



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	5921/1
Duration of Permit:	From 27 January 2014 to 27 January 2024
Permit Holder:	The Department of Mines and Petroleum

ADVICE NOTE:

This Permit does not confer upon the Permit Holder authorisation to access the land to which the Permit relates.

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

PART I - CLEARING AUTHORISED

1. Land on which clearing is to be done

LOT 1 ON DIAGRAM 10979
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LOT 1 ON DIAGRAM 26656
LOT 1 ON DIAGRAM 32385
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LOT 6090 ON PLAN 215634
LOT 6307 ON PLAN 39948
LOT 4700 ON PLAN 207022
LOT 4704 ON PLAN 207022
LOT 4699 ON PLAN 207022
LOT 53 ON PLAN 096142
Reserve 2547
Reserve 10687
Reserve 12049
Reserve 12632
Reserve 27328
Reserve 30754
Reserve 33424
Reserve 40154
Reserve 45806
Reserve 49730
DBNGP Corridor
STATE FOREST 16

2. Purpose for which clearing may be done

Clearing for the purpose of 3D seismic survey.

3. Area of Clearing

The Permit Holder must not clear more than 40 hectares of native vegetation within the area cross-hatched yellow on attached Plan 5921/1.

4. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 27 January 2019.

5. Authorised activity

The Permit Holder shall retain *habitat trees* found within the area cross hatched yellow on attached Plan 5921/1.

6. 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

7. Weed and dieback control

(a) 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* and *dieback*:

- (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (ii) shall only move soils in *dry conditions*;
- (iii) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

(b) At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any *weeds* growing within areas cleared under this Permit.

8. Flora Management

Where rare flora listed in the *Wildlife Conservation (Rare Flora) Notice* or *priority flora* have been identified and their written location(s), provided to the CEO, the Permit Holder shall ensure that:

- (a) no clearing of *critical habitat* of the identified rare or *priority flora* occurs, unless first approved by the CEO.
- (b) no clearing of the identified rare or *priority flora* occurs, unless first approved by the CEO.

9. Threatened ecological community management

Where *threatened ecological communities* or *priority ecological communities* have been identified and their written locations provided to the CEO, the Permit Holder shall ensure that:

- (a) no clearing occurs within 50 metres of identified *threatened ecological communities*, unless first approved by the CEO; and
- (b) no clearing occurs within 20 metres of identified *priority ecological communities*, unless first approved by the CEO.

10. Vegetation Management

- (a) Where practicable the Permit Holder shall avoid clearing *riparian vegetation*;
- (b) Where a *watercourse* is to be impacted by clearing, the Permit Holder shall maintain the existing surface flow; and
- (c) Ensure no clearing within lakes identified within the *Environment Protection (Swan Coastal Plain Lakes) Policy 1992*.

11. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

- (a) Retain the vegetative material removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil;
- (b) At an *optimal time* following clearing authorised under this Permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by laying the vegetative material retained under condition 11(a) on the cleared areas(s).
- (c) within 18 months of undertaking *revegetation* and *rehabilitation* in accordance with condition 11(b) of this Permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
 - (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 11(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the Permit Holder must undertake additional *planting* or *direct seeding* of native vegetation in accordance with the requirements of condition 11(b)(ii) and (iii) of this Permit.
- (d) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 11(c)(ii) of this permit, the Permit Holder shall repeat condition 11(c)(i) and 11(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
- (e) Where a determination by an environmental specialist that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 11(c)(i) and (ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition 11(c)(ii), the CEO may require the Permit Holder to undertake additional planting and direct seeding in accordance with the requirements under condition 11(c)(ii).

PART III - RECORD KEEPING AND REPORTING

12. Records to be kept

- (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;
 - (iii) the size of the area cleared (in hectares); and
 - (iv) the purpose for which clearing was undertaken.
- (b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 11 of this Permit:
 - (i) the location of any areas *revegetated* and *rehabilitated*, 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) a description of the *revegetation* and *rehabilitation* activities undertaken; and
 - (i) the size of the area *revegetated* and *rehabilitated* (in hectares).

13. Reporting

- (a) The Permit Holder must provide to the CEO on or before 1 July of each year, a written report:
 - (i) of records required under condition 12 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 1 July of each year.
- (c) Prior to 1 November 2023, the Permit Holder must provide to the CEO a written report of records required under condition 12 of this Permit where these records have not already been provided under condition 13(a) of this Permit.

DEFINITIONS

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

critical habitat means any part of the Permit Area comprising of the habitat of flora or fauna species and its population, that is critical for the health and long term survival of the flora or fauna species and its population;

dieback means the effect of *Phytophthora* species on native vegetation;

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

dry conditions means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist.

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

habitat tree means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater, that contains or has the potential to develop hollows or roosts suitable for native fauna;

local provenance means native vegetation seeds and propagating material from natural sources within 10 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.

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;

optimal time means the period from April to June for undertaking *direct seeding*, and the period from May to June for undertaking *planting*;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

priority ecological community/ies mean those ecological communities described as priority classes 1, 2, 3, 4 or 5 in the *Department of Parks and Wildlife's Priority Ecological Communities for Western Australia* (as amended);

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

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.

riparian vegetation has the meaning given to it in Regulation 3 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004;

threatened ecological community/ies has the meaning given to it in clause 3 of the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*;

watercourse has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914*;

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 the Department of Environment and Conservation Regional Weed Assessments, regardless of ranking; or

(c) not indigenous to the area concerned.

