GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 8993/1
File Number: DWERVT6249
Duration of Permit: From 8 October 2020 to 8 October 2022

PERMIT HOLDER

City of Swan

LAND ON WHICH CLEARING IS TO BE DONE

Woollcott Avenue road reserve (PIN 1332403, Henley Brook; PIN 1337655 and PIN 11169019, West Swan).

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.42 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8993/1.

CONDITIONS

1. **Avoid, minimise and reduce the impacts and extent of clearing**
   In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
   (a) avoid the clearing of native vegetation;
   (b) minimise the amount of native vegetation to be cleared; and
   (c) reduce the impact of clearing on any environmental value.

2. **Dieback and weed management**
   When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback.*
   (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
   (b) ensure that no 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. **Application**
   This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

4. **Records must be kept**
   The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:
   (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
   (b) the date that the area was cleared;
   (c) the size of the area cleared (in hectares);

(d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit; and
(e) actions taken to minimise the risk of the introduction and spread of *dieback* and *weeds* in accordance with condition 2 of this Permit.

5. Reporting
The Permit Holder must provide to the *CEO* the records required under condition 4 of this Permit, when requested by the *CEO.*

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

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

dieback means the effect of Phytophthora species on native vegetation;

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

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

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

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

15 September 2020

Plan 8993/1

CPS 8993-1

base layers

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Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

MGA Zone 50
Geocentric Datum of Australia 1994

Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 8993/1
Permit type:	Area Permit
Applicant name:	City of Swan
Application received:	3 August 2020
Application area:	0.42 hectares of native vegetation
Purpose of clearing:	Road construction and upgrades
Method of clearing:	Mechanical
Property:	Woollcott Avenue Road Reserve (PIN – 1332403), Henley Brook Woollcott Avenue Road Reserve (PINs – 1337655 and 11169019), West Swan
Location (LGA area/s):	City of Swan
Localities (suburb/s):	Henley Brook and West Swan

1.2. Description of clearing activities

The City of Swan propose to widen Woollcott Avenue up to five metres, on both sides of the road, between West Swan Road and Murray Road. Native vegetation within this area is disjunct, with 16 individual portions demarcated that include native vegetation. See Section 1.5, Figure 1.

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	15 September 2020
Decision area:	0.42 hectares of native vegetation within five metres on both sides of Woollcott Avenue as depicted in Section 1.5 below.

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 3 August 2020. DWER advertised the application for public comment and no submissions were received. A submission was provided to the Minister for Environment which was considered as a part of this assessment.

In undertaking the assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (Appendix C), supporting information provided by the applicant, relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (Section 3). The Delegated Officer also took into consideration the purpose of the clearing and the role of local government in the care, control and management of transport corridors, and the requirement for safe, well-maintained roads to improve community safety.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise the potential impacts of the proposed clearing and that native vegetation will be retained within the Woollcott Avenue road reserve. The Delegated Officer noted that in some areas native vegetation occurs adjacent to the proposed clearing, and the implementation of weed and dieback management strategies during construction will mitigate impacts to these areas. In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

