COTERRA ENVIRONMENT

Native Vegetation Clearing Permit Application Supporting Information

Wanneroo Shooting Complex

Revision 0 December 2023

CALIBRE | COMMITMENT | COLLABORATION

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1 Introduction

The Sporting Shooters Association of Australia (WA) Inc (SSAA WA) (the proponent) proposes to construct a public shooting range with parking amenities, at the Wanneroo Shooting Complex, which is located at Lot 5607 (No. 399) Neaves Road, Pinjar (the site) (Figure 1).

The proposed public shooting range is a highly sought after resource as there are no facilities within the vicinity of the complex that allow for public usage without memberships to specific clubs. The Wanneroo Shooting Complex management team receive weekly enquiries from firearm owners, enquiring about access to a facility to practice at and improve their skill sets.

1.1 Location

The site is located in the Gnangara – Moore River State Forest. It is situated on Crown Land (title LR3121/481) which is managed by the Department of Biodiversity, Conservation and Attractions (DBCA), with a valid lease to the SSAA WA (Lease No. 1490/97). A Development plan illustrating this consolidated lot has been included in (Appendix 1).

The development footprint is 6 ha. The site is within Crown Land, Bush Forever (BF) Site 380 and State Forest No. 65, which comprises a lease area of approximately 394 ha (Figure 2) and is bound by Neaves Road to the South and Perry Road to the West, in the locality of Pinjar, approximately 47 km north-east of Perth. The complex currently contains several private shooting clubs, that drive a requirement for a public shooting range.

1.2 Planning and Environmental Approvals

1.2.1 Zoning

The site is zoned Parks and Recreation and Water Catchments under the Metropolitan Region Scheme (MRS) and Regional Parks and Recreation under the City of Wanneroo's DPS2.

1.2.2 Development Application

A Development Application (DA) has been prepared for the proposed action which will facilitate development of the public shooting range (Appendix 1) in accordance with the *Planning and Development Act 2005*. The DA will be determined by the Western Australian Planning Commission (WAPC) on advice from the City of Wanneroo and the DBCA.

1.2.3 Cadastral Information

The development footprint (6 ha) is contained within the following land parcel:

- Lot 5607 on Deposited Plan 208673, Crown Land Title LR3121/481

The site is located within State Forest No. 65 and is Crown land that is vested with the Conservation Commission of Western Australia and leased to the SSAA WA.

1.2.4 Lease Agreement

The site is subject to a long-term lease agreement (executed on 12 May 2015) between SSAA WA Inc. (Lessee) and The Conservation and Land Management Executive Body (Lessor).

1.2.5 Federal Environmental Approval

The proposed action to clear native vegetation to construct the facility has been referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the

Environmental Protection and Biodiversity Conservation Act (EPBC Act). The referral has been deemed a controlled action and as such a bilateral assessment approach is proposed (see Annex C7 form attached to the NVCP application).

1.3 Development overview

The proposed public shooting range will primarily be available to licenced firearm holders, who are not club members. The proposed facility will feature a sports shooting range that allows for public usage without the requirement of a membership to a private club.

A DA has been prepared and lodged with the Department of Planning, Lands and Heritage (DPLH). The DA seeks approval for the construction of the facility, which will be operated by SSAA WA. Construction of the facility will require the clearing of up to 6 ha of native vegetation within the site and includes:

- A cleared firing line measuring 558m long by 100m wide
- A cantilevered firing line space which is 90m wide and 10m deep
- An administration building measuring 9m by 12m which will contain toilets, briefing rooms and administrative offices
- Four sea container storage structures measuring 12m by 2.4m
- Palisade fencing and gated entrance to front of development
- A 6m by 9m hardstand area for trailer storage
- A bin storage area measuring 5.8m by 2.4m
- An unmarked car parking area with a limestone base, with a capacity of 70 parked vehicles.

1.3.1 Operational management

The maximum operational hours permissible currently, in accordance with the by-laws of the Wanneroo Shooting Complex, allows for the discharge of firearms between 0700 and 2200 only. This proposal seeks to only operate during these times.

During normal day to day operations, the site anticipates that a maximum of two staff will be on the premises at any time. During any specialised events held at the site, a maximum of 10 staff members may be on site. With respect to the number of clientele utilising the subject site on a daily basis, this is estimated at a maximum of 45 persons.

1.3.2 Construction management

Subject to the required approvals, the specific works proposed to be undertaken are:

- Land clearing to establish a suitable firing line
- Palisade fencing and gated entrance to front of development
- At grade car park to entrance, using limestone with hardstand store for mobile demonstration range (trailer)
- Administration building as per a typical transportable building with sloping roof and front entrance veranda
- Containerised storage
- Concrete hardstand forming firing lining with patio cover over linking to administration building.

Where required, necessary building permit approvals will be sought prior to the construction of any structures.

1.3.3 Waste Management

Waste disposal for the Wanneroo Shooting Complex is managed by the Complex Management team with bins emptied under contract by Cleanaway every fortnight. Additional commercial bins have been proposed as part of this application, with the storage location within the north-west portion of the car parking area. The existing contract with Cleanaway will extend to service the new commercial bins every fortnight. Additional commercial bins will be supplied to facilitate the disposal of any waste generated by the proposed development.

1.3.4 Traffic Management

The site's point of access is via Perry Road. The entirety of the existing complex utilises the Perry Road entrance. As the sublease areas to the east of the application area are members only ranges, a gate is proposed at the entrance to the site to ensure that access is only to the proposed public shooting range area. The increase in patronage to the site as a result of the proposal will be adequately serviced from a traffic perspective by the existing two-way service road from Perry Road. Whilst there are 10 clubs on site, these sites do not operate on a daily basis, and on a typical weekend day, approximately half the clubs are open. Therefore, the current levels of traffic utilising this access road is not considered to be significant.

In the absence of any prescribed parking supply requirements, reference has been made to the City of Wanneroo's District Planning Scheme No.2 (DSP2), which has a prescribed parking ratio for 'Private Recreation' of 1 bay per 4 persons. The proposal anticipates a maximum of 45 clientele will utilise the services provided by the site on a daily basis. This is in addition to the two staff which will be on site on any given day, with the exception of occasional events.

Therefore, a total of 12 bays will be provided on site. As the 2,400m^2 limestone-based car parking area is capable of providing car parking for up to 70 cars, it is considered that the proposed car park is of adequate dimensions and will accommodate any total parking demand generated from this site. The parking area will remain informal, with the exception of 1 ACROD bay, which will be marked out and to the standards set out in AS/NZS 2890.6 2009.

1.3.5 Bushfire Management

As the complex is already in operation, a Bushfire Plan already exists over the whole site and will be utilised for the purposes of informing operators and clientele of the relevant procedures in the case of a fire.

1.4 Purpose of Report

This environmental report has been prepared to provide supporting information to the Department of Water and Environmental Regulation (DWER) on the Native Vegetation Clearing Permit (NVCP) application and includes the following:

- Size and location of the NVCP application area
- Site conditions
- Environmental values present within the NVCP application area
- Number and nature of any nearby environmentally sensitive receptors
- Proposed end-purpose of the clearing
- Anticipated/proposed public benefit of the clearing and its final land use
- Assessment against the Clearing Principles listed in Schedule 5 of the EP Act
- Measures proposed to avoid, mitigate and/or offset environmental impacts
- Planning and other relevant matters

1.5 Stakeholder Engagement

The proponent has undertaken preliminary consultation with DBCA regarding the proposal to construct a public shooting range within lease area.

2 Proposed Clearing

2.1 Schedule

Initial clearing works are proposed to commence on1 July 2024 and end on 31 January 2025, which will be staged over a period of approximately seven months. Clearing and construction will be governed by the Development Approval issued by the WAPC.

2.2 Proposed Works

The proposed works will involve:

- Clearing of native vegetation
- Earthworks for creation of appropriate levels within the development footprint
- Installation of services
- Fencing
- Road and building construction
- Landscaping of facility
- Implementation of conservation management measures for retained vegetation.

2.3 Pre-clearing

Prior to the commencement of clearing, the construction boundary between the development area and the adjacent retained vegetation will be surveyed and fenced to ensure it is accurately located and demarcated. This demarcation will ensure over-clearing does not occur.

All personnel on site will undertake an induction, which will outline the environmental values of the site and the importance of remaining within defined clearing areas.

