Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9270/1
Permit type:	Purpose permit
Applicant name:	Stratham Engineering Consultancy Services
Application received:	20 April 2021
Application area:	0.64 hectares of native vegetation
Purpose of clearing:	Construction of powerline corridor
Method of clearing:	Mechanical
Property:	Lot 11 on Plan 24201, Yarawindah Lot 856 on Deposited Plan 246367, Yarawindah
Location (LGA area/s):	The Shire of Victoria Plains
Localities (suburb/s):	Yarawindah

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within three small patches (see Figure 1, Section 1.5).
The application is to selectively clear trees and shrubs to allow for the construction of powerline corridor to facilitate the European Space Agency activities within the properties and the neighbouring property.

1.3. Decision on application

Decision:	Granted
Decision date:	12 November 2021
Decision area:	0.64 hectares of native vegetation as depicted in Section 1.5, below.

1.4. Reasons for decision

The 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 one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix G.1), the findings of a flora and fauna survey (see Appendix F), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the significance of the project.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*); and

- the potential introduction and spread of weeds 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 unlikely to have long-term adverse impacts on the environmental values and can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values. The applicant has suitably demonstrated avoidance and minimisation measures, the offset provided does counterbalance the impacts to significant remnant (see Section 4).

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- Avoid, minimise to reduce the impacts and extent of clearing
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback

Revegetation of temporarily cleared areas was considered through the assessment, however it was noted that the areas to be cleared to construct the powerline corridor are required to be maintained cleared to protect the underground cables (Ecoscape, 2020).

1.5. Site map

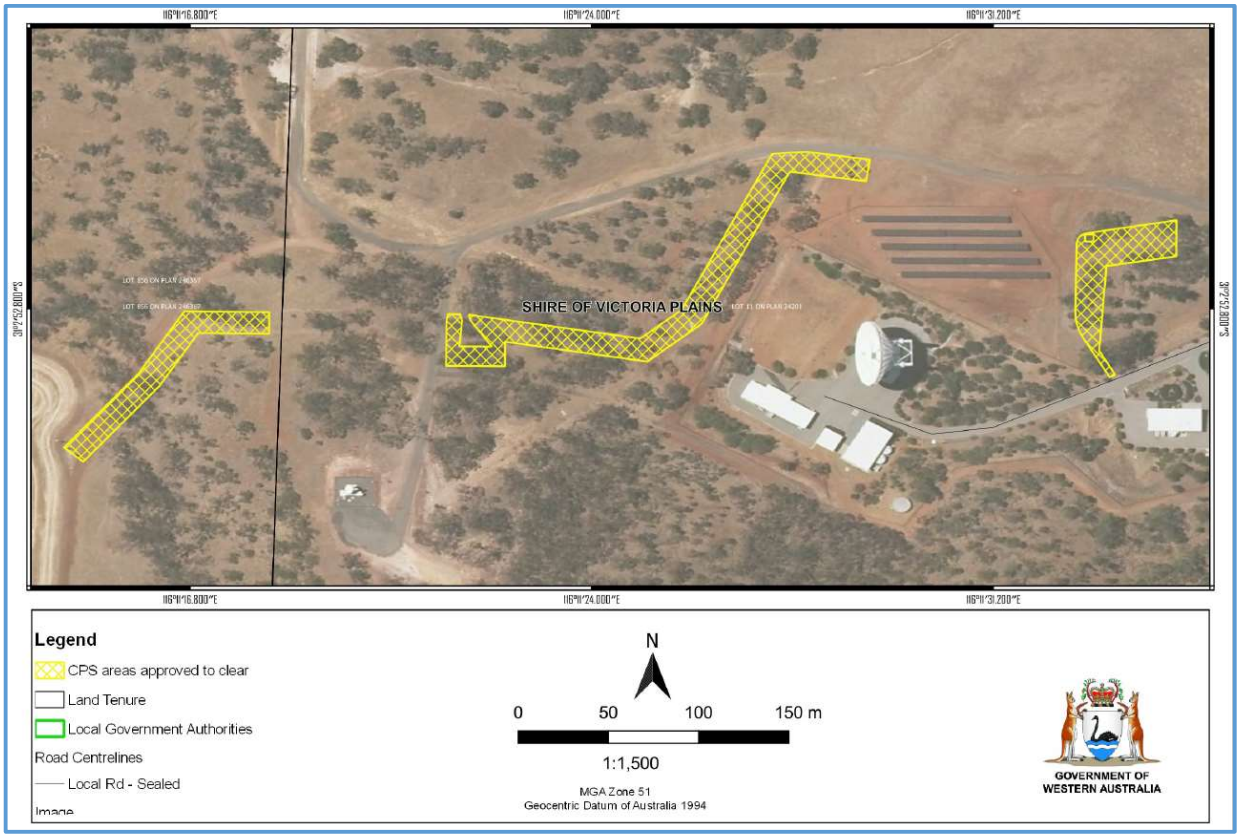

Figure 1 Map of the application area

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)
- *Planning and Development Act 2005* (WA) (P&D 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)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant demonstrated the following considerations given to the avoidance and minimisation measures:

