



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9206/1
File Number: DWERVT7473
Duration of Permit: 27 August 2021 to 27 August 2023

PERMIT HOLDER

Woodside Energy Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 573 on Deposited Plan 28209, Burrup

AUTHORISED ACTIVITY

The permit holder must not clear more than 0.074 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

2. Weed management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

3. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none">(a) the species composition, structure, and density of the cleared area;(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;(c) the date that the area was cleared;(d) the size of the area cleared (in hectares); and(e) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 2.

4. Reporting

The permit holder must provide to the *CEO* the records required under condition 3 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

3 August 2021

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

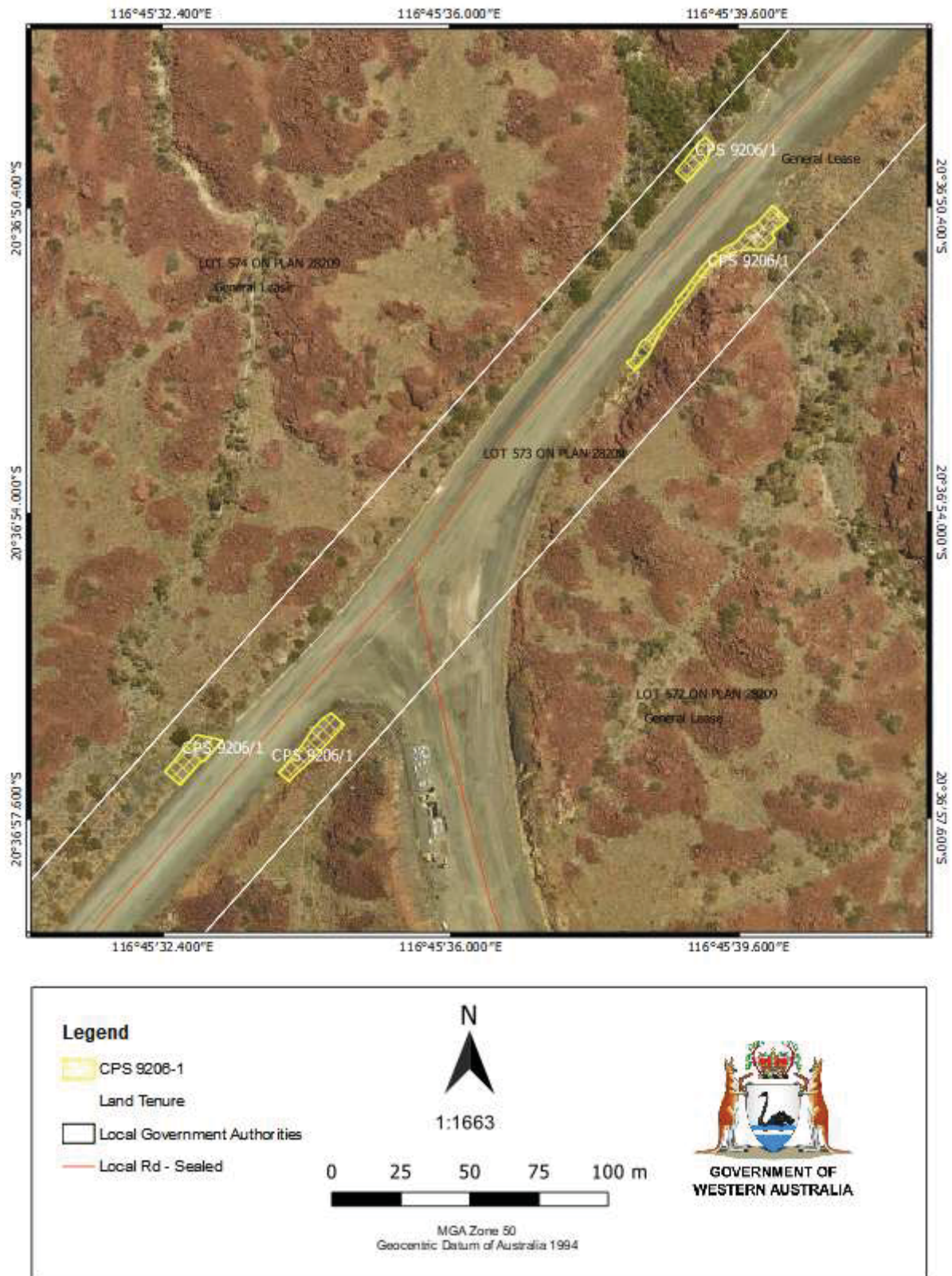


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 9206/1
Permit type:	Area permit
Applicant name:	Woodside Energy Ltd
Application received:	09 February 2021
Application area:	0.074 hectares of native vegetation
Purpose of clearing:	Upgrading existing culverts
Method of clearing:	Mechanical clearing
Property:	Lot 573 on Deposited Plan 28209
LGA area:	City of Karratha
Localities:	Burrup

1.2. Description of clearing activities

The application is to clear 0.074 hectares of native vegetation within four sites for the purpose of replacing two drainage culverts that cross a haul road. The two culverts are reaching the end of their design life, and the clearing is required to facilitate work to extend the life of the culverts and upgrade them to meet current best practise. The four application areas cover the inlet and outlet areas of the two existing culverts which are approximately 165 metres from one another along the haul road. The vegetation within the application area is regrowth vegetation after previous disturbance during the initial construction of the culverts (Figure 1, Section 1.5).

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	3 August 2021
Decision area:	0.074 hectares of native vegetation depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix I), supporting information provided by the applicant (Appendix A) including the results of a flora and vegetation survey (Appendix E), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3). The Delegated Officer also took into consideration the purpose of the clearing to facilitate the replacement of drainage culverts along a haul road.

The assessment identified that the proposed clearing could result in the removal of an individual specimen of a Priority 4 flora species that is widespread both locally and regionally, and is not likely to be significant. The proposed clearing may also result in the introduction or spread of weeds into adjacent native vegetation that could impact on the quality of the vegetation and its habitat values.

After consideration of the available information the Delegated Officer decided to grant a clearing permit subject to a condition to implement weed management strategies to minimise the risk to adjacent native vegetation.

1.5. Site maps

A site map of proposed clearing is provided in Figure 1 below.

