



Construction Environmental Management Plan

Dampier Seawater Desalination Plant

[RTIO-0213703](#)

Hamersley Iron Pty Limited

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Disclaimer and Limitation

This Environmental Management Plan has been prepared by Rio Tinto's Iron Ore group (Rio Tinto), on behalf of Hamersley Iron Pty Limited (the Proponent), specifically for the Dampier Seawater Desalination Plant Proposal.

Neither the document nor its content may be referred to without the express approval of Rio Tinto, unless the document has been submitted by Rio Tinto and approved by the relevant government regulator in connection with the Dampier Seawater Desalination Plant Proposal.

Document Status					
Rev	Author	Reviewer/s	Date	Approved for Issue	
				To Whom	Date
A	Advisian	Approvals, HSES, Ops Environment	8/09/2022	Approvals, Ops Environment	6/10/2022

SUMMARY

This Construction Environmental Management Plan (CEMP) has been prepared by Rio Tinto on behalf of Hamersley Iron Pty Limited (the Proponent) for the Dampier Seawater Desalination Plant Proposal (the Proposal). This CEMP specifically addresses the following environmental factors associated with construction activities of the Proposal:

- Marine Fauna
 - Commitments to ensure potential impacts associated with construction light spill, vessel movements (vessel strikes and hydrocarbon spills) and underwater noise are minimised; and
 - Setting appropriate management controls for construction activities to reduce risk of impacts to marine fauna.

Executive Summary Table 1 below presents the environmental objectives and management actions for the relevant environmental factor (Marine Fauna) to be met through implementation of this CEMP.

Summary Table 1: Environmental criteria and management actions to achieve environmental objectives for Marine Fauna

Proposal title		Dampier Seawater Desalination Plant
Proponent		Hamersley Iron Pty Ltd
Ministerial Statement number		Not applicable
Purpose of this CEMP		This Construction Environmental Management Plan (CEMP) describes how potential environmental impacts during the construction phase of the Project shall be managed. Implementation of this CEMP will ensure that the potential impacts caused by the construction of the Project will be minimised and the Environmental Protection Authority's (EPA's) Environmental Objectives for the key environmental factors shall be met.
Marine Fauna		
Environmental Protection Authority (EPA) Objective: <i>To ensure the biological diversity and ecological integrity are maintained.</i>		
Objective-based provisions	Predicted Impacts	<ul style="list-style-type: none"> • Construction light spill • Underwater noise • Vessel Movements (including vessel strikes and marine hydrocarbon spills)
	Environmental Objective	<p><i>'No reported negative impacts on marine fauna attributable to the construction lighting requirements of the Proposal'</i></p> <p><i>And</i></p> <p><i>'No reported negative impacts on marine fauna attributable to underwater noise and vessel movements during construction requirements of the Proposal'</i></p>

	Management Actions	<p><u>Construction Light Spill</u></p> <ol style="list-style-type: none"> 1. Lighting that does not require to be continually lit will be switched off and/or activated by motion sensors. 2. Lighting design will follow the core principles of the State's Guidelines <i>EAG 5 for Protecting Marine Turtles from Light Impacts</i> (EPA 2010) guidelines including: <ul style="list-style-type: none"> o Keep it OFF (keep light off the beach and lights off when not needed) o Keep it LOW (mount lights low down with lowest intensity for the job) o Keep it SHIELDED (stop all light escaping upwards and outwards), and o Keep it LONG (use long wavelength lights). 3. To complement the State's guidelines, the lighting design will follow the principles of Commonwealth's <i>Best Practice Lighting Design outlined in the National Light Pollution Guidelines for Wildlife</i> (Commonwealth of Australia, 2020), including: <ul style="list-style-type: none"> o Use lighting only where/when needed o Direct lighting downwards and away from sensitive habitats (ocean) <p><u>Underwater Noise</u></p> <ol style="list-style-type: none"> 4. Suitably trained marine fauna observer will be located at an elevated location adjacent to the intake pond immediately prior to and during all piling works 5. Shut down and soft-start protocols proposed should protected marine fauna species enter the monitored exclusion zone. 6. Piling restricted to daylight hours. <p><u>Vessel Movements (Vessel Strikes and Marine Hydrocarbon Spills)</u></p> <ol style="list-style-type: none"> 7. Vessels will travel at less than 8 knots when within 45 m of the wharf, as per the Port of Dampier Handbook. 8. Vessels will adhere to requirements under the Australian National Guidelines for Whale and Dolphin Watching 2017 9. All hydrocarbon spills will be reported and managed in accordance with the Oil Spill Contingency Plan – Cape Lambert and Dampier Ports.
Proposed Construction Dates		Q1 2024
CEMP required pre-construction?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No The Contractor appointed to undertake the works will incorporate the management framework into the Contractor's CEMP prior to construction commencing.

Corporate endorsement

I hereby certify that to the best of my knowledge, the provisions within this Dampier Seawater Desalination Plant Proposal Environmental Management Plan are true and correct.

