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 9232/1
Permit type:	Area permit
Applicant name:	Geraldton Pistol Club Inc
Application received:	08 March 2021
Application area:	0.78 hectares of native vegetation
Purpose of clearing:	Extension of Pistol Range
Method of clearing:	Mechanical
Property:	Lot 360 on Deposited Plan 410016
Location (LGA area/s):	City of Greater Geraldton
Localities (suburb/s):	Utakarra

1.2. Description of clearing activities

The proposal is to clear 0.78 hectares of native vegetation that has been affected by a recent fire (5 January 2021). The proposed area is a part of a single contiguous vegetation patch (see Figure 1, Section 1.5). The purpose of the clearing is to extend the existing pistol club and install fences.

1.3. Decision on application

Decision:	Granted
Decision date:	17 August 2021
Decision area:	0.78 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

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

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

In particular, the Delegated Officer has determined that:

- The proposed clearing area has been severely affected by a fire that took place on 5 January 2021. In making this decision, the Delegated Officer identified the condition of vegetation prior to the fire. In the absence of prior data, the condition is inferred from the current condition of adjacent vegetation, which is in Good condition (Keighery, 1994). The assessment of impacts of clearing was undertaken based on the vegetation's capacity to regenerate and the resultant habitat values.
- The proposed clearing area is situated in an extensively cleared region. The local area and the vegetation type retain approximately 16.6 and 24.1 percent of their original extents respectively, which are below the

national target of biodiversity conservation of a minimum 30 percent native vegetation cover. Noting the presence of intact vegetation patches in good condition within the local context, and that the proposed clearing area does not contain conservation significant flora, fauna or communities, it is unlikely to represent a significant remnant.

- Several historical records of Carnaby's cockatoo are known from the local area. A roosting site is recorded approximately 3.2 kilometres west of the application area. Given the presence of tracks of vegetation that are more suitable for Black cockatoo's roosting or feeding in close proximity, it is unlikely that the application area comprises significant habitat for Carnaby's.
- Wind erosion may potentially lead to land degradation in the area. Given the purpose of clearing is to create a grassed area, the clearing is unlikely to cause significant land degradation due to wind erosion. Undertake works within three months of clearing will minimise potential wind erosion impacts.
- The proposed clearing may introduce and spread weeds and dieback into adjacent vegetation including the burnt areas. This could impact on the quality of the remnant vegetation, their habitat values and / or capacity to regenerate. Weed and dieback management measures can mitigate this potential impact and reduce the likelihood of the introduction and spread of weeds and dieback.

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 lead to appreciable land degradation or have long-term adverse impacts on environmental values. These potential risks can be minimised and managed to unlikely lead to an unacceptable risk to environmental values.

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; and
- staged clearing to minimise wind erosion and commence planting of grass on the cleared area within three months of clearing.

1.5. Site map

Figure 1 Map of the application area

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit. Map was drawn on an imagery taken prior to the fire of 5 January 2021.

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

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

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The Applicant stated their commitments to minimise the impact of clearing. An area of approximately 1 hectare in size, located immediately east of the application area outside of the fire range, which was also affected by the recent fire is dedicated to being naturally revegetated. The area committed to revegetation comprises 1/3 of the total lease area managed by the Applicant.

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 A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see **Error! Reference source not found.**) identified that the impacts of the proposed clearing present a potential risk to fauna, adjacent flora and vegetation and significant remnant 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. Significant remnant vegetation - Clearing Principles (e)

Assessment

Desktop assessment identified that the local area retains approximately 16.6 percent of the pre-European vegetation with the mapped vegetation type retaining approximately 24.1 percent. This is inconsistent with the national objectives and targets for biodiversity conservation in Australia.

Assessment of the photographs of the area proposed to be cleared supplied by the applicant as well as intact vegetation adjacent to the application area, identified it to be in Degraded to Good condition (Keighery, 1994) (see Appendix D). It is noted that portions of the application area have been heavily disturbed from the construction of large sand berms for use as a backstop at the pistol range. This includes the areas where sand has been piled up as well as the areas where excavation has occurred. These areas have subsequently been used for the dumping of waste such as construction and demolition waste, tires, and metal drums. Weed infestation has occurred, particularly in the most disturbed areas, with exotic grasses and herbs comprising the majority of understorey species.

