



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 5519/1
Permit Holder:	Commissioner of Main Roads Western Australia
Duration of Permit:	12 March 2016 to 12 March 2046

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 extracting road materials.

2. Land on which clearing is to be done

Lot 72 on Deposited Plan 220217, Francois Peron National Park
Shark Bay Road reserve (PIN 1388337), Francois Peron National Park
Lot 96 on Deposited Plan 218858, Francois Peron National Park
Lot 73 on Deposited Plan 238404, Nanga
Part Lot 220 on Deposited Plan 220521, Hamelin Pool
Lot 343 on Deposited Plan 38362, Hamelin Pool
Shark Bay Road reserve (PIN 1388348), Hamelin Pool
Lot 365 on Deposited Plan 48608, Tamala
Useless Loop Road reserve (PIN 1223387), Tamala
Unallocated Crown land (PIN 1223390), Shark Bay

3. Area of Clearing

The Permit Holder must not clear more than 197 hectares of native vegetation within the combined areas hatched yellow on attached Plan 5519/1 (a), Plan 5519/1 (b), Plan 5519/1 (c), Plan 5519/1 (d) and Plan 5519/1 (e).

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.

5. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 12 March 2036.

6. Period in which clearing is authorised

The Permit Holder shall not clear more than 3 hectares of native vegetation during a 12 month period within each of the areas hatched yellow on attached Plan 5519/1 (a), Plan 5519/1 (b), Plan 5519/1 (c), Plan 5519/1 (d) and Plan 5519/1 (e).

7. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the purpose described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for that purpose under the *Main Roads Act 1930* or any other written law.

PART II – MANAGEMENT CONDITIONS

8. Avoid, minimise etc 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.

9. Weed control

When undertaking any clearing or other activity pursuant to 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) Ensure that no *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) Restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

10. Flora management

With regards to *priority flora* that have been identified and their written locations provided to the CEO within the ‘Shark Bay and Useless Loop Road Strategic Material Areas Targeted Flora Survey’, the Permit Holder shall ensure that:

- (a) no clearing occurs within 50 metres of priority 1 flora species *Thryptomene sp. Carrarang*, unless approved by the CEO in writing; and
- (b) no clearing occurs within 10 metres of priority 2 flora species *Abutilon sp. Hamelin* or priority 3 flora species *Lepidium biplicatum*, *Anthocercis intricata* and *Grevillia rogersoniana*, unless approved by the CEO in writing.

11. Revegetation Plan

The Permit Holder must implement and adhere to the document ‘Revegetation Plan’, Useless Loop and Shark Bay Strategic Material Sources, dated October 2015.

12. Topsoil Management Plan

The Permit Holder must implement and adhere to the documents ‘Useless Loop Road SLK 56 Topsoil Management Plan’ and ‘Useless Loop Road SLK 28.7 Topsoil Management Plan’.

PART III – MONITORING, RECORD KEEPING AND REPORTING

13. Records to 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 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 or decimal degrees;
 - (ii) the date that the area was cleared; and
 - (iii) the size of the area cleared (in hectares).
- (b) The Permit Holder must maintain a description of the activities undertaken in relation to Conditions 11 and 12 of this permit.

14. 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 13 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 April of each year.
- (c) Prior to 12 December 2045 the Permit Holder must provide to the CEO a written report of records required under condition 13 of this Permit where these records have not already been provided under condition 14(a) of this Permit.

DEFINITIONS

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

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;

priority flora means those plant taxa described as priority flora classes 1, 2, 3, 4 or 5 in the *Department of Parks and Wildlife's Threatened and Priority Flora List for Western Australia* (as amended);

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 Parks and Wildlife Regional Weed Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

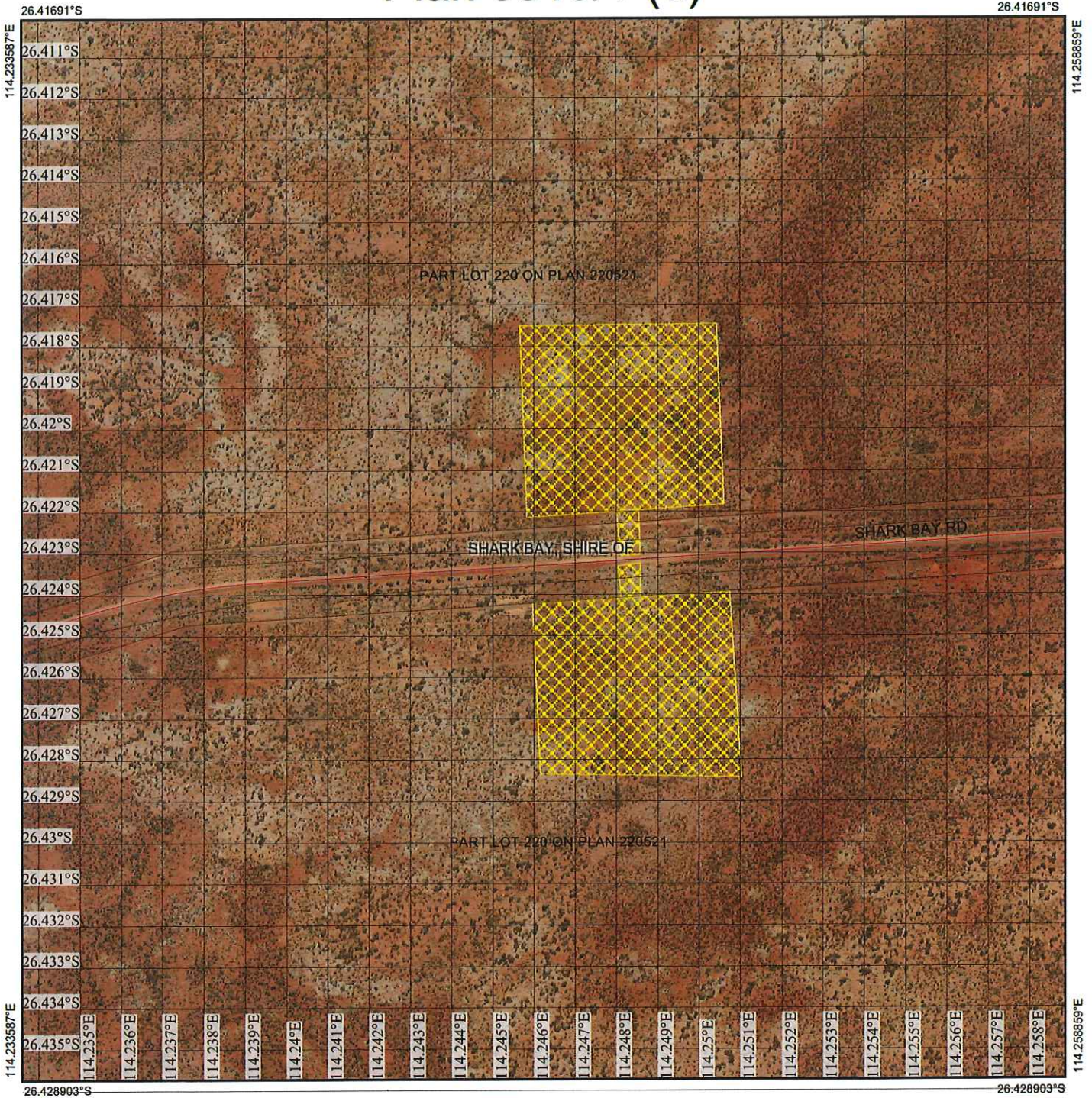


James Widenbar
A/SENIOR MANAGER
CLEARING REGULATION

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

11 February 2016

Plan 5519/1 (a)