Name: DECLAN DOHERTY

Signed: 

Designation: GM,

Date: 6.10.2022

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Appendix 1: Conceptual Framework for the Development of Rio Tinto Environmental Management Plans

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Abbreviations

ACAR	Annual Compliance Assessment Report
Baseline phase	Data collected before commencement of proposed operations
CEMP	Construction Environment Management Plan
CHMP	Cultural Heritage Management Plan
Commissioning phase	The sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications
Construction phase	The activities undertaken to build infrastructure and verify to that each item or component of infrastructure has been constructed with no material defects
Contractor	Those companies that have been pre-qualified according to Company procurement requirements and have a contract with Company or the Project to provide goods and/or services, or are appointed to undertake works.
CTD	Current, temperature and depth
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Cwth)
DFCA	Department of Biodiversity, Conservation and Attractions
DEZ	Disturbance Exclusion Zone
DWER	Department of Water and Environmental Regulation
EAG	Environmental Assessment Guide
EMP	Environmental Management Plan
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EQC	Environmental quality criteria
EQO	Environmental quality objectives
EQP	Environmental Quality Plan
EQS	Environmental quality standards
ERD	Environmental Review Document
LEP	Level of ecological protection
Management level	Level of management appropriate for an environmental value, as determined by assessment described in the Framework for the Development of Rio Tinto Environmental Management Plans
MEQMMP	Marine Environmental Quality Monitoring and Management Plan
MNES	Matters of National Environmental Significance
OEMP	Operational Environment Desalination Plant
Proponent	Hamersley Iron Pty Limited
Proposal	Dampier Seawater Desalination Plant Proposal
Framework for EMPs	Rio Tinto Framework for development of EMPs as described in Appendix 1.
SPR	A ' <i>causal pathway conceptual model</i> ' (Pressure, Stressor, Receptor) approach for potential impacts due to project (refer to Appendix 1).

TSS	Total suspended solids
WET	Whole effluent toxicity

1. CONTEXT, SCOPE AND RATIONALE

This Construction Environmental Management Plan (CEMP) has been prepared by Rio Tinto on behalf of Hamersley Iron Pty Limited (the Proponent) for the Dampier Seawater Desalination Plant Proposal (the Proposal). This CEMP was produced to support assessment of the Proposal under the Western Australia (WA) *Environmental Protection Act 1986* (EP Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This CEMP was developed according to the Conceptual Framework for the Development of Rio Tinto EMPs (internal guidance described in Appendix 1). This framework provides a standardised approach to environmental management at Rio Tinto's Pilbara Iron Ore Operations, in accordance with WA and Commonwealth Policy and Guidance, including:

- *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2021* (EPA, 2021a)
- Environment Protection Authority's (EPA) *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (EPA, 2021b)
- Environment Protection Authority's (EPA) *Interim Guidance for Environmental outcomes and outcomes-based conditions* (EPA, 2021c)
- *Environmental Impact Assessment (Divisions 1 and 2) Procedures Manual* (EPA, 2021d)
- *Environmental Management Plan Guidelines* (Commonwealth of Australia, 2014).

This CEMP is subject to approval by the Environmental Protection Authority (EPA) and will subsequently be implemented. The Contractor appointed to undertake the works will incorporate the approved management framework into the Contractor's CEMP prior to construction commencing.

Implementation of this CEMP, including phases for monitoring and reporting, will be staged to align with construction activities within the development envelope (see Section 2).

Additional management plans subject to approval by the Environmental Protection Authority (EPA) include the following:

- Dampier Seawater Desalination Plant Cultural Heritage Management Plan (CHMP) (Rio Tinto, 2022a)
- Dampier Seawater Desalination Plant Operational Environmental Management Plan (OEMP) (Rio Tinto, 2022b).

1.1 Proposal

This Proposal is for the construction aspects of the desalination plant at Parker Point, located approximately 1 km north-east of Dampier township within the Proponent's existing Dampier port industrial area (Figure 1-1 to 1-4).

The Proposal will establish a potable water supply for the Proponent's Dampier operations (including Parker Point and East Intercourse Island Ports), the town of Dampier and proposed connection into the West Pilbara Water Supply Scheme, which services the broader Dampier region. The desalination plant may be delivered in stages up to a maximum production capacity of 8 GL/a of potable water to meet future water demands.

The Proposal includes the construction and operation of a seawater desalination plant and water transfer pipelines connecting the plant to potable water tanks and the existing West Pilbara Water Supply Scheme (Figure 1-2). The Proposal includes:

- Seawater desalination plant
- Seawater intake
- Outfall to ocean
- Water transfer pipelines connecting the plant to potable water tanks and the existing West Pilbara Water Supply Scheme
- Other associated supporting infrastructure and services.

The seawater intake will be located within the existing intake pond to the south-west of the desalination plant (previously used as a cooling-water pond for the decommissioned power station), specifically to minimise the Proposal's impact to the marine environment. The desalination plant brine stream will be discharged to the ocean via an outfall constructed along the existing Parker Point wharf.

The Proposal is being developed separately, but partially within the footprint of existing Port of Dampier operations at Parker Point. Hence, activities that are part of, or required for continuation of, the existing Parker Point wharf operations do not form part of this assessment or management plan.

The scope of the Proposal subject to this assessment and management plan also excludes:

- Low impact activities, required during the Part IV assessment, including geotechnical assessments and investigations, environmental and heritage investigations. These activities will be subject to provisions under relevant legislation.
- Accommodation camps, or upgrades to accommodation camps, and associated facilities (constructed during the Part IV assessment in accordance with separate authorisations).