2.4 Clearing

Clearing of vegetation will be undertaken as follows:

- Prior to the commencement of clearing, the construction boundary between the development footprint and the adjacent vegetation will be surveyed and fenced to ensure it is accurately located and demarcated. This demarcation will ensure over-clearing does not occur.
- All personnel on site will undertake an induction, which will outline the environmental values of the site and the importance of remaining within defined clearing areas.
- Clearing outside of the main avifauna breeding season is recommended, if possible.
- Vegetation clearing will occur from a disturbed edge, where possible, to encourage any remaining fauna to naturally relocate to the adjacent vegetated area.
- A fauna handler will be present during on site during clearing activities to facilitate the capture and relocation of fauna.
- Fauna interaction register to be maintained and to capture observations and interactions with fauna.
- Proper disposal of domestic waste will be undertaken to prevent attraction of native fauna or feral animals into the construction site.

- Hygiene protocols will be in place to prevent the spread of disease or weeds to retained and adjoining native vegetation areas.
- Balgas will be salvaged prior to clearing.

Clearing will be done in accordance with the 10 Clearing Principles. Additional information providing assessment against the clearing principles is provided in Section 4.

2.5 Alternatives considered / Actions to Avoid and Minimise Clearing Actions

Alternative locations on the Complex were considered. However, locating the proposed public shooting range within an existing facility, which already has land available and is designated for this very purpose, was considered to be efficient and maximise use of the current facility. Furthermore, locating the proposed public shooting range within another site would have likely required a greater clearing area to accommodate core services which the current facility already has in place. Furthermore, the location is readily accessible to persons within the metropolitan region and outlying regions.

In relation to reducing the clearing area, the overall size of the proposed public shooting range has been limited to only 100m wide to allow for a suitable area to safely undertake the sport, whilst not leaving any unutilized spaces. Further reduction to the clearing area and overall template was investigated and determined to either not be feasible or provide an acceptable outcome, due to the nature of the sport and its safety requirements.

In order to minimise clearing actions the following will be implemented:

- A Construction Environmental Management Plan will be prepared and implemented to protect the native vegetation adjacent to the development footprint and ensure no offsite impacts to surrounding vegetation. The management plan will incorporate the management measures identified in Section 2.4.

3 Site Description

3.1 Topography

The site is relatively flat throughout, with elevations of 56 m Australian Height Datum (AHD) at the southern end to 60 m AHD at the northern end. Topographic contours are shown on Figure 3.

3.2 Geology and Soils

The geological units represented on site is as follows (Gozzard 1982):

- S8: SAND – very light grey at surface, yellow at depth, fine to medium-grained, subrounded quartz, moderately well sorted, of eolian origin.
- S10: SAND over PEBBLY SILT – sand as S8 overlying MgS1 gravelly silt.

The Department of Primary Industry and Regional Development (DPIRD) mapped soils on site are shown in Table 3-1 (DPIRD 2023). Table 3-2 lists the land degradation risk categories for each of the above soils.

Table 3-1: Land Systems (DPIRD 2023)

Mapping Units	Land System	Description	Extent (ha)
212Bs_DL	Bassendean Drainage Line Phase	Broad, shallow channels, peaky soils, fringe of *Melaleuca* spp. and *E. rudis*; reeds and sedges in central zone	1.3 (22%)
212Bs_Ja	Bassendean Jandakot Phase	Jandakot low dunes. Slopes < 10 % and generally more than 5 m relief. Grey sand over pale yellow sands generally underlain by humic and iron podsols; *Banksia* spp. low open woodland with a dense shrub layer.	4.7 (78%)

Table 3-2: Land Degradation Risk categories (DPIRD 2023)

Land Degradation Risk Category	Bassendean DL Phase	Bassendean Ja Phase
Water Erosion	100% of map unit has a very high to extreme hazard	0% of map unit has a very high to extreme hazard
Wind Erosion	0% of map unit has a high to extreme hazard	68% of map unit has a high to extreme hazard
Waterlogging and Inundation	100% of map unit has a moderate to very high risk	0% of map unit has a moderate to very high risk
Flood Hazard	100% of the map unit has a moderate to high hazard	0% of the map unit has a moderate to high hazard
Salinity risk	0% of map unit has a moderate hazard	0% of map unit has a moderate hazard

The above geological units and soils are recognised as being Class 2 which have Moderate to Low risk of Acid Sulfate Soils (ASS) occurring withing 3 m of the natural soil surface, but high to moderate risk of ASS beyond 3 m of natural soil surface.

3.3 Hydrology

3.3.1 Groundwater

Groundwater flows generally from east to west in this location (DWER 2023).

Regional groundwater mapping indicates the Groundwater level is approximately 55 to 56 m Australian Height Datum (AHD) (DWER 2023) and the natural surface ranges from approximately 56 to 60 mAHD, which translates to the depth to groundwater being between <1 to 5 m.

3.3.2 Surface Water and Drainage

There are no mapped surface water features and drainage lines within the development footprint.

3.3.3 Wetlands

The DBCA geomorphic wetland dataset for the Swan Coastal Plain maps one multiple use wetland within the northern portion of the development footprint (Figure 4). The wetland management category definitions are provided in Table 3-4.

Table 3-3: Wetlands (Landgate, 2023)

Wetland Name	Unique Feature ID	Landform	Wetland Type	Management Category	Total Area (ha)	Area on site (ha)
Lake Pinjar	15,005	Basin	Sumpland	Multiple Use	265.01	0.50

Table 3-4: Wetland Management Categories (EPA, 2008)

Management Category	General Description	Management Objective
Conservation	Wetlands which support a high level of attributes and functions	Highest priority wetlands. Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including: • reservation in national parks, crown reserves and State-owned land, • protection under Environmental Protection Policies, and • wetland covenanting by landowners. No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.
Resource Enhancement	Wetlands which may have been partially modified but still support substantial ecological attributes and functions	Priority wetlands. Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland function, structure and biodiversity. Protection is recommended through a number of mechanisms.
Multiple Use	Wetlands with few remaining important attributes and functions	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare.

It is worthwhile noting that whilst approximately 0.5 ha of the multiple use wetland occurs on site, most of the multiple use wetland (UFI: 15, 005) occurs offsite (approximately 99%) and extends west and north east of the site (Figure 4).

3.3.4 Water Resources

The site is within the Gnangara Underground Water Pollution Control Area and Public Drinking Water Source Area (Priority 1). The lease area contains two Wellhead Protection Zones (WPZs). Of these, one WPZ is within the boundary of the development footprint (DWER 2023b)(Figure 4).

The groundwater aquifers present at the site are identified as fully allocated between the Perth – superficial Swan Aquifer and the underlying Perth-Leederville Aquifer (DWER 2023c).

3.4 Vegetation and Flora

3.4.1 Pre-European Vegetation

Broad scale mapping of pre-European vegetation within the Perth region was undertaken by Beard (1976) which recorded major categories of plants. Shepherd et al. (2002) reassessed Beard's mapping and divided some of the larger vegetation units into smaller units, which then resulted in a total of 819 vegetation units being mapped across the state.

The site is mapped containing the following broad vegetation type (Landgate 2023):

- Bassendean 949: Low woodland; banksia

The status of this vegetation system associated at the state, regional and local level is presented in Table 3-5. The remnant native vegetation within the development footprint represents approximately 0.009% of the current extent of the Bassendean 949 Complex on the Swan Coastal Plain.

Table 3-5: Bassendean 949 - vegetation Statistics (GoWA 2019a)

Area	Pre-European extent	Current Extent	Current Extent managed in DBCA lands	Clearing Area Representation
Western Australia (1B)	115,119.15 ha	69,992.31 ha (60.80%)	31.94%	0.009%
Swan Coastal Plain (2B)	115,119.15 ha	69,992.31 ha (60.80%)	31.94%	0.009%
City of Wanneroo (4B)	22,158.14 ha	10,009.00 ha (45.17%)	33.56%	0.060%

3.4.2 Vegetation Complex

The site is mapped as containing native vegetation which forms part of the Bassendean Complex – North (Landgate 2023) and is described by Heddle et al (1980) as:

- Vegetation ranges from a low open forest and low open woodland of Banksia species coastal blackbutt (*E. todtiana*) to low woodland of Melaleuca species and sedgelands which occupy the moister sites. Understorey species include: *Melaleuca seriata, Adenanthos obovatus, Dasypogon bromeliifolius, Hypocalymma angustifolium, Boronia purdieana, and Scholtzia involucrata, Banksia laricina* is restricted to this northern area.

The status of this vegetation complex is presented in Table 3-6. The remnant vegetation within the site represents approximately 0.011% of the current extent of Bassendean Complex – North.

