Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8151/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shire of Cuballing
Application received date: 26 July 2018

1.3. Property details

Property: Wandering-Narrogin Road reserve (PIN 11527818)
Local Government Authority: Shire of Cuballing
Localities: CUBALLING

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
0.42	50	Mechanical Removal	Road construction or upgrades

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 23 August 2019
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 (d), (e) and (f), may be at variance to principle (h), and is not likely to be at variance to the remaining principles.

It has been determined that the proposed clearing will result in the following residual impacts:

- Loss of 0.16 hectares of Eucalypt Woodlands of the Western Australian Wheatbelt threatened ecological community; and
- Loss of 0.42 hectares (50 trees) that are considered significant as a remnant of native vegetation in an area that has been extensively cleared.

Noting that upgrades to the road will provide a public benefit including improved road safety, it is considered that the significant residual impacts can be counterbalanced through the conservation of hectares of 1.105 hectares of Crown Reserve 2556 as an offset.

The proposed clearing includes vegetation growing in an environment associated with a watercourse, however no significant impacts to the environmental values of the watercourse are expected given its highly modified nature and the relatively minimal extent of clearing required at its crossing.

Through the assessment it was identified that the proposed clearing may impact adjacent Fourteen Mile Brook Nature Reserve (R21830) through the introduction or spread of weeds and dieback. A weed and dieback management condition has been placed on the clearing permit to minimise the risk of weeds and dieback spreading into adjacent areas of remnant vegetation.

Given the above, the Delegated Officer decided to grant a clearing permit subject to avoid/minimise, offset and dieback and weed management conditions.

2. Site Information

Clearing Description

The application is to clear 0.42 hectare of native vegetation (50 trees) within a 3.78 hectare footprint within Wandering-Narrogin Road reserve (PINs 11527821, 11527818, 11527812, 11527814, 11527811 and 11527809), Cuballing, for the purpose of road widening for road safety (figure 1, figure 2, figure 3).

Vegetation Description

The application area is mapped in the 'Avon Wheatbelt' region of the Interim Biogeographic Regionalisation for Australia (IBRA), and is mapped as the following Beard vegetation association (Shepherd, 2001):

- 1023, described as Medium woodland; York gum (*Eucalyptus loxophleba*), wandoo (*Eucalyptus wandoo*) and salmon gum (*Eucalyptus salmonophloia*).

A site inspection of the application area was conducted by Department of Water and Environmental Regulation (DWER) on 10 September 2018. The site inspection identified that vegetation within the application area predominantly comprises *Eucalyptus wandoo* and *Allocasuarina* spp. woodland with native understorey largely absent (DWER, 2018).

Reconnaissance and Targeted Flora and Vegetation Survey (Flora survey) commissioned by the Shire of Cuballing and undertaken by Ecoedge in March 2019 identified four vegetation units within the application area:

- Unit A, which was identified across approximately 29.1 per cent of the application area, and can be described as Woodland/open woodland of *Eucalyptus wandoo* and *Allocasuarina huegeliana* over tall open shrubland of *Acacia acuminata* over grassland of **Avena fatua* and **Bromus diandrus* and open herbland of *Dianella revoluta*, **Dittrichia graveolens*, **Hypochaeris glabra* and **Solanum nigrum* on grey-brown sandy loam or gravel;
- Unit B covers approximately 3.4 per cent of the application area, and can be described as Woodland of *Eucalyptus wandoo* over tall open shrubland of *Banksia sessilis* over open shrubland including *Acacia pulchella*, *Allocasuarina humilis*, *Banksia armata, Calothamnus quadrifidus, Gastrolobium obovatum, G. spinosum, Leptospermum erubescens, Santalum murrayanum* over very open herbland including *Lomandra nutans* and scattered *Austrostipa hemipogon* grass on gravel;
- Unit C was identified across approximately 0.7 of the application area, and can described as Open sedgeland of **Juncus acutus* with open grassland of **Avena fatua* and **Bromus diandrus* on yellow-brown sandy loam; and
- Unit D, covers approximately 7 per cent of the application area, and can be described as scattered trees of *Eucalyptus wandoo* and *Allocasuarina huegeliana* over mainly introduced annual species of herbs and on yellow-brown sandy loam.