From the aerial photographs and photographs provided by the Applicant, it is evident a particularly hot fire has gone through the application areas (**Figure 2; Figure 4 A to F**). The areas proposed to be cleared are essentially devoid of under storey vegetation save for exotic species. The mid and over storey species comprise two larger Eucalypts in the northern portion of the application area with Acacia, Allocasuarina, and Banksia throughout. As a result of the fire, the vast majority of individuals are deceased with epicormic regeneration evident in the Eucalypts. Given the low

number of Banksias present, post fire recruitment is likely to be negligible, particularly with an increase in weed encroachment and competition.

The areas adjacent to the application area contains intact vegetation (see Figure 3) with portions visible from the photographs supplied by the applicant showing a dense mid storey of *Acacia* sp. with *Banksia* sp. and *Eucalyptus* sp. as an open canopy. Cursory assessment of this vegetation indicates it retains its structure and is in at least Good condition. Given the highly modified structure of the application area due to the excavation and dumping of soil for berms and dumping of waste, along with the extent of intact remnant vegetation in the local area and within close proximity, it is unlikely that the area proposed to be cleared represents a significant remnant.

Clearing, however, may introduce and spread weeds and dieback to adjacent intact vegetation. Weeds and diseases can also suppress the capacity of the burnt vegetation immediately adjacent to the applied area to regenerate. Post-fire recovery can take months or years and will depend on certain environmental conditions. The focus should be given to the first 12 months after the fire to eliminate threats to natural recovery (Gallagher, 2020). This should include efforts to mitigate and minimise any potential spread and introduction of weeds and dieback to these areas.

Conclusion

Given the condition and extent of the vegetation proposed to be cleared, the extent of intact remnant vegetation remaining in proximity, and the highly modified nature of the landscape, it is unlikely the vegetation proposed to be cleared represents a significant remnant. The proposed clearing is unlikely to result in a significant residual impact, however, to minimise and mitigate any potential impacts due to spread of weeds and dieback to the adjacent vegetation, a management condition is included in the permit.

Conditions

Weeds and dieback management is required to mitigate and minimise the introduction and spread of weeds and dieback into adjacent vegetation.

Figure 2. Aerial photograph of the vegetation in the application area and close proximity showing the burnt area after the 5 January 2021 fire (Source: Google Earth' 2021. Imagery date; 14 April 2021; accessed in August 2021).

Figure 3: Aerial imagery showing the extent of mapped remnant vegetation (light green) in close proximity to the application area (hashed blue).

3.2.2. Biological Values: Fauna – Principle (b)

Assessment

Forty-four species of conservation significant fauna have been recorded in the local area. None of the records occur within the application area. The fauna recorded within 20 kilometre radius include marine, aquatic, and coastal species such as the Humpback whale, which are unlikely to occur within the application area. Many of these records are also of historical records, for example the most current record of the Gilled Slender BlueTongue (*Cyclodomorphus branchialis*) was from 1927. The closest record is of a Quenda (*Isoodon fusciventer*) located approximately 2 kilometre south-west of the application area. Quenda prefers densely vegetated areas. Given the understorey is devoid of vegetation, it is unlikely that quenda or other terrestrial fauna are present within the application area. If left to regenerate, the application area is not likely to contain Quenda due to the isolated nature of the remnant.

With 1440 records, Carnaby's black cockatoo (*Calyptorhynchus latirostris*) has been recorded the most within the local area, although the most recent record was from 2010. There is one confirmed Black Cockatoo roost within the local area, within the Geraldton Township, approximately 3.2 kilometres west of the application area. The application area is located within a mapped buffered Black Cockatoo feeding area and within a mapped area wherein Carnaby's Cockatoo or their habitat are likely to occur. The application area is not mapped within the Forest red tailed or Baudin's Black Cockatoos modelled distribution areas.

