI Minerals, 5 May 2023
Mardie Project Impact Reconciliation Procedure	Mardie Project Impact Reconciliation Procedure Rev D, Preston Consulting, August 2024

Acronym or abbreviation	Definition or term
Marine fauna observer	In the context of Marine Fauna Observers (MFO) it is expected that at least one MFO will hold an Internationally recognised MFO qualification in accordance with industry standards and at least five (5) years' experience in Australian waters.
Marine environmental values	Particular values or uses of the marine environment that are important for a healthy ecosystem or for public benefit, welfare, safety, or health and which require protection from the effects of pollution, waste discharges and deposits as defined in the <i>Technical Guidance: Protecting the Quality of Western Australia's Marine Environment</i> , as amended from time to time, and available at www.epa.wa.gov.au .
Marine pests	Marine species not native to the environment of the west Pilbara coast , that do or may threaten biodiversity. The information from www.marinepests.gov.au and advice from the Department of Primary Industries and Regional Development will guide interpretation of this definition.
Marine Pest Management Procedure	Marine Pest Procedure Rev 1, O2 Environment, September 2022
Marine Water Quality Technical Guidance	Technical Guidance for protecting the quality of Western Australia's marine environment, as amended from time to time, and available at www.epa.wa.gov.au . The relevant indicator type in Appendix 1, Table 1 of this Technical Guidance that applies to B4-2 is the Environmental Quality Guidelines for toxicants in water.
Management action/s	The identified actions implemented with the intent of to achieving the environmental objective.
Management target	A type of indicator to evaluate whether an environmental objective is achieved.
Marine construction or operations	All operations to do with the construction of the marine aspects of the proposal including piling, dredging and vessel movements.
MEQMMP	Marine Environmental Quality Monitoring Management Rev 8 O2 Marine, March 2023
Marine Turtle Monitoring Program	Marine Turtle Monitoring Program Rev 3, Pendoley Environmental May 2023

Acronym or abbreviation	Definition or term
Moderate Ecological Protection Area	The area shown in (green hatching) in Figure 4 as ' Moderate Ecological Protection Area ' and defined in spatial data in schedule 1.
National Marine Mammal Data Portal	National Marine Mammal Data Portal, including the Cetacean Sightings Application, maintained by the Commonwealth Department of Climate Change, Energy, the Environment and Water.
Native title party/ies	As defined in section 18(1AA) under the <i>Aboriginal Heritage Act 1972</i> .
Negligible	A change so small that it does not measurably affect the health, diversity, abundance, or function of an environmental receptor or value, remains within natural variability, and cannot be distinguished from background conditions using accepted scientific methods.
PEC	Priority ecological community.
Project Related Vessels	Vessels related to the construction and operation of the project, including the transshipment barge, and dredge spoil disposal vessel.
Reasonable steps to consult	As outlined in the EPA's <i>Technical Guidance Environmental impact assessment of Social Surroundings – Aboriginal cultural heritage</i> , as amended from time to time.
Responsible authority	A government agency or statutory body formally designated under legislation to assume responsibility for the infrastructure and its ongoing management.
RRDMMA	The Robe River Delta Mangrove Management Area as shown in Figure 2.
Significant marine fauna	Includes turtles, cetaceans, dugongs, sawfish and other marine fauna species listed under state or Commonwealth legislation.
Threshold criteria	The indicators that have been selected to represent limits of impact beyond which the environmental outcome is not being met.
Transfer of seawater, brine and/or waste product	Transfer of seawater, brine and/or waste product to the marine environment.

Acronym or abbreviation	Definition or term
Trigger criteria	Indicators that have been selected for monitoring to provide a warning that if exceeded the environmental outcome may not be achieved. They are intended to forewarn of the approach of the threshold criteria and trigger response actions.
Trivial	A minor change that is measurable but insignificant, does not affect ecological function or environmental values, and recovers almost immediately without intervention. It does not compromise regulatory objectives or trigger management actions.
Zone of high impact	The zone described in the Dredge and Spoil Disposal Management Plan, Revision 4 (17 July 2025) as ' Zone of High Influence ' and referred to in Figure 3 and Figure 6 of this document. Zone of high impact defined as the area where serious damage to benthic communities is predicted or where impacts are considered to be irreversible as defined in the <i>technical guidance: Environmental Impact Assessment of Marine Dredging Proposals 2021</i> .
Zone of moderate impact	The zone described in the Dredge and Spoil Disposal Management Plan, Revision 4 (17 July 2025) as ' Zone of Moderate Influence ' and referred to in Figure 3 and Figure 6 of this document.
ZOI Proposed High Influence	Zone of high impact (see definition above).
ZOI Proposed Medium Influence	Zone of moderate impact (see definition above).
West Pilbara coast	The extent of the Pilbara coast from the bottom of the Exmouth Gulf to Karratha.

Figures (attached)

Figure 1 Proposal location and development envelope

Figure 2 Benthic communities and habitats within the significant amendment and original proposal area

Figure 3 Dredge envelope with zones of High and Moderate Influence

Figure 4 Level of ecological protection areas around diffuser location

Figure 5 Short Range Endemic fauna exclusion zones and Aboriginal Cultural Heritage exclusion zone for Peters Creek

