GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7931/1
Permit Holder:	Shelamar Leasing Company Pty Ltd
Duration of Permit:	3 June 2018 – 3 June 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 horticulture.

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 490 hectares of native vegetation within the area cross-hatched yellow on attached Plan 7931/1.

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:
   (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.

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 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 within the areas cross-hatched yellow on attached Plan 7931/1 for the brush-tailed mulgara (*Dasycercus blythi*).
   (b) 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 within the areas cross-hatched yellow on attached Plan 7931/1 for the greater bilby (*Macrotis lagotis*).

(c) 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) and 8(b) of this Permit, in accordance with a fauna licence pursuant to Regulation 15 of the *Wildlife Conservation Regulations 1970.*

(d) Where fauna are identified and relocated under condition 8(a), 8(b) and 8(c) 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(d)(ii);
   (iv) the scientific name and gender of each fauna relocated under condition 8(c);
   (v) the location of any fauna species, as listed in condition 8(c), 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(d)(v);
   (vii) the name of the fauna specialist that relocated fauna under condition 8(c); and
   (viii) a copy of the fauna licence authorising the relocation of fauna under condition 8(c).

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 7931/1.

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 2 March 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 -

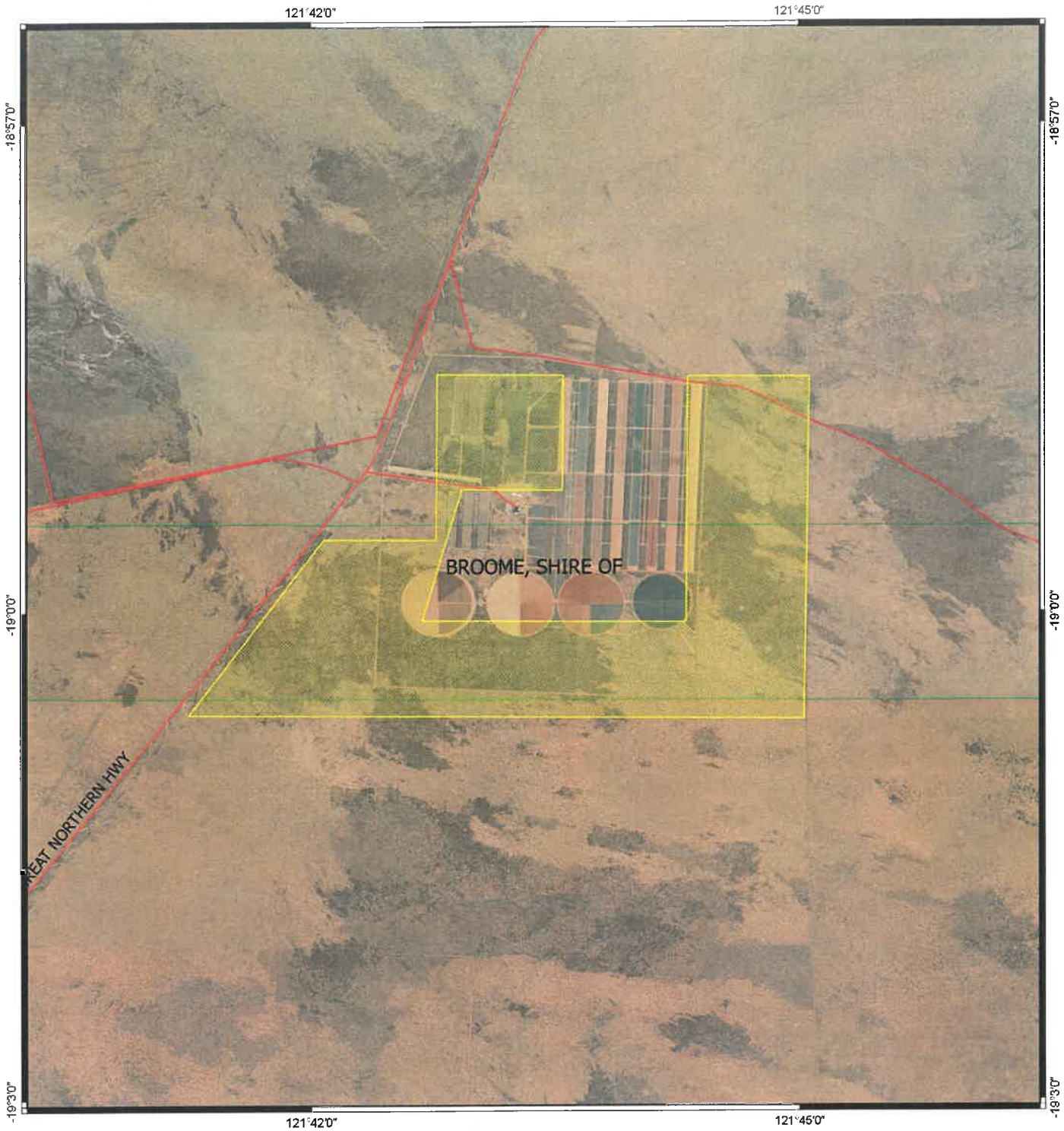
(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
(c) not indigenous to the area concerned.

