



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7559/1
Permit Holder:	Shawmac Pty Ltd
Duration of Permit:	From 31 March 2018 to 31 March 2023

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

ADVICE NOTE:

The funds referred to in condition 7 of this permit are intended for the purchase of at least 10.1 hectares of native vegetation for conservation that:

- contains suitable habitat for Carnaby's black cockatoo; and
- contains at least 8.5 hectares of vegetation representative of the Banksia Woodlands of the Swan Coastal Plain threatened ecological community.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of road widening and upgrades.

2. Land on which clearing is to be done

LOT 14249 ON DEPOSITED PLAN 27729, BEERMULLAH
LOT 14248 ON DEPOSITED PLAN 27729, BOONANARRING

3. Area of clearing

The Permit Holder must not clear more than 1.9 hectares of native vegetation within the area cross-hatched yellow on attached Plan 7559/1.

4. Period within which clearing is authorised

The Permit Holder shall not clear any native vegetation after 30 June 2022.

5. 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

6. Dieback and weed 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) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared;
 - (iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared; and
 - (iv) where *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is to be removed from the area to be cleared, ensure it is transferred to areas of comparable *soil disease status*.
- (b) Prior to leaving the area(s) cross-hatched yellow on attached Plan 7559/1, the Permit Holder must clean earth-moving machinery of soil and vegetation.

7. Offset

Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall provide funding of \$50,500 to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation.

8. 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.

PART III – RECORD KEEPING AND REPORTING

9. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) 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;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares); and
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 8 of this Permit.

10. 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 9 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 has been undertaken, a written report confirming that no clearing under this Permit has been undertaken, must be provided to the *CEO* on or before 30 June of each year.

Definitions

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

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

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

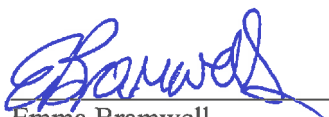
fill means material used to increase the ground level, or fill a hollow;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

soil disease status means soil types either infested, not infested, uninterpretable or not interpreted with a pathogen.