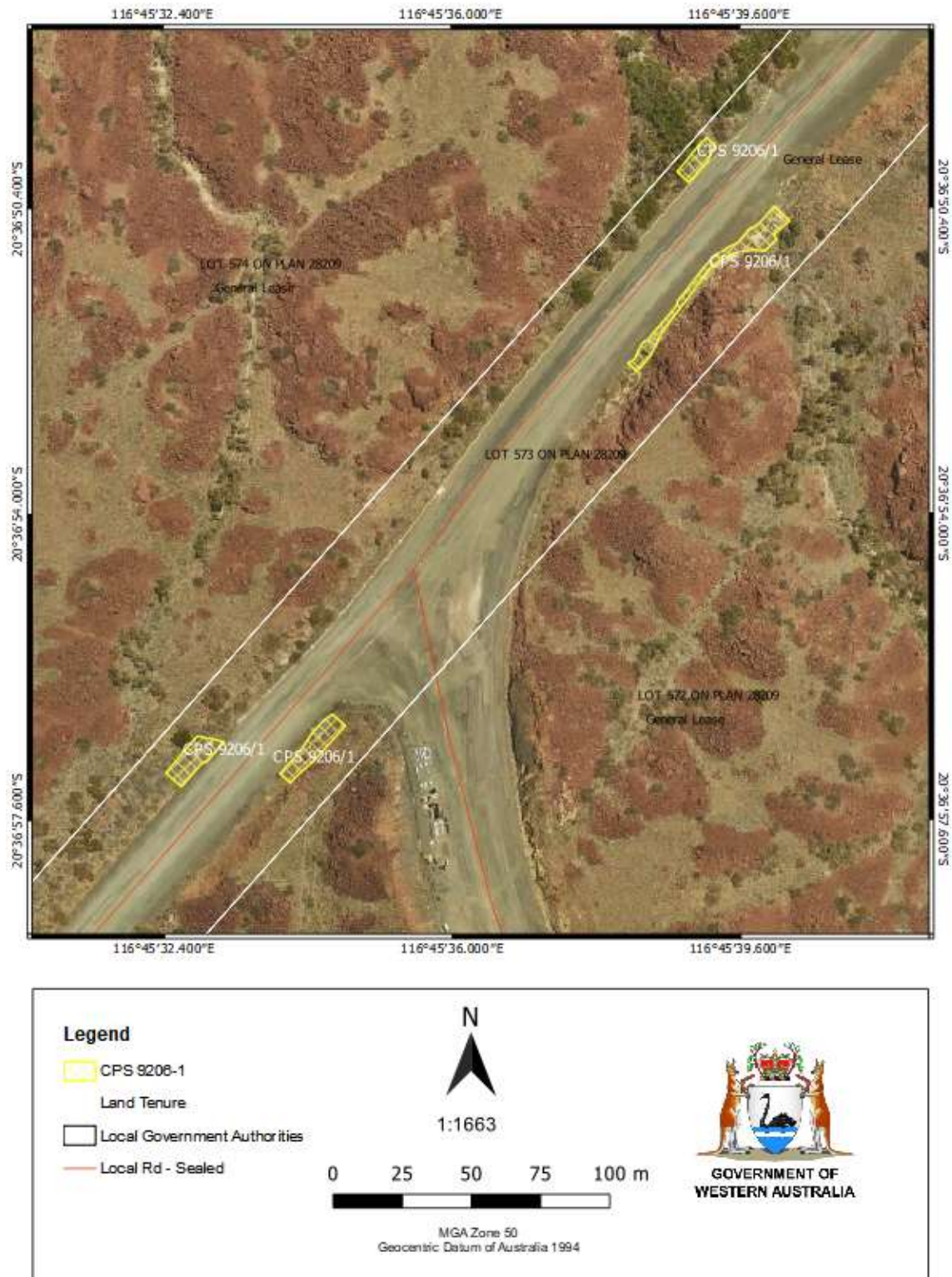


Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.

2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Biosecurity and Agriculture Management Act 2007* (BAM Act),
- *Contaminated Sites Act 2003* (CS Act)
- *Energy Operators Powers (Powers) Act 1979*
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has demonstrated the application of avoidance and minimisation measures and provided engineering drawings to support the measures proposed (Appendix F). The culvert upgrades are required to extend the design life, with upgrades to the existing infrastructure to current best practise. Total avoidance of the work has been assessed by the applicant to have an unacceptable risk. The culvert upgrade footprint is largely focussed within the existing cleared footprint of the Haul Road. Minimal work is required outside of this footprint. That is, on the shoulder of the Haul Road (Appendix F). This area supports regrowth native vegetation that has been previously cleared during the initial culvert installation. The 0.074 hectares of native vegetation applied for is a conservative estimate as the application area includes existing infrastructure where native vegetation is not present.

3.2. Assessment of impacts on environmental values

The assessment against the clearing principles (Appendix C) identified that the impacts of the proposed clearing present a potential risk to the biological values of significant flora and fauna, as well as surface water and riparian areas. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Environmental value: biological values (biodiversity) – Clearing Principle (a)

Assessment: The application area consists of four discrete areas representing entry and exit points for existing culverts that require replacement (Woodside 2021a). One regional vegetation association described by Shepherd *et al.* (2001) has been mapped over the application area. That is Association 117: A grass-steppe of hummock grassland of *Triodia* spp.. Astron (2020) described and mapped two vegetation types within the application area (Appendix E1):

- EvAcTe: *Eucalyptus victrix* with *Terminalia circumalata* low woodland over mixed *Acacia coriacea* and *Flueggea virosa* subsp. *melanthesoides* open shrubland over *Triodia epactia* (*Triodia angusta*) hummock grassland; and
- AaSsCvSg: *Acacia ampliceps* low closed forest over *Stylobasium spathulatum* shrubland over *Cyperus vaginatus* sedgeland and *Stemodia grossa* herbland.

Three of the four small areas consist of the EvAcTe vegetation type in excellent condition utilising the condition scale of Trudgen (1988) (Astron 2020). One area, representing the exit point to the northern culvert, consists of AaSsCvSg vegetation type in good condition (Astron 2020). Woodside (2021b) note that the survey of Astron (2020) covered a larger area than the proposed clearing area, and the vegetation within the application area has been previously disturbed as part of the initial haul road and culvert installation works.

The vegetation occurring within the application area does not represent any Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment or listed under the EPBC Act, nor any Priority Ecological Communities (PECs) listed by the DBCA. The native vegetation of the application area does not represent any features that differentiate it from other broadscale vegetation within the local area.

No Threatened flora species have been recorded within a 50 kilometre radius of the application area, and no Threatened flora species were recorded by the survey over the application area (Astron 2020).

One Priority flora species was recorded within the survey area; the Priority 4 *Rhynchosia bungarensis*. A second Priority flora species, the Priority 3 *Terminalia supranitifolia*, was recorded opportunistically by Astron (2020) outside of their survey area (Appendix E2). The Priority 3 *Terminalia supranitifolia* location will be avoided by the proposed clearing.

Five locations of *Rhynchosia bungarensis* were recorded by Astron (2020) (Appendix E2; Figure 2). None were recorded within the bounds of the application area (Figure 2). The individual labelled (1) in Figure 2 is located within two metres of the application area on the road-side of planned works. The applicant has no plans to clear this location, but due to the constrained nature of the site standard buffer zones can not be applied (Woodside 2021b) and the location is vulnerable to secondary impacts. The purpose of the proposed clearing directly adjacent to individual (1) is to install a grouted rock batter on the road side of the existing drainage channel to prevent erosion occurring, and to direct the stormwater flow towards the culverts. If the rock protection was not provided, there is a risk of erosion of the road batter including the potential erosion of the area around individual (1).