Mathew Gannaway
MANAGER
CLEARING REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

4 May 2018

Plan 7931/1



Legend

- Areas approved to clear
- Roads
- LGA

WANow_Imagery

N

3000 0 3000 m

MGA 94
Geocentric Datum of Australia 1994

.....Date 4/5/18
Matthew Gannaway
Officer with delegated authority under Section 20
of the Environmental Protection Act 1986

GOVERNMENT OF
WESTERN AUSTRALIA

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7931/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shelamar Leasing Company Pty Ltd
Application received date: 21 December 2017

1.3. Property details

Property: Lot 46 on Deposited Plan 93190
Local Government Authority: Shire of Broome
Localities: Eighty Mile Beach

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
490		Mechanical Removal	Pastoral diversification

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 4 May 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*) and brush-tailed mulgara (*Dasycercus blythi*);
- the proposed clearing may cause appreciable land degradation in the form of wind and water erosion between clearing and crop establishment; and
- the proposed clearing may result in the spread of weeds into adjacent areas.

To minimise impacts to the greater bilby, brush-tailed mulgara, and spectacled hare-wallaby the clearing permit contains conditions requiring:

- pre-clearance surveys to identify the greater bilby and brush-tailed mulgara 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, brush-tailed mulgara 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 490 hectares of native vegetation (within a 1,371.7 hectare footprint) within Lot 46 on Deposited Plan 93190, Eighty Mile Beach, for the expansion of horticultural operations, including the installation of additional pivot-irrigated and drip-irrigated vegetable plots (see figure 1).

Vegetation Description The applicant commissioned Emerge Associates to conduct a flora and vegetation assessment of the application area (herein referred to as the Flora Assessment), between 24 and 28 July 2017. The Flora Assessment incorporated a study area of approximately 3052.68 hectares, which encompassed the application area.

The Flora Assessment identified two native vegetation communities within the application area (see figure 2) (Emerge Associates, 2017a; Emerge Associates, 2017b):

- Vegetation community CzT comprises low open woodland of *Corymbia zygophylla* with occasional other *Corymbia* sp. and *Terminalia* sp., over open shrubland of *Acacia monticola* over forbland of *Ptilotus calostachyus and Triodia schinzii* (comprised approximately 242.8 hectares of the application area); and
- Vegetation community AmT comprises open and closed forms:
  - The open form is described as open shrubland of *Acacia monticola* over open herbland of *Trianthema pilosum* over hummock grassland of *Triodia schinzii* (comprises approximately 268.9 hectares of the application area); and
  - The closed form is described as tall closed shrubland of *Acacia monticola* over hummock grassland of *Triodia schinzii* over open herbland comprising *Halgania solanacea* (comprised approximately 751.1 hectares of the application area).

The remainder of the application area comprises completely degraded areas devoid of vegetation (approximately 38 hectares) and historically cleared horticultural plots (approximately 70.2 hectares).

The application area is mapped as Beard vegetation association 699, which is described as 'shrublands, pindan; *Acacia eriopoda* shrubland with scattered low bloodwood (*Corymbia dichromophloia*) and *Eucalyptus* sp. over soft and curly spinifex on sandplain' (Shepherd et al., 2001).

Vegetation Condition

The Flora Assessments identified the vegetation under application as being in the following condition (see Figure 3) (Emerge Associates, 2017a; Emerge Associates, 2017b):

- Very good condition (approximately 1256.6 hectares);
- Good condition (approximately 6.2 hectares); and
- Completely degraded condition (approximately 108.2 hectares).

Soil type

The Yeeda and Nita Land Systems are mapped within the application area:

- The Yeeda Land System is described as sandplains of deep yellow and red sands with occasional dunes; and
- The Nita Land System is described as sandplain with deep red sands that support sparse low tree steppe grassland.

