



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7499/1
Permit Holder:	Commission of Main Roads Western Australia
Duration of Permit:	21 April 2018 to 21 April 2023

ADVICE NOTE

The funds referred to in condition 10 of this permit are intended for contributing towards the purchase of 120 hectares of native vegetation with similar environmental values containing habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's cockatoo (*Calyptorhynchus baudinii*) and forest red-tailed black cockatoo (*Calyptorhynchus baudinii*).

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 road realignment.

2. Land on which clearing is to be done

Lot 4380 on Plan 156581, Bowelling
Lot 2840 on Plan 169981, Bowelling
Lot 23 on Plan 156346, Bowelling
Lot 24 on Plan 156346, Bowelling
Lot 1641 on Plan 233009, Bowelling
Unallocated Crown land (PIN: 542579), Bowelling
Unallocated Crown land (PIN: 542585), Bowelling
Unallocated Crown land (PIN: 542602), Bowelling
Unallocated Crown land (PIN: 542604), Bowelling
Unallocated Crown land (PIN: 542606), Bowelling
Unallocated Crown land (PIN: 11404372), Bowelling
Reserve 22437, Bowelling
State Forest 24, Bowelling
Railway reserve (PIN: 510157), Bowelling
Bowelling-Duranilling Road reserve (PINs: 11462890 and 11518535), Bowelling
Hill Road reserve (PIN: 11462883), Bowelling
Un-Named road reserve (PIN: 11503901), Bowelling
Coalfields Road reserve (PINs: 11503911, 11462885 and 11462887), Bowelling

3. Area of Clearing

The Permit Holder must not clear more than 17.06 hectares of native vegetation within the area hatched yellow on attached Plan 7499/1a.

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. Type of clearing authorised

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

PART II – MANAGEMENT CONDITIONS

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

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

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

7. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *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.

8. Fauna management

- (a) Prior to undertaking any clearing of *habitat trees*, containing hollows suitable to be utilised for nesting by Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's cockatoo (*Calyptorhynchus baudinii*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii subsp. naso*) (black cockatoos), as identified within the Ecoedge's Level 1 Fauna Survey along Collie-Lake King Road at Bowelling (SLK 64.5 – 71.0), a *fauna specialist* shall inspect such trees for the presence of black cockatoos utilising the hollow/s.
- (b) Where black cockatoos are identified under condition 8(a) of this Permit, the Permit Holder shall ensure that no clearing of, or within 10 metres of, the identified *habitat tree(s)* occurs until a *fauna specialist* has verified that the hollow/s are no longer being utilised by black cockatoos.

9. Vegetation management

The Permit Holder must implement the following management measure to mitigate impacts to the Claypans of the Swan Coastal Plain threatened ecological community (TEC):

- (a) Install parallel drains for scour protection;
- (b) Install a gross pollutant trap, incorporating rock protection, at the inflow point of the culvert that drains into the TEC; and
- (c) Replicate existing drainage pathways.

10. Monetary contributions to a fund maintained for the purpose of establishing or maintaining vegetation (offset)

Prior to undertaking any clearing authorised under this Permit and no later than 22 April 2019, the Permit Holder shall provide documentary evidence to the CEO that funding of \$198,000 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation.

11. Revegetation and rehabilitation

The Permit Holder shall establish and maintain:

- (a) 7.18 hectares of native vegetation within the area hatched red on attached Plan 7499/1b, being Lot 8 on Plan 16210, Bowelling (Trigwell Bridge); and
- (b) 9.88 hectares of native vegetation within the area hatched red on attached Plan 7499/1c, being Lot 4051 on Plan 144606, Bowelling (South Block).

PART III - RECORD KEEPING AND REPORTING

12. Records must be kept

The Permit Holder must maintain the following records for activities done in 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;
 - (ii) the date that the area was cleared; and
 - (iii) the size of the area cleared (in hectares).
- (b) Actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of the Permit.
- (c) Actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 7 of the Permit.
- (d) In relation to fauna management pursuant to condition 8 of this Permit:
 - (i) the location of each black cockatoo 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 species name of each black cockatoo identified; and
 - (iii) where black cockatoos have been identified, the date in which the black cockatoos no longer utilised the *habitat tree(s)* and the date the area was cleared.
- (e) Actions taken to mitigate impacts to the Claypans of the Swan Coastal Plain threatened ecological community in accordance with condition 9 of this Permit.
- (f) 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
 - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares).

13. 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 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, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 22 February 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:

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;

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

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

habitat tree(s) 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 100 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;

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

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;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Jane Clarkson
MANAGER
CLEARING REGULATION




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

22 March 2018

Plan 7499/1a



Legend

-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



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

J Clarkson Date 22 March 2018

J Clarkson

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

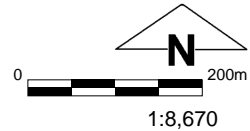


Plan 7499/1b



Legend

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



(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

Date: 22 March 2018

J Clarkson

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






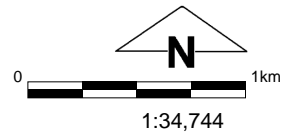
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Plan 7499/1c



Legend

-  Imagery
-  Local Government Authority
-  Clearing Instruments Conditions



(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

Date: 22 March 2018

J Clarkson

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



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Bilateral Agreement Decision Report

This report has been prepared to fulfil the requirements of an accredited environmental assessment process between the Commonwealth and State governments, pursuant to a bilateral agreement established under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report is set out in three parts:

- Part 1: Application and site details;
- Part 2: Assessment against matters of national environmental significance (pursuant to the EPBC Act); and
- Part 3: Assessment against the clearing principles (pursuant to the *Environmental Protection Act 1986* (EP Act)). Appeal rights pursuant to section 101A of the EP Act are relevant to this section of the report.

Part 1: Application and site details

1. Application details

1.1. Permit application details

Permit application No.: 7499/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Commissioner of Main Roads Western Australia

1.3. Property details

Property: Lot 4380 on Plan 156581, Bowelling
Unallocated Crown Land - 542606, Bowelling
Unallocated Crown Land - 542604, Bowelling
Unallocated Crown Land - 542602, Bowelling
Unallocated Crown Land - 542579, Bowelling
Unallocated Crown Land - 11404372, Bowelling
Reserve 22437, Bowelling
Lot 2840 on Plan 169981, Bowelling
Lot 24 on Plan 156346, Bowelling
Lot 23 on Plan 156346, Bowelling
Lot 1641 on Plan 233009, Bowelling
State Forest 24, Bowelling
Railway Reserve -510157, Bowelling
Bowelling-Duranilling Road Reserve - 11462890 and 11518535, Bowelling
Unallocated Crown Land - 542585, Bowelling
Hill Road Reserve - 11462883, Bowelling
Un-Named Road Reserve - 11503901, Bowelling
Coalfields Road Reserve - 11503911, 11462885 AND 11462887, Bowelling
West Arthur, Shire of

Local Government

Authority:
Localities: Bowelling

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
17.06		Mechanical Removal	Road construction or upgrades

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 22 March 2018
Reason for Decision: The clearing permit application received on 24 February 2017 has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing is at variance to clearing principles (a), (b) and (f), may be at variance to principles (d), (h) and (i) and is not likely to be at variance to the remaining clearing principles.