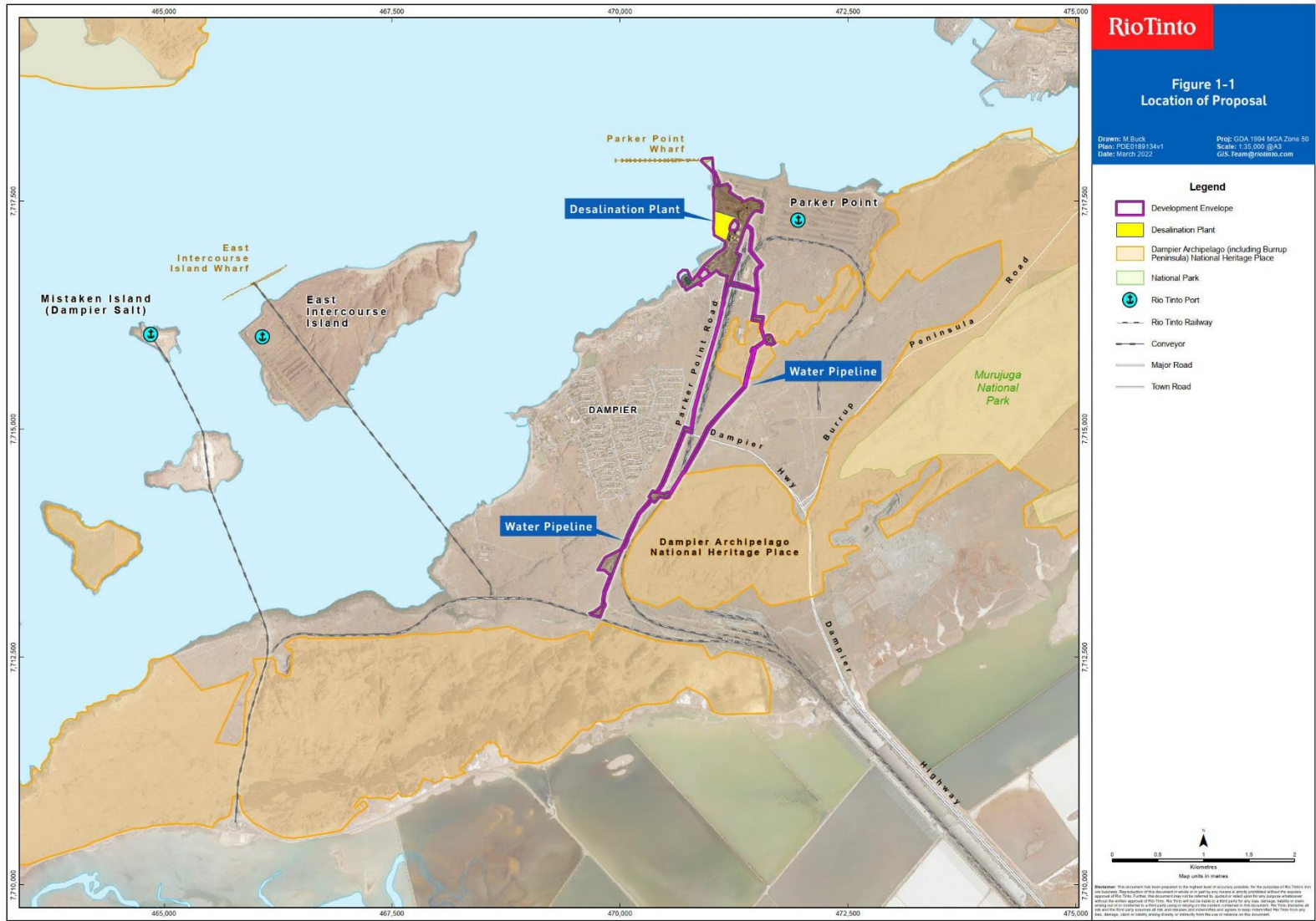


Figure 1-1: Regional Location of the Dampier Seawater Desalination Plant



Figure 1-2: Development Envelope of the Dampier Seawater Desalination Plant (Map 1)