Legend

-  Cadastre
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



1:13,365

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

James Widenbar Date *17/2/2011*

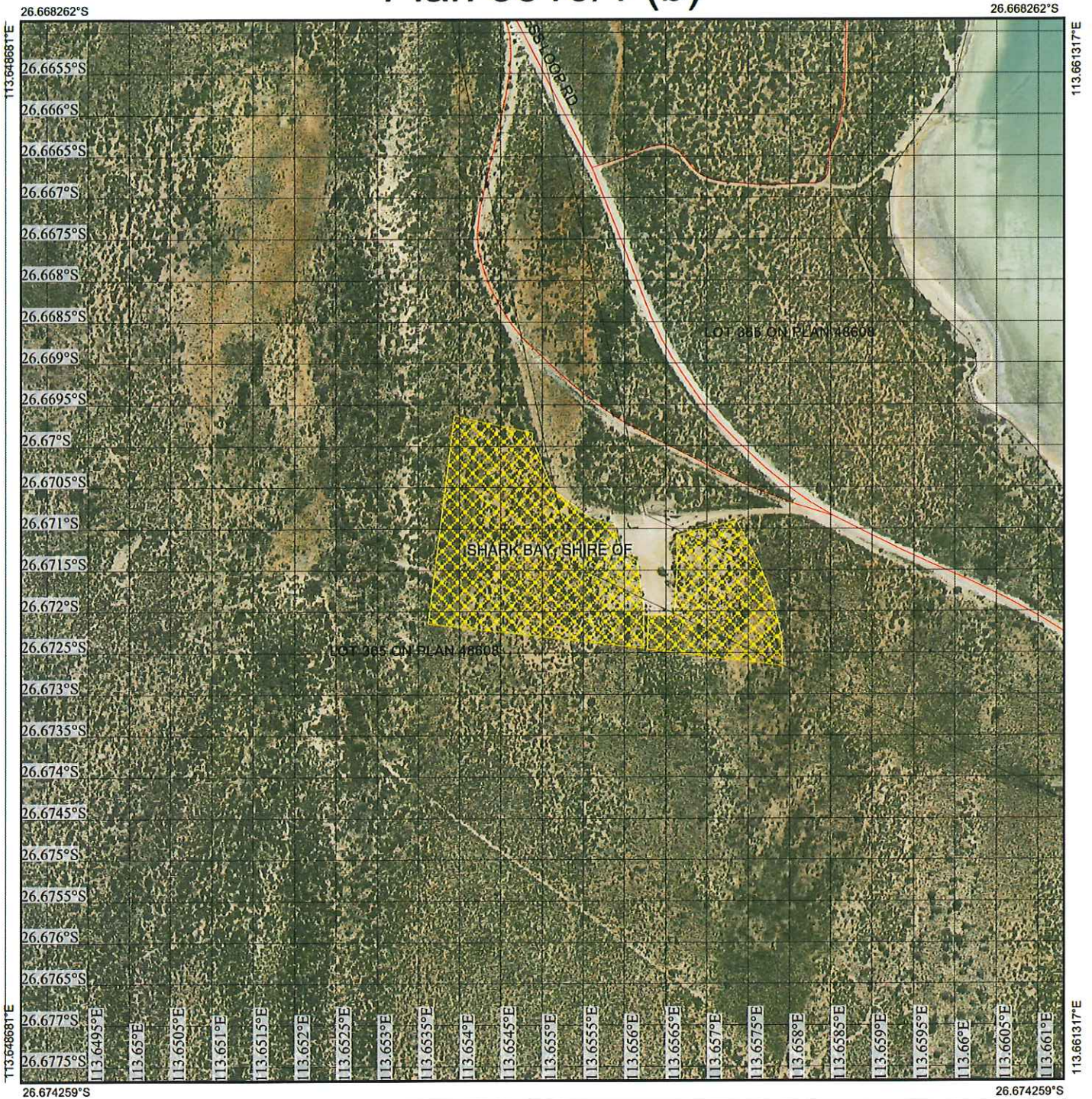
James Widenbar

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



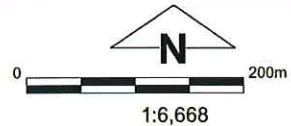
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Plan 5519/1 (b)



Legend

-  Cadastre
-  Roads
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority

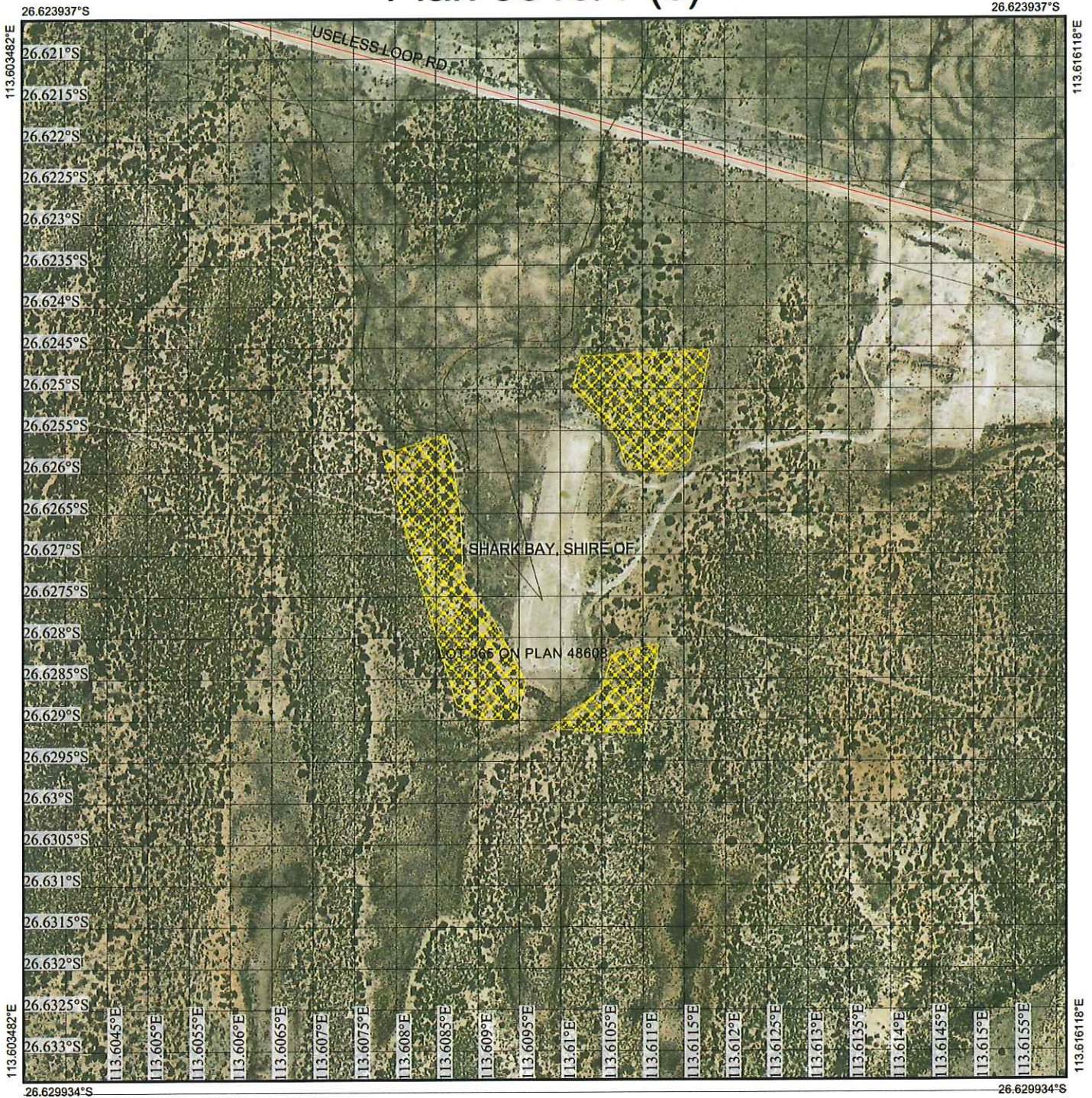


(Approximate when reproduced at A4)
GDA 94 (Lat/Long)
Geocentric Datum of Australia 1994