Through assessment it has been determined that the application area contains 17.06 hectares of foraging habitat for black cockatoos and 280 potential breeding trees, approximately 77 of which contain hollows, two of which are currently suitable to be used by black cockatoos.

To mitigate the significant environmental impacts identified above, and in accordance with the WA Environmental Offset Policy and Environmental Offsets Guidelines, prior to undertaking any clearing, the Permit Holder is to provide documentary evidence to the CEO that funding has been transferred to the Department to fund the purchase 120 hectares of native vegetation.

To ensure that black cockatoos are not impacted during the clearing process a condition has been added to the permit requiring the Permit Holder to check habitat trees for the presence of black cockatoos prior to clearing and not to clear trees where black cockatoos have been identified until a fauna specialist has verified that the hollow/s are no longer being utilised by black cockatoos.

Through assessment the Delegated Officer determined that the proposed clearing may have secondary impact on the Claypans of the Swan Coastal Plain threatened ecological community. To mitigate these impacts a condition has been added to the permit requiring the Permit Holder to install parallel drains, a pollutant trap and to replicate existing drainage.

The Delegated Officer determined that the proposed clearing may increase the spread of weeds and dieback into adjacent vegetation (Muja State Forest). To minimise this impact, a condition has been placed on the permit requiring the implementation of weed and dieback management measures.

The application area lies within the *Country Areas Water Supply Act 1947* Wellington Dam Catchment Area. To mitigate impacts to this catchment a condition has been added to the permit requiring the Permit Holder to revegetate an equivalent area in the same catchment.

The Delegated Officer had regard to approvals obtained under the *Rights in Water and Irrigation Act 1914* in the decision to grant this clearing permit.

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
The application area has been mapped as Mattiske vegetation complex S which is described as a mosaic of low open woodland of <i>Melaleuca preissiana</i> - <i>Banksia littoralis</i> , closed scrub of <i>Myrtaceae</i> spp., closed heath of <i>Myrtaceae</i> spp. and sedgelands of <i>Baumea</i> and <i>Leptocarpus</i> spp. on seasonally wet or moist sand, peat and clay soils on valley floors in all climatic zones (Government of Western Australia, 2017).	The applicant proposes to clear 17.06 hectares of native vegetation within various road reserves, rail reserves, properties, unallocated Crown land and State Forest in the locality of Bowelling, for the purpose of road realignment.	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).	A total of nine vegetation units were identified within the survey area (Ecoedge, 2016). These are: <ol style="list-style-type: none"> 1. Jarrah-Marri-Wandoo woodland/open forest on mid-lower slopes 2. Jarrah-Marri-Wandoo woodland/open forest on upper slopes 3. Wandoo-Marri woodland on lower slopes 4. <i>Melaleuca viminea</i> - <i>Hakea prostrata</i> - <i>Kunzea ciliata</i> tall open shrubland 5. <i>Hakea prostrata</i> - <i>H. varia</i> - <i>M. viminea</i> tall shrubland 6. Jarrah-Wandoo open forest on heavy gravel on lower slopes 7. <i>Amphibromus nervosus</i> tall grassland 8. Marri-Wandoo very open woodland in pasture 9. Pasture or cleared areas <p>The vegetation within the survey area ranges from completely degraded to excellent (Keighery, 1994) condition. The majority of the vegetation is in a very good to excellent (Keighery, 1994) condition (Ecoedge, 2016).</p> <p>The description and condition of the vegetation was determined via a Level 2 flora and vegetation survey conducted by Ecoedge (2016).</p>

Part 2: Assessment against matters of national environmental significance

3. Assessment of application against Matters of National Environmental Significance

Background

Main Roads Western Australia (MRWA; the applicant) proposes to clear 17.06 hectares of native vegetation within various road reserves, rail reserves, properties, unallocated Crown land and State Forest in the locality of Bowelling, for the purpose of road realignment. The application area is located within the townsite of Bowelling, and extends 4.5 kilometres west of the town. The application area is within the Shire of West Arthur.

This application proposes to realign Collie Lake King Road from SLK 64.76 to SLK 69.84 in order to remove dangerous curves. The proposed realignment will deviate from Collie Lake King Road through farmland, connecting into the existing cleared area that is currently the Darkan to Collie Rail Trail and then cut through Muja State Forest to re-join Collie Lake King Road (MRWA, 2017a).

The realignment will include two intersection modifications, a roadside stopping area and the re-establishment of the Darkan to Collie Trail adjacent to the new section of road (MRWA, 2017a).

The vegetation within the application area ranges in condition from completely degraded to excellent (Keighery, 1994). Approximately 50 percent of the survey area consists of vegetation in very good to excellent (Keighery, 1994) condition (Ecoedge, 2016). A survey of the application area identified nine vegetation units, which are described in Table 1.

Table 1. Vegetation units of the survey area (Ecoedge, 2016).

Vegetation Unit	Description
A1	Jarrah-Marri-Wandoo woodland/open forest on mid-/lower slopes
A2	Jarrah-Marri-Wandoo woodland/open forest on upper slopes
B1	Wandoo-Marri woodland on lower slopes
B2	<i>Melaleuca viminea</i> - <i>Hakea prostrata</i> - <i>Kunzea ciliata</i> tall open shrubland
C1	<i>Hakea prostrata</i> - <i>H. varia</i> - <i>M. viminea</i> tall shrubland
C2	Jarrah-Wandoo open forest on heavy gravel on lower slopes
D	<i>Amphibromus nervosus</i> tall grassland
E	Marri-Wandoo very open woodland in pasture
F	Pasture or cleared areas

Description of controlling provision

On 30 September 2016 the project was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the following controlling provisions: Listed Threatened Species and Communities. The proposed action is considered likely to have a significant impact on Carnaby's cockatoo (*Calyptorhynchus latirostris*) listed as endangered under the EPBC Act, on forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) listed as vulnerable under the EPBC Act and on Baudin's cockatoo (*Calyptorhynchus baudinii*) listed as vulnerable under the EPBC Act. Throughout the following assessment these three species will be collectively referred to as black cockatoos.

In addition, it is considered possible that significant impacts to the chuditch (*Dasyurus geoffroii*) and numbat (*Myrmecobius fasciatus*) may occur as a result of the proposed clearing.