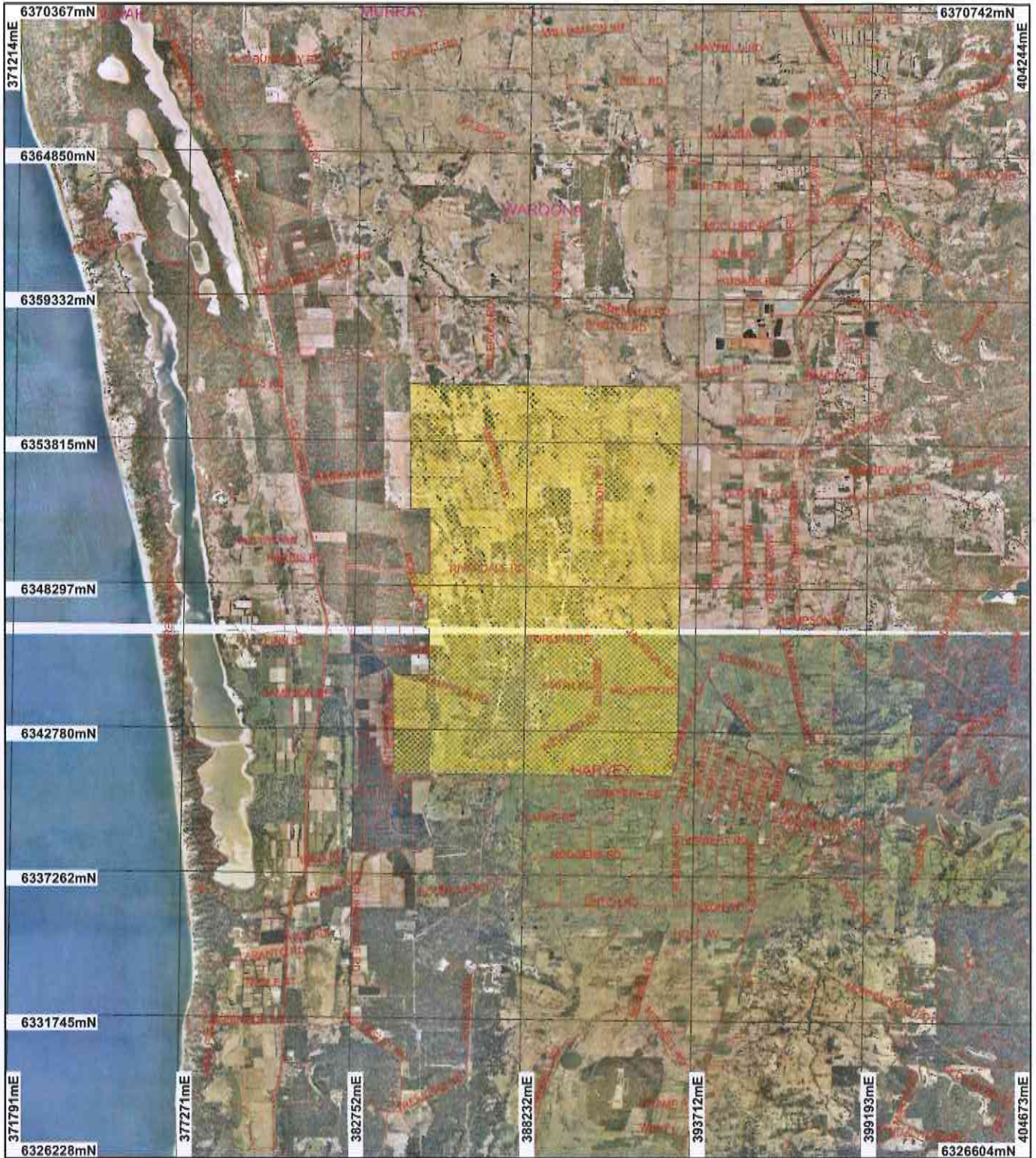


J Clarkson
ACTING MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

2 January 2014

Plan 5921/1



LEGEND

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| Road Centrelines
Cadastral | sunbury 50cm Orthomosaic -
Landgate 2008 |
| Local Government
Authorities | Pinjarra 50cm Orthomosaic -
Landgate 2006 |
| Clearing Instruments | |
| Areas Approved to Clear | |



Scale 1:194479
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Date 2.1.14
J. Clarkson

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

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.



Government of Western Australia
Department of Environment Regulation

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* Project Data. This data has not been quality assured. Please contact map author for details.



1. Application details

1.1. Permit application details

Permit application No.: 5921/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Department of Mines and Petroleum

1.3. Property details

Property:

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LOT 4698 ON PLAN 207022
LOT 4701 ON PLAN 207023
LOT 4702 ON PLAN 207023
LOT 4703 ON PLAN 207023
LOT 4705 ON PLAN 207022
LOT 4706 ON PLAN 207023
LOT 4707 ON PLAN 207023
LOT 4709 ON PLAN 207023
LOT 4710 ON PLAN 207023
LOT 4711 ON PLAN 207023
LOT 4746 ON PLAN 208773
LOT 4748 ON PLAN 208773
LOT 4962 ON PLAN 169970

LOT 5375 ON PLAN 185026
 LOT 5483 ON PLAN 216718
 LOT 5516 ON PLAN 187942
 LOT 5891 ON PLAN 215632
 LOT 5892 ON PLAN 215633
 LOT 6090 ON PLAN 215634
 LOT 6307 ON PLAN 39948
 Reserve 2547
 Reserve 10687
 Reserve 12049
 Reserve 12632
 Reserve 27328
 Reserve 30754
 Reserve 33424
 Reserve 40154
 Reserve 45806
 Reserve 49730
 DBNGP Corridor
 STATE FOREST 16
 Shire of Harvey and Waroona

Local Government Area:
 Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
40		Mechanical Removal	3D Seismic Survey

1.5. Decision on application

Decision on Permit Application:	Grant
Decision Date:	2 January 2014

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. Three Beard vegetation associations are located within the application area (GIS Database):

Beard vegetation association 968: Medium woodland; Jarrah, marri & wandoo;

Beard vegetation association 1000: Mosaic: Medium forest; Jarrah-marri / Low woodland; banksia / Low forest; teatree (*Melaleuca* spp.); and

Beard vegetation association 1182: Medium woodland; *Eucalyptus rudis* & *Melaleuca raphiophylla* (Government of Western Australia, 2013; GIS Database).