Figure 6 DMPA4 with associated zones of High and Moderate impact

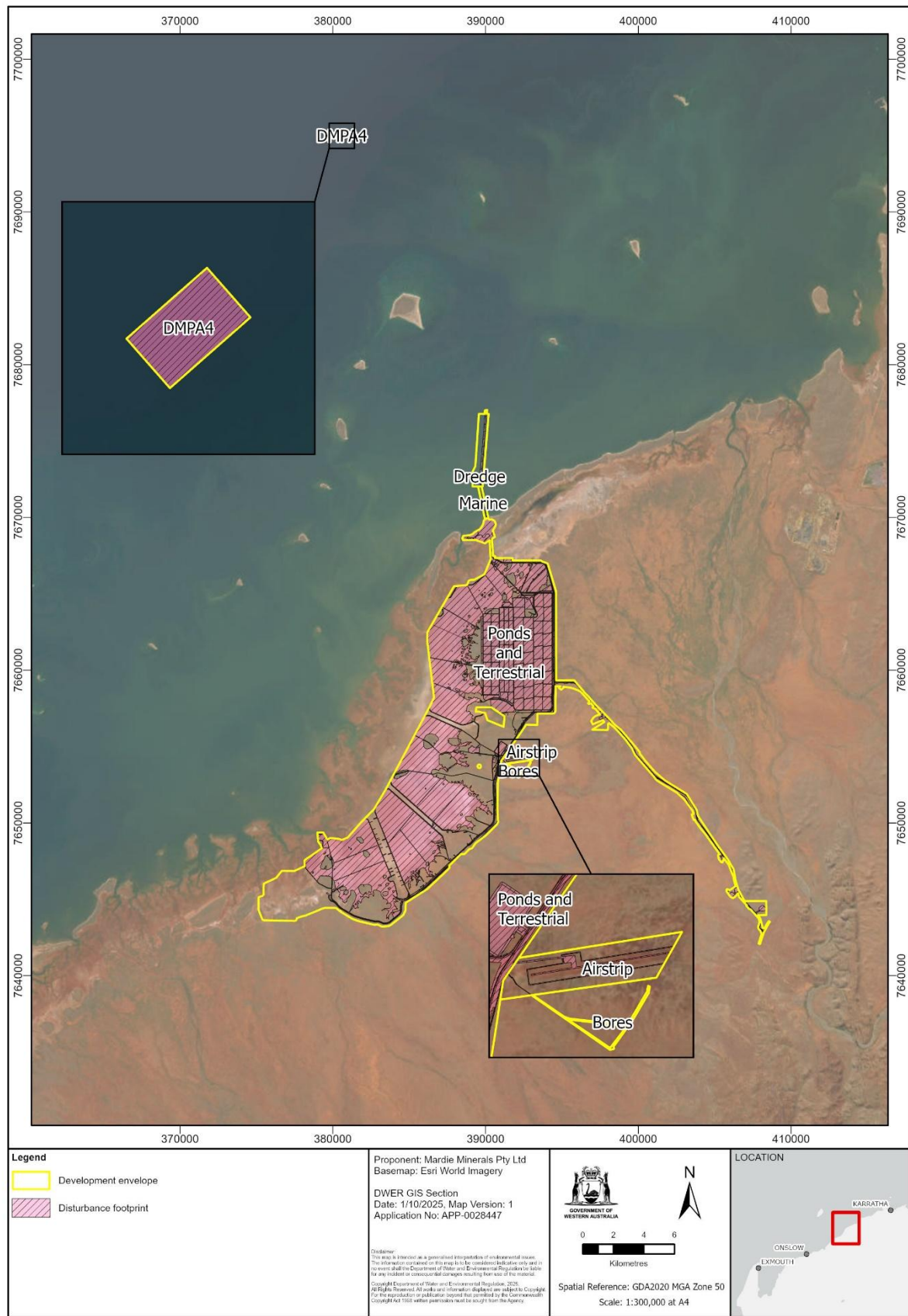


Figure 1: Proposal location and development envelope

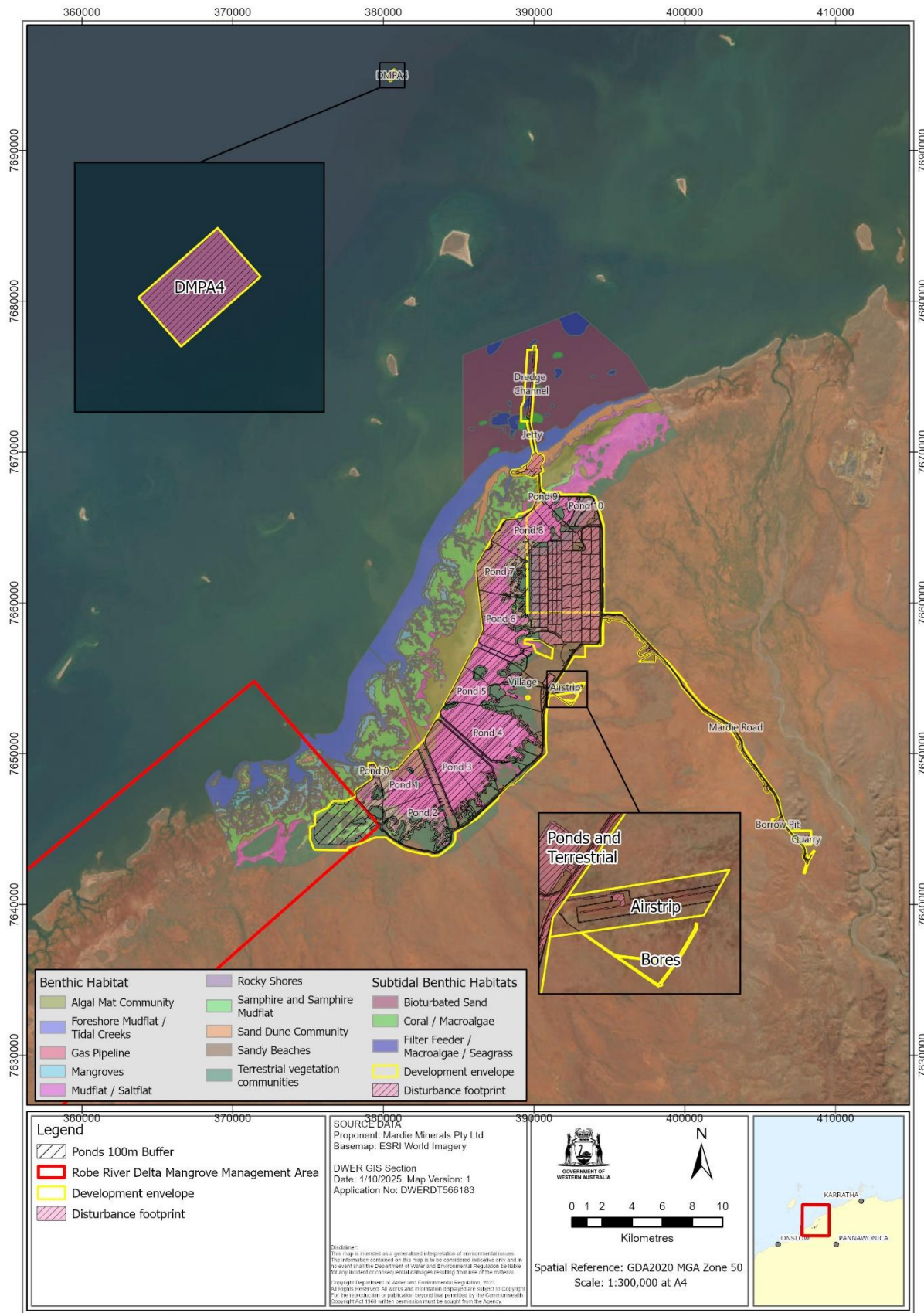
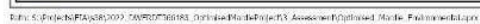