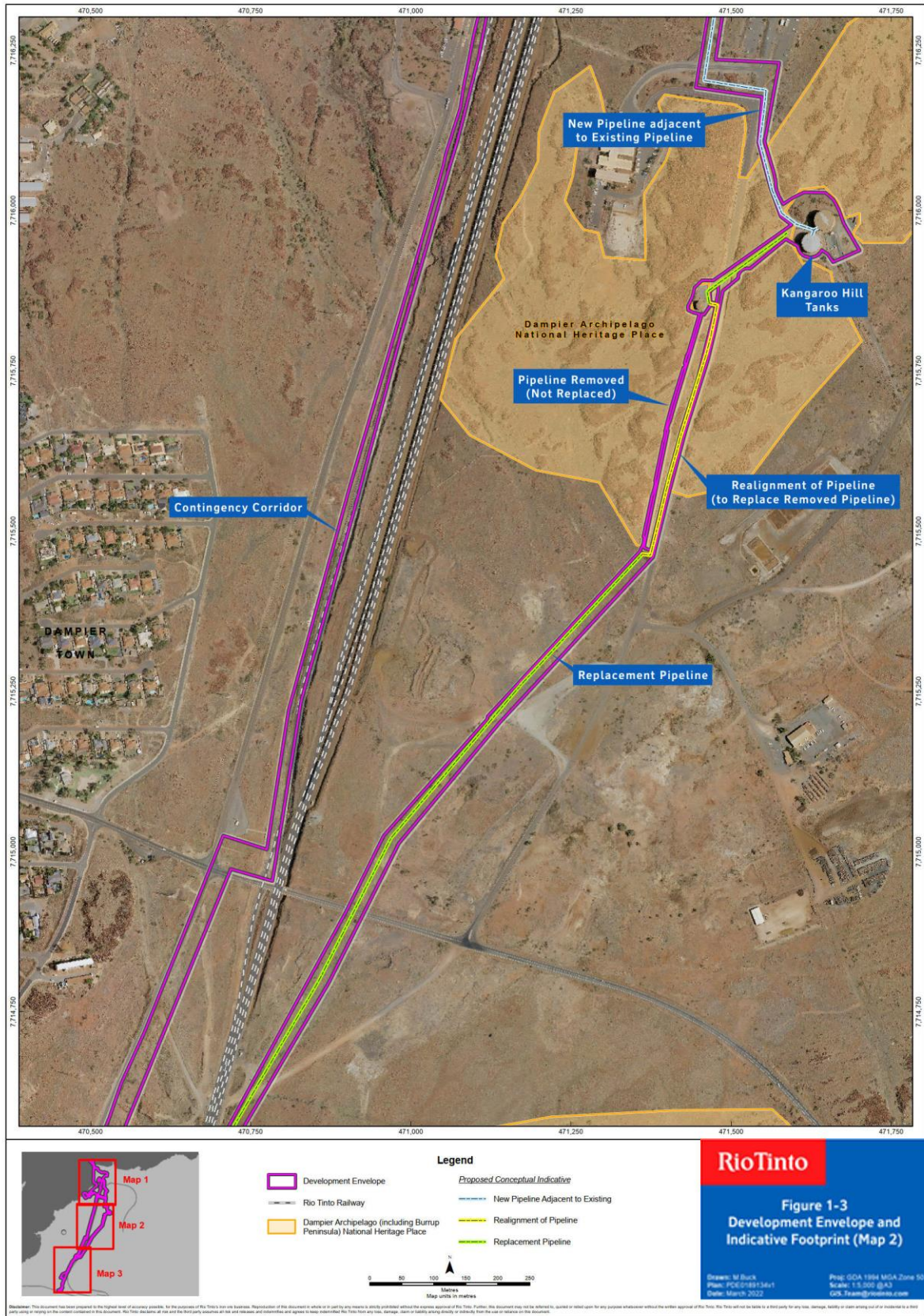


Figure 1-3: Development Envelope of the Dampier Seawater Desalination Plant (Map 2)

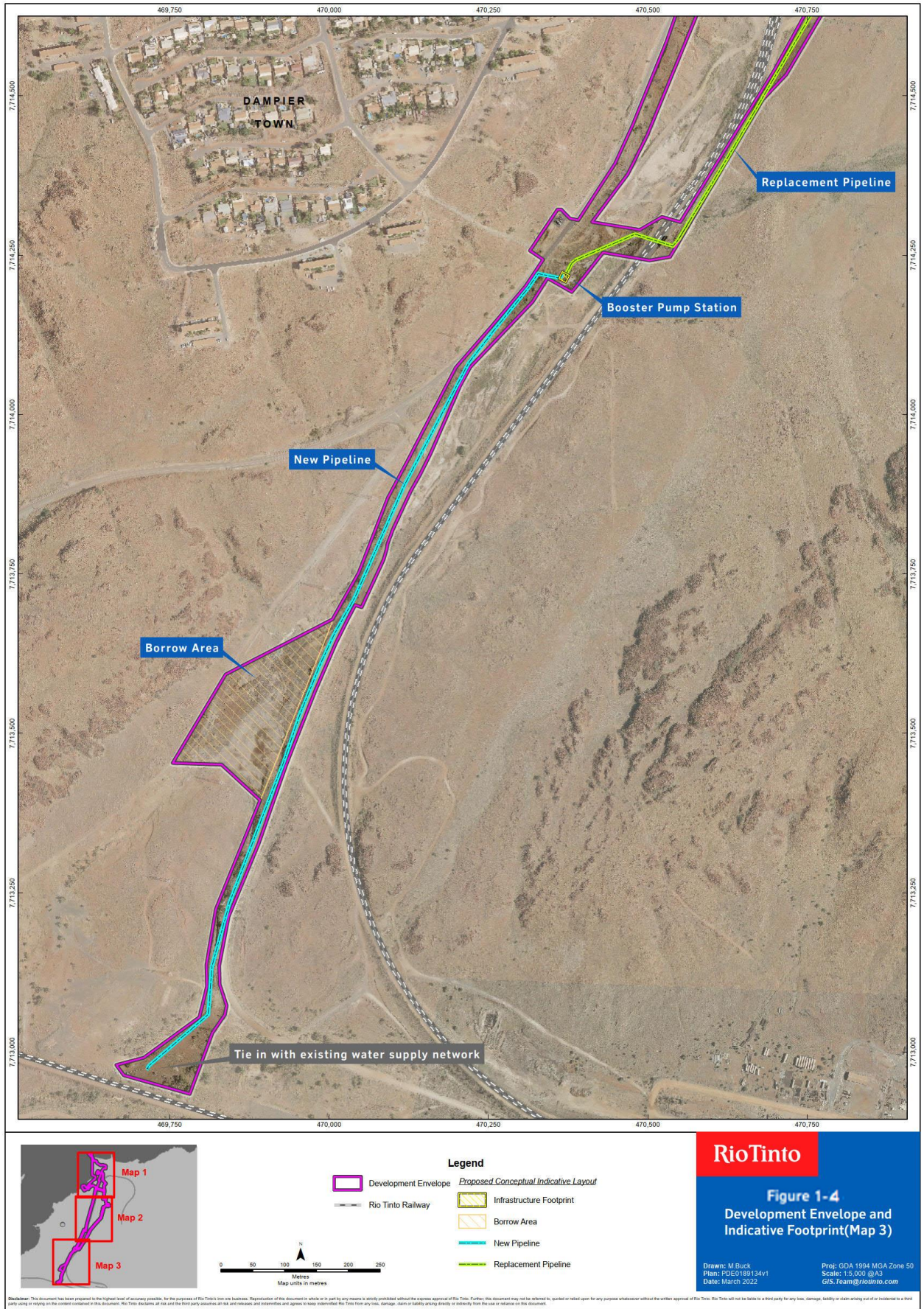


Figure 1-4: Development Envelope of the Dampier Seawater Desalination Plant (Map 3)

1.2 Key Environmental Factors

The key environmental factors requiring specific management actions during the construction stage of the Proposal, as identified in the EPA Referral Supporting Document (Rio Tinto, 2022a), include:

- Marine Fauna
- Social Surroundings

This CEMP addresses Marine Fauna environmental factor only, with the associated environmental values and potential impacts described in Table 1-1.

The Social Surroundings key environmental factor will be addressed in the Dampier Seawater Desalination Plant Cultural Heritage Management Plan (Rio Tinto, 2022a). Prior to commencement of the proposed project construction a Project CEMP will be prepared. The Project CEMP will detail the management provisions proposed in the Project Environmental Management System and will be implemented to complement the management provisions detailed in the DSDP CHMP and this referral CEMP.

