



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7953/1
Permit Holder:	Nyamba Buru Yawuru Ltd
Duration of Permit:	14 July 2018 – 14 July 2023

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of hydrological investigations, horticulture and associated infrastructure.

2. Land on which clearing is to be done

Lot 46 on Deposited Plan, 93190, Eighty Mile Beach.

3. Area of Clearing

The Permit Holder must not clear more than 422 hectares of native vegetation within the area hatched yellow on attached Plan 7953/1.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

6. Direction of clearing

The Permit Holder shall conduct clearing in a progressive manner from one direction to the other (e.g. west to east) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

7. Period in which clearing is authorised

The Permit Holder must ensure that the planting of crop species and construction of associated infrastructure occurs within three months of the authorised clearing being undertaken.

8. Fauna management

- (a) Immediately prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to undertake clearance surveys using transects spaced at a maximum 100 metres on average including the identification and inspection of burrows within the areas cross-hatched yellow on attached Plan 7953/1 for the greater bilby (*Macrotis lagotis*).
- (b) Immediately prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to relocate any fauna found under condition 8(a) of this Permit, in accordance with a fauna licence pursuant to Regulation 15 of the *Wildlife Conservation Regulations 1970*.
- (c) Where fauna are identified and relocated under condition 8(a) and 8(b) of this Permit, the Permit Holder shall include the following in a report submitted to the Department of Water and Environmental Regulation:
 - (i) the scientific name and gender of each fauna captured under condition 8(a) and 8(b);
 - (ii) the location of any fauna species, as listed in condition 8(a) and 8(b); captured using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (iii) the date, time, vegetation type and weather conditions at each location where a fauna species is captured under condition 8(c)(ii);
 - (iv) the scientific name and gender of each fauna relocated under condition 8(b);
 - (v) the location of any fauna species, as listed in condition 8(b), relocated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (vi) the date, time, vegetation type and weather conditions at each location where a fauna species is relocated under condition 8(c)(v);
 - (vii) the name of the fauna specialist that relocated fauna under condition 8(b); and
 - (viii) a copy of the fauna licence authorising the relocation of fauna under condition 8(b).

9. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the 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) restrict the movement of machines and other vehicles to the limits of the areas to be cleared; and
- (c) within six months of the expiry of this Permit, the Permit Holder must remove or kill any *weeds* or species proposed for cropping which are growing within 50 meters outside of the area hatched yellow on attached Plan 7953/1.

PART III - RECORD KEEPING AND REPORTING

10. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the species composition, structure and density of the cleared area;
 - (ii) 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;
 - (iii) the date that the area was cleared;
 - (iv) the size of the area cleared (in hectares);
 - (v) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 5 of this Permit
 - (vi) actions taken in accordance with conditions 6 and 7 of this Permit; and
 - (vii) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 9 of this Permit.

11. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
 - (i) of records required under condition 8 and 10 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 6 June 2023, the Permit Holder must provide to the *CEO* a written report of records required under condition 8 and 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

fauna specialist: means a person who holds a tertiary qualification specializing in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, and who holds a valid fauna licence issued under the *Wildlife Conservation Act 1950*.

fill means material used to increase the ground level, or fill a hollow;

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;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; 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.