James Widenbar
Date *11/2/2018*
James Widenbar

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

Plan 5519/1 (c)



Legend

-  Cadastre
-  Roads
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



1:6,670

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

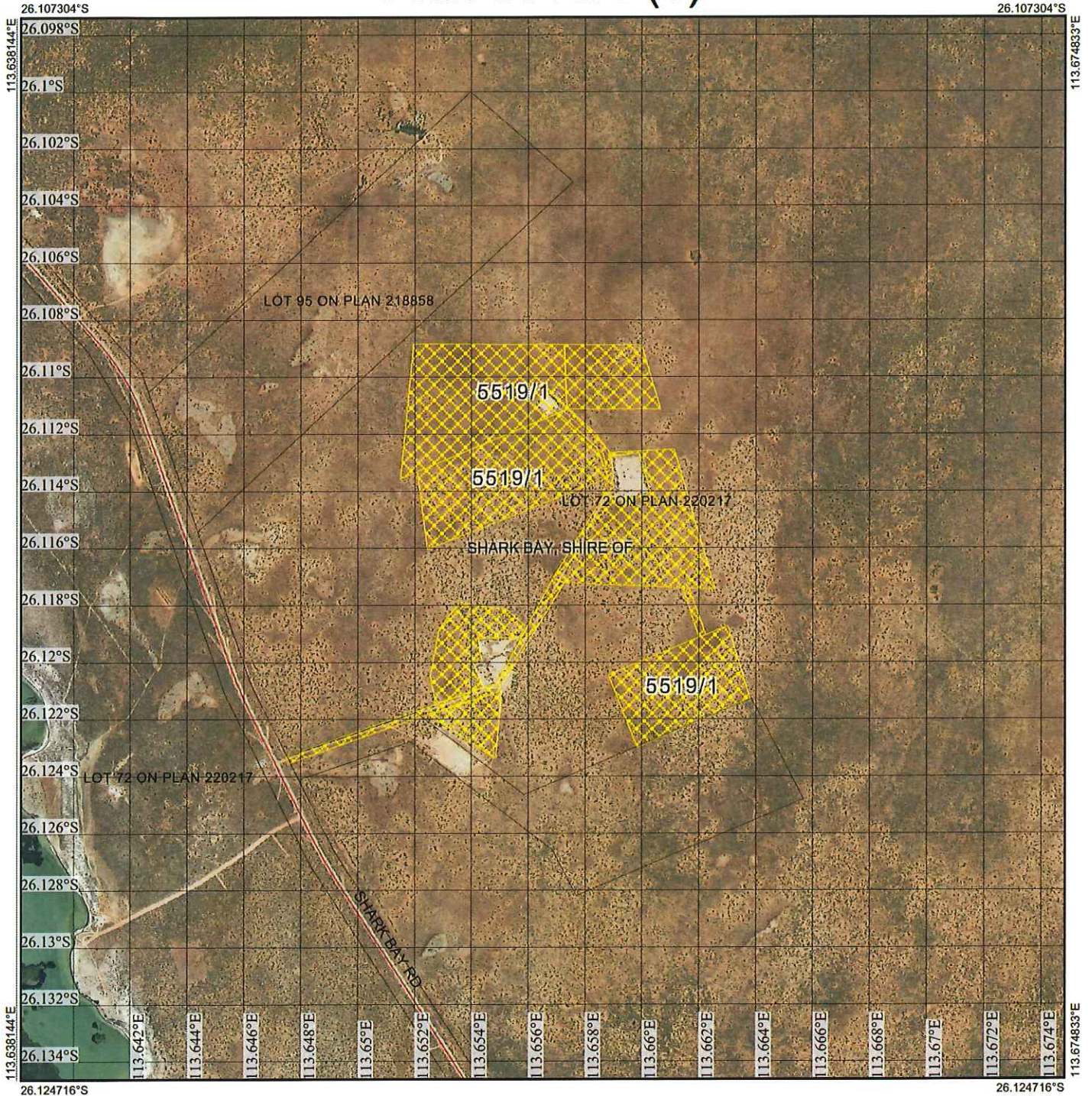
Geocentric Datum of Australia 1994

James Widenbar Date *11/12/2016*
 James Widenbar

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



Plan 5519/1 (d)



Legend

-  Cadastre
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



(Approximate when reproduced at A4)
GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

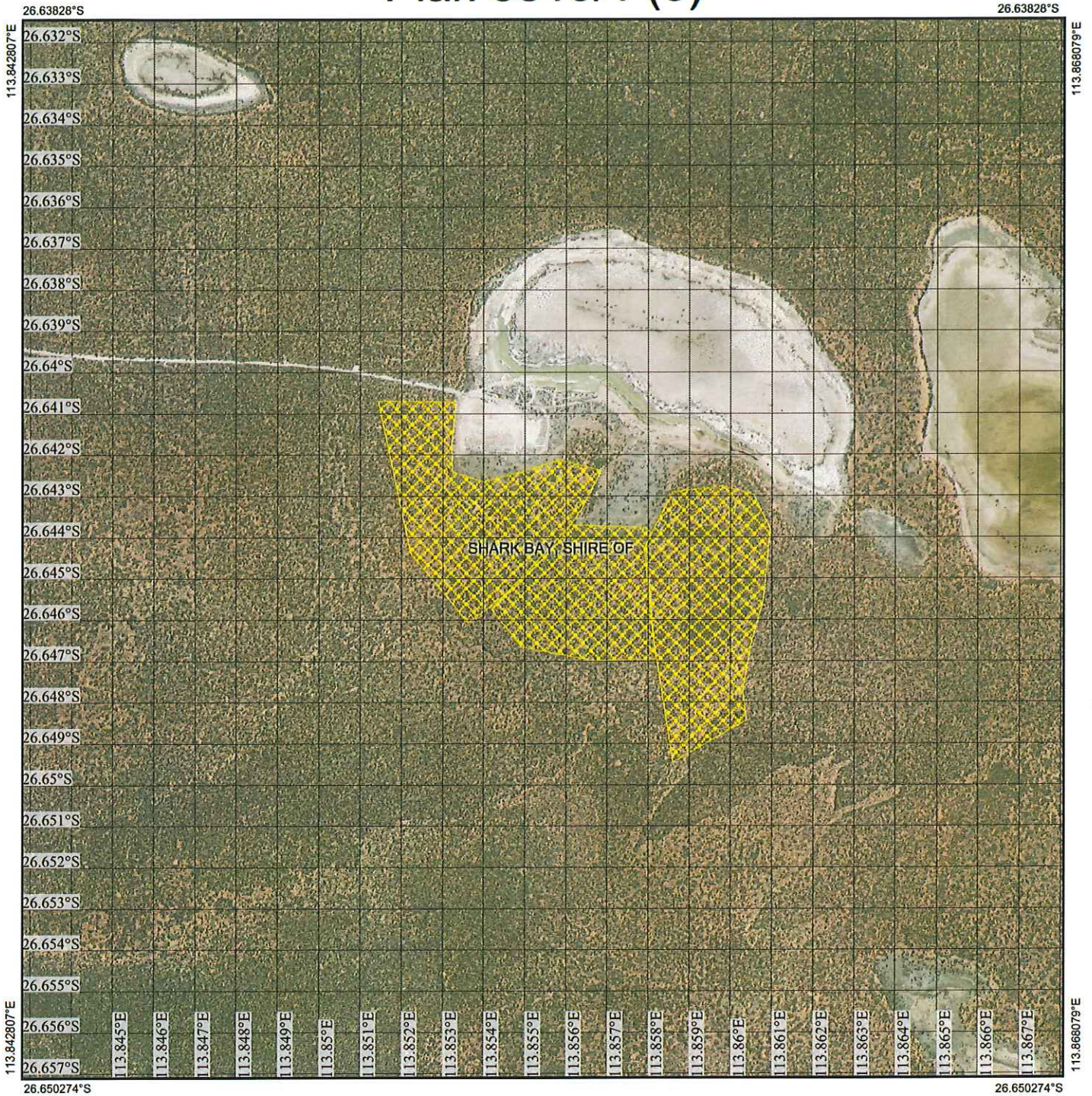
James Widenbar Date *11/2/2016*
James Widenbar