Table 1-1: Environmental values and receptors and potential impacts from the Proposal addressed in this Environmental Management Plan (as per the SPR model¹).

Environmental value (receptor)	Potential impacts	
	Direct	Indirect
Marine Fauna (Construction Light Spill)	Light emissions causing misorientation/disorientation of marine turtle hatchlings and seabirds	No indirect predicted impacts
Marine Fauna (Use of vessels and hydrocarbon spills)	Injury or fatality as a result of interaction with vessels. Impacts from accidental unplanned hydrocarbon discharges.	No indirect predicted impacts
Marine Fauna (Underwater noise)	No predicted direct impacts	Behavioural responses to short term and temporary underwater noise.

¹ A 'causal pathway conceptual model' (Stressor, Pressure, Receptor [SPR]) approach for potential impacts due to a Proposal (Appendix 1).

1.3 Condition Requirements

The Proposal is currently being assessed under Part IV of the EP Act, and the EPBC Act. Considering the information provided in the EPA Referral Supporting Document (Rio Tinto 2022c), this CEMP proposes environmental monitoring and management to ensure environmental outcomes for the preliminary key environmental factor of Marine Fauna are achieved.

1.4 Approach

This CEMP was drafted in accordance with the Conceptual Framework for the Development of Rio Tinto Environmental Management Plans (internal guidance described in Appendix 1). This conceptual approach to management considers the conservation significance of the environmental value (receptor) based on conservation status at local, state and regional levels. Management level (low, moderate or high) is assigned in order to achieve the environmental outcome according to the conservation significance of the environmental value and the significance of impact/s predicted over spatial and temporal scales.

1.5 Management Rationale

This CEMP adopts objective-based provisions to support the proposed environmental objectives.

Objective-based CEMP provisions

Objective-based (formerly management-based) provisions are applied where a level of uncertainty exists or where performance cannot be measured against trigger or threshold criteria. In this case, management targets are established to measure success of management actions in achieving the environmental objective.

Outcomes-based provisions were not considered in the management approach for this CEMP due to the short duration of the construction phase. The relatively short timeframe to construct the desalination infrastructure are likely to result in minor and temporary impacts which can adequately managed, therefore outcome-based provisions are not considered applicable to this phase.

2. CEMP COMPONENTS

This section of the CEMP identifies the components that the Proponent will implement to ensure that the defined environmental objectives are met during construction of the Proposal. Objectives-based provisions are detailed in Table 2-1 including monitoring and reporting requirements.

Implementation of this CEMP will align with commencement of relevant construction activities.

Table 2-1: Environmental Management Plan provisions – Marine Fauna

<p>EPA Factor: Marine Fauna</p> <p>Objective: To ensure the biological diversity and ecological integrity are maintained.</p> <p>Outcome: 'No reported negative impacts on marine fauna attributable to the construction lighting or underwater noise requirements of the Proposal, and no negative impacts from vessels and hydrocarbon spills'</p> <p>Key environmental values: Biologically Important Habitat for marine turtle species, protected fish species (sawfish) are known to occur in the area</p> <p>Key impacts and risks: Behavioral responses of marine fauna to construction light spill and underwater noise, and impacts from interaction with vessels and hydrocarbon spills.</p>

Objective based provisions					
LOW LEVEL OF MANAGEMENT – Construction Light Spills					
Management Actions	Management Target	Monitoring	Timing/Frequency of Monitoring	Monitoring Responsibility	Reporting
<p>Early Response:</p> <p>1. Ensure onshore sources of light are not directly visible at areas of sensitive habitat.</p>	<p>Reduce the output of light from the Project Area to as low as reasonably practicable.</p> <ul style="list-style-type: none"> • Construction lighting that does not require to be continually lit will be switched off and/or activated by motion sensors. • Where construction lighting is required at night for safety purposes, it will follow the core principles of the State's Guidelines EAG 5 for Protecting Marine Turtles from Light Impacts (EPA 2010) where practicable. Guidelines include: <ul style="list-style-type: none"> ○ Keep it OFF (keep light off the beach and lights off when not needed) ○ Keep it LOW (mount lights low down with lowest intensity for the job) ○ Keep it SHIELDED (stop all light escaping upwards and outwards) ○ Keep it LONG (use long wavelength lights). • To compliment the State's guidelines, the construction lighting will follow the principles of Commonwealth's Best Practice Lighting Design outlined in the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia, 2020), including: <ul style="list-style-type: none"> ○ Use lighting only where/when needed ○ Direct lighting downwards and away from sensitive habitats (ocean) 	<ul style="list-style-type: none"> • Annual site light auditing prior to turtle season at night and under new moon (no natural light) conditions. Site light auditing to identify problem areas containing issues, including: <ul style="list-style-type: none"> ○ Light spill hotspots ○ No shielding or filters used ○ Incorrect angling of floodlights ○ Non-compliant lighting being used. 	<ul style="list-style-type: none"> • Annual Light Auditing (Prior to Turtle Season / October) 	<ul style="list-style-type: none"> • Contractor / Proponent's delegate 	<ul style="list-style-type: none"> • The environmental objective will be reported for each calendar year by 30 April in the ACAR.

