Woodside Solar Facility Environment Management Plan

PA1000RH0000003

Revision 8

19 April 2024

VERSION CONTROL

Revision	Description	Date	Authorisation
			Approved by
0	Submission as part of referral documentation	November 2021	Gemma Lynch Head of Power Opportunities
1	Revised following EPA comments	December 2021	Gemma Lynch Head of Power Opportunities
2	Response to EPA RFI	August 2022	Gemma Lynch Head of Power Opportunities
3	Submission as part of ERD during assessment	December 2022	Gemma Lynch Head of Power Opportunities
4	Update as part of response to submissions	May 2023	Michael Gibson Head of Woodside Power
5	Update to reflect State and Commonwealth approval conditions	October 2023	Michael Gibson Head of Woodside Power
6	Response to DWER comments	March 2024	Michael Gibson Head of Woodside Power
7	Update to Figure 2.1	April 2024	Michael Gibson Head of Woodside Power
8	Update to address DWER Comments regarding fauna collision management.	April 2024	Michael Gibson Head of Woodside Power

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1. EXECUTIVE SUMMARY

Proposal name	Woodside Solar Facility
Proponent Name	Woodside Energy Ltd
Ministerial Statement Number	1212
Purpose of the EMP	This Environmental Management Plan (EMP) has been prepared to meet EP Act - Ministerial Statement No. 1212 Conditions B2-4 and B3-3 and; EPBC Act Assessment 2022/09328.
Key environmental factors, outcomes and/or objectives	Key environmental factors: • Vegetation and Flora • Terrestrial Fauna Other environmental factors: • Terrestrial Environmental Quality • Inland Waters • Social Surroundings Environmental Outcomes: *Vegetation and Flora (Condition B2-1)* (1) disturb no more than 40 ha of the 'Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays' priority ecological community'. (2) disturb no more than 526.6 ha of the 'Horseflat land system of the Roebourne plains' priority ecological community'. (3) no disturbance to large trees of Acacia coriacea and A. *xiphophylla* on larger drainage lines (Vegetation Type 34). (4) no disturbance or adverse impacts to native vegetation identified in protected areas in the Staged Disturbance Footprint Report. (5) no adverse impacts to native vegetation within twenty (20) m of the boundary of the development envelope. *Terrestrial Fauna (Condition B3-1)* (1) disturb no more than: a. 40.4 ha of minor drainage lines habitat type; b. 104.2 ha of hummock grassland on rocky plain (Triodia on stony soils) habitat type; and c. 733.4 ha of tussock grassland on cracking clays habitat type. (2) no disturbance to the short range endemic invertebrate granite habitat type. (3) no disturbance to northern quoll (*Dasyurus hallucatus*) critical habitat. (4) no disturbance or adverse impacts to native fauna habitat identified in protected areas in the Staged Disturbance Footprint Report. Environmental Objectives: *Vegetation and Flora (Condition B2-2)* (1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes; and

	(2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities. *Terrestrial Fauna (Condition B3-2)* (1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna. (2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts. (3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.
Condition clauses (if applicable)	This EMP addresses conditions B2-1, B2-2, B2-4, B3-1, B3-2, B3-3, B3-4, B3-5, B3-6, B3-7, C1-1(1), C2, C3, C4, C5 and D1 of EP Act - Ministerial Statement No.1212.
Proposed construction date	Phase 1 Commencing 2024
EMP required pre-construction	Yes ✓ No ☐

2. CONTEXT, SCOPE AND RATIONALE

2.1 Introduction

Woodside Energy Ltd (Woodside) is proposing to develop a Woodside Solar Facility (subject to securing a positive financial investment decision and all necessary regulatory approvals and commercial arrangements), approximately 15 kilometres (km) southwest of Karratha, Western Australia (WA). This will generate electricity from a large scale solar photovoltaic farm (Solar PV Farm), complemented by energy storage (battery) infrastructure (the Proposal). The Proposal plans to supply renewable energy for use by the Pluto LNG facility and potentially other industrial customers on the Burrup Peninsula.

The Proposal is described in its entirety in Section 3 of the Environmental Referral Supporting Document (Woodside 2021a) and is summarised in Section 2.2 of this Environmental Management Plan (EMP) for ease of reference.

This EMP has been developed to address potential impacts on key environmental factors and Matters of National Environmental Significance (MNES) relevant to the construction and operation of the Proposal. This EMP presents management criteria, monitoring and reporting requirements to be implemented to minimise potential impacts on the environment.

This EMP has been developed in accordance with the EPA 'Instructions on how to prepare EP Act Part IV Environmental Management Plans' (EPA 2020a). Additional management plans may be prepared including, but may not be limited to, those listed within this EMP.

2.2 Proposal Description

Woodside referred the Proposal for the Woodside Solar Facility under Section 38 of the EP Act and under the EPBC Act. This EMP addresses the construction and operations of both the initial and future expansion phases of the Proposal. Table 2-1 outlines the Proposals key infrastructure components. Figure 2-1 shows the Proposal location, Development Envelope, and indicative construction staging.

Table 2-1: Proposal Key Infrastructure Components

Infrastructure Component	Development Envelope	Location and Disturbance Footprint	Description
Solar PV Farm	1101.26 hectare (ha)[1]	Located in the Maitland Strategic Industrial Area (MSIA) Buffer Area. Disturbance footprint up to 878 ha.	• Installation of solar panels and inverters with output of up to 500 MW(AC) in total, across multiple expansion phases. • Approximately 1,000,000 solar panels each approximately 1 m by 2 m attached to mounting structures positioned 0.5 – 4 m above ground. • Access roads for construction and maintenance. • Supporting infrastructure such as a battery energy storage system, electrical substation and access roads.

[1] Woodside submitted an application requesting approval to amend MS 1212 under section 45C(1) of the *Environmental Protection Act 1986*. This application was approved on 29 February 2024 and resulted in an increase to the Proposal's Development Envelope from 1,100.3 ha to 1,101.26 ha. No other changes to the Proposal were made (ie no change of the physical elements (including maximum clearing extents), operational elements or timing elements).

Infrastructure Component	Development Envelope	Location and Disturbance Footprint	Description
			• Supporting facilities such as workshop, laydown areas and office and/or ablutions and crib facilities.
Solar Plant Supporting Infrastructure (SPSI)			• Supporting infrastructure such as a battery energy storage system, electrical substation and access roads. • Supporting facilities such as workshop, laydown areas and office and/or ablutions and crib facilities.

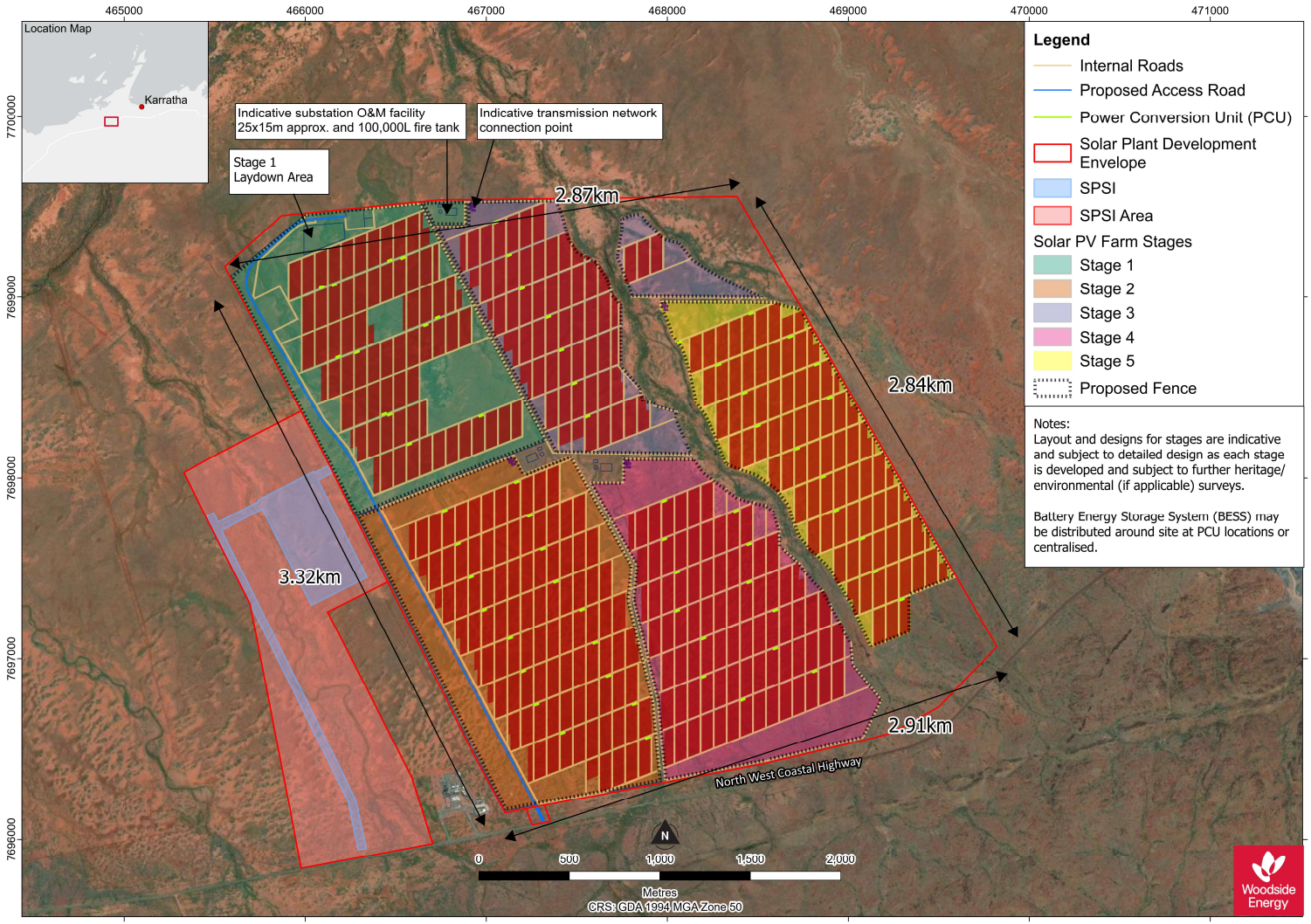

Figure 2-1. Proposal location, Development Envelope and indicative construction staging /fencing layout

2.3 Environmental factors

The environmental factors identified as being relevant to the Proposal are outlined in Table 2-2. The environmental factors are classified as follows:

- **Key Environmental Factor**: The Proposal may potentially cause a significant impact on the environment.
- **Other Environmental Factor**: The Proposal will not cause a significant impact but has potential to interact with the environment.

Environmental Factors classified as **Not Relevant** in the Project Referral Supporting Document (Woodside 2021a) are not included in this EMP as the Proposal is not deemed to cause environmental impact.

Table 2-2: Key Environmental Factors, Activities and Values

Factor	Environmental Factor	Proposal activities that would affect the factor	Site-specific environmental values, uses, condition or sensitive components which will be affected
Flora and Vegetation	Key Environmental Factor	• Clearing of native vegetation • Earthworks and movement of vehicles and machinery • Alteration of surface water flows around infrastructure	Clearing of up to 878 ha of native vegetation within a 1,101.26 ha development envelope (DE). Native vegetation varying from 'excellent' to 'degraded' condition. No impact to WA listed threatened flora species or threatened ecological communities. Presence of priority ecological communities (PEC) within the DE: Priority 1: • Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays Priority 3: • Horseflat land system of the Roebourne Plains Presence of Vegetation Type 34 - *Acacia coriacea / A. inaequilatera* tall shrubland over mixed scattered *Acacia* shrubs over mixed tussock grassland. Presence of weeds classified as having high ecological impact and rapid invasiveness. Mapped vegetation types and the location of the PECs within the DE, are shown within Figure 2-2.
Terrestrial Fauna	Key Environmental Factor	• Clearing of native vegetation • Earthworks and movement of vehicles and machinery • Storage, handling and disposal of hazardous materials and wastes, including food wastes • Installation of infrastructure posing collision/entanglement hazards. • Installation of fencing.	<u>Habitat for conservation significant fauna:</u> • Tussock Grasslands on Cracking Clays • Minor drainage lines and small areas of exposed granite • Hummock Grassland on Rocky Plain (Triodia on stony soils) Fauna habitat types are shown in Figure 2-3. Northern Quoll critical and dispersal habitat is shown in Figure 2-4. <u>Potential presence of EPBC listed threatened fauna and WA conservation significant species:</u> • Northern Quoll (*Dasyurus hallucatus*) – Endangered • Olive Python (Pilbara subspecies) (*Liasis olivaceus barroni)* - Vulnerable • Ghost Bat (*Macroderma gigas*) - Vulnerable

Factor	Environmental Factor	Proposal activities that would affect the factor	Site-specific environmental values, uses, condition or sensitive components which will be affected
			• Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* (Pilbara Form)) – Vulnerable • Grey Falcon (*Falco hypoleucos*) - Vulnerable • Peregrine Falcon (*Falco peregrinus*) - Other specially protected fauna • Northern Short-tailed Mouse (*Leggadina lakedownensis*) - Priority 4 • Lined Soil-crevice Skink (*Notoscincus butleri*) - Priority 4 • Bridled Tern (*Onychoprion anaethetus*) MiT[2], IA[3] • Oriental Pratincole (*Glareola maldivarum*) MiT, IA • Oriental Plover (*Charadrius veredus*) MiT, IA Introduced species including Cats, Cattle and Black Rat.
Terrestrial Environmental Quality	Other Factor	• Clearing of vegetation • Excavation • Importation of fill materials • Movement of vehicles and machinery • Alteration of surface water flows • Storage, handling and disposal of hazardous materials and wastes	• Construction of the Solar PV Farm will disturb up to 878 ha of land with the potential for soil erosion • Potential ASS within ephemeral creeklines • Pastoral land • Substrate for native vegetation and fauna habitat.
Inland Waters	Other Factor	• Clearing of vegetation • Excavation • Importation of fill materials (if required) • Movement of vehicles and machinery	• Ephemeral creeks • Dampier Salt Pond Zero • Pilbara Surface Water Proclamation Area • Pilbara Groundwater Proclamation Area • Potential ASS within ephemeral creeklines.

[2] EPBC Act listed migratory terrestrial species

[3] BC Act listed international migratory agreement migratory birds

Factor	Environmental Factor	Proposal activities that would affect the factor	Site-specific environmental values, uses, condition or sensitive components which will be affected
		• Alteration of surface water flows • Creation of impervious surfaces • Storage, handling and disposal of hazardous materials and wastes	
Social Surroundings (Cultural Heritage and Amenity)	Key Environmental Factor	• Clearing of vegetation and earthworks • Installation of infrastructure • Presence and activity of people, vehicles, vessels and equipment	• DE within MSIA • Access to heritage features or use of land for Traditional activities • Disturbance to flora and vegetation that will result in impacts to species used for cultural purposes • Direct, physical disturbance of Aboriginal and municipal heritage features from construction and operational activities.