weed/s means any plant -

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

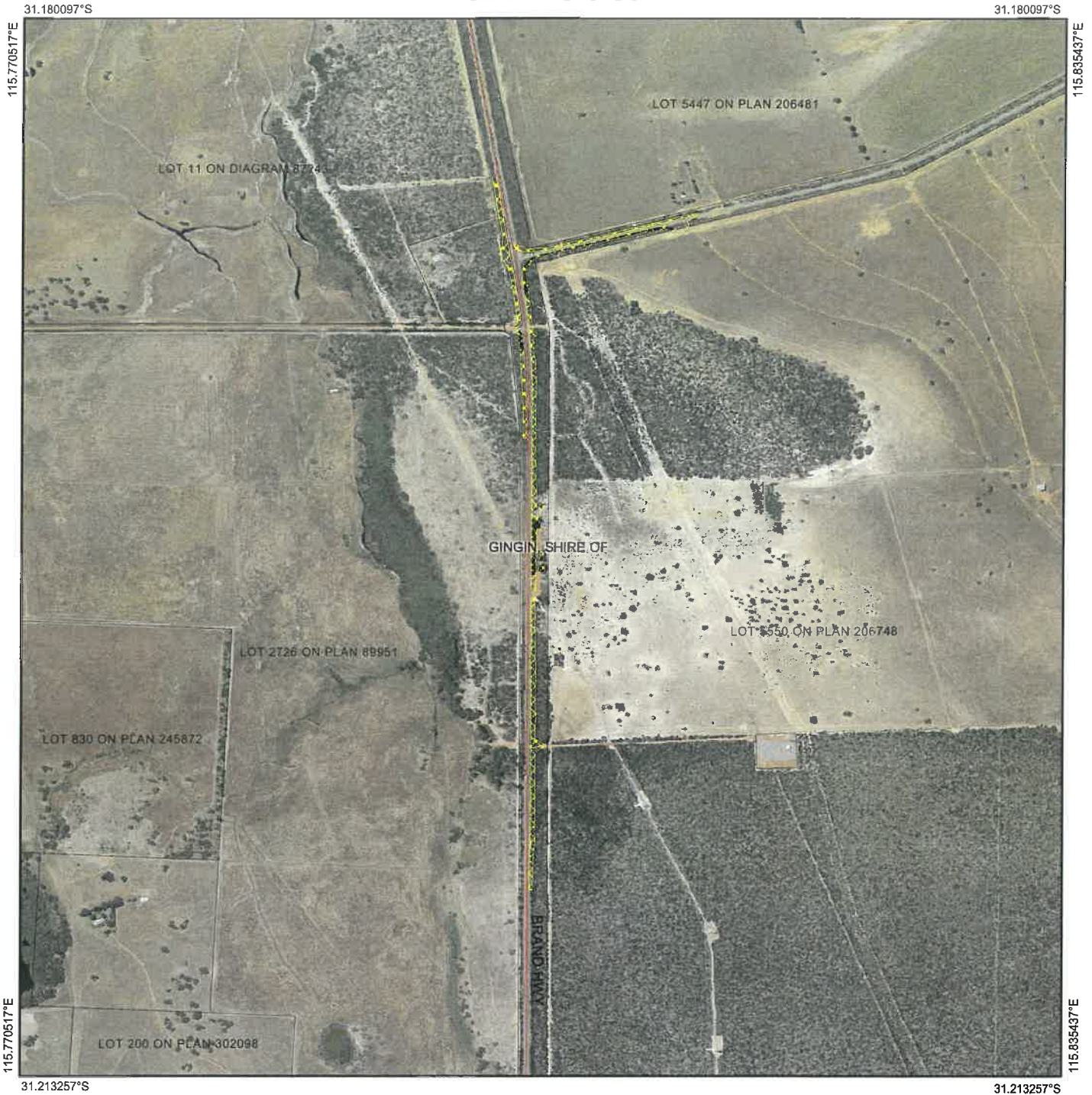


Emma Bramwell
A/ MANAGER
CLEARING REGULATION

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

27 February 2018

Plan 7559/1



Legend

-  Cadastre
-  Cadastre (Search)
-  Imagery
-  Clearing Instruments Activities
-  Roads
-  Local Government Authority



1:12,500

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

E. Branwell Date 27/02/18
E. BRANWELL

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



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 WESTERN AUSTRALIA
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1. Application details

1.1. Permit application details

Permit application No.: 7559/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shawmac Pty Ltd
Application date: 13 April 2017

1.3. Property details

Property: Lot 14248 on Deposited Plan 27729, Boonanarring
Lot 14249 on Deposited Plan 27729, Beermullah
Local Government Authority: Gingin, Shire of
Localities: Boonanarring and Beermullah

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.9		Mechanical Removal	Road widening and upgrades

1.5. Decision on application

Decision on application: Granted
Decision date: 27 February 2018
Reasons for decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to principles (a), (b), and (d), may be at variance to principle (c), and is not likely to be at variance to the remaining principles.

It is considered that the proposed clearing will result in the following impacts:

- loss of up to 1.9 hectares of vegetation that comprises a high level of biological diversity compared to that remaining in the local area (10 kilometre radius);
- loss of up to 1.9 hectares of habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*); and
- loss of up to 1.6 hectares of the "Banksia Woodlands of the Swan Coastal Plain" threatened ecological community (TEC);

The applicant has avoided and minimised impacts through design choices and further minimised impacts by reducing the proposed clearing from 2.3 hectares to 1.9 hectares.

After consideration of the above, the Delegated Officer determined that:

- the acquisition and conservation of 10.1 hectares of native vegetation that contains high biological diversity and habitat for Carnaby's cockatoo, and contains at least 8.5 hectares of vegetation representative of the "Banksia Woodlands of the Swan Coastal Plain" TEC, will counterbalance the remaining significant residual impacts.

Given the above, the Delegated Officer decided to grant a clearing permit subject to weed management, avoidance and offset conditions.

2. Site Information

Clearing Description The applicant has applied to clear 1.9 hectares of native vegetation within Lot 14249 on Deposited Plan 27729, Beermullah and Lot 14248 on Deposited Plan 27729, Boonanarring, for the purpose of road widening and upgrades.