LOW LEVEL OF MANAGEMENT – Interaction with vessels and hydrocarbon spills

Management Actions	Management Target	Monitoring	Timing/Frequency of Monitoring	Monitoring Responsibility	Reporting
<p>Early Response:</p> <p>2. Applying appropriate fauna exclusion zones and vessel restrictions to ensure fauna are not impacted by vessels.</p>	<p>Ensure marine fauna are not injured or significantly disturbed due to vessel interaction</p> <ul style="list-style-type: none"> Vessels will travel at less than 8 knots when within 45 m of the wharf, as per the Port of Dampier Handbook. Vessels will adhere to requirements under the Australian National Guidelines for Whale and Dolphin Watching 2017 (Commonwealth of Australia, 2017), specifically: <ul style="list-style-type: none"> Implementation of a no approach zone within 100 m of an adult whale (and extended to Whale Sharks or Dugong) Implementation of a caution zone within 300 m either side of a whale (and extended to Whale Sharks or Dugong), where vessel speed will not exceed 6 knots Implementation of a no approach zone within 50 m of an adult dolphin Implementation of a caution zone within 150 m either side of a dolphin, where vessel speed will not exceed 6 knots Exclusion from the caution zones if a calf is present. 	<ul style="list-style-type: none"> Records of marine fauna observations kept Review of records and compliance to marine fauna procedure (i.e. marine fauna observations undertaken, vessels adhering to no approach zones) 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> Contractor / Proponent's delegate 	<ul style="list-style-type: none"> Notify DBCA and DAWE within 48 hours if a protected marine fauna species is injured or killed due to vessel impact. The environmental objective will be reported against the management target for each calendar year by 30 April in the ACAR.
<p>Early Response</p> <p>3. Reduce the impacts of unplanned spills by applying appropriate response measures.</p>	<ul style="list-style-type: none"> Construction vessels over 400 gross tonnes must have a ship oil pollution emergency plan to minimise the likelihood of unplanned spills entering the marine environment. All spills will be reported and managed in accordance with the Oil Spill Contingency Plan – Cape Lambert and Dampier Ports. 	<ul style="list-style-type: none"> Records of all hydrocarbon/chemical spills kept 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> Contractor / Proponent's delegate 	<ul style="list-style-type: none"> All spills will be reported in accordance with the Oil Spill Contingency Plan – Cape Lambert and Dampier Ports The environmental objective will be reported against the management target for each calendar year by 30 April in the ACAR.
<p>Early Response:</p> <p>4. Applying appropriate vessel restrictions to reduce risk of introduction of marine species.</p>	<ul style="list-style-type: none"> Vessels will only be used for construction of the outfall pipeline where land-based methods are not fit for purpose. No ballast water exchange will occur during vessel operations to avoid introduction of invasive marine species (IMS) from ballast water. 	<ul style="list-style-type: none"> Vessel ballast Logs 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> Contractor / Proponent's delegate 	<ul style="list-style-type: none"> The environmental objective will be reported against the management target for each calendar year by 30 April in the ACAR.

LOW LEVEL OF MANAGEMENT – Underwater Noise					
Management Actions	Management Target	Monitoring	Timing/Frequency of Monitoring	Monitoring Responsibility	Reporting
<p>Early Response:</p> <p>5. Designing construction activities to ensure reduction of noise and visibility of marine fauna.</p>	<p>Reduce the impacts of underwater noise from the Project Area to as low as reasonably practicable</p> <ol style="list-style-type: none"> 1. Piles to secure the seawater intake pumps will be installed into the bedrock using drilling methods instead of driving methods to eliminate sources of impulsive noise 2. Culverts will be blocked during construction activities within the existing intake pond, reducing noise propagation out of the pond. 3. Based on the Commonwealth's EPBC Act 1999 policy and guidance documentation, as well as technical expert advice (JASCO 2022), the following exclusion zone, suspension zone and start-up procedures will be implemented during all pile-drilling to minimise underwater noise impacts on marine fauna (including marine turtles, cetaceans and sawfish species): <ul style="list-style-type: none"> o Pile drilling shall occur during day-light hours only o A 100m exclusion zone around the drilling site will be monitored by MFO for 15 minutes prior to pile-drilling operations commencing o If cetaceans (whales/dolphins), marine turtles or sawfish species are observed within the 100m exclusion zone, pile-drilling shall not commence until marine fauna are no longer observed within the 100m exclusion zone for 15 minutes o If no cetaceans, marine turtle, or sawfish species are observed within the 100 metre exclusion zone, the pile-drilling 'soft start-up ' procedure may commence: <ul style="list-style-type: none"> o Gradual increase in drill speed over a minimum of 15min o After a minimum of 15min, commence full capacity drilling. o If cetaceans (whales/dolphins), marine turtles or sawfish species are observed within the 50m suspension zone, pile-drilling shall cease until marine fauna is outside the 100 metre exclusion zone or has not been observed for 15min. The pile-drilling 'soft start-up ' procedure must then recommence. • A suitably trained marine fauna observer will be located at an elevated location adjacent to the intake pond immediately prior to and during all piling works • During periods of low visibility (where a distance of 100m cannot be clearly viewed), pile drilling activities may be undertaken provided that during the preceding 24 hour period: <ul style="list-style-type: none"> o There have not been 3 or more shut down situations due to marine fauna sightings o A 2 hour period of continual observations during pile drilling works was undertaken in good visibility immediately prior to low visibility (to a distance of 100 m) and no marine fauna sighted. • Piling to occur during daylight hours unless in the case of a safety/emergency; at such times it will not extend beyond 10 pm. 	<ul style="list-style-type: none"> • Daily records of marine fauna observations kept when piling undertaken • Daily review of records and compliance to marine fauna procedure (i.e. marine fauna observations undertaken, piling logs demonstrating soft start-up being undertaken). • Marine fauna observations ongoing for duration of works. 	<ul style="list-style-type: none"> • Construction 	<ul style="list-style-type: none"> • Contractor / Proponent's delegate 	<ul style="list-style-type: none"> • The environmental objective will be reported against the management target for each calendar year by 30 April in the ACAR.

2.1 Reporting

For each calendar year, during the construction phase (refer to Section 2), the environmental objectives will be reported against the management targets in the Annual Compliance Assessment Report (ACAR) for the Proposal.

