



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9266/1
File Number: DWERVT7785
Duration of Permit: From 19 August 2021 to 19 August 2023

PERMIT HOLDER

Shire of Murray

LAND ON WHICH CLEARING IS TO BE DONE

Gull Road Reserve (PIN 1346046), Nambeelup and Stake Hill

AUTHORISED ACTIVITY

The permit holder must not clear more than 0.6 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending 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.

2. Weed and dieback management

When undertaking any *clearing* authorised under this permit, the permit holder must take the following measures to minimise the risk of 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 known *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.

3. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised <i>clearing</i> activities generally	<ul style="list-style-type: none"> (a) the location where the <i>clearing</i> occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); (d) actions taken to avoid, minimise, and reduce the impacts and extent of <i>clearing</i> in accordance with condition 1; and (e) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 2.

4. Reporting

The permit holder must provide to the *CEO* the records required under condition 3 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
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.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; 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.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

26 July 2021

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1)

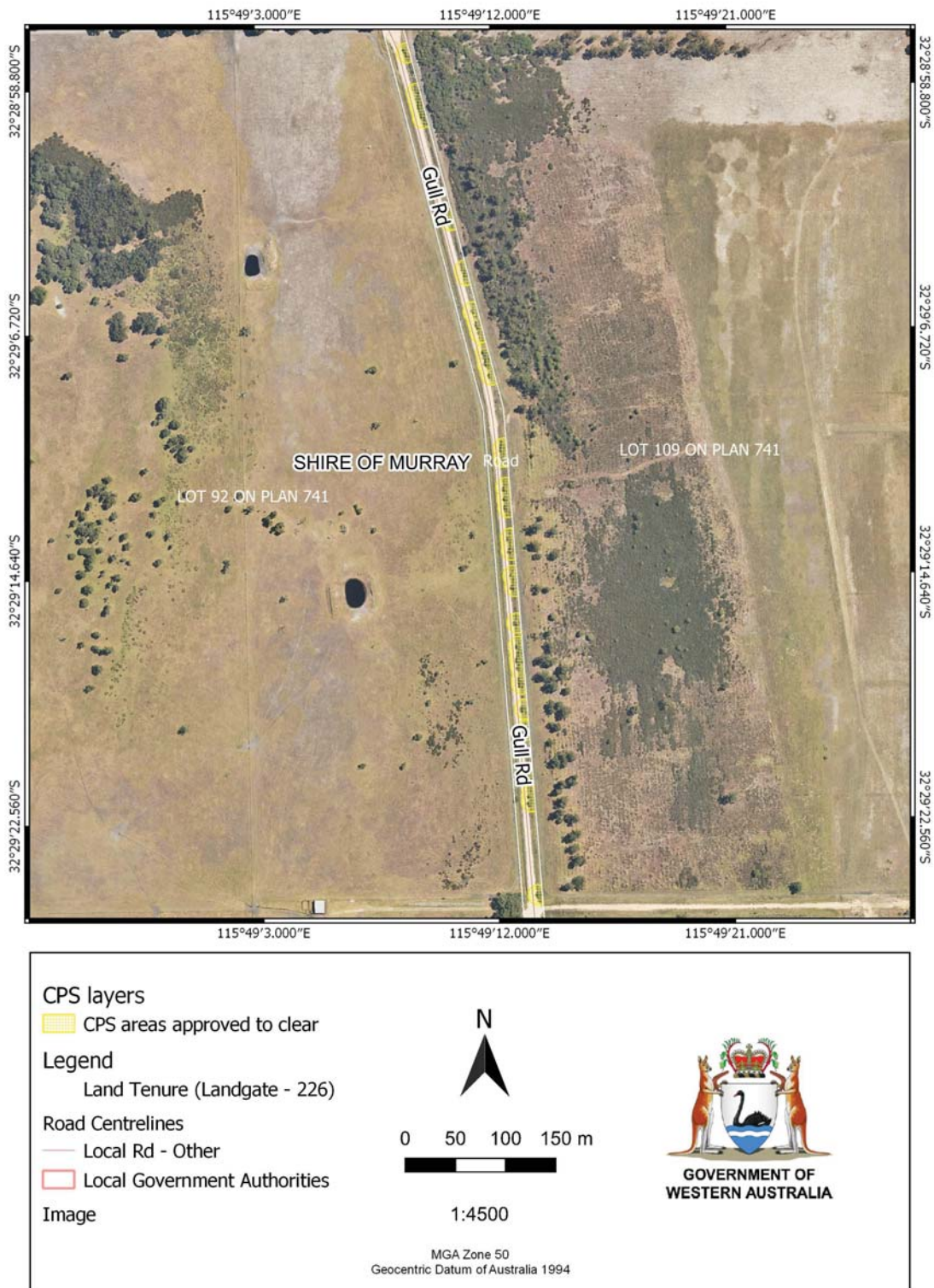


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9266/1
Permit type:	Area permit
Applicant name:	Shire of Murray
Application received:	13 April 2021
Application area:	0.6 hectares of native vegetation
Purpose of clearing:	Road construction and upgrades
Method of clearing:	Mechanical removal
Property:	Gull Road Reserve (PIN 1346046)
Location (LGA area):	Shire of Murray
Localities (suburb/s):	Nambeelup and Stake Hill

1.2. Description of clearing activities

The application is to selectively clear 0.6 hectares of native vegetation, likely comprising primarily *Melaleuca preissiana* individuals, for the purpose of upgrading Gull Road to meet road safety standards and access requirements for a commercial development (see Figure 1, Section 1.5). The area proposed to be cleared comprises discrete patches of vegetation, extending approximately 870 metres within the Gull Road reserve. The clearing area encompasses the Gull Road alignment, which has been cleared and does not require the removal of native vegetation (Figure 1).