Individuals (2) to (5) are outside of the proposed clearing area and are not at risk of being cleared or impacted during the construction work (Woodside 2021a).



Figure 2. Locations of the Priority 4 *Rhynchosia bungarensis* in the vicinity of the application area

Priority 4 species include those that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change and are usually represented on conservation lands (Appendix G). Woodside (2021b) consulted Astron Environmental Services in respect to the significance of the Priority 4 *Rhynchosia bungarensis* location (1) at the local and regional scale.

Rhynchosia bungarensis is a twining herb or creeper associated with rockpiles and drainage gullies (WAH 1998-) and is relatively common and widespread on the Burrup Peninsula and widespread across the Pilbara region with a range over 500 kilometres (WAH 1998-). A review of NatureMap revealed 62 records of *Rhynchosia bungarensis* within a 20 kilometre radius of the application area and the removal of one individual plant would not impact the viability of the population at the local or regional scale (Woodside 2021b).

Conclusion: The native vegetation proposed to be cleared is comprised of vegetation types and flora taxa typical to the region. Noting the size and context of the proposed clearing, and the avoidance and minimisation strategies provided by the applicant (Woodside 2020a), Priority flora are unlikely to be significantly impacted. Two weed species were recorded by Astron (2020) (Appendix B1) and adjacent vegetation is susceptible to weed invasion which the clearing process may exacerbate, thereby reducing habitat quality. For the reasons set out above it is considered that potential impacts of the proposed clearing on flora and vegetation can be managed by implementing appropriate weed control.

Conditions: To address potential impacts to adjacent native vegetation, weed management measures will be required as a condition on the clearing permit to mitigate impacts to adjacent vegetation.

3.2.2. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment: The application area represents four small and discrete areas of native vegetation within two drainage lines. The northern drainage line in particular represents a rocky gully habitat supporting a different vegetation type than the other areas (AaSsCvSg). Of the terrestrial fauna species of conservation significance recorded from the local area (Appendix B3), two species in particular are known from the vicinity, and occupy rocky drainage line habitat:

- Northern Quoll (*Dasyurus hallucatus*) (Endangered); and the
- Pilbara Olive Python (*Liasis olivaceus* subsp. *barroni*) (Vulnerable)

The rocky gully habitat present has the potential to provide a means of dispersal for both species along the associated drainage line. The Northern Quoll has large home ranges of up to 400 hectares (Cook 2010; DAWE 2021), and the temporary disruption to the minor area of gully habitat is unlikely to disrupt local population dynamics.

The Pilbara Olive Python prefers escarpments, gorges and water holes within the ranges of the Pilbara region (Pearson 1993). The sub-species has been recorded from the immediate vicinity (within 500 metres) and may disperse through the landscape via incised drainage lines similar to the one present within the application area. The temporary disruption to the minor area of habitat required to replace drainage line culverts is unlikely to impact the species.

Conclusion: The temporary loss of a minor area of habitat is unlikely to impact local populations of conservation significant fauna species. The likelihood of fauna of conservation significance occupying the small amount of vegetation required for clearing at the time of clearing is remote.

Conditions: No fauna management conditions required.

3.2.3. Environmental value: watercourses and water resources – Clearing Principles (f) (g) and (i)

Assessment: No significant mapped rivers or major watercourses intercept, or are within the vicinity of, the application area. However, proposed clearing is required to replace culverts as a mechanism to control drainage and is located in two drainage channels.

Cyperus vaginatus sedgeland within the northern drainage channel is representative of riparian vegetation associated with an environment associated with a watercourse.

The application area occurs in rocky areas of the Granitic Land System with a steep topography, and drainage lines are associated with infrequent surface water caused by sporadic weather events like seasonal cyclones. Uncontrolled earthworks have the potential to impact downstream habitats via sedimentation or water erosion. The purpose of the proposed clearing is to replace culverts as a mechanism to control drainage and this risk can be mitigated by the works initiated by the proposed clearing. Engineering details of the works proposed have been submitted by the applicant (Appendix F), and standard operational procedures will minimise any downstream risk. The risk of soil loss during rainfall events is considered minimal in consideration of the relatively minor scale of the works. The current surface water hydrological regime will be maintained. No increased incidence of flooding or erosion along drainage lines is likely to occur due to the limited extent of clearing, with minimal sheet flow over a short time-scale, and adequate surrounding native vegetation to allow water to infiltrate.

Conclusion: In order to replace the existing drainage culverts, the proposed clearing is likely to intersect a minor extent of riparian vegetation. Any impact is likely to be short-term with any minor exposed areas revegetating naturally. Soils may be temporarily exposed as a result of the proposed clearing and may cause a small and localised

impact downstream of the works. Any land degradation or deterioration in the quality of surface or underground water is unlikely. Given the purpose of the proposed clearing to replace culverts as a mechanism to control drainage, potential risks can be mitigated by the works initiated. For the reasons set out above it is considered that potential impacts of the proposed clearing on and water quality is very low risk and can be managed by standard operational procedures.

Conditions: No watercourse management conditions required.

3.3. Relevant planning instruments and other matters

Clearing Permit application CPS 9206/1 was advertised on the DWER website for a 21 day public comment period. No public submissions were received in relation to this application.

The application area is located on Lot 573 on Deposited Plan 28209 (the Property). DevelopmentWA (Western Australian Land Authority) is the owner of the Property, and Woodside has a Lease over the Property (Woodside 2021a). DevelopmentWA has granted Woodside Energy Ltd the authority to make the CPS 9206/1 clearing application on behalf of DevelopmentWA (Woodside 2021a).

The application area is located within the mapped Pilbara Surface Water Area (UFI 54) proclaimed under the RIWI Act, and the Pilbara Groundwater Area (UFI 44) proclaimed under the RIWI Act. There are no mapped rivers proclaimed under the RIWI Act within the vicinity and the application area is not located within any *Country Areas Water Supply Act 1947* (CAWS Act) Clearing Control Catchments, or Public Drinking Water Source Areas. Proposed clearing is required to enable the replacement of culverts within drainage lines.

Advice obtained from DWER (2021) in relation to potential water quality impacts from application CPS 9206/1 under the RIWI Act recommended that during construction and maintenance of the culverts, hydrocarbons, chemicals and potentially hazardous substances are stored and disposed of in accordance with the DWER's Guidelines and Water Quality Protection Notes. In particular:

- WQPN 10: Contaminant spills – emergency response.
- WQPN 65: Toxic and hazardous substances – storage and use.
- WQPN 83: Infrastructure corridors near sensitive water resources

DWER (2021) concluded that the CPS 9206/1 application is unlikely to impact on the water quality of water resources, provided clearing activities are undertaken with the proponent's environmental management commitments (Woodside 2021a), and the DWER's water quality protection notes and guidelines. A permit to obstruct or interfere with a watercourse or wetland, or its bed or banks is not required as the proposed disturbance occurs within a tidal creek system that is not proclaimed under the RIWI Act (DWER 2021). No surface water or groundwater will be abstracted and no additional permitting from DWER is required.