A level 2 flora and vegetation survey conducted by Umwelt (2013a) during 23 November 2012 to 11 January 2013 identified 13 vegetation communities within the application area:

Wetland and Shrublands

M1: Low Woodland to Low Open forest of *Melaleuca raphiophylla* over tall sparse shrubland of *Melaleuca lateritia* over mixed open rushland over mixed open forbland;

M2: Mid woodland to open forest of *Melaleuca preissiana* with scattered *Eucalyptus rudis* over tall shrubland to tall open shrubland of *Kunzea glabrescens* and *Astartea scoparia*;

S1: Tall Shrubland to tall open shrubland of *Kunzea glabrescens*, *Calothamnus lateralis* and *Melaleuca lateritia* with *Astartea scoparia*, *K. micrantha* and *Pericalymma ellipticum* over tall open rushland of *Meeboldina scariosa*;

S2: Tall shrubland of *Kunzea glabrescens*, *Astartea scoparia*, *Melaleuca preissiana* and *Pericalymma ellipticum* over tall open rushland of *Meeboldina scariosa* over low open forbland of *Dasyopogon bromeliifolius*; and

S3: Low shrubland of *Astartea affinis* with *Meeboldina coangustata* on clay flats.

Woodlands

W1: Mid woodland of *Eucalyptus marginata* and *Banksia attenuata* over tall open shrubland of *Kunzea glabrescens* and *B. illicifolia* over low open shrubland of *Hibbertia hypericoides* and *Conostephium pendulum* over low open forbland of *Dasyopogon bromeliifolius*;

W2: Mid woodland of *Eucalyptus marginata* and *Banksia attenuata* over tall open shrubland of *Kunzea glabrescens* and *B. illicifolia* over low open shrubland of *Conostephium pendulum* over low open forbland of *Dasyopogon bromeliifolius*;

W3: Mid woodland of *Eucalyptus marginata* and *Banksia attenuata* over disturbed understorey;

W4: Mid open woodland of *Eucalyptus marginata* over mid open shrubland of *Kunzea glabrescens* and *Xanthorrhoea preissii*;

W5: Mid woodland of *Eucalyptus marginata* and *Banksia attenuata* over tall open shrubland of *Kunzea glabrescens* and *B. ilicifolia* over low open shrubland of *Conostephium pendulum*, *Macrozamia riedlei*, *Stirlingia latifolia* and *Hibbertia hypericoides* over low open forbland of *Dasyopogon bromeliifolius*; and

W6: Mid woodland of *Corymbia calophylla* and *Eucalyptus marginata* over mid sparse shrubland of *Xanthorrhoea preissii* over low open forbland of *Dasyopogon bromeliifolius* and *Desmocladius flexuosus*.

Cleared/Plantation:

CL: Parkland cleared/Pasture/Completely cleared; and
PL: Plantation.

Clearing Description	3D Seismic Survey Project. The Department of Mines and Petroleum proposes to clear up to 40 hectares of native vegetation within a total boundary of approximately 12,771.61 hectares for the purpose of a 3D seismic survey. The project is located approximately 4 kilometres north-west of Harvey, in the Shire of Harvey and Shire of Waroona.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994); To: Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).
Comment	The vegetation condition was assessed during a survey undertaken by Umwelt (2013a). Vegetation clearing will be undertaken by slashing and mulching, and only hand pruning within Department of Parks and Wildlife managed land.

3. Assessment of application against clearing principles

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

Comments **Proposal may be at variance to this Principle**

The application area is located within the Perth subregion of the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Perth subregion is characterised by Heath and/or Tuart woodlands on limestone, *Banksia* and Jarrah-*Banksia* woodlands on Quaternary marine dunes of various ages, and Marri on colluvial and alluvials. The Perth subregion forms part of the South West Botanical Province which has a very high degree of species diversity (Mitchell et al., 2002).

Umwelt (2013a) recorded 13 vegetation communities within the application area; the main vegetation type was determined to be Parkland Cleared/Pasture/Completely Cleared (73.8%). The vegetated areas within the application area comprise of 3,071 hectares of native vegetation and 694.8 hectares of plantations. Department of Parks and Wildlife (DPaW) managed conservation areas cover 237.8 hectares of the application area. Permanently inundated wetlands cover approximately 10.8 hectares and seasonally inundated wetlands cover approximately 1,729 hectares (Umwelt, 2013a). The condition of the vegetation communities across the survey range from 'Excellent' to 'Completely Degraded' (Keighery, 1994). Remnant vegetation rated as 'Excellent' (Keighery, 1994) was typically in wetland and shrubland communities where agricultural practices had not taken place (Umwelt, 2013a). Processes of disturbance observed within the application area include invasive weed species, heavy grazing, diggings by feral pigs, logging and historical clearing. Evidence of dieback was also observed within Eucalypt woodland areas (Umwelt, 2013a). The majority of the application area consisted of cleared vegetation and plantation, representing 75.9% of the application area (Umwelt, 2013a).