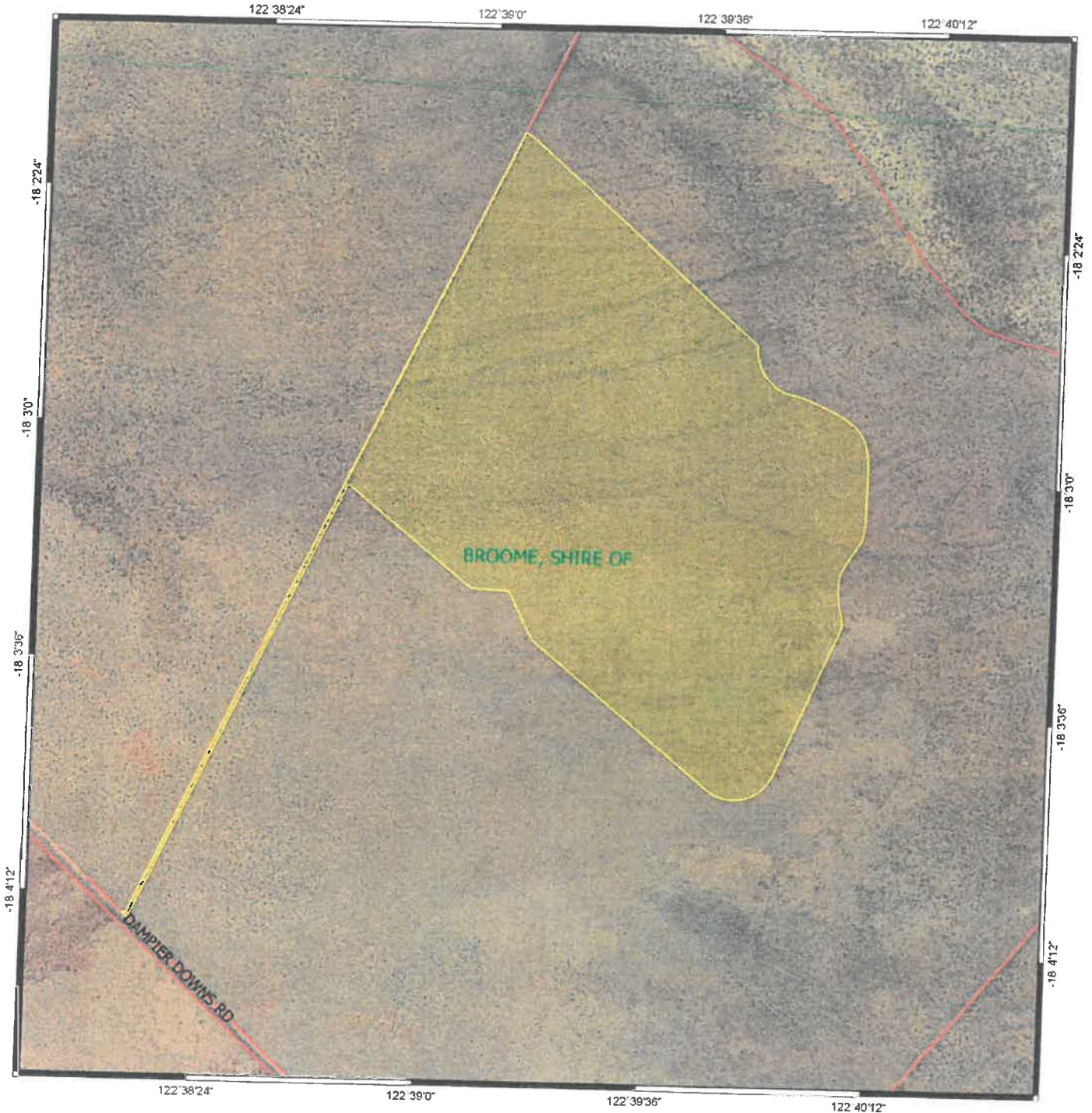


Jane Clarkson
MANAGER
CLEARING REGULATION

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

14 June 2018

Plan 7953/1



Legend

-  Areas approved to clear
-  Roads
-  Local Government Authority cadastre
-  Cadastre
- WANow_Imagery



MGA 94
Geocentric Datum of Australia 1994

Alto Date 14.6.18

Officer with delegated authority under Section 20
of the Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7953/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Nyamba Buru Yawuru Ltd
Application received date: 16 January 2018

1.3. Property details

Property: LOT 270 ON PLAN 220197, ROEBUCK
Local Government Authority: BROOME, SHIRE OF
Localities: ROEBUCK

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
422		Mechanical Removal	Horticulture

1.5. Decision on application

Decision on Permit Application: Grant

Decision Date: 14 June 2018

Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing may be at variance to principles (a), (b) and (g), is not at variance to principle (e) and is not likely to be at variance to the remaining principles.

Based on the assessment of the application area, the Delegated Officer determined that:

- the application area may comprise a high level of biological diversity;
- the application area may be necessary for the maintenance of significant habitat for the greater bilby (*Macrotis lagotis*), spectacled hare-wallaby (*Lagorchestes conspicillatus*) and Dampier Peninsula goanna (*Varanus sparnus*);
- the proposed clearing may cause appreciable land degradation in the form of wind and water erosion between clearing and crop and/or construction of associated infrastructure establishment; and
- the proposed clearing may result in the spread of weeds into adjacent areas.

To minimise impacts to the greater bilby, Dampier Peninsula goanna and spectacled hare-wallaby the clearing permit contains conditions requiring:

- pre-clearance surveys to identify the greater bilby within the application area, and the relocation of any individuals of these species recorded during pre-clearance surveys;
- one directional clearing to allow the greater bilby, Dampier Peninsula goanna and spectacled hare-wallaby to move into adjacent habitat; and
- the requirement to obtain a fauna licence issued pursuant to Regulation 15 of the *Wildlife Conservation Regulations 1970*.