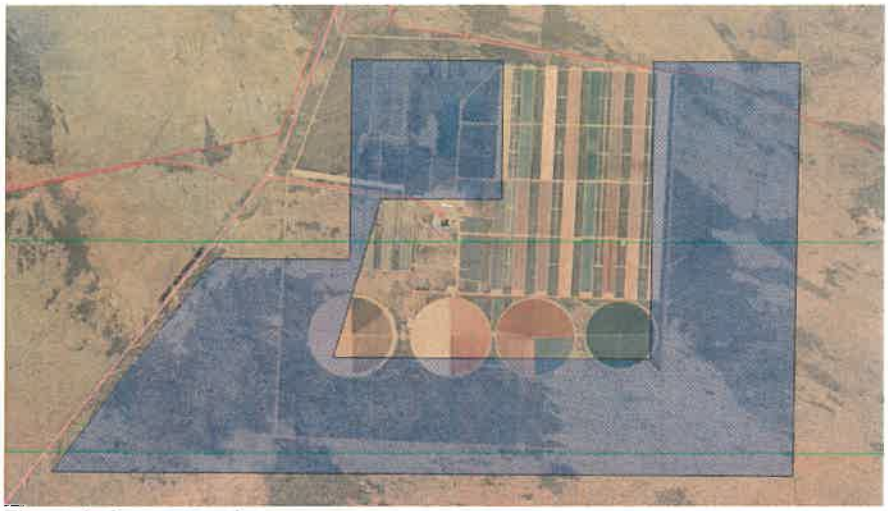


Figure 1. Application Area

Figure 2. Mapped Vegetation Types Within the Study Area

Figure 3. Mapped Vegetation Condition within the Study 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 applicant commissioned Emerge Associates to conduct a flora and vegetation assessment of the application area (the Flora Assessment), which was undertaken by two botanists between 24 and 28 July 2017. The Flora Assessment incorporated a study area of approximately 3052.68 hectares, which encompassed the application area (Emerge Associates, 2017a).

The Flora Assessment methodology involved botanists traversing the site on foot along transects which were strategically located in areas of suitable habitat for conservation significant flora species. A combination of opportunistic photographs and detailed vegetation sampling was also undertaken to describe and map vegetation (Emerge Associates, 2017a). Detailed sampling was undertaken at five locations using non-permanent relevés with each covering an area of approximately 50 metres by 50 metres. Vegetation condition was assigned at each sample location and changes in vegetation condition were also noted and mapped across the site (Emerge Associates, 2017a).

The Department of Biodiversity, Conservation and Attractions (DBCA) provided comment on the adequacy of the Flora Assessment and advised that "the timing of the survey is considered adequate for the majority of the targeted conservation significant flora" and that "survey effort would appear adequate in the context of the size of the application area, apparent absence of niche habitats and likely continuous extent of similar vegetation beyond the application area" (DBCA, 2018).

The Flora Assessment identified that the study area is primarily flat with some low rises and sandy red soils typical of pindan vegetation (Emerge Associates, 2017a). No drainage systems were observed within the survey area (Emerge Associates, 2017a).

As discussed within Section 2, the Flora Assessment identified two native vegetation communities within the application area (see figure 2), with vegetation community AmT comprising the majority of the application area (Emerge Associates, 2017a; Emerge Associates, 2017b).

A total of 86 native and one non-native (weed) species were recorded within the application area, representing 26 families and 66 genera. The dominant families containing native taxa were Fabaceae (16 native taxa) and Poaceae (15 native and one non-native taxa). *Acacia* was the most common genus with nine taxa (Emerge Associates, 2017b; Emerge Associates, 2017b)

The Flora Assessment identified that the majority of the native vegetation within the application area was largely undisturbed and in a very good condition (See section 2) (Emerge Associates, 2017a). The application area is not currently subject to stock grazing and disturbance within the site comprises occasional vehicle tracks and occasional non-native flora species (Emerge Associates, 2017a). Evidence of fire and subsequent changes to vegetation structure resulting from fire were identified within the application area, with the most recent fire estimated to have occurred approximately three to four years ago (Emerge Associates, 2017a).

One non-native species (excluding the horticulture crops) was recorded within the application area, being *Cenchrus ciliaris* (buffel grass), which was recorded in the north western portion of the application area (Emerge Associates, 2017a). 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.

The Flora Assessment noted that the study area is considered to comprise a diversity and structure that would be expected of largely undisturbed pindan vegetation within the region (Emerge Associates, 2017a).

Based on the suitability of habitat, it is considered that the application area may contain one rare flora species (*Seringia exastia*) and four priority (as listed by DBCA) flora species (Emerge Associates, 2017a). The four priority flora species include; *Dasymalla chorisepala* (Priority 3), *Seringia katatona* (Priority 3), *Terminalia kumpaja* (Priority 3) and *Tribulopis marliesiae* (Priority 3). It is noted that an additional three priority flora species were identified as being potentially present within the application area, being *Acacia glaucocaesia* (formerly Priority 3), *Phyllanthus eremicus* (formerly Priority 3), and *Pterocaulon intermedium* (formerly Priority 3) (Emerge Associates, 2017a). However since the Flora Assessment, the conservation status of these species has changed, and they are no longer listed as priority flora species by DBCA.