In the event that management targets are not met during the reporting period, the ACAR will include a description of the effectiveness of any management contingency actions that have been implemented to manage the impact. A stand-alone report will also be produced for the DWER within 21 days of any reporting against failure to meet management targets. A follow up report detailing the adequacy of the response actions will also be submitted to the DWER within 12 months of the initial notification.

3. ADAPTIVE MANAGEMENT AND REVIEW OF THIS CEMP

The Conceptual Framework for the development of Rio Tinto EMPs provides details of the review and adaptive management process (Appendix 1). The approach will include evaluation of:

- Monitoring data and comparison to baseline and reference site data on a regular basis to verify responses to potential impacts.
- The effectiveness and relevance of trigger and threshold contingency actions against environmental outcomes, on an annual basis, to determine if any changes to the criteria, monitoring or response actions are required.

Based on the results of the review process the Proponent will update and adjust the management measures and strategies in consultation with DWER (Table 5-1).

4. STAKEHOLDER CONSULTATION

Consistent with the DWER expectations for the ERD to align with the principles of environmental impact assessment, the Proponent will consult with stakeholders, including the DWER-EPA Marine Ecosystem Branch during construction of the Proposal.

5. CHANGES TO AN EMP

Table 5-1: Changes to the Dampier Seawater Desalination Plant CEMP

Complexity of Changes		Minor Revisions <input type="checkbox"/>	Moderate Revisions <input type="checkbox"/>	Major Revisions <input type="checkbox"/>
Number of Key Environmental Factors		One <input type="checkbox"/>	Two – Three <input type="checkbox"/>	> Three <input type="checkbox"/>
Date Revision submitted to EPA: DD/MM/YYYY				
Proponent's Operational Requirement Timeframe for approval of revision < One Month <input type="checkbox"/> < Six Months <input type="checkbox"/> > Six Months <input type="checkbox"/> None <input type="checkbox"/>				
Reason for Timeframe:				
Item No.	EMP Section No.	EMP Page No.	Summary of Change	Reason for Change

6. REFERENCES

- Commonwealth of Australia, 2014. Environmental Management Plan Guidelines
- Commonwealth of Australia, 2017. Australian National Guidelines for Whale and Dolphin Watching.
- Commonwealth of Australia, 2020. National Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds.
- Environmental Protection Authority (EPA), 2010. EPA Environmental Assessment Guidelines No 5: Environmental Assessment Guideline for Protecting Marine Turtles from Light Impacts. November 2010.
- Environmental Protection Authority (EPA), 2021a. Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016, Western Australian Government Gazette No. 223.
- Environmental Protection Authority (EPA), 2021b. Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans, Environmental Protection Authority, Perth.
- Environmental Protection Authority (EPA), 2021c. Interim Guidance for Environmental outcomes and outcomes-based conditions. Environmental Protection Authority, Perth
- Environmental Protection Authority (EPA), 2021d. Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual, Environmental Protection Authority, Perth.
- JASCO, 2022. Memo: Pile Drilling Underwater Noise Estimation. Memo prepared for Rio Tinto, July 2022.
- Rio Tinto, 2022a. Dampier Seawater Desalination Plant Cultural Heritage Management Plan.
- Rio Tinto, 2022b. Dampier Seawater Desalination Plant – Operational Environmental Management Plan.
- Rio Tinto, 2022c. Dampier Seawater Desalination Plant – EPA Referral Supporting Document.

7. APPENDICES

Appendix 1 Conceptual Framework for the Development of Rio Tinto Environmental Management Plans

For the development of Environmental Management Plans (EMPs), a conceptual framework model has been applied. The framework ensures linkages between current understanding, potential impacts, outcomes, adaptive management, and consistent monitoring and management practices. The framework is a stepwise process that considers the environmental values as identified in the Proposal's Environmental Impact Assessment Documents, in order to implement appropriate management measures and actions to ensure the environmental objective can be achieved.

The first step of the framework examines in detail the current knowledge of the environmental value(s) associated with the Proposal. This is compiled from information provided in the EIA documents, any additional environmental surveys and examined with input from internal experts. Environmental values associated with the Proposal are evaluated based on their conservation status at local, state and regional levels.

The second step of the framework is to define relevant indicators, level of management and outcomes and associated criteria.

A source-pathway receptor (SPR) conceptual modelling approach is used to inform the selection of indicators, as recommended by national and international guidance (DIIS 2016). The SPR conceptual model sets out the collective knowledge, experience and perspective on the environmental value (system of interest) and illustrates assumptions about how the value (system) functions and what is believed to be the important or dominant processes and their linkages. This includes factors that are perceived to be driving changes in the value (system) and the consequences of changes in these factors. The conceptual model also includes factors such as spatial boundaries as well as temporal and seasonal variations.

The number and type of indicators selected to monitor and measure changes in individual environmental values will depend on several factors including the conservation status of the environmental value; the level of management required; the environmental outcomes; location; and the types of pressures and stressors identified.

The required level of management (Low, Moderate or High) is determined using a matrix assessment with four factors relating to predicted impacts from the Proposal including: likelihood; consequence; spatial extent; and temporal duration (Table A 1). The higher the level of management, the more lines of evidence may be deemed necessary to meet the environmental outcome (that is more indicators and / or more frequent monitoring schedules).

Draft (interim) trigger and threshold criteria will be determined for each environmental value. Early response criteria (if appropriate) may be defined for indicators for the environmental value (e.g. groundwater depth) or the environmental value itself (e.g. vegetation status). Trigger and threshold criteria will directly relate to the environmental value and objective itself.

The number of trigger criteria, and the sensitivity of both trigger and threshold criteria, will be determined by the associated management level for the environmental value.

The third step of the framework is to undertake an evaluation of the baseline and/ or current data to assess against criteria and determine whether the environmental outcomes are likely to be met with existing proposed indicators. This step should also occur as part of reporting requirements when criteria are exceeded. Where criteria are not being met the adaptive management process should be implemented.