The flora and vegetation survey identified a total 184 flora taxa within 44 families and 119 genera within the application area (Umwelt, 2013a). Three Threatened Flora species and four Priority Flora species were recorded within the application area (Umwelt, 2013a; GIS Database):

- *Drakaea micrantha* (Threatened);
- *Drakaea elastica* (Threatened);
- *Diuris purdiei* (Threatened);
- *Diuris drummondii* (Threatened);
- *Boronia capitata* subsp. *gracilis* (Priority 3);
- *Acacia flagelliformix* (Priority 4);
- *Acacia semitrullata* (Priority 4); and
- *Caladenia speciosa* (Priority 4).

Umwelt (2013a) identified one record of each Threatened Flora species, and the Priority Flora species were recorded in multiple locations. Habitat assessment for the Threatened Flora species indicates that they are most likely limited in distribution to the wetland and shrubland communities. Within these communities, existing disturbance to vegetation is expected to further limit distribution (Umwelt, 2013a). Potential impacts to Threatened and Priority Flora as a result of the proposed clearing may be minimised by the implementation of flora management practices.

One Threatened Ecological Community (TEC) and two Priority Ecological Communities (PEC's) are mapped as occurring within the application area (GIS Database). The vegetation survey identified that the vegetation type S3 comprised similarities to the Vulnerable (State) 'Dense shrublands on clay flats (SCP 9)' TEC (Umwelt, 2013a). This TEC has a recorded location within the application area in DPaW managed land and one vegetation quadrat was established to verify the location and was located within Wellard Nature Reserve. This vegetation community was mapped as S3 (Umwelt, 2013a). This community has a similar structure and contains species that are typical of the TEC SCP 9 (Gibson et al., 1994). The proposed clearing will not occur within the TEC, but will access existing tracks within the TEC buffer. Areas within the TEC without existing tracks will be accessed by foot (Umwelt, 2013b). The proposed clearing is to be undertaken within a large clearing permit boundary and given the low impact nature of the proposed activities there are unlikely to be any significant negative impacts upon the TEC.

Vegetation types W1 and W2 comprise some similarities to the Priority 3 'Southern *Banksia attenuata* woodlands (SCP 21b)' PEC. This PEC has two recorded locations within the application area on private property. These locations were inspected and occurred in the vegetation community M1. These locations appear to be incorrect. This community, SCP21b, has an affinity with the mapped vegetation communities of W1 and W2 (Umwelt, 2013a). The proposed clearing will not occur within the PEC, but will access existing tracks within the PEC buffer. Areas within the PEC without existing tracks will be accessed by foot (Umwelt, 2013b). The proposed clearing is to be undertaken within a large clearing permit boundary and given the low impact nature of the proposed activities there are unlikely to be any significant negative impacts upon the PEC.

According to the available databases, the PEC '*Eucalyptus calophylla* – *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain (SCP 3b)' occurs within the application area (GIS Database). This community has some affinity with the mapped vegetation community W6 - Mid woodland of *Corymbia calophylla* and *Eucalyptus marginata* over mid sparse shrubland of *Xanthorrhoea preissii* over low open formland of *Dasyopogon bromeliifolius* and *Desmocladus flexuosus*. The forbs or herbs dominating the understorey of W6 do not match the typical species found in SCP3b. The sand-loam soils of W6 also differ from the sandy-clay soils of SCP 3b (Umwelt, 2013a).

A level 1 fauna survey carried out by Umwelt (2013a) recorded five species of amphibians, ten reptiles, two native mammals and 62 species of avifauna within the application area. The remnant vegetation within the application area has the potential to comprise of high faunal diversity; however the low impact nature of the activities and the proposed clearing of 40 hectares over an application area of 12,771.61 hectares is unlikely to have any significant negative impacts on biodiversity at a local scale.

The application area includes approximately 3,071 hectares of remnant native vegetation (Umwelt, 2013b; GIS Database). Approximately 2,656 hectares of this remnant vegetation is located outside of DPaW managed lands. The proponent has stated that at most, 2.75% of remnant vegetation within the application area will be disturbed to undertake the seismic survey (Umwelt, 2013b). The condition of this vegetation was classified as 'excellent' (Keighery, 1994; Umwelt, 2013a).

There were 27 weed species identified during the survey including one declared pest, Arum Lily (*Zantedeschia aethiopica*) (Umwelt, 2013a). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of appropriate weed management practices. The Dieback Atlas which maps *Phytophthora cinnamomi* sites within the South-West indicates dieback has been confirmed to occur within the application area, although areas are not mapped. The Atlas indicates the former Department of Environment and Conservation Vegetation Health Services have positively confirmed the presence through specimens collected in the application area including areas of remnant native vegetation (DEC, 2012). Umwelt (2013a) observed evidence of dieback in Eucalypt woodland areas. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of appropriate dieback management practices.

Given the presence of Threatened Flora, Priority Flora, TEC's and PEC's within the application area the proposed clearing may be at variance to this principle. Flora management practises will minimise the impact to biodiversity.

The proponent has committed in the Environmental Management Plan (Umwelt, 2013b) to:

- Access within any Environmentally Sensitive Areas only using existing tracks;
- Any clearing along existing tracks outside of Environmentally Sensitive Areas will be through mulching native vegetation to better define these tracks;
- Within plantations new access tracks will only be created through mulching; and
- Within native vegetation that has the understorey cleared or grazed, new access tracks will only be cleared through the slashing of native vegetation (Umwelt, 2013b).