Of the abovementioned species, the Flora Assessment recorded two conservation significant flora within the larger study area, being *Seringia exastia* (classified as 'flora that are considered likely to become extinct or rare, as critically endangered flora' under the *Wildlife Conservation (Rare Flora) Notice 2017*) and *Seringia katatona* (Emerge Associates, 2017a). A total of 398 locations of *Seringia* sp. (being *Seringia exastia*, *Seringia katatona* and *Seringia nephrosperma*) were recorded within the study area. These species all have a similar appearance and it is noted that fine scale assessment of floral features is required to separate each to a species level. Of the 398 locations, only 38 plants were flowering and able to be identified to a species level, whereby the *Seringia* plants at the remaining locations were sterile and lacked the floral features required for species identification (Emerge Associates, 2017a).

Two of the 38 specimens collected were thought to be *Seringia exastia* and nineteen of the 38 specimens were determined to be *Seringia katatona*. The two *Seringia exastia* specimens were recorded approximately 550 metres from the north eastern portion of the application area (whereby the applicant has purposefully provided a 500 metre buffer to these occurrences) and 16 of the *Seringia katatona* specimens were identified within the application area (Emerge Associates, 2017a; Emerge Associates, 2017b).

The remaining specimens collected were determined to be *Seringia nephrosperma* (Emerge Associates, 2017a), which is not recognised as a species of conservation significance. The Flora Assessment concluded that, based on the frequency of records, the unidentified *Seringia* plants are most likely to be individuals of *Seringia katatona* or *Seringia nephrosperma,* rather than *Seringia exastia* (Emerge Associates, 2017a).

DBCA provided comment on the findings of the Flora Assessment, advising that "It is noted that the large number of the *Seringia* plants recorded in the Emerge (2017) survey were not flowering, despite the survey being appropriately timed and there being good seasonal conditions. *Seringia* are known as fire bushes...which re-sprout and flower profusely after fire or physical disturbance...It would appear that in the absence of fire or other disturbance, it would not be unusual to record a high proportion of sterile plants...On this basis, the Emerge (2017) survey is considered adequate for *Seringia* species, despite the high number of *Seringia* records within the application area not able to be identified to species level" (DBCA, 2018).

DBCA (2018) further advised that:

- "three species of *Seringia* species co-occur in the La Grange region, some co-occurring within the same immediate area;
- these species can be difficult to to distinguish in the La Grange region, and forms with immediate floral characters are present...;
- *Seringia exastia* is restricted to several populations, one at Broome, one on the eastern edge of Nita Downs and between one and several populations in the Great Sandy Desert...;[and]
- *Seringia katatona* is more widespread and variable than previously understood and downgrading of its conservation status has been recommended..."

While numerous records of *Seringia katatona* were recorded within the application area, based on the commonality of this species DBCA advised that "impacts to *Seringia katatona* are unlikely to be of conservation significance" (DBCA, 2018).

With specific regard to *Seringia exastia*, DBCA advised that "it would appear likely that the plants [recorded as *Seringia exastia*] within the area proposed to be cleared are *Seringia katatona*..." (DBCA, 2018) and concluded that "based on the currently available information on the distribution of *Seringia exastia* and the understanding of the taxonomy ...it would appear that there is a low likelihood of true *Seringia exastia* occurring within the proposal area" (DBCA, 2018).

Noting this advice, and that the application area maintains a 550 metre buffer to the recorded specimens initially thought to have been *Seringia exastia*, the proposed clearing is not likely to impact on this species.

No other threatened or priority flora species were recorded within the application area (Emerge Associates, 2017a) and it is unlikely that the application area includes any other conservation significant flora species.

As discussed under Principle (d), there are no threatened ecological communities (TEC's) mapped within the local area, and noting that neither of the two vegetation types recorded within the application area are representative of any known TEC's, 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. There are two PEC's mapped within the local area, identified below:

- The Parda Land System (Priority 3), is described as conical hills, stony ring plains, alluvial plains and shallow valleys supporting spinifex grassland with sparse shrubs and trees (mapped approximately 22 kilometres east of the application area); and
- 'Vegetation Association 37 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979)' (Priority 3) is described as shrublands comprising teatree thicket (mapped approximately four kilometres west of the application area) (Shepherd et al., 2001).

The application area is mapped as Beard vegetation association 699, and a Flora Assessment of the application area did not identify any vegetation types considered to be representative of either PEC. Therefore, no PECs are considered likely to occur within the application area, and noting the distance to these PEC's, the proposed clearing is not likely to impact on these communities.