Through assessment it was identified that the original application area contain 0.355 hectares of the critically endangered (EPBC Act) 'Claypans of the Swan Coastal Plain' threatened ecological community (TEC). This TEC was subsequently removed from the application area, however the proposed clearing may still have indirect impacts on this TEC.

Carnaby's cockatoo

Currently, the overall population trend for the Carnaby's cockatoo is one of decline due to the loss and fragmentation of habitat as a result of clearing of native vegetation (Saunders, 1990; Johnstone and Storr, 1998; Saunders and Ingram, 1998; Garnett et al., 2011). Carnaby's cockatoo is endemic to the south-west of Western Australia. Breeding takes place between late July and December and occurs mostly in the inland wheatbelt region of its distribution, in areas receiving between 300 and 750 millimetres of annual average rainfall (Saunders, 1974). During the non-breeding season (January to July) the majority of the

birds move to the higher rainfall coastal regions of their range including the midwest coast, Swan Coastal Plain and south coast (Saunders, 1980, 1990; Berry, 2008; Saunders et al., 2011; Johnstone et al., 2011). There has been an apparent expansion in the breeding range to include areas further west and south since the middle of last century with a more rapid increase into the Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) forests of the south west (Johnstone and Storr 1998; Johnstone et al., 2011). This expansion in breeding range is due to threatening processes such as clearing of breeding habitat and competition for suitable breeding hollows.

Carnaby's cockatoo preferred habitat is remnant native eucalypt woodlands, especially those of salmon gum (*Eucalyptus salmonophloia*) and wandoo (*Eucalyptus wandoo*), and in shrubland or kwongan heathland dominated by plants of the Proteaceae family. It also occurs in forests containing marri, jarrah, karri (*Eucalyptus diversicolor*) and tuart (*Eucalyptus gomphocephala*) (Parks and Wildlife, 2013).

Carnaby's cockatoo nests in large hollows in tall, living or dead eucalypts. It nests most commonly in smooth-barked wandoo and salmon gum, but have also been recorded breeding in red morrell (*Eucalyptus longicornis*), York gum (*Eucalyptus loxophleba*), tuart (*Eucalyptus gomphocephala*), flooded gum (*Eucalyptus rudis*), swamp yate (*Eucalyptus occidentalis*), gimlet (*Eucalyptus salubris*) and marri, and are said to nest in any species of eucalypt with a suitable hollow (Parks and Wildlife, 2013).

The Carnaby's Cockatoo Recovery Plan (Parks and Wildlife, 2013) summarises habitat critical to the survival of Carnaby's cockatoos as:

- the eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- in the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.

The recovery plan also states that success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites (Parks and Wildlife, 2013). Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species (Parks and Wildlife, 2013).

Forest red-tailed black cockatoo

The forest red-tailed black cockatoo is endemic to the south-west humid and sub-humid zones of south west Western Australia and inhabits jarrah, karri and marri forests receiving more than 600 millimetres of annual average rainfall (DEC, 2008).

The forest red-tailed black cockatoo occurs in one population of approximately 15,000 individuals and are known to nest in the large hollows of marri, jarrah and karri (Johnstone and Kirkby, 1999).

The recovery plan for the forest red-tailed black cockatoo lists the main threats as illegal shooting, habitat loss through land clearing, nest hollow shortage and competition from other species (DEC, 2008).

Baudin's cockatoo

Baudin's cockatoo is endemic to a 2,000 kilometre area of the humid and sub-humid zones of south-west Western Australia and is generally contained within the 750 millimetre isohyet of average annual rainfall. This species is locally resident, but at the end of the breeding season (January), the birds move away from the breeding area and form flocks that move in response to changing food resources (DEC, 2008).

Baudin's cockatoo mainly feeds on the seeds of marri and nest in mature trees such as marri, karri, jarrah and Wandoo in the lower south-west of Western Australia (DEC, 2008).

This species has declined over more than 50 per cent of its range over the past 50 years. The principal cause of the decline in range was clearing of the eastern margins of the forests for agriculture and the current primary threat to the population is illegal shooting (DEC, 2008). The Conservation advice for this species states that one of the main threats is habitat loss and nest hollow shortage.

Chuditch

The chuditch is the largest carnivorous marsupial (family *Dasyuridae*) occurring in Western Australia.

At the time of European settlement, chuditch were present in all mainland Australian States, and the Northern Territory, however they are now only present in approximately five per cent of their former range. Most chuditch are now found in varying densities throughout the jarrah forest and south coast of Western Australia (DEC, 2012a).

Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The most dense populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges, and even at their most abundant, chuditch are generally present in low numbers. For this reason they require habitats that are of a suitable size and not excessively fragmented (DEC, 2012a).

The total chuditch population as of 2007 was estimated to be less than 10,000 individuals with probably 75 per cent of these

occurring in the eucalypt forests and woodlands, and mallee heath and shrublands of the south-west and south coast of Western Australia (DEC, 2012b).

Numbat

The numbat is a small, insectivorous marsupial. At the time of European settlement, the numbat's distribution extended across arid and semiarid regions, from western New South Wales through South Australia and across much of the southern half of Western Australia (Friend, 2008), encompassing coastal, arid and semi-arid lands (Friend & Thomas, 2003). This distribution lasted until at least the end of the 19th century (Spencer, 1896) however, by 1985 only two isolated populations remained: at Dryandra and Perup in the southwest of Western Australia (Friend, 2008), approximately 160 kilometres apart (Threatened Species Scientific Committee, 2014).

The historic contraction in the numbat's range occurred mainly between 1900 and 1950, and a further population crash in the late 1970s brought the total population size down to the low hundreds (Friend, 2008; Threatened Species Scientific Committee, 2014).

The species' habitat is generally dominated by eucalypts that provide hollow logs and branches for shelter and termites for food (Friend, 2008). Although its range has contracted to jarrah (*Eucalyptus marginata*) forest and wandoo (*Eucalyptus wandoo*) woodland, the numbat was found in a wide range of woodland types, including York gum (*Eucalyptus loxophleba*) and mallee (*Eucalyptus* spp.) woodland in Western Australia, mulga woodland in central Australia, and mallee woodland in South Australia (Friend, 2008). The numbat's habitat requirement of protection from raptors can be met by vegetation thickets, as well as burrows or hollows (Friend & Thomas, 2003; Threatened Species Scientific Committee, 2014).

Claypans of the Swan Coastal Plain threatened ecological community

The Clay Pans of the Swan Coastal Plain ecological community occurs in Western Australia where clay soils form an impermeable layer close to the landscape surface, and wetlands form that rely solely on rainfall to fill and then dry to impervious pans in summer (DSEWPC, 2012).

The ecological community generally occurs as a shrubland (less commonly as a low, open woodland) over a ground layer of geophytes, herbs and sedges which are characteristic of the wetter parts of the sites. There are no dominant species which characterise the entire ecological community. The ecological community, however, shows similar landform and vegetation structural features across its range (DSEWPC, 2012).