Methodology DEC (2012)
Gibson et al (1994)
Mitchell et al (2002)
Umwelt (2013a)
Umwelt (2013b)
GIS Database:
GIS Database:

- IBRA WA (Regions - Subregions)
- Perth Metropolitan South 15cm Orthomosaic - Landgate 2011
- Threatened Ecological Sites Buffered

(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 Proposal is may be at variance to this Principle

A level 1 fauna survey by Umwelt (2013a) identified six faunal habitat types within the application area:

1. Wetland vegetation;
2. Jarrah/Banksia Woodland with mixed understorey;
3. Jarrah/Banksia Woodland with cleared/grazed understorey;
4. Jarrah/Marri woodland with mixed understorey;
5. Cleared land; and
6. Pine Plantation.

The application area has been identified under the Greater Bunbury Regional Scheme as being part of a regionally significant McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (North-South) ecological linkage and the Yalgorup/Riverdale Road/Yarloop (Riverdale Road Transect) ecological linkage (EPA, 2003). These linkages are also recognised within the South West Regional Ecological Linkages technical report (Molley et al., 2009). These linkages provide an important corridor for the dispersal of native fauna as well as consisting of either breeding or foraging habitat, or both, for local fauna (EPA, 2003; Molley et al., 2009). Umwelt (2013a) identified the vegetation condition of these faunal habitats to be 'completely degraded' to 'excellent' (Keighery, 1994). Only 6% of the vegetated areas were considered to be in 'excellent' condition (Keighery, 1994; Umwelt, 2013a). The majority of the application area comprised of cleared lands, resulting in 74% of the application area being considered as 'completely degraded' (Keighery, 1994). Remnant vegetation within the application area is highly fragmented and interspersed within areas of cleared land (GIS Database). No new tracks will be constructed within areas of remnant vegetation and clearing activities within remnant vegetation will only consist of mulching vegetation to define existing tracks (Umwelt, 2013b).

The application area sits over the Harvey estuary which is the largest estuary on the Swan Coastal Plain (Balla, 1994). Wetlands are the most biologically productive areas of the Swan Coastal Plain and serve as nurseries for fish and feeding ground for birds (including migratory avifauna species), and have a diversity of habitats and therefore high species richness (Balla, 1994). The Harvey estuary is covered by the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 and Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992 (Balla, 1994).

Umwelt (2013a) conducted a level 1 fauna survey on 17 to 21 December 2012 and 10 to 11 January 2013. The survey recorded five species of amphibians, ten reptiles, two native mammals and 62 species of avifauna. Umwelt (2013a) identified three species of conservation significance within the application area, however there is potential for another two conservation significant species to occur. The species recorded within the application area were the Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (EPBC Act – Endangered; WC Act – Schedule 1), Glossy Ibis (*Plegadis falcinellus*) (WC Act – Schedule 3; CAMBA) and the Rainbow Bee-eater (*Merops ornatus*) (EPBC Act - Migratory species; JAMBA, CAMBA). Preferred habitat for the Graceful Sun Moth (*Synemon gratiosa*) (DPaW – Priority 4) was also identified within the application area (Umwelt, 2013a).

The Rainbow Bee Eater (*Merops ornatus*) and Glossy Ibis (*Plegadis falcinellus*) are both migratory species which are highly mobile and may use the study area for foraging as part of a larger territory area (DoE, 2013a; 2013b). Given that the proposed clearing will occur during March, the Rainbow Bee-eater would have left the area for its northerly migration (Umwelt, 2013a). The Glossy Ibis will move if threatened with disturbance and there is suitable habitat outside the application area for this species (Umwelt, 2013a; GIS Database).

There is suitable habitat within the application area for the Cattle Egret (*Ardea ibis*) (EPBC Act – Migratory species; JAMBA, CAMBA), Eastern Great Egret (*Ardea modesta*) (EPBC Act – Migratory species; WC Act – Schedule 3; JAMBA, CAMBA), Australasian Bittern (*Botaurus poiciloptilus*) (EPBC Act – Endangered), Western Ringtail Possum (*Pseudocheirus occidentalis*) (EPBC Act – Vulnerable; WC Act – Schedule 1), Chuditch (*Dasyurus geoffroii*) (EPBC Act – Vulnerable; WC Act – Schedule 1), Graceful Sun Moth (*Synemon gratiosa*) and Quenda (*Isodon obesulus fusciventer*) (DEC – Priority 5) (Umwelt, 2013a).

It is possible that the Australasian Bittern, Eastern Great Egret and the Cattle Egret may utilise the wetlands within the application area, however given that the wetlands are not impacted by the proposed clearing; it is unlikely that the conservation significance of these species would be impacted.

Habitat for the Chuditch and Quenda has been recorded in surveys north of the application area and immediately west of the application area (Hyder and Dell, 2009; DPaW, 2013). Given the low impact nature of the proposed activities and the clearing of 40 hectares within a 12,771.61 hectare boundary, the proposed clearing is unlikely to impact the conservation significance of this species.

The stronghold area for the Western Ringtail Possum is between Bunbury and Dunsborough from the base of the Whicher Scarp to the coast (DEWHA, 2009). However, Western Ringtail Possums have been recorded recently within 5 kilometres of the western boundary of the application area. Preferred habitat such as Peppermint (*Agonis flexuosa*) forest was recorded in the south-western portion of the application area and

Jarrah, Marri and grasstrees are scattered throughout areas of remnant vegetation (Umwelt, 2013a). No other preferred habitat (Tuart or Wandoo) was recorded within the application area.

No Graceful Sun Moths were recorded during the fauna survey; however the species host plant, *Lomandra hermaphrodita*, was identified within the Jarrah/Banksia vegetation communities (Umwelt, 2013a). *Lomandra hermaphrodita* was sparsely distributed within the Jarrah/Banksia woodlands within the application area (Umwelt, 2013a). The nature of the proposed clearing may impact a few *Lomandra hermaphrodita* individuals, however is not likely to impact the conservation status of the Graceful Sun Moth.