"Information from the flora and fauna surveys conducted on-site has influenced the design of the proposed action as far as practicable. However, given the site constraints, it is not feasible to avoid all remnant native vegetation. Where practicable, the internal road alignment will avoid areas of remnant native vegetation and follow existing roads and firebreaks."

"Existing Western Power connection to and within the project area will follow the route of the existing connection and is unlikely to result in any potential Class 3 nesting trees being disturbed. Where practicable, underground cabling will be installed to reduce the area of vegetation required to be cleared."

In addition to this, the applicant has committed to preparing a Construction Environmental Management Plan which would include the following measures:

- Inspection of tree hollows (by suitably qualified person) if trees containing suitable hollows are to be cleared within the breeding season for Carnaby's cockatoo.
- Areas to be cleared will be clearly marked/pegged and environmental inductions to be given to contactors to provide awareness of the applicable legislation.
- Dieback/weed management- ensuring that no weed or dieback affected material is moved into the area or into surrounding areas
- Hydrocarbon storage – if hydrocarbons must be stored, they will be stored in suitable bund areas, refuelling to be undertaken with care and spill kits readily available
- Laydown areas or other ancillary areas to be located in areas of non-native vegetation

The application advised that the areas cleared for the construction of the powerline corridor will require to be maintained in a cleared state due to the potential damage to underground cables (Ecoscape, 2020).

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

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix C) 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 **Error! Reference source not found.**) identified that the impacts of the proposed clearing present a risk to habitat for black cockatoo species and adjacent vegetation. 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 - Clearing Principles (a, b, c and d)

Assessment
Fauna

A flora and fauna survey provided with the clearing permit application considered the likelihood of species and communities within a 10–15-kilometre radius of the application area. The survey noted two fauna species as having a high likelihood of occurrence, *Calyptorhynchus latirostris* (Carnaby's black cockatoo) and *Idiosoma mcclementsorum* (Julimar shield-backed trapdoor spider) but did not find any individuals of these species.

The 18 fauna species recorded within the survey are not conservation significant species and are a mix of native and introduced species but mostly comprised of avian species. The application area is within the known breeding range for Carnaby's black cockatoo and the vagrant distribution for forest red tailed black cockatoo. Within the local area, there are two mapped occurrences of white-tailed black cockatoos breeding, the closest of which is located approximately three kilometres from the application area.

The survey investigated trees within the application area for suitability as breeding habitat for black cockatoo species (particularly Carnaby's cockatoo). A total of 251 trees were surveyed across the greater area, five of which occur within the application area with the following classifications:

Number of trees	Classification for breeding habitat
4	Trees without suitable hollows (class 5)
1	Trees with large hollows or broken branches but not having the features preferred by black cockatoos for breeding (Class 4)
0	Trees with potentially suitable hollows but with no evidence of use by black cockatoos (Class 3)
0	Trees with suitable hollows and evidence of use but not currently occupied (Class 2)
0	Trees with and active nest (Class 1)*

*The survey was completed outside of the active breeding season for black cockatoos and the survey notes that due to this, classification of trees as class 1 would not have been evident at this time of year.

During the assessment, the applicant advised that part of the application area had habitat values removed during a weather event. Specifically, a storm/flood event on Wednesday 3 March 2021 caused the chain mesh fence at the facility to fall over and remove this habitat. Specifically, the Class 4 tree listed in the table above no longer exists.

The vegetation types occurring within the application area described as '*Eucalyptus loxophleba subsp. loxophleba* woodland over *Avena barbata* low isolated grasses' and *'Eucalyptus wandoo* subsp. *wandoo* woodland over *Melaleuca marginata* and *Hibbertia hypericoides* subsp. *hypericoides* mid shrubland over *Avena barbata* low isolated grasses' are considered likely to provide some foraging habitat for black cockatoo.