Excluding marine species, there are records of 39 conservation significant fauna species recorded within the local area (Parks and Wildlife, 2007-). These include the following:

- two terrestrial species 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);
- one non-migratory avian species listed as 'other specially protected fauna' under the WC Fauna Notice;
- one terrestrial species listed as Priority 2 by DBCA;
- one terrestrial species listed as Priority 4; and
- 34 migratory avian species, of which one is listed as 'fauna that is rare or is likely to become extinct as endangered fauna' under the WC Fauna Notice, five are listed as 'fauna that is rare or is likely to become extinct as vulnerable fauna' under the WC Fauna Notice, one is Priority 4, and 27 are protected under international agreement.

Of these, a Fauna Assessment of the application area identified evidence of the greater bilby (*Macrotis lagotis*) (Bamford Consulting Ecologists, 2017), which is listed as 'fauna that is rare or is likely to become extinct as vulnerable fauna' under the WC Fauna Notice. Noting this, the application area may provide significant habitat for this species. Whilst not previously recorded within the local area, It is likely that evidence of the Brush-tailed mulgara (*Dasycercus blythi*) (Priority 4) was also identified within the application area (Bamford Consulting Ecologists, 2017), and the application area may also provide significant habitat for this species. The application area also provides suitable habitat for the spectacled hare-wallaby (*Lagorchestes conspicillatus* subsp. *leichardtii*) (Priority 4), and while unlikely to be significant for this species, the proposed clearing may result in fauna mortalities should this species occur on site at the time of clearing.

Based on known habitat requirements, the application area is considered unlikely to comprise significant habitat for any other conservation significant fauna species.

As the application area contains vegetation predominantly in a very good (Keighery, 1994) condition, one Priority 3 flora species and habitat that is utilised by the greater bilby and brush-tailed mulgara, 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 and brush tailed-mulgara, the applicant will be required to:

- Conduct pre-clearance surveys to identify greater bilbies and brush-tailed mulgara within the application area;
- Relocate any greater bilbies and brush-tailed mulgara recorded during the pre-clearance survey; and
- Undertake slow progressive directional clearing to allow greater bilby, brush tailed-mulgara and spectacled hare-wallaby to move into adjacent habitat.

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

Excluding marine species, there are records of 39 conservation significant fauna species recorded within the local area (Parks and Wildlife, 2007-). The applicant commissioned Bamford Consulting Ecologists (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 24 and 28 July 2017 and involved initially islowly driving along all accessible vehicular tracks looking for fauna evidence. Following the vehicle based search, transects were walked across the study area (largely at distances less than 500 metres apart), with greater searching intensity where evidence had been found during the vehicle based search. These transects were diagonal and walked to access the most distant corners of the larger study area, which were supplemented by additional walking transects (Bamford Consulting Ecologists, 2017).

The Fauna Assessment noted that species likely to be present within the application area, that could be impacted by the proposed clearing, include the greater bilby, brush-tailed mulgara, spectacled hare wallaby and woma (*Aspidites ramsayi*) (Bamford Consulting Ecologists, 2017). The Fauna Assessment determined that these species are considered likely to be present given that the project area is within their home range, and supports suitable habitat for these species in the form of *Acacia* shrublands and spinifex on sand and sandy loam plains (Bamford Consulting Ecologists, 2017). The woma is referred to within the Fauna Assessment as a Priority 4 species, however, this species is no longer listed as Priority 4 by DBCA and is no longer considered to be conservation significant (not to be confused with the southwest sub population of this species which is listed as Priority 1).

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 types within the application area (Emerge Associates, 2017a), it is considered that suitable habitat for this species occurs within the application area.

The Fauna Assessment did not identify any evidence of spectacled hare-wallaby, however it noted that this species can be difficult to detect, and with recent records in the general area it should be assumed to be present within the application area (Bamford Consulting Ecologists, 2017). Previous advice from the former Department of Parks and Wildlife (Parks and Wildlife) regarding this species for a nearby clearing permit application, 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.

The greater bilby largely occupies three major vegetation types; open tussock grassland on uplands and hills, mulga woodland or shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas (Department of the Environment and Energy, 2016). In Western Australia, the distribution of the greater bilby is highly fragmented with populations occurring in the Gibson Desert and Great Sandy Desert bioregions, Pilbara bioregion, Dampierland (along Eighty Mile Beach and north to Beagle Bay), and in the Central Kimberley and Ord-Victoria Plains bioregions south of the Fitzroy and Margaret Rivers (Pavey, 2006). Based on the vegetation types recorded within the application area, it is considered to provide suitable habitat for this species.