Approximately 59.8 per cent of the application area was determined to be cleared land (Ecoedge, 2019)

Vegetation Condition

The condition of the vegetation within the application area is considered to be:

- Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994) – approximately 0.02 hectares (0.4 per cent) of the application area; to
- Completely degraded: No longer intact, completely/almost completely without native species (Keighery, 1994) – approximately 1.67 hectares (36.3 per cent) of the application area.

Remaining 59.8 per cent of the application area is cleared land (Ecoedge, 2019).

The condition of the vegetation was determined based on the Flora survey (Ecoedge, 2019).

Soil type

The application area is mapped as the following land subsystems (Department of Primary Industries and Regional Development (DPIRD), 2019):

- Noombling Subsystem (Dryandra) (257DyNB), which is mapped across approximately 52.8 per cent of the application area, and is described as Long gentle and undulating hillslopes and divides. Colluvium / weathered granite, gneiss and some dolerite. Yellow/brown and grey deep sandy duplexes, brown deep loamy duplexes, sandy gravels and shallow duplexes. Marri-Wandoo / Jam-Sheoak;
- Norrine Subsystem (Dryandra) (257DyNO), which covers approximately 32.6 per cent of the application area, and is described as A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust; and
- Biberkine Subsystem (Dryandra) (257DyBK), which is mapped across approximately 14.6 per cent of the application area, and is described as Valley floors & footslopes with gently undulating rises & low hills. Alluvium and colluvium over granite etc. Yellow brown sandy duplexes, wet and semi-wet soils & brown deep loamy duplexes. Wandoo-Flooded Gum with Jam-Sheoak-Teatree.

Comment

The local area is considered a 10 kilometre radius of the application area.

Approximately 1.28 kilometres (approximately 62 per cent) of the application area is located adjacent to Fourteen Mile Brook Reserve in south.

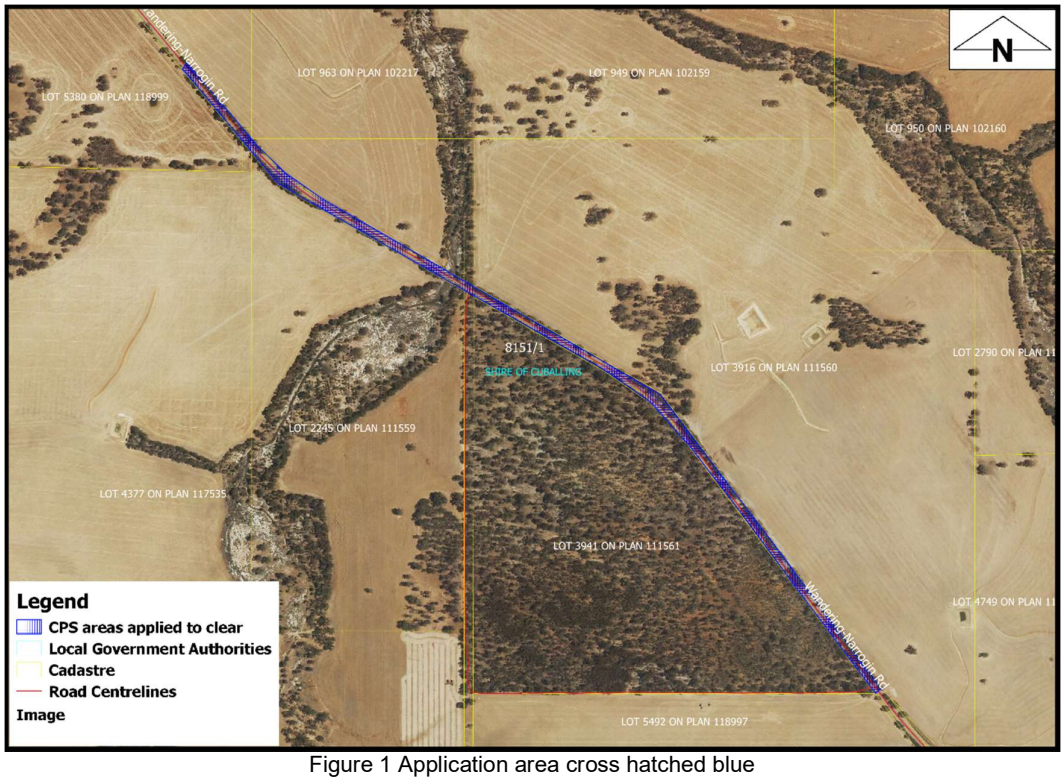

Figure 1 Application area cross hatched blue


Figure 2 View of the southern edge of the application area looking southeast from outside the application area (DWER, 2018)


Figure 2: Vegetation association with culvert (DWER, 2018)

3. Minimisation and mitigation measures

The need for clearing has been minimised through minimising clearing selective (Shire of Cuballing, 2018).