Photographs of the vegetation proposed to be cleared indicate that there may be vegetation that can be utilised by Carnaby's Cockatoos for foraging and roosting purposes (Bamford, 2013; Geraldton Pistol Club Inc., 2021). The

species of Acacia present within the application area may have been utilised for foraging, particularly if it was *A. saligna*, however, given the extensive mortality as a result of the fire, it is difficult to identify. The Banksia species present may also be used for foraging if left to regenerate. However, Banksia's appears to be in low numbers of individuals, which means it is unlikely to represent a significant resource for Carnaby's. The north-western portion of the application area, near the infrastructure, contains two larger Eucalypt individuals and a small number of smaller individuals. It is likely that these species may be used for foraging and potentially roosting purposes given a confirmed roosting site approximately 3.2 kilometres west. Noting that it is a low number of individuals present within the application area representing potential foraging habitat and the extent of potential habitat in the surrounding remnant vegetation (see Figure 3), the area proposed to be cleared does not likely represent a significant remnant of vegetation in the context of habitat for Carnaby's.

If left to regenerate, noting the historical disturbance and open nature of the adjacent vegetation that is impacted by weeds, the application area will not likely provide significant habitat for other conservation significant fauna.

Conclusion
Based on the above assessment, the Delegated Officer considered it unlikely that the vegetation proposed to be cleared will be utilised by Carnaby's Cockatoo if left to regenerate and that any potential loss of habitat vegetation does not represent a significant residual impact. Given the extent of clearing and amount of intact vegetation in close proximity, it is unlikely any ecological linkage function will be impacted.

Condition:
No fauna management condition is required.

3.2.3. Environmental Value : Land degradation – Principle (g)

Assessment
The sandy nature of the land systems of the region and its proximity to the coastline make the soils of the application area prone to wind erosion. The recent fire has removed the ground covers from the application area and its immediate surrounds, exposing the soils to the wind. Further clearing of the vegetation after the fire could exacerbate the risk of land degradation due to wind erosion. Planting ground covers including grass on the affected areas could mitigate and minimise the wind erosion risk. Given the purpose of clearing is to create a grassed area for the fire range, the proposed clearing is unlikely to exacerbate the susceptibility of the proposed area to wind erosion.

Conclusion
Based on the above assessment, the Delegated Officer has determined that the proposed clearing is not going to lead to appreciable land degradation. However, to minimise any risk of wind erosion, a management condition is included on the permit.

Condition:
To address the impacts, the permit holder must undertake the authorise clearing in stages and commence planting of grass no later than three months after undertaking the authorised clearing to reduce the potential for wind erosion.

3.3. Relevant planning instruments and other matters

The Applicant provided a letter of support from the City of Greater Geraldton (the City). The City advised that local government approvals were not required, and that the proposed clearing was consistent with the City's Local Planning Scheme. The City did not have any objections to the proposed clearing.