1.3. Decision on application

Decision:	Granted
Decision date:	26 July 2021
Decision area:	0.6 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- loss of vegetation growing in association with a mapped 'multiple use' wetland (palusplain)
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is not likely to have any long-term adverse impacts on the hydrological and ecological values of the wetland, and that weed and dieback management practices will mitigate any potential impacts from the proposed clearing.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures, the Delegated Officer determined that the impacts of the proposed clearing could be minimised and managed to be environmentally acceptable. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise and reduce the impacts and extent of clearing
- take steps to minimise the risk of the introduction and spread of weeds and dieback.

1.5. Site map

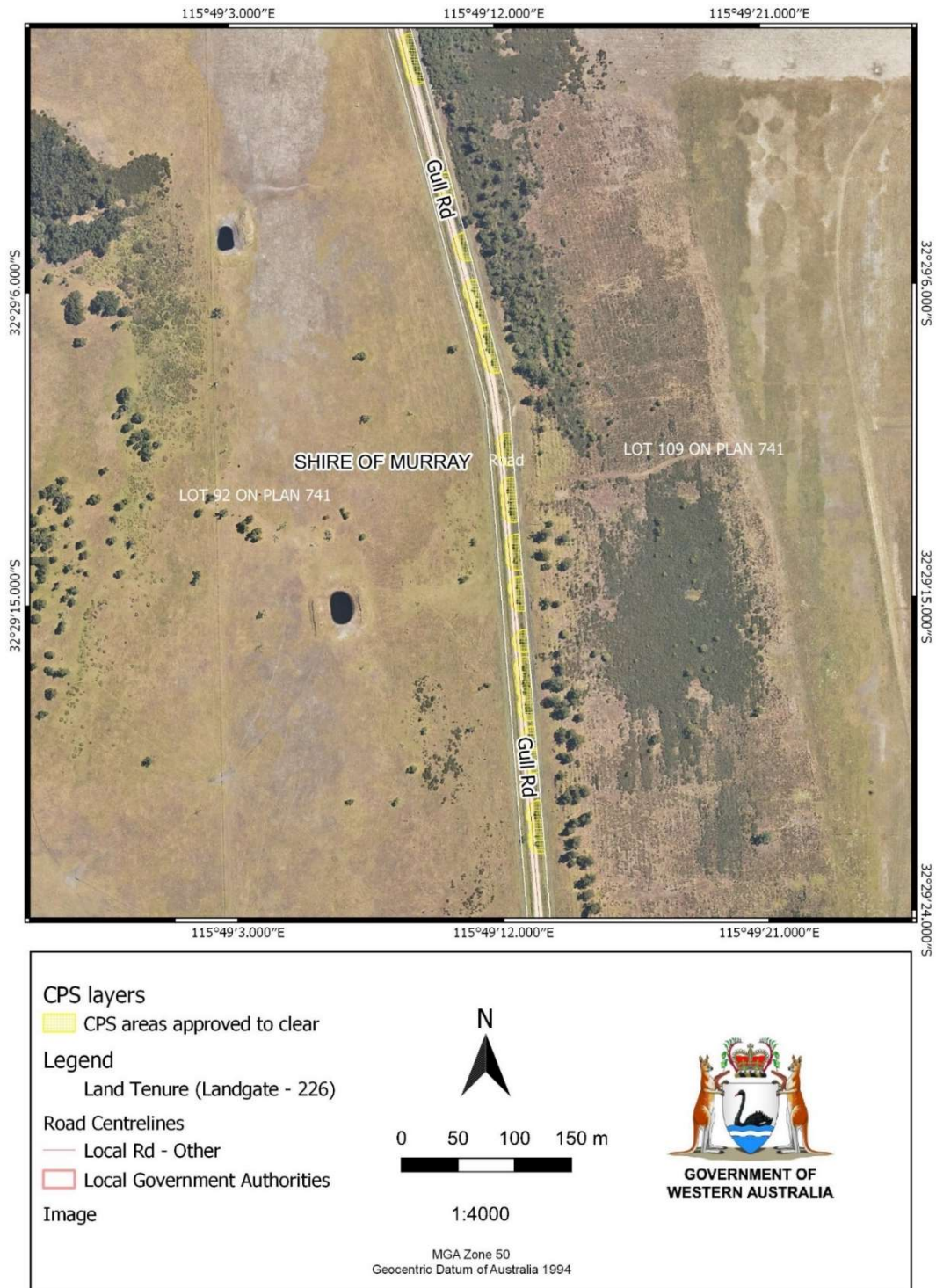


Figure 1: Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019).

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values. The applicant advised that the road has been designed to minimise the clearing and removal of native vegetation (Shire of Murray 2021a). The proposed clearing comprises the selective clearing of trees within the Gull Road reserve (Shire of Murray 2021a). Road upgrades to Gull Road are required to ensure the road standards and specifications are met for the development of rural lots in Keralup by Department of Communities and in consultation with the Peel Development Commission (Shire of Murray 2021b). The option to upgrade an existing road (Gull Road) has been selected as an alternative to constructing a new road to reduce the amount of native vegetation clearing that may be required (Shire of Murray 2021b). The development has been a coordinated approach, with several agencies including DWER and Department of Biodiversity, Conservation and Attractions (DBCA) involved in the planning process (Shire of Murray 2021b).