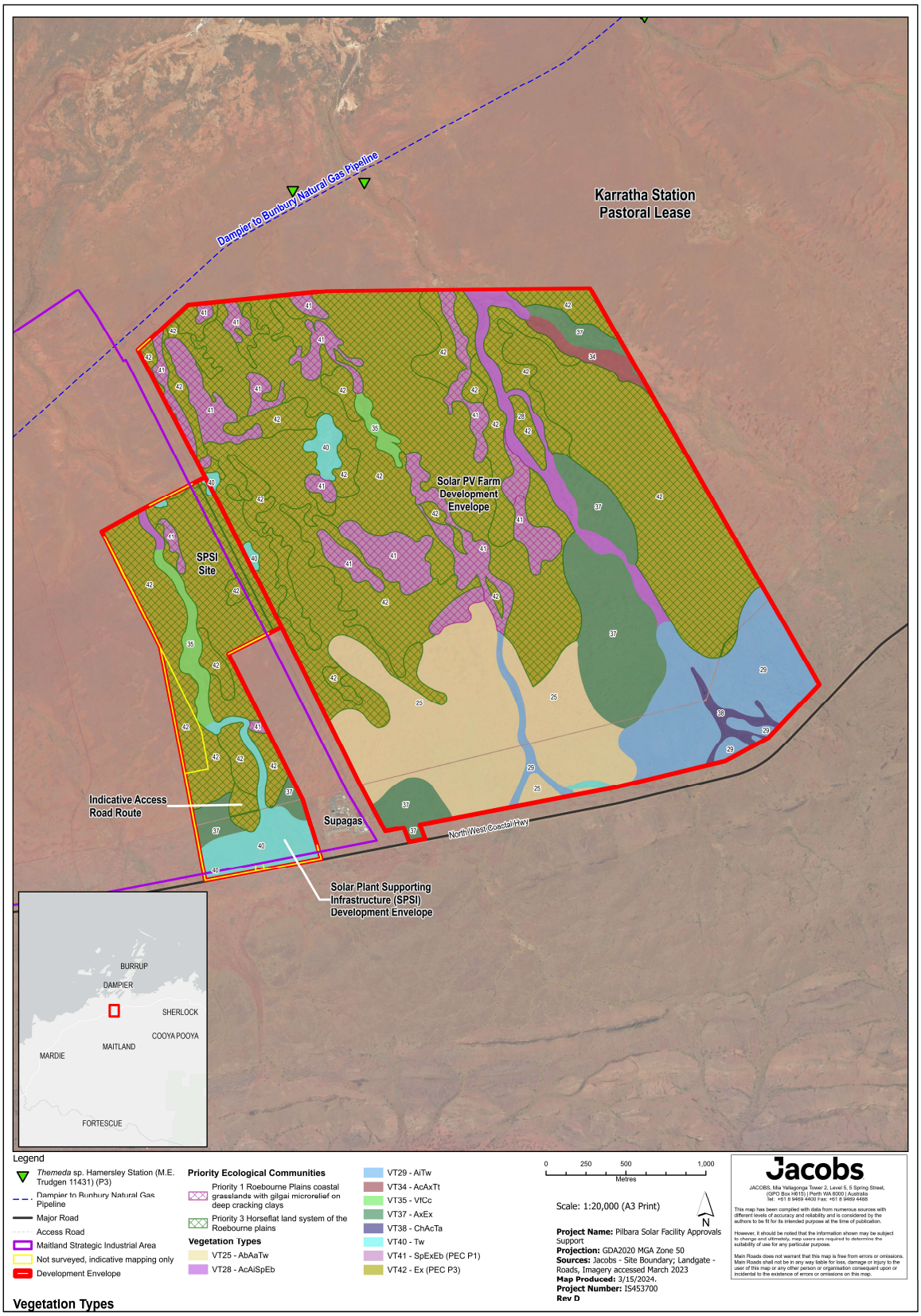

Figure 2-2. Mapped vegetation types within the Development Envelope

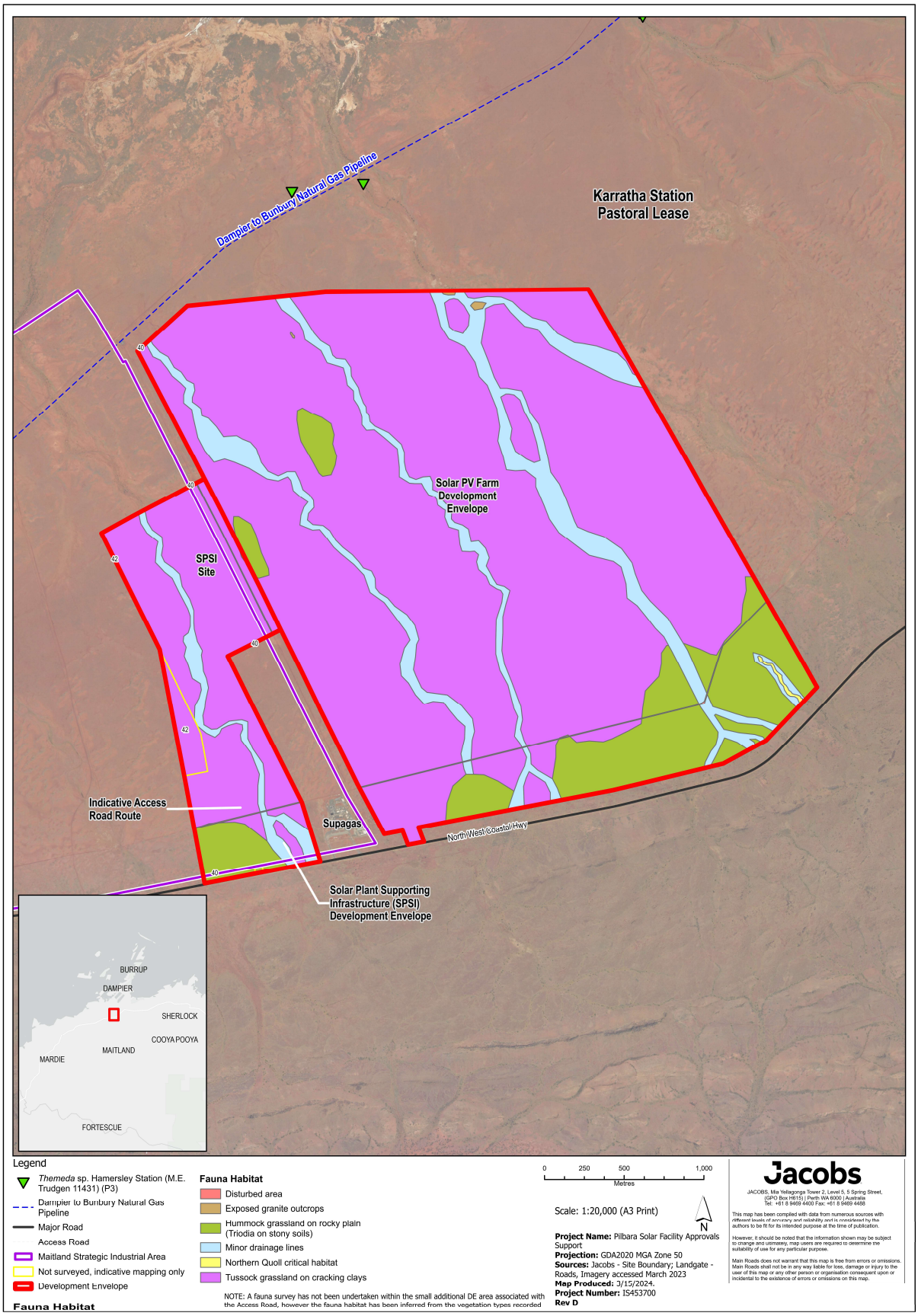

Figure 2-3. Fauna Habitats

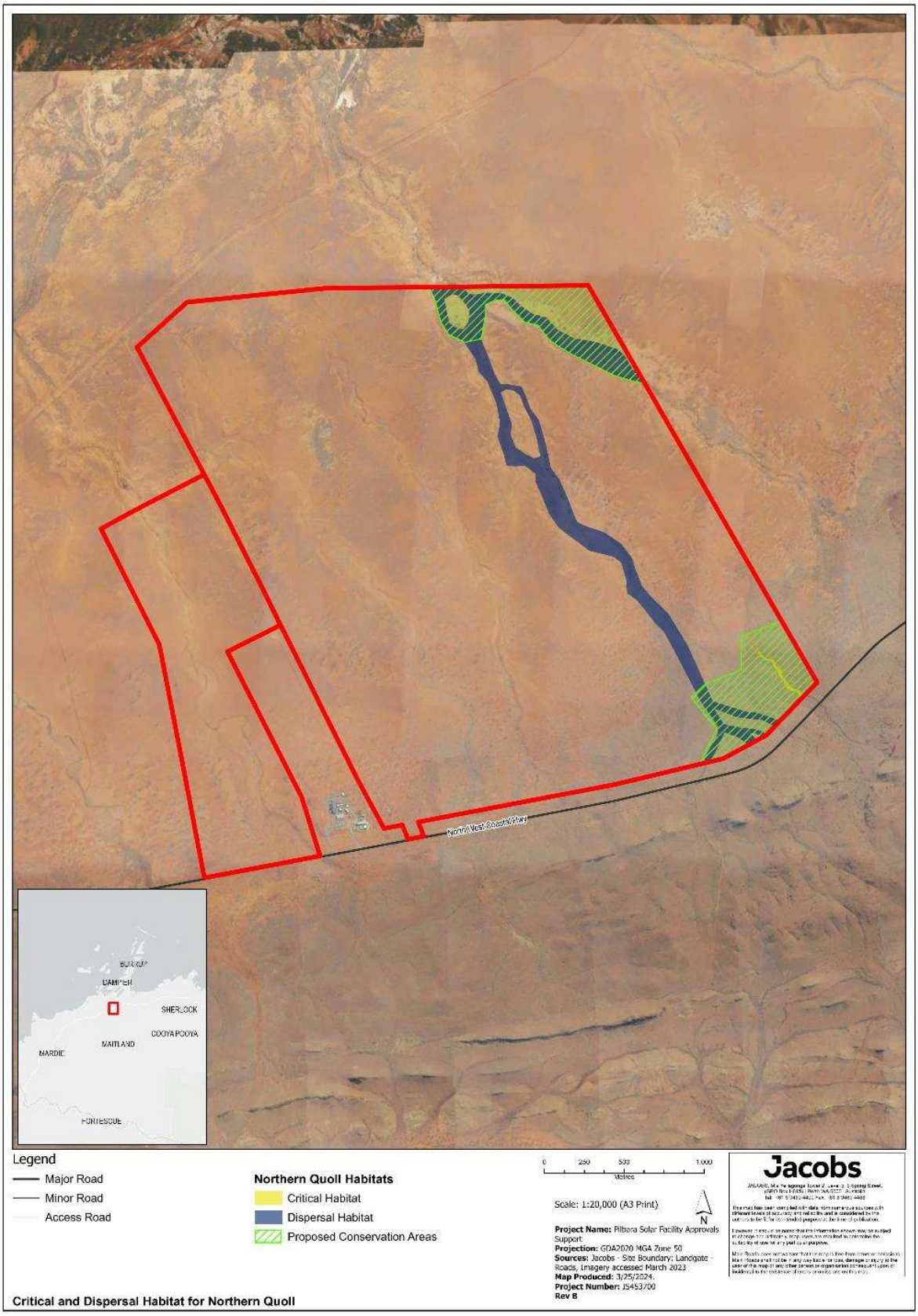

Figure 2-4. Critical and dispersal habitats for Northern Quoll, and the Woodside Solar Proposed Conservation Area (Biota, 2023)

2.4 Condition requirements

The EMP has been developed to satisfy the following conditions within Ministerial Statement No. 1212 as detailed within Table 2-3.

Table 2-3: Ministerial Conditions relating to the Environmental Management Plan

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
B2-1	The proponent must ensure implementation of the proposal achieves the following environmental outcomes: (1) disturb no more than 40 ha of the 'Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays' priority ecological community'; (2) disturb no more than 526.6 ha of the 'Horseflat land system of the Roebourne plains' priority ecological community'; (3) no disturbance to large trees of Acacia coriacea and A. *xiphophylla* on larger drainage lines (Vegetation Type 34) (4) no disturbance or adverse impacts to native vegetation identified in protected areas in the Staged Disturbance Footprint Report; and (5) no adverse impacts to native vegetation within twenty (20) m of the boundary of the development envelope.	Section 4.1	Section 4.1 of the EMP provides management measures to ensure clearing is limited to the approved extents, no disturbance or adverse impacts occur to protected areas and vegetation within 20 m of the DE boundary, such that the environmental outcomes are achieved.
B2-2	The proponent must implement the proposal to achieve the following environmental objectives: (1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes; and (2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities.	Section 4.1	Section 4.1 of the EMP provides management measures relating to weeds and dust such that no adverse impacts occur to vegetation outside of the DE as a result of these aspects.
B2-4	The proponent must review and update the Woodside Solar Facility Environment Management Plan (May 2023, Rev 4, PA1000RH0000003) to ensure it demonstrates how achievement of the vegetation environmental outcomes in condition B2-1 will be	This EMP.	This EMP has been prepared to fulfill this requirement.

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
	monitored and substantiated, and how the environmental objective in condition B2-2(2) will be achieved, and submit it to the CEO[4].		
B2-5	The proponent must revegetate all areas of native vegetation cleared but not reasonably expected to be required for ongoing operations within twenty-four (24) months after completion of each stage of construction activities until areas of revegetation achieve a cover and composition of locally native species such that weed cover and abundance is no greater than undisturbed reference sites, and soil is protected from erosion.	Section 4.1	Section 4.1 of the EMP outlines the approach to revegetation including reference to the required Waste Minimisation, Decommissioning and Rehabilitation EMP.
B3-1	The proponent must implement the proposal to meet the following environmental outcomes: (1) disturb no more than: a. 40.4 ha of minor drainage lines habitat type; b. 104.2 ha of hummock grassland on rocky plain (Triodia on stony soils) habitat type; and c. 733.4 ha of tussock grassland on cracking clays habitat type. (2) no disturbance to the short range endemic invertebrate granite habitat type; (3) no disturbance to northern quoll (*Dasyurus hallucatus*) critical habitat identified in Figure 3 (of the Ministerial Statement); (4) no disturbance or adverse impacts to native fauna habitat identified in protected areas in the Staged Disturbance Footprint Report.	Section 4.2	Section 4.2 of the EMP provides management measures to ensure clearing is limited to the approved extents, no disturbance to the short range endemic invertebrate habitat type occurs, no disturbance to Northern Quoll critical habitat occurs, and no disturbance or adverse impacts occur to fauna habitat identified in protected areas in the Staged Disturbance Footprint Report, such that the environmental outcomes are achieved.

[4] The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the Environmental Protection Act 1986, or the CEO's delegate.

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
B3-2	The proponent must implement the proposal to achieve the following environmental objectives: (1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna; (2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts; and (3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.	Section 4.2	Section 4.2 of the EMP provides management measures that will be implemented to achieve these environmental objectives.
B3-3	The proponent must review and update the Woodside Solar Facility Environment Management Plan (May 2023, Rev 4, PA1000RH0000003) to: (1) include the results and management actions for threatened fauna recorded in the development envelopes from the Proposed Woodside Solar Farm Targeted Fauna Survey (July 2023, Rev B, Biota); and (2) to ensure it demonstrates how achievement of the terrestrial fauna environmental outcomes in condition B3-1 will be monitored and substantiated, and how the environmental objectives in condition B3-2 will be achieved and submit it to the CEO.	Section 2.5.2 Section 4.2	This EMP has been prepared to fulfill this requirement. Section 4.2of the EMP provides management measures that will be implemented to achieve these environmental objectives. The targeted fauna survey was conducted from the 17th – 20th April 2023 during which motion cameras and ultrasonic bat recorders were deployed in the parts of the DE considered most prospective for the targeted threatened fauna species, targeted searches were conducted, and the DE was traversed to document the fauna habitats present. Motion camera and bat recorder retrieval was conducted on the 1st May 2023. Sampling effort within the DE comprised: • targeted diurnal searches: 41.5 km traversed over four days • nocturnal searches: 10.2 km walked over 2 nights • deployment of infrared motion cameras to target ground-dwelling mammals at 13 sites for a total of 165 sampling nights

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
			• deployment of SongMeter ultrasonic sound recorders targeting the bat assemblage at four locations for a total of 42 recording nights • collection of samples from water holes for environmental DNA (eDNA) analysis to determine Pilbara Olive Python presence • non-systematic survey activities including night-spotting, ground foraging, identification of secondary signs and opportunistic records. Based on the targeted fauna survey, Biota (2023) concluded: • there is 0.8 ha of critical habitat and 50.7 ha of dispersal habitat present within the DE for the Northern Quoll. It is noted that Northern Quoll critical habitat will be avoided during clearing activities. • the DE does not contain either critical or supporting habitat for the Pilbara Olive Python. • The entire DE represents potential foraging habitat for Ghost Bats. • The DE contains some marginally suitable foraging habitat for Pilbara Leaf-nosed Bat, however as there is an absence of roosting sites, the species is unlikely to occur in the DE. • The entire DE represents potential foraging habitat for Grey Falcons. It is noted that the results of the targeted fauna survey have been reviewed and management measures incorporated within this plan as appropriate.
B3-4	Prior to ground disturbing activities the proponent must undertake the following actions: (1) within seven (7) days prior to clearing, using a licenced fauna spotter, undertake pre-clearance surveys to detect presence of	Section 4.2	Section 4.2 of the EMP includes commitments with respect to pre-clearance surveys and fauna spotters.