Table 3-6: Bassendean complex, North - Vegetation Statistics (GoWA 2019b)

Area	Pre-European extent	Current Extent	Current Extent Protected for Conservation	Site Representation
Swan Coastal Plain	79,057.35	56,659.67 (71.67%)	25.94%	0.011%
Perth Metropolitan Region	22,939.51	11,770.55 (51.31%)	2.99%	0.051%
City of Wanneroo	8,723.12	4,484.54 (51.41%)	-	0.069%

3.4.3 Flora and Vegetation Assessments

In 2022, Anders Environmental (Anders) conducted a reconnaissance survey between 21 and 22 April 2022 and a detailed flora and vegetation survey between 3 and 4 October 2022 (Appendix 2). The survey area is comprised of two areas (Figure 2):

- The development footprint which is approximately 6 ha
- The Wanneroo Shooting Complex (the lease area) which is approximately 392 ha.

The key findings from the flora and vegetation assessments are summarised below.

3.4.4 Flora

A desktop assessment identified 74 conservation significant flora species occurring within a 20 km radius of the survey area (Anders 2023) (Appendix 2: Appendix A)

Anders (2023) recorded a total of 102 flora species, from 34 families and 77 genera, of which 88 were locally native species, and the remainder (14) were introduced species. There were 81 perennial species, and 21 annual species. The most common families on site were Asteraceae (12 species), Fabaceae (12 species) and Myrtaceae (12 species) (Anders 2023).

3.4.5 Conservation Significant Flora

No flora species listed as Threatened under the *Biodiversity Conservation Act 2016* (BC Act) or under the EPBC Act were recorded, and no Priority flora listed under the BC act were recorded within the development footprint and lease area during the spring 2022 survey (Anders 2023).

3.4.6 Vegetation Types

Three vegetation types were present across the development footprint. Vegetation type VT1 consisted of a mosaic of burnt (estimated to be greater than 5 years) and unburnt areas and have been mapped according to burn scars identified within the aerial imagery (Anders 2023) (Figure 5):

- VT1 – BaXpEp: *Banksia attenuata – Banksia menziesii* open woodland over *Xanthorrhoea preissii* mid sparse shrubland over *Eremaea pauciflora* low sparse shrubland (0.8 ha within the site)
- VT1 – Burnt – BaXpEp: *Banksia attenuata – Banksia menziesii* open woodland over *Xanthorrhoea preissii* mid sparse shrubland over *Eremaea pauciflora* low sparse shrubland (4.1 ha within the site)
- VT2 – MpXpDb: *Melaleuca preissiana* open woodland over *Xanthorrhoea preissii* mid sparse shrubland over *Dasypogon bromeliifolius* low sparse forbland (1.1 ha within site).

These types are outlined in Table 3-7 below.

Table 3-7: Vegetation types

Vegetation Type	Vegetation Description	Details	Clearing Area	Lease area outside development footprint
VT1 (BaXpEp)	*Banksia attenuata* - *Banksia menziesii* open woodland over Xanthorrhoea preissii mid sparse shrubland over Eremaea pauciflora low sparse shrubland.	Distribution mapped throughout most of the survey area.	0.8	287.1
VT1 (BaXpEp-Burnt)	*Banksia attenuata* - *Banksia menziesii* open woodland over *Xanthorrhoea preissii* mid sparse	Occurs in large patches and represents old burn scars estimated to be more than 5 years. Floristic composition	4.1	47.4

Vegetation Type	Vegetation Description	Details	Clearing Area	Lease area outside development footprint
	shrubland over Eremaea pauciflora low sparse shrubland.	was the same as the unburnt areas.		
VT2 (MpXpDb)	*Melaleuca preissiana* open woodland over *Xanthorrhoea preissii* mid sparse shrubland over *Dasypogon bromeliifolius* low sparse forbland	Located in discreet areas in the eastern and western sections of the survey area. Corresponds to mapped wetlands within the site.	1.1	20.3
Disturbed	Areas mostly cleared of native vegetation for the existing shooting range and access tracks in Completely Degraded condition	Tracks and historical clearing for the existing shooting range in the centre of the survey area.	-	31.4
Total			6.0	386.2

3.4.7 Vegetation Condition

In accordance with the Keighery system and as described in Bush Forever (Table 3-8), Anders Environmental assessed the condition of the vegetation within the site.

Table 3-8: Vegetation Condition Scale (GoWA 2000)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. 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 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 grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

The vegetation condition of the development footprint ranged from Good (1.2 ha) to Very Good (4.8 ha) (Anders 2023) (Figure 6).

Within the wider lease area, the vegetation condition ranged from Completely Degraded to Excellent with most of the lease area recorded as Excellent, covering over 71% of the area. Disturbance was mostly attributed to the already existing shooting range and high weed cover was noted in these areas of completely degraded condition (Anders 2023) (Appendix 2).

There were a total of fourteen weeds recorded, none of which are Weeds of National Significance (WONS).

Vegetation type and condition classification is listed in Table 3-9.

Table 3-9: Vegetation Types and Condition

Condition Rating	Development footprint (ha)	Lease area outside development footprint (ha)
Excellent	-	280.5
Very Good	4.8	67.4
Good	1.2	12.9
Completely Degraded	-	31.4
Total	6.0	392.2

3.4.8 Floristic Community Types

An assessment for the Floristic Community Type (FCT) was undertaken by Anders (2023) (Appendix 2). Based on the statistical analysis undertaken, all VT1 (BaXpEp) quadrats (including those within the development footprint) aligned with 23b – Swan Coastal Plain Northern *Banksia attenuata – Banksia menziesii* woodlands (SCP23b). That is, with exception of one VT1 quadrat (NR20; located in the eastern portion of the lease area) which aligned with 21c – Low lying *Banksia attenuata* woodlands or shrublands (SCP21c). Both SCP23b and SCP21c are listed by DBCA as Priority Ecological Communities (PEC) (Priority 3) (Anders 2023).

SCP23b is a component of the Banksia Woodlands of the Swan Coastal Plain ecological community Priority Ecological Communities (PEC) (Priority 3), and based on the vegetation condition thresholds the vegetation mapped as VT1 – BaXpEp is part of the Banksia Woodlands of the Swan Coastal Plain ecological community Priority Ecological Communities (Anders 2023).

The VT2 – MpXpDb quadrats aligned with SCP4 – *Melaleuca preissiana* damplands and SCP21a - Central *Banksia attenuata - Eucalyptus marginata* woodlands, which are not listed as a TEC nor a PEC (Anders 2023).

3.4.9 Banksia Woodlands of the Swan Coastal Plain Ecological Community

Anders Environmental undertook an assessment to confirm the presence and extent of Banksia Woodlands of the Swan Coastal Plain ecological community, which is listed by the Commonwealth as Endangered, and listed as a Priority 3 PEC by the DBCA.

Within the development footprint and based on the condition thresholds the vegetation VT1 – BaXpEp is considered to be part of the Banksia Woodlands of Swan Coastal Plain ecological community (Anders 2023) (Figure 7).

3.4.10 Wetland Vegetation

The DBCA geomorphic wetland dataset for the Swan Coastal Plain maps one multiple use wetland (UFI 15,005) (Figure 4) within the northern portion of the development footprint, which connects to the western extent of a series of wetlands associated with Lake Pinjar. This wetland aligns with the northern patch of VT2 – MpXpDb mapped by Anders (2023). Additionally, Anders (2023) has mapped another area of VT2 – MpXpDb within the southern portion of the development footprint (Figure 5).

3.5 Fauna

3.5.1 Fauna Assessments

On 20 April 2022, Ecoscape undertook a fauna survey within the development footprint (Appendix 3), which included the following (Ecoscape 2022):

- Database and literature review
- Basic terrestrial vertebrate fauna survey
- Black Cockatoo habitat assessment.

Key findings from the fauna assessment are summarised below.

3.5.2 Fauna

Ecoscape (2022) desktop assessment identified 52 conservation-listed terrestrial vertebrate fauna species within a 20 km buffer area of the survey site. During the field assessment, a total of 15 vertebrate species were recorded, one mammal and 14 birds (Ecoscape 2022), none of which are conservation listed species. These are identified in Table 3-10:

Table 3-10: Recorded Fauna Species

Species	Common name	Mammal/Bird
Macropus fuliginosus	Western Grey Kangaroo	Mammal
Acanthiza inornata	Western Thornbill	Bird
Anthochaera carunculata	Red Wattlebird	Bird
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Bird
Corvus coronoides	Australian Raven	Bird
Cracticus tibicen	Australian Magpie	Bird
Gavicalis virescens	Singing Honeyeater	Bird
Malurus splendens	Splendid Fairy-wren	Bird
Petroica boodang	Scarlet Robin	Bird
Phaps chalcoptera	Common Bronzewing (Pigeon)	Bird
Phylidonyris niger	White-cheeked Honeyeater	Bird
Phylidonyris novaehollandiae	New Holland Honeyeater	Bird
Platycercus zonarius	Australian Ringneck	Bird
Rhipidura leucophrys	Willie Wagtail	Bird
Zosterops lateralis	Silvereye	Bird

The entire site was traversed on foot and all habitats were assessed for quality and capability for supporting locally common and significant fauna species.