4. Assessment of application against clearing principles, planning instruments and other relevant matters

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

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

The application is to clear 0.42 hectare of native vegetation (50 trees) within a 3.78 hectare footprint within Wandering-Narrogin Road reserve (PINs 11527821, 11527818, 11527812, 11527814, 11527811 and 11527809), Cuballing, for the purpose of road widening for road safety.

Nine priority and one threatened flora species have been recorded within the local area. Threatened flora are discussed in Principle (c). Of the nine priority flora, the following eight priority flora species may occur within the application area:

- *Asterolasia hyaline* (P2) has been recorded approximately 8.9 kilometres from the application area. This species is known from eight records from the Shires of Albany, Cuballing, Narrogin and Wandering, and is typically associated with sandy loams (WA Herbarium, 1998-).
- *Banksia cynaroides* (P4) has been recorded approximately 3.1 kilometres from the application area. This species is known from 33 records predominantly from the southern Avon Wheatbelt bioregion, and is typically associated with gravelly sand or clay loam over laterite (WA Herbarium, 1998-).

- *Banksia subpinnatifida var. subpinnatifida* (P2) has been recorded approximately 9 kilometres from the application area. This species is known from 18 records in the Shires of Cuballing, Narrogin, Pingelly and Wandering, and is typically associated with gravelly loams (WA Herbarium, 1998-).
- *Darwinia sp. Dryandra (G.J. Keighery 9295)* (P4) has been recorded approximately 8.2 kilometres from the application area. This species is known from 15 records from the north-eastern Swan Coastal Plan and western Avon Wheatbelt bioregions, and is typically associated with gravelly clays on lateritic ridges (WA Herbarium, 1998-).
- *Gastrolobium ovalifolium* (P4) has been recorded approximately 5.1 kilometres from the application area. This species is known from 27 records from the south-western Avon Wheatbelt and Jarrah Forest bioregions, and is typically associated with sandy clays on gravelly hills (WA Herbarium, 1998-).
- *Hibbertia montana* (P4) has been recorded approximately 1.2 kilometres from the application area. This species is known from 61 records from the central Avon Wheatbelt, northern Jarrah Forest and eastern Swan Coastal Plain, and is typically associated with loam over granite, lateritic soils and gravel on granite rocks, lateritic ridges, boulders and hills (WA Herbarium, 1998-).
- *Leucopogon darlingensis subsp. rectus* (P2) has been recorded approximately 7 kilometres from the application area. This species is known from 22 records from the Shires of Cuballing, Narrogin and Williams, and is typically associated with yellow or brown sandy or gravelly loams over laterite (WA Herbarium, 1998-).
- *Verticordia huegelii var. tridens* (P3) has been recorded approximately 7.4 from the application area. This species is known from 31 records from the south-western Avon Wheatbelt and Jarrah Forest bioregions, and is typically associated with gravelly loam (WA Herbarium, 1998-).

The Flora survey (Ecoedge, 2018) identified thirty-one flora taxa within the application area, of which six species were introduced. No threatened, priority or other flora of conservation significance were found.

As discussed in Principle (b), the application area is not likely to comprise significant habitat for conservation significant fauna species.

As discussed in Principle (c), no threatened flora is likely to occur within the application area given the degraded to completely degraded vegetation condition.

As discussed in Principle (d), a portion of the application area comprises the Commonwealth listed critically endangered threatened ecological community (TEC) *Eucalypt* Woodlands of the Western Australian Wheatbelt which is also the State listed Priority 3 ecological community 'Eucalypt Woodlands of the Western Australian Wheatbelt. It is estimated that the proposed clearing will result in the loss of approximately 0.16 hectares of this TEC. No other TECs or priority ecological communities are expected to occur within the application area.

The application area contains minimal floristic diversity when compared to adjacent areas which exhibit similar vegetation types but better vegetation condition. Therefore the application area is not likely to comprise a high level of biological diversity.

Given the above, the proposed clearing is not likely to be 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.