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values. The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to biological values (fauna, adjacent flora and vegetation) and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora and vegetation) - Clearing Principles (a) and (d)

Assessment: According to available databases, 22 flora of conservation significance have been recorded within the local area, comprising two Threatened, two Priority 1, three Priority 2, nine Priority 3 and six Priority 4 flora taxa. None of these records occur over the application area. A preliminary assessment identified that noting the preferred habitat types, including soil and vegetation types mapped over the application area, the vegetation within the application area may comprise suitable habitat for six conservation significant flora. Threatened flora species, *Diuris drummondii* (vulnerable), is known from two records within the local area, with the nearest occurring 1.9 kilometres from the application area. Based on the habitat preferences of this species, it is not likely to occur within the application area. Conservation significant flora with the potential to occur within the application area are assessed further below:

- *Drakaea elastica* (critically endangered) is known from low-lying situations adjoining winter-wet swamps, within white or grey sands (Western Australian Herbarium 1998-). According to available databases, the species is known from 14 records within the local area between 1990 to 2007 (Western Australian Herbarium 1998-). The nearest record occurs approximately 1.3 kilometres from the application area (Western Australian Herbarium 1998-). These individuals have primarily been recorded in association with *Banksia*, *Kunzea*, *Stirlingia* and *Dasyopogon* (Western Australian Herbarium 1998-).
- *Johnsonia pubescens* subsp. *cygnorum* (Priority 2) is known from flats and seasonally-wet sites, within grey-white-yellow sandy soils (Western Australian Herbarium 1998-). According to available databases, the species is known from three records within the local area, between 1992 to 1999 (Western Australian Herbarium 1998-). The nearest record occurs approximately 2.7 kilometres from the application area (Western Australian Herbarium 1998-).

- *Dillwynia dillwynioides* (Priority 3) is known from winter-wet depressions and sandy soils (Western Australian Herbarium 1998-). According to available databases, the species is known from three records within the local area, between 1992 to 2007 (Western Australian Herbarium 1998-). The nearest record occurs approximately 3.5 kilometres from the application area (Western Australian Herbarium 1998-).
- *Caladenia speciosa* (Priority 4) is known from white, grey or black sand (Western Australian Herbarium 1998). According to available databases, the species is known from two records within the local area, between 1990 to 2012 (Western Australian Herbarium 1998-). The nearest record occurs approximately 1.3 kilometres from the application area (Western Australian Herbarium 1998-).
- *Jacksonia sericea* (Priority 4) is known from calcareous and sandy soils (Western Australian Herbarium 1998-). According to available databases, the species is known from two records within the local area, between 1966 to 2007 (Western Australian Herbarium 1998-). The nearest record occurs approximately 5.7 kilometres from the application area (Western Australian Herbarium 1998-).
- *Parsonsia diaphanophleba* (Priority 4) is known from alluvial soils and along rivers (Western Australian Herbarium 1998-). According to available databases, the species is known from three records within the local area, between 1983 to 2006 (Western Australian Herbarium 1998-). The nearest record occurs approximately 1.6 kilometres from the application area (Western Australian Herbarium 1998-).

Photographs provided by the applicant (Appendix D) and Google (2021) street view digital imagery indicates that the vegetation within the application area is in completely degraded (Keighery 1994) condition. The vegetation within the application area and along the eastern extent of the Gull Road reserve primarily comprises *Melaleuca preissiana* and thickets of non-native grasses that have been maintained. Native understorey species are predominantly absent from the application area (Appendix D). The western extent of the application area comprises non-native grasses that have been maintained. No native species appear to be present within the western verge of the application area. Noting the degraded vegetation condition, absence of native understorey, presence of dense non-native grass thickets, the small extent of clearing proposed, historical nature and distribution of flora records, the vegetation within the application area is not likely to comprise significant habitat for conservation significant flora.

According to available databases, no threatened ecological communities (TECs) or priority ecological communities (PECs) occur over the application area. Ten conservation significant ecological communities are known from within the local area (Western Australian Herbarium 1998-; Appendix A). The nearest community is a mapped occurrence of the '*Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region*' (Priority 3; Banksia Woodland) listed as endangered under the EPBC Act and located approximately 0.08 kilometres from the application area. The vegetation within the application intersects the buffer for this community. The Banksia Woodland community is characterised by a canopy mostly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*, *B. prionotes* or *B. ilicifolia* (DBCA 2021). The community typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands (DBCA 2021). It is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau (DBCA 2021).

Photographs provided by the applicant indicate the vegetation within the application area primarily comprises *Melaleuca preissiana* and does not contain any *Banksia* species. Given the small patch size and absence of banksia species and native understorey, the vegetation within the application area does not meet the key diagnostic characteristics set out in the approved conservation advice '*Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region*' ecological community (TSSC 2016). Noting the completely degraded (Keighery 1994) vegetation condition, absence of native understorey and extent of clearing proposed, the vegetation within the application area is not likely to represent other conservation significant ecological communities recorded within the local area, or significantly impact their conservation status.

The vegetation within the application area is situated approximately 0.7 kilometres from the south west regional ecological linkage and within a mapped Roadside Conservation Committee (RCC) boundary. The *Melaleuca preissiana* individuals dispersed within the application area provides minimal ecological linkage value within the Gull Road reserve and local landscape. However, noting the completely degraded (Keighery 1994) condition, extent of clearing proposed and given the absence of significant habitat for conservation significant flora, fauna (Section 3.2.2) and communities, the vegetation is not likely to comprise a high level of biodiversity.

For the reasons set out above, it is considered that the proposed clearing is not likely to result in significant impacts to conservation significant flora, fauna or communities. The proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation, which could impact habitat quality and connectivity.

Conclusion: Based on the above assessment, the proposed clearing may result in the potential introduction of weed and dieback to adjacent remnant vegetation. The

Conditions: To address the above impacts, the implantation of weed and dieback management strategies as a condition on the permit will mitigate the impacts of the proposed clearing.

3.2.2. Biological values (fauna) - Clearing Principles (b)

Assessment: According to available databases, 37 fauna of conservation significance have been recorded within the local area, comprising 14 Threatened, three Priority 3, five Priority 4, 15 specially protected Migratory species, one species of special conservation interest (conservation dependent fauna; CD) and other specially protected species (OS) fauna species. None of these records occur over the application area.

In determining the likelihood of conservation significant fauna occurring within the application area, consideration was given to preferred habitat types and typical home ranges, proximity of records to the application area, and the type and condition of the vegetation within the application area. Several fauna recorded within the local area are typically associated with marine and estuarine habitats, which do not occur within the application area (Appendix A). Due to the proximity of the Indian Ocean, marine species were identified in database records and these have not been considered further. A summary of fauna recorded within the local area and with the potential to occur within the application area is presented in Appendix A.