3.5.3 Fauna Habitat

Two fauna habitats types were recorded for the site (Ecoscape 2022) (Figure 8):

- Banksia woodland (4.9 ha) – Open Banksia woodland over shrubs and sedges on grey sandy soils. Habitat is suitable for a range of small mammals, reptiles and woodland birds.
- Melaleuca woodland (1.1 ha) – Open Melaleuca low woodland with scattered Marri trees over shrubs on grey sandy soils. Habitat is suitable for a range of small mammals, reptiles and woodland birds.

Small and partly cleared but regenerating areas are not considered as a separable habitat type, however it is expected that they support the local fauna assemblages in a similar way to the adjacent native vegetation.

3.5.4 Conservation Significant Fauna

No conservation listed fauna species were recorded during the field survey; however, evidence suggests that the survey area is used by the Carnaby's Cockatoo and Quenda. The following conservation listed fauna species were identified as having a High or Medium likelihood of occurring within the site (Ecoscape 2022) (Appendix 3):

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – EPBC Act Status Endangered; BC Act Status Endangered
- Quenda (*Isoodon fusciventer*) – DBCA Status Priority 4
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) - EPBC Act Status Vulnerable; BC Act Status Vulnerable
- Western Brush Wallaby (*Notamacropus irma*) – DBCA status Priority 4

3.5.5 High Likelihood Species

3.5.5.1 Carnaby's Cockatoo

Carnaby's Cockatoos occur in uncleared or remnant native Eucalypt woodlands, shrublands or Kwongan heathland dominated by *Hakea*, *Banksia* or *Grevillea* species. The survey area is situated within the species distribution on the Swan Coastal Plain and is in close proximity to confirmed roosting and breeding sites (Ecoscape 2022).

The Carnaby's Cockatoo was not recorded during the field survey; however, given the site context, it is highly likely that it uses habitat within the survey area occasionally for foraging (Ecoscape 2022).

3.5.5.2 Quenda

The Quenda have a patchy distribution and prefer to reside in swampy, dense vegetation (Ecoscape 2022).

The mapped Banksia Woodland within the survey area provides suitable shelter and foraging habitat for the Quenda. Secondary evidence as recorded by Ecoscape (2022) during the field survey indicates that Quenda utilise the area. This evidence included diggings as well as nearby historical sightings (Ecoscape 2022).

3.5.6 Medium Likelihood Species

3.5.6.1 Forest Red-tailed Black Cockatoo

The Melaleuca Woodland with scattered Marri trees habitat type within the survey area potentially contains suitable foraging habitat for the Forest Red-tailed Black-Cockatoo. However, due to the low number of trees present and their size it is considered to not represent roosting habitat. Although the species has been recorded within 15 km from the survey area, it is considered the development footprint provides limited value to this species and that Forest Red-tailed Black-Cockatoo would only occur in a vagrant manner (Ecoscape 2022).

3.5.6.2 Western Brush Wallaby

The Western Brush Wallaby's optimum habitat is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. The Melaleuca Woodland habitat within the site may provide shelter and foraging habitat for the Western brush Wallaby, whose optimum habitat is open woodland (Ecoscape 2022).

3.5.7 Black Cockatoo Habitat

In accordance with the 2012 EPBC Act referral guidelines for three threatened Black Cockatoo species Carnaby's Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso* (DSEWPaC 2012), Ecoscape undertook a Black Cockatoo habitat assessment on 20 April 2022.

The survey methods used recorded the following:

- Location, recorded using a handheld GPS device with an accuracy of approximately 5 m
- Species
- Identification of hollows of suitable size and orientation, recording evidence of use by cockatoos such as chewing at the follow entrance
- Habitat value according to the scoring system developed by BCE (2020)
- Photographs of trees, showing follows if present
- Known nesting trees as per DBCA data

The survey area is within the spatial distribution for Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo, however neither were recorded during the survey. Evidence such as chewed Marri nuts indicate that Carnaby's Cockatoos frequent the site.

According to DBCA mapping (Figure 9):

- Approximately two thirds of the survey area requires investigation as potential Carnaby's Cockatoo feeding habitat on the Swan Coastal Plain
- The site is situated less than 3 km from a confirmed Carnaby's Cockatoo breeding area at its north-western boundary and less than 6 km away from a confirmed Carnaby's Cockatoo breeding area at its eastern boundary
- At the north-western end the sites boundary is less than 5 m away from the buffered boundary surrounding a confirmed Carnaby's Cockatoo roost site

3.5.7.1 Foraging Habitat

The suitability of the development footprint as foraging habitat was assessed as per the Bamford Consulting Ecologist (BCE) 2022 scoring system. The site condition for the Banksia woodland (4.9 ha) was scored as having (Ecoscape 2022):

- Moderate to high foraging value for Carnaby's Cockatoo (Figure 10)
- Negligible to low foraging value for Forest Red-tailed Black Cockatoo (Figure 11).

The site condition for the Melaleuca woodland (1.1 ha) within the site was scored as having (Ecoscape 2022):

- Negligible to low foraging value for Carnaby's Cockatoo (Figure 10)
- Low foraging value for Forest Red-tailed Black Cockatoo (Figure 11)

The Black Cockatoo habitat assessment identified that the development footprint provides significant foraging habitat for Carnaby's Cockatoo within the Banksia woodland but limited potential foraging habitat for Forest Red-tailed Black Cockatoo, whilst the Melaleuca woodland provided limited potential foraging habitat for both species.

Furthermore, ublicly available datasets indicate that approximately 25,479.42 ha of Carnaby's Cockatoo foraging habitat occurs within 12 km of the site and of this 14,081.12 ha (55.26%) occurs within Bush Forever (Attachment 1-Figures: Figure 11). Therefore, the Carnaby's Cockatoo foraging habitat within the development footprint represents 0.019% within a 12 km radius of the site.

Two Marri (*Corymbia calophylla*) trees were recorded within the development footprint as being potential nesting trees (Diameter Breast Height (DBH) > 500m); however, there were no suitable hollows present. Jarrah (*Eucalyptus marginata*) was also present but were not of suitable DBH having. Whilst the scattered Marri trees within the northern Melaleuca woodland provide opportunities for roosting behaviour, there is limited roosting habitat within the development footprint. (Ecoscape 2022)

It should be noted that both habitat types extend beyond the site boundary (Banksia woodland (VT1) – 339.4 ha and Melaleuca woodland (VT2) – 51.5 ha) and remain in similar condition, with the addition of more Marri trees.

3.5.7.2 Roosting Habitat

It is recognised that Black Cockatoos roost overnight in tall trees, which may include native and introduced species such as pine and eucalypts. These trees are generally in close proximity to a fresh water source.

There is limited roosting habitat within the survey area. The northern portion of Melaleuca woodland that contains scattered Marri trees provides some opportunity for roosting behaviour and is geographically the closest area to the known roosting site identified during the desktop survey (Ecoscape 2022).

3.5.7.3 Breeding habitat

Black Cockatoos are known to breed in hollows of large eucalypts such as Jarrah and Marri.

Assessments were undertaken according to the criteria outlines in the Commonwealth Guidelines (DSEWPaC 2012), and additional information recorded using the Bamford (2016) grading system for identification of potentially suitable nesting trees based on the size and orientation of hollows.

Two trees were recorded that had a suitable diameter (DBH > 500 mm) for Black Cockatoo nesting. Both trees were *Corymbia calophylla.* Both trees were class 5, meaning there were no suitable hollows currently present, but potentially some may develop in the future.

Jarrah (*Eucalyptus marginata)* were also recorded in the area, which are considered a significant tree for Black Cockatoo breeding, but no trees were of appropriate diameter.

3.6 Conservation Areas and Ecological Linkages

The development footprint and lease area is located within the Gnangara Moore River State Forest (No. 65), which is as an Environmentally Sensitive Area (ESA) (ID: 19528) and is a mapped Bush Forever (BF) site (Site No. 380). ESAs are mapped to prevent degradation of the environment in areas with important values such as threatened flora or significant wetlands.