Figure 2: Benthic communities and habitats within the proposal area



Environmental Protection Authority

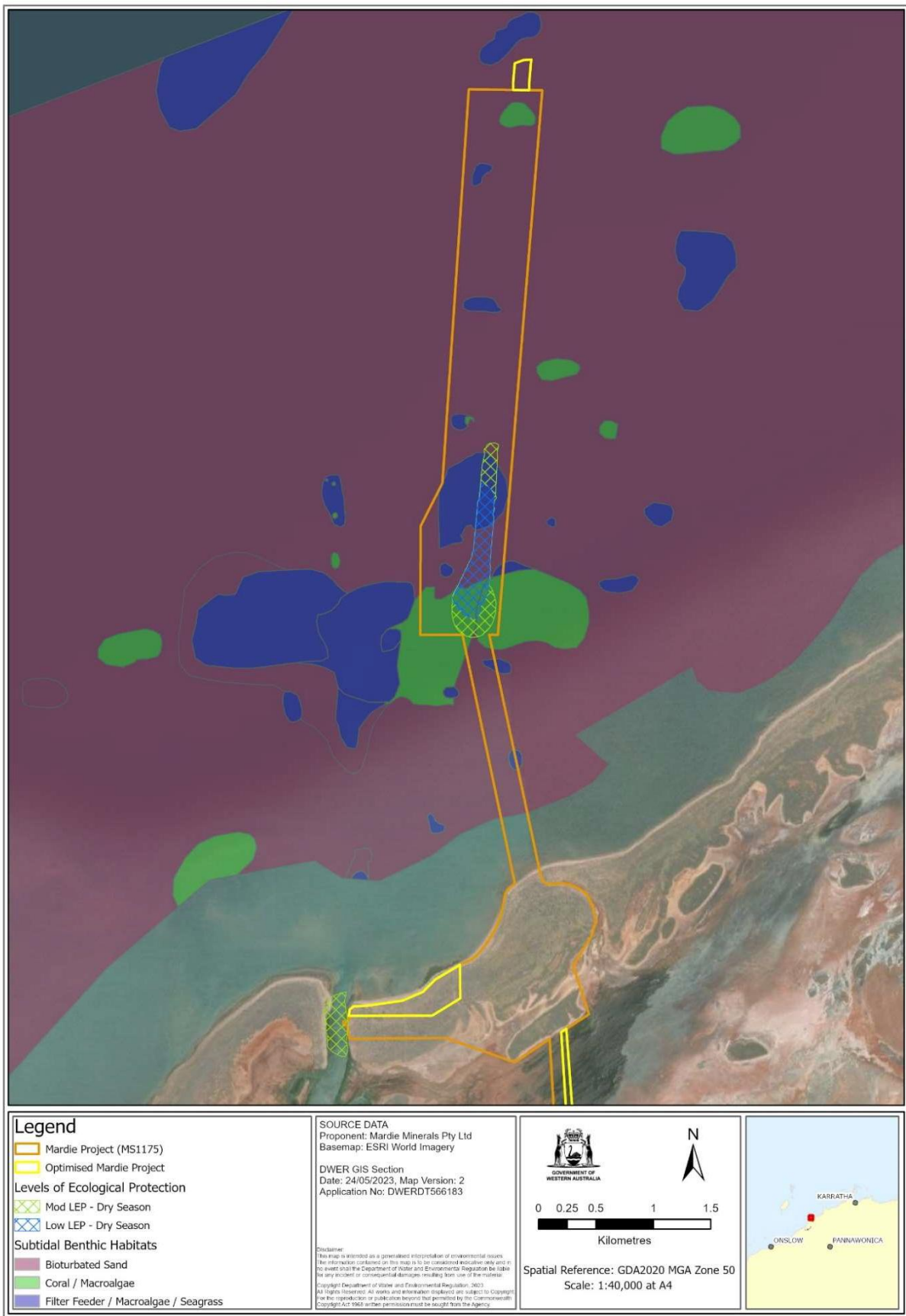


Figure 4: Level of ecological protection areas around diffuser location

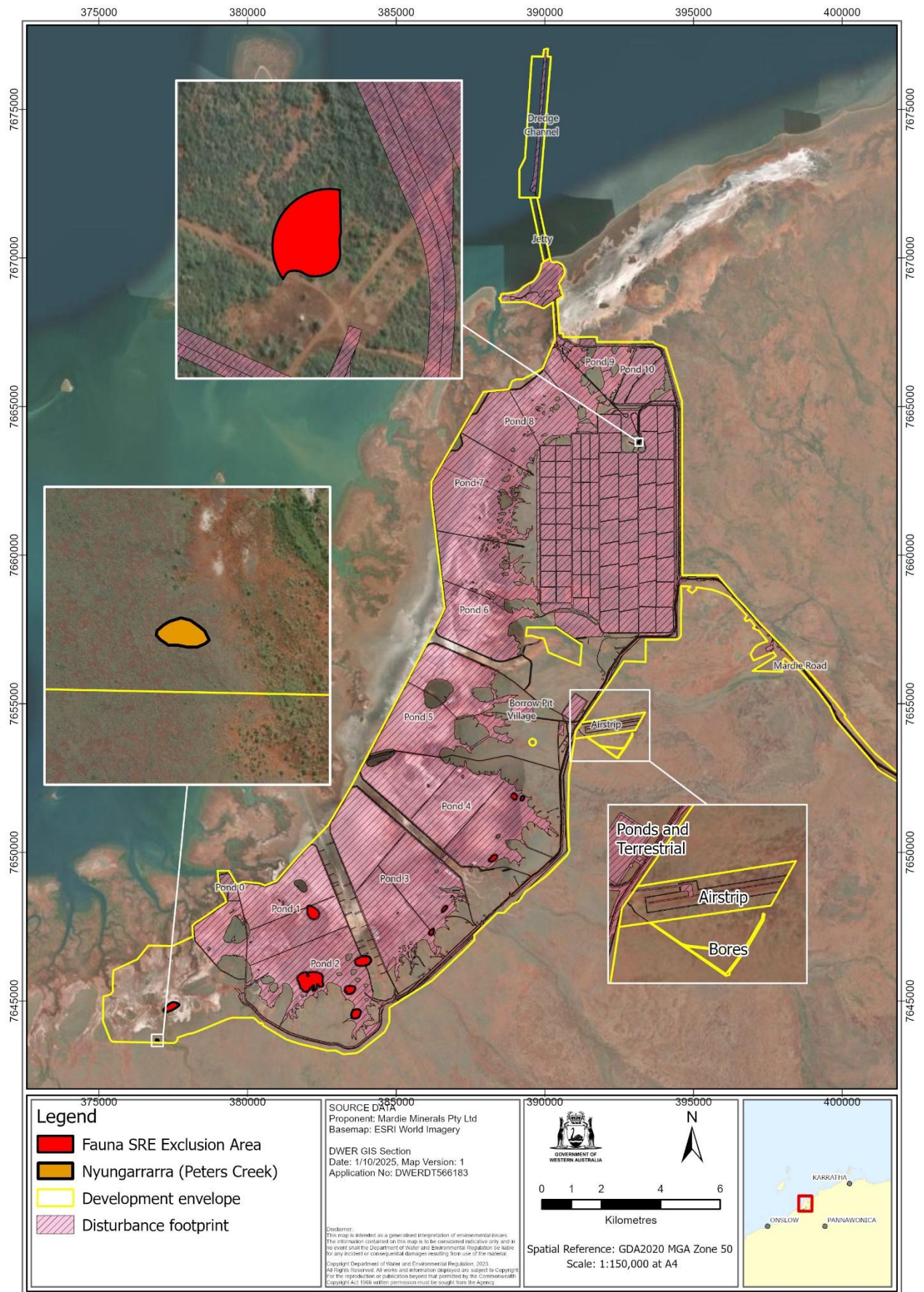


Figure 5: Short Range Endemic fauna exclusion zones and Peters Creek exclusion zone