The Fauna Assessment identified three areas of recent greater bilby activity within the application area;

- Fresh tracks (considered to be less than a week old), as well as older foraging holes, identified within the north eastern portion of the application area. The tracks were found on the first day and the Fauna Assessment notes that there were no new tracks or fresh foraging signs within the area later in the week, which indicates that the evidence was likely from a single, young (based on footprint size) greater bilby passing through;
- Three burrows and numerous foraging holes over an area of less than one hectare within the western portion of the application area. The lack of footprints and presence of one scat suggests that this location had not been occupied for several months. The extent of activity suggests that a single greater bilby had been resident for a short period of time and had then moved on; and
- A short line of footprints along the main vehicular track running through the centre of the application area. The prints were assumed to be less than one week old and may have been from the same greater bilby that had passed through the north western portion of the application area.

The abovementioned evidence indicates that greater bilbies occur within the application area, most likely as regular transients in small numbers, and occasionally as short term residents. The Fauna Assessment noted that no large areas of intensive and long term foraging were found, and there were no old burrows, which would be expected if greater bilbies were regular, long term residents (Bamford Consulting Ecologists, 2017).

DBCA provided comment on the findings with regards to the greater bilby and advised that "given bilby occurrence has been confirmed within the application area…the local bilby population will be impacted by vegetation clearing activities (DBCA, 2018). To minimise impacts to greater bilbies DBCA recommended that "targeted bilby pre-clearance survey(s) must be undertaken prior to any vegetation clearing.... The pre-clearance survey should be undertaken no less than two weeks before vegetation clearing activities commence ..." (DBCA, 2018). 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, 2018).

The brush-tailed mulgara occupies spinifex (*Triodia* spp.) grasslands, and burrows in flats between sand dunes (Woolley, 2017) and based on the vegetation types recorded within the application area (Emerge Associates, 2017a), the application area is considered to provide suitable habitat for this species. The fauna survey identified two potential brush-tailed mulgara burrows within the study area (one of these was recorded within the application area), but these were considered unconfirmed, as there were no supporting tracks or scats (Bamford Consulting Ecologists, 2017). The Fauna Assessment noted that if the burrows were from a brush-tailed mulgara, they suggest a low population density, as burrows are found regularly in areas where this species are common (Bamford Consulting Ecologists, 2017).

DBCA provided comment on the brush-tailed mulgara findings and advised that "As the location of the survey is approximately 200 kilometres north of any previously known mulgara records, confirmation of these records as mulgara would represent a range extension for the species. Similar mulgara burrows have recently been recorded in the regional area of this application…As mulgara are burrowing species, they are also vulnerable to mechanical clearing methods" (DBCA, 2018).

To minimise impacts to the brush-tailed mulgara DBCA advised that "the pre-clearance survey(s) should also include searches for mulgara burrows…Additional survey may confirm the species presence and result in a range extension together with determining actual species identification, which is anticipated to be the brush-tailed mulgara" (DBCA, 2018).

Given that the application area provides suitable habitat for the greater bilby and brush-tailed mulgara, that evidence of these species was identified within the application area, and extent of clearing proposed (490 hectares), the proposed clearing may be at variance to this Principle.

To minimise direct impacts to the greater bilby, brush tailed mulgara and spectacled hare-wallaby, the applicant will be required to:

- conduct pre-clearance surveys to identify the greater bilby and brush-tailed mulgara within the application area;
- relocate any greater bilby and brush-tailed mulgara recorded during the pre-clearance survey; and
- undertake slow progressive directional clearing to allow the greater bilby, brush-tailed mulgara, and spectacled hare-wallaby 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
As discussed under Principle (a), a total of 398 locations of *Seringia* sp. (being *Seringia exastia*, *Seringia katatona* and *Seringia nephrosperma*) were recorded within the study area, of which 38 specimens were identified to species level. Two of these specimens were identified as the rare flora species *Seringia exastia* (Emerge Associates, 2017a). The applicant considered these findings and as a result has ensured that a minimum 500 metre buffer was provided to these occurrences, with both specimens recorded approximately 550 metres from the north eastern portion of the application area (Emerge Associates, 2017b).

DBCA provided comment on the findings of the Flora Assessment, advising that "It is noted that the large number of the *Seringia* plants recorded in the Emerge (2017) survey were not flowering, despite the survey being appropriately timed and there being good seasonal conditions. *Seringia* are known as fire bushes...which re-sprout and flower profusely after fire or physical disturbance...It would appear that in the absence of fire or other disturbance, it would not be unusual to record a high proportion of sterile plants...On this basis, the Emerge (2017) survey is considered adequate for *Seringia* species, despite the high number of *Seringia* records within the application area not able to be identified to species level" (DBCA, 2018).