Vegetation Description The application area intersects two mapped Swan Coastal Plain vegetation complexes:

- Coonambidgee Complex which is described as 'vegetation ranges from a low open forest and low woodland of *Eucalyptus tottiana* (Pricklybark) - *Banksia attenuata* (Slender Banksia) - *Banksia menziesii* (Firewood Banksia) - *Banksia ilicifolia* (Holly-leaved Banksia) with localised admixtures of *Banksia prionotes* (Acorn Banksia) to an open woodland of *Corymbia calophylla* (Marri) - *Banksia* species'; and
- Reagan Complex which is described as 'vegetation ranges from low open woodland of *Banksia* species *Eucalyptus tottiana* (Pricklybark) to closed heath depending on the depth of soil' (Government of Western Australia, 2017).

Vegetation Condition	Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994). To Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).
Landform/Soil Type	The application area is mapped as soil types Cb39 and AC2 which are described as “Subdued dune-swale terrain: chief soils are leached sands on the low dunes” and “Gently undulating plateau underlain by sedimentary rocks: chief soils are yellow earthy sands with siliceous sands” respectively (Northcote et al.,1960-68).
Comments	The condition and description of the application area was determined by a site inspection undertaken by officers of the former Department of Environment Regulation (DER) [now Department of Water and Environmental Regulation (DWER)] (DER, 2017) and a flora and vegetation survey undertaken by 360 Environmental Pty Ltd (360 Environmental, 2013). The local area considered in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area.

Figure 1: Application area



3. Assessment of application against clearing principles

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

Proposed clearing is at variance to this Principle

A site inspection undertaken by former DER officers found the vegetation within the application area to range from degraded to very good (Keighery, 1994) condition (DER, 2017).

As discussed under Principle (b), the application area contains *Banksia* woodland, which is the preferred foraging habitat for Carnaby's cockatoo.

As discussed under Principle (c), the application area contains suitable habitat for one rare flora species.

According to available databases, 32 priority flora have been recorded within the local area. Of the 32 priority flora recorded, ten are considered likely to occur within the application area based on the commonality of the soil and vegetation types between the priority flora taxa and the area proposed to be cleared.

The former Department of Parks and Wildlife (Parks and Wildlife) [now Department of Biodiversity, Conservation and Attractions (DBCA)] advised that seven priority flora species may occur within the application area as it contains suitable habitat (Parks and Wildlife, 2017). However, the above mentioned priority flora species are well represented locally within the nearby Nature Reserve and the proposed clearing is not likely to have a significant impact on the conservation status of the priority flora species.

One Priority 3 flora species (*Austrostipa* sp. Cairn Hill (M.E. Trudgen 21176)) may occur within the application area as the only known local population of the species is recorded approximately 100 metres south east of the application area within similar habitat. Priority 3 flora species are species that are known from several locations, and the species do not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.

Parks and Wildlife advised that the proposed clearing may impact on the conservation status of the Priority 3 species at a local scale (Parks and Wildlife, 2017). According to available databases, there are multiple records of the priority flora species in the region, with some records of the priority flora species within nature reserves. Noting this, while the proposed clearing may impact on the species at a local scale, it is considered to be represented within the region and clearing the application area is not likely to have a significant impact on the conservation status of the priority flora species.

Two Priority 4 flora species (*Caladenia* species and *Lepidobolus densus*) may occur within the application area. The application area is comprised of similar habitat to that known to support the abovementioned species and the local records are within close vicinity to the application area (Parks and Wildlife, 2017). Parks and Wildlife advised that while the proposed clearing may impact on the conservation status of the priority flora species at a local scale, it would not impact the conservation status of the priority flora species (Parks and Wildlife, 2017).

According to available databases, the threatened ecological community (TEC) 'Banksia Dominated Woodlands of the Swan Coastal Plain' is mapped over approximately 72 per cent of the application area. The site inspection noted that vegetation within the application area was in degraded to very good (Keighery, 1994) condition and contained species consistent with the 'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC (DER, 2017). The vegetation within the application area includes vegetation necessary for the maintenance of the 'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC. TECs are discussed further under Principle (d).