The clay pans have very high species richness, a number of local endemics and are the most floristically diverse of the Swan Coastal Plain wetlands (DSEWPC, 2012).

The main threats to this community arise from the fact that it occurs in the most densely populated region of Western Australia and on some of the most productive agricultural soils in the landscape (DSEWPC, 2012).

Methodology References:
Berry (2008)
DEC (2008)
DEC (2012a)
DSEWPC (2012)
Ecoedge (2016)
Friend (2008)
Friend and Thomas (2003)
Garnett et al. (2011)
Johnstone et al. (2011)
Johnstone and Kirkby (1999)
Johnstone and Storr (1998)
Keighery (1994)
MRWA (2017a)
Parks and Wildlife (2013)
Saunders (1974)
Saunders (1980)
Saunders (1990)
Saunders et al. (2011)
Saunders and Ingram (1998)
Spencer (1896)
Threatened Species Scientific Committee, 2014

Summary of Impacts

According to the former Commonwealth Department of the Environment's EPBC Act referral guidelines for Western Australia's three threatened black cockatoo species, the application area falls within the known breeding range for Carnaby's cockatoo (Commonwealth of Australia, 2012). According to these guidelines the application area is within an area where Baudin's cockatoo are likely to occur and forest red-tailed black cockatoos may occur.

A total of 17.06 hectares of foraging habitat is present in the application area, it is considered that *Amphibromus nervosus* tall grassland (Vegetation Type D) and paddock (Vegetation Type F) provide only limited foraging potential. No roosting trees were

identified. Up to 280 potential black cockatoo breeding trees may be cleared, of which approximately 77 have hollows. Two of these trees have multiple hollows suitable for current use. One is a marri with three hollows suitable for current use; the second is a wandoo with more than five hollows, one of which was considered suitable for current use. No evidence of use (occupancy or chew marks) was found (Ecoedge, 2016).

The Carnaby's Cockatoo Recovery Plan notes that there are multiple reasons for the decline of Carnaby's cockatoo, however the decline to-date has primarily been brought about by the extensive clearing of nesting and feeding habitat (Parks and Wildlife, 2013). Loss of nesting habitat, together with foraging areas and watering sites within foraging distance of breeding sites is one of the key threatening processes contributing towards the decline of the species. A further significant threat is the clearing, fragmentation and degradation of foraging and night roosting habitat in the non-breeding parts of Carnaby's cockatoo range in the southwest of Western Australia and particularly on the Swan Coastal Plain (Parks and Wildlife, 2013). The long-term survival of Carnaby's cockatoo depends on the availability of suitable breeding habitat and foraging habitat capable of providing enough food to sustain the population (Parks and Wildlife, 2013).

Given the application area contains 17.06 hectares of foraging habitat, 280 potential nesting trees and is located within the known range of these species, it is considered that the application area may contain critical habitat for black cockatoos and is therefore inconsistent with the recovery plan for this species.

According to the former Department of Environment and Conservation's recovery plan for the chuditch this species is now found in varying densities throughout the jarrah forest and south coast of Western Australia (DEC, 2012a). Critical habitat includes a range of habitats including forest, mallee shrublands, woodland and desert. Most dense populations are found in riparian jarrah forest (DEC, 2012a).

Approved conservation advice for the numbat notes that this species habitat is generally dominated by eucalyptus that provide hollow logs and branches for shelter and termites for food (Friend, 2008; Threatened Species Scientific Committee, 2014).

The level 1 fauna survey as defined by the Environmental Protection Authority (EPA 2004) completed in 2014, found no direct evidence of chuditch utilising the study area (Harewood, 2014) and no impact on the numbat.

However, noting their distribution and habitat preferences that application area has the potential to contain suitable habitat for these species.

The survey, was not conducted in accordance with the Department of the Environment and Energy (DotEE) *Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999* (2011). When the project was referred to the DotEE, the chuditch and numbat had not been considered as a controlling provision by Main Roads.

One of the nine vegetation units identified in the Level 2 Flora and Vegetation Survey was identified to be commensurate with the 'Claypans of the Swan Coastal Plain' threatened ecological community (TEC). The survey identified 0.8 hectares of this TEC, 0.355 hectares of which was originally proposed to be cleared under this application. The applicant has amended the clearing boundary so this TEC will not be directly impacted through the removal of vegetation. However, the TEC may still be impacted from secondary impacts such as interruption of functioning hydrological processes, changes in water quality and drainage, runoff and weeds. The approved conservation advice for this community lists two of the major threats to this community as being hydrological changes and weed invasion (DSEWPC, 2012).

Methodology References:
Commonwealth of Australia (2012)
DEC (2012a)
DSEWPC (2012)
Ecoedge (2016)
Friend (2008)
Parks and Wildlife (2013)
Threatened Species Scientific Committee (2014)

Public consultation

The clearing application was advertised by the former Department of Environment Regulation online on 10 April 2017 for a 21 day submission period. Publication summary advertised in *The West Australian* on Monday 17 April 2017. Two public submissions were received during this comment period.

The first submission was received on 26 April 2017 and raised concerns with removal of native orchid habitat and habitat associated with rare and threatened orchid species. It was proposed that members of this group conduct a flora survey, and potentially translocate any orchids found ahead of works (Submission 1, 2017).

In response to this submission the applicant advised that the application area was surveyed in Spring 2015 and 2016 and that no orchid species listed as priority or threatened were identified (MRWA, 2017c). It was also advised that the applicant would liaise with this group regarding potential time of clearing and allow the group to relocate any orchids identified within the application area (MRWA, 2017c).

The second submission was received on 30 April 2017 and raised concern with the number of clearing principles at or potentially at variance, that the application contains vegetation in excellent condition, a threatened ecological community and Carnaby's cockatoo habitat. It was also questioned why clearing could not be further reduced impacts by upgrading the existing road or by

using engineering solutions (Submission 2, 2017).

In response to this the applicant advised they assessed a number of alignment options to identify the option with the least clearing impact, with a specific emphasis on utilising already cleared areas. The current alignment was chosen as it was the smallest footprint possible (MRWA, 2017c).

The submission also asked a number of questions of the applicant including:

- What avoidance measures were considered?
- What revegetation is the applicant going to undertake?
- Is the applicant going to retain or revegetate the batter back slope and beyond with trees and shrubs?
- What offsets are Main Roads proposing?
- What will happen to the old road reserve?