1.5. Site map

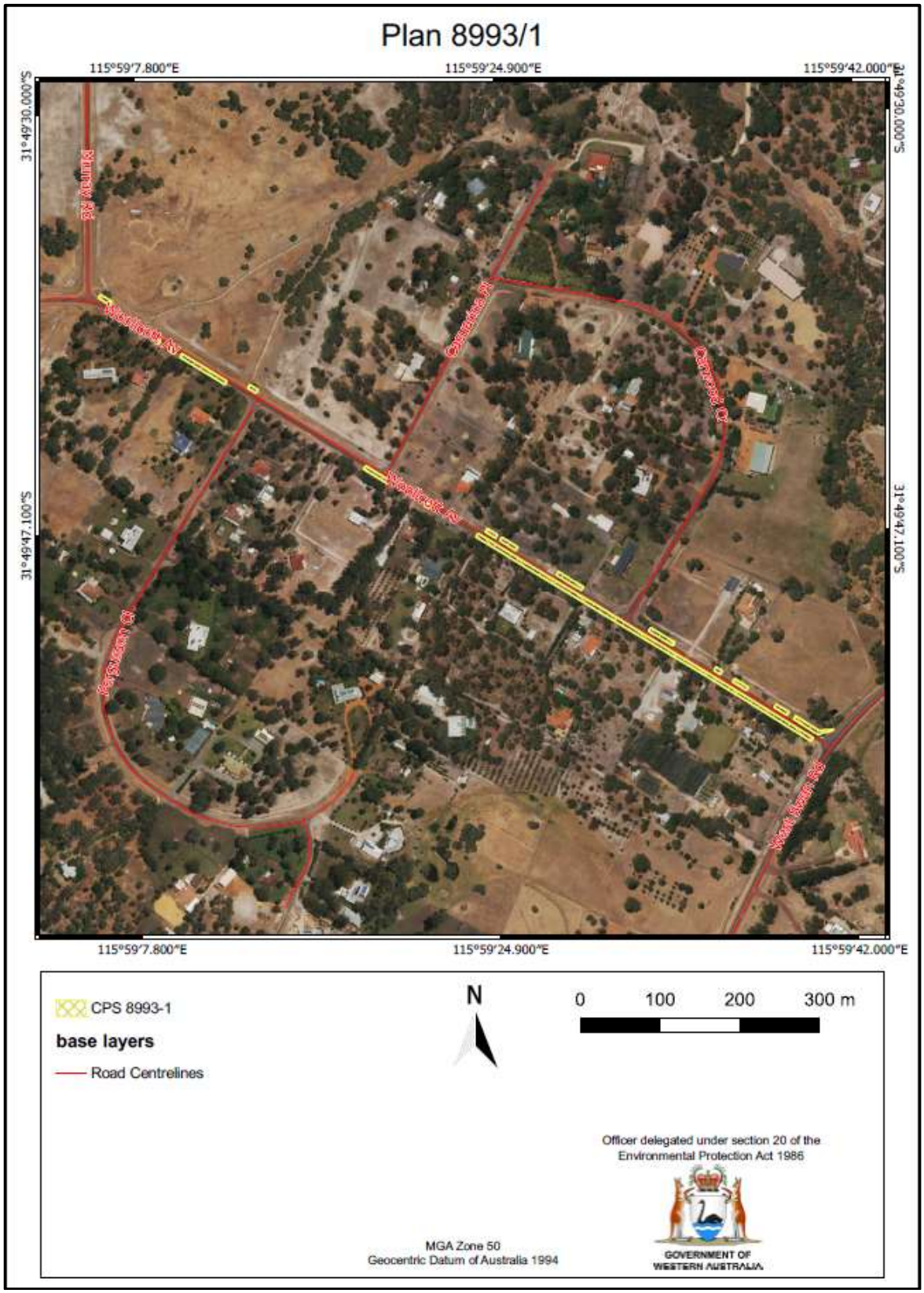

Figure 1. Map of area approved to clear. The area cross-hatched yellow indicates the areas authorised to be cleared under the granted clearing permit.

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 3), 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; and
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment includes:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

The key guidance documents which inform this assessment are:

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

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The City of Swan is planning the widening of Woollcott Avenue to a new standard to accommodate increased traffic growth in the area. The clearing areas are based on a maximum offset of five metres from the edge of the existing seal to allow for the road widening, as well as a small clear zone (City of Swan 2020a).

Woollcott Avenue is an existing road, and no changes to alignment would be beneficial in reducing the proposed clearing requirement (City of Swan 2020b). Due to the increased traffic volumes expected with the on-going urban development at the western end of Woollcott Avenue, reducing the proposed widening is not advisable as it reduces vehicle separation distances with an associated higher risk of head on collisions, and a lower likelihood of an errant vehicle safely recovering (City of Swan 2020b).

However, the clear zone has been reduced to three metres as part of the design. This is a reduction from the Main Roads Western Australia (MRWA) guidelines which advise a 5.5 metre clear zone for a 70 kilometre per hour (kph) road with 1,501 to 6,000 average daily traffic (ADT). The clear zone will be further assessed on site, and where feasible trees on the fringes of the three metre zone will be maintained. That is, the clearing requirements will be reviewed prior to the removal of native vegetation and the required clearing areas will be clearly demarcated prior to clearing (City of Swan 2020b).

Due to the reduction of clearing to five metres in width, native vegetation will be retained along Woollcott Avenue. The width of the road reserve is 30 metres, leaving approximately 5.5 metres uncleared in the northern section of the road reserve, and approximately eight metres uncleared in the southern section of the road reserve. The majority of the native vegetation remaining along Woollcott Avenue is on the southern side, where an eight metre width will be retained.

Clearing has been limited to the minimum required for the widening of Woollcott Avenue and trees and vegetation will be retained as much as possible within the application area. The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise the potential impacts of the proposed clearing on environmental values.

3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix A) and considered whether the clearing poses a risk to environmental values and whether these can be managed to be environmentally acceptable. An assessment against the Clearing Principles is contained in Appendix C.

The assessment identified that the clearing may pose a risk to the environmental values of flora, fauna, and remnant vegetation and that these required further consideration. 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. Environmental value: biological values (flora) – Clearing Principles (a) to (d)

Assessment: The application area consists of roadside vegetation on both sides of Woollcott Avenue that is predominantly parkland cleared and in a Degraded to Completely Degraded condition based on the vegetation condition scale of Keighery (1994). Native vegetation is also disjunct with 16 individual portions demarcated that include native species. Photographs provided by the applicant (Appendix E) indicate that the proposed clearing area consists of an overstorey of regrowth Marri *(Corymbia calophylla)* and Jarrah *(Eucalyptus marginata)* over scaterred *Jacksonia sternbergiana*, and *Banksia* sp, over a dense cover of introduced grasses and herbs with occasional *Macrozamia riedlei* and Cyperaceae sp.

There are no Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for the Environment identified within six kilometres of the application area, and vegetation does not align with any endorsed TECs (Appendix A2). The ecological community described as Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region is listed as Priority 3 by the Department of Biodiversity, Conservation and Attractions, and Endangered under the EPBC Act (Commonwealth of Australia 2016a). Broadscale mapping of this community has been mapped within eight metres of the application area. There is an occasional individual Banksia species occurring over the application area, however patch size and vegetation condition do not meet the minimum thresholds required for the vegetation present to be representative of this ecological community (Commonwealth of Australia 2016a; 2016b).

Twelve Threatened flora taxa have been recorded within ten kilometres of the application area (Appendix A2), however, none of these records are within five kilometres of the application area. The application area is predominantly parkland cleared, disjunct, and in a completely Degraded to Degraded condition (Keighery 1994). The application area is also ecologically isolated from other areas of native vegetation, with records of Threatened flora predominantly from bushland areas in good condition further afield such as Bush Forever sites BF 300 (Maralla Road Bushland), BF 304 (Whiteman Park), BF 200 (Caversham Airbase Bushland), as well as the Talbot Road Nature Reserve, John Forest National Park, and un-named Nature Reserves (e.g. R 49300 and R 46875) (WAH 1998-). It is unlikely that the application area includes, or is necessary for the continued existence of, Threatened flora.

Numerous Priority flora taxa (47) have been recorded within ten kilometres of the application area (Appendix A2), with the vast majority of recent records from bushland areas further than five kilometres distant. However, five Priority flora taxa have been recorded within three kilometres of the application area (Appendix A2c).