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



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Plan 5519/1 (e)



Legend

-  Cadastre
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



1:13,340

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

James Widenbar Date *11/2/2016*
 James Widenbar

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



1. Application details

1.1. Permit application details

Permit application No.: 5519/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Commissioner of Main Roads Western Australia

1.3. Property details

Property: UNALLOCATED CROWN LAND, SHARK BAY
ROAD RESERVE - 1223387, TAMALA
ROAD RESERVE - 1388337, FRANCOIS PERON NATIONAL PARK
ROAD RESERVE - 1388348, HAMELIN POOL
LOT 343 ON PLAN 38362, HAMELIN POOL
LOT 365 ON PLAN 48608, TAMALA
LOT 72 ON PLAN 220217, FRANCOIS PERON NATIONAL P
LOT 73 ON PLAN 238404, NANGA
LOT 96 ON PLAN 218858, FRANCOIS PERON NATIONAL PARK
PART LOT 220 ON PLAN 220521, HAMELIN POOL
SHARK BAY, SHIRE OF
Midwest
GERALDTON and SHARK BAY
SHARK BAY
Local Government Authority: SHARK BAY and HAMELIN POOL and TAMALA and NANGA and FRANCOIS PERON
DER Region: NATIONAL PARK
DPaW District:
LCDC:
Localities:

Reasons for Decision:

The clearing application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and has concluded that the proposed clearing is at variance to principles (f) and (h), may be at variance to principles (a) and (i), is not at variance to principle (e) and is not likely to be at variance to the remaining clearing principles.

Through assessment it has been determined that the clearing may significantly impact priority flora species. Flora management measures restricting any clearing occurring within 50 metres of the specified priority1 flora species and within 10 metres of the specified priority 2 and 3 flora species will minimise impacts on priority flora species.

Through assessment it has been determined that the clearing will directly and indirectly impact on adjacent birridas (non perennial lakes). The implementation of a Topsoil Management Plan and Revegetation Plan, outlining specific birrida management measures and requiring progressive rehabilitation to be undertaken incrementally post clearing will assist in managing and mitigating these impacts.

Through assessment it has been determined that the clearing will directly impact environmental values of conservation areas through the introduction or spread of weeds. Weed management measures will minimise impacts to the conservation areas. Furthermore implementation of the Revegetation Plan will assist in mitigating any long term impacts to environmental values of the conservation areas.

Relevant State policies and other relevant policies have been taken into consideration in the decision to grant a clearing permit.

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
197		Mechanical Removal	Extractive Industry

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 11 February 2016

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Shark Bay Road Site SLK 21 (Plan (a)) is mapped as Beard vegetation association 242, consisting of succulent steppe with scrub, snakewood over saltbush and Beard vegetation association 243, consisting of shrublands, bowgada and minniritchi (Shepherd et al, 2001). Shark Bay Road Site SLK 102 (Plan (d)) is mapped as Beard Vegetation Association 112, consisting of hummock grassland, shrub steppe and Acacia ligulata over Triodia plurinervata (Shepherd et al, 2001).</p>	<p>The road material extraction areas comprise five separate areas along Useless Loop and Shark Bay Roads within the Shire of Shark Bay. The area of proposed clearing is 197 hectares over a period of 20 years.</p>	<p>Pristine: No obvious signs of disturbance (Keighery 1994)</p> <p>To</p> <p>Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)</p>	<p>Site SLK 21 comprises areas of tall open Acacia dominated shrubland (including Acacia tetragonophylla, Acacia grasbyi and Acacia drepanophylla) and areas of tall open shrubland of Acacia ramulosa var ramulosa and Acacia xiphophylla (GHD, 2009). The vegetation at this site ranges from good to completely degraded (Keighery, 1994) in condition.</p> <p>Site SLK 102 comprises open shrubland over tussock grassland, with scattered emergent shrubs and mixed open shrubland on limestone (GHD, 2009). The vegetation at this site is predominantly in a degraded (Keighery, 1994) condition due to the effects of historical grazing and weed invasion.</p>
<p>Useless Loop Road Site SLK 28.7 (Plan (e)) is mapped as Beard Vegetation Association 368, consisting of shrublands tree-heath between sandhills with Banksia ashbyi, Grevillea gordoniana, Acacia spp., Melaleuca and mallee (Shepherd et al, 2001).</p>			<p>Site SLK 28.7 is the most biologically diverse site, comprising eight vegetation types. These include tall shrubland to open heath of Acacia rostellifera, Banksia ashbyi and Calothamnus formosus, mixed shrubland to open heath over very open grassland, tall open shrubland of Melaleuca cardiophylla, Melaleuca eleuterostachya, tall open shrubland of Melaleuca cardiophylla, Acacia rostellifera and Hakea stenophylla, shrubland to open heath of Calothamnus formosus, Melaleuca huegelii subsp., pristicensis and Beaufortia sprengelioides, mixed shrubland to open heath of Calothamnus formosus, Melaleuca cardiophylla and Melaleuca cardiophylla and low open shrubland of chenopods and Frankenia with scattered emergents on saline flats (GHD, 2009).</p>
<p>Useless Loop Road Site SLK 48 (Plan (b)) is mapped as Beard Vegetation Association 984 consisting of shrublands with acacia and melaleuca scrub/ succulent steppe and saltbush (Shepherd et al, 2001).</p>			<p>The condition of the vegetation ranges from excellent to pristine with occasional small areas of completely degraded (Keighery, 1994) vegetation associated with previous road material extraction (GHD, 2009).</p>
<p>Useless Loop Road Site SLK 56 (Plan (c)) is mapped as Beard Vegetation Association 1423 consisting of shrublands and scrub heath in the Shark Bay Area, mainly comprising Acacia spp (Shepherd et al, 2001).</p>			<p>Site SLK 48 consists of mixed open scrub on undulating sand dunes, low open shrubland on limestone outcrops and mixed regrowth on areas that have been previously cleared (GHD, 2009). The site ranges from very good to completely degraded (Keighery, 1994) condition and has been impacted through historic clearing for road material extraction. There are existing material stockpiles nearby that are proposed to be used prior to the expansion of the pit (Main Roads WA, 2009).</p>

Site SLK 56 comprises mixed low Chenopod and Frankenia shrubland on saline flats with areas of open to very open mixed low shrubland (GHD, 2009). The majority of this site is in excellent (Keighery, 1994) condition.