Numerous specially protected migratory seabirds, shorebirds and wading birds protected under International Agreements were recorded within the local area (Appendix A). These records are primarily associated with coastal habitats, Serpentine River, Goegrup Lake, Black Lake and other hydrological features within the local area that do not intersect the application area. Photographs provided by the applicant (Appendix D), Google (2021) street view digital imagery indicates the vegetation within the application area predominantly comprises riparian vegetation in degraded to completely degraded (Keighery 1994) condition, with an understorey containing non-native grass thickets. Noting the extent of clearing within the Gull Road reserve and degraded vegetation condition, the vegetation within the application area is not likely to comprise significant habitat for specially protected migratory fauna species. Other wetlands and watercourses within the local area are likely to provide better quality habitat. These migratory species could be transient within the landscape, however the multiple use wetland mapped within the application area and road reserve is not likely to provide significant habitat. Other conservation significant fauna with the potential to occur within the application area are assessed further below.

Calyptorhynchus latirostris (Carnaby's cockatoo), *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) and *Calyptorhynchus baudinii* (Baudin's cockatoo), collectively known as black cockatoos, have all been recorded within the local area. The vegetation within the application area is within the modelled distribution of three threatened black cockatoo species (Commonwealth of Australia 2012). Carnaby's cockatoo is known from 417 records within the local area, with the nearest occurring approximately 1.2 kilometres from the application area. This species prefers proteaceous woodlands and shrublands and some non-native plants for foraging (DPAW 2013; Commonwealth of Australia 2012; EPA 2019; Shah 2006; Valentine and Stock 2008). Forest red-tailed black cockatoo is known from 91 records within the local area, the nearest observed approximately 2.8 kilometres from the application area. Baudin's cockatoo is known from two records within the local area, with the nearest occurring approximately 6.3 kilometres from the application area. White-tailed black cockatoo has been recorded 57 times within the local area between 2006-2018, indicating further records of Carnaby's or Baudin's cockatoo in the local area. The nearest white-tailed black cockatoo record is located approximately within 1.7 kilometres from the application area. The nearest black cockatoo roosting site is located approximately 3.7 kilometres from the application area.

Photographs provided by the applicant (Appendix D), Google (2021) street view digital imagery indicate there are no native *Eucalyptus* species that occur over the application area. The vegetation within the application area comprises *Melaleuca preissiana* with a completely degraded understorey. *Melaleuca preissiana* is not a preferred food species for black cockatoos (Groom 2011), and negligible foraging habitat is likely available over the application area. Given the above, vegetation within the application area is not likely to comprise significant foraging, breeding, or roosting habitat for black cockatoos.

Isoodon fusciventer (quenda; Priority 4) typically prefer dense understorey vegetation (DEC 2012; DBCA 2017b). It is understood that individuals have overlapping home ranges between 1-2 hectares. This species is known from 441 records within the local area, with the nearest occurring approximately 1.6 kilometres from the application area. Noting the proximity of the nearest record, quenda may utilise the application area while moving through the landscape. *Phascogale tapoatafa wambenger* (south-western brush-tailed phascogale; CD) is known from 29 records within the local area, with the nearest observed 1.6 kilometres from the application area. In the southwest of Western Australia, this species is typically observed in dry sclerophyll forests and open woodlands that contain hollow-bearing tree, and are less common in high rainfall areas (DBCA 2012). *Dasyurus geoffroyi* (chuditch; critically endangered) prefers *Eucalyptus marginata* forests and woodlands, mallee shrublands and heathland habitats (DBCA 2017a). *Myrmecobius fasciatus* (numbat; endangered) is known from two records within the local area between 1974 and 2002, with the nearest observed 1.6 kilometres from the application area. Given the absence of understorey and hollow-bearing trees, historical nature and proximity of records, extent of clearing proposed and the completely degraded (Keighery 1994) vegetation condition, the vegetation within the application area is not likely to comprise significant habitat for quenda, south-western brush-tailed phascogale, chuditch or numbat, or be significant for the continued survival of these species.

Black-striped snake is a small-bodied, terrestrial burrowing snake that lives in Banksia woodlands and sandy areas of the Perth region (Western Australian Museum 2017). Black-striped snake is known from five records within the local area, with the nearest occurring approximately 6.7 kilometres from the application area. *Lerista lineata* (Perth slider; Priority 3) is known from 12 records in the local area, with the nearest observed 4.5 kilometres from the application area. The Perth slider is found in sandy coastal heath and low scrubland, *Banksia* spp. woodland, *Eucalyptus gomphocephala* open woodland over deep sands, and coastal dunes. Noting the habitat preferences of these species, extent of the clearing proposed and the proximity of the nearest records, the vegetation proposed to be cleared is not likely to be significant for the continued survival of these species.

Other conservation significant fauna were recorded from one to two records within the local area (Appendix A), including *Notamacropus Irma* (western brush wallaby; Priority 4), *Hydromys chrysogaster* (water-rat; Priority 4), *Falco peregrinus* (peregrine falcon; other specially protected species) and *Synemon gratiosa* (graceful sunmoth; Priority 4). Noting the distribution, proximity and historical nature of these records and the degraded vegetation condition, the vegetation within the application is not likely to comprise significant habitat for these conservation significant fauna.

For the reasons set out above, it is considered that the proposed clearing is not likely to result in significant impacts to conservation significant fauna or habitats. The proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation, which could impact habitat quality and connectivity.

Conclusion: Based on the above assessment, the Delegated Officer has determined that the proposed clearing will have minimal impacts on fauna and their habitat. Potential impacts of the proposed clearing to fauna habitat can be managed by minimising the risk of introduction and spread of weeds and dieback into adjacent fauna habitat

Conditions: To address the above impacts, the implantation of weed and dieback management strategies as a condition on the permit will mitigate the impacts to adjacent vegetation and fauna habitat.