Approximately 11.7% (1,495 hectares) of the application area is comprised of Jarrah/Banksia/Marri woodlands. Of these vegetation communities, approximately 2 hectares of remnant vegetation within the application area will be disturbed to undertake the seismic survey as committed by the proponent in the Environmental Management Plan (Umwelt, 2013b). Access within this vegetation community will be through existing access tracks, and maintenance to the tracks will be via mulching (Umwelt, 2013b). No new tracks are to be constructed within remnant vegetation (Umwelt, 2013b). Carnaby's Black Cockatoos were observed within the application area on numerous occasions. Potential breeding hollows (albeit scarce) were identified and preferred foraging habitat was also recorded within the application area. The proponent (Umwelt, 2013b) has committed to avoiding mature trees with a diameter at breast height of 500 millimetres.

Given the presence of habitat utilised by Western Ringtail Possums and black cockatoo species, the proposed clearing may be at variance to this principle. Management practises including the avoidance of habitat trees will minimise impacts to fauna habitat.

Methodology Balla (1994)
DoE (2013a)
DoE (2013b)
DPaW (2013)
EPA (2003)
Hyder and Dell (2009)
Keighery (1994)
Molloy et al., 2009
Umwelt (2013a)
Umwelt (2013b)
GIS Database:
- Perth Metropolitan South 15cm Orthomosaic - Landgate 2011

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

Comments Proposal is not likely to be at variance to this Principle

Umwelt (2013a) conducted a level 2 flora and vegetation survey of the application area during 23 November 2012 to 11 January 2013. Umwelt (2013a) recorded a single location of one Threatened Flora species recorded within the application area; *Drakaea micrantha*. The proponent has stated in their Environmental Management Plan (Umwelt, 2013b) that they will avoid this species.

According to the available databases, there are three known records of Threatened Flora within the application area; *Diuris drummondii*, *Diuris purdiei* and *Drakaea elastica* (GIS Database). There is only one recorded location of each of the species within the application area with the proponent stating in the Environmental Management Plan that these species will be avoided (Umwelt, 2013a; 2013b). However, the proponent will need access within the buffer zone of the Threatened Flora species *Diuris purdiei* and *Drakaea elastica* in two separate locations. Access will occur within well-defined existing tracks where there will be no impact to native vegetation (DMP, 2013). Potential impacts to Threatened Flora species as a result of the proposed clearing may be minimised by the implementation of flora management practices.

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

Methodology DMP (2013)
Umwelt (2013a)
Umwelt (2013b)
GIS Database:
- Threatened and Priority Flora

(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 Proposal is not likely to be at variance to this Principle

A search of the available databases showed that there is one known Threatened Ecological Community (TEC) recorded within the application area (GIS Database).

Umwelt (2013a) recorded one TEC within the application area; Dense shrublands on clay flats (Vulnerable) (SCP9). This TEC is associated with Department of Parks and Wildlife managed Wellard Nature Reserve (Umwelt, 2013a; GIS Database). The proposed clearing will not occur within the TEC, but will access existing tracks within the TEC buffer. Access to areas within the TEC without existing tracks will be accessed by foot (Umwelt, 2013b). The proposed clearing within a large boundary and the low impact nature of the activities is unlikely to significantly impact the TEC.

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

Methodology Umwelt (2013a)
 Umwelt (2013b)
 GIS Database:
 - DEC tenure
 - Threatened Ecological Sites Buffered

(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 Proposal may be at variance to this Principle

The application area falls within the Perth subregion of the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 39% of the pre-European vegetation remains within the bioregion (Government of Western Australia, 2013). The vegetation within the application area is recorded as:

Beard vegetation association 6: Medium woodland; tuart & jarrah;

Beard vegetation association 968: Medium woodland; jarrah, marri & wandoo;

Beard vegetation association 1000: Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; teatree (*Melaleuca* spp.); and

Beard vegetation association 1182: Medium woodland; *Eucalyptus rudis* & *Melaleuca raphiophylla* (Government of Western Australia, 2013; GIS Database).

Beard vegetation associations 6, 1000 and 1182 retain approximately 24.88%, 26.65% and 26.92 % respectively, of their pre-European extent which is less than the 30% threshold level recommended in the National Objectives Targets for Biodiversity Conservation below which, species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000). Beard vegetation association 968 while above the 30% recommended threshold, retains only 7.19% of its pre-European extent within both the Swan Coastal Plain Bioregion and Perth Subregion with an endangered conservation status (Department of Natural Resources and Environment, 2002).

The area proposed to be cleared includes areas of remnant native vegetation such as the wetland and shrubland vegetation communities where agricultural practices have not taken place (GIS Database). The vegetation complex for the application area has been mapped as Bassendean – Central and South, Serpentine River, Guildford, Dardanup and Karrakatta – Central and South (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and post clearing %)