The fourth step of the framework is to implement the EMP. To ensure successful implementation, relevant internal and external (regulatory) stakeholders are consulted to ensure the EMP meets management expectations and can be implemented for the associated Proposal.

The fifth, final step of the framework considers a revision of or alternatives of indicators and/ or criteria. This step is considered where monitoring and assessment indicates outcomes are not being met. Where data suggests that outcomes cannot be met using current associated indicators and criteria, repeat the second to fifth step of the framework, with consideration of the additional information gained through monitoring

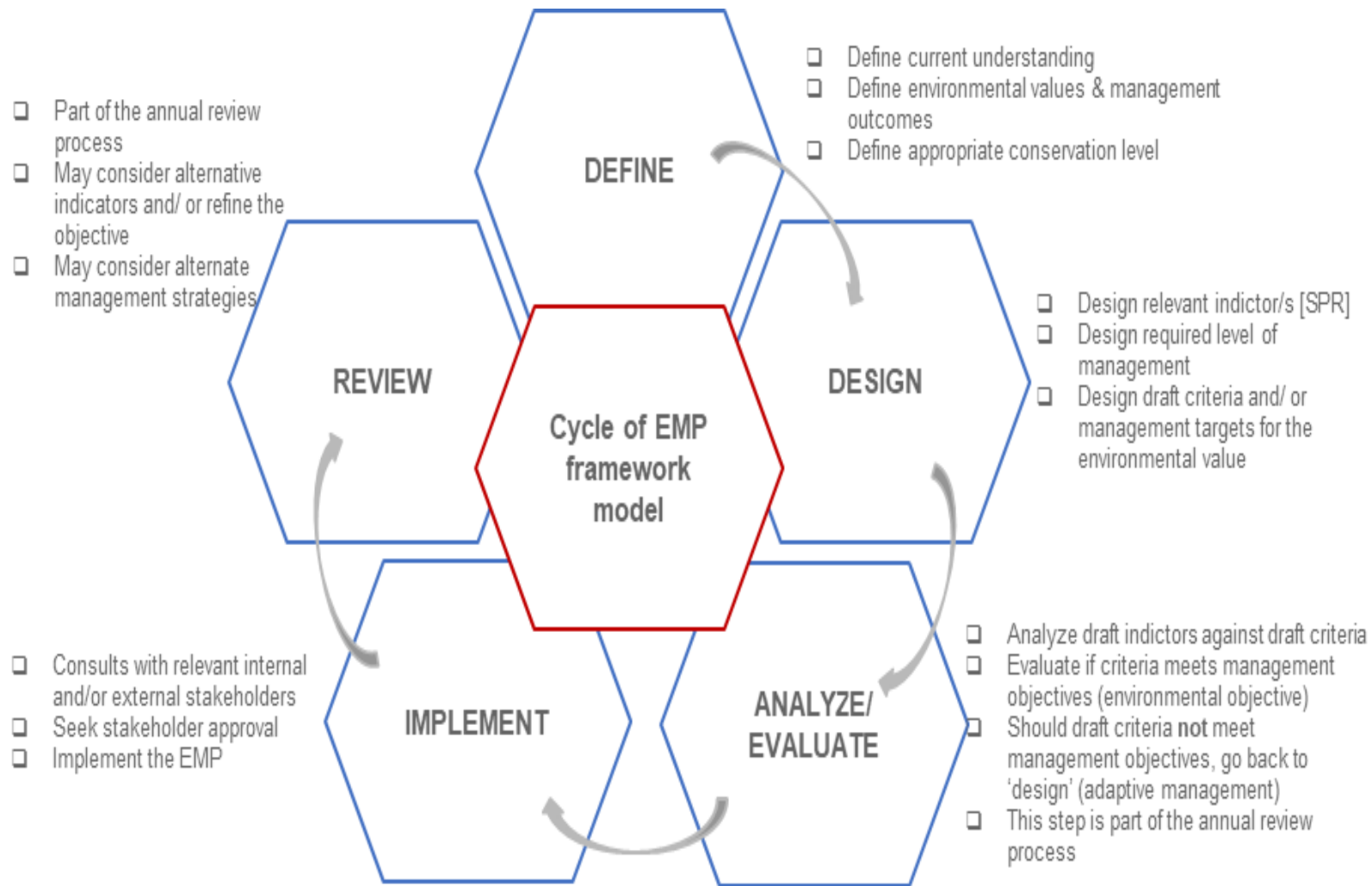


Figure A 1: Cycle of the conceptual Environmental Management Plan framework model

Table A 1: Management level assessment matrix

Factor	Level of required management (increasing to right)				
Likelihood	Rare	Unlikely	Possible	Likely	Almost Certain
Consequence	Environmental values (species, communities /ecosystems) with no formal recognition for conservation purposes	Environmental values (species, communities /ecosystems) with no formal recognition for conservation purposes but may hold local environmental significance	Environmental values (species, communities /ecosystems) recognised as being of conservation interest	Environmental values (species, communities /ecosystems) directly protected under State and Commonwealth legislation	Environmental values (species, communities /ecosystems) directly protected under State and Commonwealth legislation (with potential severe consequence).
Extent	Immediate	Surrounds	Local	Catchment	Sub-regional
Duration	Days	Months	Years	Decades	Centuries

- The factors act independently of one another, and an increased risk of one factor will not necessary result in other factors with higher risk.
- Level/s of management gives an indication of potential importance, however important to note that regulatory focus, cumulative impact and heritage values may impact the way the environmental values are treated/ managed.

Reference

DIIS (2016). Leading Practice Sustainable Development Program for the Mining Industry - Preventing Acid and Metalliferous Drainage Handbook Department of Industry, Innovation and Science (DIIS), Canberra, Australia.