Given the application area contains suitable habitat for conservation significant fauna, may contain rare and priority flora and contains vegetation representative of a TEC, the application area comprises a high level of biological diversity and the proposed clearing is at variance to this Principle.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Proposed clearing is at variance to this Principle

Two fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* (WC Act) have been recorded within the local area, being: Carnaby's cockatoo (*Calyptorhynchus latirostris*) and chuditch (*Dasyurus geoffroii*) (Parks and Wildlife, 2007-).

Carnaby's cockatoo is also listed as endangered under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). 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).

The records of feeding activity for Carnaby's cockatoo on the Swan Coastal Plain reveal that *Banksia* species account for nearly 50 per cent of the diet for this species. *Banksia* species are therefore considered an essential native food source for Carnaby's cockatoo (Shah, 2006). Noting that the application area contains *Banksia* woodland (DER, 2017; 360 Environmental, 2013), and approximately 1.6 hectares of the application area is mapped as the 'Banksia Woodlands of the Swan Coastal Plain' TEC, it is considered to provide suitable foraging habitat for Carnaby's cockatoo.

A site inspection of the application area did not identify any large trees with suitable breeding hollows for Carnaby's cockatoo (DER, 2017).

Carnaby's cockatoo has suffered a 30 per cent contraction in range and a 50 per cent decline in population since the late 1940s, and between 1968 and 1990 disappeared from more than a third of its breeding range (Saunders, 1990; Saunders and Ingram 1998; Garnett et al. 2011). Loss of nesting habitat, together with foraging areas and water sources within 12 kilometres of nesting sites is one of the key threatening processes contributing towards the decline of Carnaby's cockatoo (Saunders and Ingram, 1998). The application area is within 12 kilometres of a recorded breeding location and is within proximity to multiple water sources.

Given the above and noting the condition of the vegetation is predominantly in good to very good (Keighery, 1994) condition (DER, 2017; 360 Environmental, 2013), the application area is considered to contain significant foraging habitat for black cockatoos.

The chuditch currently inhabits most kinds of wooded habitat within its current range including eucalypt forest. In jarrah forest, chuditch populations occur in both moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest (Department of the Environment and Energy, 2016). Two records of this species have been recorded within the local area dated 2001 and 1969. Noting the limited historical records found within the local area, the vegetation is unlikely to provide significant habitat for this species.

It is not considered likely the proposed clearing will have a significant impact on fauna dispersal capabilities between remnant vegetation located within the local area. Larger remnants located within the local area including Bonanarring Nature Reserve and Bartletts Well Nature Reserve will contribute to fauna movement across the landscape.

Noting the above, the application area provides significant foraging habitat for the conservation significant black cockatoo species. Therefore, the proposed clearing is at variance to this Principle.

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

Proposed clearing may be at variance to this Principle

According to available databases, five rare flora species have been recorded within the local area. The first rare flora species occurs in white or grey sand over laterite, sandy loam (Western Australian Herbarium, 1998-). The second rare flora species occurs in white or grey sand (Western Australian Herbarium, 1998-). Based on the application area recorded as containing analogous soil types as the above mentioned rare flora species, the application area may provide suitable habitat for the above mentioned rare flora species.

The third rare flora species occurs in grey sand, clay loam and Winter-wet depressions (Western Australian Herbarium, 1998-). The fourth rare flora species occurs in gravel, granite rocks, slopes (Western Australian Herbarium, 1998-). The fifth rare flora species occurs in granite (Western Australian Herbarium, 1998-). The application area is unlikely to provide suitable habitat for these species, based on the site inspection findings (DER, 2017).

Parks and Wildlife advised that the first rare flora species occurs in similar habitat to the application area and is currently known from 15 populations over three disjunct localities (Parks and Wildlife, 2017). While the species is well represented in a nearby Nature Reserve, Parks and Wildlife consider taking any of the first rare flora species to be significant (Parks and Wildlife, 2017).