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

According to available databases, ten fauna species listed as being of conservation significance under the *Biodiversity Conservation Act 2016* (BC Act) within the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* have been recorded within the local area. These include Woylie, Brush-tailed Bettong (*Bettongia penicillata subsp. ogilbyi*), forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), chuditch, Western Quoll, chuditch (*Dasyurus* geoffroii), Malleefowl (*Leipoa ocellata),* Bilby, Dalgyte, Ninu (*Macrotis* lagotis), Numbat, Walpurti *(Myrmecobius fasciatus)*, Red-tailed Phascogale, Kenngoor (*Phascogale calura*), Southern Death Adder (*Acanthophis antarcticus*) and Western Brush Wallaby (*Notamacropus Irma*), (DBCA, 2007-).

Woylie

The woylie is known from four surviving populations (Perup, Kingston, Dryandra Woodland and Tutanning Nature Reserve) and has been translocated to several additional locations including locations in South Australia and New South Wales (Yeatman and Groom, 2012). The application area is located adjacent to Fourteen Mile Brook Nature Reserve (R21830) which forms part of Dryandra Woodland.

According to the Recovery Plan, the key habitat requirements of the numbat include (Department of Parks and Wildlife, 2017):

- presence of termites in sufficient abundance;
- sufficient cover – adequate cover near ground level is required to provide refuge from raptors – cover may be provided by thickets or a combination of thickets and hollow logs;
- sufficient openness – although a degree of cover is required for refuge from predators, a sufficiently open understorey is required for feeding sites – a combination of an open understorey interspersed with thickets and hollow logs is ideal; and
- presence of eucalypt species – the majority of sites where numbats occur and were recorded in the past are characterised by the presence of eucalypt species thus providing logs and hollows and possibly higher termite densities.

The application area contains suitable habitat for the woylie based on the vegetation type present, however, the DWER site inspection observed that the understorey is largely devoid of native vegetation (DWER, 2018). It is considered that the woylie is not likely to utilise the application area given the lack of refuge provided by the vegetation present and the proximity of the road and associated traffic. Although the clearing will result in a wider road corridor, the application area is restricted to the road reserve and additional traffic lanes are not proposed. The extent of widening proposed is not likely to result in a substantially greater deterrent to use of the remaining adjacent habitat by the woylie.

The application area occurs on the edge of Fourteen Mile Brook Nature Reserve (R21830) (i.e. does not dissect the reserve). Additional areas of Dryandra Woodland (i.e. Montague State Forest 53) are located approximately 1,100 metres northeast. The proposed clearing is not considered likely to result in significant impacts to the ability of the woylie to move between Fourteen Mile Brook Nature Reserve (R21830) and Montague State Forest 53.

Given the above, the application area is not likely to contain significant habitat for the woylie.

Black cockatoos

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). Potential nesting trees for black cockatoos are defined as "trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 millimetres". For salmon gum and wandoo, suitable DBH is 300 millimetres (Commonwealth of Australia, 2012).

A Habitat tree assessment of the application area (Ecoedge, 2019) was conducted to identify if any trees in or near the application area are in current use by black cockatoos. The survey identified 109 trees with a DBH >300 millimetres within the application area, and of those only two appeared to contain hollows. One of the two trees was assessed as having a small to medium sized hollow unsuitable for black cockatoos and the other tree was assessed as possibly suitable for black cockatoos, however it did not show any signs of use, historic or recent. This tree is located about 10 metres from the existing road centreline and it is very unlikely to be cleared. Fauna management conditions will mitigate any impacts to breeding habitat for black cockatoos.

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). Noting the vegetation types present within the application area, the application area comprises of suitable foraging habitat for black cockatoos. However, noting the application area does not comprise of breeding habitat and that no evidence of foraging was observed during the DWER site inspection (2018) and the fauna survey (Ecoedge, 2019), the proposed clearing is unlikely to have a significant impact on black cockatoos foraging habitat.

Red-tailed phascogale

The preferred habitat of the red-tailed phascogale is *Allocasuarina* spp. woodlands with hollow-bearing *Eucalyptus* spp.. The application area includes *Allocasuarina* species and two large eucalypt trees containing hollows were observed (Figure 3) (DWER, 2018a).The Habitat tree assessment of proposed clearing area (Ecoedge, 2019) was undertaken to identify if any trees in or near proposed work are in current use by red-tailed phascogales. No evidence of hollows being used by this species was found, however the survey noted that the presence/absence of red-tailed phascogales is difficult to determine given they leave little secondary evidence of use around hollows and the hollows themselves. Noting, the degraded/fragmented nature of the vegetation present in the immediate vicinity and their isolation well away from any larger expanses of better quality native vegetation likely to provide a source of individuals (i.e. Fourteen Mile Brook Nature Reserve), it is considered highly unlikely that the particular trees with hollows within the application area would be used by phascogales (Ecoedge, 2019).