Foraging habitat of these vegetation types was analysed within the application area as part of the survey (Ecoscape, 2020) which noted the vegetation within the application area provide 'quality' to 'low quality' foraging habitat for black cockatoo species. The analysis was completed using the Commonwealth Black Cockatoo Foraging Quality Scoring Tool.

Night roosting habitat for black cockatoos is unlikely within the application area due to the absence of riparian environments or permanent water sources.

Flora

The survey was completed in May 2020, which is not within the optimal period for a primary survey within the bioregion according to the Flora and Vegetation Technical Guidance (EPA 2016d). The survey recorded 25 vascular flora species within the application area and noted that additional species were likely to be recorded if the survey was conducted later in the year. No conservation significant flora species were recorded during the survey.

An additional survey was undertaken in September 2021 (PVG Environmental, 2021) to target three threatened flora species that DWER considered could be present within the application area but had the potential to be missed due to the initial survey timing;

- *Spirogardnera rubescens* (endangered under the EPBC Act, threatened under the BC Act)
- *Banksia serratuloides* subsp. *serratuloides* (vulnerable under the EPBC Act, threatened under the BC Act)
- *Melaleuca sciotostyla* (endangered under the EPBC Act, threatened under the BC Act)

The targeted flora survey did not identify any of the above species within the application area and within the broader survey area.

Ecological Communities

The closest ecological community to the application area is Eucalypt woodlands of the Western Australian Wheatbelt with an occurrence located approximately five kilometres away. The application area contains some of the features of this community but lacks the key diagnostic species to be representative of this community. In addition, the application area is approximately five kilometres from the Avon Wheatbelt bioregion which is outside of the IBRA region for this community, so the vegetation does not meet the criteria for this community.

Conclusion
Based on the above assessment, the proposed clearing will result in the loss of five trees, none of which contain hollows which are potentially suitable hollows for black cockatoo species to breed in or provide habitat for other conservation significant fauna. The vegetation proposed to be cleared is in degraded condition and is not representative of an ecological community and does not provide habitat for Priority or Threatened flora species

Conditions
Noting the application area does not contain trees with suitable hollows, a hollow inspection condition is not required to be placed on the permit. Avoidance and minimisation measures will be required as conditions on the clearing permit to ensure further reductions are considered by the permit holder.

3.2.2. Biological values - significant remnant vegetation and conservation areas - Clearing Principles (e)

Assessment
The National Objectives and Targets for Biodiversity Conservation 2001-2005 include a target to have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e. pre-European settlement) (Commonwealth of Australia, 2001). This is the threshold level below which species loss appears to accelerate exponentially.

In assessing the risk of further loss and subsequent cumulative effects, consideration has been given to the extent of native vegetation remaining and what is currently managed as conservation estate as indicated in Appendix C.2, the current vegetation extents for the bioregion, and the dominantly mapped Beard vegetation association (Yalanbee) are above the recommended 30 per cent thresholds. The secondary mapped Beard vegetation association (Michibin) is mapped as having 25 per cent remnant remaining. The extent of the application area that intersects this vegetation type is approximately 800 square meters and given the degraded condition, is unlikely to be representative of this vegetation association.

As indicated within Appendix C.2, the local area contains less than 30 per cent remnant vegetation.

The mapped vegetation types within the application area (Appendix F), show the vegetation within the application area comprise of two distinct vegetation types with the remainder being non-native. Figures, 2, 3 and 4 below show the general sparsity of the vegetation within the application area.

The application area does not include significant habitat for threatened fauna or flora species, is not a biologically diverse remnant and is not part of a significant linkage.

Figure 2: The application area contains sparse vegetation

Figure 3: The application area contains sparse vegetation

Figure 4: The application area contains sparse vegetation

Conclusion

Based on the assessment above, the application area is not likely to include flora or ecological communities of conservation significance or comprise significant habitat for indigenous fauna, and is therefore unlikely to be significant as a remnant of native vegetation in an area that has been extensively cleared. However, the proposed clearing has the potential to introduce weed and dieback to the surrounding vegetation.

Conditions:

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Avoidance and minimisation
- Weed and dieback management conditions

3.2.3. Biological values - land and water resources - Clearing Principles (f and j)

Assessment

The application area intersects a minor non-perennial watercourse. The survey provided (Ecoscape, 2020) did not report any vegetation representative of types that would be growing in association with a watercourse. In addition to this, vegetation remains upstream and downstream of the area of intersection which would limit impacts to water quality.

Conclusion

Noting that the area of intersection is minor and the watercourses only flow during winter, any impacts would be minor and temporary.