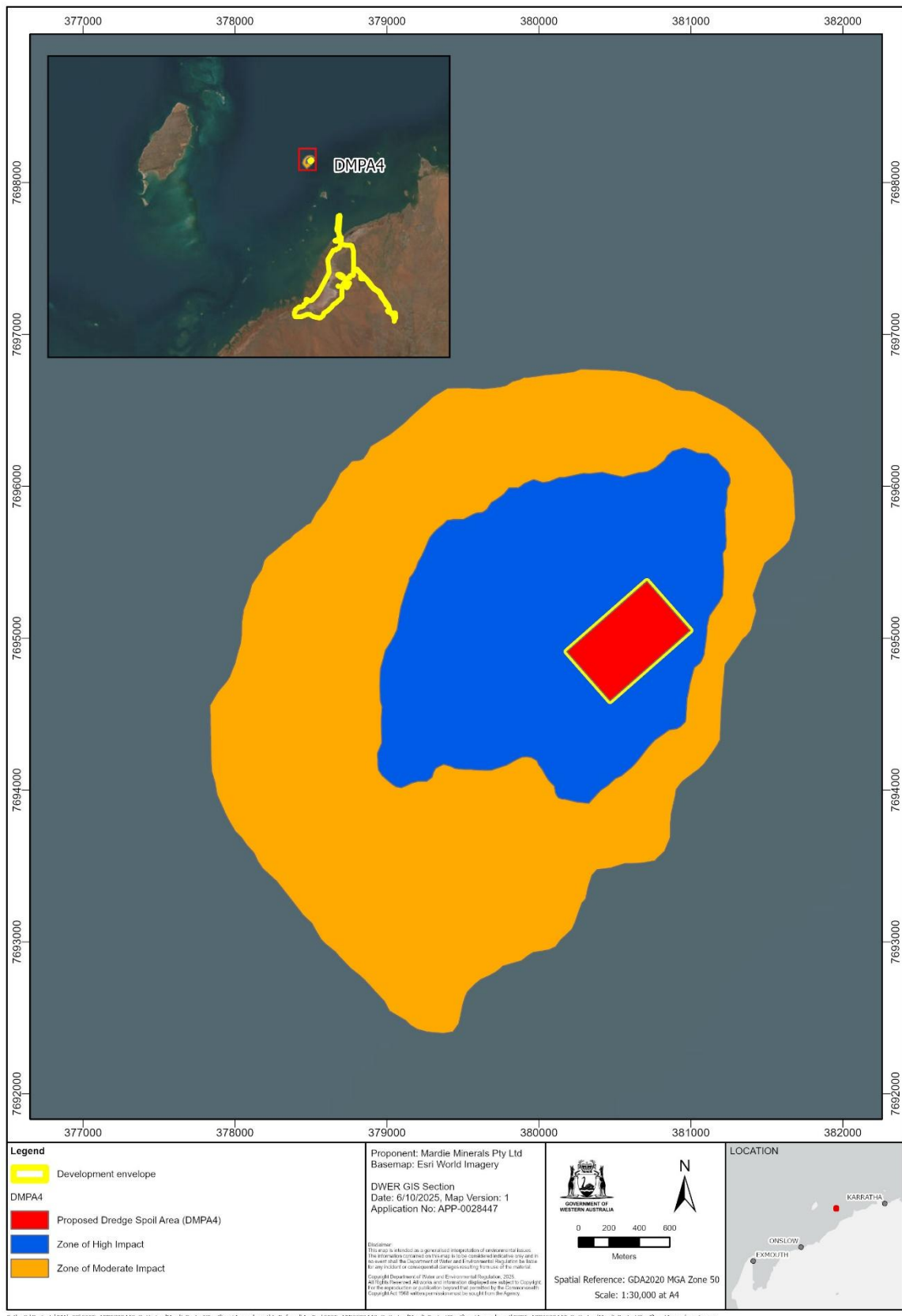


Figure 6: DMPA4 with associated zones of High and Moderate impact

Schedule 1

All coordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 1994 (GDA94).

Spatial data depicting the figures are held by the Department of Water and Environmental regulation - APP-0028447.