3. Assessment of application against clearing principles

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

Comments

Proposed clearing may be at variance to this Principle

The applicant proposes to clear up to 197 hectares over five separate areas. Two areas occur along Shark Bay Road, SLK 21 (Plan (a)) and SLK 102 (Plan (d)), and three along Useless Loop Road SLK 28.7 (Plan (e)), SLK 48 (Plan (b)) and SLK 56 (Plan (c)). These areas are proposed to be cleared for the purpose of road material extraction. The proposed clearing is part of Main Roads Western Australia (MRWA) Gascoyne Region's 20 year strategic plan identifying potential future material areas (MRWA, 2009). These locations have been identified as suitable material resource locations, with consideration given to minimising environmental and visual impacts (MRWA, 2009).

The sites are proposed to be extracted on an as needs basis, with clearing of between one and three hectares to occur every one to two years with progressive revegetation (MRWA, 2009). The applicant has advised that the clearing would occur within the confines of the larger 197 hectare area and the total clearing size is likely to be less than this figure.

Four of the five sites lie within the Shark Bay World Heritage Area which was inscribed on the World Heritage Area list in 1991 and included in the National Heritage List on 21 May 2007. Shark Bay is listed as a World Heritage Area due to its outstanding natural values and for its significant geological, biological and ecological processes representing the major stages in earth's evolutionary history. It provides examples of superlative natural phenomena, including birridas, and contains important and significant habitats for in situ conservation for biological diversity (DEWHA, 2008).

The vegetation throughout the project sites ranges from pristine to completely degraded (Keighery, 1994) condition (GHD, 2009). Site SLK 102 is the most degraded of the sites with high levels of weed invasion and impact from historic grazing resulting in the majority of the site being in a degraded (Keighery, 1994) condition (GHD, 2009). The majority of site SLK 21 is in a good to degraded (Keighery, 1994) condition and the majority of site SLK 48 is in a good (Keighery, 1994) condition. Sites SLK 28.7 and 56 are largely in pristine to excellent (Keighery, 1994) condition (GHD, 2009).

The Shire of Shark Bay retains approximately 99 per cent of its pre-European vegetation extent (Government of Western Australia, 2014).

The application areas may contain potential habitat for the shield-backed trapdoor spider (*Idiosoma nigrum*), which is listed as 'rare or likely to become extinct' under the Wildlife Conservation Act 1950. There are several records of this species within the local area (50 kilometre radius) of site SLK 21, however no burrows of this species were identified within site SLK 21 during a flora and fauna survey of the application areas (GHD, 2009). The application areas are not expected to provide significant habitat for this species, or other conservation significant fauna, given the presence of extensive undisturbed areas of native vegetation surrounding each application area.

A flora survey undertaken by GHD (2009) identified two Priority 3 flora species within site SLK 21, a Priority 2 species within site SLK 102, and two Priority 3 species within site SLK 28.7. A Priority 3 species was also recorded at one location approximately 30 metres north of site SLK 48 and one location approximately 10 metres north of site SLK 56 (GHD, 2009).

Priority 1 species are species that are known from only one or a few locations (generally five or less) and are potentially at risk. Priority 2 species are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation. Priority 3 species are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat not under imminent threat.

A follow up targeted flora survey (GHD, 2014) was undertaken between 8 and 11 October 2013 to determine the full size and extent of the priority flora populations within the application areas. This survey identified 6 priority flora species within the application areas, these being:

- *Thryptomene* sp. Carrarang (Priority 1) recorded at 10 locations within site SLK 56.
- *Anthocercis intricata* (Priority 3) recorded at 7 locations, with 11 plants total within Site SLK 48
- *Grevillea rogersoniana* (Priority 3) recorded at 7 locations within Site SLK 28.7
- *Melaleuca huegelii* subsp. *pristicensis* (Priority 3) recorded at 9 locations (5 to 20 plants at each location) within site SLK 56 and 102 locations (approximately 600 plants) within Site SLK 28.7
- *Acacia drepanophylla* (Priority 3) recorded at 247 locations within Site SLK 21; and
- *Verticordia dichroma* var. *syntoma* (Priority 3), 31 individuals recorded within Site SLK 28.7

There were three priority flora species recorded within the initial 2009 flora survey that were not recorded within the follow up 2013 targeted fauna survey. These species are:

- Abutilon sp. Hamelin (Priority 2) recorded at one location within the boundary of Site SLK 102
- Lepidium biplicatum (Priority 3) recorded at two locations, one 30 metres north of Site SLK 48 and one 10 metres north of Site SLK 102; and
- Tetragonia coronata (Priority 3) recorded at one location within Site SLK 21

The targeted flora survey (GHD, 2014) identified that the locations of *Thryptomene* sp. Carrarang, *Anthocercis intricata*, *Lepidium biplicatum* and *Grevillea rogersoniana* may be avoided. This notion has been supported by the Department of Parks and Wildlife (Parks and Wildlife, 2014).

Abutilon sp. Hamelin and *Tetragonia coronata* were not recorded in the most recent targeted survey, however as these species flower from July to September, they may have been difficult to identify during the targeted survey (undertaken in October). These species may therefore occur within Sites SLK 102 and SLK 21 respectively. The applicant would be required to maintain a 10 metre buffer around *Abutilon* sp. Hamelin, *Lepidium biplicatum*, *Tetragonia coronata* and *Grevillea rogersoniana* (Priority 2 and 3), and maintain a 50 metre buffer around *Thryptomene* sp. Carrarang (Priority 1). If MRWA wishes to clear within these buffers a request for approval from the Department of Environment Regulation would be required. In regards to the Priority 3 species *Verticordia dichroma* var. *syntoma*, *Acacia drepanophylla* and *Melaleuca huegelii* subsp. *Pristicensis*, it is not expected that the proposed clearing will impact on the conservation status of these locally common (GHD, 2014) taxa (Department of Parks and Wildlife, 2014).

One priority ecological community (PEC), the Hamelin Stromatolite - Hypersaline microbial community No. 2 (Priority 1), has been recorded within the local area (50 kilometre radius), and all of the proposed extraction sites lie within the buffer of this PEC. Given that the proposed clearing occurs more than six kilometres from the coastal waterline in which the stromatolites have been mapped, it is unlikely that the proposed clearing will impact upon this community. The minimal clearing at any one time and progressive revegetation proposed for the sites post extraction will help to ensure that significant environmental impacts through hydrological change are minimised.

The application areas include six priority flora species, and may include an additional three priority flora species. The applicant will be required to avoid five of these species, and the remaining species are locally common. The Shire of Shark Bay is relatively undisturbed and retains 99 per cent of its pre-European vegetation whereby there are large areas of high quality vegetation within the surrounding landscape. However, four of the five sites lie within the Shark Bay World Heritage Area and given that some of the vegetation within the clearing footprint areas is in pristine to excellent (Keighery, 1994) condition, the proposed clearing may be at variance to this Principle.

Main Roads has advised that temporary cleared areas will be progressively rehabilitated, and clearing will be staged, with only one to three hectares of vegetation to be removed every one to two years (MRWA, 2009) from each site. This will ensure that there is no permanent loss of native vegetation and it is expected that long term impacts will be minimal. The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken incrementally post clearing within each of the proposed extraction sites.

Methodology

References:

DEWHA (2008)
GHD (2009)
GHD (2014)
Keighery (1994)
Government of Western Australia (2014)
Parks and Wildlife (2014)
MRWA (2009)
MRWA (2015)

GIS Databases:

-Parks and Wildlife Tenure
-SAC Bio Datasets (Accessed November 2015)

(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.