To minimise the potential for appreciable land degradation and the spread of weeds, the clearing permit contains conditions requiring:

- the planting of crop species within three months of any clearing being undertaken, to minimise wind and water erosion;
- the movement of machinery to be restricted to the limits of the application area and cleaning earth moving machinery prior to entering and leaving the application area; and
- within six months of the expiry of the Permit, the Permit Holder must remove or kill any weeds and species proposed for cropping which are growing within 50 metres outside of the application area.

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

2. Site Information

Clearing Description	The application is to clear 422 hectares of native vegetation within Lot 1544 on Plan 75840, Roebuck, for the purpose of pivot irrigation, hydrological investigations and associated infrastructure (figure 1).
Vegetation Description	<p>The application commissioned Ecoscape (2017) to conduct a flora and fauna survey of the application, between 27 April 2017 and 12 May 2017.</p> <p>The flora and fauna survey incorporated a study area of approximately 960.67 hectares, which encompassed the application area.</p> <p>The flora and fauna survey identified one native vegetation community within the application area 'BdCzLOW' which is described as <i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i> and <i>Corymbia zygophylla</i> low open woodland over <i>Acacia eriopoda</i> tall open shrubland over <i>Chrysopogon fallax</i>, <i>Sorghum plumosum</i> and <i>Aristida holathera</i> var. <i>latifolia</i> mid tussock grassland (Ecoscape, 2017).</p> <p>The application area is mapped as Beard vegetation association 699, which is described as 'shrublands, pindan; <i>Acacia eriopoda</i> shrubland with scattered low bloodwood (<i>Corymbia dichromophloia</i>) and <i>Eucalyptus</i> sp. over soft and curly spinifex on sandplain' (Shepherd et al., 2001).</p>
Vegetation Condition	The flora and fauna survey identified the application as being in an excellent to good (Keighery, 1994) condition. The majority being in an excellent (Keighery, 1994).
Soil type	The application area is mapped as Yeeda Land System which is described as 'Sandplains with red and yellow sands supporting pindan acacia shrublands with emergent eucalypt trees.