Avoidance measures and offsets proposed by the applicant are outlined below. In regards to revegetation Main Roads advised that the application area is in the Wellington Dam Catchment Area declared under the *Country Areas Water Supply Act 1947* and will require a revegetation offset. Main Roads advises that revegetation of the redundant road has been discussed since project inception (MRWA, 2017c). It is further advised that revegetation of the back slope will be undertaken where possible, taking into account the requirement for cleared zone for the movement of fire equipment along the road, and the steep gradient between the road and the rail trail (MRWA, 2017c).

The full response to the submissions can be viewed at <ftp://ftp.dec.wa.gov.au/Permit> under 7499.

Avoidance, mitigation and offset

Avoidance and Mitigation

The applicant has advised that it has undertaken extensive investigation into minimising the impacts of this project, including workshops with both the former Wellington District Department of Parks and Wildlife (Parks and Wildlife) and community stakeholders such as the Collie to Darkan Rail Trail Group and the Shire of West Arthur (MRWA, 2017b).

The applicant has advised that the following changes were made to the design in order to minimise the clearing impact to the smallest footprint possible:

- a number of alignment options were assessed to identify the option with the least clearing impact, with a specific emphasis on utilising already cleared areas. Two final alignments were surveyed in 2014 and the current alignment chosen because it would require the least clearing of State Forest.
- Main Roads commissioned an Ethnographic survey with the traditional owners to identify any heritage sites and consult with Aboriginal community members regarding the project.
- a parking bay was relocated from the original location, which would require removal of an entire population of vegetation identified as a TEC. This parking bay was moved to an existing cleared location which is currently paddock.
- The project was designed to have the smallest possible impact to habitat suitable for Priority 2 *Leucopogon subsejunctus*, by 'weaving' in between the two known populations. In total, 5.5 hectares of suitable habitat was identified in the 2014 and 2016 spring surveys. No more than 0.73 hectares (13 per cent) will be cleared.
- The project avoids Priority 3 *Synaphea hians* known locations, with only one *S. hians* plant to be removed. A 0.13 hectare population of *Synaphea hians* has been avoided.
- Consultation has been undertaken with former Department of Water (DoW) and the design modified to prevent impacts to the Collie River in accordance with *Water Quality Protection Note 44 Roads near sensitive water resources*.
- Consultation has been undertaken with Parks and Wildlife, and the design modified to prevent spread of dieback, including changes to road drainage.

An Environmental Management Plan has been developed for the project and includes the following:

- Clean down on entry will be checked by the Department of Biodiversity, Conservation and attractions (DBCA) prior to start of works (if available) before initial mobilisation on site.
- All plant will have clean down on entry certificates at the start of project, which will be present on site at all times for inspection.
- All vehicles, machinery and equipment must be clean when entering protectable areas. Written records must be maintained and available to DBCA or MRWA staff upon request.
- Dieback control will be included in the project induction for all staff.
- Clean on entry signs will be put up as required.
- The hygiene management plan will be complied with for this project.
- Cross contamination between infested and un-infested areas is not permitted.
- Protectable and un-protectable areas will be clearly delineated on site. The contractor will ensure that drainage from clean down on entry locations do not drain into protectable areas.
- Cape Tulip infestations will be managed prior to works.
- Soil from the Cape Tulip infested area will be marked on-ground prior to works, and removed to prevent the spread of this species.
- The contractor will ensure that all licences are obtained for construction water.
- Vegetation removal and soil disturbance will be minimised, where practicable.
- Disturbed areas will be stabilised soon after construction activities are completed.
- Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted during project construction.
- Sediment will be managed on site. No runoff from stockpile areas will be allowed into the Collie River, and stockpiles will be located so as not to impact the river. Stockpiles will be at least 100 m from any surface water features.
- Install temporary drainage to divert catchment runoff around high risk earthwork areas.
- Use of silt curtains and straw bales in existing flow channels to prevent runoff from the site into the Collie River.

- Where practicable revegetate disturbed areas to avoid the risk of erosion and sediment mobilisation.
- Soft starts will be implemented to allow fauna to vacate the clearing area prior to works.
- No fauna will be deliberately injured. In the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline (08) 9474 9055 will be contacted for assistance.
- The two trees with hollows suitable for current use will be checked prior to clearing to ensure they are not in use. Any birds found will be relocated or the tree will be left until fledglings have left the nest, dependent upon time of year.

Offset for Matters of National Environmental Significance

The applicant identified the following significant residual environmental impacts associated with the proposed clearing:

- Up to 17.06 hectares of foraging habitat for black cockatoo species; and
- Up to 280 potential cockatoo breeding trees, 203 without hollows and no more than 77 with hollows of varying sizes. Of these, only 2 have hollows suitable for current use as identified in the 2016 spring survey.

To counterbalance the above impacts associated with matters of national environmental significance the applicant proposed an offsets package that consists of providing \$198,000 to the state offset fund to purchase approximately 120 hectares of black cockatoo habitat within the Shire of West Arthur (MRWA, 2017d).

In assessing whether the proposed offset is adequately proportionate to the significance of the habitat values for black cockatoos being impacted, the Department of Water and Environmental Regulation (DWER) undertook a calculation using the Commonwealth Offsets Assessment Guide. DWER's calculation indicated that 120 hectares (containing at least 280 potential breeding trees) is required to counterbalance the loss of 17.06 hectares habitat of black cockatoo habitat. Based on this calculation \$198,000 is required to be transferred to the state offset fund.

Methodology MRWA (2017d)

Other relevant considerations

Economic and Social Matters

The following information was provided in the applicants 'Clearing Impact Assessment and Matters of National Environmental Significance' report (MRWA, 2016a).

The need to upgrade the Collie Lake-King Rd has arisen because of a significant increase in freight traffic along this route; one of the main contributors being the Bunge Agribusiness Pty Ltd (Bunge). The Bunge project will construct grain handling and export facilities at the Bunbury Port and immediately west of Arthur River. Bunge will source grain directly from farmers, initially from the Narrogin-Corrigin-Lake Grace region, and will use road transport exclusively to transport grain from farms directly to the port in Bunbury, or to its holding facility in Arthur River (currently under construction).

Additionally, this section of road consists of a series of substandard horizontal curves with steep vertical longitudinal gradients and poor sight lines. Crash statistics for the last five years indicate that there have been five major accidents on this section of road; one resulting in a fatality, one major accident and three requiring medical intervention. It is expected that these statistics may become worse, as more trucks are on the road moving between Arthur River and Bunbury Port. Therefore this project is to provide significant safety improvements.

The social cost of the project is the removal of the historic rail trail between Collie and Darkan, which is currently used by day trekkers, horse riders and dirt bike riders. Extensive consultation has been undertaken with the Shire of West Arthur and the Collie to Darkan Rail Trail group. The rail trail is being realigned and constructed to the north of the project and will not be impacted long term. The rail trail is not on the Commonwealth, State or Municipal Heritage register.

The project will hire between 15 and 50 people, depending on the method of delivery, and is expected to cost approximately \$7.7 million.