Two National Parks occur within a 15 km radius of the site (Anders 2023):

- Neerabup National Park (9 km SW)
- Yanchep National Park (11.4 km NW)

Five nature reserves occur within a 15 km radius of the site (Anders 2023):

- Neerabup Nature Reserve (8.2 km SW)
- Neaves Road Nature Reserve (10.1 km SE)
- Lake Joondalup Nature Reserve (11.9 km SSW)
- Yeal Nature Reserve (12.2 km N)
- Jandabup Nature Reserve (12.3 km S)

The site contains one geomorphic multiple use wetland that is an extension of a suite wetlands associated with Lake Pinjar, situated west of the site. It is a low-lying basin that is subjected to seasonal inundation during winter and seasonal drying over summer. It is not managed under conservation. There are two other

wetlands to the east of the survey area which are categorised as damplands and are assigned a conservation category (Landgate 2023).

A regional ecological link traverses through the mid and southern sections of the site (Figure 12).

3.7 Heritage

No sites of Aboriginal or European heritage as listed on the DPLH Aboriginal Heritage Enquiry System (DPLH 2023; State Heritage Office 2023) were identified within the site or its surrounds.

4 Assessment Against Clearing Principles

An assessment of the proposed vegetation cleating against the ten native vegetation Clearing Principles contained in Schedule 5 of the EP Act is provided in sections 4.1 to 4.10.Based on the assessment of the environmental values of the clearing area, it is deemed that the development is unlikely to be at variance with 6 of the ten Clearing Principles. However, the development could be considered to potentially be at variance to Principles b, d, f, and h.

4.1 Comprises high level of biological diversity

Principle (a): Native vegetation should not be cleared if it comprises a high level of biological diversity.

As identified in Section 3.4.4, a total of 102 flora species, from 34 families and 77 genera, of which 88 were locally native species, and the remainder (14) were introduced species. There were 81 perennial species, and 21 annual species. The most common families on site were Asteraceae (12 species), Fabaceae (12 species) and Myrtaceae (12 species) (Anders 2023). Therefore, the development footprint's flora diversity is considered to be high.

No flora species listed as Threatened under the BC Act or under the EPBC Act were recorded, and no Priority flora listed under the BC Act were recorded as well.

As identified in Section 3.5.3, there is a total of two fauna habitats recorded within the development footprint, and a total of 15 vertebrate species were recorded during the field assessment, none of which are conservation listed species. Therefore, development footprint's fauna diversity is considered to be moderate.

Whilst there is a high level of diversity of flora within the development footprint, the presence of 339.4 ha of VT1 (Banksia woodland) and 21.4 ha of VT2 (Melaleuca woodland), within the wider lease area, clearing is considered unlikely to reduce the biological diversity in this area.

Therefore, the proposed clearing is not considered to be at variance with this principle

4.2 Potential impact to any significant habitat

Principle (b): Native vegetation should not be cleared if it comprises the whole or apart of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia.

Within the clearing area, a total of 15 native vertebrate fauna species were recorded (one mammal, fourteen birds). Of these fauna species, none are conservation listed. However, it is likely that Carnaby's Cockatoo frequent the site, as discussed in Section 3.5.4.

As identified in Section 3.5.7.1, the site condition for the Banksia woodland (4.9 ha) was scored as having (Ecoscape 2022):

- Moderate to high foraging value for Carnaby's Cockatoo (Figure 9)
- Negligible to low foraging value for Forest Red-tailed Black Cockatoo (Figure 10).

The site condition for the Melaleuca woodland (1.1 ha) within the site was scored as having (Ecoscape 2022):

- Negligible to low foraging value for Carnaby's Cockatoo (Figure 9)
- Low foraging value for Forest Red-tailed Black Cockatoo (Figure 10)

Therefore, the Black Cockatoo habitat assessment identified that the area provides significant foraging habitat for Carnaby's Cockatoo within the Banksia woodland but limited potential foraging habitat for Forest Red-tailed Black Cockatoo, whilst the Melaleuca woodland provided limited potential foraging habitat for both species.

The proposed clearing of up to 6 ha within the site will cause the removal of two Marri (*Corymbia calophylla*) trees that were recorded within the development footprint as being potential nesting trees (Diameter Breast

Height (DBH) > 500 mm); however, there were no suitable hollows present. Jarrah (*Eucalyptus marginata*) was also present but were not of suitable due to a DBH of less than 500mm. Whilst the scattered Marri trees within the northern Melaleuca woodland provide opportunities for roosting behaviour, there is limited roosting habitat within the development footprint. (Ecoscape 2022)

The area is likely utilised by Western Brush-Wallaby as the correct habitat type is reflected in the Melaleuca Woodland, however the small extent (less than 20%) indicates that the area is not deemed critical for the Western Brush Wallaby. Quenda diggings were noted on site, however the site is not restrictive and Quenda may be visitors to the site, rather than residents.

No local fauna species were recorded within the development footprint that are considered dependant on the habitat, primarily due to the small extent of the site (6 ha) and the adjacent availability of habitat and the presence of 339.4 ha of VT1 (Banksia woodland) and 21.4 ha of VT2 (Melaleuca woodland) within the wider lease area.

Give the extent of the surrounding habitat, individuals will be able to move into adjacent habitat if required to avoid disturbance from clearing works (Ecoscape, 2022).

Whilst, the proposed clearing provides negligible to low foraging value for Forest Red-tailed Black Cockatoo, the 4.9 ha of Banksia Woodlands provides significant foraging habitat for the Carnaby's Cockatoo.

As a result the proponent has committed to providing an offset package to offset the loss of 4.9 ha of moderate to high quality foraging habitat. The proponent is currently investigating various options for the offset package. The final package will be subject to further consultation with DWER and DBCA but is likely to consist of purchasing a site containing Banksia Woodland PEC and ceding the land to the conservation estate, as well implementation of appropriate management measures that will ensure the long term conservation and management of the offset is achieved.

It is proposed that the environmental offset is imposed as a condition of a Native Vegetation Clearing Permit with DWER as the regulator. Further discussion of the proposed environmental offsets is provided in Section 5.

Given the above and the residual impact to Carnaby's Cockatoo foraging habitat, the proposed clearing may be at variance to this Principle.

4.3 Potential Impacts to any rare flora

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

No flora species listed as Threatened or Priority under the BC Act under the BC Act were recorded on Site, the proposed clearing is not considered to be at variance with this Principle.

4.4 Presence of any threatened ecological communities

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

As discussed in Section 3.4.9, none of the defined vegetation types and FCTs are representative of any State listed TECs. Within the development footprint, 4.9 ha of vegetation VT1 – BaXpEp is considered to be part of the Banksia Woodland of the Swan Coastal Plain ecological community, which is a State Listed PEC (Priority 3) and Federal listed TEC.

However, given Schedule 5 of the EP Act definition of TECs includes TECs as defined in the Commonwealth EPBC Act, the proposed clearing is considered to be at variance with this Principle.

It is worthwhile to note that based on the requirements of DWERs (2021) *Environmental offsets metric: Quantifying environmental* offsets in Western Australia, the proponent proposes to offset the loss of Banksia

Woodlands of the Swan Coastal Plain ecological community. The proponent is currently investigating various options for the offset package. The final package will be subject to further consultation with DWER and DBCA but is likely to consist of purchasing a site containing Banksia Woodlands of the Swan Coastal Plain ecological community and ceding the land to the conservation estate, as well implementation of appropriate management measures that will ensure the long term conservation and management of the offset is achieved.

It is proposed that the environmental offset is imposed as a condition of a Native Vegetation Clearing Permit with DWER as the regulator. Further discussion of the proposed environmental offsets is provided in Section 5.

4.5 Significance of remnant native vegetation

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

Table 3-5 and Table 3-6 represents the extent statistics associated with vegetation within the Bassendean 949 vegetation system and the Bassendean Complex – North vegetation complex. As noted in these tables, the development footprint contains:

- 0.009% of the current extent of the Bassendean 949 Complex within the Swan Coastal plain, which has 69,992 ha (60.80%) remaining
- 0.011% of the current extent of the Bassendean Complex – North within the Swan Coastal Plain, which has 56,659.67 ha (71.67%) remaining.

Consistent with the National Objectives and Targets for Biodiversity Conservation (Commonwealth of Australia 2001), the EPA has an objective to retain 30% of the pre-clearing extent of each ecological community; however, the EPA has a modified objective to retain at least 10% of the preclearing extent of each ecological community within defined constrained areas including the Perth Metropolitan Region (EPA 2015). Vegetation complexes are used by the EPA as the basis for regional representation of biodiversity (EPA 2015).

Of the original extent of Bassendean 949 and Bassendean Complex – North, the proposed clearing, both are above 10% and 30% of their pre-European extent.