Advice was obtained from the City of Karratha in regard to application CPS 9206/1 with reference to consistency with local Town Planning Schemes, and whether any planning approvals have been granted or are required. The native vegetation clearing application was considered to be consistent with the City of Karratha's Local Planning Scheme No.8 with no additional approvals required (City of Karratha 2021).

A Native Title Determination encompasses the application area. That is; Ngarluma/Yindjibarndi (WCD2005/001). Spatial data indicates that the application area intersects over 35 Registered Aboriginal Heritage sites listed in accordance with section 5 of the *Aboriginal Heritage Act 1972* (WA) and other Aboriginal Heritage sites (Appendix H). It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Appendix A – Information provided by applicant

Information	Description
Woodside (2021a)	Supporting information for clearing permit application CPS 9206/1. Woodside Energy Ltd.
Woodside (2021b)	Additional information relating to the avoidance of Priority flora relating to clearing permit application CPS 9206/1. Woodside Energy Ltd.
Astron (2020)	Flora and vegetation survey undertaken over the application area by Astron Environmental Services. Pluto Haul Road Culvert Vegetation Survey August 2020.

Appendix B – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

B.1 Site characteristics

Site characteristic	Details												
Local context	The application area is located within the Pilbara IBRA Bioregion (PIL) of Thackway and Cresswell (1995) and the Roebourne Sub-region (PIL04). The application area is located within the City of Karratha, and is associated with two existing culverts located along the Pluto Haul Road on the Burrup Peninsula as a component of the Pluto Domestic Fuel Supply Project.												
Climate	The project is located in the Pilbara region of Western Australia and experiences a semi-arid climate. Temperatures are warm to hot all year and rainfall is generally low, mostly falling in the late summer months due to the influence of tropical cyclones and monsoon (Commonwealth of Australia 2005). The closest meteorological recording station is located in Karratha (No. 004083) approximately 1.4 km from the survey area. Climatic data from this station indicates that the mean maximum temperature ranges from 36.3 °C in March, to 26.4 °C in July. The mean minimum temperature ranges from 26.9 °C in January to 13.8 °C in July. The mean annual rainfall for all years is 292.4 mm.												
Landform	The Pilbara Province lies over the Pilbara Craton, which consists of two different tectonic components. The two broad geologic sequences are the ancient Archaean granite-greenstone terrain and the younger volcano-sedimentary sequence of the Hamersley Basin (Tille 2006). The application area is located in the Granitic Land System of rugged granitic hills supporting shrubby hard and soft spinifex grasslands (Tille 2006).												
Ecological linkage	No formal mapped ecological linkages in the vicinity												
Conservation areas	The application area does not intersect with any DBCA managed lands. The Murujuga National Park is approximately 1.5 kilometres east of the application area. <table border="1" data-bbox="435 1247 1235 1472"> <thead> <tr> <th>DBCA Managed Lands</th> <th>Proximity (m)</th> <th>Number in local area</th> </tr> </thead> <tbody> <tr> <td>Murujuga National Park</td> <td>1,439</td> <td>3</td> </tr> <tr> <td>Conservation and Parks Commission</td> <td>8,052</td> <td>23</td> </tr> <tr> <td>Executive Director Department Of CALM</td> <td>13,315</td> <td>2</td> </tr> </tbody> </table>	DBCA Managed Lands	Proximity (m)	Number in local area	Murujuga National Park	1,439	3	Conservation and Parks Commission	8,052	23	Executive Director Department Of CALM	13,315	2
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Vegetation description (Regional)	One regional vegetation association considered within the regional mapping of Shepherd <i>et al.</i> (2001) has been mapped over the application area. Association 117: A grass-steppe of hummock grassland of <i>Triodia</i> spp.												

Site characteristic	Details																								
Vegetation description (Astron 2020)	<p>Astron (2020) described and mapped two vegetation types. Data interpreted from the survey work of Astron (2020) is provided below.</p> <table border="1" data-bbox="435 331 1393 688"> <thead> <tr> <th>Veg Code</th> <th>Vegetation description</th> <th>Area (ha)</th> <th>Per cent</th> </tr> </thead> <tbody> <tr> <td>AaSsCvSg</td> <td><i>Acacia ampliceps</i> low closed forest over <i>Stylobasium spathulatum</i> shrubland over <i>Cyperus vaginatus</i> sedgeland and <i>Stemodia grossa</i> herbland.</td> <td>0.065</td> <td>87.5</td> </tr> <tr> <td>EvAcTe</td> <td><i>Eucalyptus victrix</i> with <i>Terminalia circumalata</i> low woodland over mixed <i>Acacia coriacea</i> and <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> open shrubland over <i>Triodia epactia</i> (<i>Triodia angusta</i>) hummock grassland.</td> <td>0.009</td> <td>12.5</td> </tr> <tr> <td colspan="2">TOTAL</td> <td>0.074</td> <td>100.0</td> </tr> </tbody> </table>	Veg Code	Vegetation description	Area (ha)	Per cent	AaSsCvSg	<i>Acacia ampliceps</i> low closed forest over <i>Stylobasium spathulatum</i> shrubland over <i>Cyperus vaginatus</i> sedgeland and <i>Stemodia grossa</i> herbland.	0.065	87.5	EvAcTe	<i>Eucalyptus victrix</i> with <i>Terminalia circumalata</i> low woodland over mixed <i>Acacia coriacea</i> and <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> open shrubland over <i>Triodia epactia</i> (<i>Triodia angusta</i>) hummock grassland.	0.009	12.5	TOTAL		0.074	100.0								
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Vegetation condition (Astron 2020)	<p>The full description of the vegetation condition rating scale by Trudgen (1991) is provided in Appendix D.</p> <table border="1" data-bbox="435 867 1003 1077"> <thead> <tr> <th>Polygon</th> <th>Area (ha)</th> <th>Vegetation type</th> <th>Condition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.016</td> <td>VT02</td> <td>Excellent</td> </tr> <tr> <td>2</td> <td>0.018</td> <td>VT02</td> <td>Excellent</td> </tr> <tr> <td>3</td> <td>0.031</td> <td>VT02</td> <td>Excellent</td> </tr> <tr> <td>4</td> <td>0.009</td> <td>AaSsCvSg</td> <td>Good</td> </tr> <tr> <td colspan="2">Total</td> <td>0.074</td> <td></td> </tr> </tbody> </table>	Polygon	Area (ha)	Vegetation type	Condition	1	0.016	VT02	Excellent	2	0.018	VT02	Excellent	3	0.031	VT02	Excellent	4	0.009	AaSsCvSg	Good	Total		0.074	
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Soil description	<p>The Granitic Land System is mapped over the application area comprised of rugged granitic hills supporting shrubby hard and soft spinifex grasslands.</p> <table border="1" data-bbox="435 1213 1177 1329"> <thead> <tr> <th>Symbol</th> <th>Land System</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>286Gr</td> <td>Granitic Land System</td> <td>Rugged granitic hills supporting shrubby hard and soft spinifex grasslands.</td> </tr> </tbody> </table>	Symbol	Land System	Description	286Gr	Granitic Land System	Rugged granitic hills supporting shrubby hard and soft spinifex grasslands.																		
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286Gr	Granitic Land System	Rugged granitic hills supporting shrubby hard and soft spinifex grasslands.																							
Land degradation risk (DPIRD 2017)	<p>In regard to erosion, surface water is largely reliant on weather and waterways generally only flow for parts of the year, in response to larger cyclonic or rainfall events. Water erosion may occur as sheetflow in broad inter-drainage areas on alluvial plains, near the baselines of hills and ridges with the risk of soil erosion during rainfall events.</p> <p>Groundwater is mapped at 1,000 to 3,000 TDS/mg/L (that is, fresh to brackish)</p> <p>A review of the Acid Sulfate Soil (ASS) risk mapping indicates a very low risk (DPIRD 2017).</p>																								
Waterbodies	<p>A minor, non-perennial, watercourse intersects the application area and discharges to the ocean approximately 550 metres to the north-northwest. Proposed clearing is required to replace culverts as a mechanism to control drainage. There are no wetlands in the vicinity. Coastal mangroves occur approximately 1.4 kilometres to the north.</p>																								