Schedule 2

**Proponent residual Impacts and Risk Management Measures –
Optimised Mardie - Revised Project (Condition B10)**

Project	Value and Timeframe
Project A Mapping of the original and current extent of Samphire and Algal mat on the west Pilbara Coast.	\$1,500,000 prior to the commencement of construction.
Project B Identify and quantify the potential effects of sea level rise on mangroves, samphire and algal mat on the west Pilbara Coast.	\$500,000 prior to the commencement of construction.
Project C(i) Identify the ecological roles, values and functions of algal mat on the west Pilbara coast.	\$500,000 prior to the commencement of construction.
Project C(ii) Identify the ecological roles, values and functions of intertidal benthic communities and habitat on the west Pilbara coast.	\$2,102 per hectare of algal mat, coastal samphire or mangroves that monitoring indicates has been lost due to project-attributable indirect impacts, or subject to loss of health, per cent cover or diversity of intertidal within 3 months of the loss being identified.
Project C(iii) Identify the ecological roles, values and functions of intertidal benthic communities and habitat on the west Pilbara coast.	\$2,102 per hectare of mangroves within the RRDMMMA, that the CEO has approved to be disturbed, prior to the commencement of disturbance within the RRDMMMA.
Project D	Provision of \$300,000 (adjusted yearly for CPI) to fund research and management programs (through WAMSI, DBCA or independently - for example the RAD project referred to in Section 4.2.1 ¹) to preserve, maintain and grow high value sub-tidal BCH in the region. \$500,000 held in reserve (adjusted yearly for CPI) to extend the research and management programs described above if indirect impacts are greater than predicted and attributed to the Proposal.

¹ Section 4.2.1 of the Optimised Mardie Project Draft Offset Strategy (Appendix 10.1 to the Optimised Mardie Project Supplementary Report)

Appendix B: Decision-making authorities

Table B1: Identified relevant decision-making authorities for the proposal

Decision-Making Authority	Legislation (and approval)
1. Minister for the Environment (Cth)	<i>Environmental Protection (Sea Dumping) Act 1981 (Cth)</i> -Sea dumping permit
2. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> -section 18 consent to impact a registered Aboriginal heritage site
3. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> -section 40 authority to take or disturb threatened species -section 45 authority to modify occurrence of a threatened ecological community <i>Contaminated Sites Act 2003</i> -section 58 disturbance of contaminated sites
4. Minister for Mines and Petroleum	<i>Mining Act 1978</i> - granting of a new mining lease - approval to lease, transfer or otherwise dispose of land under the Land Administration Act (note: applies when land is leased or disposed of under the LAA)
5. Minister for Ports	<i>Port Authorities Act 1999</i> -lease/licence/easement of land within control of Port Authority (term exceeding 5 years) -approval for Port Authority to sell port land that is Crown land -sea bed lease
6. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> - permit to interfere with beds and banks - licence to construct or alter a well - permit to take water
7. Chief Executive Officer, Department of Biodiversity, Conservation and Attractions	<i>Biodiversity Conservation Act 2016</i> - authority to take flora and fauna (other than threatened species)
8. Chief Dangerous Goods Officer, Department of Mines, Petroleum and Exploration	<i>Dangerous Goods Safety Act 2004</i> - storage and handling of dangerous goods security risk substance storage licence
9. Executive Director Resource and Environmental Compliance,	<i>Mining Act 1978</i> - mining proposal

Decision-Making Authority	Legislation (and approval)
Department of Mines, Industry Regulation and Safety	- mine closure plan
10. Director General, Department of Transport	<i>Jetties Act 1926</i> -construction of jetty <i>Marine Navigational Aids Act 1973</i> Navigable Waters Regulations 1958 -Reg 8 Permission to throw into or place things in port, harbour or navigable waters
11. Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> - part V works approval and licence - part V clearing permit
12. Chief Executive Officer, Pilbara Ports Authority	<i>Port Authorities Act 1999</i> Lease/license/easement of land within control of Port Authority
13. Commissioner for Main Roads	<i>Traffic (Vehicles) Act 2012</i> - heavy haulage approval
14. Chief Executive Officer, City of Karratha	<i>Local Government Act 1995</i> - development approval and scheme amendment <i>Building Act 2011</i> - permit for worker accommodation <i>Planning and Development Act 2005</i> -extractive industries licence <i>Health Act 1911</i> - Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulation 1974 -Approval of sewage treatment and disposal

Appendix C: Regulation under other statutory processes

Table C1: Identified relevant decision-making authorities for the proposal

Statutory decision-making process	Environmental outcome
<i>Aboriginal Heritage Act 1972</i>	No disturbance to Aboriginal cultural heritage, unless consent is granted to disturb that site under the <i>Aboriginal Heritage Act 1972</i> and has involved reasonable steps to consult with relevant Traditional Owners.
<i>Biodiversity Conservation Act 2016</i>	The taking of threatened flora, fauna and ecological communities does not result in any species or community being listed under a higher conservation status.
<i>Contaminated Sites Act 2003</i>	Protection of public health and the environment by mandating the reporting, identification, and management of contaminated sites
<i>Dangerous Goods Safety Act 2004</i>	Regulation and licencing of the safe storage, handling, and transport of dangerous goods.
<i>Environmental Protection Act 1986</i> - part V works approval and licence - part V clearing permit - approval for noise management plans for construction outside of prescribed hours - part IV compliance (Ministerial statements)	Regulate emissions and discharges from construction and operations to achieve the following outcomes: -no adverse impacts to soil, surface water and groundwater quality -maintain air quality and minimise emissions so that environmental values are protected -protect sensitive receptors from dust and noise. Provision for monitoring compliance with Ministerial statements and penalties for non-compliance.
<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>	The EPA has recommended conditions in relation to impacts on listed threatened species and communities protected by the EPBC Act. The Department of Climate Change, Energy, the Environment and Water may impose additional conditions under the EPBC Act.
<i>Environmental Protection Act 1981 (Sea Dumping) (1981) (Cth)</i>	Protect Australia's marine environment by regulating and controlling the dumping of wastes, other matter, and structures at sea
<i>Land Administration Act 1997</i>	Administration and management of Crown land while providing the rights and interests of Native Title holders.
<i>Port Authorities Act 1999</i>	Grant an easement, lease, or licence over "vested land,"

<i>Biosecurity Act 2015 (Cth);</i>	Prevent, eliminate, minimize, and manage risks posed by pests, diseases, and contaminants to Australia's human, animal, and plant health, as well as its environment
<i>Rights in Water and Irrigation Act 1914</i>	Regulation, management, use, and protection of the state's water resources
<i>The Public Health Act 2016</i>	Protect public health and the environment by setting mandatory standards for the design, installation, and management of on-site wastewater systems in the state.