3.2.3. Environmental value: (Land resources) - Clearing Principle (f)

Assessment: No drainage lines or watercourses intersect the application area. A mapped occurrence of a constructed waterline occurs approximately 28 metres north from the application area. The nearest river is Serpentine River, mapped approximately 1.5 kilometres west from the application area. The entire application area is located within a mapped occurrence of a palusplain multiple use category wetland (ID 16021). The nearest conservation category wetland is mapped approximately 1.3 kilometres west from the application area. Photographs provided by the applicant (Appendix D) and Google (2021) street view digital imagery indicates that the vegetation within the application area comprises vegetation considered to be riparian, given the likely presence of *Melaleuca preissiana*. Clearing is therefore at variance with Principle (f).

Multiple use wetlands are considered wetlands with few remaining important attributes and functions (EPA 2004; EPA 2008; Water and Rivers Commission 2001). The management objective should be to take all reasonable measures to retain the wetland's hydrological function (EPA 2008), but is not incompatible with clearing. Photographs provided by the applicant (Appendix D) and Google (2021) street view digital imagery indicates that the understorey within the application area is predominantly devoid of native vegetation and dominated by non-native grass thickets that have been maintained. The vegetation adjacent to the application area and surrounds has primarily been cleared for farming.

The proposed clearing will impact on riparian vegetation that is growing in, or in association with, an environment associated with a wetland. However, considering the size and degraded to completely degraded condition (Keighery 1994) of the application area, the impact on environmental values is considered minor. Noting the extent and purpose of the proposed clearing, impacts to the wetland and surface water quality are expected to be minimal and limited to the duration of the proposed clearing activities. Given the distance to the Serpentine River and the small area of the proposed clearing, the proposed clearing is not likely to impact surface water quality of the river.

Conclusion: For the reasons set out above, it is considered that the proposed clearing is not likely to have any long-term adverse impacts on the hydrological and ecological values of the wetland. No clearing permit conditions are necessary in relation to this matter.

Conditions: No land or water resources management conditions are required.

3.3. Relevant planning instruments and other matters

Clearing Permit application CPS 9226/1 was advertised on the DWER website for a 21 day public comment period on 28 April 2021. No public submissions were received in relation to this application.

The Shire of Murray is the public authority that manages the application area as it is located entirely within Gull Road reserve (PIN 1346046). The application area is zoned a local road, surrounded by lands zoned rural. The clearing purpose is consistent with the Shire of Murray Town Planning Scheme No. 4.

The application area is located within the Murray Groundwater Area proclaimed area under the *Rights in Water and Irrigation Act 1914* (RIWI Act). It is not located within any Surface Water Areas or Irrigation Districts proclaimed under the RIWI Act, or any *Country Areas Water Supply Act 1947* (CAWS Act) Clearing Control Catchments, or Public Drinking Water Source Areas. Groundwater will not be intercepted, the beds or banks of any watercourses will not be disturbed, and no other permitting by DWER is required.

No Aboriginal sites of significance have been mapped within the application area. The nearest mapped site is Serpentine River (Place ID 3582), located approximately 0.58 kilometres from the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B.

A.1. Site characteristics

Characteristic	Details
Local context	The application area encompasses the western and eastern extent of the Gull Road reserve. The western extent of the road reserve within the application area is primarily devoid of any native vegetation (Appendix D). The area proposed to be cleared comprises 0.6 hectares of native vegetation within the intensive land use zone of Western Australia. The area immediately surrounding the application area is zoned for rural purposes. The broader landscape is zoned for industrial, regional open space and primary regional roads. The vegetation within the application area is bound by rural properties to the east and west. These areas have predominantly been cleared for agricultural purposes, but some patches of native vegetation have been retained. Spatial data indicate the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 29.32 per cent of the original native vegetation cover.
Ecological linkage	The application area is situated approximately 0.7 kilometres from the south west regional ecological linkage and within a Roadside Conservation Committee (RCC) boundary. The dispersed vegetation within the application area provides minimal linkage values within the road reserve.
Conservation areas	Two nature reserves (ID R 44986 and R 50750) are mapped approximately 1.8 kilometres and 1.5 kilometres west and south-east from the application area. Rockingham Lakes is located approximately 3.7 kilometres north west from the application area. No environmentally sensitive areas are mapped over the application area.
Vegetation description	<p>Photographs provided by the applicant and Google (2021) street view digital imagery indicate that the vegetation within the eastern extent of the application area primarily comprises <i>Melaleuca preissiana</i>, with a completely degraded understorey, containing thickets of non-native grasses that have been maintained (Appendix D). Native understorey species are primarily absent from the application area.</p> <p>The western extent of the application area comprises non-native grasses that have been maintained. No native species appear to be present within the western extent of the road reserve within the application area. Representative photographs of the application area are available in Appendix D.</p> <p>The vegetation within the application area is partially consistent with the mapped vegetation type of Bassendean Complex-Central and South vegetation complex (44) which is described as vegetation ranging from woodland of <i>Eucalyptus marginata</i> (jarrah) - <i>Allocasuarina fraseriana</i> (sheoak) - Banksia species to low woodland of <i>Melaleuca</i> species, and sedgelands on the moister sites. This area includes the transition of <i>Eucalyptus marginata</i> (jarrah) to <i>Eucalyptus tottiana</i> (pricklybark) in the vicinity of Perth (Heddle 1980). The mapped vegetation type retains approximately 29.32 per cent of the original extent (Government of Western Australia 2019a).</p>
Vegetation condition	<p>Photographs provided by the applicant and Google (2021) street view digital imagery indicate the vegetation within the proposed clearing area is in degraded to completely degraded (Keighery 1994; Appendix D) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos are available in Appendix D.</p>
Soil description	<p>The soils over the application area are mapped as:</p> <ul style="list-style-type: none"> • Bassendean B2 Phase, described as flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 metres. • Bassendean B4 Phase, described as broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally

Characteristic	Details																																												
	greater than 1.5 metres by clay or less frequently a strong iron-organic hardpan.																																												
Land degradation risk	<p>The land degradation risk factors mapped over the application area are detailed below:</p> <table border="1"> <thead> <tr> <th rowspan="2">Risk Categories</th> <th colspan="2">Bassendean B2 Phase</th> <th colspan="2">Bassendean B4</th> </tr> <tr> <th>Rating</th> <th>Description</th> <th>Rating</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Wind erosion</td> <td>M2</td> <td>30-50% of map unit has a high to extreme wind erosion risk</td> <td>M1</td> <td>10-30% of map unit has a high to extreme wind erosion risk</td> </tr> <tr> <td>Water erosion</td> <td>L1</td> <td><3% of map unit has a high to extreme water erosion risk</td> <td>L1</td> <td><3% of map unit has a high to extreme water erosion risk</td> </tr> <tr> <td>Waterlogging</td> <td>L1</td> <td>3-10% of map unit has a moderate to very high waterlogging risk</td> <td>H2</td> <td>>70% of map unit has a moderate to very high waterlogging risk</td> </tr> <tr> <td>Subsurface acidification</td> <td>H2</td> <td>>70% of map unit has a high subsurface acidification risk or is presently acid</td> <td>H2</td> <td>>70% of map unit has a high subsurface acidification risk or is presently acid</td> </tr> <tr> <td>Phosphorus export</td> <td>H2</td> <td>>70% of map unit has a high to extreme phosphorus export risk</td> <td>H2</td> <td>>70% of map unit has a high to extreme phosphorus export risk</td> </tr> <tr> <td>Salinity risk</td> <td>L1</td> <td><3% of map unit has a moderate to high salinity risk or is presently saline</td> <td>L1</td> <td><3% of map unit has a moderate to high salinity risk or is presently saline</td> </tr> <tr> <td>Flooding</td> <td>L1</td> <td><3% of the map unit has a moderate to high flood risk</td> <td>L1</td> <td><3% of the map unit has a moderate to high flood risk</td> </tr> </tbody> </table>	Risk Categories	Bassendean B2 Phase		Bassendean B4		Rating	Description	Rating	Description	Wind erosion	M2	30-50% of map unit has a high to extreme wind erosion risk	M1	10-30% of map unit has a high to extreme wind erosion risk	Water erosion	L1	<3% of map unit has a high to extreme water erosion risk	L1	<3% of map unit has a high to extreme water erosion risk	Waterlogging	L1	3-10% of map unit has a moderate to very high waterlogging risk	H2	>70% of map unit has a moderate to very high waterlogging risk	Subsurface acidification	H2	>70% of map unit has a high subsurface acidification risk or is presently acid	H2	>70% of map unit has a high subsurface acidification risk or is presently acid	Phosphorus export	H2	>70% of map unit has a high to extreme phosphorus export risk	H2	>70% of map unit has a high to extreme phosphorus export risk	Salinity risk	L1	<3% of map unit has a moderate to high salinity risk or is presently saline	L1	<3% of map unit has a moderate to high salinity risk or is presently saline	Flooding	L1	<3% of the map unit has a moderate to high flood risk	L1	<3% of the map unit has a moderate to high flood risk
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Flooding	L1	<3% of the map unit has a moderate to high flood risk	L1	<3% of the map unit has a moderate to high flood risk																																									
Waterbodies	A mapped occurrence of a palusplain Multiple Use category wetland (ID 16021) intersects the application area. A mapped occurrence of a constructed waterline is situated approximately 28 metres north from the application area. The Serpentine River is mapped approximately 1.5 kilometres west from the application area.																																												
Hydrogeography	The application area is situated within the Murray Groundwater Area and Serpentine River System Surface Water Area as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> . The hydrogeology over the application area comprises surficial sediments, shallow aquifers. Groundwater salinity within the application area ranged between 1,000-3,000 milligrams per litre total dissolved solids.																																												
Flora	According to available databases, 22 flora of conservation significance have been recorded within the local area, comprising two Threatened, two Priority 1, three Priority 2, nine Priority 3 and six Priority 4 flora taxa. The nearest record is <i>Caladenia speciosa</i> , located approximately 1.2 kilometres from the application area. Of the flora recorded in the local area, six occur within the same mapped soil and vegetation types of those that occur over the application area.																																												
Ecological communities	According to available databases, ten ecological communities of conservation significance have been recorded within the local area. None of these records occur over the application area. The nearest record is a mapped occurrence of the ' <i>Banksia Dominated Woodlands of the Swan Coastal Plain</i> ' (Priority 3; Banksia Woodland), located approximately 0.8 kilometres from the application area. The ' <i>Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (floristic community type 19 as originally described in in Gibson et al. (1994))</i> ' community is the nearest mapped threatened ecological community (TEC), located approximately 7.8 kilometres from the application area.																																												
Fauna	According to available databases, 37 fauna of conservation significance have been recorded within the local area, comprising 14 Threatened, three Priority 3, five Priority 4, 15 specially protected Migratory species, one specially protected species (conservation dependent; CD) and one other specially protected species (OS) fauna																																												

Characteristic	Details
	<p>species. The nearest fauna record is <i>Calidris acuminata</i> (sharp-tailed sandpiper; Migratory), known from nine records within the local area between 1991 to 2012.</p> <p><i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo), <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo) and <i>Calyptorhynchus baudinii</i> (Baudin's cockatoo), collectively known as black cockatoos, have all been recorded within the local area. Carnaby's cockatoo is known from 417 records within the local area, with the nearest occurring approximately 1.2 kilometres from the application area. Forest red-tailed black cockatoo is known from 91 records within the local area within the nearest occurring approximately 2.8 kilometres from the application area. Baudin's cockatoo is known from two records within the local area, with the nearest occurring approximately 6.3 kilometres from the application area.</p> <p>White-tailed black cockatoo has been recorded 57 times within the local area, indicating further records of Carnaby's or Baudin's cockatoo in the local area. The nearest white-tailed black cockatoo record is located approximately within 1.7 kilometres from the application area. The nearest confirmed black cockatoo roosting site is approximately 3.7 kilometres from the application area.</p>

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex** (Heddle)					
Bassendean Complex-Central and South (44)	87,476.26	23,508.66	26.87	7,614.36	5.00
Local area					
10 km radius	31,470.54	8,331.56	29.32	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), an analysis of relevant flora are presented below.