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
	northern quoll (*Dasyurus hallucatus*) within clearing areas; and (2) ground disturbing activities shall not commence until either: a. the individual has been relocated by the fauna spotter; or b. the individual has been observed by the fauna spotter to have moved on from the area to adjoining suitable habitat; and c. the fauna spotter considers that the individual no longer occurs in the area.		
B3-5	The proponent must undertake the following actions during construction activities: (1) ensure the presence of fauna spotters during all ground disturbing activities; and (2) construction activities must cease in any area where northern quoll (*Dasyurus hallucatus*) are identified until: a. the individual has been relocated by a fauna spotter; or b. the individual has been observed by the fauna spotter to have moved on from the area to adjoining suitable habitat; and c. the fauna spotter considers that the individual no longer occurs in the area.	Section 4.2	Section 4.2 of the EMP includes commitments with respect to fauna spotters during construction.
B3-6	The proponent must produce and provide a report on fauna management no later than sixty (60) days after the completion of each stage of construction activities to the CEO. The report shall include the following: (1) details of fauna inspections;	Section 4.2	Section 4.2 of the EMP includes commitments with respect to the provision of a fauna management report.

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
	(2) dates and details of clearing activities for each area inspected; (3) the number and type of fauna removed and relocated and actions taken; (4) details of the fauna spotter commissioned; (5) results of the pre-clearance surveys; and (6) vertebrate fauna mortalities.		
B3-7	The proponent must undertake the following actions during construction activities: (1) clear trapped vertebrate fauna from within open trenches, using a suitably trained and licensed fauna spotter a. at least twice daily, with the first daily clearing to be completed no later than three (3) hours after sunrise and the second clearing to be completed between the hours of 3:00 pm and 6:00 pm of that same day, unless otherwise agreed to by the CEO; and b. within one (1) hour prior to backfilling of trenches; (2) ensure open trench lengths shall not exceed a length capable of being inspected and cleared by the requirements set out in condition B3-7(1); (3) ensure ramps providing egress points and/or fauna refuges providing suitable shelter from the sun and predators for trapped vertebrate fauna are to be placed in the trench at intervals not exceeding fifty (50) metres; (4) in the event of substantial rainfall, and following the clearing of vertebrate fauna from the trench, pump out any pooled water in the open trench and discharge it to adjacent vegetated areas in a manner that does not cause erosion;	Section 4.2	Section 4.2 of the EMP includes commitments with respect to prevention of fauna injury or mortality as a result of construction trenching.

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
	(5) produce and provide a report on fauna management no later than sixty (60) days after the completion of each stage of construction activities to the CEO. The report shall include the following: a. details of fauna inspections; b. dates of trenching activities for each trench inspected; c. the number and type of fauna cleared from trenches and actions taken; d. details of the fauna spotter commissioned; and e. vertebrate fauna mortalities		
C4-1	The environmental management plans required under conditions B2-4 and B3- 3 and condition B5-2 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 alternate 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;	Section 4.1 and Section 4.2	Section 4.1 and Section 4.2 outline trigger and threshold levels that will be applied, how they will be monitored and measures that will be implemented should the trigger and threshold levels be exceeded, as well as reporting requirements.

Condition	Condition requirement	Section Reference	How the EMP addresses the condition requirements
	(7) contingency measures which will be implemented if threshold criteria or trigger criteria are not met; and (8) reporting requirements.		
C5-1	The environmental management plans required under condition B2-3, condition B2-4 and condition B3-3 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.	Section 4.1 (Table 4-1) and Section 4.2 (Table 4-3)	Section 4.1 and Section 4.2 provide the provisions which enable the achievement of the objectives of the conditions including management actions, targets, contingency measures and reporting requirements. Outline trigger and threshold levels that will be applied, how they will be monitored and measures that will be implemented should the trigger and threshold levels be exceeded, as well as reporting requirements.

2.5 Rationale and approach

This EMP adopts management provisions to achieve the environmental objectives for each key environmental factor, based on consideration of

- Survey and study findings.
- Key assumptions and uncertainties.
- Risks to environmental values including (MNES).
- Scientific information on the site and region.
- Intensity, duration, magnitude and footprint of impact.
- Changes in the environment.
- External issues to the Proposal.
- Timeframe for mitigation.

2.5.1 Survey and study findings

Table 2-4 presents the surveys and studies relevant to the Proposal, which have been considered in developing this EMP. Details of the survey/study findings are presented in the Proposal Referral Supporting Document (Woodside 2021a).

Table 2-4: Surveys and Studies relevant to the Proposal

Factor	Survey / Study	Consultant	Description
Flora and Vegetation	Reconnaissance Flora and Vegetation Survey	Vicki Long & Associates (2019) Vicki Long & Associates (2021)	Desktop assessment and field survey in June-July 2019 over DE. Field survey in April 2020 included assessing vegetation type, condition, habitat and presence of priority flora, PECs and weeds.
Terrestrial Fauna	Level 1 Terrestrial Fauna Survey	GHD (2019)	Desktop assessment and field survey in June-July 2019 over DEs. Field survey included habitat assessment, opportunistic fauna searches, camera trapping and bat survey. Moderate limitation due to survey timing, which may under represent migratory birds, but these are not predicted to be directly impacted.
	Targeted Fauna Survey	Biota (2023)	Targeted fauna survey focussed on Northern Quoll, Pilbara Olive Python, Pilbara Leaf-nosed Bat, Ghost Bat and Grey Falcon to provide an assessment of the likelihood of these species' occurrence within the DE and habitat value of DE for these species. Further information is provided in **Section 2.5.2** below.
	Desktop short range endemic (SRE) species assessment	Phoenix (2023)	Desktop survey to assess the presence of SREs within the DE and the value of the habitat to SREs within the DE.
Inland Waters	Surface water & flood risk evaluation	RPS (2018a) and RPS (2018b)	Information regarding surface water flows within the MSIA and storm surge modelling.

Factor	Survey / Study	Consultant	Description
		GHD (2017)	
Inland Waters	Groundwater quality	GHD (2017)	Measurement of groundwater levels and information on groundwater quality
Social Surroundings (Amenity and Cultural Heritage)	Aboriginal Heritage Database Search	Woodside (2021)	Desktop search of relevant heritage sites
	Heritage assessment	Black Wattle Archaeology Pty Ltd (2019)	Archaeological site avoidance survey in Solar PV Farm (partial) and SPSI.
	Ethnographic Assessment	DB-Consulting (2019)	Ethnographic site avoidance and site assessment survey for the Solar PV Farm (partial) and SPSI.

2.5.2 Targeted Fauna Survey (Biota, 2023)

Condition B3-3 of MS 1212 requires that this EMP *"include the results and management actions for threatened fauna recorded in the development envelopes from the Proposed Woodside Solar Farm Targeted Fauna Survey (July 2023, Rev B, Biota)"*. The following provides a summary of the results of the Biota (2023) survey. Management measures that address potential impacts to fauna identified in the Biota (2023) survey area are included in Section 4.2. Management measures include the avoidance of clearing of any Northern Quoll critical habitat present in the DE, and inclusion of this habitat with the Woodside Solar Facility proposed conservation area (Figure 2-4).

Biota Environmental Sciences (Biota) undertook a targeted fauna survey for the following MNES species:

- Northern Quoll (*Dasyurus hallucatus*)
- Pilbara Olive Python (*Liasis olivaceus barroni*)
- Ghost Bat (*Macroderma gigas*)
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* (Pilbara Form))
- Grey Falcon (*Falco hypoleucos*).

A field survey was conducted from the 17-20 April 2023 utilising motion cameras and ultrasonic bat recorders in areas most prospective for the threatened fauna listed above, as well as targeted searches. Key findings of the survey were:

- The Northern Quoll was recorded at three locations: two motion camera records within the study area and one scat record to the north of the DE.
- The DE contains suitable habitat for foraging for the Grey Falcon, however no roosting or breeding areas were recorded during the survey.
- The Pilbara Olive Python was not recorded, with suitable habitat limited to minor drainage lines in the east of the study area and a series of ephemeral pools on granite to the north of the DE.
- The Ghost Bat and Pilbara Leaf-nosed Bat were not detected. The Ghost Bat has the potential to visit the study area for foraging in the minor drainage lines, however, the Pilbara Leaf-nosed Bat was considered unlikely to occur. There was no potential roost or breeding habitats within the study area for either bat species.

2.5.3 Key assumptions and uncertainties

This EMP presents management provisions which address the key assumptions and uncertainties relating to the implementation of the Proposal and the values and sensitivities of the key environmental factors.

The key assumptions include:

1. Presence of migratory or conservation significant fauna. The Level 1 survey (GHD 2019) identified the potential for conservation significant fauna to use the identified habitats within the proposed DE but did not record the presence of certain species, which may be wide ranging or cryptic. The Level 1 survey also noted the potential under representation of migratory birds due to survey timing. The targeted fauna survey undertaken by Biota (2023) was designed to provide further information with respect to the occurrence of the targeted MNES species in the DE and the value of the habitat for these species that is present in the DE. The EMP further addresses this uncertainty through provisions that protect potential habitats for conservation significant species such as drainage lines.
2. No excavation below the water table and no groundwater abstraction will be required for the Proposal.
3. A search of the DWER contaminated sites database indicates the Proposal DE is not located within 5 km of any registered contaminated sites.
4. Management of the risk of disturbance to Aboriginal Heritage Sites is covered within the Social Surrounding (Cultural Heritage) Management Plan (Woodside 2021b) and the Indigenous Land Use Agreement Cultural Heritage Management Plan.

2.5.4 Existing and Proposed Mitigation Measures

To ensure the Proposal is implemented in a manner that meets the EPA's environmental objectives, existing and proposed mitigation measures have been identified for each potential impact and risk to the relevant environmental factors. As defined by Woodside's Health, Safety and Environment Risk Assessment Guideline (Woodside 2021c), mitigation measures have been categorised in accordance with the hierarchy of controls:

1 Elimination of the risk by removing the hazard [Avoid].

2 Substitution of a hazard with a less hazardous one [Avoid / Minimise].

3 Engineering controls which include design measures to prevent or reduce the frequency of the risk event, detect or control the risk event (limiting the magnitude, intensity and duration) [Minimise].

4 Administrative controls: Management systems and work instructions used to prevent or mitigate exposure to safety and / or environmental hazards [Avoid / Minimise].

The internal management framework that will be implemented to achieve the environmental outcomes and objectives is detailed in Section 3. Specific mitigation measures that will be implemented during the life of the Proposal are detailed in Section 4.

2.5.5 Rationale for choice of provisions

This EMP adopts provisions based on industry standard practices for avoidance, minimisation and rehabilitation of environmental impacts during construction.

The provisions reflect the temporary duration of construction activities presented in Table 2-2, and the intermittent, episodic and acute nature of impacts posed by construction activities, such as un-authorised clearing, dust emissions during high winds, or accidental spills of hazardous materials or wastes.

The provisions have also reflected the potential for chronic impacts to occur post construction, such as the spread of introduced weeds or ongoing erosion of areas disturbed during construction, as well as impacts relating to maintenance and operating activities (e.g. Solar PV Farm maintenance).

The provisions consider the effects of issues external to the Proposal, including:

- Heavy rainfall events (e.g. cyclones), flooding and wet ground conditions.
- Movements of stock across disturbed areas.

The majority of provisions address episodic and acute impacts and provide short term mitigation. Provisions also address the longer-term timeframes to demonstrate weed control and rehabilitation success.

3. INTERNAL MANAGEMENT FRAMEWORK

Woodside has a Health, Safety, Environment and Quality (HSEQ) Management System (MS). The Company aims to be recognised as an industry leader in HSEQ through managing activities in a sustainable manner giving regard to Woodside's workforce, communities and the environment. Woodside is committed to managing activities to minimise adverse health, safety or environmental impacts, incorporating the right first time approach to quality.

The principles of Woodside's Environment and Biodiversity Policy are:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision making processes.

Complying with relevant laws and regulations and applying responsible standards where laws do not exist. A set of specific HSEQ policies and procedures is maintained for each Woodside facility. Proposal specific policies and procedures will be developed and maintained as required, in line with the HSEQ MS.

Risk control measures must be identified and implemented, using the hierarchy of controls, to manage risks to a tolerable and as low as reasonably practicable (ALARP) level.

3.1 Roles and responsibilities

Responsibility for the application of the Environment and Biodiversity Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control.

Critical HSE roles are identified within each business unit, asset and function. Role specific training and competency development is provided to ensure competence to carry out work in a healthy and safe workplace and minimise impacts to the environment. All Woodside employees and contractors are made aware of the HSE hazards, risks, impacts, controls and required response to incidents in their workplace. The Woodside HSE Management Process Hierarchy is provided in Figure 3-1.

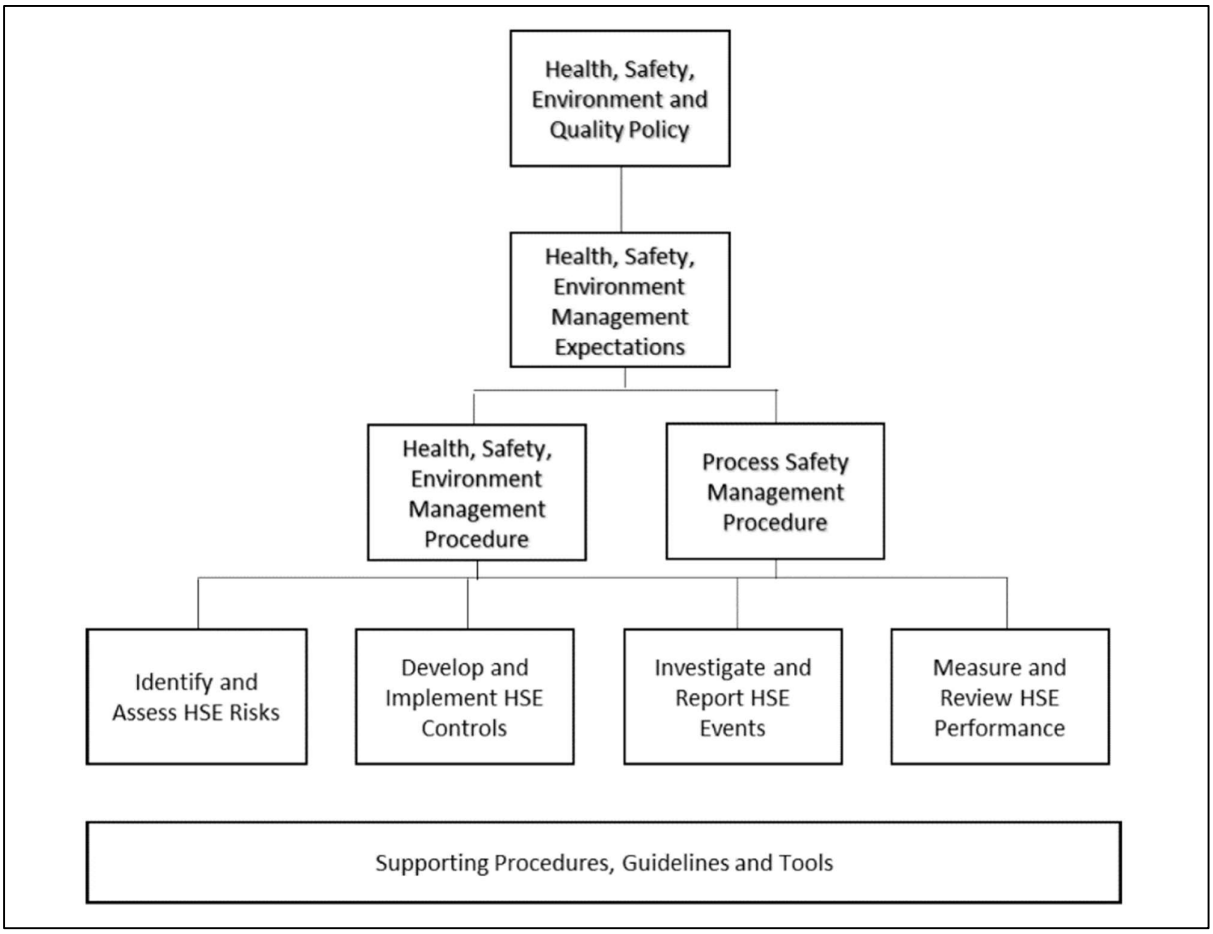

Figure 3-1: Woodside HSE Management Process Hierarchy

3.2 Communication

Woodside will communicate and distribute environmental information to the workforce by way of the following methods: site inductions, toolbox meetings, training, pre-start meetings, on-site notice boards, electronic media, environmental alerts and incident investigations lessons learnt.