Applicant's Environmental History

The applicant is a State agency and has a sound record of responsible environmental management and environmental management systems. The applicant seeks to achieve balanced and sustainable outcomes for the community with responsible environmental stewardship in developing and maintaining the road network critical to its success. The applicant is committed to:

- protecting and enhancing the environmental values of road reserves
- minimising the impact on the natural environment of roads and road use
- conserving natural resources and minimising energy consumption and waste.

The applicant holds Certificate No. EMS 530437 and operates an Environmental Management System which complies with the requirements of ISO 14001:2004 for the following scope: Main Roads Total Management System comprising Planning, Delivery, Maintenance, Network Operations and Supporting Services. Officially registered since 14 July 2005 under Certificate 149459. The Environmental Management System facilitates management of environmental risks and performance improvement. The independently certified and audited system is integrated into all key processes including planning, delivery, maintenance, network operations and supporting services.

Part 3: Assessment against the clearing principles

4. 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 is at variance to this Principle**

The applicant proposes to clear 17.06 hectares of native vegetation within various road reserves, rail reserves, properties, unallocated Crown land and State Forest in the locality of Bowelling, for the purpose of road realignment.

The applicant engaged Ecoedge to undertake a Level 2 Flora and Vegetation survey of a 47.8 hectare area of Collie – Lake King Road approximately between SLK 64.5 and 71. The survey was carried out on 2, 5 and 28 September and 8 November 2016.

The majority (49.6 per cent) of the surveyed area was in a very good or excellent (Keighery, 1994) condition, the majority (42.6 hectares) of the remaining area was in a completely degraded (Keighery, 1994) condition (Ecoedge, 2016).

The survey identified a total of 278 vascular flora taxa, 32 of which were introduced species. Two priority flora were identified; *Leucopogon subsejunctus* (P2) and *Synaphea hians* (P3) (Ecoedge, 2016).

Leucopogon subsejunctus is known from approximately nine populations over three locations within a range of approximately 33 kilometres east-west and 22 kilometres north-south. The South West Parks and Wildlife Region has reported a population near the Coalfields Highway (near to application area) as consisting of approximately 3,000 plants in 2014 (Parks and Wildlife, 2016a).

The flora survey report states that 0.41 hectares out of 4.8 hectares (8.5 per cent) of the mapped population of *Leucopogon subsejunctus* is within the application area. It is unclear whether or not the survey extended beyond the project area (proposed disturbance area and a 20 metre buffer) and therefore it would be reasonable to expect that this population of *Leucopogon subsejunctus* has not been mapped in its entirety and there would be some additional areas of this population in adjacent areas of State Forest (Parks and Wildlife, 2016a). In addition to impacts of clearing part of this population, the remainder of the population may be subject to indirect impacts given its location adjacent to the proposed realigned Collie Lake King Road (Coalfields Hwy) (Parks and Wildlife, 2016a).

Given the large population of *Leucopogon subsejunctus* recorded near to the application area and that the majority of the population will remain, the impact of the proposed clearing is not considered likely to significantly impact the conservation status of this species (Parks and Wildlife, 2016a).

A single *Synaphea hians* plant was found within the survey area (Ecoedge, 2016). *Synaphea hians* is known from a range of approximately 86 kilometres east-west and 37 kilometres north-south. A 2014 survey conducted by Ecoedge which encompassed the application area recorded approximately 20 plants of *Synaphea hians* under a powerline approximately 180 metres east of the application area (Ecoedge, 2016). Given *Synaphea hians*' relatively large range and nearby records the proposed clearing of one plant is not likely to impact the conservation status of this species.

As discussed in Principle (b) the application area contains 17.06 hectares of foraging habitat for black cockatoos and 280 potential breeding trees.

The majority of the application area is in a very good to excellent (Keighery, 1994) condition, contains known habitat for two priority flora species and significant habitat for black cockatoos, therefore it is considered to contain a high level of biological diversity.

The proposed clearing is at variance to this Principle.

Taking into account the applicant's avoidance and minimisation measures, it is considered that a suitable offset will counterbalance impacts to biodiversity.

Methodology

References:
Ecoedge (2016)
Keighery (1994)
Parks and Wildlife (2016a)

GIS Datasets:
Sac Bio Datasets – accessed April 2017

(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 at variance to this Principle

Five fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* have been recorded within the local area (10 kilometre radius), being; Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), numbat (*Myrmecobius fasciatus*) and chuditch (*Dasyurus geoffroii*) (Parks and Wildlife, 2007-).

The applicant commissioned Zoologist Greg Harewood to undertake a Level 1 fauna survey. Targeted searches and recordings of black cockatoo foraging, nesting and roosting habitat were also undertaken (Ecoedge, 2016).

The fauna survey identified a total of 53 native fauna species within the survey area (47.8 hectare area).

Carnaby's cockatoo is listed as endangered and Baudin's cockatoo and forest red-tailed cockatoo are listed as vulnerable under the EPBC Act. Black cockatoos breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees (Commonwealth of Australia, 2012). These species nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2012).

The fauna survey identified a total of 584 habitat trees within the survey area (Ecoedge, 2016). Up to 280 of these habitat trees may be cleared, of which approximately 77 have hollows. Two of these trees have multiple hollows suitable for current use. One is a marri with three hollows suitable for current use; the second is a wandoo with more than five hollows, one of which was considered suitable for current use. No evidence of use (occupancy or chew marks) was found (MRWA, 2017a).

Black cockatoos have a preference for foraging habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceous plant species such as *Banksia* sp., *Hakea* sp. and *Grevillea* sp. (Commonwealth of Australia, 2012). A total of 17.06 hectares of foraging habitat was identified within the application area (MRWA, 2017a). Evidence of two black cockatoos was observed; Carnaby's cockatoo (chewed marri and jarrah fruits) and forest red-tailed black cockatoo (individuals and chewed marri and jarrah fruits).

Suitable habitat for the chuditch and numbat may occur within the application area, however no evidence of either of these species was observed within the application area (Harewood, 2014). Given the linear nature of the proposed clearing and the amount of vegetation in surrounding State Forest, the application area is not likely to contain significant habitat for these two species.

An ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) is mapped in close proximity to the application area. The SWREL report (Molloy et al., 2009) defines an ecological linkage as "A series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape". The application area is adjacent to large tracts of native vegetation within State Forest and therefore the proposed clearing of linear areas of native vegetation is not likely to significantly impact upon this linkage.

Given the above, the proposed clearing is at variance to this Principle.

Taking into account the applicant's avoidance and minimisation measures, it is considered that a suitable offset will counterbalance impacts to black cockatoos. Part 2 of this assessment provides further information on these matters.