Thysanotus sp. Badgingarra (E.A. Griffin 2511) (Priority 2) has been recorded approximately 1.6 kilometre east within Talbot Road Reserve on lateritic loam over laterite, a soil type not present over the application area. Two Priority 3 taxa, *Cyathochaeta teretifolia* and *Cyathochaeta teretifolia,* occur in swamps, creek edges, or seasonally wet poorly-drained flats, or shallow inundated soils, that are also not present over the application area. The two Priority 4 taxa, *Darwinia pimelioides* and *Verticordia lindleyi* subsp. *lindleyi,* occur within two kilometres of the application either in loam or sandy-loams and around granite outcrops, or sands or sandy clay and winter-wet depressions. *Verticordia lindleyi* subsp. *lindleyi* has a broad distribution and occurs in soil types similar to the application area (unconsolidated Bassendean sands) but usually over clay or gravel, and in areas that are wet in winter - but also within open woodland (WAH 1998-).

Noting the application area is ecologically isolated from areas of native vegetation in good condition, and due to the predominantly parkland cleared, disjunct, and degraded condition of the vegetation within the application area Priority flora taxa are unlikely to occur.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable in relation to this environmental value.

Conditions: No flora and/or vegetation management conditions required.

3.2.2. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment: According to available databases 14 birds, ten mammals and three reptiles of conservation significance have been recorded within ten kilometres of the application area (Appendix A2). Many of the birds identified are shorebirds, waterbirds and migratory wading species protected under International Agreements requiring wetland habitats that are not present over the application area. The migratory Fork-tailed Swift *(Apus pacificus)*, as well as the Peregrine Falcon *(Falco peregrinus)* (other specially protected fauna) may overfly the application area without utilising any of the habitats present.

The three reptiles, and the majority of mammals identified, are unlikely to occur due to the Completely Degraded to Degraded condition of the vegetation and, in particular the disturbed understorey and lack of ecological connectivity. Relatively recent records of the Priority 4 Quenda *(Isoodon fusciventer)* are known from the vicinity of the application area. Quenda require a dense understorey for cover (van Dyck and Strahan 2008), that can include exotic species, and any dense vegetation within the application area could potentially be utilised. Dispersing Quenda may

intermittently frequent the application area, particularly from Bush Forever Site 200 (Caversham Airbase bushland) located approximately 700 metres to the south, however, the application area itself does not contain significant habitat for Quenda. The Endangered Western False Pipistrelle *(Falsistrellus mackenziei)* (a bat) may potentially overfly the application area, however, its range has contracted to old growth forest and higher rainfall eucalypt woodlands (Richards *et al.* 2012), and is unlikely to be present.

The reduction of the clearing required enables the retention of native vegetation, including overstorey trees, along Woollcott Avenue with approximately 5.5 metres retained in the northern section of the road reserve, and approximately eight metres retained in the southern section. The majority of the native vegetation remaining along Woollcott Avenue is on the southern side, where an eight metre width will be retained (Figure 2). The retention of native vegetation along Woollcott Avenue will enable local native fauna to continue to move across the landscape.

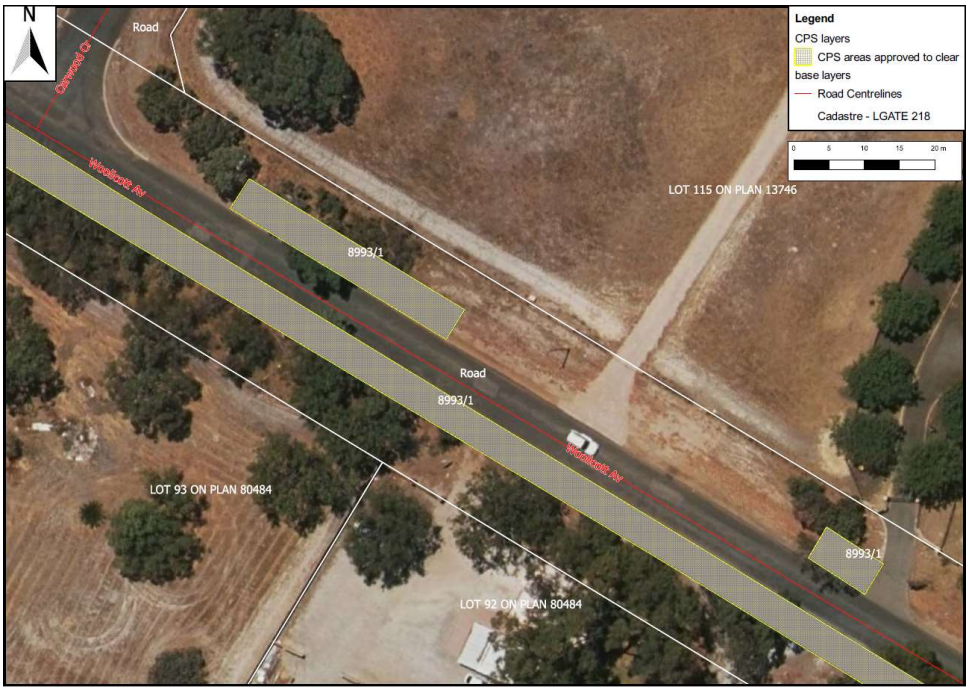

Figure 1. Map showing detail of the width of the clearing proposed and retention of roadside vegetation

Of the vertebrate fauna species of conservation significance identified, the species most likely to occur over the application area are the three vagile species of black cockatoo known from the Perth metropolitan area that could utilise the tree canopy present. The Endangered Carnaby's Cockatoo *(Calyptorhynchus latirostris)*, Endangered Baudin's Cockatoo *(Calyptorhynchus baudinii)*, and the Vulnerable Forest Red-tailed Black Cockatoo *(Calyptohynchus banksii naso)* are all known from the vicinity of the application area.