Comments

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

A number of threatened and priority fauna species have been recorded within the local area (50 kilometre radius) with the closest records being the javelin legless lizard (*Delma concinna*) for sites SLK 56, SLK 48 and SLK 28.7, the thick-billed grass-wren (*Amytornis textilis textilis*), shield-backed trapdoor spider (*Idiosoma nigrum*) for site SLK 21 and chuditch (*Dasyurus geoffroii*) for site SLK 102.

The shield-backed trapdoor spider (*Idiosoma nigrum*) is classified as vulnerable under the Wildlife Conservation Act 1950 (WC Act). The closest record of this species is located approximately 15 kilometres from site SLK 21 (Parks and Wildlife, 2007-). One trapdoor spider burrow was found within site SLK 21, however it was determined that the burrow was not that of *Idiosoma nigrum* (GHD, 2009).

Despite no burrows of this species being identified within the application areas, it is possible that this species may inhabit the areas of proposed clearing (GHD, 2009). However, given that the Shire of Shark Bay is extensively vegetated with approximately 99 per cent of pre-European vegetation remaining (Government of Western Australia, 2014), and the lack of confirmed burrows, it is not likely for the vegetation under application to comprise significant habitat for this species.

Two wetland areas, mapped as non-perennial lakes, are located within the boundary and directly adjacent to site SLK 28.7.

These lakes are known as birridas, and were once landlocked saline lakes that formed rounded depressions between sand dunes as a result of a drop in sea level (DEC, 2010).

Birridas form important breeding habitat for invertebrates (crustaceans) after rainfall as they retain water for several months and subsequently provide foraging habitat for wading bird species (DEC, 2010). Site SLK 28.7 has been used previously as a source of road base material with gypsum having been extracted historically to a depth of one metre (MRWA, 2009). The applicant has advised that the proposed clearing is unlikely to cause further disturbance beyond the previously extracted area. To minimise impacts to birridas, contour ratios for extraction east of the birridas will be reduced to a ratio of 1:6 and revegetation will occur within the previously disturbed areas of the birridas to reduce the potential for further water ponding (MRWA, 2015). Clearly marking the birridas, staged clearing and progressive rehabilitation of the extraction site will help to minimise impacts.

The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken incrementally post clearing within each of the proposed extraction sites. A Topsoil Management Plan has also been provided for the SLK 28.7 site, which will help to ensure successful revegetation within the waterlogged areas that exist at this site.

Suitable habitat for several other priority and threatened fauna species, has been recorded within the application areas. These species include malleefowl (sites SLK 28.7 and SLK 56) and bilby (site SLK 102), both listed as vulnerable under the WC Act. Suitable habitat may also exist for rufous fieldwren (P4), thick-billed grasswren (P4), woma python (P1) and javelin legless lizard (P1) (GHD, 2009).

These species were not recorded on site during a fauna survey (GHD, 2009), and given that similar habitat to that of the application area is available in the extensively vegetated surrounding areas, it is not likely for the vegetation under application to comprise significant habitat for these species.

Given the above it is unlikely that the vegetation under application comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

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

Methodology References:
DEC (2010)
GHD (2009)
Government of Western Australia (2014)
MRWA (2009)
MRWA (2015)
Parks and Wildlife (2007-)

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

Comments **Proposed clearing is not likely to be at variance to this Principle**
One rare flora species has been recorded within the local area (50 kilometre radius). The closest record of this species is mapped approximately 20 kilometres from site SLK 28.7 within similar vegetation and soil types.

This species is listed as endangered under both the Wildlife Conservation Act 1950 and the Environment Protection and Biodiversity Conservation Act 1999 and inhabits areas of red or yellow sand dunes, within tree heath or tall open shrubland with other eucalypt species, including *Eucalyptus jucunda*, *Eucalyptus eudesmioides* and *Eucalyptus gittinsii* (Brown et al, 1998).

A flora survey of the application areas did not identify any rare flora species (GHD, 2009), nor did a follow up targeted flora survey (GHD, 2014).

Given the above, the vegetation under application is not likely to include, or be necessary for the continued existence of rare flora, therefore the proposed clearing is not likely to be at variance to this principle.

Methodology References:
Brown et al (1998)
GHD (2009)
GHD (2014)

GIS Databases:
-SAC Bio Datasets (Accessed November 2015)

(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.

Comments **Proposed clearing is not likely to be at variance to this Principle**
No threatened ecological communities (TEC's) have been mapped within the local area (50 kilometre radius).

A flora survey of the application areas did not identify any vegetation units representative of any listed TEC's (GHD, 2009).

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

Methodology References:
GHD (2009)

GIS Databases:
-SAC Bio Datasets (Accessed November 2015)

(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.

Comments **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 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The areas under application are located within the Carnarvon (sites SLK 21 & 102) and Yalgoo (sites SLK 28.7, 48 and 56) Bioregions. These Bioregions and the Shire of Shark Bay retain approximately 99 per cent pre-European vegetation (Government of Western Australia, 2014).

The Beard Vegetation Associations (BVA) mapped within the areas under application (BVA 112, 242, 243, 368, 984 and 1423) are well represented within the Carnarvon and Yalgoo Bioregions with all vegetation associations retaining approximately 99 to 100 per cent of their pre-European vegetation extents (Government of Western Australia, 2014).

The local area (50 kilometre radius) is highly vegetated with large areas retained for conservation including Francois Peron National Park, Dirk Hartog National Park, Zuytdorp Nature Reserve and Monkey Mia Reserve as well as Nanga and Pt Tamala unallocated Crown lands within former leaseholds proposed for conservation.

The application areas include vegetation in a pristine and excellent (Keighery, 1994) condition, and include priority flora species, however, the vegetation is not within an area that has been extensively cleared, therefore the proposed clearing is not at variance to this Principle.

Pre-European	Current Extent (ha)	Remaining (ha)	Extent in DPaW Lands (%)	(%)
IBRA Bioregion				
Carnarvon	8,382,890	8,360,801	99.7	12
Yalgoo	5,057,326	4,923,840	97	32
Shire				
Shark Bay	2,410,758	2,403,084	99.7	39
Beard Vegetation Association in Bioregion				
112	20,101	20,010	99.5	2
1423	27,778	27,747	99	2
984	17,404	17,404	100	1
368	328,009	328,009	100	73
242	2,370	2,370	100	0
243	107,785	107,785	100	0

(Government of Western Australia, 2014)

Methodology References:
Commonwealth of Australia (2001)
Government of Western Australia (2014)
Keighery (1994)

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

Comments Proposed clearing is at variance to this Principle

Two nationally recognised wetlands occur within the local area (50 kilometre radius). Shark Bay East occurs approximately 270 metres west of site SLK 56 and Hamelin Pool is located approximately 6.3 kilometres north-west of site SLK 21.

Two wetland areas, mapped as non-perennial lakes, are located within the boundary and directly adjacent to site SLK 28.7. These lakes, also known as birridas, were once landlocked saline lakes and formed rounded depressions between sand dunes as a result of a drop in sea levels (DEC, 2010).

Birridas form important breeding habitat for invertebrates (crustaceans) after rainfall as they retain water for several months and subsequently provide foraging habitat for wading bird species (DEC, 2010). Birridas are also considered natural superlative phenomena, one of the criteria for the World Heritage listing of the Shark Bay area (DEWHA, 2008). It is recognised that material extraction from birridas has the potential to impact on Shark Bay World Heritage Values (DEC, 2010).

Site SLK 28.7 has been used previously as a source of road base material with gypsum having been extracted historically to a depth of one metre (MRWA, 2009). This disturbance has impacted on a small portion of the birridas and has resulted in bordering waterlogged areas.