It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

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

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is adjacent to remnant vegetation to the east and west with a small tract of vegetation to the north. A fire on 5 of January 2021 has burnt almost all the vegetation within the application area. The land to the south is mostly cleared. A golf course and sporting complex is located approximately 400 metres to the west/south-west. A wastewater treatment plant and further cleared land is located to the north. The application area is located within the general Geraldton township. Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 16.6 per cent of the original native vegetation cover.
Ecological linkage	The application area is not within any formal mapped ecological linkages. Given the fragmentation in the landscape and the adjoining vegetation, the application area is unlikely to serve any ecological function.
Conservation areas	The application area does not intersect any conservation areas. The local area contains 38 Class C and one Class A unmanaged reserves. There are 14 records of DBCA legislated tenures within the local area. The closest unmanaged reserve is located approximately 1.5 kilometres southwest and the nearest DBCA managed reserve is approximately 7 kilometres east.
Vegetation description	Photographs supplied by the applicant indicate the burnt vegetation within the proposed clearing area may consist of *Acacia* sp.*, Banksia* sp. and *Eucalyptus* sp. Representative photos and maps are available in Appendix D. The intact vegetation patches adjacent to the application area contain a dense mid storey of *Acacia* sp. with *Banksia* sp. and *Eucalyptus* sp. as an open canopy. This is consistent / with the mapped vegetation type Greenough Vegetation System 359, which is described as shrublands; acacia & banksia scrub. The mapped vegetation type retains approximately 25 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	The conditions of vegetation within the proposed clearing area prior to the fire is inferred from the condition of adjacent vegetation, which is intact and in Good condition (Keighery, 1994). The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos of the application area are in Appendix D.
Climate	The mean annual rainfall for the application area is 500 mm.
Topography	The elevation of the application area is approximately 20 metres AHD.
Soil description	The soil is mapped as Tamala South 5 red sand Phase (221Ta_5Tr) described as lower lying and swale areas. Red deep sand.
Land degradation risk	• >70% of the map unit has a high subsurface acidification risk or is presently acid. • >70% of the map unit has a high to extreme wind erosion risk
Waterbodies	The desktop assessment and aerial imagery indicated that the application area does not intersect any waterbodies or waterways. The closest waterway is the Chapman River located approximately 2.1 kilometres north east.

Characteristic	Details
Hydrogeography	The application area is located within the Arrowsmith Groundwater Area proclaimed under Section 26B (1) of the *Rights in Water and Irrigation Act 1914* and the unproclaimed Chapman River surface Water area. The area proposed to be cleared does not intersect any Public Drinking Water Source Areas.
Flora	The local area contains fifty conservation significant flora species, 19 of which occur on the same soil type as the application area. The most common of these are the Priority 4 *Eucalyptus blaxellii* with 41 records, followed by Priority 2 *Thryptomene stenophylla* with 39 records. There are no records of conservation significant flora within 1 kilometre of the application area. The nearest record is *Verticordia chrysostachys* var. pallida found 1.4 kilometres south. None of conservation significant flora are likely to occur within the application area due to incorrect landform (hills/ridges etc.) or occur in different vegetation types.
Ecological communities	The area proposed to be cleared does not intersect any Priority or Threatened Ecological Communities (PEC / TEC). There are 16 records of Priority Ecological Communities within the local area. The most common is the state listed Priority 1 Coastal Sands dominated by *Acacia rostellifera, Eucalyptus oraria* and *Eucalyptus obtusiflora* (Geraldton area) with 12 records. The closest record is Subtropical and Temperate Coastal Saltmarsh approximately 5 kilometres north
Fauna	Forty-four species of conservation significant fauna have been recorded in the local area, including several marine, aquatic and coastal species. None of the records occur within the application area. The records include historical records from 1920s. Carnaby's black cockatoo (*Calyptorhynchus latirostris*) has been recorded within the local area, with the most recent record being from 2010.

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Geraldton Sandplains	3,136,025	1,410,755	45	561,943	0.4
Vegetation System					
Greenough Vegetation System 359	42,4931.17	10,760.95	24.19	414.55	0.93
Local area: 20 km radius	68,982	11,459	16.6		
Post clearing calculation local area vegetation	68,982	11,458.27	16.6		

*Government of Western Australia (2019a)

A.3. Flora analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix E.1), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (local area)
Caladenia hoffmanii	T	N	Y	4.35	3
Chorizema humile	T	N	N	16.84	1
Drummondita ericoides	T	N	N	15.01	16
Eucalyptus blaxellii	P4	Y	Y	5.62	42
Eucalyptus cuprea	T	N	N	7.97	1
Grevillea triloba	P3	N	Y	1.74	24
Styphelia marginata	T	N	Y	2.89	2
Thryptomene stenophylla	P2	N	Y	2.18	39

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (local area)
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	Y	Y	10.19	1440
Dasyurus geoffroii (chuditch, western quoll)	VU	Y	Y	10.27	1
Idiosoma arenaceum (Geraldton Sandplain shield-backed trapdoor spider)	P3	Y	Y	2.23	6
Isoodon fusciventer (quenda, southwestern brown bandicoot)	P4	Y	Y	2.01	1