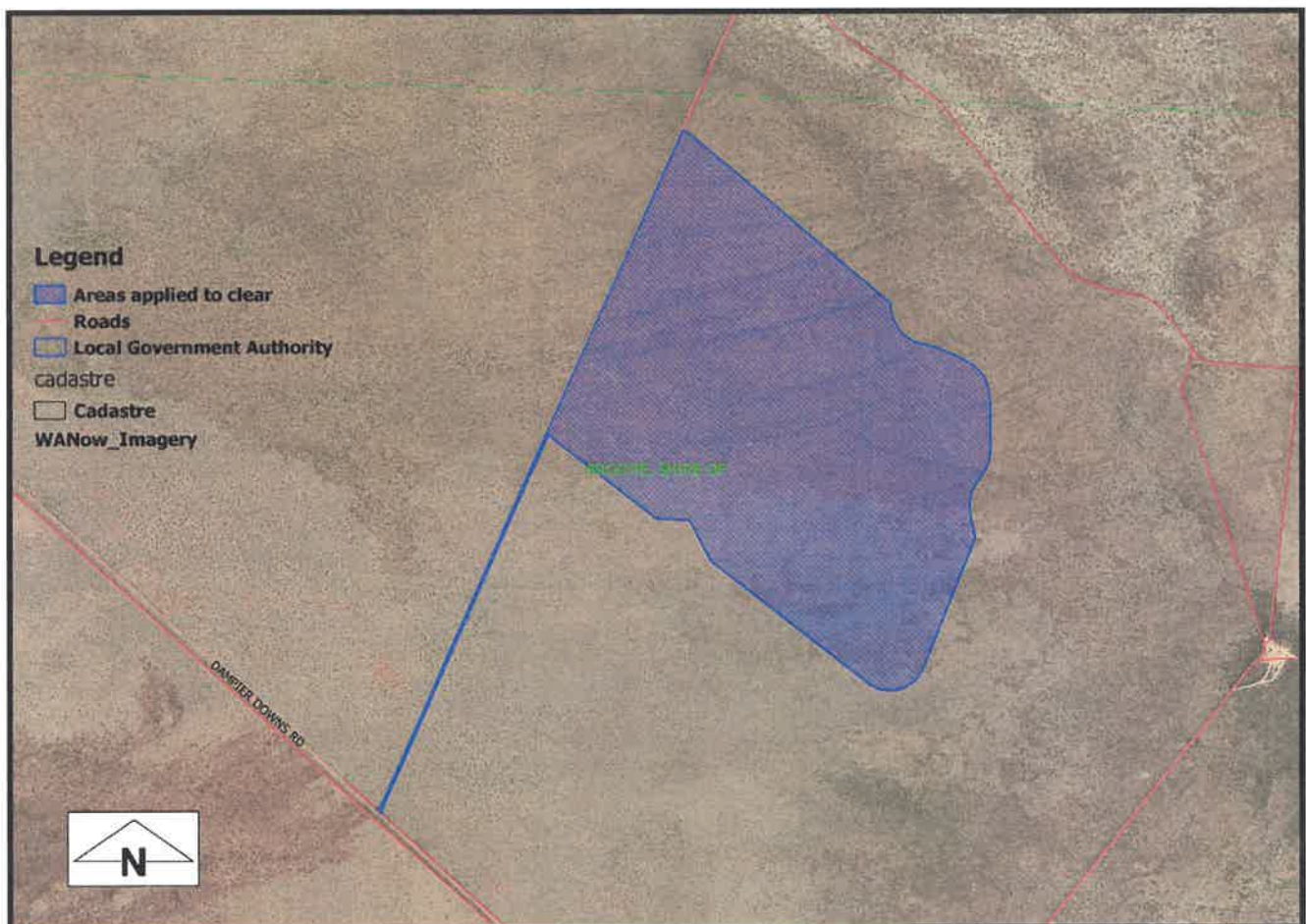


Figure 1: Application Area

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Proposed clearing may be at variance to this Principle

The local area considered in the assessment of this application is defined as a 50 kilometre radius surrounding the application area. The local area is extensively vegetated and contains approximately 99 per cent native vegetation cover.

The application commissioned Ecoscape to conduct a flora and fauna survey of the application. The flora and fauna survey incorporated a study area of approximately 960.67 hectares, which encompassed the application area.

The flora and fauna field survey was conducted sporadically between 27 April 2017 and 12 May 2017, over approximately five days of intensive survey, and additional time for conservation significant flora searched during traverses during the fauna survey (an additional four days). Detailed sampling was undertaken at six locations (three quadrat from each vegetation type) of quadrats 50 metres by 50 metres in size.

The Department of Biodiversity, Conservation and Attractions (DBCA) provided comment on the adequacy of the flora and fauna survey and advised that 'the timing of the survey is considered adequate for the majority of the targeted conservation significant flora (DBCA, 2018a).

As discussed within Section 2, the flora and fauna survey identified one native vegetation community within the application area 'BdCzLOW'. The vegetation was largely in excellent (Keighery, 1994) condition, with the remainder in very good or good (Keighery, 1994) condition.

A total of 117 vascular flora species from 10 floristic quadrats within the study area and three regional quadrats. One conservation significant flora species *Triodia caelestialis* (Priority 3) was identified (Ecoscape, 2017), however this species has now been delisted.

One introduced species *Stylosanthes hamata* was identified within the survey area (Ecoscape, 2017). The applicant will be required to undertake weed management measures to minimise the risk of this species spreading into surrounding vegetation adjacent to the application area.

According to available databases, one rare flora species and 14 priority flora species have been recorded within the local area. The flora and fauna survey determined the five priority flora species were considered to have a possible occurrence within the study area being *Bonamia oblongifolia* (Priority 3), *Croton aridus* (Priority 3), *Glycine pindanica* (Priority 3), *Haemodorum capitatum* (Priority 1) and *Tribulopsis marliesiae* (Priority 3) (Ecoscape, 2017). The flora and fauna survey did not identify any conservation significant flora species within the application area (Ecoscape, 2017).

DBCA advised that the vegetation types that occur within the application area occur more broadly and extend well beyond the application area and, of the priority taxa that are likely to occur, most are Priority 3 or have been recently delisted as a result of further survey work in the La Grange region. Therefore no specific conservation taxa of concern have been identified. The risk to conservation significant flora as a result of the proposed clearing is considered likely to be low (DBCA, 2018a).

As discussed under principle (d), the vegetation recorded within the application area is not representative of any known threatened ecological communities (TEC's) and the proposed clearing is not likely to impact on any TEC's.

According to available datasets, there are no priority ecological communities (PEC's) mapped within the application area. The closest mapped PEC is 'Kimberley Vegetation Complex 67' which is an important wetland of the Roebuck Plains System which is located approximately one kilometre north of the application. DBCA has advised that measures should be undertaken to ensure the proposed vegetation clearing and subsequent land use do not impact upon the PEC or wetland (DBCA, 2018a). Given that a one kilometre vegetated buffer will remain between the proposed clearing area and mapped PEC and that the local area is extensively vegetated the proposed clearing is not likely to have a significant impact on the environmental values of this wetland. Weed management measures to minimise the risk of weeds spreading into surrounding vegetation will help mitigate impacts to this PEC.