Given the size of the clearing represent 0.009% of Bassendean 949 and 0.011% of Bassendean Complex – North, the proposed clearing will/not reduce the extent of these vegetation communities below 30% of their pre-European extent. The proposed clearing is not considered to be at variance with this principle.

4.6 Potential impact on watercourses and/or wetlands

Principle (f): Native vegetation should not be cleared if it is growing in, or in association with, and environment associated with a watercourse or a wetland

As discussed in Section 3.3.3 and depicted in Figure 4, the DBCA geomorphic wetland dataset for the Swan Coastal Plain maps one multiple use wetland (UFI 15,005) within the northern portion of the development footprint, with most of the wetland occurring offsite (99%) and extending west and north east of the development footprint. This wetland is a low-lying basin that is subjected to seasonal inundation during winter and seasonal drying over summer (Anders 2023).

The extent of the wetland generally aligns with the northern patch of wetland vegetation (VT2 – MpXpDb) mapped by Anders (2023). Additionally, another of area of VT2 – MpXpDb was mapped within the southern portion of the development footprint. Anders (2023) mapped both of these areas as being in Very Good condition.

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

4.7 Potential to cause appreciable land degradation

Principle (g): Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation

Following clearing, soils on site will be stabilised through construction of hardstand, building, carparks, etc.

The layout of and orientation has been designed to make use of the existing topography within the development footprint and minimise the amount of earthwork required. Furthermore, potential impacts to soils will be minimised and managed during construction in accordance with an approved Construction Environmental Management Plan which will include the following measures:

- Clearing boundaries will be clearly demarcated on the ground to avoid unauthorised soil disturbance
- Stabilisation of batters during construction to prevent sedimentation in the area to be retained
- Dust management during construction
- Management of surface hydrology to prevent run-off into surrounding areas.

The above actions will prevent soil movement and appreciable land degradation, the proposed clearing is not considered to be at variance with this Principle.

4.8 Potential impact on adjacent or nearby conservation areas

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 areas

The development footprint is within Bush Forever site 380 and State Forest No. 65.

Given the location, the proposed clearing is considered to be at variance with this Principle.

4.9 Potential deterioration in the quality of surface or underground water

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

The development footprint contains no surface water features. The soils within the development footprint are free draining Bassendean sand therefore, it is likely that surface water will rapidly infiltrate the soil.

The depth to groundwater ranges from approximately <1 to 5m and due to the site being located within the Gnangara Underground Water Pollution Control Area, the current lease agreement with DBCA sets out stringent requirements that will ensure the protection of the groundwater by ensuring:

- wastewater from any new ablution blocks are discharged outside the Gnangara Underground Water Pollution Control Area
- rubbish is stored so there are no leachates entering the ground
- tyres and batteries are stored under cover on an impermeable surface
- lead shot is collected and disposed of outside the Perth Drinking Water Supply Area
- it complies with SSAA WAs Lead Management Plan
- no pesticides or fertilisers are used at the complex unless approved by DBCA.

Given the above, the proposed clearing is not considered to be at variance with this principle.

4.10 Potential for clearing to cause or exacerbate the incidence of flooding

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

As noted in Section 3.2, the soils within the development footprint predominantly consist of Bassendean Ja phase (78%) which has a 0% moderate to high flood risk; however, it is noted the Bassendean DL phase (22%) has a 100% moderate to high flood risk (DPIRD 2023).

Potential impacts on surface water and groundwater quantity will be mitigated through implementation of a Construction Environmental Management Plan to ensure the incidence of flooding is not caused by vegetation clearing and construction of the facility.

Given the above, clearing of vegetation is not likely to cause or exacerbate the incidence or intensity of flooding, the proposed clearing is not considered to be at variance with this principle.

5 Proposed Environmental Offset

The proponent will consider acquiring land containing Banksia Woodlands PEC and Carnaby's Cockatoo foraging habitat in consultation with the appropriate authorities and thereby, provide protection in perpetuity by ceding the land to the relevant management agency, such as DBCA. Furthermore, any proposed land acquisition will include implementation of appropriate management measures that will ensure the long-term conservation and management of the offset is achieved.

Outside of the development footprint and within the wider lease area, there is:

- 334.5Given the above and the significant environmental values present within the lease area, the proponent is also investigating the potential to include within the offset package management measures additional to what is currently being undertaken for lease area. That is, to ensure the long-term conservation and management of over 300 ha of Banksia Woodlands PEC and Carnaby's Cockatoo habitat within the lease area.

The management measures may include undertaking weed control on a half yearly or quarterly basis, additional fencing to prevent uncontrolled access, feral animal control, and educational signage and/or education material for distribution to those who use the complex regarding appropriate environmental management use of the area.

It is worthwhile to note that the potential to include revegetation within the offset package was also considered and investigated; however, given the considerable resources and funding that would be required over a long time frame, this option was considered financially unviable as SSAA WA is a community based organisation with limited funding available.

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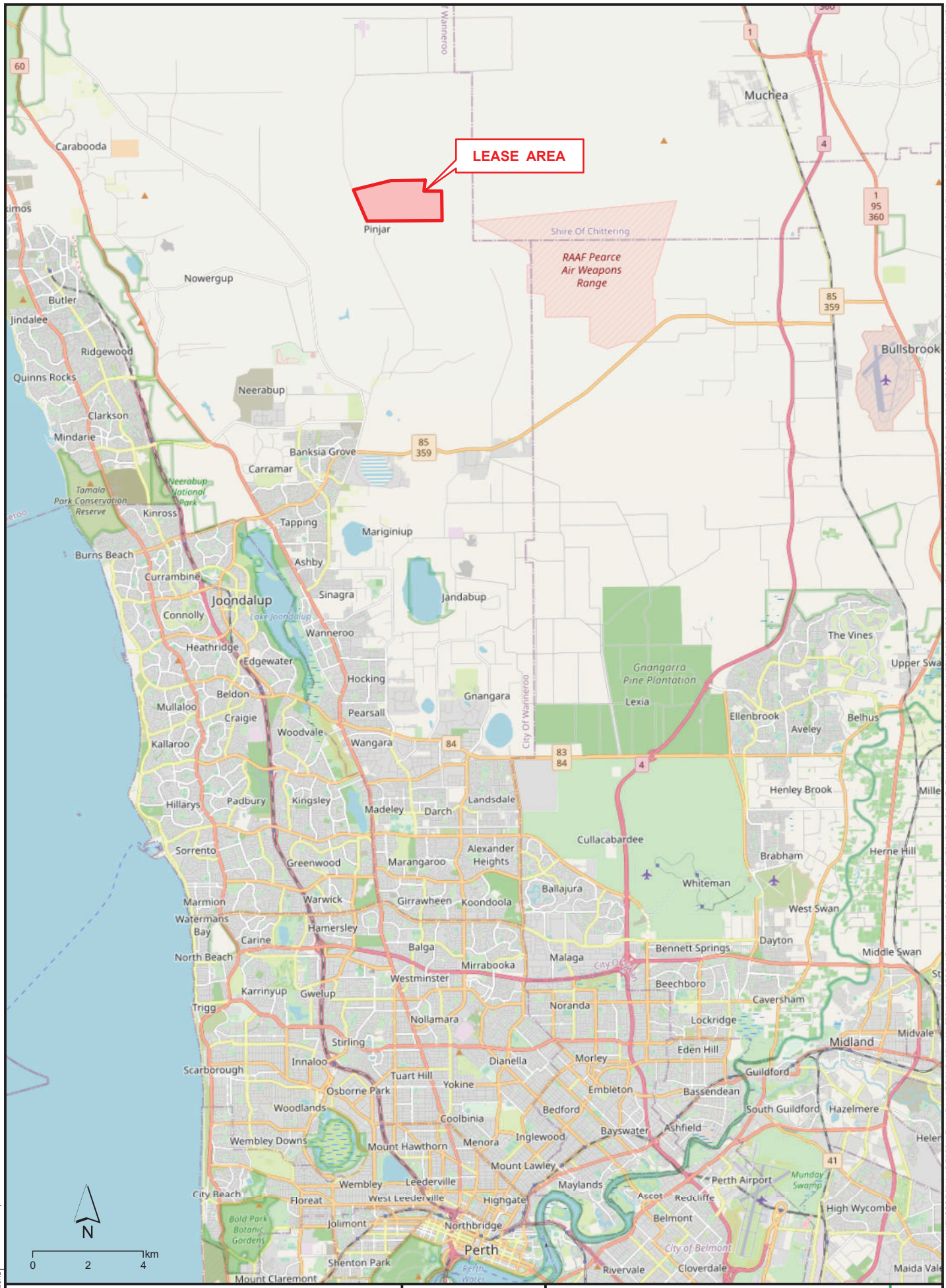
Figures