Site characteristic	Details						
Hydrogeography	<i>Rights in Water and Irrigation Act 1914</i>						
	<table border="1"> <tr> <td>Surface water areas and irrigation districts</td> <td>Located within the proclaimed Pilbara Surface Water Area (UFI 54)</td> </tr> <tr> <td>Groundwater areas</td> <td>Located within the proclaimed Pilbara Groundwater Area (UFI 44)</td> </tr> <tr> <td>Rivers</td> <td>No mapped rivers proclaimed under the Rights in RIWI Act</td> </tr> </table>	Surface water areas and irrigation districts	Located within the proclaimed Pilbara Surface Water Area (UFI 54)	Groundwater areas	Located within the proclaimed Pilbara Groundwater Area (UFI 44)	Rivers	No mapped rivers proclaimed under the Rights in RIWI Act
	Surface water areas and irrigation districts	Located within the proclaimed Pilbara Surface Water Area (UFI 54)					
	Groundwater areas	Located within the proclaimed Pilbara Groundwater Area (UFI 44)					
	Rivers	No mapped rivers proclaimed under the Rights in RIWI Act					
<i>Country Areas Water Supply Act 1947</i>							
<table border="1"> <tr> <td>Clearing control catchments</td> <td>None</td> </tr> </table>	Clearing control catchments	None					
Clearing control catchments	None						
Other							
	<table border="1"> <tr> <td>Public Drinking Water Supply Area (PDWSA)</td> <td>None</td> </tr> </table>	Public Drinking Water Supply Area (PDWSA)	None				
Public Drinking Water Supply Area (PDWSA)	None						
Flora	<p>Over a larger survey area than the 0.074 hectare application area Astron (2020) recorded a total of 53 plant taxa from 30 families and 46 genera. Two confirmed weed taxa, *<i>Aerva javanica</i> (kapok bush) and *<i>Physalis angulata</i> were recorded.</p> <p>No Threatened flora species were recorded.</p> <p>One priority species was recorded within the survey area of Astron (2020)</p> <ul style="list-style-type: none"> <i>Rhynchosia bungarensis</i> (P4) <p>A second Priority taxa, <i>Terminalia supranitifolia</i> (P3), was recorded opportunistically by Astron (2020) outside of their survey area. This location is approximately 48 metres from the application area, and on the opposite side of the haul road.</p>						

B.2 Vegetation extent

Factor	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current percentage remaining within all DBCA managed land (%)
IBRA Bioregion					
Pilbara	17,808,657	17,731,765	99.57	1,132,944	6.36
Vegetation association					
117 (Hummock grassland)	897,108	883,705	98.51	125,405	13.98
Local area (50 km radius)					
Remnant vegetation	584,543	537,088	90.7		

B.3 Ecosystem, flora and fauna

With consideration for the site characteristics set out above, relevant datasets (Appendix I2), the following conservation significant ecological communities, flora and fauna species may be impacted by the clearing.

Significant ecological communities

Four Priority Ecological Communities (PECs) listed by the DBCA have been mapped within 50 kilometres of the application area. Astron (2020) did not observe or record any PECs or Threatened Ecological Communities (TECs) and the vegetation of the application area does not align with any TECs or PECs

Priority Ecological Community (Common ID)	Status
Burrup Peninsula rock pile communities	Priority 1
Stony Chenopod association of the Roebourne Plains area	Priority 1
Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands)	Priority 1
Horseflat Land System of the Roebourne Plains	Priority 3

Significant flora recorded from the local area (50 km radius)

Twenty-two Priority flora taxa have been recorded within 50 kilometres of the application area.

No Threatened flora taxa have been recorded within 50 kilometres of the application area.

Priority flora taxa recorded within 50 kilometres of the application area	Status
<i>Gomphrena</i> sp. Martins Well (K.F. Kenneally 6116)	P1
<i>Goodenia pallida</i>	P1
<i>Helichrysum oligochaetum</i>	P1
<i>Tephrosia rosea</i> var. Port Hedland (A.S. George 1114)	P1
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	P2
<i>Trianthema</i> sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023)	P2
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	P3
<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i>	P3
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3
<i>Eragrostis lanicaulis</i>	P3
<i>Eragrostis surreyana</i>	P3
<i>Glycine falcata</i>	P3
<i>Gomphrena cucullata</i>	P3
<i>Gomphrena leptophylla</i>	P3
<i>Gymnanthera cunninghamii</i>	P3
<i>Nicotiana umbratica</i>	P3
<i>Solanum albostellatum</i>	P3
<i>Stackhousia clementii</i>	P3
<i>Terminalia supranitifolia</i>	P3
<i>Terminalia supranitifolia</i>	P3
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	P3
<i>Vigna triodiophila</i>	P3
<i>Rhynchosia bungarensis</i>	P4

Significant fauna species recorded from the local area (50 km radius)

Numerous fauna species of conservation significance have been recorded from within 50 kilometres of the application area.