The flora and fauna survey noted vegetation identified within the application is not considered of conservation significance, and does not represent any currently described TECs and PECs.

As discussed under principle (b), the application area provides suitable habitat for the greater bilby (*Macrotis lagotis*), which is listed as 'fauna that is rare or is likely to become extinct as vulnerable fauna' under the *Wildlife Conservation (Specially Protected Fauna) Notice 2017* (WC Fauna Notice), spectacled hare-wallaby (*Lagorchestes conspicillatus*) (Priority 3) and Dampier Peninsula goanna (*Varanus sparnus*) (Priority 1).

As the application area contains vegetation predominantly in excellent (Keighery, 1994) condition and provides habitat for the greater bilby, spectacled hare-wallaby and Dampier Peninsula goanna, the proposed clearing may comprise a high level of biodiversity and may be at variance to this Principle.

To minimise direct impacts to the greater bilby, spectacled hare-wallaby and Dampier Peninsula goanna, the applicant will be required to:

- conduct pre-clearance surveys to identify the greater bilby within the application area;
- relocate any greater bilby recorded during the pre-clearance survey; and
- undertake slow progressive directional clearing to allow the greater bilby, spectacled hare-wallaby and Dampier Peninsula goanna to move into adjacent habitat ahead of clearing.

While the application area may contain a high level of biological diversity, it is acknowledged that the values present within the application area also occur within the immediate vicinity, and may occur throughout the larger local area, which retains approximately 99 per cent native vegetation. Therefore, it is considered that with the fauna management measures outlined above, the proposed clearing is not likely to have a significant impact on the level of biological diversity in the local area, and will not lead to an unacceptable risk to the environment.

(b) 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 indigenous to Western Australia.

Proposed clearing may be at variance to this Principle

According to available databases, excluding marine species, there are records of 18 conservation significant fauna species recorded within the local area (DBCA, 2007-). The applicant commissioned Escoscape (2017) to conduct a fauna assessment of a larger study area encompassing the application area, which involved a targeted survey for conservation significant fauna species.

The fauna survey was undertaken between 10 and 18 May 2017 incorporating a number of survey techniques, including a systematic trapping program as well as opportunistic searches (Escoscape, 2017).

The fauna survey identified one habitat type within the application area being 'shrubland over tussock grassland'. During the survey, a total of 82 species (seven native mammals, three introduced species of mammal, 38 birds, 25 species of reptile, three amphibians and six potential short range endemic species were recorded from the study area (Escoscape, 2017).

The fauna survey noted that four species of conservation significance have a moderate to high likelihood to occur or have been recorded from site: greater bilby (*Macrotis lagotis*), which is listed as fauna that is rare or is likely to become extinct as vulnerable fauna' under the WC Fauna Notice, rainbow bee-eater (*Merops ornatus*), spectacled hare-wallaby (*Lagorchestes conspicillatus*) (Priority 3) and Dampier Peninsula goanna (*Varanus sparnus*) (Priority 1) (Escoscape, 2017).

The fauna survey advised that three conservation significant fauna species were identified within the application area being; rainbow bee-eater from nine locations, spectacled hare-wallaby, from 16 locations (evidence) and Dampier Peninsula goanna (*Varanus sparnus*) from four locations consisting of seven individuals. The vegetation within the application area has the potential to provide habitat for the greater bilby, however the species was not recorded within this habitat (Escoscape, 2017).

The rainbow bee-eater is no longer listed as specially protected in Western Australia. The habitat within the application area is unlikely to be significant for the species however individuals may be directly impacted if the clearing occurs during the nesting/breeding season, therefore these periods should be avoided (DBCA, 2018a).

The spectacled hare-wallaby is uncommon in WA and exists in a few isolated populations within the Pilbara and Kimberley regions (Winter et al., 2016). This species occupies a wide variety of habitat types including open forests, open woodland, tall shrublands, tussock grasslands and hummock grasslands (Winter et al., 2016). In the drier southern parts of its range in WA, it commonly occupies spinifex (*Triodia* sp.) sandplains interspersed with low shrubs and a diversity of soft grasses, sedges, or forb species (Winter et al., 2016). Based on the recorded vegetation type within the application area and that evidence of this species was identified within the application it is considered that suitable habitat for this species occurs within the application area.