Black cockatoo habitat can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPaC 2012) (DoEE 2017) (DPaW 2013). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DSEWPaC 2012; DoEE 2017; DPaW 2013), but may range up to 20 kilometres (Commonwealth of Australia 2017).

Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (DAWE 2020a). Flocks will use different night roosts, often for weeks, or until the local food supply is exhausted. Flocks show some fidelity to night roosts with sites used in most years to access high-quality feeding sites. However, not all night roosts are used in every year (DPaW 2013).

Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of an impact area (Commonwealth of Australia 2017).

The BirdLife Australia Great Cocky Count (Peck *et al.* 2019) confirmed nine night roosts within 12 kilometres of the application area being utilised during the 2019 season including; 11 used by Carnaby's Cockatoo and at least two being utilised by the Forest Red-tailed Black-Cockatoo. Foraging resources over the application area, therefore, should be viewed in respect to supporting local populations of these two species. (Baudin's Cockatoo has been

recorded in the local area, but is more commonly associated with Jarrah-Marri forest of the Jarrah Forest bioregion (Higgins 1999), approximately 5.5 kilometres to the east of the application area).

No Banksia Woodland occurs over the application area, and due to the immaturity of the trees present no roosting habitat or breeding habitat is present. Potential black cockatoo habitat within the application area consists of regrowth Marri *(Corymbia calophylla)* and Jarrah (*Eucalyptus marginata)* with the occasional individual Banksia (Appendix E). Both Carnaby's Cockatoo and the Forest Red-tailed Black-Cockatoo feed on the foraging resource present over the application area, with Red-tailed Black Cockatoos feeding predominantly on Jarrah but also Marri, and Carnaby's Cockatoo feeding on predominantly Banksia, but also Marri and Jarrah.

The Commonwealth of Australia (2017) provide a foraging habitat assessment tool. Due to the disjunct nature of the vegetation along Woollcott Avenue the vegetation description aligns with 'small stands of foraging plants', equating to low quality foraging habitat.

The Commonwealth of Australia (2017) recommend increasing this score for all Carnaby's Cockatoo locations occurring within the Swan Coastal Plain due to the importance of this bioregion providing important foraging habitat during the non-breeding season, and in particular Banksia Woodland, as it has been demonstrated that Carnaby's Cockatoo will exploit all areas of available Banksia food resources on the Swan Coastal Plain (EPA 2019). Due to the negligible occurrence of Banksias over the application area the foraging resource available is considered low. In the local context large areas of Banksia Woodland are mapped within ten kilometres of the application area within Bush Forever sites including; Beechboro Road Bushland (BF 198), Caversham Airbase Bushland (BF 200), Maralla Road Bushland (BF 300), and Whiteman Park (BF 304) (Government of Western Australia 2000b).

Although conservation significant fauna species occur within the vicinity of the application area, including black cockatoos, the application area does not include vegetation necessary for the maintenance of a significant habitat for fauna and native vegetation will be retained within the Woollcott Avenue road reserve.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable in relation to this environmental value.

Conditions: No fauna management conditions required.

3.2.3. Environmental value: significant remnant vegetation – Clearing Principle (e)

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

The application area is located within the Swan Coastal Plain bioregion as described by Thackway and Cresswell (1995). The Swan Coastal Plain bioregion (SWA) as a whole retains approximately 38.6 per cent of its pre-European vegetation extent, with the Perth subregion (SWA(02) retaining approximately 41.7 per cent of its pre-European vegetation extent (Shepherd *et al.* 2001) (Government of Western Australia 2019a).

Heddle *et al.* (1980) as updated by Webb *et al.* (2016) mapped the vegetation complexes of the Swan Coastal Plain, with two vegetation complexes mapped over the application area. The majority of the application area, covering the western end, is mapped as: the Southern River Complex (SCP 42), an open woodland of *Corymbia calophylla* (Marri) and *Eucalyptus marginata* (Jarrah) and *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds.

A minor component, mapped over the eastern end of the application area, is described by Heddle *et al.* (1980) as: the Swan Complex (SCP 33), a fringing woodland of *Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark).

Both these vegetation units are below the 30 per cent threshold of the Commonwealth of Australia (2001), with the Southern River Complex (SCP 42) at 18.4 per cent retention, and the Swan Complex (SCP 33) at 13.6 per cent retention (Government of Western Australia 2019b) (Appendix A3). However, the Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region as a constrained area, which provides for the reduction of vegetation complexes to a minimum of ten per cent of their pre-European extent (EPA 2008).

The eastern portion of the application area is located within the Gnangara Sustainability Strategy (GSS) Ecological Linkage (ID 32) (Brown *et al.* 2009; Sonneman and Brown 2008). This is a conceptual linkage of areas of remnant vegetation throughout the Gnangara groundwater system, and in the vicinity of the application area is 0.5 kilometres wide linking the Swan River (Bush Forever site 302) to Caversham Airbase bushland (Bush Forever site 200). The conceptual linkage is largely associated with the St Leonards Creek riparian system. Due to the reduction of the proposed Woollcott Avenue clearing width, native vegetation, including overstorey trees, will be retained along Woollcott Avenue with the majority of the native vegetation remaining along the southern side will be retained (Figure

2). The retention of native vegetation along Woollcott Avenue will contribute to the maintenance of connectivity attributes.

At the local scale of a ten kilometre radius of the application area approximately 7,837 hectares of native vegetation has been retained, representing 24.9 per cent native vegetation cover. Noting the application area does not contain conservation significant flora, fauna or communities, the application area is not considered significant as a remnant of native vegetation.

An area of Banksia Woodland has been mapped eight metres south of the application area. Weed and dieback management measures will assist in mitigating impacts to surrounding vegetation.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable **subject to relevant conditions** in relation to this environmental value.