Conditions

To address the above impacts, avoidance and minimisation measures will be required as conditions on the clearing permit.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include development approval under the *Planning and Development Act 2005* (issued by the Shire of Victoria Plains).

The Shire of Victoria Plains advised DWER that local government approvals are required, noted the following:

- The VP Shire Council granted conditional development approval for a proposed new deep space antenna and associated infrastructure on Lot 11 on Plan 24201 Great Northern Highway, Yarawindah at its April Ordinary Meeting which was held on 3 May 2021 (Shire of Victoria Plains, 2021).

The application area is within 100 meters of an Aboriginal site of significance, the Gingin Brook Waggl Site (ID 20008). 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. Additional information provided by applicant

The original application was for the proposed clearing of 11.69 hectares to construct a Biomass Calibration Transponder and associated infrastructure.

Throughout the assessment process, the Department wrote to the applicant requesting additional information. The applicant provided responses but in the absence of finalising the development approval and the environmental offset, the determination was made by the applicant to decouple the Biomass Calibration Transponder from the powerline corridor infrastructure with notice to DWER of this modification provided on 04 November 2021.

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
The application of offsets should be in the form of new plantings not the security of a non-reserve area at a distance which still results in a net loss.	The reduction of the application area from decoupling the application area does not require an environmental offset. The submission comments will be addressed in the subsequent clearing permit application for the Biomass Calibration Transponder.

Appendix C. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is within a patch of native vegetation in the intensive land use zone of Western Australia. It is surrounded by a mostly cleared landscape with other small remnants of native vegetation which are somewhat linked to the application area. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 22 per cent of the original native vegetation cover.
Ecological linkage	There are no formal ecological linkages mapped within the application area, however the application area is likely to be part of local linkages across the patchwork of remnant vegetation within the local area.
Conservation areas	The application area is within 1300 meters of Sevenmile Well Nature Reserve, an A class reserve purposed for the conservation of flora and fauna.
Vegetation description	Vegetation survey (Ecoscape, 2020) indicate the vegetation within the proposed clearing area consists of the vegetation types as described below. The full survey descriptions and maps are available in Appendix F. • EIW: *Eucalyptus loxophleba* subsp. *loxophleba* woodland over *Avena barbata low isolated grasses, on the lower slopes • EwW: *Eucalyptus wandoo* subsp. *wandoo* woodland over *Melaleuca marginata* and *Hibbertia hypericoides* subsp. *hypericoides* mid shrubland over **Avena barbata* low isolated grasses, on the lateritic upland. This is consistent with the mapped vegetation type(s): • Yalanbee, Y6, which is described as Woodland of *Eucalyptus wandoo-Eucalyptus accedens*, less consistently open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* on lateritic uplands and breakaway landscapes in arid and perarid zones. • Michibin, Mi, which is described as Open woodland of *Eucalyptus wandoo* over *Acacia acuminata* with some *Eucalyptus loxophleba* on valley slopes, with low woodland of *Allocasuarina huegeliana* on or near shallow granite outcrops in arid and perarid zones. The mapped vegetation types retain approximately 46 and 25 per cent (respectively) of the original extent (Government of Western Australia, 2019)
Vegetation condition	Vegetation survey (Ecoscape, 2020) indicate the vegetation within the proposed clearing area is in completely degraded (Keighery, 1994) condition, described as: • Completely degraded - The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

Characteristic	Details
	The full Keighery (1994) condition rating scale is provided in Appendix E. The full survey descriptions and mapping are available in Appendix F.
Climate and landform	The annual average rainfall for New Norcia is 386 millimetres. The application area varies between approximately 245 – 290 meters AHD.
Soil description	There are four soil types mapped within the application area; • Yarawindah 2a typical Phase - very gently inclined hillslopes and hillcrests; loamy and sandy earths, loamy gravel, shallow loamy gravel over duricrust • Julimar Michibin cb Phase - gently inclined to steep breakaway slope; red to brown loamy earths and duplexes, some loamy gravel, acid duplexes and stony • Yarawindah 3 Subsystem - stripped very gently to gently inclined hillslopes and hillcrests, commonly includes small rises of rock such as quartzite; loamy earths, loamy stony soils, loamy gravel
Land degradation risk	The three mapped soil types within the application area have varying risks of land degradation. Wind erosion of the Yarawindah 2a typical Phase is moderate and wind erosion of the Yarawindah 3 Subsystem is reported to be medium to high. The remainder of the mapped soil types land degradation risk is low.
Waterbodies	The desktop assessment and aerial imagery indicated that the application area intersects a minor non-perennial watercourse.
Hydrogeography	The application area is not within any proclaimed areas under the RIWI or CAWS Acts. The mapped groundwater salinity is 3000-7000 milligrams per litre which is described as being saline.
Flora	According to available databases, there are 39 flora records in local area, the nearest record is a Priority 4 species 'Calothamnus pachystachyus'. There are three records of priority flora within 1 kilometre of the application area.
Ecological communities	The application area is within 5.2 kilometres of mapped occurrences of the Threatened Ecological Community *'Eucalypt woodlands of the Western Australian Wheatbelt'*
Fauna	Available databases show records of four conservation significant fauna species within the local area. The closest record is of a Julimar shield-backed trapdoor spider (*Idiosoma mcclementsorum).* The most frequent occurring is Calyptorhynchus latirostris (Carnaby's cockatoo).