Species name	Conservation status	Suitable soil & vegetation type?	Distance of closest record to application area (km)	Number of known records (total)
<i>Caladenia speciosa</i>	Priority 4	Yes	1.3	2
<i>Dillwynia dillwynioides</i>	Priority 3	Yes	3.5	18
<i>Drakaea elastica</i>	Critically endangered	Yes	1.3	14
<i>Jacksonia sericea</i>	Priority 4	Yes	5.7	7
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i>	Priority 2	Yes	2.7	3
<i>Parsonsia diaphanophleba</i>	Priority 4	Yes	1.6	3
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026)	Priority 1	No	4.3	2
<i>Boronia capitata</i> subsp. <i>gracilis</i>	Priority 3	No	3.0	1
<i>Stachystemon exilis</i>	Priority 1	No	7.4	1
<i>Stylidium longitubum</i>	Priority 4	No	3.6	4

Species name	Conservation status	Suitable soil & vegetation type?	Distance of closest record to application area (km)	Number of known records (total)
<i>Styphelia filifolia</i>	Priority 3	No	7.5	1
<i>Acacia benthamii</i>	Priority 2	No	4.1	7
<i>Beyeria cinerea</i> subsp. <i>cinerea</i>	Priority 3	No	5.7	3
<i>Calandrinia oraria</i>	Priority 3	No	6.9	2
<i>Cardamine paucijuga</i>	Priority 2	No	6.1	3
<i>Conostylis pauciflora</i> subsp. <i>pauciflora</i>	Priority 4	No	6.4	2
<i>Diuris drummondii</i>	Vulnerable	No	1.9	2
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i>	Priority 4	No	5.8	1
<i>Lasiopetalum membranaceum</i>	Priority 3	No	6.1	2

A.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), an analysis of relevant fauna are presented below.

Species name	Conservation status	Distance of closest record to application area (km)	Number of known records (total)	Year	Significant habitat likely present?
<i>Calidris ferruginea</i> (curlew sandpiper)	Critically endangered	1.8	6	1990-2010	No
<i>Calidris tenuirostris</i> (great knot)	Critically endangered	5.8	4	1990-1991	No
<i>Numenius madagascariensis</i> (eastern curlew)	Critically endangered	5.0	2	1997-2000	No
<i>Calidris canutus</i> (red knot)	Endangered	5.9	3	1991-2006	No
<i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo)	Endangered	2.8	91	2002-2020	No
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	Endangered	6.3	2	2014-2020	No
<i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo)	Endangered	2.1	417	1998-2018	No
<i>Caretta caretta</i> (loggerhead turtle)	Endangered	6.5	3	1989-2000	No
<i>Myrmecobius fasciatus</i> (numbat)	Endangered	1.6	2	1974-2002	No
<i>Dasyurus geoffroi</i> (chuditch)	Vulnerable	3.4	7	1996-2016	No
<i>Sternula nereis nereis</i> (fairy tern)	Vulnerable	9.5	4	1990-1991	No
<i>Idiosoma sigillatum</i> (Swan Coastal Plain shield-backed trapdoor spider)	Priority 3	7.8	1	2013	No
<i>Neelaps calonotos</i> (black-striped snake)	Priority 3	6.7	5	1967-2011	No
<i>Lerista lineata</i> (Perth slider)	Priority 3	4.5	12	1977-2018	No
<i>Hydromys chrysogaster</i> (water-rat)	Priority 4	6.7	1	2010	No
<i>Oxyura australis</i> (blue-billed duck)	Priority 4	4.5	13	1978-1999	No
<i>Synemon gratiosa</i> (graceful sunmoth)	Priority 4	5.8	2	2011	No
<i>Isoodon fusciventer</i> (quenda)	Priority 4	1.6	441	1997-2020	No
<i>Notamacropus irma</i> (western brush wallaby)	Priority 4	1.6	1	1933-1933	No
<i>Phascogale tapoatafa wambenger</i> (south-western brush-tailed phascogale)	Conservation dependent fauna	1.6	29	1899-2018	No
<i>Falco peregrinus</i> (peregrine falcon)	Other specially protected species	4.6	1	2010	No
<i>Ardenna pacifica</i> (wedge-tailed shearwater)	Migratory	6.5	1	2004	No
<i>Calidris acuminata</i> (sharp-tailed sandpiper)	Migratory	1.2	9	1991-2012	No
<i>Calidris alba</i> (sanderling)	Migratory	9.3	1	2015	No

Species name	Conservation status	Distance of closest record to application area (km)	Number of known records (total)	Year	Significant habitat likely present?
<i>Calidris ruficollis</i> (red-necked stint)	Migratory	1.2	9	1981-2012	No
<i>Calidris subminuta</i> (long-toed stint)	Migratory	1.2	2	2010-2012	No
<i>Hydroprogne caspia</i> (caspiian tern)	Migratory	6.8	6	1990-1991	No
<i>Limosa lapponica</i> (bar-tailed godwit)	Migratory	4.5	3	1991-2001	No
<i>Limosa limosa</i> (black-tailed godwit)	Migratory	9.5	1	1991	No
<i>Macronectes giganteus</i> (southern giant petrel)	Migratory	7.1	1	2011	No
<i>Numenius phaeopus</i> (whimbrel)	Migratory	7.7	2	2000	No
<i>Pandion cristatus</i> Osprey (eastern osprey)	Migratory	6.8	5	1990-1992	No
<i>Pluvialis squatarola</i> (grey plover)	Migratory	9.5	4	1990-1991	No
<i>Thalasseus bergii</i> (crested tern)	Migratory	5.4	6	1999-2013	No
<i>Tringa glareola</i> (wood sandpiper)	Migratory	1.2	4	1992-2012	No
<i>Tringa nebularia</i> (common greenshank)	Migratory	4.4	21	1991-2008	No

Note: White-tailed black cockatoo has been recorded 57 times within the local area between 2006-2018, indicating further records of Carnaby's or Baudin's cockatoo in the local area. The nearest white-tailed black cockatoo record is located approximately within 1.7 kilometres from the application area.