Appendix D: Environmental Protection Act principles

Table D1: Consideration of principles of the *Environmental Protection Act 1986*

EP Act principle	Consideration
1. The precautionary principle <i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –</i> (a) <i>careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i> (b) <i>an assessment of the risk-weighted consequences of various options.</i>	The EPA has considered the precautionary principle in its assessment and has had particular regard to this principle in its assessment of MEQ, BCH and marine fauna key environmental factors. The assessment of these impacts is provided in this report. Environmental studies including plume modelling and BCH field surveys have informed the location of the proposal. DMPA4 was selected as it is close to the approved proposal (to reduced vessel transport), situated further from offshore islands, and was considered unlikely to contain BCH of regional or conservation significance compared to other areas within the Mardie and Pilbara region. Plume modelling also indicated a significantly reduced plume at this location compared to an alternative (inshore) location. The EPA has applied conditions to impose limits on spoil disposal and the disturbance of BCH. Where there is uncertainty or data gaps and the risks deemed low, the EPA has applied conditions ensuring environmental impacts are avoided/limited. The EPA has concluded that subject to the recommended implementation conditions, the proposal is unlikely to pose a threat of serious or irreversible harm.
2. The principle of intergenerational equity <i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i>	The EPA has considered the principle of intergenerational equity in its assessment and has had particular regard to this principle in its assessment of MEQ, BCH and marine fauna key environmental factors. The EPA notes that the DMPA4 location was identified to avoid significantly important BCH and offshore islands. Key ecological windows for marine turtles will be avoided to ensure impacts to nesting turtles is minimised as far as possible. The EPA considers consistency with this principle could be achieved with the implementation of proponent's avoidance and minimisation measures, in addition to recommended conditions, which requires the proponent to: • implementation of the DSDMP, BCH and MEQ monitoring programs, and marine turtle monitoring plan. • no disruption to humpback whale (including mother-calf pairs) migration in the BIA • no interruption of significant marine fauna undertaking critical behaviours in biologically important areas

EP Act principle	Consideration
	- no adverse impact on the ecological processes or habitats that sustain the blue-spotted emperor - maintain levels of ecological protection within the marine environment. - limit the extent of BCH loss and impacts which may provide habitat for marine fauna at different life stages. - No introduction of marine pests to State waters The EPA has concluded that the environmental values will be protected, and the health, diversity and productivity of the environment will be maintained for the benefit of future generations.
3. The principles of the conservation of biological diversity and ecological integrity <i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i>	The EPA has considered the principle of conservation of biological diversity and ecological integrity in its assessment and has had particular regard to this principle in its assessment of MEQ, BCH and marine fauna key environmental factors. The EPA has considered to what extent the potential impacts from the proposal to these environmental factors can be ameliorated, to ensure consistency with this principle. Surveys have been used to confirm the range and status of environmental values within the vicinity of the proposal. Disturbance within areas of noted higher biological diversity (i.e., BCH, offshore islands) has been avoided by selecting DMPA4 for offshore disposal of spoil. To ensure biodiversity and ecological integrity of environmental values within the development envelope, the EPA has recommended conditions including disturbance limits for marine fauna, MEQ and BCH, particularly through the implementation of the DSDMP.
4. Principles relating to improved valuation, pricing and incentive mechanisms (1) <i>Environmental factors should be included in the valuation of assets and services.</i> (2) <i>The polluter pays principle — those who generate pollution and waste should bear the cost of containment, avoidance or abatement.</i> (3) <i>The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes.</i>	In considering this principle, the EPA notes that the proponent will bear the costs relating to implementing the proposal to achieve environmental outcomes, and management and monitoring of environmental impacts during construction, operation and decommissioning of the proposal. The EPA has had particular regard to this principle in considering MEQ, BCH and marine fauna.

EP Act principle	Consideration
<i>(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.</i>	
5. The principle of waste minimisation <i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i>	The EPA has considered the principle of waste minimisation in its assessment and has had particular regard to this principle in its assessment of MEQ, BCH and marine fauna key environmental factors. The EPA notes that there are no practical uses for the dredge spoil material, other than onshore fill, and after consideration the proponent considers this impractical.

Appendix E: Other environmental factors

Table E1: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Land			
Flora and vegetation	The proposal involves expansion of the existing airstrip and will expand the Terrestrial Development Envelope (TDE) and area within which clearing may occur. It is anticipated that the works will require clearing of 10 ha of native vegetation.	<u>Agency comments</u> During the assessment DBCA advised that genetic sequencing has confirmed specimens previously identified as <i>Minuria tridens</i> (P1), a Commonwealth listed species, is two different taxa: <i>Minuria</i> sp. Onslow and <i>Minuria</i> sp. Murchison. Specimens identified at the proposal are considered <i>Minuria</i> sp. Onslow which has been assigned P3 status. DWER advised that the proponent's revised design of infrastructure has been approved, so that there will be no direct impact on the Robe River Delta Mangrove	The proponent is already authorised to clear up to 3,014 ha good to excellent native vegetation under MS 1211. The EPA previously assessed this impact and considered subject to limitations on clearing and offsets, the residual impact could be counterbalanced, so that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation. While the proposal includes an expansion of the TDE and will require clearing, the clearing will be accommodated within the existing clearing limits already approved in MS 1211. No change to the extent of authorised clearing is required. The expanded TDE contains no significant flora or vegetation values, with the majority showing a degree a disturbance caused by anthropogenic activities and lower quality vegetation. The three vegetation types recorded within the airstrip study area were observed to be abundant in the surrounding region (Phoenix 2025). The proponent's surveys identified three introduced flora species, and one a declared pest and Weed of National Significance. The EPA notes that the additional vehicle movement in and out of the area during construction will increase the risk of introduction or spread of weeds, however, considers that recommended condition (B7) can manage the additional risk. The EPA recognises that cumulative loss of native vegetation through current and future mining, pastoralism, and infrastructure developments is a key threat to flora and vegetation values within the Pilbara bioregion. The proposed clearing relates to native vegetation that is not significant, is largely disturbed and will not increase the clearing limits already authorised. The EPA considers that the proposal can be managed via conditions including limitations on the extent of the terrestrial disturbance and limitations on the