Significant fauna species recorded within 50 kilometres of the application area		
Common Name	Taxon	Status
BIRDS		
Grey Falcon	<i>Falco hypoleucos</i>	VU
Peregrine Falcon	<i>Falco peregrinus</i>	OS
Osprey	<i>Pandion cristatus</i>	MI
Glossy Ibis	<i>Plegadis falcinellus</i>	MI
Fork-Tailed Swift	<i>Apus pacificus</i>	MI
Barn Swallow	<i>Hirundo rustica</i>	MI
Oriental Cuckoo	<i>Cuculus optatus</i>	MI
Curlew Sandpiper	<i>Calidris ferruginea</i>	CR
Great Knot	<i>Calidris tenuirostris</i>	CR
Eastern Curlew	<i>Numenius madagascariensis</i>	CR
Red Knot	<i>Calidris canutus</i>	EN
Lesser Sand Plover	<i>Charadrius mongolus</i>	EN
Common Sandpiper	<i>Actitis hypoleucos</i>	MI
Common Noddy	<i>Anous stolidus</i>	MI
Wedge-Tailed Shearwater	<i>Ardenna pacifica</i>	MI
Ruddy Turnstone	<i>Arenaria interpres</i>	MI
Sharp-Tailed Sandpiper	<i>Calidris acuminata</i>	MI
Sanderling	<i>Calidris alba</i>	MI
Red-Necked Stint	<i>Calidris ruficollis</i>	MI
Long-Toed Stint	<i>Calidris subminuta</i>	MI
Oriental Plover	<i>Charadrius veredus</i>	MI
Pin-Tailed Snipe	<i>Gallinago stenura</i>	MI
Oriental Pratincole	<i>Glareola maldivarum</i>	MI
Broad-Billed Sandpiper	<i>Limicola falcinellus</i>	MI
Bar-Tailed Godwit	<i>Limosa lapponica</i>	MI
Black-Tailed Godwit	<i>Limosa limosa</i>	MI
Little Curlew	<i>Numenius minutus</i>	MI
Whimbrel	<i>Numenius phaeopus</i>	MI
Pacific Golden Plover	<i>Pluvialis fulva</i>	MI
Grey Plover	<i>Pluvialis squatarola</i>	MI
Wood Sandpiper	<i>Tringa glareola</i>	MI
Common Greenshank	<i>Tringa nebularia</i>	MI
Marsh Sandpiper	<i>Tringa stagnatilis</i>	MI
Terek Sandpiper	<i>Xenus cinereus</i>	MI
Grey-Tailed Tattler	<i>Tringa brevipes</i>	P4
Greater Sand Plover	<i>Charadrius leschenaultii</i>	VU
Fairy Tern	<i>Sternula nereis nereis</i>	VU
Bridled Tern	<i>Onychoprion anaethetus</i>	MI
Gull-Billed Tern	<i>Gelochelidon nilotica</i>	MI

Significant fauna species recorded within 50 kilometres of the application area		
Common Name	Taxon	Status
Caspian Tern	<i>Hydroprogne caspia</i>	MI
White-Winged Black Tern	<i>Chlidonias leucopterus</i>	MI
Roseate Tern	<i>Sterna dougallii</i>	MI
Common Tern	<i>Sterna hirundo</i>	MI
Little Tern	<i>Sternula albifrons</i>	MI
Brown Booby	<i>Sula leucogaster</i>	MI
Crested Tern	<i>Thalasseus bergii</i>	MI
Wilson's Storm-Petrel	<i>Oceanites oceanicus</i>	MI
Lesser Frigatebird	<i>Fregata ariel</i>	MI
MAMMALS		
Northern Quoll	<i>Dasyurus hallucatus</i>	EN
Banded Hare-Wallaby	<i>Lagostrophus fasciatus fasciatus</i>	VU
Ghost Bat	<i>Macroderma gigas</i>	VU
Pilbara Leaf-Nosed Bat	<i>Rhinonicteris aurantia (Pilbara)</i>	VU
Rock Wallaby Species	<i>Petrogale sp.</i>	EN or VU or P
North-Western Free-Tailed Bat	<i>Mormopterus cobourgianus</i>	P1
Water-Rat	<i>Hydromys chrysogaster</i>	P4
Spectacled Hare Wallaby (Mainland)	<i>Lagorchestes conspicillatus leichardti</i>	P4
Northern Short-tailed Mouse	<i>Leggadina lakedownensis</i>	P4
Western Pebble-Mound Mouse	<i>Pseudomys chapmani</i>	P4
REPTILES		
Nevin's Slider	<i>Lerista neviniae</i>	EN
Pilbara Olive Python	<i>Liasis olivaceus barroni</i>	VU
Four-Lined Slider (Karratha)	<i>Lerista quadrivincula</i>	P1
Airlie Island Ctenotus	<i>Ctenotus angusticeps</i>	P3
Lined Soil-Crevise Skink (Dampier)	<i>Notoscincus butleri</i>	P4

Appendix C – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> One regional vegetation type is mapped over the application area; Vegetation association 117 (Hummock grassland). No TECs or PECs occur over the application area. Two priority flora species listed by the DBCA were recorded by Astron (2020); <i>Rhynchosia bungarensis</i> (P4) and <i>Terminalia supranitifolia</i> (P3) recorded) outside of the survey area. One location of <i>Rhynchosia bungarensis</i> is within the application area, with another in close vicinity. Noting the size and context of the proposed clearing, habitat and distribution of <i>Rhynchosia bungarensis</i>, and the extensive areas of native vegetation with similar soil type surrounding the application area in similar or better condition, the risk posed by the proposed clearing on Priority flora is considered low.</p>	Not likely to be at variance	Yes Section 3.2.1
<p><u>Principle (b):</u> “Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</p> <p><u>Assessment:</u> Of the 48 birds of conservation significance recorded within the local area, 42 are either shorebirds, marine, or wetland specialists. Of the remainder the application area does not offer breeding or foraging habitat. Of the mammals and reptiles, two species in particular are known from the vicinity and occupy rocky drainage line habitat that occurs in the application area:</p> <ul style="list-style-type: none"> • Northern Quoll (<i>Dasyurus hallucatus</i>) (EN) • Pilbara Olive Python (<i>Liasis olivaceus</i> subsp. <i>barroni</i>) (VU) <p>Given the scale and location of the proposed clearing, it is unlikely to comprise significant habitat for fauna.</p>	Not likely to be at variance	Yes Section 3.2.2
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> No Threatened flora have been identified within 50 kilometres of the application area. The vegetation and flora survey of Astron (2020) did not identify any Threatened flora over the application area, or any Threatened flora species likely to occur. The proposed clearing is not likely to include or be necessary for the continued existence of Threatened flora.</p>	Not at variance	No
<p><u>Principle (d):</u> “Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.”</p> <p><u>Assessment:</u> No TECs endorsed by the Western Australian Minister for Environment have been mapped within 50 kilometres of the application area. No vegetation types identified within the application area are representative of any TEC (Astron 2020). Native vegetation proposed to be cleared is unlikely to comprise the whole, or a part of, or be necessary for the maintenance of, a TEC.</p>	Not at variance	No
Environmental values: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p>	Not at variance	No