Chuditch

Chuditch requires adequate den resources (hollow logs, burrows or rock crevices), adequate prey resources and areas of large intact habitat to survive (Department of Environment and Conservation, 2012). Given the application area borders substantial areas of remnant vegetation (i.e. Fourteen Mile Brooke Nature Reserve), the chuditch may occur in the area. No large hollow logs, burrows or rock crevices were observed in the application area during the DWER site inspection (DWER, 2018) and therefore the species is only likely to opportunistically utilise the application area for foraging.

Given the size of clearing proposed, and the narrow linear shape of the application area, the potential loss of foraging habitat proposed to be cleared is not expected to be significant.

The application area occurs on the edge of Fourteen Mile Brook Nature Reserve (R21830) (i.e. does not dissect the reserve). Additional areas of Dryandra Woodland (i.e. Montague State Forest 53) are located approximately 1,100 metres northeast. The proposed clearing is not likely to result in significant impacts to the ability of the Chuditch to move between Fourteen Mile Brook Nature Reserve (R21830) and Montague State Forest 53.

Given the above, the application area is not likely to contain significant habitat for the chuditch.

Malleefowl

Malleefowl continue to persist in several conservation areas across Western Australia including Dryandra Woodland, Fitzgerald River National Park, Stirling Range National Park, Kalbarri National Park, and Mount Manning – Helena and Aurora Ranges Conservation Park, and have been reintroduced to Francois Peron National Park in Shark Bay (Department of Parks and Wildlife, 2016). The application area is located adjacent to Fourteen Mile Brook Nature Reserve (R21830) which forms part of Dryandra Woodland.

One of the key habitat requirements for malleefowl is abundant leaf litter and a sandy substrate for the successful construction of nest mounds (Department of Parks and Wildlife, 2016). No nest mounds were observed in the application area during the DWER site inspection (DWER, 2018). The application area is not expected to represent a suitable area for malleefowl to construct nest mounds. The application area may provide foraging habitat for the species but the proximity of the road and associated traffic is likely to act as a deterrent to use of the area.

Although the clearing will result in a wider road corridor, the application area is restricted to the road reserve and additional traffic lanes are not proposed. The extent of widening proposed is unlikely to result in a substantially greater deterrent to use of the remaining adjacent habitat by malleefowl.

Given the above, the application area is not likely to contain significant habitat for malleefowl.

Bilby
Bilby historically occupied a vast area of Australia with records from all states except Victoria and Tasmania. In Western Australia, the distribution of the bilby extended from the Dampier Peninsula in the north to the Wheatbelt in the southwest. The species is now restricted to the Pilbara and Kimberley in Western Australia, the Tanami, Great Sandy and Gibson deserts in the Northern Territory, and an isolated population in southwest Queensland (Pavey, 2006). The application area does not occur within the current distribution of the bilby and therefore no impacts to the species are expected.

Numbat
Numbat is known from two surviving subpopulations (Dryandra Woodland and Upper Warren) and has been translocated to 12 different sites within the former range of the species (Department of Parks and Wildlife, 2017). The application area is located adjacent to Fourteen Mile Brooke Nature Reserve which forms part of Dryandra Woodland.

According to the Recovery Plan, the key habitat requirements of the numbat include:
- presence of termites in sufficient abundance;
- sufficient cover – adequate cover near ground level is required to provide refuge from raptors – cover may be provided by thickets or a combination of thickets and hollow logs;
- sufficient openness – although a degree of cover is required for refuge from predators, a sufficiently open understorey is required for feeding sites – a combination of an open understorey interspersed with thickets and hollow logs is ideal; and
- presence of eucalypt species – the majority of sites where numbats occur and were recorded in the past are characterised by the presence of eucalypt species thus providing logs and hollows and possibly higher termite densities.
  (Department of Parks and Wildlife, 2017)

The DWER site inspection did not identify hollow logs or thickets within the application area (DWER, 2018). The application area may provide foraging habitat for the numbat if termites are present but the proximity of the road and associated traffic is likely to act as a deterrent to use of the area. Although the clearing will result in a wider road corridor, the application area is restricted to the road reserve and additional traffic lanes are not proposed. The extent of widening proposed is unlikely to result in a substantially greater deterrent to use of the remaining adjacent habitat by the numbat.