DBCA has advised that the application area is likely to be significant habitat for the spectacled hare-wallaby. Based on the amount of secondary evidence found, the spectacled hare-wallaby is likely to be a resident species. The proposed clearing will reduce the habitat available for this species at a local scale but is unlikely to significantly impact the species at the regional scale (DBCA, 2018a). Previous advice from the former Department of Parks and Wildlife (Parks and Wildlife) regarding this species for a clearing permit application within the Kimberley region, indicated that it is highly agile and would be expected to move away from clearing activities, thus reducing the potential for mortalities (Parks and Wildlife, 2017). Noting this, and the extent of potentially suitable habitat within the local area (which retains approximately 99 per cent native vegetation), it is considered that slow, progressive directional clearing methods to ensure that this species is afforded the opportunity to move into adjacent vegetated areas ahead of clearing, would be sufficient to minimise impacts to this species.

DBCA has advised that the application area may provide important habitat for the Dampier Peninsula goanna. This species was recorded from all trapping sites and can therefore be considered a resident species. However DBCA noted, it is difficult to confirm the species identification from the photo provided due to the body position, and no distinguishing characteristics were provided in the report. Direct impact in the form of individuals present in the application area being killed during vegetation clearing is possible, however it is more likely they will disperse from the disturbance into the adjacent habitat if the pattern of clearing allows it (DBCA, 2018a).

The fauna survey did not identify any evidence of the greater bilby within the application area. DBCA has advised that large portions of potentially suitable bilby habitat were not adequately surveyed and therefore this species may be present within the application area. Recent survey work in the La Grange region extended from Roebuck Plains Station to Mandora Station confirmed that the area is important for the continued persistence of wild bilby populations and revealed that they occur in

several habitat types and in varying population sizes. The project modelled habitat suitability for bilbies in relation to environmental variables and concluded that occupancy was higher if plots were defined as grassland or with a sand substrate, with the broad bilby habitat types being identified as coastal habitat, pindan habitat and desert habitat. It is considered that the application area likely falls into the pindan habitat category. This coupled with the records of bilby in the vicinity and that habitat is reported as being in excellent condition indicate that bilby may utilise the area within, or immediately adjacent to, the application area. It is most likely that this utilisation is periodic, and it is less likely that there is a resident population (DBCA, 2018a).

DBCA advised that a local population of the greater bilby within the application area may be nomadic within the area and therefore may occur sporadically within the application area. There may be a risk of impacting the local population through vegetation clearing in the form of loss of habitat and reduced quality and quantity of food resources available. Reduced availability of food resources could cause a decline in breeding outputs. Loss of vegetation cover will also likely increase the risk of predation, as bilbies will have to forage and traverse areas that are more open and exposed to both natural and introduced predators. Depending on the proposed and surrounding land use, threats such as increased degradation and simplification of habitat from domestic grazing, increased predation pressure and changes to fire regimes are also a risk (DBCA, 2018a).

If greater bilby are determined to be residing in the area at the time of clearing, direct mortality may occur during the clearing process. It is particularly important to determine if there are any bilby burrows on site and if they are active immediately prior to any disturbance. To minimise impact to greater bilbies comprehensive pre-clearing searches of the disturbance envelope should be undertaken prior to any vegetation clearing. The pre-clearance survey should be undertaken no less than two weeks before vegetation clearing activities commence and should follow the DBCA Draft Guidelines for pre-clearing searches to locate resident bilbies (DBCA, 2018a).

DBCA also recommended that a management plan be provided should any greater bilbies be identified within pre-clearance surveys, which should provide for the "implementation of directional clearing towards remnant vegetation with buffers around areas of recent fauna activity, to allow all fauna species, including bilby and spectacled hare-wallaby, an opportunity to disperse/self-relocate away from the disturbance" and, "relocation options if bilby do not disperse/self-relocate, noting that any relocation must be conducted under a licence to take/disturb fauna" (DBCA, 2018a).

Given that the application area provides suitable habitat for the greater bilby, spectacled hare-wallaby and Dampier Peninsula goanna and that evidence of two of these species was identified within the application area, and extent of clearing proposed (422 hectares), the proposed clearing may be at variance to this Principle.

To minimise direct impacts to the greater bilby, spectacled hare-wallaby and Dampier Peninsula goanna, the applicant will be required to:

- conduct pre-clearance surveys to identify the greater bilby within the application area;
- relocate any greater bilby recorded during the pre-clearance survey; and
- undertake slow progressive directional clearing to allow the greater bilby, spectacled hare-wallaby and Dampier Peninsula goanna to move into adjacent habitat ahead of clearing.

It is considered that with the fauna management measures outlined above, the proposed clearing is not likely to have a significant impact on fauna indigenous to Western Australia, and will not lead to an unacceptable risk to the environment.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Proposed clearing is not likely to be at variance to this Principle

According to available databases, one rare flora species, *Seringia exastia*, has been recorded within the local area. The closest known record has been recorded more than 40 kilometres from the application area.