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Assessment:</u> The national objectives and targets for biodiversity conservation in Australia has a target to prevent the clearance of ecological communities with an extent below 30 per cent of that present prior to the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001). The application area is located within the Pilbara bioregion which has retained over 99 per cent of its native vegetation. Over 883,700 hectares of the mapped Vegetation Association 117 has been retained, representing over 98 per cent of its original occurrence. Within a 50 kilometre radius of the application area, over 584,500 hectares of native vegetation has been retained representing over 90 per cent of its original occurrence. Astron (2020) described and mapped two vegetation types over the application area. The vegetation types described are common in the local area, and the native vegetation within the application area is not significant as a remnant of native vegetation, nor is it located within an area that has been extensively cleared.</p>		
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u> The application area does not intersect with any DBCA managed lands. The Murujuga National Park is approximately 1.5 kilometres to the east of the application area at its closest point, and islands of the Dampier Archipelago Reserve system are located immediately off shore. Given the location and scale of proposed clearing, and the separation distance to lands managed for conservation, the proposed clearing is not likely to have an impact on the environmental values of adjacent or nearby formal conservation areas.</p>	Not at variance	No
Environmental values: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> No significant mapped rivers or major watercourses intercept, or are within the vicinity of, the application area. However, proposed clearing is required to replace culverts as a mechanism to control drainage and are located in two drainage channels. The exit culvert to the drainage channel to the north is a steep gully the supports the <i>Acacia ampliceps</i> low closed forest over <i>Stylobasium spathulatum</i> shrubland over <i>Cyperus vaginatus</i> sedgeland that is representative of riparian vegetation. In order to replace the existing culverts, the proposed clearing will remove a minor extent of native vegetation growing in, or in association with, an environment associated with a watercourse.</p>	At variance	Yes Section 3.2.3
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The application area occurs in rocky areas of Granitic Land System with a steep topography presenting difficulties for access and the operation of machinery. Given the proposed clearing extent and landform and soil type present, land degradation risks for acid sulphate soils, sub-surface acidification, phosphorous export, wind erosion, salinity and waterlogging are considered low. There is a high risk of land degradation as a consequence of water erosion. Given the purpose of the proposed clearing to replace culverts as a mechanism to control drainage this risk can be mitigated by the works initiated by the proposed clearing. Soils will be exposed as a result of the proposed clearing that may cause a small and localised impact downstream of the works.</p>	Not likely to be at variance	Yes Section 3.2.3

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u> The application area is located within the Pilbara Surface Water Area (UFI 54) proclaimed under the RIWI Act, and the Pilbara Groundwater Area (UFI 44) proclaimed under the RIWI Act. There are no mapped rivers proclaimed under the RIWI Act within the vicinity. Proposed clearing is required to enable the replacement of culverts within drainage lines and without the implementation of standard controls downstream impacts are possible.</p>	May be at variance	Yes Section 3.2.3
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> Surface water is largely reliant on weather and surface water in waterways is generally only present or flowing for parts of the year, in response to larger cyclonic or rainfall events. Drainage issues arise from the high erosion tendencies of the red soils and the large volumes of stormwater that flow in the wet season. Proposed clearing is required to enable the replacement of culverts within two drainage lines, and proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.</p>	Not at variance	No

Appendix D – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)




Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E –Biological survey information excerpts (Astron 2020)

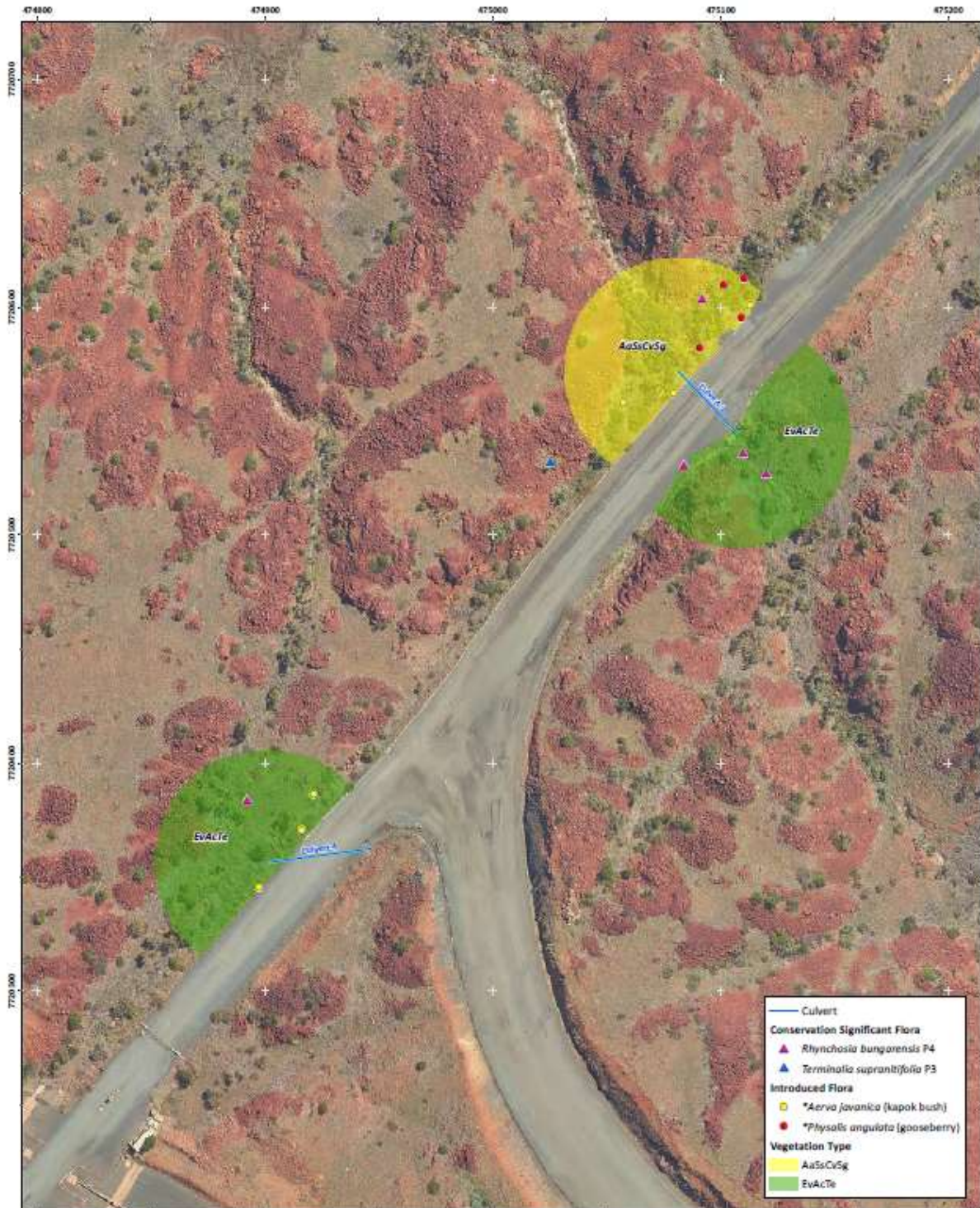
E.1 Vegetation of the application area

Woodside Energy Ltd
Pluto Haul Road Culvert Vegetation Survey – August 2020

Table 1: Site and vegetation type descriptions.