The application area occurs on the edge of Fourteen Mile Brook Nature Reserve (R21830) (i.e. does not dissect the reserve). Additional areas of Dryandra Woodland (i.e. Montague State Forest 53) are located approximately 1,100 metres northeast. The application area is separated from State Forest 53 by farmland. Numbats have been known to cross farmland but this appears to be rare with artificial movement of individuals and translocations currently considered necessary for achieving genetic transfer and recolonization (Department of Parks and Wildlife, 2017). Therefore the application area is not likely to provide significant ecological linkage values for the numbat.

Given the above, the application area is not likely to contain significant habitat for the numbat.

Noting the size of clearing proposed, the narrow linear shape of the application area, and the fact that the understorey of the application area is largely devoid of native vegetation, the proposed clearing is not expected to result in significant impacts to any other indigenous fauna species.

Given the above, the application area is not likely to comprise the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna, and therefore is not likely to be at variance to this Principle.

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

Proposed clearing is not likely to be at variance to this Principle
According to available databases, one threatened flora species has been recorded within the local area; being *Acacia deflexa*.

Acacia deflexa is prostrate to straggling or erect shrub, 0.15-2 metre high. This species has been recorded approximately 7.7 kilometres northeast of the application area and is known from 17 records from the Shires of Corrigin, Kondinin, Cuballing, Narrogin and Wickepin. *Acacia deflexa* is typically associated with white sandy clay over clay, flat. /Growing in white sandy clay over clay and flowers August to September.

The vegetation within the application area predominantly consists of wandoo and *Allocasuarina* spp. woodland with the understorey largely devoid of native vegetation (DWER, 2018). Flora survey (Ecoedge, 2018) identified thirty-one flora taxa within the application area, of which six species were introduced. No threatened, priority or other flora of conservation significance were found. Based on the flora survey, no threatened flora species are expected to be present.

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

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

Proposed clearing is at variance to this Principle

According to available databases, the application comprises the Commonwealth listed critically endangered threatened ecological community (TEC) Eucalypt Woodlands of the Western Australian Wheatbelt which is also the State listed Priority 3 ecological community (PEC) 'Eucalypt Woodlands of the Western Australian Wheatbelt' (Wheatbelt Woodlands).

Flora survey undertaken by Ecoedge (2019) identified that one of the four vegetation units recognised in the application area meets criteria for Wheatbelt Woodlands. This vegetation unit is the unit B which covers 0.16 hectares of the application area (3.4 per cent of the application area). The remaining vegetation within the application area does not meet criteria for Wheatbelt Woodland TEC (Ecoedge, 2019) and occurs in patches of up to 4 metres in width (DWER, 2018). The condition thresholds for the TEC outlined in the 'Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt' for this TEC states that roadside patches must be 5 metres or more in width to qualify as the TEC (Threatened Species Scientific Committee, 2015). Therefore the TEC is not likely to be present within the remainder of the application area.

It is estimated that the proposed clearing will result in the loss of 0.16 hectares of Wheatbelt Woodlands TEC. The total number of occurrences of the TEC as mapped by the Commonwealth Department of the Environment and Energy is 87,224, with a total area of about 633,914 hectares. The TEC extends from Pindar to Takalarup, a distance of about 700 kilometres. All mapped occurrences require ground-truthing (Department of Biodiversity, Conservation and Attractions, 2018).

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

An offset condition will counter balance the residual impacts from the proposed clearing.

(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 at variance to this Principle

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

The application area is located within the Avon Wheatbelt IBRA bioregion. This IBRA bioregion has approximately 18.5 per cent of its pre-1750 vegetation extent remaining (Government of Western Australia, 2019).

The application area is also mapped in the Beard vegetation association 1023 and Beard vegetation association in IBRA bioregion 1023 which retains approximately 10.8 and 10.85 per cent of its pre-1750 vegetation respectively.

The local area retains approximately 15 per cent native vegetation.