A.5. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), an analysis of relevant ecological communities are presented below.

Community name	Conservation status		Suitable habitat	Distance of closest record to application area (km)	Number of known records (total)
	State	Commonwealth			
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (floristic community type 19 as originally described in in Gibson et al. (1994))	Critically Endangered	Endangered	N	9.2	8
Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain (original description; Gibson et al. (1994).	Critically Endangered	Endangered	N	7.8	4
Forests and woodlands of deep seasonal wetlands of the Swan Coastal Plain (floristic community type 15 as originally described in Gibson et al. (1994))	Vulnerable	N/A	N	8.4	1
Herb rich saline shrublands in clay pans (floristic community type 7 as originally described in Gibson et al. (1994))	Vulnerable	Critically Endangered	N	8.2	1
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994))	Vulnerable	Critically Endangered	N	9.5	2
Coastal shrublands on shallow sands	Priority 3	N/A	N	5.3	3
Northern Spearwood shrublands and woodlands	Priority 3	N/A	N	5.3	2
Subtropical and Temperate Coastal Saltmarsh	Priority 3	Vulnerable	N	4.0	27
Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain	Priority 3	Critically Endangered	N	2.1	66
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	Priority 3	Endangered	N	0.08	905

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> <i>Drakaea elastica</i> (critically endangered), <i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> (Priority 2), <i>Dillwynia dillwynioides</i> (Priority 3), <i>Caladenia speciosa</i> (Priority 4), <i>Jacksonia sericea</i> (Priority 4) and <i>Parsonsia diaphanophleba</i> (Priority 4) occur within the same mapped soil and vegetation types as those mapped over the application area. The vegetation within the application area is mapped 0.08 kilometres from and occurrence of the ‘<i>Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region</i>’ (Priority 3; Banksia Woodland) and within the buffer for this community. The area proposed to be cleared does not contain locally or regionally significant flora, fauna, habitats, assemblages of plants.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u> Black cockatoos have all been recorded within the local area. The vegetation within the application area is within the modelled distribution of all three threatened black cockatoo species (Commonwealth of Australia 2012).</p> <p><i>Isoodon fusciventer</i> (quenda; Priority 4), <i>Phascogale tapoatafa wambenger</i> (south-western brush-tailed phascogale; CD), <i>Dasyurus geoffroii</i> (chuditch; critically endangered) and <i>Myrmecobius fasciatus</i> (numbat; endangered) have also been recorded from within 1.6 kilometres from the application area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> <i>Diuris drummondii</i> (vulnerable) and <i>Drakaea elastica</i> (critically endangered) have been recorded within the local area. Based on preferred habitat types, the degraded vegetation condition and historical nature of records, the vegetation within the application area is not likely to comprise significant habitat for threatened flora. The proposed clearing is not likely to significantly impact threatened flora individuals or populations within the local area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> “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.”</p> <p><u>Assessment:</u> Two threatened ecological communities (TECs) listed by the Minister for Environment have been recorded within the local area. These include ‘<i>Melaleuca huegelii - Melaleuca systema shrublands on limestone ridges (floristic community type 26a as originally described in Gibson et al. (1994))</i>’ (endangered) and ‘<i>Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain</i>’ (critically endangered) located approximately 7.0 kilometres and 9.6 kilometres from the application area, respectively.</p> <p>Based on the preferred habitat types, condition of vegetation and composition of vegetation present, the vegetation within the application area is not likely to comprise significant habitat for TECs. The vegetation within the application area is not dominated by species that indicate a TEC.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
Environmental value: significant remnant vegetation and conservation areas		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The local area and Bassendean Complex-Central and South (44) complex retain approximately 29.32 per cent and 26.87 per cent of their pre-European vegetation extent. The extent of the mapped vegetation type and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. Noting the vegetation proposed to be cleared is predominantly in completely degraded (Keighery 1994) condition, does not comprise high biodiversity, significant habitat for fauna, threatened or priority flora or ecological communities, it is therefore not considered to be significant as a remnant of native vegetation within an extensively cleared area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of adjacent and/or nearby conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> Given the area proposed to be cleared is mapped with one palusplain multiple use category wetland (ID 16021), the vegetation within the application area is growing in association with a wetland.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The soils mapped over the application area are susceptible to subsurface acidification and phosphorus export, and a moderate risk of wind erosion. These soils have a low risk of water erosion, waterlogging and salinity. Noting the extent of clearing proposed and the condition of vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u> The proposed clearing area is situated within a palusplain multiple use wetland, and the Murray Groundwater Area and Serpentine River System Surface Water Area, as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i>. Noting the purpose and extent of the clearing proposed, the proposed clearing is not likely to impact surface or ground water quality.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The proposed clearing area is mapped within a palusplain multiple use wetland. The soils mapped within the application area indicate a low risk of flooding. Noting the risks identified, the extent and purpose of the clearing, the proposed clearing is not likely to contribute to increased incidence or intensity of flooding or waterlogging.</p>	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types. Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared.

This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Photographs of vegetation within the application area (Shire of Murray, 2021b)









Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)

- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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