Conditions: Weed and dieback management measures will assist in mitigating impacts to surrounding vegetation.

3.2.4. Environmental value: environment associated with a watercourse or wetland – Clearing Principle (f)

Assessment: The western portion of the application area is located within a mapped multiple use palusplain (UFI 13396), and St Leonards Creek is located within 50 metres to the east of the application area.

A palusplain is a seasonally-waterlogged flat (Semeniuk and Semeniuk 2004) and 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. A minor ephemeral drainage channel (ID 14342) parallels the application area in the extreme western portion in association with multiple use palusplain (UFI 13396). No native vegetation is associated with this drainage channel, and within the western portion of the application area (mapped as a multiple use wetland) vegetation is Completely Degraded consisting predominantly of introduced grasses and exotic species. However, a few scattered individual *Melaleuca ?rhaphiophylla* also occur (Appendix E).

St Leonards Creek is located 50 metres to the east of the application area on the opposite side of West Swan Road and due to the separation distance is unlikely to be impacted. On the western side of West Swan Road and the extreme eastern extent of the application area, one juvenile *Melaleuca ?rhaphiophylla* occurs associated with a man-made drain that parallels West Swan Road. Vegetation in this area is Completely Degraded consisting predominantly of introduced grasses.

Due to the Completely Degraded condition of the vegetation within the application area, the proposed clearing is not likely to impact the attributes of the mapped multiple use palusplain or nearby St Leonards Creek.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable in relation to this environmental value.

Conditions: No management conditions required.

3.3. Relevant planning instruments and other matters

The application was advertised on the DWER website for a 21 day public comment period on 18 August 2020. No submissions were received during this period. However a submission was provided to the Minister for Environment which was considered as a part of this assessment. (Appendix B).

The City of Swan is the public authority that manages the application area (CPS 8993/1) as it is located entirely within the Woollcott Avenue road reserve (PIN 1332403, PIN 1337655, and PIN 11169019). The application area is zoned Local Reserve - Local Road and the clearing purpose is consistent with Local Planning Scheme 17.

The application area is located within the Swan River System surface water area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act), and the Swan Groundwater Area proclaimed under the RIWI Act. No rivers proclaimed under the RIWI Act intersect the application area and no additional water licensing or permitting under DWER will be required. The application is not located in any *Country Areas Water Supply Act 1947* (CAWS Act) clearing control catchments or Public Drinking Water Source Areas.

The application area is located within the boundaries of the registered Single Noongar Claim (Area 1) (WAD6006/2003), and the Whadjuk People Indigenous Land Use Agreement (WI2017/015).

No Aboriginal Sites of Significance have been identified within the application area, however, Registered Aboriginal Heritage Place ID 25822 (Park Street #1), Place ID 25822 (Edward Street Camp) and Place ID 33182 (Swan River) are all located within 1.2 kilometres of 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.

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 C.

1. Site summary

Site characteristic	Details
Local context	The application area is situated within the Swan Coastal Plain bioregion (SWA) of Thackway and Cresswell (1995), and the Perth subregion (SWA02). The proposed clearing area comprises 0.42 hectares of native vegetation consisting of approximately 61 trees (some of which are exotic), in several patches and within five metres on both sides of Woollcott Avenue, West Swan. Spatial data indicates that the local area (ten kilometre radius of the proposed clearing area) retains approximately 24.9 per cent of the original native vegetation cover.

Vegetation description (Heddle, *et al.* 1980)	The application area has been mapped as:
	• Western End (Majority)
	  ○ Southern River Complex (SCP 42): Open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds.
	• Eastern End (Minor)
	  ○ Swan Complex (SCP 33): Fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark).
	
	Assessing the photographs provided by the applicant (Appendix E), the overstorey vegetation consists of regrowth Marri *(Corymbia calophylla)* and Jarrah *(Eucalyptus marginata)* over scattered *Jacksonia sternbergiana, Banksia menziesii* and *B. attenuata,* over a dense cover of introduced grasses and herbs with occasional *Macrozamia riedlei* and Cyperaceae sp.

Vegetation condition (Keighery 1994)	Vegetation is predominantly parkland cleared with an occasional scattered understorey of native shrub species and is in a Completely Degraded to Degraded condition based on Keighery (1994) (Appendix D). Representative photographs are available in Appendix E.
Soil description (Schoknecht, *et al.* 2004)	The application area is located within the Bassendean sands, with two soil units mapped as: • Muchea sand (Bassendean). Deep grey sand. (212Bs__Mus.) • Karrakatta grey sand (Bassendean). Moderately deep light grey sand over yellow sand (sand dune). (212Bs__Ksg) The Bassendean dune system forms a gently undulating aeolian sand plain of bleached white-grey sands approximately 20 kilometres wide. The dunes accumulated as coastal dunes during periods of higher sea levels. Any carbonate material has since been completely leached, leaving unconsolidated sands consisting almost entirely of quartz.