Seringia exastia is restricted to several populations, one on the eastern edge of Nita Downs and between one and several populations in the Great Sandy Desert (DBCA, 2018b).

This species grows in pindan (red soil) heathland Apart from one subpopulation which occupies a north-facing dune slope, the remaining six subpopulations occur on almost flat land and associated vegetation includes *Triodia schinzii* (Feathertop Spinifex) and scattered trees under 7 metres in height, of *Acacia colei* (Soap Wattle), *Eucalyptus dampieri* (Bloodwood) and several other common species with a variety of intermediate sized shrubs (Department of the Environment, Water, Heritage and the Arts, 2009).

A flora and fauna survey undertaken within application area did not identify any rare flora within the survey area (Ecoscape, 2017). DBCA advised that the timing of the flora survey is considered adequate for the majority of the targeted conservation significant flora. The risk to conservation significant flora is considered likely to be low (DBCA, 2018a).

Given the known distribution and habitat of *Seringia exastia* and that no rare flora were identified within the survey area, the vegetation proposed to be cleared is not likely to include or be necessary for the continued existence of rare flora.

The proposed clearing is not likely to be at variance to this Principle.

(d) 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.

Proposed clearing is not likely to be at variance to this Principle

According to available databases, two threatened ecological communities (TEC) 'Roebuck Bay mudflats' and 'Vine thickets on coastal sand dunes of Dampier Peninsula' have been recorded within the local area. The closest known records has been recorded approximately 22 and 45 kilometres west of the application area respectively.

A flora and fauna survey undertaken within application area did not identify vegetation representative of any TEC's (Ecoscape, 2017).

Noting this, the application area is not likely to comprise the whole or a part of, or be necessary for the maintenance of any TEC's.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is not at variance to this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 percent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is located within the Dampierland Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and the Shire of Broome, both of which retain greater than 99 per cent of their pre-European vegetation extents (Government of Western Australia, 2018).

The vegetation within the application area is mapped as Beard vegetation association 699 which retains approximately 99.9 per cent of its pre-European vegetation extent within the Dampierland IBRA bioregion (Government of Western Australia, 2018).

The local area is highly vegetated and retains approximately 99 per cent (786,503 hectares) of its pre-European vegetation extent (taking into account the coastal water mark). The application area represents approximately 0.054 per cent of the remaining native vegetation within the local area and the proposed clearing would reduce the extent of native vegetation within the local area to 786,081 hectares.

While the application area may be significant as a remnant as it contains vegetation in excellent (Keighery, 1994) condition and suitable habitat for conservation significant fauna, noting that the Shire, the IBRA bioregion and the local area retain more than 30 per cent of their vegetation extents respectively, it is considered that the vegetation within the application area is not an area that has been extensively cleared.

Given the above, the proposed clearing is not at variance to this Principle.

Table 1: Vegetation extents

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Department of Parks and Wildlife Managed Lands		
				Extent (ha)	Pre-European (%)	Current (%)
IBRA bioregion*						
Dampierland	8,343,945	8,319,879	99.7	141,360	1.76	1.7
Beard vegetation association in bioregion*						
699	1,976,313	1,974,958	99.9	9,409	0.48	0.48

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is not likely to be at variance to this Principle

According to available databases, there are no watercourses or wetlands mapped within the application area. The closest hydrological feature to the application area is an area subject to inundation and ANCA wetland Roebuck Plains System located approximately 1.2 kilometres from the application area.

The Flora Assessment did not identify riparian vegetation within the application area (Ecoscape, 2017), noting this, and the distance to known hydrological features, it is considered that the vegetation within the application area is not likely to be growing in, or in association with a watercourse or wetland.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing may be at variance to this Principle

As discussed in Section 2, the soils within the application area have been mapped at a regional scale as the Yeeda land System.

Advice from the Commissioner of Soil and Land Conservation (CSLC) advised that ' the sandplain unit generally has dark reddish brown loamy sand supporting "pindan" vegetation including spinifex, ribbon grass, acacia, bauhinia, grevillea and emergent *Corymbia dichromophloia*. The slopes are likely to be less than one per cent (CSLC, 2018).

CSLC advised that under pastoral grazing land use, the soil is not recognised as being erosion prone. However, after clearing the protective native vegetation, wind erosion and water erosion is liable to occur. Once crop cover is established, the soil erosion risk is likely to be low (CSLC, 2018). Other forms of land degradation area unlikely to be significant (CSLC, 2018).

Given the above, the proposed clearing may result in appreciable land degradation via wind and water erosion and may be at variance to this Principle.