Methodology

References:
Commonwealth of Australia (2012)
Ecoedge (2016)
Molloy et al. (2009)
MRWA (2017a)
Parks and Wildlife (2007-)

GIS Datasets:
Sac Bio Datasets – accessed April 2017

(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 (10 kilometre radius).

A Level 2 Flora and Vegetation Survey of the application area conducted in Spring did not identify any rare

flora species (Ecoedge, 2016).

Methodology Given the above, the proposed clearing is not likely to be at variance to this Principle.
References:
Ecoedge (2016)

GIS Datasets:
Sac Bio Datasets – accessed April 2017

(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 may be at variance to this Principle

One of the nine vegetation units identified in the Level 2 Flora and Vegetation Survey was identified to be a threatened ecological community (TEC), being vegetation unit B2. Vegetation unit B2 is described as *Melaleuca viminea-Hakea prostrata-Kunzea ciliata* tall open shrubland. This vegetation unit is likely to be the Federally listed TEC 'Claypans of the Swan Coastal Plain', which is critically endangered. This TEC comprises of four separate State listed TECs and one priority ecological community (PEC). Of these vegetation units B2 is most likely to be an occurrence of the 'Clay pans with shrubs over herbs' PEC (Ecoedge, 2016).

Preliminary inspections by staff of the former Department of Parks and Wildlife South West Region in 2016 noted two areas of intact claypan wetland vegetation along the Collie River, one area dominated by *Melaleuca cuticularis* (not within the application area) and the other dominated by *Melaleuca viminea* within a small road reserve (within the application area). This second site in particular was considered likely to be an example of a claypan TEC (Parks and Wildlife, 2017b).

Ecoedge's survey identified 0.8 hectares of vegetation unit B2 within the survey area of which 0.355 hectares was initially proposed to be cleared under this application. The applicant has subsequently amended the application to avoid any clearing of this TEC. The avoidance of this TEC has been achieved through shifting the centreline of the existing proposed alignment and steepening batters on the southern side of the road at this location (requiring retaining walls (or similar) to be constructed and slope stabilisation).

Although the applicant has amended the application to remove the TEC from the application area, the TEC may still be impacted from secondary impacts such as interruption of functioning hydrological processes, changes in water quality and drainage, runoff and weeds.

Given the possibility of secondary impacts to the TEC, the proposed clearing may be at variance to this Principle.

The applicant has provided the following information regarding key controls that will be implemented to avoid or minimise secondary impacts on the TEC immediately adjacent to the application area:

"The clay pan communities that comprise the Claypans of the Swan Coastal Plain TEC typically occur on clay soils in low lying areas that are seasonally wet or inundated. These communities are dependent on rainfall and local surface drainage. In the area where the TEC occurs within and adjacent to the project footprint, surface water flows move generally from north to south. These flows currently travel from State Forest to the north, crossing the existing disused rail formation through a series of concrete pipe and box culverts, into the TEC. At this location, the new road formation is proposed to be constructed on the same alignment as the disused rail formation. Existing culverts will require extension but their current locations have been maintained in the project design and will therefore continue to provide the same channelling function for surface water flows as the existing rail formation. In addition, the current overland flow regime during natural flood events is expected to be maintained.

Scour protection of parallel drains will be implemented on steep grades along the project alignment to reduce the risk of sedimentation in low lying areas such as the TEC. To further protect quality of water entering the TEC, a form of gross pollutant trap incorporating rock protection will be installed at the inflow point to the culvert that drains directly into the TEC in order to capture litter and coarse sediments before they enter the culvert.

Replication of existing drainage pathways and incorporation of water quality treatment measures into the project drainage design will act to maintain existing overland flows and water quality that are likely to be contributing to ongoing hydrological and water quality maintenance of the TEC at this location.

To prevent the invasion and spread of weeds and soil pathogens such as *Phytophthora* dieback as a result of project activities, a variety of environmental management controls have been proposed. To minimise the spread of dieback throughout the project area and surrounds, drainage has specifically been designed to redirect all project drainage away from 'protectable' areas during the clearing, construction and operational phases of the project. As the TEC is already mapped as dieback infested, the priority of drainage at this

location is to maintain existing flow regimes as previously discussed."

(MRWA, 2017e)

Methodology References:
Ecoedge (2016)
MRWA (2017b)
MRWA (2017e)
Parks and Wildlife (2017b)
Phoenix (2017)

GIS Datasets:
Sac Bio Datasets – accessed April 2017

(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 likely to be at variance to this Principle

The application area is located within the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 54 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2016).

The application area is mapped as Matiske vegetation complex S which retains approximately 76 per cent of its pre-European extent remaining (Government of Western Australia, 2016). Approximately 85 per cent of this complex is held in conservation tenure.

The Shire of West Arthur retains approximately 31 per cent (87,118 hectares) native vegetation.

Aerial imagery and available GIS datasets indicate that the local area retains approximately 80 per cent vegetation.

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 application area is considered to be a significant remnant as it contains known habitat for two priority flora species, vegetation in a very good to excellent (Keighery, 1994) condition vegetation, significant habitat for black cockatoo and a TEC. However, the application area is not located within an area which has been extensively cleared.

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

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Tenure (%)
IBRA Bioregion				
Jarrah Forest	4,506,660	24,162,018	54	69
Shire*				
Shire of West Arthur	283,182	87,118	31	34
Matiske vegetation complex				
S	53,658	40,663	76	85

Methodology References:
Commonwealth of Australia (2001)
Government of Western Australia (2016)
Government of Western Australia (2017)
Keighery (1994)

GIS Databases
Pre-European vegetation
NLWRA, Current Extent of Native 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 Proposed clearing is at variance to this Principle

The application area runs adjacent to and crosses Collie River East. The application also intersects tributaries

to Collie River East.

Ecoedge identified wetland vegetation in units B2, C1 and C2 (Ecoedge, 2016). Up to 8.69 hectares of these three vegetation units will be cleared for this application.

Given the above, the proposed clearing is at variance to this Principle.

Although riparian vegetation growing in association with Collie River East is proposed to be removed it is unlikely that this watercourse will be significantly impacted by the proposed works. The existing road will already have drainage and culverts in place to help mitigate impacts to Collie River East.

Methodology References:
Ecoedge (2016)

GIS Databases
Hydrography, linear
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain

(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 application area has been mapped as the following soil types (Schoknecht et al., 2004):

- Harris Subsystem (approximately 80 per cent of application area): Broad, poorly drained alluvial flats on the surface of the Darling Plateau.
- Dwellingup Subsystem: Divides, lower to upper slopes and hillcrests. Duplex sandy gravels and loamy gravels with minor areas of shallow gravels, deep sandy gravels, yellow deep sands and yellow and pale deep sands, often gravelly.