COTERRA ENVIRONMENT

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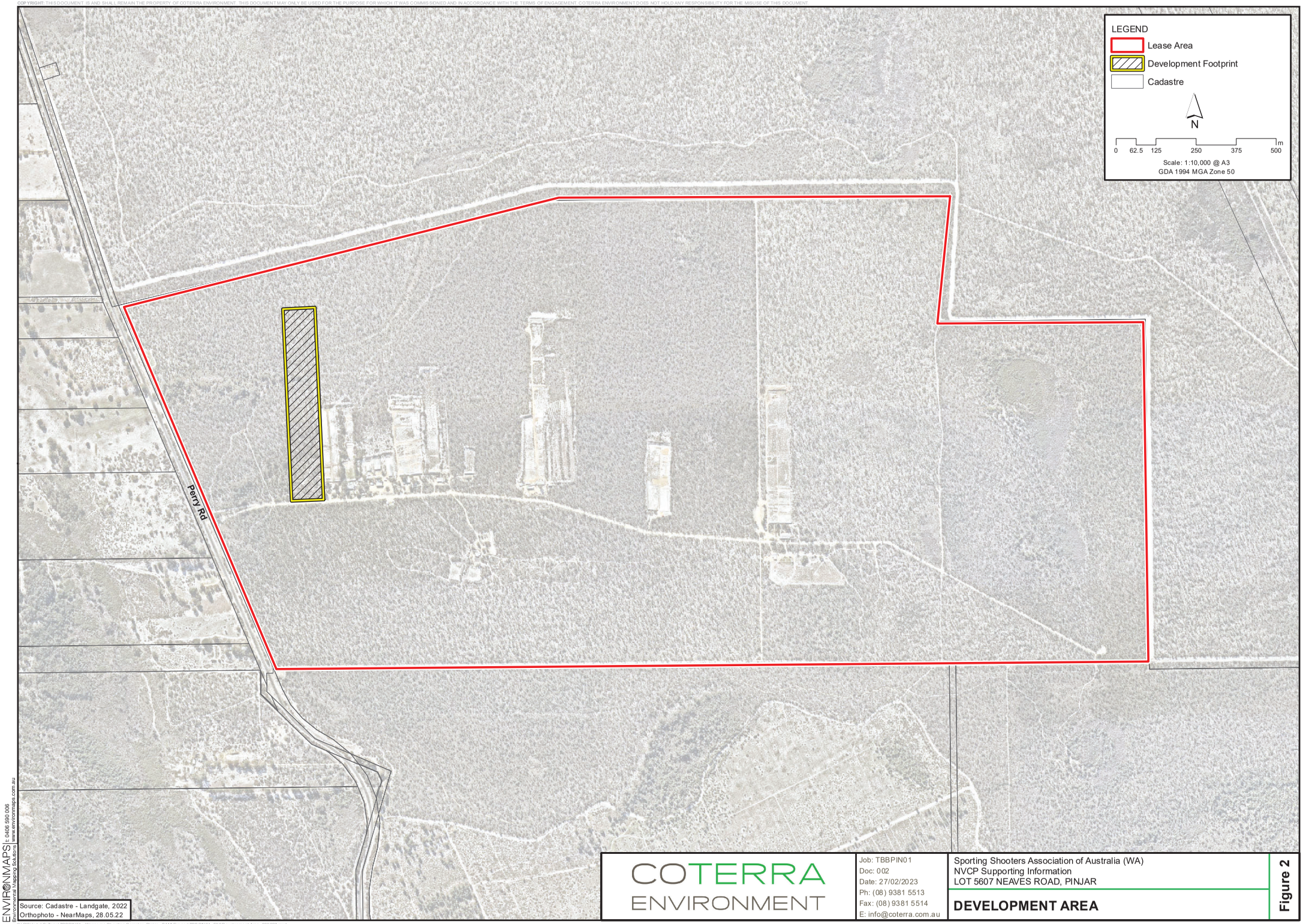
SITE LOCATION

Figure 1

ENVIRONMAPS Environmental Mapping Solutions t: 0406 590 006 www.environmaps.com.au

C:\GIS\Jobs\CoTerra\TBBPIN01 - Wanneroo Shooting Complex, Pinjar - SAM\Figures\TBBPIN01_F01 Site Location_230227.mxd



Source: Cadastre - Landgate, 2022
Orthophoto - NearMaps, 28.05.22

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C:\GIS\Jobs\CoTerra\TBBPIN01 - Wanneroo Shooting Complex, Pinjar - SAM\Figures\TBBPIN01_F02.Development Area_230227.mxd

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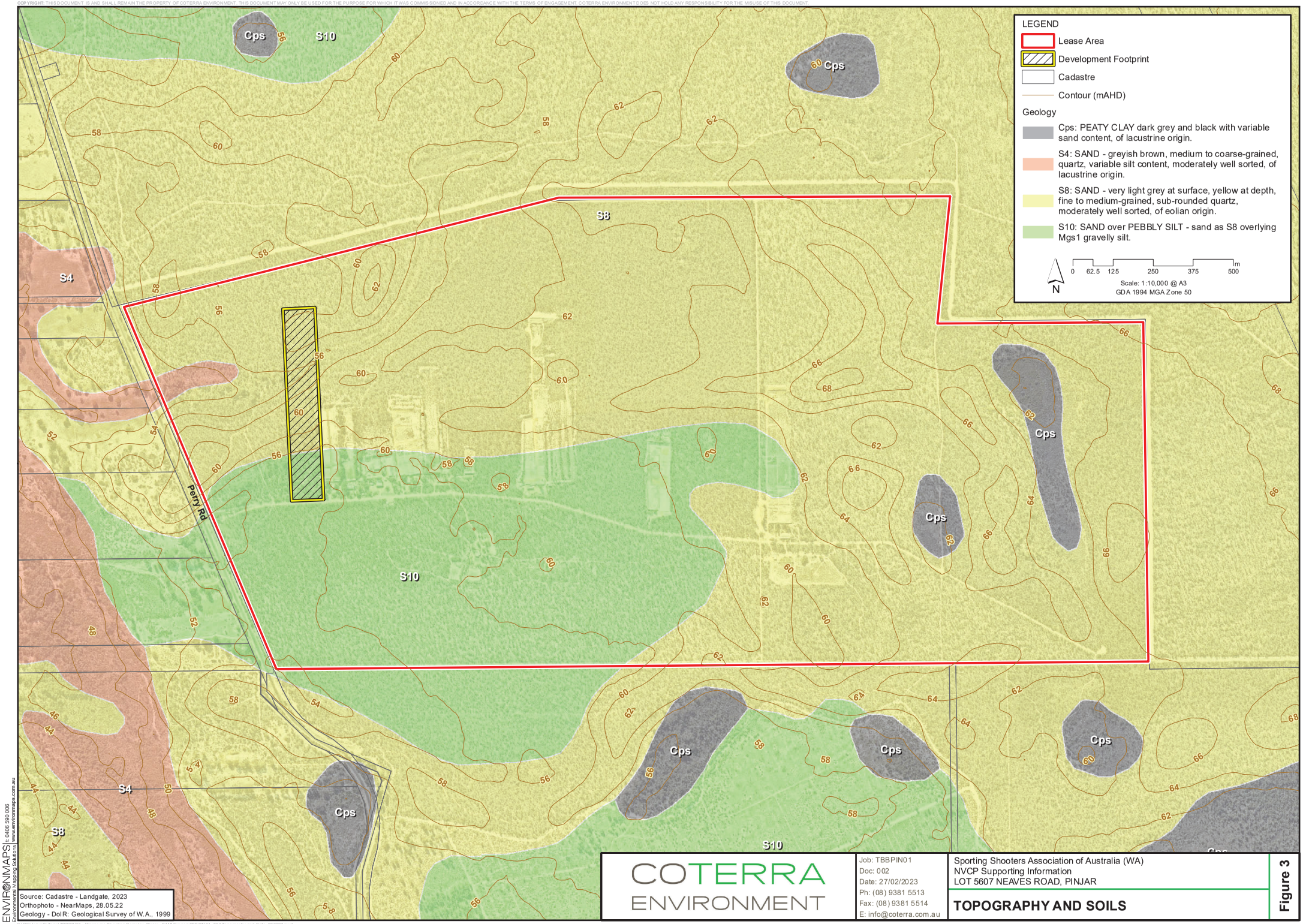
LOT 5607 NEAVES ROAD, PINJAR