Parks and Wildlife advised that the second rare flora species occurs in low-lying winter wet damp sands with *Banksia* and *Kingia australis* heathland or *Banksia* woodland. Based on the site inspection findings, the application area is consistent with *Banksia* woodland, but does not occur within a winter wet damp land. The nearest winter wet damp land is approximately 120 metres to the west of the application area. Noting this, the second rare flora species is unlikely to occur within the application area as it does not contain suitable habitat (Parks and Wildlife, 2017).

Given the above, and the condition of the vegetation, the application area may include or be necessary for the continued existence of rare flora; and the proposed clearing may be at variance to this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Proposed clearing is at variance to this Principle

On 16 September 2016, the Commonwealth Department of the Environment and Energy (DoEE) listed 'Banksia Woodlands of the Swan Coastal Plain' as an endangered TEC under the EPBC Act. DoEE has released a map of the indicative present distribution of the TEC, defining areas mapped as 'likely to occur' or 'may occur'. The application area is mapped by DoEE as a 'likely to occur' area for the ecological community. The Approved Conservation Advice for this TEC states "Ground-truthing (e.g. an on-ground survey) is required to verify if a particular site meets the required key diagnostic characteristics and minimum condition thresholds to be the described ecological community" (Threatened Species Scientific Committee, 2016).

The Approved Conservation Advice for the TEC states that to be considered representative of the TEC a remnant in the Swan Coastal Plain bioregion must include at least one of four *Banksia* species being candlestick banksia, firewood banksia, holly-leaved banksia and/or *Banksia prionotes* (acorn banksia); must include an emergent tree layer often including marri, jarrah, or tuart, and other medium trees including WA Christmas tree, *Eucalyptus tottiana* (blackbutt, pricklybark), *Allocasuarina fraseriana* (western sheoak), *Callitris arenaria* (sandplain cypress), *Callitris pyramidalis* (swamp cypress) or *Xylomelum occidentale* (woody pear); and must include an often highly species-rich understorey (Threatened Species Scientific Committee, 2016).

Condition thresholds provide guidance on when a patch of an ecological community retains sufficient conservation values to be considered a 'Matter of National Environmental Significance', as defined under the EPBC Act, and to be considered as part of the TEC minimum patch sizes by condition (Keighery, 1994) are 'pristine' – no minimum patch size applies; 'excellent' – 0.5 hectares; 'very good' – 1 hectare; 'good' – 2 hectares (Threatened Species Scientific Committee, 2016).

A portion of the application area (approximately 1.6 hectares) is mapped as the Banksia Woodlands of the Swan Coastal Plain TEC.

The vegetation within the application area ranged from degraded to very good (Keighery, 1994) condition, with a majority of the application area being in good to very good (Keighery, 1994) condition. The vegetation was recorded to contain species that are consistent with the Banksia Woodlands of the Swan Coastal Plain TEC (DER, 2017).

Noting the condition and composition of the vegetation within the application area, a portion of the proposed clearing is considered representative of the Banksia Woodlands of the Swan Coastal Plain TEC (DER, 2017). Given the above, the proposed clearing is at variance to this Principle.

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

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

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

The application area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 39 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2016).

The application area is located within Shire of Gingin, within which there is approximately 56 per cent pre-European vegetation extent remaining (Government of Western Australia, 2016). The local area retains approximately 36 per cent vegetation.

The application area is mapped Swan Coastal Plain Vegetation Complexes, Coonambidgee Complex and Reagan Complex, of which there is approximately 45 and 34 per cent respectively of the pre-European vegetation extents remaining within the Swan Coastal Plain bioregion (Government of Western Australia, 2017). The application area (1.9 hectares) is mapped within vegetation complexes that retain well above the recommended threshold.

The vegetation is in degraded to very good (Keighery, 1994) condition and contains suitable foraging habitat for black cockatoos, is representative of the 'Banksia Woodlands of the Swan Coastal Plain' TEC and may contain rare or priority flora. The local area contains approximately 13,175 hectares of native vegetation; the removal of 1.9 hectares (0.01 per cent) will leave approximately 13,173 hectares of native vegetation remaining in the local area. Noting the environmental values present outlined above, the vegetation is considered a significant remnant, however given the vegetation representation, the application area is not considered to be located within an extensively cleared area.