<table>
<tr><td>Land degradation risk (DPIRD 2017).</td><td>Land degradation risk ratings are provided in the table below.
<table>
<tr><th rowspan="3">Aspect</th><th colspan="4">Degradation risk</th></tr>
<tr><th colspan="2">Muchea sand</th><th colspan="2">Karrakatta grey sand</th></tr>
<tr><th colspan="2">Hazard Rating</th><th colspan="2">Hazard Rating</th></tr>
<tr><td>Wind Erosion</td><td>High</td><td>(H1)</td><td>High</td><td>(H2)</td></tr>
<tr><td>Water Erosion</td><td>Low</td><td>(L1)</td><td>Low</td><td>(L1)</td></tr>
<tr><td>Waterlogging</td><td>Low</td><td>(L2)</td><td>Low</td><td>(L1)</td></tr>
<tr><td>Water repellance</td><td>High</td><td>H2</td><td>High</td><td>(H2)</td></tr>
<tr><td>Phosphorus export</td><td>High</td><td>(H1)</td><td>Medium</td><td>(M2)</td></tr>
<tr><td>Salinity</td><td>Low</td><td>(L1)</td><td>Low</td><td>(L1)</td></tr>
<tr><td>Flood Risk</td><td>Low</td><td>(L1)</td><td>Low</td><td>(L1)</td></tr>
<tr><td>Acid Sulphate Soils</td><td colspan="2">Moderate to Low</td><td colspan="2">Moderate to Low</td></tr>
</table></td></tr>
<tr><td>Waterbodies</td><td>The application area is located in the Coastal Plain hydrological zone. The ephemeral St Leonards Creek is located approximately 50 metres east of the application area. St Leonards Creek discharges to the Swan River 600 metres to the east.
The western portion of the application area is located within a ‘multiple use’ palusplain (UFI 13396)
A minor ephemeral drainage channel (ID 14342) parallels the application area in the extreme western portion. No native vegetation is associated with the drainage channel.
A ‘resource enhancement’ palusplain (UFI 14152) is located 225 metres to the south.
The Swan River (UFI 14356) 600 metres to the east.
RAAF Caversham (WA120) is listed in the Directory of Important Wetlands in Australia and is located approximately 500 metres to the south-west.
Groundwater is mapped at 500-1,000 TDS. (That is, ‘fresh’).</td></tr>
<tr><td>Conservation areas</td><td>There are no DBCA legislated lands within the vicinity of the application area.
The application area is not within an Environmentally Sensitive Area.</td></tr>
<tr><td>Climate and landform</td><td>The climate of the application area is warm and temperate. The winter months have higher rainfall than summer months with an annual rainfall of approximately 733.2 millimetres (BOM 2020).
The application area is located within the Bassendean System. That is, the Swan Coastal Plain from Busselton to Jurien, and described as sand dunes and sandplains with pale deep sand, semi-wet and wet soil.</td></tr>
</table>

2. Ecosystem, flora and fauna analysis

With consideration for the site characteristics set out above, and relevant datasets (Appendix F), an analysis of relevant ecosystem, flora, and fauna factors are presented below.

2a) Ecological Linkages

The eastern portion of the application area is located within the Gnangara Sustainability Strategy (GSS) Ecological Linkage (ID 32) (Brown *et al.* 2009; Sonneman and Brown 2008). This is a conceptual linkage of areas of remnant vegetation throughout the Gnangara groundwater system (Brown *et al.* 2009; Sonneman *et al*. 2008).

2b) Ecological Communities

There are no TECs endorsed by the Western Australian Minister for the Environment within six kilometres of the application area. Four TECs endorsed by the Western Australian Minister for the Environment occur between six and ten kilometres of the application area.

- Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) (CR)
- *Corymbia calophylla - Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in in Gibson *et al.* (1994)) (CR)
- Shrublands and woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20c as originally described in in Gibson *et al.* (1994)) (CR)
- *Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson *et al.* (1994)) (EN)

One community listed as Priority 3 Ecological Community (PEC) in Western Australia and a Threatened Ecological Community (TEC) (EN) under the EPBC Act has been identified within close proximity of the application area (see table below).

Ecological Community	Distance to closest record	Suitable soil type	Suitable vegetation type
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region. (P3, EN)	7.5 metres south	Yes	No

Broadscale mapping of the Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region has been mapped regionally within eight metres of the application area.

2c) Conservation significant flora recorded within ten kilometres of the application area

- Twelve taxa of Threatened flora have been recorded within ten kilometres of the application area (5 Critically Endangered; 3 Endangered; and 4 Vulnerable).
- 47 taxa of Priority flora have been recorded within ten kilometres of the application area (4 Priority 1; 7 Priority 2; 21 Priority 3; and 15 Priority 4).
- No Threatened flora taxa have been recorded within five kilometres of the application area.
- Five Priority flora taxa have been recorded within three kilometres of the application area (1 Priority 2; 2 Priority 3; and 2 Priority 4).

Summary of Threatened flora summary recorded within 10 kms	
Status	**No. of taxa**
CR	5
EN	3
VU	4
	12

Summary of Priority flora summary recorded within 10 kms	
Status	**No. of taxa**
P1	4
P2	7
P3	21
P4	15
	47

Threatened Taxon recorded within 10 kms	Status	Records within 10 km
Caladenia huegelii	CR	9
Calytrix breviseta subsp. breviseta	CR	3
Grevillea curviloba / subsp. curviloba	CR	9 / 7
Thelymitra dedmaniarum	CR	1
Trithuria occidentalis	CR	11
Diplolaena andrewsii	EN	22
Grevillea christineae	EN	2
Grevillea curviloba subsp. incurva	EN	1
Anthocercis gracilis	VU	7
Conospermum undulatum	VU	1
Diuris drummondii	VU	1
Eleocharis keigheryi	VU	4
TOTAL	**12**	**78**