C.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*					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Vegetation complex					
Beard vegetation association Yalanbee, Y6 *	197,849.01	92,080.88	46.54	41,703.16	21.08
Beard vegetation association, Michibin, Mi	168,040.13	42,996.09	25.59	8,512.22	5.07
Local area					
10km radius	-	-	22.96	-	-

C.3. Land degradation risk table

Risk categories	*Yarawindah 2a typical Phase*
Wind erosion	30-50% of map unit has a high to extreme wind erosion risk
Water erosion	3-10% of map unit has a high to extreme water erosion risk
Salinity	3-10% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	<3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	10-30% of map unit has a high to extreme phosphorus export risk

Risk categories	*Julimar Michibin cb Phase*
Wind erosion	10-30% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	<3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	30-50% of map unit has a high to extreme phosphorus export risk

Risk categories	*Yarawindah 3 Subsystem*
Wind erosion	50-70% of map unit has a high to extreme wind erosion risk
Water erosion	3-10% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	<3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	10-30% of map unit has a high to extreme phosphorus export risk

Appendix D. 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: A survey completed noted the area proposed to be cleared does not contain local or regionally significant flora, fauna, habitats, assemblages of plant communities.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
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: The area proposed to be cleared does not contain significant foraging, roosting for conservation significant fauna. A survey completed within the application area located 18 vertebrae fauna species, none of which are conservation significant. The surveys provided note that five trees are present within the application area which represent breeding habitat for black cockatoo species.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The survey completed found no conservation significant flora within the application area. Therefore, the area proposed to be cleared is unlikely to contain habitat flora species listed under the BC Act.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
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: The area proposed to be cleared contains species that can indicate a threatened ecological community 'Eucalypt Woodlands of the Western Australian Wheatbelt', listed as 'Critically Endangered' under the EPBC Act, however, findings of surveys completed not it is not representative of the community.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Environmental value: 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: The extent of the mapped vegetation type and the native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	May be at variance	Yes *Refer to Section 3.2.2, above.*
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."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: 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: Given a minor non-perennial water courses is recorded as intersecting the application area, the proposed clearing may impact on-site water quality to a minor and temporary amount.	May be at variance	Yes *Refer to Section 3.2.3, above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Two of the mapped soils are moderately to highly susceptible to wind erosion and all of the mapped soil types have a high risk of subsurface acidification. Noting vegetation will remain surrounded the application area,	Not likely to be at variance	No .

Assessment against the clearing principles	Variance level	Is further consideration required?
the proposed clearing is not likely to have an appreciable impact on land degradation.		
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: Given the application area intersects minor non-perennial watercourses, the proposed clearing may impact surface water if clearing occurs during winter. It is considered that the area of intersection is minor, and any impacts would be minor and temporary.	May be at variance	Yes *Refer to Section 3.2.3, above.*
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: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Given the application area intersects minor non-perennial water courses to minor extent, the proposed clearing is unlikely to contribute to waterlogging.	Not likely to be at variance	No

Appendix E. 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 F. Biological survey information excerpts vegetation