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 Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,222	578,432	39	38
Local Government Authority**				
Shire of Gingin	298,080	165,960	56	-
Swan Coastal Plain Vegetation Complex **				
Coonambidgee Complex	6,272.47	2,848	45	10
Reagan Complex	9,181	3,107	34	7

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

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

No watercourses or wetlands have been recorded within the application area. The closest watercourse is located approximately 160 metres from the application area.

A site inspection undertaken by DER officers did not identify any riparian vegetation within the application area (DER, 2017).

Given the distance to the closest watercourse, the application area is not likely to be growing in, or in association with a watercourse or wetland. Therefore, the proposed clearing is not likely to be at variance to this Principle.

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

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

The application area is mapped as soil types Cb39 and AC2 which are described as "Subdued dune-swale terrain: chief soils are leached sands on the low dunes" and "Gently undulating plateau underlain by sedimentary rocks: chief soils are yellow earthy sands with siliceous sands" respectively (Northcote et al., 1960-68).

Groundwater salinity is mapped at less than 1000- 3000 total dissolved solids (milligrams per litres).

Given the relatively small size of the application area and the long narrow linear shape of the application area, the proposed clearing is not likely to cause appreciable land degradation in the form of wind or water erosion or to contribute to the rise of groundwater causing land degradation due to increased salinity at the surface.

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

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

No conservation areas have been recorded within the application area. The closest conservation areas are 'Boonanarring Nature Reserve' and 'Bartletts Well Nature Reserve' located approximately 2.8 and 2.2 kilometres respectively from the application area.

As native vegetation is going to remain within the road reserve, no ecological linkages are likely to be severed or significantly impacted as a result of the proposed clearing.

The application area is a remnant of native vegetation along a road reserve, 1.9 hectares in size. Given the relatively small size and the long narrow linear nature of the application area, the proposed clearing is not likely to have a significant impact on fauna dispersal capabilities between conservation areas located within the local area. Larger remnants located within the local area, including Boonanarring Nature Reserve and Bartletts Well Nature Reserve, will contribute to fauna movement across the landscape.

Given the distance to the closest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any conservation areas. Therefore, the proposed clearing is not likely to be at variance to this Principle.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

No watercourses or wetlands have been recorded within the application area. The closest watercourse is located approximately 160 metres from the application area. Depth to groundwater is estimated to range between 7 and 10 metres from the surface soil.

Groundwater salinity is mapped at less than 1000-3000 mg/L total dissolved solids (milligrams per litres).

The application area is mapped as having a low to moderate risk of salinity and no known risk of acid sulfate soils or potential acid sulfate soils occurring within three metres of the soil surface.

Given the above, the relatively small size of the application area and the linear nature of the proposed clearing, the proposed clearing is not likely to be at variance to this Principle.

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

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

There are no watercourses or wetlands that occur within the application area and the land slopes towards damplands to the west. Depth to groundwater is estimated to range between 7 and 10 metres from the surface soil. Given the linear nature of the proposed clearing and that there are no areas prone to inundation and the mapped soil types present within the application area, it is considered unlikely that the proposed clearing would cause or exacerbate the incidence or intensity of flooding.

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

Planning instruments and other relevant matters.

The southern portion of the application area is mapped as an Aboriginal Site of Significance. The site is named Gingin Brook Waggy Site. It is the applicant's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The application was advertised online on 16 May 2017 for a 21 day submission period. No submissions have been received in relation to this application.

The application area is adjacent to and outside of the Boonanarring Minerals Sand Mine Project Area. The Boonanarring Minerals Sand Mine Project Area was formally assessed (via Public Environmental Review) and approved by the EPA with conditions (Ministerial Statement 981).

The Shire of Gingin advised it has no objections to the proposed clearing (Shire of Gingin, 2017).

4. Avoidance, minimisation and offset

Avoidance and minimisation

The applicant provided the following advice in relation to the avoidance and minimisation of impacts (Coterra Environment, 2018):

"The clearing is being undertaken in order to widen the existing roads (Wannamal Road and Brand Hwy) in the vicinity of the Boonanarring Minerals Sand Mine project, to ensure that the Wannamal Road and Brand Highway intersection can safely allow for heavy vehicle turning access and uninterrupted visual line of sight to oncoming traffic. The clearing is required due to the narrow width of the existing seal. The upgrade has been designed in a manner to minimise the impacts to roadside vegetation and utilised previously cleared areas within the road reserve where possible."