Priority Taxon recorded within 10 kms	Status	Records within 10 km
Bolboschoenus fluviatilis	P1	4
Hydrocotyle striata	P1	4
Levenhookia preissii	P1	2
Stachystemon exilis	P1	3
Acacia benthamii	P2	1
Lepyrodia curvescens	P2	2
Millotia tenuifolia var. laevis	P2	2
Phyllangium palustre	P2	1
Poranthera moorokatta	P2	4
Thysanotus brachiatus	P2	1
Thysanotus sp. Badgingarra (E.A. Griffin 2511)	P2	4
Acacia oncinophylla subsp. oncinophylla	P3	8
Beaufortia purpurea	P3	18
Byblis gigantea	P3	3
Carex tereticaulis	P3	3
Cyathochaeta teretifolia	P3	15
Eryngium pinnatifidum subsp. Palustre (G.J. Keighery 13459)	P3	1
Eryngium sp. Subdecumbens (G.J. Keighery 5390)	P3	1
Haemodorum loratum	P3	2
Halgania corymbosa	P3	8
Isopogon autumnalis	P3	8
Lasiopetalum glutinosum subsp. glutinosum	P3	1
Meionectes tenuifolia	P3	4
Myriophyllum echinatum	P3	1
Phlebocarya pilosissima subsp. pilosissima	P3	2
Pithocarpa corymbulosa	P3	8
Schoenus capillifolius	P3	4
Schoenus sp. Waroona (G.J. Keighery 12235)	P3	1
Stylidium paludicola	P3	2
Stylidium trudgenii	P3	3
Tetratheca pilifera	P3	7
Thysanotus anceps	P3	2
Anigozanthos humilis subsp. chrysanthus	P4	2
Cyanicula ixioides subsp. ixioides	P4	1
Darwinia pimelioides	P4	30
Drosera occidentalis	P4	2
Hydrocotyle lemnoides	P4	3
Hypolaena robusta	P4	2
Jacksonia sericea	P4	3
Lasiopetalum bracteatum	P4	2
Persoonia sulcata	P4	3
Schoenus griffinianus	P4	2
Schoenus natans	P4	1
Senecio leucoglossus	P4	2
Stylidium longitubum	P4	10
Thysanotus glaucus	P4	2
Verticordia lindleyi subsp. lindleyi	P4	7
TOTAL:	**47**	**202**

Five Priority flora taxa have been recorded within three kilometres of the application area.

Priority flora taxa recorded within three kms	Status	~ Closest record (km)	Suitable soil type	Suitable vegetation type
Thysanotus sp. Badgingarra (E.A. Griffin 2511)	P2	1.6 km east	No	No

Priority flora taxa recorded within three kms	Status	~ Closest record (km)	Suitable soil type	Suitable vegetation type
Cyathochaeta teretifolia	P3	5.5 km west	No	No
Meionectes tenuifolia	P3	2.0 km south	No	No
Darwinia pimelioides	P4	2.2 km south	No	No
Verticordia lindleyi subsp. lindleyi	P4	930 m south	Yes	No

2d) Conservation significant fauna recorded within ten kilometres of the application area:

Fourteen birds, ten mammals and three reptiles of conservation significance have been recorded within ten kilometres of the application area.

Vertebrate fauna recorded within 10 kms	Common Name	Status	Suitable habitat features	~ Closest record (m)
Birds				
Calyptorhynchus latirostris	Carnaby's Cockatoo	EN	Yes	55 m
Calyptorhynchus baudinii	Baudin's Cockatoo	EN	Yes	2,900 m
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	VU	Yes	2,400 m
Botaurus poiciloptilus	Australasian Bittern	EN	No	
Anous tenuirostris melanops	Australian Lesser Noddy	EN	No	
Cacatua pastinator pastinator	Muir's Corella	CD	No	
Falco peregrinus	Peregrine Falcon	OS	No	
Ixobrychus flavicollis australis	Black Bittern (S-W.)	P2	No	
Oxyura australis	Blue-Billed Duck	P4	No	
Hydroprogne caspia	Caspian Tern	IA	No	
Tringa nebularia	Common Greenshank	IA	No	
Thalasseus bergii	Crested Tern	IA	No	
Plegadis falcinellus	Glossy Ibis	IA	No	
Tringa glareola	Wood Sandpiper	IA	No	
Mammals			No	
Pseudocheirus occidentalis	Western Ringtail Possum	CR	No	
Bettongia penicillata ogilbyi	Woylie	CR	No	
Dasyurus geoffroii	Chuditch	VU	No	
Macrotis lagotis	Bilby	VU	No	
Phascogale tapoatafa wambenger	Phascogale	CD	No	
Isoodon fusciventer	Quenda	P4	Yes	1,500 m
Hydromys chrysogaster	Water Rat	P4	No	
Notamacropus irma	Western Brush Wallaby	P4	No	
Notamacropus eugenii derbianus	Tammar Wallaby	P4	No	
Falsistrellus mackenziei	Western False Pipistrelle	P4	Yes	520 m
Reptiles				
Pseudemydura umbrina	Western Swamp Tortoise	CR	No	
Neelaps calonotos	Black-striped Snake	P3	No	
Ctenotus gemmula (SCP)	Ctenotus (SCP)	P3	No	

3. Vegetation extent

3a) Regional vegetation mapping

Factor		Pre-European Extent (ha)	Current Extent (ha)	Remaining (%)	Protected for Conservation (ha)	Protected for Conservation (%)
SCP (42)	Southern River Complex	58,781	10,832	18.4	803	1.4
SCP (33)	Swan Complex	15,194	2,062	13.6	124	0.8
SWA	Swan Coastal Plain	1,501,222	579,813	38.6	153,955	10.3

SWA(02)	Perth	1,117,757	466,143	41.7	126,073	11.3

3b) Remnant vegetation within ten kilometres of the application area

Remnant Vegetation	Hectares	Remaining %
Total Area (10 km radius)	31,462	(100 %)
Remnant vegetation remaining	7,837	24.9 %

Appendix B – Details of public submissions

The application was advertised on the DWER website for a 21 day public comment period on 18 August 2020. One public submissions was received in relation to this application. A summary is provided in the table below.