Woodside has engaged with government departments, local government, traditional owner and neighbouring industries during the design and planning stage for the Proposal and will continue to consult as the Proposal evolves. Details of stakeholder consultation are presented in the Environmental Referral Supporting Document (Woodside 2021a). Community consultation is also planned as the Proposal progresses through to RFSU (Ready for Start-Up).

3.3 Environmental awareness training and inductions

Woodside will ensure that all personnel, including subcontractors, complete a site induction. This induction will include an environmental component where the following information will be provided.

- Environmental Code of Conduct.
- Requirements of relevant environmental management documentation.
- Significant environmental values to be protected.
- Control strategies for the management of environmental risk in day-to-day activities.
- Roles and responsibilities for implementing management, monitoring and reporting associated with the environment.

- Applicable legislative responsibilities and requirements and the risks associated with noncompliance.
- Additional training will be provided to personnel, where applicable, which might include spill response or fire and emergency response.

Records of training and inductions will be maintained in a training register.

3.4 Complaints procedure

All complaints will be recorded within a register that will be developed and maintained by Woodside. Woodside maintains a 24/7 complaints hotline that members of the public can find access to via the Woodside public website. Incidents will be recorded by the person who causes or identifies the incident. Complaints will be recorded by the person who receives the complaint (at the time it is received). Records to be obtained about a complaint include:

- Contact details for person making complaint (name and phone number as a minimum)
- The approximate location that the issue was identified
- Date, time and issue/s that the complaint relates to.

3.5 Emergency response

Woodside will prepare both a construction and operations phase Emergency Response Plan. This Plan will detail how emergencies are responded to within the DE.

3.6 Audits

To ensure the management measures outlined in this EMP are being adequately implemented and comply with relevant design and environmental standards, regular environmental audits will be undertaken. Auditing of the commitments outlined in this EMP will be undertaken as follows:

- Regular system audits of the EMS and compliance procedures, including:
- Prior to construction commencing – review of contractor management plans and processes for compliance with this EMP and regulatory environmental conditions
- At completion of construction to identify and correct any non-conformances
- Yearly as part of the Annual Environmental Review (during Operations)
- Regular site compliance inspections including audits of key Contractors' environmental management plans
- Persons responsible for environmental auditing will be suitably qualified

A progress and compliance report will be prepared following significant audit activities, to document the effectiveness of the environmental management measures that have been implemented. Any non-compliance will be highlighted and addressed. Where audit findings show environmental management actions are not effective, the audit may recommend changes to procedures.

3.7 Environmental incidents / non-compliances

Incident reporting and investigations are carried out in accordance with Woodside Health, Safety and Environment Event Reporting and Investigation Procedures. The overarching process for incident reporting and investigation is shown in Figure 3-2.

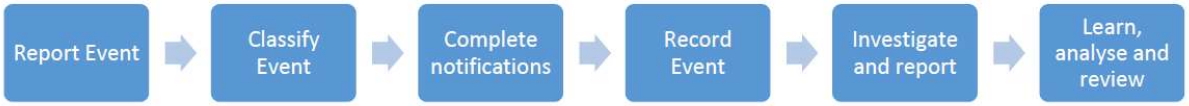

Figure 3-2: HSE Event Reporting and Investigation Process

The following procedure will be implemented when an environmental incident / near miss / non-compliance occurs:

- Raise an incident report (no later than the end of the working day or shift)
- Preserve site evidence (to ensure integrity of investigations)
- Preliminary classification of the incident (Workplace Supervisor in consultation with the Responsible Manager is to determine the 'actual impact' and the 'potential risk rating', to establish who must be notified and how the incident will be investigated)
- Complete appropriate internal and external notifications:
- Record the incident in Woodside's *Incident Reporting Database*.
- Investigate the incident and report on findings (including the final classification of the incident)

Implement corrective actions:

- Identify and analyse root causes
- Identify required actions to prevent recurrence (e.g. install temporary fencing or signs)
- Identify any additional opportunities for improvement (e.g. improved training / education for personnel).

In accordance with Condition D1-1, if Woodside becomes aware of a potential non-compliance with the approval conditions, Woodside will:

(1) Report the potential non-compliance to the CEO within seven days of being aware of the potential non-compliance.

(2) Implement contingency measures.

(3) Investigate the cause of the potential non-compliance.

(4) Investigate environmental impacts that may have occurred as a result of the potential non-compliance.

(5) Advise the CEO on the rectification measures to be implemented

(6) Advise the CEO of any other measures to be implemented to ensure no further impact

(7) Provide a report to the CEO within 21 days of being aware of the potential non-compliance, detailing the measures required in the above.

In accordance with Condition D-2, 2 failures to comply with the requirements of a condition, or with the content of an environmental management plan required under a condition, constitutes a non-compliance with the conditions, regardless of whether the contingency measures, rectification or other measures above have been or are being implemented.

3.8 Compliance reporting

Woodside will complete annual compliance report against the requirements of the Ministerial conditions set as part of approval of the Proposal under the EP Act and the requirements of any Decision Notice issued under the EPBC Act. Annual compliance reporting will be in accordance with Condition D2 of the State approval and any required compliance reporting set by the EPBC Act Decision Notice.

4. EMP Provisions

4.1 Flora and Vegetation

4.1.1 EPA environmental factor objective

To protect flora and vegetation so that biological diversity and ecological integrity are maintained (EPA 2016a).x`x`

4.1.2 Environmental outcomes and objectives

Environmental Outcomes

(1) disturb no more than 40 ha of the 'Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays' priority ecological community' (Figure 2-2).

(2) disturb no more than 526.6 ha of the 'Horseflat land system of the Roebourne plains' priority ecological community' (Figure 2-2).

(3) no disturbance to large trees of Acacia coriacea and A. *xiphophylla* on larger drainage lines (Vegetation Type 34) (Figure 2-2).

(4) no disturbance or adverse impacts to native vegetation identified in protected areas in the Staged Disturbance Footprint Report.

(5) no adverse impacts to native vegetation within twenty (20) m of the boundary of the Development Envelope.

Environmental Objectives

(1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes.

(2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities.

4.1.3 Management provisions

This section outlines management provisions for the identified potential impacts and risks to flora and vegetation. Objective-based and outcome-based management actions, management targets, monitoring and reporting requirements are provided in Table 4-1 and

Table 4-2 respectively.

Potential indirect impacts to flora and vegetation that relate to ASS, erosion, sedimentation, pollution and environmental flows are addressed through provisions for the following factors:

- Terrestrial Environmental Quality (Table 4-5);
- Inland Waters (Table 4-6).

Table 4-1: Flora and Vegetation – Objective-based management measures

EPA Factor: Flora and Vegetation
EPA Objective: To protect flora and vegetation so that biological diversity and ecological integrity are maintained.

Objective(s):

(1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes.

(2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities.

Key environmental values: flora and vegetation
Key impacts and risks: reduction in health of flora and vegetation.

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
Condition B1-1: The proponent must prepare and submit a Staged Disturbance Footprint Report to the CEO that identifies the final disturbance footprint for the relevant stage of the proposal prior to construction activities. The Staged Disturbance Footprint Report may be submitted in stages and must demonstrate, at every stage, that the maximum clearing extents specified under Condition A1-1 and achievement of environmental outcomes specified under Conditions B2-1 and B3-1 will be met for all stages combined.				
• Woodside will prepare and submit a Staged Disturbance Footprint Report to the CEO that identifies the final disturbance footprint for the relevant stage of the Proposal prior to construction activities. The Staged Disturbance Footprint Report will be submitted in stages and must demonstrate, at every stage, that the maximum clearing extents and achievement of environmental outcomes will be met for all stages. • All areas permitted to be cleared as per each Stage Disturbance Footprint will be clearly identified on project documentation and demarcated on site.	• No clearing to occur outside of the approved project clearing footprints.	• Regular construction area inspections to visually check/review clearing boundaries.	• Weekly during clearing activities.	• Internal construction reporting.
		• Ground survey using surveyors and/or aerial photography in combination with baseline mapping shapefiles and Geographic Information System (GIS) technology to determine the extent of each vegetation type present within the DE.	• Monthly during active clearing scopes. • Six monthly during construction (ie when there is still an increased presence onsite). • Annually during operations phase (when activity onsite is low and risks are reduced).	• Internal construction reporting. • Annual compliance reporting.
Condition B1-2: Each Staged Disturbance Footprint Report must identify protected areas within the development envelope, which include native fauna habitat corridors, northern quoll (*Dasyurus hallucatus*) critical habitat, areas supporting large trees of *Acacia coriacea* and *A. xiphophylla* and Aboriginal cultural heritage sites which will not be disturbed or subjected to adverse impacts. The total protected areas shall be a minimum of 97.6 ha across all stages.				
• All clearing exclusion zones as identified in each Stage Clearing Report will be clearly delineated onsite by flagging and signage and checked prior to commencement of clearing activities. • All vehicles / plant to be restricted to approved clearing areas and designated access tracks. • A 10 m exclusion zone around large trees of Acacia coriacea and A. xiphophylla on larger drainage lines (Vegetation Type 34) will be established. When activities are proposed within 50m these trees will be clearly delineated onsite by flagging and signage as do not remove. The 10 m exclusion zone is considered sufficient based on the Australian Standard (AS 4970) for the Protection of Trees on Development Sites, which recommends a Tree Protection Zone of 12 times the diameter at breast height (DBH). For the relevant trees in the DE this would equate to a TPZ of approximately 6-8m and therefore 10 m is considered sufficiently conservative to account for impacts such as shading of the panels on the trees and growth and spread of the trees.	• No clearing to occur outside of approved clearing areas and designated access tracks.	• Regular construction area inspections to visually check/review clearing boundaries.	• Weekly during clearing activities	• Internal construction reporting.
		• Ground survey using surveyors and/or aerial photography in combination with baseline mapping shapefiles and Geographic Information System (GIS) technology to determine the extent of each vegetation type present within the DE.	• Monthly during active clearing scopes. • Six monthly during construction (ie when there is still an increased presence onsite). • Annually during operations phase (when activity onsite is low and risks are reduced).	• Internal construction reporting. • Annual compliance reporting.
Condition B2-2: The proponent must implement the proposal to achieve the following environmental objectives: (1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes; and (2) and no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities. **Condition B2-3:** The proponent must implement the Woodside Solar Facility Weed Management Plan (May 2023, Rev 1, PA1000RH0000004) with the purpose of ensuring the flora and vegetation environmental objective in condition B2-2(1) is achieved.				

EPA Factor: Flora and Vegetation
EPA Objective: To protect flora and vegetation so that biological diversity and ecological integrity are maintained.

Objective(s):

(1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes.

(2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities.

Key environmental values: flora and vegetation
Key impacts and risks: reduction in health of flora and vegetation.

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
Implementation of the Woodside Solar Facility Weed Management Plan (May 2023, Rev 1, PA1000RH0000004) including: • Weed surveys shall be undertaken in areas in which construction or activities (e.g. geotechnical surveys) are planned prior to commencement. Surveys shall map weed occurrence and percentage cover. • High risk areas (e.g. areas identified as infested with of Declared Pests, WoNS, weeds identified as threats to PECs, weeds within 50 m of PECs / priority flora) are to be identified on site weed map. • The known weed status of each section of the project area shall be clearly marked on the site weed map to inform entry procedures/requirements. • The site induction program will include hygiene training to ensure all staff and sub-contractors are aware of the requirements to avoid the spread and introduction of weeds. • Inductions will include weed identification guides and maps. • Weed control (chemical or physical) shall be undertaken within construction areas (prior to construction commencing) to eradicate populations of declared and environmental weeds with particular emphasis in priority areas. • Annual weed control activities to be undertaken within operational areas. Declared or environmental weeds to be targeted to be eradicated within operational areas. • Any vehicles / plant planning to enter areas within the Development Envelope but outside of construction or operational areas are to be certified clean on entry. • Any vehicles / plant planning to enter construction areas in which weeds are present to be clean on exit. • Entry and exit points to/from the road reserve shall be reduced or avoided as far as practicable in weed infested areas. • Imported fill will be weed free. Accredited suppliers with weed free certification to be utilised.	• Minimise risk of weed spread through proactive weed management and control. • No spread of weeds attributable to onsite vehicle movement. • No introduction of weeds to project areas via imported materials.	• Pre-construction weed survey (ideally within wet season conditions) in areas where construction scopes or activities (e.g. geotechnical surveys) are planned. Including relevant high risk areas within 50 m of PECs, waterways, or known populations/habitat for priority flora and fauna (i.e. Northern Quoll).	• Prior to ground disturbing activities in each construction phase.	• Maintain Weed Maps.
		• Post-construction annual weed survey (ideally within wet season conditions) in areas where construction scopes or activities (e.g. geotechnical surveys) have occurred. Including relevant high risk areas within 50 m of PECs, waterways, or known populations/habitat for priority flora and fauna (i.e. Northern Quoll). • Weed map shall be updated following annual weed treatment during operational phases.	• Weed monitoring for 3 years post-construction.	• Maintain Weed Maps.
		• Monitoring of microclimate (temperature and humidity).	• For three years post construction.	• Monitoring report.
		• Periodic review of construction/staff induction program to ensure they are consistent with the management plan.	• Continuously throughout project life.	• Training/Induction records.
		• Weed control activities to be undertaken within areas of operation.	• Pre-construction (if required by pre-construction weed survey). • 6 monthly during construction. • Annual during operations.	• Evidence of weed control activity being conducted.
		• Post treatment surveys to confirm adequacy of weed control activities related to areas of operation. • Surveys to also verify that there are no adverse impacts to flora and vegetation from the introduction or spread of weeds within 20 m of the DE (in proximity to areas of operation).	• Monthly monitoring for very high priority weeds. • Quarterly monitoring for high priority weeds. • Annual monitoring for medium and low priority weeds.	• Monitoring report.

EPA Factor: Flora and Vegetation
EPA Objective: To protect flora and vegetation so that biological diversity and ecological integrity are maintained.

Objective(s):

(1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes.

(2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities.

Key environmental values: flora and vegetation
Key impacts and risks: reduction in health of flora and vegetation.

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
		• Routine audits of Clean on Entry / Exit implementation.	• Continuously throughout project life. • Prior to and During construction.	• Site access rules. • Training/inductions records.
		• Records site access rules denote restrictions around weed infested areas.	• Continuously throughout project life.	• Weed Monitoring Procedures.
		• Fill certifications to be acquired prior to fill usage.	• When acquiring imported fill material.	• Certifications of clean fill maintained.
• If required, dust suppression (e.g. water cart or dust suppression sprays) will be used during dust generating activities and as required over cleared areas. • Dust reduction fencing will be erected around the construction area if required. • Haul loads at risk of dust emissions will be stabilised or covered prior to leaving site. • All vehicles to stay on clearly designated access tracks / approved clearing areas and adhere to speed limits. • Avoid dust generating activities during unfavourable weather conditions (e.g. high wind speed) and unfavourable wind directions, where practicable.	• Minimise generation of dust from construction activities.	• Weekly inspections of vegetation within 20 m of the DE during construction to review effectiveness of current dust mitigation strategies and adjust as required. • Daily monitoring of weather conditions.	• Weekly during construction.	• Internal construction reporting.
• During construction, fire suppression equipment will be available at all work areas. • Plant or vehicles working in uncleared areas will be fitted with or have ready access to fire suppression equipment • During construction and operations, activities with the potential to generate heat / fire (e.g. hot works) will be appropriately managed under a permit to work system or job safety assessment • During operations regular vegetation clearing maintenance will be undertaken to prevent vegetation interference with or obstruction of infrastructure or assets • During operations, infrastructure or assets will be regularly maintained to reduce the likelihood of faults or incidents that may cause ignition to surrounding vegetation. • During operations, roads and access tracks will be regularly maintained to allow timely response to faults or equipment failure. • Comply with local council fire prevention measures. • Firebreaks and other fire prevention works will be maintained / undertaken during operations, in accordance with the Bush Fires Act 1954.	• Minimise risk of accidental fire breakouts during construction.	• During construction, ongoing review of local fire danger ratings, and restrictions and subsequent communication to relevant personnel • Vegetation maintenance inspection/ monitoring of fire breaks and minimum distance clearances surrounding infrastructure and assets	• During construction.	• Internal construction reporting.