The applicant has advised that the proposed clearing is unlikely to cause further disturbance beyond the previously extracted area, however there is the potential for further ponding of surface water to occur, restricting water flows into the birridas.

To minimise impacts to birridas, the applicant has advised that contour ratios for extraction east of the birridas will be reduced to a ratio of 1:6 and revegetation will occur within the previously disturbed areas of the birridas to reduce the potential for further water ponding (MRWA, 2015). The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken. A Topsoil Management Plan has also been provided for the SLK 28.7 site, which will help to ensure that the revegetation proposed within the waterlogged areas that exist on site will be successful.

Site SLK 56 is mapped as an area subject to inundation with tidal flats and estuary flows encroaching upon the application area. A small portion of this site is located within the Shark Bay Marine Park. The north eastern portion of this application area lies within a mapped saline coastal flat wetland, however, this portion of the application area is situated within a road reserve and therefore has already been subject to significant disturbance.

A Topsoil Management Plan has also been provided for the SLK 56 site, which will help to ensure that the revegetation within this site is successful.

Given the above, the vegetation at sites SLK 28.7 and SLK 56 is growing within, and in association with, an environment associated with a watercourse or wetland, therefore the proposed clearing is at variance to this Principle. However, given the management measures outlined above, the proposed clearing is not likely to impact significantly on the birridas.

Methodology References:

DEC (2010)
DEWHA (2008)
MRWA (2009)
MRWA (2015)

GIS Databases:

-Geodata, Lakes
-Hydrography, linear
-ANCA Wetlands

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

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

The chief soils of the road material extraction sites SLK 48 and 56 have been mapped by Northcote et al (1960-68) as coastal calcareous sands, largely with a seaward fringe of coastal dune formations overlying aeolianite with chief soils of calcareous sands on the dunes, overlying a core of aeolianite limestone. The soils also have some bare limestone, shallow soils and intervening saline flats.

The western portion of site SLK 102 is similar to sites SLK 48 and 56, however, the mapped soils change to brown calcareous dune sands with numerous playas (birridas) flooded by saline soils and kopi gypsum (Northcote et al, 1960-68). Historic extraction has occurred in three locations within this site (MRWA, 2009).

Site SLK 21 is described as plains with some limestone ridges and flats and chief soils of brown calcareous earths with shallow loamy soils on limestone and areas of red earthy sands and sandy red earths (Northcote et al, 1960-68). Calcrete limestone outcrops were observed at this site (MRWA, 2009).

Site SLK 28.7 comprises two mapped soil types with the first being dune and swamp country forming a seaward margin with chief soils of red earthy sands and red and brown sands on the dunes with shallow loams, sands overlying marl and kopi gypsum in the swamp pans (MRWA, 2009).

The second is described as undulating sand dune formations generally underlain by aeolianite and with a few marl swamps nearer the coast with the chief soils being red earthy sands and red and brown sands with loamy soils occurring in the swamps (MRWA, 2009).

The proposal was referred to the Department of Agriculture and Food Western Australia (DAFWA) for comment in May 2009. A submission to MRWA from the Commissioner of Soil and Land Conservation (SALC) advised that the "proposed materials areas are unlikely to raise concerns under the Soil and Land Conservation Act 1945 provided they are progressively rehabilitated and preferably by direct return of the top soil" (Commissioner of SALC, 2009).

The Commissioner (2009) also advised that MRWA should design and manage the extraction pits to ensure that surface run off is not retained within the pit for extended periods to avoid use by feral animals.

The proposed clearing has since been referred to DAFWA (2013) for comment and it has been advised that MRWA should ensure that the pit floors of the extraction sites do not retain water.

The majority of the soils detailed above are highly permeable, and given the low annual rainfall of Shark Bay, it is unlikely for the proposed clearing to cause appreciable land degradation via water erosion.

MRWA has advised that temporary cleared areas will be progressively rehabilitated as soon as practicable, and clearing will be staged, with only one to three hectares of vegetation to be removed every one to two years (MRWA, 2009). The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken incrementally post clearing within each proposed pit.

Given that staged clearing practices and progressive rehabilitation is proposed, it is unlikely for the proposed clearing to result in appreciable land degradation through erosion.

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

Methodology

References:

Commissioner of SALC (2009)
Northcote et al (1960-68)
MRWA (2009)
MRWA (2015)
DAFWA (2013)

GIS Databases:

-Soils, Statewide
-Topographic Contours, Statewide

(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.

Comments

Proposed clearing is at variance to this Principle

The Shire of Shark Bay retains extensive areas within conservation reserves, areas which are recognised for their outstanding biodiversity within the former Register of National Estate and overall as a World Heritage Area.

Four of the application areas (sites SLK 28.7, SLK 48, SLK 56 and SLK 102) fall within the Shark Bay World Heritage Property which has been included on both the National and World Heritage lists for its outstanding natural values as it represents the major stages in earth's evolutionary history, supports significant geological, biological and ecological processes, provides examples of superlative natural phenomena, and contains important and significant habitats for in situ conservation for biological diversity.

Site SLK 56 intersects two small portions of the Shark Bay Marine Park, however given that these areas are cut off from the rest of the marine park by Useless Loop Road, it is unlikely the proposed clearing will significantly impact on this conservation area.

Sites SLK 28.7 and 102 lie within the Peron-Nanga area, listed on the former Register of National Estate and also classified as a System 9 conservation reserve. The Peron-Nanga area has been listed as a natural area due to its rich, diverse and endemic flora, dense sandplain vegetation rich in Proteaceous species, and habitat for flora and fauna species at the northern limits of their range (DSEWPaC, 2010).

The closest conservation area to site SLK 21 is the Class A nature reserve - Sedimentary Deposits Reserve located approximately 6.1 kilometres north west of the proposed clearing. Given this distance, it is unlikely that clearing at this site will impact upon this Class A reserve.

Given that clearing is proposed to take place within conservation reserves, the proposed clearing is at variance to this Principle. Staged clearing practices, progressive rehabilitation and weed management practices will help to minimise the impact of the proposed clearing on the environmental values of these areas.

Main Roads has advised that temporary cleared areas will be progressively rehabilitated as soon as practicable and clearing will be staged, with only one to three hectares of vegetation to be removed every one to two years (MRWA, 2009) from each site. The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken incrementally post clearing within each pit. This will ensure that there is no permanent loss of native vegetation, and it is expected that long term impacts will be minimal.

Methodology References:
DSEWPaC (2010)
MRWA (2009)
MRWA (2015)

GIS Databases:
-Parks and Wildlife Tenure

(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.

Comments Proposed clearing may be at variance to this Principle

The closest watercourses to the application areas are minor, non-perennial watercourses located approximately 2.6 kilometres west of site SLK 102, two kilometres north of SLK 21, 4.1 kilometres north west of SLK 28.7 and 140 metres north of SLK 56.

Two wetland areas, mapped as non-perennial lakes, are located within the boundary and directly adjacent to site SLK 28.7. These lakes, also known as birridas, have been subject to disturbance through historic material excavation, resulting in ponding of the extraction areas (MRWA, 2009). The proposed clearing may result in localised sedimentation of the birridas and further ponding on the borders of each birrida.

The applicant has advised that the proposed clearing is unlikely to cause further disturbance beyond the previously extracted area, however further ponding of surface water would increase the risk of restricting natural water flow into the birridas. To minimise impacts to the birridas, the applicant has advised that contour ratios for extraction east of the birridas will be reduced to a ratio of 1:6 and revegetation will occur within the previously disturbed areas of the birridas to reduce the potential for further water ponding (MRWA, 2015). The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken. A Topsoil Management Plan has also been provided for the SLK 28.7 site, which will help to ensure that the revegetation proposed within the waterlogged areas that exist on site will be successful.