“Given its location on a regional road the project is being undertaken under Main Roads specifications, which include the following:

- Engineering design should be subject to a minimum 3 m contingency buffer
- The use of roadside barriers is not supported in this location, as this may introduce a hazard
- Main Roads would not generally support the use of speed reduction around the entry point to Wannamal Road as an alternative to creating a slip lane.”

“As an avoidance measure, the original allowance of a 5 m contingency buffer has been reduced to a 3 m buffer (see updated Figures 1a to 1e and 2a in Attachment 1). This reduces the overall potential clearing area to 1.9 ha.”

“Other incorporated measures to avoid and minimise clearing include:

- The clearing area will be demarcated prior to the commencement of the clearing of native vegetation and other project activities, and retained for the duration of road works.
- The site office, storage areas and construction vehicles / machinery will be located on previously disturbed or cleared areas to avoid any additional clearing or disturbance.”

It is noted that impacts have been further avoided and minimised after DWERs letter dated 1 December 2017, including:

- reducing the proposed clearing area from 2.3 hectares to 1.9 hectares;
- the proposed clearing is the minimum width required for road widening and upgrades; and
- five metre contingency buffer has been reduced to a three metre buffer.

Significant residual impacts

The assessment against the clearing principles has identified that the proposed clearing is at variance to principles (a), (b) and (d). After avoidance, minimisation and mitigation, it is considered that the proposed clearing will result in the following significant residual impacts:

- loss of up to 1.9 hectares of vegetation that comprises a high level of biological diversity compared to that remaining in the local area (10 kilometre radius);
- loss of up to 1.9 hectares of habitat for Carnaby’s cockatoo; and
- loss of up to 1.6 hectares of the “Banksia Woodlands of the Swan Coastal Plain” TEC.

Offset– Monetary contribution

To offset the remaining significant residual impacts (i.e. to high biological diversity, the “Banksia Woodlands of the Swan Coastal Plain” TEC, and Carnaby’s cockatoo habitat), the applicant proposed a monetary contribution for the acquisition of 10.1 hectares of remnant native vegetation for conservation. Of the 10.1 hectares, the applicant proposed that 8.5 hectares would need to comprise the “Banksia Woodlands of the Swan Coastal Plain” TEC (Coterra Environmental, 2018).

It is considered that sufficient remnant native vegetation remains available for acquisition and conservation that contains high biological diversity and comprises of Carnaby’s cockatoo habitat and the “Banksia Woodlands of the Swan Coastal Plain” TEC. The Department is likely to be able to acquire native vegetation for conservation containing all of the environmental values that relate to those being lost.

In assessing whether the proposed offset is adequately proportionate, the Department of Water and Environmental Regulation undertook a calculation using the Commonwealth Offsets Assessment Guide. The calculation indicated that the acquisition of 10.1 hectares is required, 8.5 hectares of which would need to be representative of the “Banksia Woodlands of the Swan Coastal Plain” TEC. This equates to a monetary contribution of \$50,500 determined based on the estimated value per hectare of a vegetated parcel of land. In this instance a similar offset in the area was at \$5000 per hectare.

Given the above, a monetary contribution of \$50,500 for the acquisition of 10.1 hectares of native vegetation for conservation is considered adequate to counterbalance the remaining significant residual impacts of the proposed clearing consistent with the *WA Environmental Offsets Policy September 2011*.

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GIS Datasets:

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- Acid Sulfate Soil Risk Map, Swan Coastal Plain
- Geomorphic Wetlands Swan Coastal Plain
- Ground Water Contours
- Groundwater Salinity Statewide
- Hydrology, linear
- Parks and Wildlife, Tenure
- Pre-European Vegetation
- SAC Bio Datasets – accessed July 2017
- Salinity Risk
- Soils, statewide
- Topographic Countours, Statewide