Culvert-Site-Orientation	Vegetation code	Vegetation type description	Vegetation condition	PECs/TECs	Photograph
002-1-West	AaSsCvSg	<i>Acacia ampliceps</i> low closed forest over <i>Stylobasium spathulatum</i> shrubland over <i>Cyperus vaginatus</i> sedge land and <i>Stemodia grossa</i> herbland.	Good	None	
002-1-East	EvAcTe	<i>Eucalyptus victrix</i> with <i>Terminalia circumalata</i> low woodland over mixed <i>Acacia coriacea</i> and <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> open shrubland over <i>Triodia epactia</i> (<i>Triodia angusta</i>) hummock grassland.	Excellent	None	
004-2-West	EvAcTe	<i>Eucalyptus victrix</i> with <i>Terminalia circumalata</i> low woodland over mixed <i>Acacia coriacea</i> and <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> open shrubland over <i>Triodia epactia</i> (<i>Triodia angusta</i>) hummock grassland.	Excellent	None	
004-2-East	Unable to Assess	Unable to Assess	Unable to Assess	None	

E.2 Priority flora locations



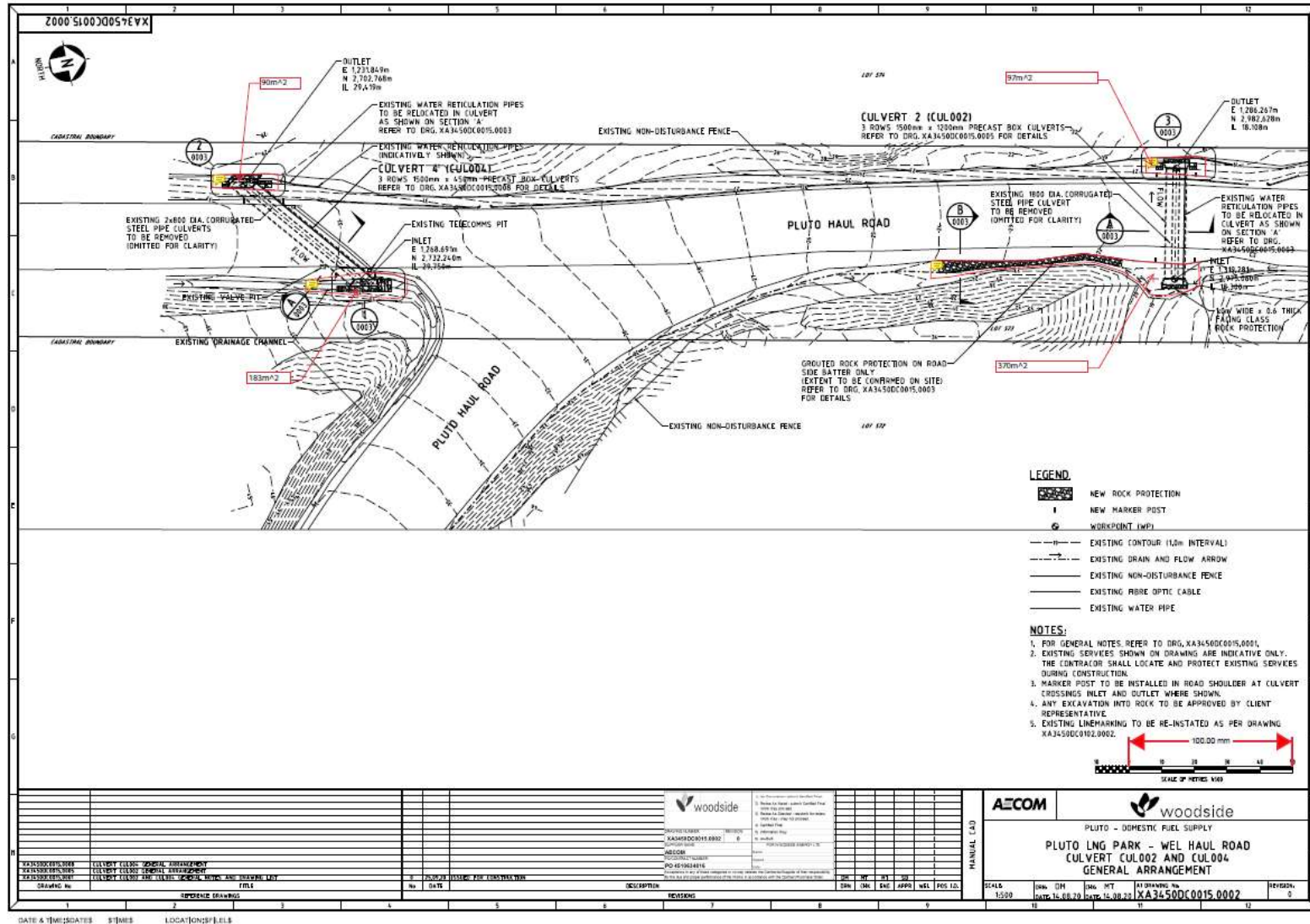
Woodside Energy Ltd
Pluto Haul Road Culvert Vegetation Survey

Figure 1: Survey sites, vegetation type mapping and location of conservation significant and introduced flora species



Author: H. Poole	Date: 11-08-2020	Scale: 1:1,000 at A3 Coordinate System: GDA 1994 MGA Zone 50
Drawn: C. Doyle	Figure Ref: 14017-20-BIDR-1Rev0_200811_Fig1	

Appendix F –Engineering drawings (Woodside 2021a)





Department of Biodiversity,
Conservation and Attractions

CONSERVATION CODES

For Western Australian Flora and Fauna

Threatened, Extinct and Specially Protected fauna or flora¹ are species² which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

The *Wildlife Conservation (Specially Protected Fauna) Notice 2018* and the *Wildlife Conservation (Rare Flora) Notice 2018* have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018* to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016*.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened species

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where *"there is no reasonable doubt that the last member of the species has died"*, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form"*, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P **Priority species**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 **Priority 1: Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

2 **Priority 2: Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

3 **Priority 3: Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

4 **Priority 4: Rare, Near Threatened and other species in need of monitoring**

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

¹ The definition of flora includes algae, fungi and lichens

² Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Appendix H – Aboriginal sites of significance

PE 1 Camping Beach Area
PE 2 Meeting Place
PE 4 Women's Place
PE 3 Men's and Ceremonial Engravings
PE 5 Men's Engravings A, B & C
PE 6 Access Gully
PE 8 Men's Only Area
Woodside Pluto Area B 100
WGTO PB 152
DRD 38
DRD 56
DRD 57
DRD 69
DRD 28
DRD 48
Woodside Pluto Area B 68
SMASHED ROO
Burrup Peninsula, Murujuga
DRD 61
Woodside Haul Road 05
DRD AREA A-05
DRD AREA A-07
PE 7 Men and Women Restricted Place
THE THYLACINES
Woodside Haul Road Expansion 08
KISSING BIRDS

THE THYLACINES
Woodside Haul Road Expansion 08
KISSING BIRDS
HAUL ROAD SOUTH 06.
Burrup Peninsula, Murujuga
DRD 61
Woodside Haul Road 05
DRD AREA A-05
DRD AREA A-07
PE 7 Men and Women Restricted Place
EAGLES NEST
Burrup Peninsula, Murujuga

Appendix I – References and databases

I.1 References

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I.2 GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Remnant Vegetation, All Areas
- Native Vegetation Extent (DPIRD-005)
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)