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.5. Land degradation risk table

Risk categories	***Land Unit 1***
Wind erosion	H2 : > 70% of the map unit has a high to extreme hazard
Water erosion	L1: 3-10% of the map unit has a very high to extreme hazard
Salinity	L1: 3-10% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	H2: > 70% of the map unit has a high to extreme hazard
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L1: 3-10% of the map unit has a moderate to very high to risk
Phosphorus export risk	L1: < 3of the map unit has a high to extreme hazard

Appendix B. 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: If left to regenerate, the application area does not likely contain significant habitat for fauna or unique assemblage of plants. Conservation significant flora are not likely to be found due to the disturbed nature of the area pre-fire and incorrect habitat requirements based on the records within the local area. The application area is not likely to comprise a high level of biodiversity.	Not likely to be at variance	No .
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: If left to regenerate, the area proposed to be cleared may contain vegetation that may be suitable for foraging and roosting by Carnaby's Cockatoos. Given the extent and condition of the adjacent vegetation, it is unlikely to represent significant habitat for any conservation significant fauna.	Not likely to be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The closest record is a threatened species (*Styphelia marginata*) located approximately 3 kilometres from the application area. Given the highly modified nature of the landscape and the vegetation condition of the application area and habitat requirements for this species, it is unlikely that this species will occur. No other threatened flora are likely to occur.	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: The application area does not intersect any mapped Ecological Communities listed as 'Threatened' by the Minister for Environment. The area proposed to be cleared does not contain species that resemble a state-listed TEC.	Not likely to be at variance	No
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 native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. However, the vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area or considered to be a significant remnant.	Not likely to be at variance	Yes *Refer to Section 3.2.1, 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:	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the distance to the nearest conservation area (approximately 7 kilometres) and the high amount of residential development in the local area, the proposed clearing is not likely to have an impact on the environmental values of any conservation areas.		
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 no water courses or wetlands are recorded within one kilometre of the application area, the proposed clearing is unlikely to impact an environment associated with a watercourse or wetland.	Not likely to be at variance	No
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 are highly susceptible to wind erosion. The proposed clearing area is also surrounded by vegetations recently affected by fire which could exacerbate the wind erosion risk. Grassing the cleared area could mitigate and minimise any potential impacts of clearing in relation to wind erosion.	Not likely to be at variance	*Yes* *Refer to Section 3.2.3, above.*
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 no water courses or wetlands are recorded within one kilometre of the application area and the nature of the works, the proposed clearing is unlikely to impact surface or ground water quality.	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: 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.	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types (Keighery, B.J., 1994).

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.

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

Appendix D. Photographs of the vegetation (Geraldton Pistol Club Inc., 2021)

A

B

Figure 3. Aerial photograph of the Pistol Range after a fire

Figure 4. Vegetation within the application area. (A) Looking East (B) Looking North-east (C) Looking South-east (D) Looking-south (E) Looking West (F) looking east from current pistol range

Appendix E. Sources of information

E.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- 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)
- Google Earth (2021)
- 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)

E.2. References

Bamford Consulting Ecologists (Bamford) (2013). *Plants known to be used for foraging, roosting and nesting by black cockatoos in south-western Western Australia*. Data compiled from the literature (Davies, 1966; Saunders, 1974, 1979a, b, 1980; Saunders et al. 1982; Saunders, 1986; Johnstone and Storr, 1998; Higgins 1999; Johnstone and Kirkby, 1999, 2008; Groom, 2011; Johnstone et al. 2011; DSEWPaC, 2012a, b; c, R. Johnstone pers. comm.) in Bamford (2013) Wedgetail Circle, Parkerville Fauna Assessment. Prepared for Coterra Environment. Bamford Consulting Ecologists. Prepared by Jeff Turpin, Simon Cherriman and Mike Bamford. 14th August 2013.

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