Comment (summarised)	Area	Response
Woollcott Avenue is known as a wildlife corridor for native wildlife such as echidnas, microbats, wallabies, reptiles and some of Australia's endangered black cockatoo species.	Principles (b) and (e)	Although conservation significant fauna species occur within the vicinity of the application area, including black cockatoos, the application area does not include vegetation necessary for the maintenance of a significant habitat for fauna and native vegetation will be retained within the Woollcott Avenue road reserve. The retention of native vegetation along Woollcott Avenue will contribute to the maintenance of connectivity attributes.
Loss of natural habitat threatens native wildlife populations and poses major welfare risks such as preventing safe movement across the landscape.	Principles (b) and (e)	The retention of native vegetation along Woollcott Avenue will contribute to the maintenance of connectivity across the landscape.
The Society suggests that an Environmental Impact Assessment be completed prior to the proposed works being approved and taking place.	Assessment	The Department of Water and Environmental Regulation (DWER) administers the clearing provisions of the *Environmental Protection Act 1986* (EP Act). Clearing native vegetation is an offence, unless done under a clearing permit or the clearing is for an exempt purpose. In accordance with section 510 of the EP Act, when determining a clearing permit application, the Chief Executive Officer (CEO) has regard to the clearing principles contained in the EP Act which consider environmental values of native vegetation, including biodiversity, water quality and land degradation issues, and also planning and other matters that are considered relevant. A valid application for a Clearing Permit (CPS 8993/1) under section 51E(1) of the EP Act to clear 0.42 hectares of native vegetation within the Woollcott Avenue road reserve for the purpose of road construction and upgrades was received by DWER on 3 August 2020. The application has been assessed and a decision made in accordance with the EP Act.

Appendix C – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The application area is predominantly parkland cleared, disjunct, and in a Completely Degraded to Degraded condition. None of the Threatened and Priority flora and ecological communities recorded in the local area are likely to occur within the application area.	Not likely to be at variance	Yes See Section 3.2.1
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."* Assessment: Fauna species of conservation significance have been recorded in the vicinity of the application area that have the potential to occur within the habitats present, including; three black cockatoos of conservation significance, as well as the Priority 4 Quenda and Western False Pipistrelle (a bat). Native vegetation will be retained along Woollcott Avenue that will facilitate fauna movement across that landscape. The proposed clearing area does not include significant habitat for fauna.	Not likely to be at variance	Yes See Section 3.2.2
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: No Threatened flora taxa have been recorded within five kilometres of the application area. The application area is predominantly parkland cleared, disjunct and in a Completely Degraded to Degraded condition and unlikely to support Threatened flora.	Not likely to be at variance	No
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."* Assessment: No TECs endorsed by the Western Australian Minister for Environment have been mapped within six kilometres of the application area. Vegetation over the application area does not align with any identified TECs within the local area. The application area is predominantly parkland cleared and in a Completely Degraded to Degraded condition and unlikely to support TECs.	Not at variance	No
Environmental values: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: Two vegetation complexes of Heddle *et al.* (1980) have been mapped over the application area and are below the 30 per cent threshold advocated by the Commonwealth of Australia (2001) (Government of Western Australia 2019). Vegetation over the application area is predominantly parkland cleared and in a Completely Degraded to Degraded condition and not considered representative of either of the two mapped regional vegetation complexes. Approximately 24.9 per cent of remnant vegetation remains in the local area of a ten kilometre radius of the application area.	Not likely to be at variance	Yes See Section 3.2.3
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."*	Not at variance	No

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Assessment: There are no DBCA legislated lands within the vicinity of the application area, and the application area is not within an ESA. Due to the separation distance, and cleared lands between the application area and Bushforever sites, proposed clearing is not likely impact the environmental values of these sites.		
Environmental values: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: The western portion of the application area is located within a mapped multiple use wetland (palusplain UFI 13396) and St Leonards Creek is located 50 metres to the east of the application area. Vegetation within the mapped multiple use wetland is Completely Degraded consisting predominantly of introduced grasses and exotic species. However, a few scaterred individual *Melaleuca ?rhaphiophylla* also occur.	Is at variance	Yes
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils of the Bassendean Dune System are susceptible to wind erosion (DPIRD 2017). Standard and staged road construction methodologies will be implemented including strategies for drainage controls and wind and water erosion. Soils will not be excavated at depth, and any impacts to surrounding landscapes, soils, or drainage systems can also be managed through appropriate design. Noting the condition of the vegetation and the minor extent of proposed clearing, the proposed clearing is not likely to cause appreciable land degradation.	Not at variance	No
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."* Assessment: The western portion of the application area is located within a mapped multiple use wetland, however, no watercourses occur within the application area. Regional groundwater is mapped as 'fresh' at 500 to 1,000 total dissolved salts (TDS) milligrams per litre (mg/L), and salinity risk is rated low (DPIRD 2017). The proposed activity will not intersect groundwater, and there are no defined drainage paths over the application area. Standard and staged road construction methodologies will be implemented including strategies for drainage controls and water erosion and the proposed clearing is unlikely to cause any deterioration in the quality of any surface waters or groundwater.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: Standard road construction methodologies will be implemented including strategies for drainage controls and water erosion and any potential for flooding can be managed through appropriate drainage design. Given the small scale of the proposed clearing, the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.	Not at variance	No

Appendix D – 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.

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 E – Vegetation proposed to be cleared - Representative photographs


Widening Area

Widening Area

Widening Area

Widening Area

Widening Area

Widening Area

Widening Area

The western end of the application area located within a mapped multiple use palusplain (UFI 13396) showing Completely Degraded vegetation and isolated *Melaleuca ?rhaphiophylla* (Google Earth imagery, May 2018).

Appendix F – References and databases

1. References

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City of Swan (2020b) Additional information provided by the City of Swan pertaining to alternatives that avoid or minimise the need for clearing regarding CPS 8993/1. City of Swan. Received by DWER on 26 August 2020 (DWER Ref: A1927029).

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2. GIS datasets

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

- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

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)