IBRA Bioregion - Swan Coastal Plain	1,501,222	587,708	~39.15	Depleted	10.77 (10.12)
IBRA Subregion - Perth	1,117,757	473,909	~42.40	Depleted	11.95 (11.11)
Local Government - Shire of Harvey	170,788	89,034	~52.13	Least Concern	3.35 (1.95)
Local Government - Shire of Waroona	83,233	44,990	~54.05	Least Concern	22.15 (19.48)
Beard vegetation associations - State					
6	56,343	14,019	~24.88	Vulnerable	3.55 (3.33)
968	296,878	98,807	~33.28	Depleted	1.34 (1.12)
1000	99,836	28,346	~28.39	Vulnerable	2.76 (1.95)
1182	23,437	6,309	~26.92	Vulnerable	0.32 (0.30)
Beard vegetation associations - Bioregion					
6	56,343	14,019	~24.88	Vulnerable	3.55 (3.33)
968	136,188	9,796	~7.19	Endangered	1.34 (1.12)
1000	94,175	25,093	~26.65	Vulnerable	2.76 (1.95)
1182	12,309	1,493	~39.36	Depleted	0.32 (0.30)
Beard vegetation associations - subregion					
6	56,343	14,019	~24.88	Vulnerable	3.55 (3.33)
968	136,188	9796	~7.19	Endangered	1.34 (1.12)
1000	94,175	25,093	~26.65	Vulnerable	2.76 (1.95)
1182	12,310	1,493	~12.13	Depleted	0.32 (0.30)
Hedde Vegetation Complex***					
Bassendean – Central and South	87,318	24,610	~28.1	Vulnerable	6.78 (3.45)
Serpentine River	19,855	1,727	~8.70	Endangered	4.25 (1.51)
Guildford	92,463	4,863	~5.26	Endangered	0.33 (0.29)
Dardanup	9,504	647	~6.81	Endangered	0.64 (0.51)
Karrakatta – Central and South	49,735	12,788	~25.71	Vulnerable	0.33 (0.29)

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

*** Hedde et al. (1980)

The vegetation under application has been identified under the Greater Bunbury Regional Scheme as being part of a regionally significant McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (North-South) ecological linkage and the Yalgorup/Riverdale Road/Yarloop (Riverdale Road Transect) ecological linkage (EPA, 2003). Whilst it is acknowledged that Beard vegetation association 968 and Hedde Vegetation Complexes Serpentine River, Guildford, Dardanup are well below the recommended threshold level (30%) (EPA, 2000), clearing activities within remnant vegetation will only consist of mulching vegetation to define existing tracks (Umwelt, 2013b). No new tracks will be constructed within areas of remnant vegetation (Umwelt, 2013b). At most, 1.925 hectares of remnant vegetation within the application area will be disturbed to undertake the seismic survey as committed in the Environmental Management Plan (Umwelt, 2013b).

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology Department of Natural Resources and Environment (2002)
EPA (2000)
EPA (2003)
Government of Western Australia (2013)
Heddle et al. (1980)
Umwelt (2013b)
GIS Database:
- IBRA WA (regions - subregions)
- Perth Metropolitan South 15cm Orthomosaic - Landgate 2011
- Pre-European Vegetation

(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 **Proposal may be at variance to this Principle**

According to available databases the application area includes three permanent water bodies, two artificial lakes and a natural lake, as well as various types of wetlands (Umwelt, 2013a). Due to the low elevation of the application area, approximately 8,865.4 hectares (69.9% of the application area) are defined as wetlands and are either permanently, seasonally or intermittently waterlogged or inundated with water that may be fresh, saline, flowing or static (Umwelt, 2013a).

Several riparian species were identified within the vegetation communities mapped within the application area associated with these wetlands (Umwelt, 2013a). No clearing of native vegetation is permitted within conservation category wetlands (Umwelt, 2013b). Clearing of native vegetation by mulching or slashing is restricted to the edges of existing access tracks only if required within Multiple Use, Resource Enhancement wetlands and those listed as Not Assessed (Umwelt, 2013b). No clearing is permitted for new tracks in wetlands or native vegetation communities. Clearing will be permitted on new or existing tracks through areas where native vegetation has a cleared or a grazed understorey (Umwelt, 2013b). Provided disturbance to riparian habitats is avoided or minimised where possible, and strict weed hygiene procedures are followed, the proposed works are not expected to substantially impact these vegetation communities. Potential impacts to riparian vegetation may be minimised through the implementation of appropriate vegetation management.

The application footprint falls within the Environment Protection (Swan Coastal Plain Lakes) Policy 1992 and contain numerous lakes. The applicant has advised in their Environmental Management Plan that no Swan Coastal Plain Lakes will be impacted during works.

The low impact nature of the activities and the proposed clearing of 40 hectares over a 12,771 hectare clearing boundary is unlikely to result in any significant impact to any watercourse or wetland provided natural surface water flow patterns are not disturbed.

The proposed clearing may involve the removal of riparian vegetation and therefore may be at variance to this principle.

Methodology Umwelt (2013a)
Umwelt (2013b)

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

Comments **Proposal is not likely to be at variance to this Principle**

The proponent has applied to clear up to 40 hectares within an application area of approximately 12,771.61 hectares for the purpose of a 3D seismic survey. Disturbance associated with access tracks will be restricted to the use of existing access tracks and any clearing will be through mulching vegetation to define existing tracks where permitted. No new tracks will be constructed within areas of remnant vegetation or environmentally sensitive areas, and hand pruning of native vegetation is only permitted within Department of Parks and Wildlife managed lands (Umwelt, 2013b). The majority of the application area comprised of cleared lands, resulting in 74% of the application area being considered as 'completely degraded' (Umwelt, 2013a; GIS Database). The proposed clearing activities are not likely to result in large areas of disturbed or open land. Given the nature and scale of the proposed activities, the clearing is not likely to result in appreciable land degradation.

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

Methodology Umwelt (2013a)
Umwelt (2013b).
GIS Database:
- Perth Metropolitan South 15cm Orthomosaic - Landgate 2011

(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 Proposal may be at variance to this Principle

The application area is located within the Ord Riverdale Nature Reserve, Harvey Flats Nature Reserve, Wellard Nature Reserve which are managed by the Department of Parks and Wildlife (DPaW), and an un-named conservation flora and fauna purpose reserve which is vested with the Conservation Commission of Western Australia (GIS Database). Approximately 415 hectares of the application area occurs within DPaW managed land, which accounts for 3.2% of the application area (Umwelt, 2013b).