With regard to *Seringia exastia* DBCA advised that "*Seringia exastia* is restricted to several populations, one at Broome, one on the eastern edge of Nita Downs and between one and several populations in the Great Sandy Desert..." (DBCA, 2018). DBCA further advised that "it would appear likely that the plants [recorded as *Seringia exastia*] within the area proposed to be cleared are *Seringia katatona*..." (DBCA, 2018) and concluded that "based on the currently available information on the distribution of seringia exastia and the understanding of the taxonomy ...it would appear that there is a low likelihood of true *Seringia exastia* occurring within the proposal area" (DBCA, 2018).

Noting this advice, and that the application area maintains a 550 metre buffer to the recorded specimens initially thought to have been *Seringia exastia*, the proposed clearing is not likely to impact on this species.

No other rare flora species have been recorded within the local area, and noting that none were identified within the Flora Assessment, the proposed clearing is not likely to impact on any other rare flora species.

Given the above, 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, there are no known TECs within the local area. The nearest TEC to the application area is the 'Assemblages of the organic springs and mound springs of Mandora Marsh area', located approximately 80 kilometres south.

According to available databases, no springs are mapped within the application area, and none were recorded within the Flora Assessment, which noted that the application area supports two native plant communities, of which neither represent a TEC (Emerge Associates, 2017a). 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, retains greater than 99 per cent pre-European vegetation extent (Government of Western Australia, 2018).

The vegetation within the application area is mapped as Beard vegetation association 699 which retains approximately 99.7 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 (735,465 hectares) of its pre-European vegetation extent (taking into account the coastal water mark). The application area represents approximately 0.066 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 734,975 hectares.

While the application area may be significant as a remnant as it contains a Priority 3 flora species and suitable habitat for conservation significant fauna, noting that 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 a minor non perennial watercourse located approximately 3.5 kilometres east. The closest mapped wetland is the Ramsar listed Eighty Mile Beach, which is located approximately 16 kilometres west.

The Flora Assessment did not identify riparian vegetation within the application area (Emerge Associates, 2017a). 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 (comprises approximately 80 per cent of the application area) and Nita Land System (comprises approximately 20 per cent of the application area).

The Flora Assessment described the application area as being primarily flat, with some low rises and sandy red soils typical of pindan soils (Emerge Associates, 2017a).

Historical advice from the Deputy Commissioner of Soil and Land Conservation (DCSLC) relating to a previous application (CPS 6962/1, comprised 1470 hectares)) encompassing the application area, advised that the application area contains normal phase and loamy phase Cockatoo sands, which are described as:

- normal phase: red to dark red loamy sand to clayey sand grading to sandy loam or light sandy clay loam subsoils from 1-2 metres; and
- loamy phase: dark reddish brown to dusky red topsoil with a texture of loamy sand or clayey sand (DCSLC, 2016).

The DCSLC (2016) advised that the proposed clearing associated with CPS 6962/1 was not likely to cause land degradation via waterlogging, salinity or eutrophication (DCSLC, 2016).

The DCSLC (2016) further advised that these soil types are moderately susceptible to wind erosion following clearing. Noting the extent of clearing proposed, there is the potential for wind erosion to cause land degradation should the surface soils within the application area be exposed post clearing and during the establishment of crops.

The Flora Assessment noted the largely flat topography and lack of surface drainage within the application area, advising that water is most likely to be retained on the surface (Emerge Associates, 2017b). Given the episodic high intensity rainfall typically experienced in the region, especially during the accumulation of rainfall over the wet season, sheet flow of surface water may occur following periods of heavy rainfall and there is the potential for the proposed clearing to result in water erosion.

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.

The applicant provided information that relates to land degradation within the application area and advised that (Emerge Associates, 2017b):

- Vegetation will be retained between each proposed pivot and irrigation drip locations to an approximate width of 75 metres, to provide a buffer to prevent wind and water erosion within any cleared areas, consistent with the current operations;
- No evidence of significant soil erosion was noted during the flora and vegetation survey attributed to the current operations, and no evidence of the land degradation affecting the health of adjacent vegetation was observed; and
- The proposed expansion will employ similar management techniques to the current operations, and therefore is unlikely to cause significant land degradation.

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 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 the Ramsar listed Eighty Mile Beach site and the Jinmarnkur Conservation Park, which are located approximately 16 kilometres and 17 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. The application area contains mildly sloping terrain, and sheet flow may occur following heavy rainfall (DCSLC, 2016), however noting the distance to the closest mapped wetland or watercourse (a minor non perennial watercourse located approximately 3.5 kilometres west), 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.

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

Mean annual rainfall at Anna Plains weather station, located approximately 30 kilometres south-west of the application area, is approximately 412 millimetres (BoM, 2016). 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).