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
		Management Area (RRDMMA). <u>Public comments</u> No public comments were received	extent of clearing of good to excellent quality native vegetation (A1), as well as conditions on the indirect impact such as introduction of weeds (B7-1). The EPA notes that the proponent has revised the design of the project to remove proposed infrastructure located within the RRDMMA. As a result, the proposal will no longer directly disturb mangrove vegetation within the RRDMMA, and condition B3-4 of MS 1211 is no longer required as a recommended condition based on the approval of DWER. Similarly, B7-1(2) and C3-3 are no longer recommended conditions based on the advice of DBCA regarding the P3 status of <i>Minuria</i> sp. Onslow. The EPA considers that the recommended conditions, particularly the limitations on extent in Condition A1 are adequate to manage the additional impact from the proposal. Accordingly, the EPA did not consider flora and vegetation to be a key environmental factor at the conclusion of its assessment.
Terrestrial fauna	The proposal, specifically the expansion of the existing airstrip, has the potential to impact terrestrial fauna, through: - clearing of 10 ha of native vegetation which represents habitat for fauna, in particular migratory birds - disturbance, injury or death of terrestrial fauna due to vehicle and aircraft movement (strike) - alteration of behaviour from the	<u>Public comments</u> The proposed airstrip upgrade and increased use is likely to pose a significant risk to the 20+ species of migratory shorebirds known to utilise the area. A full assessment of the potential impacts on migratory shorebirds should be required, including maximum airstrip usage figures and impact mitigation measures, and this assessment should be made available for public review.	The proponent is authorised by MS1211 to impact the following terrestrial fauna values: - foraging habitat for the Pilbara leaf-nosed bat: Disturbance of no more than 3,240 ha within the development envelope - foraging habitat for the Northern coastal free – tailed bat: Disturbance of no more than 1,186 ha within the development envelope - foraging habitat for the Pilbara olive python: Disturbance of no more than 6 ha within the development envelope - foraging habitat for the Northern quoll: Disturbance of no more than 80 ha within the development envelope. - Loss of up to 34 ha of foraging and dispersal habitat for the Migratory Shorebirds. The EPA assessed the above impacts and considered that they could be regulated through reasonable conditions and counterbalanced by offsets, so the environmental outcome is likely to be consistent with the EPA objective for terrestrial fauna. While the proposal involves an expansion of the TDE within which clearing may occur, and clearing is required to facilitate the proposed works, the clearing will

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
	airstrip becoming a short-term attractant, such as noise and/or artificial light emissions.	<u>Agency comments</u> No agency comments were received.	be accommodated within the approved clearing limits established under MS1211. The EPA notes that no threatened or priority vertebrate fauna were identified within the expanded TDE (Phoenix Environmental Sciences 2024). The fauna habitat being disturbed is widespread throughout the region and has minimal value for birds. The EPA notes that the coastline to the west of the proposal represents bird attracting habitat where migratory birds forage. While migratory shorebirds forage together and then move in large groups to roosting habitat and open water bodies (or when disturbed), it is unlikely that they will cross the runway area as there are no freshwater bodies to the east of the proposal. The airstrip is designated for emergency use only, consistent with the definition provided in Section 3 of the <i>Emergency Management Act 2005</i>. Its use will be limited to urgent, unforeseen events to protect life, property, or the environment. Due to the ad hoc nature of these operations, the frequency and intensity of disturbance is expected to be minimal. On this basis, the proposal is not expected to result in significant impacts to migratory shorebirds. To ensure this outcome, the EPA has applied an operational limit (condition A1) restricting use of the airstrip to emergency purposes only. Any increase in the frequency or regularity of airstrip use beyond emergency operations would elevate disturbance levels and likely result in impacts inconsistent with the EPA's environmental objectives. Similarly, bats may be attracted to artificial lights around the airstrip due to the increased density of flying insect prey. As bats are nocturnal, interaction between bats and aircraft is unlikely for daytime flights, however nighttime flights may present a risk of bat strike. Noting this, the EPA considers that as the aircrafts are only to be used in emergencies, the risk of interactions is extremely low. The EPA also acknowledges the proponent will avoid and minimise potential impacts on terrestrial fauna due to the airstrip upgrade construction and operation by:

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			- avoiding installation of any large, open, artificial freshwater pools on the eastern side of the airstrip to decrease the likelihood of birds crossing the runway when flying from the habitat on the west - restrictions around dumping organic waste close to the proposal - installing bird spikes on infrastructure at the airstrip and nearby to avoid migratory shorebirds nesting / settling - fencing around the airstrip to prevent strikes with terrestrial non-avian fauna during take-off and landing - where possible, restricting arrival and departure of aircraft to eastern side of the airstrip to avoid flying over the migratory shorebird habitat to the west - where possible, restricting arrival and departure to daytime to minimise interactions with bats - implementing a construction environmental management plan, which will include observing vehicle speed limits, weed management / control and waste management (Preston Consulting 2025). Further, the EPA notes the Long-term Migratory Shorebird Monitoring and Management Plan includes mitigation and management responses to be implemented if project related declines in utilisation are detected. Noting the mitigation measures above, the EPA has recommended conditions that will limit the extent of clearing of fauna habitat and the use of the airstrip (A1) and outcome-based conditions to minimise the risk of physical injury or mortality from construction or operation on native fauna (B6). Accordingly, the EPA did not consider terrestrial fauna to be a key environmental factor at the conclusion of its assessment and considers that the recommended conditions are adequate to manage the additional impact from the proposal.
Water			
Inland waters	The abstraction of 0.7 GL/year of groundwater could result in the	<u>Public comments</u> No public comments were received. <u>Agency comments</u>	Groundwater is currently taken from the Pilbara, Ashburton, Carnarvon-Superficial resource under groundwater licences GWL205621 (up to 0.15 GL/yr) and GWL211434 (up to 0.5 GL/yr) for ongoing operational needs at the site,