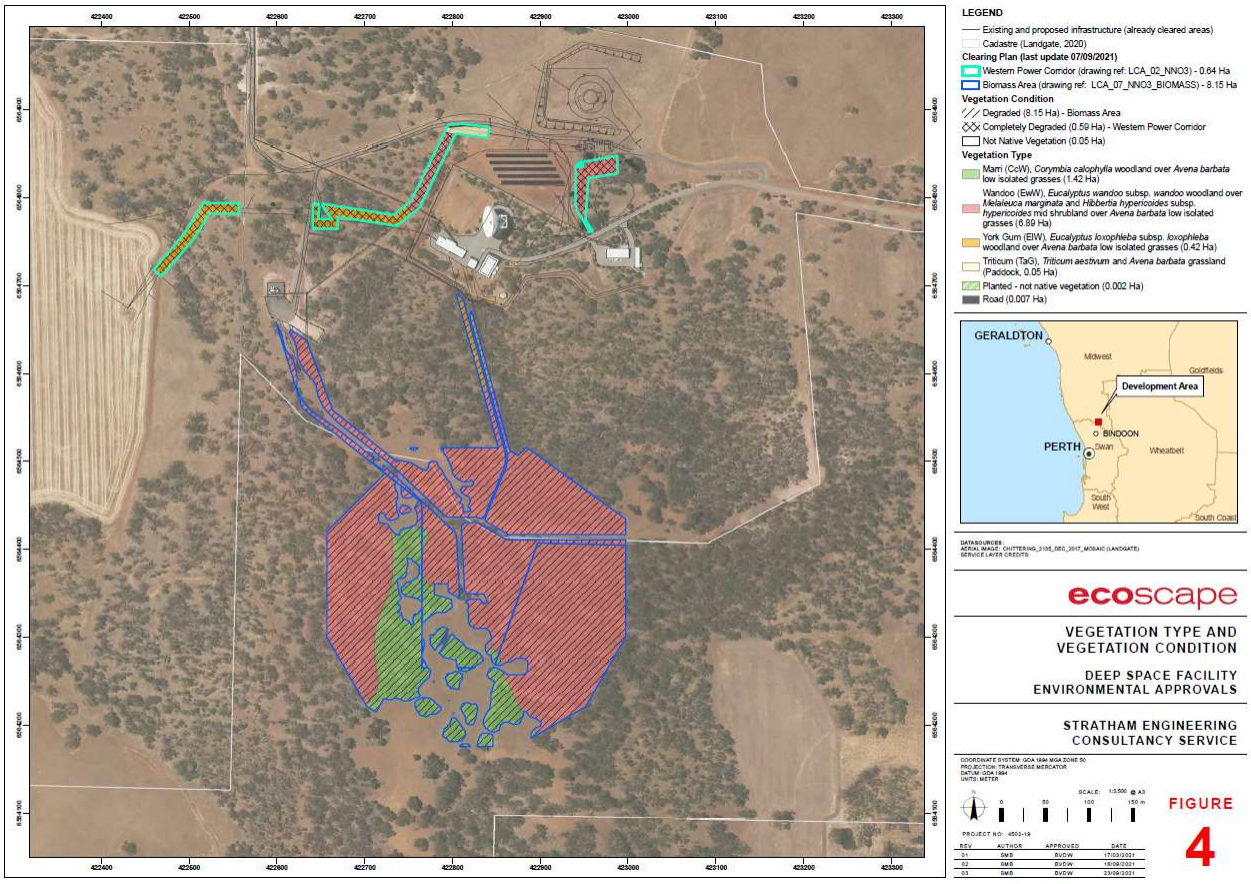

Figure 5: The condition and vegetation type of the revised application area was provided the applicant (EndPlan Environmental, 2021)

EIW	*Eucalyptus loxophleba* subsp. *loxophleba* woodland over **Avena barbata* low isolated grasses	(DS2001 DS2002) **DS2015**		Diagnostic: *Eucalyptus loxophleba* subsp. *loxophleba*, **Avena barbata* Constant: **Avena barbata*, *Eucalyptus loxophleba* subsp. *loxophleba*

Figure 6: The description and photograph of vegetation type within the application area (EcoScape, 2020)

EwW	*Eucalyptus wandoo* subsp. *wandoo* woodland over *Melaleuca marginata* and *Hibbertia hypericoides* subsp. *hypericoides* mid shrubland over **Avena barbata* low isolated grasses Note: the above vegetation description is from the entire survey area and the mid stratum is not relevant for the Infrastructure site.	**DS2004** (DS2005 DS2008 DS2009 DS2010 DS2011)		Diagnostic: *Eucalyptus wandoo* subsp. *wandoo, Melaleuca marginata* Constant: *Eucalyptus wandoo* subsp. *wandoo, *Avena barbata, Hibbertia hypericoides* subsp. *hypericoides, Melaleuca marginata*

Figure 7: The description and photograph of vegetation type within the application area (EcoScape, 2020)

Appendix G. Sources of information

G.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)
- 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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