It is considered that land degradation via wind and water erosion may be further minimised by the utilisation of cleared areas within an appropriate period of time following clearing activities. Therefore, to minimise the risk of wind and water erosion, the applicant will be required to plant the intended crops or commence construction of associated infrastructure over the cleared areas within three months of the date of clearing, which will prevent the prolonged exposure of bare sandy soils.

(h) 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.

Proposed clearing is not likely to be at variance to this Principle

According to available databases, the closest conservation areas to the application area are and unnamed nature reserve and the Ramsar listed Eighty Mile Beach site which are located approximately 21.5 kilometres and 24 kilometres west of the application area respectively.

Noting the distance to nearby conservation areas and highly vegetated local area (retains 99 per cent native vegetation cover), the proposed clearing is unlikely to impact on the environmental values of these conservation areas.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(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.

Proposed clearing is not likely to be at variance to this Principle

As discussed under Principle (f), there are no watercourses or wetlands mapped within the application area. Noting the distance to the closest mapped wetland or watercourse (wetland 1.2 kilometres north), and extent of vegetation between these areas, the proposed clearing is not likely to impact on the flow or quality of surface water of this watercourse.

Groundwater salinity within the application area has been mapped as fresh at between 0 to 500 milligrams per litre total dissolved solids. Given the extensive vegetative cover surrounding the application area, the proposed clearing is unlikely to lead to a perceptible rise in the water table or increase in groundwater salinity levels.

The proposed clearing is not likely to impact on the quality of surface or groundwater resources. There are no significant surface water pathways (creeks or streams) within the proposed clearing footprint, for which turbidity may be an issue.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance to this Principle

The Dampierland bioregion has a semi-arid to tropical monsoonal climate, receiving much of its rainfall during summer months (Bastin and ACRIS Management Committee, 2008) between December and March (BoM, 2016).

Flooding may occur following heavy rainfall. Therefore, the proposed clearing of 422 hectares may increase the risk of short term localised flooding following periods of heavy rainfall, which is commonly experienced by the region.

Noting, that the risk of standing water and water erosion is associated with high rainfall events and that local runoff is likely to be for short durations, it is considered that any flooding that occurs is likely to be short term, not significantly greater than that currently experienced during high rainfall events, and is not likely to have a significant environmental impact.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

Planning instruments and other relevant matters.

According to available databases, the application area is zones as 'general agriculture'. The proposed horticultural land use is consistent with the land-use objectives of the Shire's Local Planning Strategy and Local Planning Scheme No.6.

The area proposed for clearing is located within the Canning Kimberley Groundwater Area which is proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI). Any taking or use of groundwater water in this proclaimed area, for purposes other than domestic and/or stock watering, is subject to licencing by the department.

The applicant has submitted two licence applications to DWER being:

- 5C groundwater licence application - requesting an annual water entitlement of 3 gigalitres per annum (GL/a) for irrigated pasture (3 pivots of approximately 65 hectares each for a total area of 200 hectares); and
- 26D application - requesting to construct as many production bores as required.

These applications are currently under assessment and awaiting further information to be provided before they can be approved.

The horticulture activities associated with the intended land use should be managed according to current best practice, in line with several DWER Water Quality Protection Notes (WQPN) that provide recommendations on best practice measures to protect water resource, including:

- WQPN 22 - Irrigation with nutrient rich waste water;
- WQPN 33 - Irrigation management plans; and
- WQPN 101 - Tropical agriculture.

CSLC advised that the soils mapped within the application area have a high capability for sprinkler irrigation and a variety of forage fibre and horticultural crops successfully grown in the district (CSLC, 2018).

The Department of Planning, Lands and Heritage (DPLH) has advised that on 3 May 2018 the Pastoral Lands Board gave in principle approval to the diversification permit s120.18-001 subject to the applicant successfully applying for a clearing permit. The DPLH assessment included the 315 hectares permit area referred to as the 'construction zone' and includes 200 hectares of pivots plus sheds, infrastructure and area that falls in the arc of the pivots. The Pastoral Lands Board requested an "uncleared" 200 metre buffer zone beyond the permit area boundary to control approved introduced plants found outside the permit area (DPLH, 2018).

The closest mapped PEC is 'Kimberley Vegetation Complex 67' which is an important wetland of the Roebuck Plains System which is located approximately one kilometre north of the application. DBCA has advised that measures should be undertaken to ensure the proposed vegetation clearing and subsequent land use do not impact upon the nearby 'Kimberley Vegetation Complex 67' PEC or wetland (DBCA, 2018a). It is considered that the hydrological investigations and management measures imposed via conditions of the 5C groundwater licence, will be sufficient to adequately mitigate environmental impacts associated with the end land use.

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 14 February 2018 with a 21 day submission period. No public submissions have been received in relation to this application.

4. References

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