Noting that the application area contains 0.16 hectares of the Wheatbelt Woodlands TEC, the extensively cleared local area and vegetation complexes, and the cumulative effect of clearing within Wandering-Narrogin Road Reserve, the application area is considered a significant remnant.

The vegetation within the application area is considered a significant remnant in an area that has been extensively cleared. The proposed clearing is at variance to this Principle.

An offset condition will counter balance the residual impacts from the proposed clearing.

Table 1 Vegetation Statistics*

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA bioregion*:					
Avon Wheatbelt	9,517,109.61	1,761,226.55	18.5	174,960.72	2.42
Beard vegetation association:					
1023	1,601,605.76	172,944.35	10.8	18,906.63	1.35
Beard vegetation association in IBRA bioregion:					
1023	1,522,680.4	165,192.79	10.85	17,258.19	1.29

* Government of Western Australia. (2019). 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth.

(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 at variance to this Principle

According to available databases, a minor non-perennial watercourse (ID18954) intersects the application area. The presence of a watercourse was confirmed by DWER site inspection (2018) as well as the Ecoedge flora survey (2019). The watercourse identified intersects the application area in its central portion. No distinctive riparian vegetation was recorded during the DWER site inspection, however vegetation was present in the road reserve where the single watercourse was identified. No significant impacts to the environmental values of the watercourse are expected given its highly modified nature and the relatively minimal extent of clearing required at its crossing.

The DWER site inception (2018) also identified two constructed culverts intersecting the application area, however no riparian vegetation with these drainage lines were observed (Figure 2).

Given the above, the proposed clearing is at variance to this Principle. Given the culverts in place the proposed clearing is not likely to have a significant impact on this watercourse.

(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

Primary soils within the application area are mapped by DPIRD (2019) and described as:

- Noombling Subsystem (Dryandra) (257DyNB), which is mapped across approximately 52.8 per cent of the application area, and is described as Long gentle and undulating hillslopes and divides. Colluvium / weathered granite, gneiss and some dolerite. Yellow/brown and grey deep sandy duplexes, brown deep loamy duplexes, sandy gravels and shallow duplexes. Marri-Wandoo / Jam-Sheoak;
- Norrine Subsystem (Dryandra) (257DyNO), which covers approximately 32.6 per cent of the application area, and is described as A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust; and
- Biberkine Subsystem (Dryandra) (257DyBK), which is mapped across approximately 14.6 per cent of the application area, and is described as Valley floors & footslopes with gently undulating rises & low hills. Alluvium and colluvium over granite etc. Yellow brown sandy duplexes, wet and semi-wet soils & brown deep loamy duplexes. Wandoo-Flooded Gum with Jam-Sheoak-Teatree.

According to DPIRD (2019) the mapped soil types within the application has land degradation risks described in Table 2.

Table 2 Risk degradation summary

Risk categories	Noombling Subsystem (Dryandra)	Biberkine Subsystem (Dryandra)	Norrine Subsystem (Dryandra)
Wind erosion	10-30% of map unit has a high to extreme wind erosion risk	<3% of map unit has a high to extreme wind erosion risk	10-30% of map unit has a high to extreme wind erosion risk
Water erosion	3-10% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	10-30% of map unit has a high to extreme water erosion risk
Salinity	10-30% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline	3-10% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	10-30% of map unit has a high subsurface acidification risk or is presently acid	10-30% of map unit has a high subsurface acidification risk or is presently acid	3-10% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk	10-30% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	<3% of map unit has a moderate to very high waterlogging risk	10-30% of map unit has a moderate to very high waterlogging risk	<3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	10-30% of map unit has a high to extreme phosphorus export risk	10-30% of map unit has a high to extreme phosphorus export risk	10-30% of map unit has a high to extreme phosphorus export risk

Groundwater salinity within the application area has been mapped as saline at between 7,000-14,000 milligrams per litre total dissolved solids (TDS), being saline.

Noting the extent of the proposed clearing, the linear shape of the application area and its location along an existing road, any land degradation impacts are not likely to be appreciable.

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 may be at variance to this Principle

The application area is located adjacent to Fourteen Mile Brook Nature Reserve (R21830). Therefore, it is considered that the proposed clearing may impact on the environmental values of the adjacent conservation area through increased edge effects and the introduction and spread of weeds and dieback.