EPA Factor: Flora and Vegetation
EPA Objective: To protect flora and vegetation so that biological diversity and ecological integrity are maintained.

Objective(s):

(1) no adverse impacts to flora and vegetation from the introduction or spread of environmental weeds compared with pre-construction condition outside of the development envelopes.

(2) no adverse impacts to flora and vegetation outside of the development envelopes through generation of dust from construction activities.

Key environmental values: flora and vegetation
Key impacts and risks: reduction in health of flora and vegetation.

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
Condition B2-5: The proponent must revegetate all areas of native vegetation cleared but not reasonably expected to be required for ongoing operations within twenty-four (24) months after completion of each stage of construction activities until areas of revegetation achieve a cover and composition of locally native species such that weed cover and abundance is no greater than undisturbed reference sites, and soil is protected from erosion.				
Preparation and implementation of a Decommissioning and Rehabilitation Plan which will outline the revegetation of all areas of native vegetation cleared but not reasonably expected to be required for ongoing operations within twenty-four (24) months after completion of each stage of construction activities until areas of revegetation achieve a cover and composition of locally native species such that weed cover and abundance is no greater than undisturbed reference sites, and soil is protected from erosion. The plan will include measures to ensure: • rehabilitated landforms are stable and do not cause pollution or environmental harm. • rehabilitated areas are capable of sustaining achievement of the stated environmental outcomes. • rehabilitated vegetation is self-sustaining. • rehabilitated areas are consistent with species diversity and abundance consistent with native vegetation adjacent to the proposal and achieves a cover and composition of locally native species such that weed cover and abundance is no greater than undisturbed reference sites, and soil is protected from erosion.	• Ensure all areas disturbed as part of construction or operational activities are rehabilitated in line with baseline conditions.	• Ongoing monitoring of the rehabilitated areas will be undertaken to measure performance against the completion criteria set out in the Decommissioning and Rehabilitation Environmental Management Plan (December 2023, Rev 1, PA1000RH0000010). • Monitoring will involve the establishment of quadrats, photo monitoring points and transects. • A Rehabilitation Monitoring Report will be compiled within three months, following the completion of each monitoring inspection.	• Areas of revegetation will be inspected following the first wet season (November to April), after the commencement of rehabilitation. • Future monitoring inspections will then be carried out immediately following the end of the wet season, every year for five years. If completion criteria are not met after five years, monitoring will continue to be undertaken annually until completion criteria are achieved.	• Rehabilitation Monitoring Reports

Table 4-2: Flora and Vegetation – Outcome-based management measures

<table>
<tr><td colspan="5">EPA Factor: Flora and Vegetation
EPA Objective: To protect flora and vegetation so that biological diversity and ecological integrity are maintained.
Outcome(s):
(1) disturb no more than 40 ha of the ‘Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays’ priority ecological community'
(2) disturb no more than 526.6 ha of the ‘Horseflat land system of the Roebourne plains’ priority ecological community’
(3) no disturbance to large trees of Acacia coriacea and A. xiphophylla on larger drainage lines (Vegetation Type 34)
(4) no disturbance or adverse impacts to native vegetation identified in protected areas in the Staged Disturbance Footprint Report.
(5) no adverse impacts to native vegetation within twenty (20) m of the boundary of the Development Envelope.
Key environmental values: priority ecological communities, flora and vegetation
Key impacts and risks: reduction in health of flora and vegetation</td></tr>
<tr><td colspan="5">Outcome-based</td></tr>
<tr><td>• Trigger criteria
• Threshold criteria</td><td>Response actions:
• Trigger level actions
• Threshold contingency actions</td><td>Monitoring</td><td>Timing / frequency of monitoring</td><td>Reporting</td></tr>
<tr><td colspan="5">Condition B1-3: The proponent must ensure there is no disturbance of land that has not been surveyed as at 27 July 2023 until it has been surveyed consistent with EPA guidance and the survey results confirm it is not subject to any of the vegetation, communities or habitat restrictions referenced in condition B2 or condition B3.

Condition B2-1: The proponent must ensure implementation of the proposal achieves the following environmental outcomes:
(1) disturb no more than 40 ha of the ‘Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays’ priority ecological community'
(2) disturb no more than 526.6 ha of the ‘Horseflat land system of the Roebourne plains’ priority ecological community’
(3) no disturbance to large trees of Acacia coriacea and A. xiphophylla on larger drainage lines (Vegetation Type 34)
(4) no disturbance or adverse impacts to native vegetation identified in protected areas in the Staged Disturbance Footprint Report.
(5) no adverse impacts to native vegetation within twenty (20) m of the boundary of the Development Envelope.</td></tr>
<tr><td rowspan="2">Trigger Criterion:
90% of permitted clearing extent for any specified vegetation type is reached.

Threshold Criterion:
100% of permitted clearing extent (i.e. within Condition B2-1) for any specified vegetation type is reached.</td><td rowspan="2">Trigger level actions:
• A review of the remaining vegetation extent will be undertaken to ensure compliance with permitted clearing, as per Condition B2-1.
• Clearing extent will be communicated to personnel, including area, percentage, and type of vegetation. This includes no adverse impacts to native vegetation within 20 m of the boundary of the DE.
• Ground survey monitoring of the respective vegetation type will be undertaken weekly during active clearing scopes once trigger criterion is reached for the specified vegetation type to ensure the limit is not exceeded.
Threshold contingency actions:
• Clearing of relevant vegetation type will cease immediately once threshold criterion is reached.</td><td>• Regular construction area inspections to visually check/review clearing boundaries.</td><td>• Weekly during clearing activities.</td><td>• Internal construction reporting.</td></tr>
<tr><td>• Ground survey using surveyors and/or aerial photography in combination with baseline mapping shapefiles and Geographic Information System (GIS) technology to determine the extent of each vegetation type present within the DE.</td><td>• Monthly during active clearing scopes.
• Weekly during active clearing scopes once trigger criterion is met for specified vegetation type.
• Six monthly during construction (ie when there is still an increased presence onsite).
• Annually during operations phase (when activity onsite is low and risks are reduced).</td><td>• Annual compliance reporting.
• Internal construction reporting.</td></tr>
</table>

4.2 Terrestrial Fauna

4.2.1 EPA environmental factor and objective

To protect terrestrial fauna so that biological diversity and ecological integrity are maintained (EPA 2016b).

4.2.2 Environmental outcomes and objectives

Environmental Outcomes

(1) disturb no more than (Figure 2-3):

a. 40.4 ha of minor drainage lines habitat type;

b. 104.2 ha of hummock grassland on rocky plain (Triodia on stony soils) habitat type; and

c. 733.4 ha of tussock grassland on cracking clays habitat type.

(2) no disturbance to the short range endemic invertebrate granite habitat type (Figure 2-3).

(3) no disturbance to northern quoll (Dasyurus hallucatus) critical habitat (Figure 2-4).

(4) no disturbance or adverse impacts to native fauna habitat identified in protected areas in the Staged Disturbance Footprint Report.

Environmental Objectives

(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.

(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.

(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.

4.2.3 Management provisions

This section outlines management provisions for potential impacts on terrestrial fauna. Objective-based and outcome-based management actions, targets and monitoring and reporting requirements are provided in Table 4-3 and

Table 4-4 respectively.

Potential indirect impacts to terrestrial fauna (including the Northern Quoll) that relate to weeds, alteration of fire and hydrological flows, and dust deposition are addressed through provisions for the following factors:

- Flora and Vegetation (Table 4-1)
- Terrestrial Environment Quality (Table 4-5)
- Inland Waters (Table 4-6).

Table 4-3: Terrestrial Fauna – Objectives-based management measures

EPA Factor: Terrestrial Fauna

EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.

Objective(s):

(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.

(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.

(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.

Key environmental values: terrestrial fauna

Key impacts and risks: physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
Condition B1-1: The proponent must prepare and submit a Staged Disturbance Footprint Report to the CEO that identifies the final disturbance footprint for the relevant stage of the proposal prior to construction activities. The Staged Disturbance Footprint Report may be submitted in stages and must demonstrate, at every stage, that the maximum clearing extents specified under Condition A1-1 and achievement of environmental outcomes specified under Conditions B2-1 and B3-1 will be met for all stages combined. **Condition B1-2:** Each Staged Disturbance Footprint Report must identify protected areas within the development envelope, which include native fauna habitat corridors, northern quoll (*Dasyurus hallucatus*) critical habitat, areas supporting large trees of Acacia coriacea and A. xiphophylla and Aboriginal cultural heritage sites which will not be disturbed or subjected to adverse impacts. The total protected areas shall be a minimum of 97.6 ha across all stages. **Condition B1-3:** The proponent must ensure there is no disturbance of land that has not been surveyed as at 27 July 2023 until it has been surveyed consistent with EPA guidance and the survey results confirm it is not subject to any of the vegetation, communities or habitat restrictions referenced in condition B2 or condition B3.				
• In accordance with Condition B1, Woodside will prepare and submit a Staged Disturbance Footprint Report to the CEO that identifies the final disturbance footprint for the relevant stage of the Proposal prior to construction activities. The Staged Disturbance Footprint Report will be submitted in stages and must demonstrate, at every stage, that the maximum clearing extents and achievement of environmental outcomes will be met for all stages. • All areas permitted to be cleared as per each Stage Disturbance Footprint will be clearly identified on project documentation and demarcated on site. • There will be no disturbance of land that has not been surveyed as at 27 July 2023 until it has been surveyed consistent with EPA guidance and the survey results confirm it is not subject to any of the fauna habitat types referenced in condition B3.	• No clearing to occur outside of the approved project clearing footprints.	• Regular construction area inspections to visually check/review clearing boundaries.	• Weekly inspection during clearing activities.	• Internal construction reporting. • Annual compliance reporting.
• All clearing exclusion zones as identified in each Stage Disturbance Footprint Report (including proposed conservation zones (Figure 2-4), Northern Quoll critical habitat and the short range endemic invertebrate granite habitat type) will be clearly delineated onsite by flagging, signage and checked prior to commencement of clearing activities[5]. • All vehicles / plant to be restricted to approved clearing areas and designated access tracks.				
Condition B3-2: The proponent must implement the proposal to achieve the following environmental objectives: (1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna; (2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts; and (3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.				
• The Proposal has been designed to avoid ecologically sensitive locations, specifically the drainage line habitats as far as possible. Construction works will avoid these areas with the exception of the works required for creek crossings and clearing associated with fire management.	• Minimise the risk of indirect disturbance to native fauna.	• Regular construction area inspections to visually check/review clearing boundaries.	• Weekly during clearing activities.	• Internal construction reporting.

[5] Heritage Exclusion Zones will be fenced as agreed with Ngarluma Aboriginal Corporation in the Woodside Solar Cultural Heritage Management Plan.

EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objective(s):
(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.
(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.
(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.
Key environmental values: terrestrial fauna
Key impacts and risks: physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
• In accordance with Condition B1, Woodside will prepare and submit a Staged Disturbance Footprint Report to the CEO that identifies the final disturbance footprint for the relevant stage of the Proposal prior to construction activities. The Staged Disturbance Footprint Report will be submitted in stages and must demonstrate, at every stage, that the maximum clearing extents and achievement of environmental outcomes will be met for all stages. • All areas permitted to be cleared as per each Stage Disturbance Footprint will be clearly identified on project documentation and demarcated on site. • There will be no disturbance of land that has not been surveyed as at 27 July 2023 until it has been surveyed consistent with EPA guidance and the survey results confirm it is not subject to any of the fauna habitat types referenced in condition B3.	• Minimise direct and indirect impacts to fauna from construction activities.	• Regular construction area inspections to visually check/review clearing boundaries.	• Weekly during clearing activities.	• Internal construction reporting.
		• Ground survey using surveyors and/or aerial photography in combination with baseline mapping shapefiles and Geographic Information System (GIS) technology to determine the extent of each vegetation type present within the DE.	• Monthly during active clearing scopes. • Six monthly during construction (ie when there is still an increased presence onsite). • Annually during operations phase (when activity onsite is low and risks are reduced).	• Internal construction reporting. • Annual compliance reporting.
• Inductions for all staff and contractors involved in clearing and ground disturbance activities will include information on potential impacts to fauna, management measures, handling and reporting requirements. • If injured/sick animals are encountered, a nominated fauna carer listed under the Pilbara Wildlife Carers Association will be called to care for the animal. If euthanasia is determined to be the best course of action in consideration of the individual's welfare, this will be undertaken by appropriately qualified personnel.		• Audits of induction records.	• Monthly during construction. • Annually during operations phase (when activity onsite is low and risks are reduced).	• Induction material. • Incident reporting.
• Food wastes will be appropriately segregated and contained, including use of lids, such that both native and feral animals are unable to access the waste. • Food wastes to be collected from construction sites on at least a weekly basis and disposed off-site at licensed waste facilities. • Outside bins to be secured to prohibit access by animals. • Sheds/offices etc to be secured from entry by animals. • Construction sites to be inspected and cleared of food wastes and water containers at completion of work. • All staff and contractors to be inducted on prohibition of littering and feeding of fauna.		• Weekly inspection of construction site.	• Weekly during construction.	• Internal construction reporting. • Report all native fauna incidents resulting in injury or death to conservation significant fauna, to the DBCA and DCCEEW (as required).
• All vehicles to stay on clearly designated access tracks and adhere to speed limits. • Infrastructure modified (e.g. bird deterrents installed) if collisions identified as a significant cause of mortality. • Construction activities are only proposed during daylight hours. Operations will be mostly unmanned unless maintenance / repair activities		• Weekly inspection of construction sites.	• Weekly during construction.	• Internal construction reporting. • Report all native fauna incidents resulting in injury or death to conservation significant fauna, to the DBCA and DCCEEW (as required).

EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objective(s):
(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.
(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.
(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.
Key environmental values: terrestrial fauna
Key impacts and risks: physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
are required. Maximum routine site-based workforce will be less than five (5) people.				
• Where vehicles or machinery travel through or are sourced from within areas where cane toads are known to occur (i.e. Northern Territory, northern Queensland, Kimberley region of WA), biosecurity measures will be implemented. This will involve a visual inspection of vehicle and machinery bodies and any associated loads (i.e. pallets). • The Project induction will include information on cane toad identification and reporting requirements, if sighted.		• Visual inspection of vehicle/machine/item of plant body and any associated load (ie. pallets) arriving from area that is known to have cane toads present.	• During construction.	• Biosecurity inspection record, verifying vehicle/machine/item of plant arriving onsite is free of cane toads.
• Lighting only used where required and kept to a minimum (e.g. turned off when not required). • Construction activities will only occur during daylight hours with limited light emissions during construction. • Operation: Site will be unmanned during operations most of the time. Task based lighting only to be used when personnel need to be onsite at night (maintenance, repairs, or emergency response activities). • During construction point sources operating intermittently for eighteen to twenty-four (18-24) months per stage of construction (i.e. generators, pile driving equipment and bulldozers etc). These are not expected to produce noise emissions with conveyance over the landscape. • Construction works will be undertaken in accordance with Environmental Protection (Noise) Regulations 1997. • During operation, noise emissions will be limited to occasional vehicle movements and localised works.		• On completion of construction undertake a review of night-time light emissions from the facilities and implement adaptive measures where required. • Site inspections and audits.	• Weekly during construction.	• Internal construction reporting. • Report non compliances with Environmental Protection (Noise) Regulations 1997 (WA).
• Project inductions will include the requirement to report all sightings of feral animals during construction. • No feeding of native and/or feral animals will be permitted.		• Weekly inspection of construction site.	• Weekly during construction.	• Implement and maintain an introduced fauna register, noting all sighting, species and captures.
• Any temporary fencing will limit the use of barbed wire, wherever practicable. • Fencing will be designed for Wind Region D and to comply with AS1725.1. • Fencing will be 800 mm x 50 mm x 3.15 KK galvanised chain wire and 3 wows of Barbed wire, with an overall height 2350 mm. • Fencing that is required (i.e. for pastoral reasons etc), will have the top strand as a single strand wire. Bat deflectors will be installed on fencing, to minimise Bat and Grey Falcon entanglement interaction. • To ensure access to dispersal corridors, fencing will not be located in Northern Quoll critical habitat or dispersal habitat (Figure 2-3). Where above ground power lines are constructed, wires will be marked to increase their visibility to Grey Falcon. This may include the use of spirals, flappers or other markers.		• Native fauna injuries and deaths recorded. Monthly site inspections, including review of fencing and powerlines.	• Monthly.	• Implement and maintain a Fauna Register (all injuries, deaths & relocations). • Report all native fauna incidents resulting in injury or death to conservation significant fauna, to the and DCCEEW (as required). • Site inspection checklist.

EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objective(s):
(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.
(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.
(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.
Key environmental values: terrestrial fauna
Key impacts and risks: physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
The location of planned fencing is shown in Figure 2-1.				
• Following completion of construction of each phase, monitoring for fauna injuries or fatalities (e.g. bats and birds) from solar panel collisions will be undertaken around the operational solar facility. • Should bird/bat interactions with the solar array be recorded, additional mitigation measures will be investigated and where approporeate will be incorporated to minimise potential fauna interactions in the future (e.g. bird deterrents). Consideration will be given to the following monitoring and avoidance measures; • Retrofitting of visual cues to existing panels (ie UV-reflective or solid, contrasting bands)[6]; • Installation of bird diverters and perch deterrent devices[6]; • Abatement Controls such as restricting vehicle movements during periods of migration[7]; • Operational Controls to make sites less suitable for sensitive species such as habitat modification or removal of carcasses[7]; • Investigations into alternative solar panel designs and technologies to inform future phase[7] • Maintenance of asset protection zones for bushfire management (ie periodic trimming of grass, bushes, and other foliage around the solar energy systems) which will also discourage fauna activity[6]. • Solar PV arrays to be designed around natural drainage lines, breaking the outline of the infrastructure minimising appearance as a false water body. • A minimum of 6 m distance will be kept between the tracker rows for the installed arrays. Horvath et al (2010) suggests fragmenting the solar-active area of arrays lessens their attractiveness to polarotactic insects, which in tern would reduce their attractiveness for birds and bats feeding on these insects. • Solar PV arrays will be stowed at ~60 degree off horizontal when there is no sunlight (farm is not operating).	• Minimise collision impacts to fauna from operational infrastructure.	• Site inspection to monitor for fauna injuries or fatalities.	• Monthly inspection ongoing throughout operation. • Weekly monitoring for injuries or fatalities during peak migratory bird periods[8] within the first 12 months after completion of each phase of construction.	• Site inspection reports.

Condition B3-4: Prior to ground disturbing activities the proponent must undertake the following actions:
(1) within seven (7) days prior to clearing, using a licenced fauna spotter, undertake pre-clearance surveys to detect presence of northern quoll (*Dasyurus hallucatus*) within clearing areas; and
(2) ground disturbing activities shall not commence until either:
(a) the individual has been relocated by the fauna spotter; or

[6] Based on monitoring and avoidance measure recommendations outlined in Kagan et al., 2014 with regard to the mitigation of bird and bat impacts.
[7] Based on monitoring and avoidance measure recommendations outlined in Bennun et al., 2012 with regard to the mitigation of bird and bat impacts.
[8] Peak migratory periods occur in Spring (September to November) and again in Autum (March to May) as shorebirds migrate between Northern Australia and offshore locations (DoE, 2015).

EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objective(s):
(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.
(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.
(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.
Key environmental values: terrestrial fauna
Key impacts and risks: physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
(b) the individual has been observed by the fauna spotter to have moved on from the area to adjoining suitable habitat; and (c) the fauna spotter considers that the individual no longer occurs in the area.				
In accordance with Condition B3-4: • Within seven (7) days prior to clearing, a licenced fauna spotter will undertake a pre-clearance survey to detect presence of Northern Quoll within clearing areas. These surveys will include the use of cameras. • If the pre-clearance survey identified the presence of Northern Quoll within the clearing areas, ground disturbing activities shall not commence in that area until: • the individual has been relocated by the fauna spotter[9]; or • the individual has been observed by the fauna spotter to have moved on from the area to adjoining suitable habitat; and • the fauna spotter considers that the individual no longer occurs in the area.	• Minimise impacts to northern quoll as a result of clearing activities. • No clearing within Northern Quoll critical habitat (Figure 2-4). • No clearing within the proposed Conservation Area (Figure 2-4).	• Pre-clearance surveys.	• Within seven (7) days prior to clearing.	Fauna management report as per Condition B3-6 prepared and submitted to the CEO no later than sixty (60) days after the completion of each stage of construction activities. The report shall include the following: • details of fauna inspections. • dates and details of clearing activities for each area inspected. • the number and type of fauna removed and relocated and actions taken. • details of the fauna spotter commissioned. • results of the pre-clearance surveys. • vertebrate fauna mortalities.
Condition B3-5: The proponent must undertake the following actions during construction activities: (1) ensure the presence of fauna spotters during all ground disturbing activities; and (2) construction activities must cease in any area where northern quoll (*Dasyurus hallucatus*) are identified until: (a) the individual has been relocated by a fauna spotter; or (b) the individual has been observed by the fauna spotter to have moved on from the area to adjoining suitable habitat; and (c) the fauna spotter considers that the individual no longer occurs in the area.				
In accordance with Condition B3-5: • Fauna spotters will be present during all ground disturbing activities. • Construction activities will cease in any area where Northern Quoll are identified until: ○ the individual has been relocated by a fauna spotter[9]; or ○ the individual has been observed by the fauna spotter to have moved on from the area to adjoining suitable habitat; and ○ the fauna spotter considers that the individual no longer occurs in the area.	• Minimise impacts to northern quoll as a result of construction activities. • No clearing within Northern Quoll critical habitat (Figure 2-4).	• Visual fauna spotting during ground disturbing activities.	• During all ground disturbing activities.	• Fauna management report as per Condition B3-6. See above.

[9] Individuals would be relocated to habitat outside of the planned disturbance area for the stage under construction but within the home range to the species. Relocation will be to suitable supporting or critical habitat in 'good' to 'excellent' condition as defined by DCCEEW in the Commonwealth referral guidelines for the Northern Quoll (DoE, 2016), such as the critical or supporting habitat present in the DE shown in Figure 3-4. Suitable locations will be identified in consultation with a suitably qualified specialists prior to construction commencing and these sites will be agreed in consultation with the DBCA.

EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objective(s):

(1) minimise the risk of physical injury or mortality from construction activities and operations on native fauna.
(2) minimise the risk of adverse impacts and indirect disturbance to native fauna including physical injury or mortality, behavioural changes, and health impacts.
(3) minimise the risk of adverse impacts to migratory and raptorial birds from collisions with infrastructure.

Key environmental values: terrestrial fauna
Key impacts and risks: physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure

Objective-based

Management Actions	Management Targets	Monitoring	Timing / frequency of monitoring	Reporting
Condition B3-7: The proponent must undertake the following actions during construction activities: (1) clear trapped vertebrate fauna from within open trenches, using a suitably trained and licensed fauna spotter (a) at least twice daily, with the first daily clearing to be completed no later than three (3) hours after sunrise and the second clearing to be completed between the hours of 3:00 pm and 6:00 pm of that same day, unless otherwise agreed to by the CEO; and (b) within one (1) hour prior to backfilling of trenches; (2) ensure open trench lengths shall not exceed a length capable of being inspected and cleared by the requirements set out in condition B3-7(1); (3) ensure ramps providing egress points and/or fauna refuges providing suitable shelter from the sun and predators for trapped vertebrate fauna are to be placed in the trench at intervals not exceeding fifty (50) metres; (4) in the event of substantial rainfall, and following the clearing of vertebrate fauna from the trench, pump out any pooled water in the open trench and discharge it to adjacent vegetated areas in a manner that does not cause erosion; (5) produce and provide a report on fauna management no later than sixty (60) days after the completion of each stage of construction activities to the CEO. The report shall include the following: (a) details of fauna inspections; (b) dates of trenching activities for each trench inspected; (c) the number and type of fauna cleared from trenches and actions taken; (d) details of the fauna spotter commissioned; and (e) vertebrate fauna mortalities.				
During construction, Woodside will: • clear trapped vertebrate fauna from within open trenches, using a suitably trained and licensed fauna spotter: • at least twice daily, with the first daily clearing to be completed no later than three hours after sunrise and the second clearing to be completed between the hours of 3:00 pm and 6:00 pm of that same day. • within one (1) hour prior to backfilling of trenches. • ensure open trench lengths shall not exceed a length capable of being inspected and cleared. • ensure ramps or batters providing egress points and/or fauna refuges providing suitable shelter from the sun and predators for trapped vertebrate fauna are to be placed in the trench at intervals not exceeding 50 metres. • in the event of substantial rainfall, and following the clearing of vertebrate fauna from the trench, pump out any pooled water in the open trench and discharge it to adjacent vegetated areas in a manner that does not cause erosion. • All excavations, temporary drains and trenches to be backfilled as soon as practicable. • If injured/sick animals are encountered, a nominated fauna carer listed under the Pilbara Wildlife Carers Association will be called to care for the animal. If euthanasia is determined to be the best course of action in consideration of the individual's welfare, this will be undertaken by appropriately qualified personnel.	• Ensure no impacts to vertebrate fauna due to open trenching on site.	• Daily monitoring for trapped fauna within steep sided excavations and trenches.	• At least twice daily (during construction), with the first daily clearing to be completed no later than three (3) hours after sunrise and the second clearing to be completed between the hours of 3:00 pm and 6:00 pm of that same day. • Within one (1) hour prior to backfilling of trenches.	Fauna management report as per Condition B3-6 prepared and submitted to the CEO no later than sixty (60) days after the completion of each stage of construction activities. The report shall include the following: • details of fauna inspections. • dates of trenching activities for each trench inspected. • the number and type of fauna cleared from trenches and actions taken. • details of the fauna spotter commissioned. • vertebrate fauna mortalities.

Table 4-4: Terrestrial Fauna – Outcome-based management measures

<table>
<tr><td colspan="5">EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Outcome(s):
(1) disturb no more than:
a) 40.4 ha of minor drainage lines habitat type;
b) 104.2 ha of hummock grassland on rocky plain (Triodia on stony soils) habitat type; and
c) 733.4 ha of tussock grassland on cracking clays habitat type.
(2) no disturbance to the short range endemic invertebrate granite habitat type.
(3) no disturbance to northern quoll (Dasyurus hallucatus) critical habitat.
(4) no disturbance or adverse impacts to native fauna habitat identified in protected areas in the Staged Disturbance Footprint Report.
Key environmental values: Terrestrial fauna
Key impacts and risks: Physical injury or mortality, behavioural changes, health impacts and collisions with infrastructure</td></tr>
<tr><td colspan="5">Outcome-based</td></tr>
<tr><td>• Trigger criteria
• Threshold criteria</td><td>Response actions:
• Trigger level actions
• Threshold contingency actions</td><td>Monitoring</td><td>Timing / frequency of monitoring</td><td>Reporting</td></tr>
<tr><td colspan="5">Condition B3-1: The proponent must implement the proposal to meet the following environmental outcomes:
(4) disturb no more than:
(a) 40.4 ha of minor drainage lines habitat type;
(b) 104.2 ha of hummock grassland on rocky plain (Triodia on stony soils) habitat type; and
(c) 733.4 ha of tussock grassland on cracking clays habitat type
(5) no disturbance to the short range endemic invertebrate granite habitat type;
(6) no disturbance to northern quoll (Dasyurus hallucatus) critical habitat;
(7) no disturbance or adverse impacts to native fauna habitat identified in protected areas in the Staged Disturbance Footprint Report.</td></tr>
<tr><td rowspan="2">Trigger Criterion:
• 90% of permitted clearing extent for any specified habitat type is reached.
• Clearing exclusion zones are not clearly delineated onsite by flagging and signage.
Threshold Criterion:
100 % of permitted clearing extent (i.e. within Condition B3-1(4)) for any specified habitat type is reached.</td><td rowspan="2">Trigger level actions:
• Ground survey monitoring of the respective vegetation type will be undertaken weekly during construction once trigger criterion is reached for the specified habitat type to ensure the limit is not exceeded.
• A review of clearing to date will be undertaken to establish if any unapproved clearing has occurred.
• Clearing will not recommence until demarcation requirements are met.
Threshold contingency actions:
• Clearing of relevant habitat type will cease immediately once threshold criterion is reached.</td><td>• Regular construction area inspections to visually check/review clearing boundaries and assess vegetation clearing, in particular, compliance with statutory approvals.</td><td>• Weekly during clearing activities.</td><td>• Internal construction reporting.</td></tr>
<tr><td>• Ground survey using surveyors and/or aerial photography in combination with baseline mapping shapefiles and Geographic Information System (GIS) technology to determine the extent of each vegetation type present within the DE.</td><td>• Monthly during active clearing scopes.
• Weekly once trigger criterion is met for specified habitat type.
• Six monthly during construction (ie when there is still an increased presence onsite).
• Annually during operations phase (when activity onsite is low and risks are reduced).</td><td>• Annual compliance reporting.
• Internal construction reporting.</td></tr>
</table>

4.3 Terrestrial Environmental Quality

4.3.1 EPA environmental factor objective

To maintain the quality of land and soils so that environmental values are protected (EPA 2016c).

4.3.2 Proposal specific objectives

As an additional environmental factor (i.e. not a key factor), no environmental outcomes have been identified specific to this factor. Woodside will implement the proposal to achieve the following objectives which will contribute to the achievement of the identified environmental outcomes of the Proposal for Flora and Vegetation and Terrestrial Fauna factors:

- Minimise soil erosion from clearing, earthworks and vehicle / machinery movements.
- Minimise sedimentation of surrounding inland waters
- Prevent contamination to soil or water from the release of hazardous materials or exposure of ASS in or adjacent to the DE.

4.3.3 Management provisions

This section outlines management provisions for potential impacts on terrestrial environmental quality. The objectives are described above, and management actions, targets and monitoring and reporting requirements are provided in Table 4-5. As there are no environmental outcomes specific to this factor, specific trigger and threshold criteria and actions have not been proposed.

Table 4-5: Terrestrial Environmental Quality – Management based provisions

Management Actions	Management Targets	Monitoring	Reporting
Construction – ASS Sensitivity: High (Drainage lines), Low (elsewhere)			
• Avoidance of excavation below the water table. • No abstraction of groundwater.	• No excavation below the water table. • No ground water abstraction.	• Audit of design and construction methodology to confirm requirements met.	• Audit report (internal).
Construction – Soil Erosion, Drainage and Compaction Sensitivity: High (drainage lines), Medium (elsewhere)			
• Minimise extent of cleared vegetation to that required for each phase (i.e. not pre-clearing for future/prospective works). • Stormwater runoff and drainage management measures (e.g. stormwater infiltration or evaporation basins and controlled stormwater flows) utilised where downstream erosion risk is identified. • Vehicle / plant movements to be restricted to approved disturbance areas and designated access tracks. • All disturbed areas to be visually assessed at completion of construction works for risk of compaction or erosion. Any disturbed areas deemed to be at risk of compaction or erosion to be provided with remedial works to reduce impact to soils, (e.g. scraping, ripping, contouring, grading, stabilising). • Remedial work areas to be inspected after first wet season from implementing, to check effectiveness, with any eroded areas provided with additional remedial works or reinstatement if required. • Vegetation rehabilitation (where required, e.g. for temporary laydown areas no longer required) to be undertaken as soon as practicable. • Construction works (particularly those within and around surface waterways) are to be suspended or scaled back, in the event of a cyclone warning. Include temporary erosion protection as required to prevent washout of works areas.	• All disturbed areas assessed for risk. • Remedial works applied for all at risk areas. • All remedial work areas re-inspected and remediated / reinstated if required.	• Post-construction inspection (carried out within 12 months of activity completion) of disturbed areas to identify risk of compaction / erosion. • Post wet season inspection of remedial works (first wet season following activity completion).	• Post-construction inspection report, including mapping of areas at risk of erosion / compaction, record of remedial works.