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
	potential reduction of aquifer levels and volume.	No agency comments were received.	such as potable water to the village, road maintenance, and other construction activities. The current groundwater licences allow for total abstraction of 0.65 GL/yr. The proponent has submitted an application to DWER to amend GWL205621 for the abstraction of an additional 0.05 GL/yr, such that the total approved abstraction will be 0.7 GL/yr if approved. Water is a requirement for both construction and operation of the approved project. The groundwater abstraction activities required for the proposal are authorised under the RIWI Act via groundwater licences, however, are not authorised under MS1211. To provide clarity for DMAs and the proponent, the proposal includes an amendment to groundwater abstraction to allow for 0.7 GL/year. The EPA notes that the approved groundwater abstraction of up to 0.65 GL/yr was assessed by DWER during its assessment of the 5C licence application with no significant concerns raised. The proposal requires a cumulative total of 0.7 GL/yr, which is considered low and unlikely to result in a significant increase in risk or impact to inland water values. Further, the EPA considers the abstraction can be appropriately managed via the groundwater licences. While the EPA considers it appropriate to include groundwater limits on the proposal, it did not consider inland waters to be a key environmental factor at the conclusion of its assessment.
Air			
Greenhouse gas emissions	The total estimated Scope 1 emissions for the proposal is 66,628tCO ₂ -e per year during operations.	<u>Public comments</u> The claim that greenhouse gas (GHG) emissions from the proposal will be similar to those from the approved project is not justified, and does not seem likely, given the extensive Scope	The total estimated Scope 1 emissions for the approved project are 64,798tCO₂-e per year during operations. The additional estimated Scope 1 emissions associated with disposal of dredge spoil from maintenance dredging is 1,830tCO₂-e per year during operations. Greenhouse gas was not identified as a preliminary key environmental factor during the previous assessments. The Mardie Project was predicted to contribute 45,760 tCO₂-e of scope 1 emissions (over the first two years from vegetation clearing) and 53,292 tCO₂-e per year of scope 2 emissions (from

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
		1 emissions from diesel/fuel oil use associated with offshore dredge material disposal. Accurate GHG emissions values should be presented to support an appropriate assessment. <u>Agency comments</u> No agency comments were received.	natural gas and diesel consumption) during operations, to produce 4.4 Mtpa of salt. The Optimised Mardie Project increased production to 5.35 Mtpa (21.5%). The EPA noted that the Optimised Mardie Project increased Scope 1 emissions to 64,798tCO₂-e per year. Given the low export volumes and product transport distances within Australia, Scope 3 emissions were not expected to be significant. The scope 1 emissions estimated for the approved project are well under the NGERs reporting threshold of 100,000tCO₂-e per year. The proponent prepared a GHG estimate for the proposed offshore disposal of dredging spoil from capital dredging (based on a total of 294 runs during a 6-month period) and maintenance dredging (based on a total of 1,288 runs over a 56-year period) resulting from the proposal. The additional GHG emissions are not predicted to be significant (1,830 tCO₂-e per year during operations) and will not result in the proposal exceeding the 100,000tCO₂-e per annum threshold. The EPA therefore considers it is unlikely the proposal would have a significant impact on greenhouse gas emissions based on: - the scope 1 emissions from the approved project do not exceed 100,000tCO₂-e per annum - the estimated additional GHG emissions from the proposal are minimal and do no result in the proposal approaching the 100,000tCO₂-e per annum threshold - the passive nature of the approved project (evaporative solar project that utilises seawater to produce raw salts). Accordingly, the EPA did not consider greenhouse gas emissions to be a key environmental factor at the conclusion of its assessment.
People			

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Social Surrounds	The proposal, specifically the expansion of the existing airstrip, has the potential to impact social surrounds related aboriginal heritage values if they were present. In addition, concerns were raised during the public comment period about the impact of the proposed dredge spoil ground DMPA4 on commercial fishing.	<u>Public comments</u> The Pilbara coastline supports vital nursery and juvenile habitats for key fisheries and endangered species such as the bluespotted emperor, green sawfish, and prawn species – many of which are essential to commercial fisheries. WA's Pilbara fisheries are a significant food resource that is already under pressure. <u>Agency comments</u> No agency comments were received.	The EPA identified social surrounds as a key environmental factor in its assessment of the Optimised Mardie (approved project) and MS 1211 authorised the following impacts related to social surrounds: • disturbance to 6 DPLH Aboriginal heritage sites. • disturbance of 3,512 ha land used for traditional purposes. The EPA assessed the impacts above and considered that Aboriginal cultural heritage is likely to be managed through the implementation of recommended conditions, so that it is consistent with the EPA objective for social surroundings. In assessing the proposal, no additional aboriginal heritage sites or places were identified that would be disturbed. The proponent commissioned an Aboriginal heritage assessment for the airfield in 2024. No Aboriginal sites or places identified within the airstrip study area portion of the TDE during the site avoidance Aboriginal Heritage survey undertaken with the Yaburara and Mardudhunera Tradition Owners (Horizon Heritage, 2024). One registered heritage site (Wiruwandi Plain (DPLH 10351)) is immediately adjacent to the airstrip tenement L08/325. However, this site will not be impacted by the proposed works at the airstrip. The EPA has recommended outcome-based conditions (condition B8-1) to limit direct disturbance to Aboriginal cultural heritage and recommended condition B8-3 to require ongoing consultation and engagement with native title parties. The EPA has addressed impacts to fisheries in BCH section 2.2. Accordingly, the EPA did not consider social surrounds to be a key environmental factor at the conclusion of its assessment.

Appendix F: List of submitters

7-day comment on referral

Organisations and public

- Four public comments were received during the 7-day comment period on the referred information.

Appendix G: Assessment timeline

Date	Progress stages	Time (weeks)
3 June 2025	EPA decided to assess – level of assessment set	
8 August 2025	EPA received final information for assessment	9
16 October 2025	EPA completed its assessment	9
13 November 2025	EPA provided report to the Minister for Environment	4
17 November 2025	EPA report published	3 days
8 December 2025	Appeals period closed	3

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the EPA decides to assess the proposal and records the level of assessment.

In this case, the EPA met its timeline objective to complete its assessment and provide a report to the Minister.

Appendix H: Relevant policy, guidance, procedures and references

The EPA had particular regard to the policies, guidelines and procedures listed below in the assessment of the proposal.

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