Any vehicular access to DPaW managed land will be on existing tracks only (Umwelt, 2013b). Any vegetation disturbance will be limited to hand pruning if required. Access in DPaW managed land for the placement of geophones will be completed on foot (Umwelt, 2013b).

The application area includes areas of remnant vegetation which forms part of the regionally significant McLarty/Kemerton/Twin Rivers/Preston River/Gwindinnup (North-South) ecological linkage and the Yalgorup/Riverdale Road/Yarloop (Riverdale Road Transect) ecological linkage (EPA, 2003). These areas also contain either conservation category or multiple use category wetlands, or both. Conservation category wetlands support a high level of ecological attributes and functions and are the highest priority for protection (Molloy, 2009). The remnant vegetation under application is in an 'excellent' condition (Keighery, 1994) and would contribute to the functionality of this linkage. No clearing of native vegetation is permitted within conservation category wetlands. Clearing of native vegetation by mulching or slashing is restricted to the edges of existing access tracks only if required within Multiple Use, Resource Enhancement wetlands and those listed as Not Assessed (Umwelt, 2013b). No clearing is permitted for new tracks in wetlands or native vegetation communities. Clearing will be permitted on new or existing tracks through areas where native vegetation has a cleared or a grazed understorey (Umwelt, 2013b).

Phytophthora cinnamomi (dieback) was recorded in the application area (Umwelt, 2013a; 2013b). The proposed clearing may contribute towards the spread of dieback into the adjacent reserves. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a dieback management practices.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology EPA (2003)
Keighery (1994)
Molloy (2009)
Umwelt (2013a)
Umwelt (2013b)
GIS Database:
DEC 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 Proposal is not likely to be at variance to this Principle

The application area is not located within a Public Drinking Water Source Area (GIS Database). The application area is located within the proclaimed South West Coastal groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purpose other than domestic and/or stock watering is subject to licence by the Department of Water.

The application area has a groundwater salinity that ranges from marginal to brackish (500 - 1,000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). The proposed clearing of 40 hectares of native vegetation is unlikely to further deteriorate the quality of underground water (GIS Database).

The application area includes three permanent water bodies, two artificial lakes and a natural lake, as well as various types of wetlands. Due to the low elevation of the application area, approximately 8,865.4 hectares (69.9% of the application area) are defined as wetlands and are either permanently, seasonally or intermittently waterlogged or inundated with water that may be fresh, saline, flowing or static (Umwelt, 2013a). No clearing of native vegetation is permitted within conservation category wetlands. Clearing of native vegetation by mulching or slashing is restricted to the edges of existing access tracks only if required within Multiple Use, Resource Enhancement wetlands and those listed as Not Assessed. No clearing is permitted for new tracks in wetlands. The low impact nature of the activities and the proposed clearing of 40 hectares over a 12,771 hectare clearing boundary is unlikely to result in deterioration in surface or groundwater quality in the local area.

Clearing will be completed during the 'dry season' to minimise environmental and land use impacts (Umwelt, 2013b). To minimise the potential impact of surface erosion no clearing is to be undertaken during the months from April to January.

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

Methodology Umwelt (2013a)
GIS Database:
- Geodata, Lakes
- Groundwater Salinity, Statewide
- Hydrography, Linear
- Public Drinking Water Source Areas
- RIWI Act, Groundwater Areas

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

Comments **Proposal is not likely to be at variance to this Principle**

Given the size of the area to be cleared (40 hectares) compared to the size of the Harvey River catchment area (2,066,150 hectares), Harvey Diversion catchment area (7,124,960 hectares) and Harvey Estuary catchment area (10,422,850 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

The application area comprises conservation category wetlands with poorly drained and organic-rich soil where winter pooling is possible, multiple use category wetlands and resource enhancement category wetlands (GIS Database). No clearing of native vegetation is permitted within conservation category wetlands. Clearing of native vegetation by mulching or slashing is restricted to the edges of existing access tracks only if required within Multiple Use, Resource Enhancement wetlands and those listed as Not Assessed. No clearing is permitted for new tracks in wetlands or native vegetation communities. Clearing will be permitted on new or existing tracks through areas where native vegetation has a cleared or a grazed understorey. The low impact nature of the activities and the proposed clearing of 40 hectares over a 12,771 hectare clearing boundary is not likely to cause or exacerbate the incidence or intensity of floods in the catchment or local areas. Clearing will be completed during in the 'dry season' to minimise environmental and landuse impacts (Umwelt, 2013b). The low impact nature of the activities and the proposed clearing of 40 hectares over a 12,771 hectare clearing boundary is not likely to cause or exacerbate the incidence or intensity of floods in the catchment or local areas.

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

Methodology Umwelt (2013b)
GIS Database:
- Geomorphic Wetlands
- Hydrographic Catchments - Catchments

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

There is one Native Title claim over the area under application. The claim WC1998/058 was registered with the National Native Title Tribunal on 17 September 1998. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are four registered Aboriginal Sites of Significance within the application area (Site IDs: 3222, 3559, 5843, 5800) (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation (formerly the Department of Environment and Conservation) and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 16 December 2013 by the Department of Environment and Regulation inviting submissions from the public. No submissions were received to the proposed clearing.

The area under application falls within the Environmental Protection (Peel Inlet- Harvey Estuary) Policy 1992 which outlines environmental policy objectives to protect the Peel Inlet- Harvey Estuary from further degradation (Balla, 1994).

The applicant has obtained a Regulation 4 Authority permit (CE004147) from the Department of Parks and Wildlife (DPaW) which allow for lawful authority to conduct activities on lands managed by DPaW.

Methodology Balla (1994)
GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Registered with the NNTT

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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)

GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a

specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.