Management Actions	Management Targets	Monitoring	Reporting
• Construction works within surface waterways to be provided with temporary erosion protection as required.			
Operations – Soil Erosion, Drainage and Compaction Sensitivity: High (drainage lines), Medium (elsewhere)			
• Stormwater drains including diversion drains, culverts and floodways, to be inspected each year to identify where erosion and sediment build up is occurring. • Stormwater drains to be provided with remedial works to reinstate eroded areas, provide additional erosion protection, and remove sediment built up to ensure that drains convey flows to design specifications. • Routine vehicles and machinery use is restricted to existing roads and access tracks.	• Stormwater drains or drainage channels maintained to limit sediment build-up and other obstructions and manage erosion.	• Annual inspections of stormwater infrastructure prior to wet season.	• Inspection reports.
Construction – Hazardous Materials and Wastes Sensitivity: High (drainage lines), Medium (elsewhere)			
• On-site refuelling of machinery and plant to occur on sealed or bunded areas. • Scheduled / major maintenance of vehicles / plant to be undertaken off-site. • Provision of spill response kits at refuelling locations (if applicable – only temporary refuelling equipment planned). • No hazardous materials or solid / liquid wastes to be stored within 50 m of drainage lines. • Hazardous materials to be stored in accordance with relevant Australian Standards and Regulations. • Spill management procedures to be developed and key staff responsible for hazardous materials storage/handling trained in spill response. • Material Safety Data Sheets (MSDS) and hazardous materials inventory to be retained on site. • All soil and materials / equipment contaminated from spills / leaks to be disposed of at a licensed waste facility.	• Hazardous materials stored in compliance with relevant. Australian Standards and Regulations. • No spills or leaks resulting in contamination of soil, surface water or groundwater. • No unauthorised waste disposal.	• Regular site inspections of hazardous materials and waste storage and handling areas to identify spills / leaks and discharges, and check that storage, handling and signage is appropriate. • Post-construction inspection of construction sites to check for signs of soil and surface water contamination,	• Post construction inspection report. • All environmental incidents are to be recorded and reported as required.

Management Actions	Management Targets	Monitoring	Reporting
• Solid waste to be temporarily contained in designated bins prior to disposal off-site at a licensed waste disposal facility. • General construction waste material to be appropriately managed and disposed of off-site at an appropriate facility.		waste litter and debris.	

4.4 Inland Waters

4.4.1 EPA environmental factor objective

To maintain hydrological regimes and quality of groundwater and surface water so that environmental values are protected (EPA 2018).

4.4.2 Proposal specific objective(s)

As an additional environmental factor (i.e. not a key factor), no environmental outcomes have been identified specific to this factor. Woodside will implement the proposal to achieve the following objectives which will contribute the achievement of the identified environmental outcomes of the Proposal for Flora and Vegetation and Terrestrial Fauna factors:

- Maintain surface hydrological regime.
- Minimise potential for unplanned release to the environment of hazardous materials or waste
- Minimise impacts to the availability of groundwater.
- Minimise indirect impacts to groundwater quality from disturbance of ASS and existing site contamination in or adjacent to the DE.
- Minimise impacts to inland waters from construction activities.

4.4.3 Management provisions

This section outlines management provisions for potential impacts on inland waters. The objectives are described above, and management actions, targets and monitoring and reporting requirements are provided in Table 4-6. As there are no environmental outcomes specific to this factor, specific trigger and threshold criteria and actions have not been proposed.

Potential impacts to inland waters arising from soil erosion and pollution (ASS, hazardous materials and solid or liquid wastes) are addressed through management provisions for Terrestrial Environmental Quality (Table 4-5).

Table 4-6: Inland Waters – Management based provisions

Management Actions	Management Targets	Monitoring	Reporting
Construction and Operations – Hydrological Regime Sensitivity: High (drainage lines), Low (elsewhere)			
• Access tracks or roads traversing drainage lines to be constructed as to not inhibit water flow. • Avoidance of impacts to ecological sensitive locations, specifically drainage lines (except where required for creek crossings or fire management). The Proposal has been designed to avoid drainage lines as far as possible. • Vegetation associated with natural drainage lines to be prioritised for protection through detailed design works. • Construction works within surface waterways (e.g. diversion channels, culverts or floodways) should be constructed during the dry season and no-flow periods as far as practicable. • Any damage to surface waterway bed and banks caused by major storm events through construction works areas to be remediated. • Construction works within surface waterways to be completed and permanent erosion protection / stabilisation provided as soon as practicable. • Vehicle movements to be restricted to designated access tracks.	• No damage to waterways outside of construction areas, arising from construction works.	• Pre and post-construction photo monitoring points on drainage lines downstream of DE. • Visual inspection of temporary erosion protection measures. • Visual inspection of downstream areas following major storm events and remediating if required.	• Incident report for major storm event, wash out or downstream impacts.
Construction and Operations / Maintenance – Reduction in availability of Groundwater Sensitivity: High (drainage lines), Low (elsewhere)			
• Water for use during construction and operations will be brought on site by tanker. No local water will be abstracted.	• No groundwater abstracted for construction purposes. • No long term impacts to inland waters (e.g. physical and chemicals parameters and vegetation health).	Site plans indicate no groundwater abstraction occurring.	

4.5 Social Surroundings (Amenity)

4.5.1 EPA environmental factor objective

To protect social surroundings from significant harm (EPA 2016d).

4.5.2 Proposal specific objectives

As an additional environmental factor (i.e. not a key factor), no environmental outcomes have been identified specific to this factor. Woodside will implement the proposal to achieve the following objectives which will contribute the achievement of the identified environmental outcomes of the Proposal for Flora and Vegetation and Terrestrial Fauna factors:

- Minimise impacts to amenity from the physical presence of infrastructure.
- Minimise indirect impacts to amenity from construction and operational activities.

4.5.3 Management provisions

This section provides management measures for potential impacts to Social Surroundings (Amenity). The objectives are described above, and management actions, targets and monitoring and reporting requirements are provided in Table 4-7. As there are no environmental outcomes specific to this factor, specific trigger and threshold criteria and actions have not been proposed.

Minimisation of dust emissions arising from clearing, unauthorised access and soil erosion is addressed through management provisions for:

- Flora and Vegetation (Table 4-1)
- Terrestrial Environmental Quality (Table 4-5)

A Social Surrounding (Cultural Heritage) Management Plan and an Indigenous Land Use Agreement Cultural Heritage Management Plan have been developed to provide management measures for potential impacts to Cultural Heritage (Woodside 2021b).

Table 4-7: Social Surroundings – Management based provisions

Management actions	Management targets	Monitoring	Reporting
Construction - Amenity Sensitivity: Low			
• Construction works undertaken in accordance with *Environmental Protection (Noise) Regulations 1997*. • Vehicles / plant regularly maintained to ensure noise minimisation. • Traffic management – Traffic management plan to be implemented during construction.	• No incidents of non-compliance with Environmental Protection (Noise) Regulations 1997.	• Not applicable.	• Prepare and maintain a Complaints Register.

5. Adaptive Management and Review

The adaptive management approach aims to reduce impacts by embedding a cycle of monitoring, reporting and implementing change (where required). This document applies the principles of adaptive management through monitoring, corrective actions and implementing changes. The EMP is intended to be dynamic and will be updated to reflect changes in management practices and the social and natural environment with time. This will also allow flexibility to respond to new environmental impacts and adopt new technologies / management measures. Adaptive management has been embedded throughout this document, and the key adaptive management processes are described below.

In line with the concept of adaptive management and considering the above, the management actions presented in this EMP shall be monitored, reviewed, evaluated and updated, as required, considering:

- environmental monitoring identifies a non-conformance with the EMP
- outcomes of incident investigations or audits
- outcomes of any technical review of and evaluation of the emissions
- new and relevant data/information gained as a result of implementing this EMP, or from external sources
- significant changes to industry standard management practices
- changes in State or Commonwealth legislation or policy.

With relevant updates included in a revised EMP. In addition, this EMP may be reviewed:

- based on EPA, DCCEEW and decision-making authorities comments during the Proposal approval process
- if a significant incident occurs related to the protection of Aboriginal heritage
- Traditional Owners request that a review is undertaken due to a relevant concern.

Technical review and evaluation of the management actions outlined in this EMP will be conducted every five years[10] (if not initiated prior to that time) to ensure the management actions are adequately addressing the key risks and meeting EPA objectives. If, as a result of any review, any significant changes are required to be made to this EMP, a revised EMP will be provided to the EPA for approval (if required).

When the five-yearly review cycle is triggered, or if a significant change to either the facility, activity, or risk is identified, a revised EMP will be submitted to the EPA.

[10] Frequency no more than annually.

6. STAKEHOLDER CONSULTATION

Stakeholder consultation and engagement is an integral component of the environmental impact assessment and environmental approvals process. This section describes Woodside's approach to stakeholder consultation broadly and for the Proposal specifically.
Woodside's objectives for stakeholder consultation are to:

- improve stakeholder awareness and understanding of the Proposal
- provide stakeholders with opportunities to obtain information about the Proposal including the physical, ecological, socio-economic and cultural environment that may be affected, the potential impacts that may occur, and the prevention and mitigation measures proposed to avoid or minimise those impacts
- gain feedback from stakeholders on their concerns in regard to the Proposal and, where possible, address stakeholder concerns through further activities, or by implementing additional mitigation measures.

Revision 3 of this EMP was included as an appendix to the Environmental Referral Supporting Document for the Proposal (Woodside, 2021) and therefore was reviewed by the EPA, DCCEEW and other Designated Management Authorities.

Revision 4 was updated in response to comments made on the Environmental Referral Supporting Document.

Revision 5 was updated to reflect State and Commonwealth Environmental Approval Conditions and was also provided to DCCEEW in October 2023 as part of the Commonwealth assessment of the Proposal.

Comments on the Environmental Referral Supporting Document have also been sought from relevant Traditional Owner groups in the region and their feedback has been incorporated into this document.

Comments received during the assessment process relating to the EMP are provided below in Table 6-1.

Table 6-1: Stakeholder consultation

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
Department of Water and Environmental Regulation (DWER)	Acid sulfate soil (ASS) investigations • There is an increased risk of groundwater acidification occurring if extensive construction dewatering were to take place. • Clarify in the ERSD and EMP whether there would be infrastructure construction below the water table or the excavation of large amounts of material from below the water table, that would require the use of construction dewatering. If this is proposed, additional ASS investigations are to be undertaken in areas where excavation below the water table and dewatering are taking place. • This would be required to ensure adequate management limiting the oxidation of potentially sulfidic soil materials. • ASS investigations in these areas should be undertaken in accordance with the requirements of the DWER ASS investigation guidelines.	• The construction of the Solar PV Farm infrastructure will not require excavation of material from below the water table. The Solar Array piers are expected to be piled to a depth of up to 2 m below ground level, with excavations required for building foundations up to 1.5 m in depth. Trenches established to contain cables are expected to have a depth of up to 1 m. These excavations will be back filled with the displaced soil material at the completion of construction activities. • Woodside confirms there is no plan for infrastructure construction below the water table or the excavation of large amounts of material from below the water table, that would require the use of construction dewatering. • Given the above, no additional ASS investigations or additional management measures are required.
DWER	ASS management • Provide information about how the risks of ASS disturbance would be managed if any construction were to be undertaken below the water table within the development envelope.	Please refer to above comment.
DCCEEW	Proposed Mitigation ERSD – Section 12.4 Woodside has stated that an updated version of the Environmental Management Plan will be provided to the department and will include the following information: • Measures to avoid and mitigate the impact of Cane Toads (*Bufo marinus*) on the Northern Quoll (*Dasyurus hallucatus*) and the Ghost Bat (*Macroderma gigas*). • Measures to avoid and mitigate the impact of feral cats (*Felis catus*) on the Northern Quoll (*Dasyurus hallucatus*), Pilbara Olive Python (*Liasis olivaceus barroni*), Ghost Bat (*Macroderma gigas*), Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*), and the Grey Falcon (*Falco hypoleucos*).	Woodside acknowledged the comment and provided the updated Environmental Management Plan to DCCEEW to address comments.

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	• Measures to avoid and mitigate the impact of foxes (*Vulpes vulpes*) on the Northern Quoll (*Dasyurus hallucatus*) and the Pilbara Olive Python (*Liasis olivaceus barroni*). • Measures to avoid and mitigate the impacts of fence collision and entanglement on the Ghost Bat (*Macroderma gigas*) and the Grey Falcon (*Falco hypoleucos*). • Measures to avoid and mitigate the impacts of power transmission lines on the Grey Falcon (*Falco hypoleucos*). • Measures to avoid and mitigate the impacts of weeds on the Northern Quoll (*Dasyurus hallucatus*).	
DCCEEW	Appendices, Environmental Management Plan -Table 4.2 • The department notes that the ERSD lists pre-clearance surveys and relocation as a mitigation measure for impacts to MNES, including the Northern Quoll (*Dasyurus hallucatus*), and Pilbara Olive Python (*Liasis olivaceus barroni*). • Please provide further information on location(s) and habitat description(s) of the proposed areas for relocation of the Northern Quoll (*Dasyurus hallucatus*), and Pilbara Olive Python (*Liasis olivaceus barroni*), including the reasoning for, and the methodology used to determine the suitability of these areas. • Please also provide reporting procedures for the number of deaths (if any), likely to occur during the relocation. • Please provide plans for follow up surveys post relocation. • Please provide information on the likelihood of success of the proposed relocation including reference to any precedents and scientific research for the relevant species.	• Woodside notes that given the habitat in the DE, the presence of these species is unlikely. Should these species be observed during the active monitoring during clearing activities, construction in the area will cease until the animal moves away or is relocated. Relocation will only be undertaken if the individual does not move out of the area on its own accord. • Should relocation be required, this will be undertaken by a suitably qualified person that is in possession of a Fauna Taking (Relocation) Licence to take or disturb fauna for the purpose of relocating. Relocation will occur immediately prior to clearing occurring to ensure the individual or other individuals do not return to the area prior to clearing. • If required, relocation habitat would be outside of the DE but within the home range to the species. Relocation will be to suitable supporting or critical habitat in 'good' to 'excellent' condition as defined by DCCEEW in the relevant recovery plan or conservation advice. Habitat chosen would be a minimum of 500 m from roads or other facilities that may present a risk to the individual. Suitable locations will be identified in consultation with a suitably qualified specialists prior to construction commencing. These sites will be agreed in consultation with the DBCA. • A relocation report will be prepared and submitted as part of the annual compliance reporting. This report would detail any deaths during relocation. Deaths of individuals would also be reported to DWER and DCCEEW within 24 hours and be recorded as an environmental incident in Woodside's internal reporting systems.