Historical advice from the DCSLC relating to a previous application (CPS 6962/1, comprised 1470 hectares)) encompassing the application area, advised that for the proposed clearing of CPS 6962/1 (which comprised a larger area encompassing the application area) sheet flow may occur following heavy rainfall, which is typically experienced by the region. Therefore, the proposed clearing of 490 hectares may increase the risk of short term localised flooding following periods of heavy rainfall, which is commonly experienced by the region.

However, noting that the applicant will retain vegetative buffers between horticultural pivots, 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.

On 24 February 2016, the applicant applied to clear 1470 hectares of native vegetation within Lot 46 on Deposited Plan 93190, Eighty Mile Beach (CPS 6962/1), which encompassed the current application area. The application was refused on the basis that that the proposed clearing of 1,470 hectares may impact on rare and priority flora and significant habitat for the greater bilby (*Macrotis lagotis*; rare or likely to become extinct under the *Wildlife Conservation Act 1950*) and spectacled hare-wallaby

(*Lagorchestes conspicillatus* subsp. *leichardti*; priority 3). No biological survey information was provided and a precautionary approach was taken in refusing that application.

Since the refusal of CPS 6962/1 the applicant has re-applied for an application to clear a significantly smaller area of native vegetation, comprising 490 hectares (being the current application). The applicant has also commissioned biological surveys to support the application and allow a determination to be made on the significance of impacts to conservation significant flora and fauna species.

The clearing permit application was advertised on the DWER website on 24 January 2018 with a 21 day submission period. One public submission was received in relation to this application.

The Submission (2018) objects to the proposed clearing and advised the following:

- The application needs to be assessed within the broader context of land clearing throughout the Kimberley region.
- A strategic review to assess the impact of clearing across the entirety of the Kimberley landscape should be undertaken.
- More thorough field surveys need to be completed as part of an EPA Public Environmental Review for the application before a decision is made.
- Key concerns include impacts to target flora, vegetation, fauna and hydrology (especially underground springs) of specifically the Shelamar Station
- How the application fits into the broader regional context;
- There are concerns relating to the number of clearing permits currently being sought in the Kimberley region and the impact such clearing will have of the overall ecosystem.
- Huge portions of land currently have clearing proposals either under assessment or have been approved; from the Ord River down to the Fitzroy and further south to Eighty Mile Beach, including this application.
- A strategic review of the Kimberley is needed to establish integrated landscape management, to better manage the environmental impacts of numerous developments and to give industry direction on suitable and sustainable projects for this region.

The submission recommended that a whole of landscape approach to biodiversity conservation be considered when assessing this application and a delay in decision until a strategic review takes place, or an EPA Public Environmental Review is undertaken. The submission concluded that local communities and Traditional Owners should have the opportunity to understand and give feedback on the impacts they may be facing if this application is granted (Submission, 2018).

Noting that the applicant has undertaken biological surveys to inform the extent of impacts as a result of the proposed clearing, and that the applicant will be required to undertake specific management measures to prevent direct impacts to conservation significant fauna and minimise the risk of land degradation and spread of weeds, it is considered that the proposed clearing will not lead to an unacceptable risk to the environment.

The Shire of Broome provided comment on the application and advised that "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, under which the subject land is zoned 'general agriculture'. On this basis, the Shire does not wish to register any objections" (Shire of Broome, 2018).

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 proponent has a current groundwater licence (GWL161367) for five gigalitres per annum (GL/a), to facilitate Stage 4a of the Shelamar expansion. This licence was issued on 21 December 2017 and expires 21 December 2027. The approved expansion includes two additional 40 hectare pivot areas which are associated with this clearing permit application.

The proponent has also submitted an application to DWER to an allocation of 14.504 (GL/a) as part of a staged approach to the expansion (Stage 4b and Stage 5), which is currently under assessment by DWER. Stage 4b, is proposed to include eight pivots, all of which are associated with the current application.

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.

To minimise environmental impacts associated with the proposed end land use, the applicant has advised that the following measures will be undertaken (Emerge Associates, 2017b):

- Irrigation will cease prior to and during forecast high rainfall events and when soils have reached likely field capacity, to reduce the potential for water erosion.
- Efforts to maintain the topsoil structure will be made to minimise the risk of water erosion and
- Bunds and sedimentation ponds will also be constructed, if required, to prevent erosion during storm events (Emerge Associates, 2017b).
- The potential for nutrient loss to groundwater and surrounding areas will be managed through the monitoring of soil conditions, irrigation scheduling and wet season management of soluble fertilisers; and
- Weed control will be undertaken using registered and approved herbicides and application rates, to ensure no impact will occur on the quality of surface or underground groundwater.

The DCSLC provided land degradation advice for the aforementioned CPS 6962/1 application, which encompassed the application area nd advised that the soil types mapped within the application area have a moderate to high capability for the proposed land use of horticulture (DCSLC, 2016).

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

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