Land Deg Risk Category	Harris Subsystem (80 per cent of application area)	Dwellingup Subsystem
Water Erosion	10-30% of map unit has a high to extreme water erosion risk	3-10% of map unit has a high to extreme water erosion risk
Wind Erosion	10-30% of the map unit has a high to extreme wind erosion risk	10-30% of the map unit has a high to extreme wind erosion risk
Waterlogging	>70% of map unit has a moderate to very high waterlogging risk	<3% of map unit has a moderate to very high waterlogging risk
Flooding	50-70% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk
Salinity Risk	50-70% of map unit has a moderate to high salinity risk or is presently saline	30-50% of map unit has a moderate to high salinity risk or is presently saline

Based on the mapped land degradation risk outlined above, the application area has a relatively low likelihood of water and wind erosion (Schoknecht et al., 2004).

The Harris Subsystem (associated with Collie River) has a relatively high risk of waterlogging, flooding and salinity risk.

The local area retains approximately 80 per cent vegetation and therefore the proposed clearing is not likely to increase the risk of salinity.

Given the linear nature of the application area the risk of the proposed clearing causing waterlogging and flooding is low.

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

Methodology References:
Schoknecht (2004)

GIS Databases
-Soils, statewide
-Salinity Risk

(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 may be at variance to this Principle

Approximately 50 per cent of the local area comprises of Muja State Forest. The application intersects Muja State Forest (approximately 900 metres) and also runs adjacent to it for approximately two kilometres.

The applicant has advised that it has held discussions with the Department of Biodiversity, Conservation and Attractions to ensure that the proposed clearing is undertaken in accordance with their requirements, and will have the least possible impact on surrounding State Forest. The section of State Forest that will be directly impacted is in the process of being excised, and tenure will be changed to road reserve (MRWA, 2017a).

As discussed in Principle (b) an ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) is mapped in close proximity to the application area. The application area is adjacent to large tracts of native vegetation within State Forest and therefore the proposed clearing of linear areas of native vegetation is not likely to significantly impact upon this linkage.

The proposed clearing will directly remove vegetation associated with State Forest and will increase the risk of spreading weeds and dieback. Weed and dieback management practices will help to minimise this risk.

The proposed clearing may be at variance to this Principle.

Methodology References:
Molloy et al, (2009)
MRWA (2017a)

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 application is adjacent to and intersects Collie River East. Therefore the proposed clearing has the potential to increase sediment levels entering Collie River East.

The applicant has advised that “The East Branch of the Collie River has ephemeral qualities with very little to no flow during the dry season”. Consultation with the former Department of Water (DoW) has been undertaken to ensure the design is in accordance with *Water Quality Protection Note 44 Roads near sensitive water resources* (MRWA, 2017a).

Groundwater salinity within the application area is mapped as 3,000-7,000 total dissolved solids, milligrams per litre. This level of groundwater salinity is classified as moderately saline to saline. The local area retains approximately 80 per cent vegetation and therefore the proposed clearing is not likely to increase the risk of salinity.

The application area lies within the *Country Areas Water Supply Act 1947* (CAWS Act) Wellington Dam Catchment Area. The catchment has been subject to CAWS Act native vegetation clearing controls since November 1976 to prevent salinisation of water resources (DoW, 2017).

The application area is located within Zone A of the catchment. This is a very high salinity risk area where DoW Policy and Guidelines for the “Granting of Licences to Clear Indigenous Vegetation” provide for the grant of a licence to clear for government works subject to an equivalent area being reforested within the same or higher salinity risk zone.

The proposed clearing may be at variance to this Principle.

As discussed further under “Planning Instruments and Other Relevant Matters”, the applicant has provided a Revegetation Offset Plan which proposes to revegetate 17.06 hectares of land which is vested with the former Department of Water.

Methodology References:
DoW (2017)
MRWA (2017a)

GIS Databases
Hydrography, linear
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
Groundwater Salinity

(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

As discussed in Principle (g) the Harris Subsystem, which covers approximately 80 per cent of the application area, has a relatively high risk of flooding. The relatively high risk of flooding is associated with the poorly drained soils.

Although there is a relatively high risk of flooding associated with the Harris Subsystem the proposed clearing

is not likely to cause flooding due to the linear nature of the application area. In addition, existing infrastructure, such as drains and culverts, are already in place to minimise this risk.

Methodology The proposed clearing is not likely to be at variance to this Principle.
GIS Databases
Soils, statewide

Planning instruments and other relevant matters.

Comments The application was received by the former Department of Environment Regulation (DER) on 24 February 2017, and was formally accepted on 6 April 2017 after receipt of comments on the adequacy of supporting documentation from the Department of the Environment and Energy (DotEE).

The clearing application was advertised by the former DER online on 10 April 2017 for a 21 day submission period. Publication summary advertised in *The West Australian* on Monday 17 April 2017. Two public submissions were received during this comment period.

The application falls within the Collie River Irrigation District which is a proclaimed area under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The former Department of Water (DoW) has advised that the applicant has obtained a 'permit to interfere with bed and banks' under the RIWI Act (DoW, 2017).

The application area is also within the *Country Areas Water Supply Act 1947* (CAWS Act) Wellington Dam Catchment Area originally gazetted April 1952. The area is located within an unassigned priority Public Drinking Water Source Area and no priority source protection area is proposed. The catchment has however been subject to CAWS Act native vegetation clearing controls since November 1976 to prevent salinisation of water resources (DoW, 2017).

The proposed clearing site is located within Zone A of the catchment. This is a very high salinity risk area where DoW Policy and Guidelines for the "Granting of Licences to Clear Indigenous Vegetation" provide for the grant of a licence to clear for government works subject to an equivalent area being reforested within the same or higher salinity risk zone (DoW, 2017).

The former DoW advised that there is no compensation history for any of the land parcels within the application area. Consequently, it has no objection to the clearing under the CAWS Act subject to an 'equivalent area salinity mitigation offset' being established. This is subject to the offset, whether it be the purchase of land or revegetation, being established in salinity risk Zone A of the Wellington Dam Catchment Area (DoW, 2017).

In accordance with the above advice Main Roads proposes the following:

- 7.18 hectares of revegetation within Lot 8 on Plan 16210, Bowelling. This site is referred to as the 'Trigwell Bridge' site and is located 14.5 kilometres south of the application area.
- 9.88 hectares of revegetation within Lot 4051 on Plan 144606, Bowelling. This site is referred to as the 'South Block' site and is located approximately seven kilometres west of the application area.

Both of these sites are vested with the former Department of Water. The revegetation will consist of planting seedlings across the 17.06 hectares in winter 2018 and infill planting in 2019 if required.

The application area partially intersects the Collie River Waugal Aboriginal Site of Significance. It is the applicant's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Methodology References:
DoW (2017)
MRWA (2017c)

GIS Databases:
Aboriginal Sites of Significance
CAWS Act Areas
RIWI, Irrigation Areas

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