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
		• Further pre-clearance surveys of the area would be undertaken post relocation to ensure all individuals have been relocated. • It is noted that the purpose of any relocation would be to remove individuals from the DE so as to avoid injury or death during clearing. The purpose would not be to establish the population in a new area. As such, success would be measured by the successful capture, transport and release without death or injury. Given the techniques that would be employed are standard and commonly used, and relocation would be undertaken by licensed and qualified personnel, the success rate is expected to be high. • Post relocation surveys of the site the individuals are relocated to are not proposed given they would provide little value while potentially introducing a risk of injury during trapping. • Woodside notes that the above approach is similar to that adopted by other proponents in the Pilbara region including Main Roads WA - Marble Bar Road Coongan Gorge Realignment and MO30 Material Pit Expansion. • Table 4-2 of the Environmental Management Plan has been updated to reflect the above.
DCCEEW	<u>Update Environment Management Plan</u> DCCEEW notes that the implementation of an Environment Management Plan (EMP) has been proposed to avoid and mitigate the impacts of clearing, habitat fragmentation, vehicle strike, predation, weeds, fire, altered hydrology, acid sulfate soils, pollution, erosion, dust, sedimentation, and increased runoff on the Northern Quoll, Olive Python – Pilbara subspecies, Grey Falcon, Ghost Bat and Pilbara Leaf-nosed Bat. Please provide a revised Environmental Management Plan that includes: • Measures to avoid and mitigate the impact of Cane Toads (*Bufo marinus*) on the Northern Quoll and the Ghost Bat. The proponent may wish to consider the Department's Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads. • Measures to avoid and mitigate the impact of feral cats (*Felis catus*) on the Northern Quoll, Olive Python – Pilbara subspecies, Ghost Bat, Pilbara Leaf-nosed Bat and the Grey	• Woodside acknowledged this comment and will provided an updated Environment Management Plan that addresses the issue raised to DCCEEW. • Table 4-2 of the EMP outlines the measures to avoid and mitigate these impacts. This includes measures to avoid the introduction of cane toads, feral cats, and fox species. These measures include but are not limited to project inductions teaching how to identify and report sightings, and avoiding feeding of native and/or feral animals. It outlines that an introduced fauna control program is to be implemented during the construction phase. • In order to avoid fence collision and entanglement, any temporary fencing will avoid the use of barbed wire, wherever practicable and the top strand will be a single strand wire. Bat/Bird effectors will be installed on fencing and where ground power lines are constructed, wires will be marked to increase their visibility to these species. • Section 4.3.2, Table 4-1: Flora and vegetation – management-based provisions describe weed management actions which

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	Falcon. The proponent may wish to consider the Department's Threat abatement plan for predation by feral cats. • Measures to avoid and mitigate the impact of foxes (Vulpes vulpes) on the Northern Quoll and the Olive Python – Pilbara subspecies. The proponent may wish to consider the Department's Threat abatement plan for predation by European red fox. • Measures to avoid and mitigate the impacts of fence collision and entanglement on the Ghost Bat and the Grey Falcon. • Measures to avoid and mitigate the impacts of power transmission lines on the Grey Falcon. In addition, the DCCEEW notes that treatment of sewage and stormwater runoff is proposed to be undertaken as part of this proposed action. Please describe these activities and outline impacts (if any) that may occur to habitat for EPBC Act listed species. If impacts are likely to occur, please describe measures that are proposed to be implemented to avoid and mitigate these impacts.	include the identification and knowledge of current weed status and risk areas of the DE; inductions including identification and hygiene training to ensure the spread and introduction of weeds is avoided and control activities to be undertaken within the operational area. • With respect to sewage and stormwater runoff: ▪ Sewage is to be contained and taken offsite for disposal. No sewage treatment infrastructure is proposed. ▪ Sources of potentially contaminated stormwater onsite are minimal and comprise bunds associated with cooling infrastructure associated with transmission units. If contaminated stormwater is found in these bunds it will be taken offsite for disposal. No other sources of contaminated stormwater are anticipated to be present at the site.
DWER	<u>District Water Management Strategy</u> • The District Water Management Strategy (DWMS) prepared for the Maitland Industrial Estate, together with the management measures in the EMP will address flooding and stormwater regimes and the altered hydrological regime. DWER however have not yet seen or endorsed the DWMS.	Noted.
Department of Primary Industry, Resources and Development (DPIRD)	<u>Environmental Management Plan</u> Soil erosion may result from the development, causing onsite and off-site impacts of erosion and deposition of sediment on inland waters. Measures to avoid, minimise and rehabilitate these impacts proposed in the EMP include: *Vegetation* • Minimise the extent of cleared vegetation to that required for each phase (i.e. not pre-clearing for future/prospective works) • Stage construction of the solar farm with up to 200 ha cleared per 100 megawatt installed	Woodside acknowledged the DPIRD's comments on soil erosion and measures to prevent related impacts.

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	• Undertake vegetation rehabilitation, where required e.g., for temporary laydown areas no longer required, as soon as practicable • Retain low vegetation between the solar panels and prune to manage shading of panels. *Surface water management* • Retain existing major drainage lines within the solar PV farm in their current state, except for vehicle crossings • Provide construction works within surface waterways with temporary erosion protection as required • Use stormwater runoff and drainage management measures (e.g. stormwater infiltration or evaporation basins and controlled stormwater flows) where downstream erosion risk is identified • Inspect stormwater drains including diversion drains, culverts and floodways, each year to identify where erosion and sediment build up is occurring • Provide stormwater drains with remedial works to reinstate eroded areas, provide additional erosion protection, and remove sediment built up to ensure that drains convey flows to design specifications. *Vehicle and machinery movements* • Restrict vehicle / plant movements to approved disturbance areas and designated access tracks • Restrict routine vehicles and machinery use to existing roads and access tracks. *Construction and remediation* • Most of the construction to occur outside the wet season. • Construction works (particularly those within and around surface waterways) are to be suspended or scaled back, in the event of a cyclone warning. Include temporary erosion protection as required to prevent washout of works areas • Minimise soil disturbance when installing solar panels	

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	• Visually assess all disturbed areas at completion of construction works for risk of compaction or erosion. Any disturbed areas deemed to be at risk of compaction or erosion to be provided with remedial works to reduce impact to soils, (e.g. scraping, ripping, contouring, grading and stabilising) • Inspect remedial work areas after first wet season, to check effectiveness, with any eroded areas provided with additional remedial works or reinstatement if required. *Grazing* • Fence solar panels to exclude grazing livestock (cattle). *Decommissioning* • After the solar farm is decommissioned (expected 70-year lifespan), rehabilitate land to allow for future use.	
Ngarluma Aboriginal Corporation (NAC)	Traditional owner use of land NAC wishes to emphasise the ongoing use by Ngarluma People of the development envelope and surrounds for traditional purpose, and the need to ensure that Ngarluma People can continue to access important cultural resources in the adjacent coastal area.	Woodside acknowledges this comment and the importance of the ongoing use and access to important cultural resources and areas by Ngarluma People. The Social Surroundings (Cultural Heritage) Management Plan addresses the actions to minimise constraints on access to heritage features or use of land for traditional activities. The access by Traditional Owners to the DE during operations will be maintained to allow ongoing use of areas within the DE, except that which is utilised for the Solar PV Farm infrastructure. Access beyond/around the DE will not be restricted.
NAC	Conservation and protection Ngarluma concerns include the following: • a request to conserve 10% of the area, with a focus on preserving high value vegetation and trees along drainage lines • protection of Aboriginal cultural heritage. Please provide a response to addresses NACs above concerns; retaining 10% of the area, focussing on high value vegetation and trees along drainage lines and protection of Aboriginal cultural heritage.	Woodside acknowledges this comment and confirms that: • At least 10% of vegetation within the DE will be conserved. • High value vegetation and trees along drainage lines will be preserved where possible. This includes, large trees of *Acacia coriacea* and *A. xiphophylla* on larger drainage lines running along the eastern side of the Solar PV Farm DE within VT34. • The Social Surroundings (Cultural Heritage) Management Plan addresses the actions to protect Aboriginal cultural heritage. • Approvals under the *Aboriginal Heritage Act 1972* or *Aboriginal Cultural Heritage Act 2021* (whichever is in force) would be sought

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
		together with NAC if construction works intersect the boundaries of any Aboriginal Heritage Places.
Additional DCCEEW comments received on 25 May 2023		
DCCEEW	• Woodside has stated that additional fauna survey work will be undertaken, and the results will be provided to DCCEEW as part of the assessment process under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). At the referral decision stage, the proposed action was determined as likely to have a significant impact on the Northern Quoll (*Dasyurus hallucatus*) (Endangered). • DCCEEW has the position that a 600-metre avoidance buffer will need to be applied for any denning habitat, or any non-breeding record of the species within the development envelope, which must not have any direct or indirect impacts from the proposed action. • DCCEEW considers that critical habitat for the Northern Quoll includes denning and foraging habitat within the home range of 100 hectares surrounding the 600-metre avoidance buffer, which has been identified in the Northern Quoll Recovery Plan as: ▪ low rocky hills – mesas, gorges, escarpments, ranges, breakaways, and boulder fields; ▪ major drainage lines and tree lined creeks; ▪ and structurally diverse woodland or forest areas. • DCCEEW considers that any habitat outside the critical habitat buffer of 100 hectares to be supporting habitat for the Northern Quoll, which has been identified in the Northern Quoll Recovery Plan as: ▪ Basalt hills, mesas (and buttes of limonites), high and low plateaus and lower slopes. ▪ Tor fields and stony plains supporting either hard or soft spinifex grasslands. ▪ Sandstone and dolomite hills and ridges, shrublands, sandy plains, clay plains and tussock grasslands and coastal fringes including dunes islands and beaches.	Woodside provided a fauna survey report which supports DCCEEW's assessment of the project. A copy of this report was provided to the EPA as well.

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	• Note that supporting habitat also includes any habitat outside of critical habitat buffer and within the disturbance envelope (fixed footprint), and the development envelope (flexible footprint). • Please provide the results of a survey for the Northern Quoll, conducted in accordance with the Department's Survey Guidelines for Australia's threatened mammals, that ▪ Describes any detection of presence of the Northern Quoll within the development envelope, including individuals, dens, latrines, and tracks. ▪ Describes (in hectares) critical habitat and supporting habitat in hectares, for the Northern Quoll, within the development envelope based on the above classifications. • At the referral decision stage, the proposed action was determined as likely to have a significant impact on the Pilbara Olive Python (Liasis olivaceus barroni) (Vulnerable). • DCCEEW considers that critical habitat for the Pilbara Olive Python includes shelter and foraging habitat within the home range of either 88 to 450 hectares, which has been identified in the Pilbara Olive Python Conservation Advice as: ▪ rocky outcrops in proximity to deep gorges, gullies, and water holes; and ▪ granophyre rock-piles with foraging in neighbouring spinifex grasslands. • DCCEEW considers that any habitat outside of the critical habitat home range for the Pilbara Olive Python to be supporting habitat which has been identified in the Pilbara Olive Python Conservation Advice as: ▪ deep gorges, gullies, water holes, drainage lines and water courses ▪ rock piles, spinifex grasslands. • Please provide the results of a survey for the Pilbara Olive Python, conducted in accordance with the department's survey guidelines for Australia's threatened reptiles, that:	

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	▪ Describes any detection of presence of the Pilbara Olive Python, including individuals, faecal pellets, and tracks, within the development envelope. ▪ Describes (in hectares), critical habitat and supporting habitat for the Pilbara Olive Python within the development envelope, based on the above classification. • Please also provide a map of suitable habitat for the Northern Quoll and Pilbara Olive Python that is proposed to be cleared within the development envelope. • The department requires this information to be provided as part of the assessment process under the EPBC Act.	
DCCEEW	• The department notes that the Environmental Management Plan lists preclearance surveys and relocation as a mitigation measure for impacts to MNES, including the Northern Quoll (Dasyurus hallucatus), and Pilbara Olive Python (Liasis olivaceus barroni). • As previously requested, please provide further information on location(s) and habitat description(s) of the proposed areas for relocation of the Northern Quoll (Dasyurus hallucatus), and Pilbara Olive Python (Liasis olivaceus barroni), including the reasoning for, and the methodology used to determine the suitability of these areas. Information regarding likelihood of success should include reference to scientific research. • The department requires this information to form a view as to the acceptability of the Proposal under the EPBC Act.	Woodside noted DCCEEW's request and provided DCCEEW a response to support the Commonwealth assessment of the Woodside Solar Facility. A copy of this response was provided to the EPA for information.
DCCEEW	• The department notes that rehabilitation is proposed for temporary construction areas, (including post-construction inspection and recording of remedial works within 12 months of construction and mapping of areas at risk of erosion / compaction); and, at the end of the project life. The department considers rehabilitation within the development envelope as a mitigation measure, not a compensatory measure.	Woodside noted DCCEEW's request and provided DCCEEW a response to support the Commonwealth assessment of the Woodside Solar Facility. A copy of this response was provided to the EPA for information.

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	• The department also notes that a rehabilitation management plan is proposed to be prepared at a minimum of five years prior to the last planned electricity generation activity in the development envelope, in consultation with Traditional Owners. • Please clarify what rehabilitation is proposed to be implemented and how it will be implemented, outlining a monitoring regime with thresholds to determine success; and what corrective actions, if required, would be taken.	
Additional DCCEEW comments received on 26 September 2023		
DCCEEW	The Department notes that fences will be erected in the development envelope. Please provide further information on the design (including height and type of fence), location, and how fences will allow for EPBC Act listed species to access habitat corridors within the development envelope.	The proposed fencing will be designed to meet the requirements of AS1725.1 and will be rated for severe cyclonic wind conditions. The fence is anticipated to comprise galvanised chain wire and be topped with three rows of barbed wire. The overall height of the fence is expected to be approximately 2,350 mm. The fences will be located around each stage of the Proposal as they are developed and are not anticipated to form a continuous boundary around the development envelopes. The Northern Quoll Dispersal Habitat and Critical Habitat areas identified by Biota (2023) will not be included in fenced off areas to ensure fauna can continue to use these areas without restriction. Figure 1 below indicates the locations of proposed fencing foreach proposed stage of the proposal. The Woodside Solar Facility Environment Management Plan (PA1000RH0000003) has been updated to incorporate this information (Attachment B)
	Please provide further information regarding the hours of operation for construction activities.	Construction activities are only proposed during daylight hours. No night works are proposed during the construction of the Proposal. The Woodside Solar Facility Environment Management Plan (PA1000RH0000003) has been updated to incorporate this information (Attachment B)

Stakeholder	Stakeholder Comments/advice received on key environmental issues	Woodside's response
	Please provide information on anticipated maximum noise levels generated during the construction and operation phases. Please provide information on lighting proposed to be used (design and type), during the construction and operation phases.	The Proposal will comprise renewable energy generation and storage infrastructure. Noise levels during the operations phase of the Proposal are expected to be ambient, with occasional vehicle movements and localised maintenance works contributing additional low-level noise to the environment. Construction activities are expected to have a duration of approximately 24 months for each stage of the Proposal's construction. During the construction phase, noise emissions are expected to be limited to those produced by point sources operating intermittently (i.e. generators, pile driving equipment and bulldozers). These noise emissions are not expected to have conveyance outside the immediate surrounds of the area undergoing construction. No external light sources will be established to support construction activities. During the operations phase, the Proposal will be unmanned most of the time. Task based lighting will only to be used when personnel need to be onsite at night to undertake maintenance, repairs or emergency response activities. The Woodside Solar Facility Environment Management Plan (PA1000RH0000003) has been updated to incorporate this information (Attachment B)

7. Terms

7.1 Defined Terms

Term	Definitions
Proposal	The Proposal comprises two key components: • Solar PV Farm • Solar Plant Supporting Infrastructure (SPSI)
Development Envelopes	The Development Envelopes represent the area within which development of the Proposal is to occur. The two Development Envelopes for this Proposal include: • Solar PV Farm • Solar Plant Supporting Infrastructure
Vegetation Type 34	*Acacia coriacea / A. inaequilatera* tall shrubland over mixed scattered *Acacia* shrubs over mixed tussock grassland (Ref. Vicki Long 2020 - Table 2 Vegetation Code and Description Comparisons for the 2019 dry season and 2020 wet season surveys)
Proposal Components	The Proposal includes two components (Solar PV and Solar Plant Supporting Infrastructure)
Disturbance Footprint	Includes all areas proposed to be disturbed/cleared within the two Development Envelopes
Woodside	Woodside Energy Ltd
Buffer Area	The 2 km 'Industry Buffer Area' surrounding the Maitland Strategic Industrial Area
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the Environmental Protection Act 1986, or the CEO's delegate.
Northern quoll (*Dasyurus hallucatus*) critical habitat	Tree-lined creeks with hollows, with trees of sufficient size and age to form hollows that could potentially be used as den sites identified in the Biota (2023) targeted fauna survey as shown in Critical and dispersal habitats for Northern Quoll, and the Woodside Solar Proposed Conservation Area (Biota, 2023)
Northern quoll (*Dasyurus hallucatus*) supporting habitat	All hummock grassland on rocky plain (Triodia on stony soils), minor drainage lines and tussock grassland on cracking clays habitat types outside of northern quoll (*Dasyurus hallucatus*) critical habitat.
Northern quoll (*Dasyurus hallucatus*) dispersal habitat	Minor drainages in the east of the DE as shown in Figure 2-4.

7.2 Acronyms

Terms	Definitions
ALARP	As low as reasonably practicable
ASS	Acid Sulfate Soils
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation

Terms	Definitions
EMP	Environmental Management Plan
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERSD	Environmental Review Supporting Document
HSE	Health, Safety and Environment
HSEQ	Health, Safety, Environment and Quality
LandCorp	Western Australian Land Authority
MSDS	Material Safety Data Sheets
MNES	Matter of National Environmental Significance
MSIA	Maitland Strategic Industrial Area
NAC	Ngarluma Aboriginal Corporation
PEC	Priority Ecological Community
RFSU	Ready for Start-Up
Solar PV	Solar Photovoltaic
SPSI	Solar Plant Supporting Infrastructure
WA	Western Australia
WoNS	Weeds of National Significance
Woodside	Woodside Energy Ltd

7.3 Units of measure

Units	Definition
ha	Hectare
km	Kilometre
kV	Kilovolt
m	Meter
MW	Megawatt
MWh	Megawatt-hours

8. References

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Environment Management Plan

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