Groundwater salinity at the sites has been mapped as 3000 to 7000 milligrams per litre (moderately saline to saline) for sites SLK 48 and 56, and 7000 to 14000 milligrams per litre (saline to highly saline) for sites SLK 28.7, 102 and 21. It is unlikely the clearing of one to three hectares per year in these sites will lead to a rise in the watertable and thus an increase in groundwater salinity levels.

Methodology Given the above the proposed clearing may be at variance to this Principle.
References:
MRWA (2009)
MRWA (2015)

GIS Databases:
-Groundwater Salinity, Statewide
-Hydrography, linear
-Hydrography, linear (hierarchy)

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

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

The proposed road material extraction sites all lie within six kilometres of the wash area and coastline, with sites SLK 102 and SLK 48 being within one kilometre of the coastline.

The closest watercourses to the applied clearing areas are minor, non-perennial watercourses located approximately 2.6 kilometres west of SLK 102, two kilometres north of SLK 21, 4.1 kilometres north-west of SLK 28.7 and 140 metres north of SLK 56.

Site SLK 56 has been mapped within an area subject to inundation and is approximately 130 metres from a tidal flat.

The clearing of native vegetation at this site may result in increased inundation, however, it is unlikely to exacerbate flooding across the landscape. Site SLK 28.7 has been previously cleared and excavated in some places adjacent to the birridas resulting in ponding of surface water. Therefore there is potential for clearing to result in further water moving from the birridas into the extraction site (MRWA, 2009).

It is proposed that the clearing will be minimal (two to three hectares per year for these two sites) at any one time with progressive revegetation to occur across the sites, as outlined within a Revegetation Plan provided by the applicant (MRWA, 2015). Therefore, although it is likely that increased surface water movement and inundation may occur locally at the two abovementioned sites, revegetation should assist in reducing the potential for flooding.

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

Methodology References:
MRWA (2009)
MRWA (2015)

Planning instruments and other relevant matters.

Comments The proposed clearing is part of the Main Roads Western Australia (MRWA) Gascoyne Region's 20 year strategic plan identifying potential future material areas, and as such the proposed clearing is required for the extraction of road building material for road construction and maintenance works, including emergency situations such as natural disasters (MRWA, 2009). The application areas have been identified as suitable material resource locations and the project is a joint venture between MRWA and the Shire of Shark Bay.

The applicant has advised that clearing of the entirety of the areas under application is unlikely, whereby reductions in the clearing area will most likely occur once the best material (within the larger footprint application) areas are identified.

The sites are proposed to be extracted on an as needs basis, with clearing of one to three hectares every one to two years, with progressive revegetation (MRWA, 2009). The applicant has submitted a Revegetation Plan (MRWA, 2015) which outlines the progressive rehabilitation to be undertaken at each site. A Topsoil Management Plan has also been provided for two sites, which will help to ensure that the revegetation proposed within the waterlogged areas that exist on these sites will be successful.

Main Roads initially applied for an application for a clearing permit in August 2010, whereby a preliminary assessment was undertaken. Main Roads later withdrew the application and referred the proposal to the Environmental Protection Authority (EPA). The EPA decided not to assess the proposal, therefore another (this) clearing permit application has been submitted.

The EPA recommended that the existing material areas are rehabilitated prior to extensive disturbance of any new areas. In particular it was recommended that previous disturbance adjacent to SLK 56 be rehabilitated prior to further disturbance (EPA, 2012). The applicant will be required to ensure that rehabilitation within these areas occurs progressively.

A submission (2013) has been received for the proposed clearing. The submission objects to the proposed clearing on the basis that no clearing should occur within the biologically diverse Francois Peron National Park.

Although a portion of one of the properties (Lot 72 on Plan 220217) under application (at site SLK 102) occurs within the Francois Peron National Park locality, at its closest point the proposed clearing at site SLK 102 falls 26 kilometres outside of the mapped National Park. Given this distance of separation it is unlikely for the proposed clearing to impact upon the conservation values of this area.

The application areas are zoned 'rural (pastoral)' under the Town Planning Scheme with site SLK 21 also including areas zoned as 'major highways' and 'no zone'.

MRWA(2009) has noted that site SLK 56 has the potential to contain acid sulphate soils (ASS) within three metres of natural soil surface due to its proximity to the Shark Bay Marine Area. Mapping shows an area approximately 460 metres north of the application area is at moderate to low risk of ASS occurring within three metres of natural soil surface and high to moderate risk of ASS beyond three metres of natural soil surface. The excavation of materials from this site may result in ASS.

The Department of Water (DoW, 2013) has advised that if groundwater is to be used for dust suppression, screening or other activities associated with extraction, licensing would be required. The DoW (2013) advised that Main Roads possess bores and licences to take groundwater in this area.

DoW advise that a distance of 1.5 metres should be maintained between the water table and base of any extraction pit to prevent impacts to groundwater quality. DoW (2013) further advise that should Main Roads intercept groundwater during the proposed clearing activities and dewatering is required, activities should cease until advice from the Department is obtained on whether a licence is required.

Main Roads has advised that if additional groundwater is required then an application for a 26D licence under the Rights in Water and Irrigation Act 1914 will be made, along with a 5C Licence for the abstraction of groundwater (MRWA, 2009).

The Shark Bay Area is a matter of National Environmental Significance and was inscribed on the World Heritage List in 1991 and gazetted as a National Heritage area on 21 May 2007.

MRWA referred the proposed works to the former Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) who determined that the proposed action is not a controlled action, provided that no more than 195 hectares of native vegetation is cleared over a 20 year period, an annual clearing limit of one to three hectares is not exceeded and all annual clearing of native vegetation must be revegetated within 12 months of clearing (DSEWPaC, 2012).

A direct interest submission objecting the proposed clearing has been received from the Yamatji Marlpa Aboriginal Corporation on behalf of the Nanda People native title claimants. The objection was made on the grounds that the future act in question will seriously impact upon the claimant's native title rights and interests.

The native title rights and interests claimed include the rights to the possession, occupation, use and enjoyment of the land. It is advised that in order to minimise the impact on the Native Title Party's rights and interests, the Party will require a negotiated agreement with the applicant, setting out the manner in which the applicant may access and use the land.

MRWA consequently commissioned a site identification Aboriginal Heritage Survey in order to determine if there are any sites or places of Aboriginal heritage significance that would be affected by the proposed clearing.

There were no ethnographic Aboriginal heritage sites or places identified within the boundaries of the application areas. There were five previously recorded archaeological heritage sites and two previously recorded archaeological heritage places identified within the Heritage Survey, which covered the areas under application and several other areas proposed for works by MRWA (Brad Goode and Associates, 2015).

As a result of consultations with several nominated members of the Gnulli, the Malgana Shark Bay People's Application and the Nanda People native title claim groups, it has been determined that Main Roads should endeavour to avoid disturbance to all archaeological sites (Brad Goode and Associates, 2015). It is recommended that should any additional archaeological material be discovered during the proposed works Main Roads engage an archaeologist to record such material and seek advice regarding any further approvals that may be required (Brad Goode and Associates, 2015).

MRWA has authority to access land for the purpose of gravel extraction under Section 185 of the Land Administration Act 1997.

Methodology References:
DoW (2013)
EPA (2012)
MRWA (2009)
MRWA (2015)
DSEWPaC (2012)
Submission (2013)
Brad Goode and Associates (2015)

GIS Databases:
-Register of National Estate
-RIWI Act, Groundwater Areas
-Town Planning Scheme Zones

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