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

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

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

As discussed in Principle (f), according to available databases, a minor non perennial watercourse (ID 18954) has been mapped in the application area. The presence of a watercourse was confirmed by DWER (2018) site inspection. The watercourse intersects the application area in its central portion. The proposed clearing may increase run-off and sedimentation within the watercourse, however this impact is likely to be minimal and short-term.

Groundwater salinity within the application area is mapped between 7,000-14,000 milligrams per litre total dissolved solids which is considered to be saline and highly saline (Mayer, Ruprecht & Bari, 2005). 10-30 per cent of the Noombling Subsystem (Dryandra) map units have a moderate to high salinity risk or is presently saline (DPIRD, 2019). Noting this, the extent of the proposed clearing and the condition of the vegetation within the application area, the proposed clearing is not likely to cause deterioration in the quality of underground water in the form of salinity.

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

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

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

Less than 3 per cent of the Noombling Subsystem (Dryandra) and Norrine Subsystem (Dryandra) map unit, and between 10-30 per cent of the Biberkine Subsystem (Dryandra) map unit has a moderate to high flood risk (DPIRD, 2019). Noting this, the extent of the proposed clearing and the condition of the vegetation within the application area, the proposed clearing is not likely to 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.

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

The clearing permit application was advertised on the DWER website on 16 August 2018 with a 21 day submission period. No public submissions have been received in relation to this application.

5. Applicant's submissions

On 5 October 2018, DWER wrote to the applicant outlining that impacts to the Wheatbelt Woodlands TEC and significant remnant vegetation were identified during the assessment as well as potential impacts to fauna. The applicant was invited to provide additional advice regarding proposed measures to avoid and minimise impacts, undertake Flora surveys and a habitat tree survey.

On 25 February 2019, the applicant advised that an experienced botanist and zoologist were engaged and are undertaking flora and fauna surveys in support of the clearing permit. On 7 May 2019 the applicant provided a Flora and fauna survey of the application area.

On 15 July 2019, the applicant was invited to provide additional advice regarding proposed measures to avoid and minimise impacts and offset unavoidable impacts.

On 17 July 2019, the applicant advised that the approval to clear is part of a project to widen the Wandering Narrogin Road to provide contemporary road safety and asset management. In completing the planning for this project, the Shire have sought to minimise possible the clearing of native vegetation wherever possible and still provide the improved safety outcomes and ability to effectively and efficiently maintain the constructed road. The Shire advised that the road reserve area of CPS 8151/1 has vegetation on both sides of the road. The application has the minimum area clearing of native vegetation to complete this project by widening both sides of the constructed road by 0.5 meters. A different alignment would increase the total amount of clearing required.

The Shire advised that they are prepared to relinquish a portion of Crown Reserve 2556 as an offset for the clearing by amending the reserve purpose from 'Gravel' to 'Conservation'. In addition the applicant acknowledged that the proposed clearing has the potential to impact on the environmental values of the adjacent remnant vegetation through increased edge effects and the introduction and spread of weeds and dieback. The applicant committed to reduce these risks by clearing only vegetation that is required to widen the Wandering-Narrogin Road, purchasing gravel sourced from the area for use as road building materials to limit the risk of introduction and spread of dieback, and continuing the active management of roadside weeds after construction.

6. Consideration of variances following applicant's submission / further information

Given no changes to the application area were proposed by the applicant, the variances against the clearing principles were not updates.

It is noted that upgrades to the road will provide a public benefit including improved road safety.

It is considered that the proposed impacts to significant remnant vegetation are of a scale that can be offset through the conservation of a portion of Crown Reserve 2556 as proposed by the applicant. Further details on the offset are provided in Section 7.

7. Suitability of Proposed Offset

The offset site is located approximately 30 kilometres northeast of the application area. The offset site is mapped as the same Beard vegetation association as the application area and the DWER site inspection identified that it is also dominated by wandoo and *Allocasuarina* spp. (DWER, 2018). It is considered that the offset site contains environmental values that relate to those being lost.

To determine what offset size would be adequately proportionate to the significance of the environmental values being impacted, DWER undertook a calculation using the Commonwealth Offsets Assessment Guide. The calculation indicated that the conservation of 1.105 hectares is required. The applicant has agreed to relinquish a 1.105 hectare portion of Crown Reserve 2556.

Given the above, the conservation of 1.105 hectares of Crown Reserve 2556 is considered adequate to counterbalance the significant residual impacts of the proposed clearing consistent with the *WA Environmental Offsets Policy September 2011*.

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