DEVELOPMENT AREA

Figure 2



Source: Cadastre - Landgate, 2023
Orthophoto - NearMaps, 28.05.22
Geology - DoIR: Geological Survey of W.A., 1999

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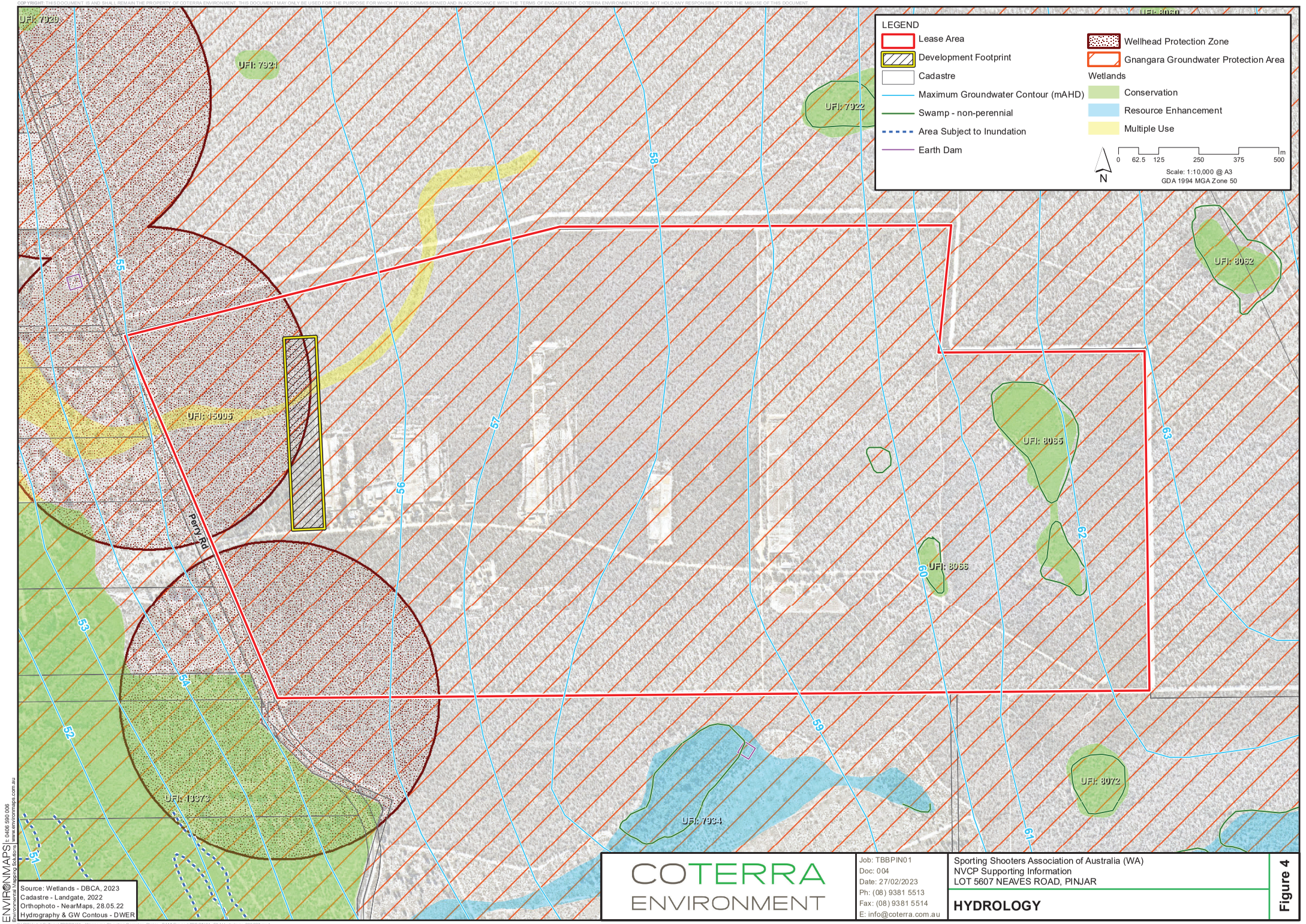
TOPOGRAPHY AND SOILS

Figure 3

C:\GIS\Jobs\CoTerra\TBBPIN01 - Wanneroo Shooting Complex, Pinjar - SAM\Figures\TBBPIN01_F03 Topography and Soils_230227.mxd



Source: Wetlands - DBCA, 2023
Cadastre - Landgate, 2022
Orthophoto - NearMaps, 28.05.22
Hydrography & GW Contous - DWER

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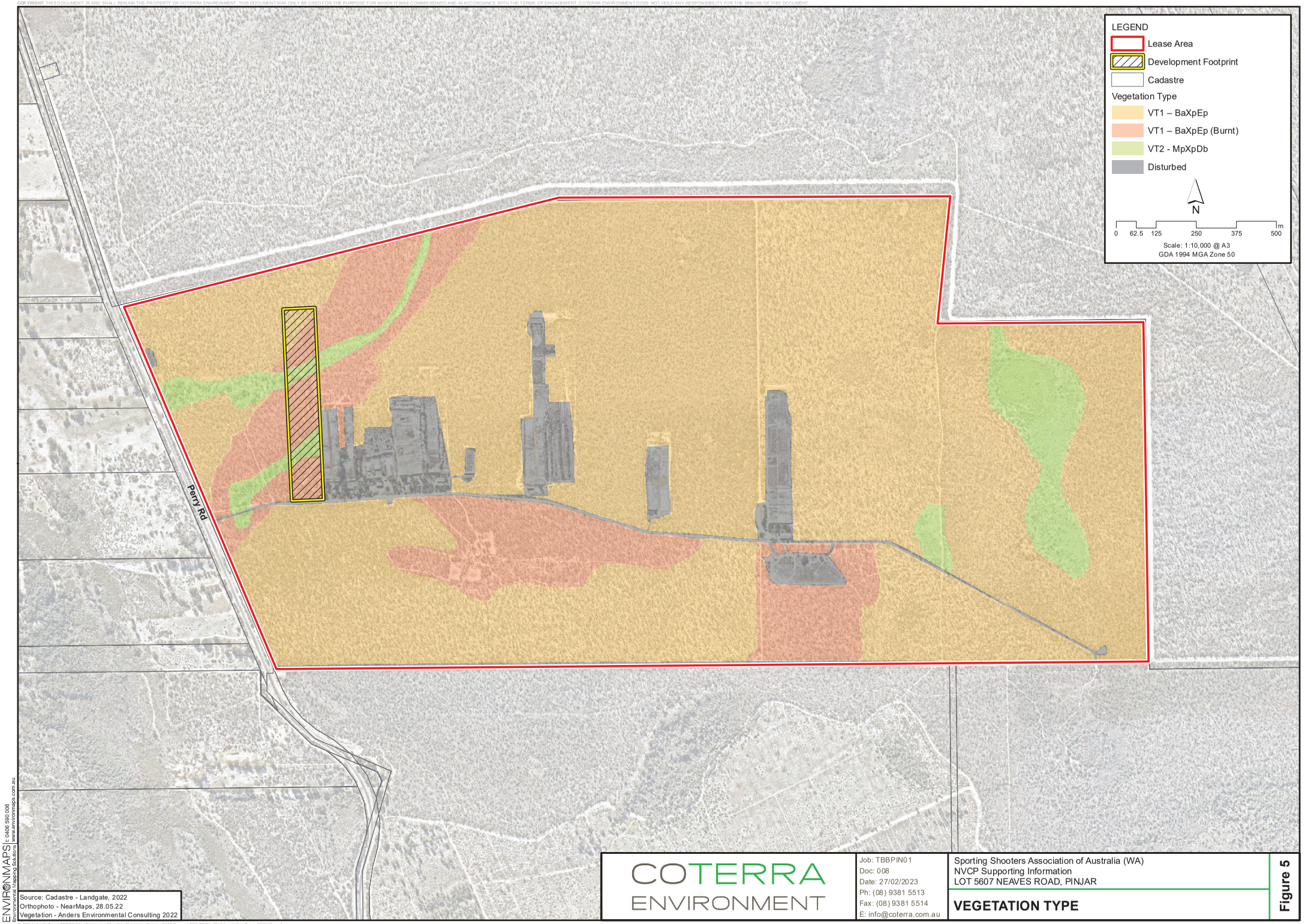
LOT 5607 NEAVES ROAD, PINJAR

HYDROLOGY

Figure 4



Source: Cadastre - Landgate, 2022
Orthophoto - NearMaps, 28.05.22
Vegetation - Anders Environmental Consulting 2022

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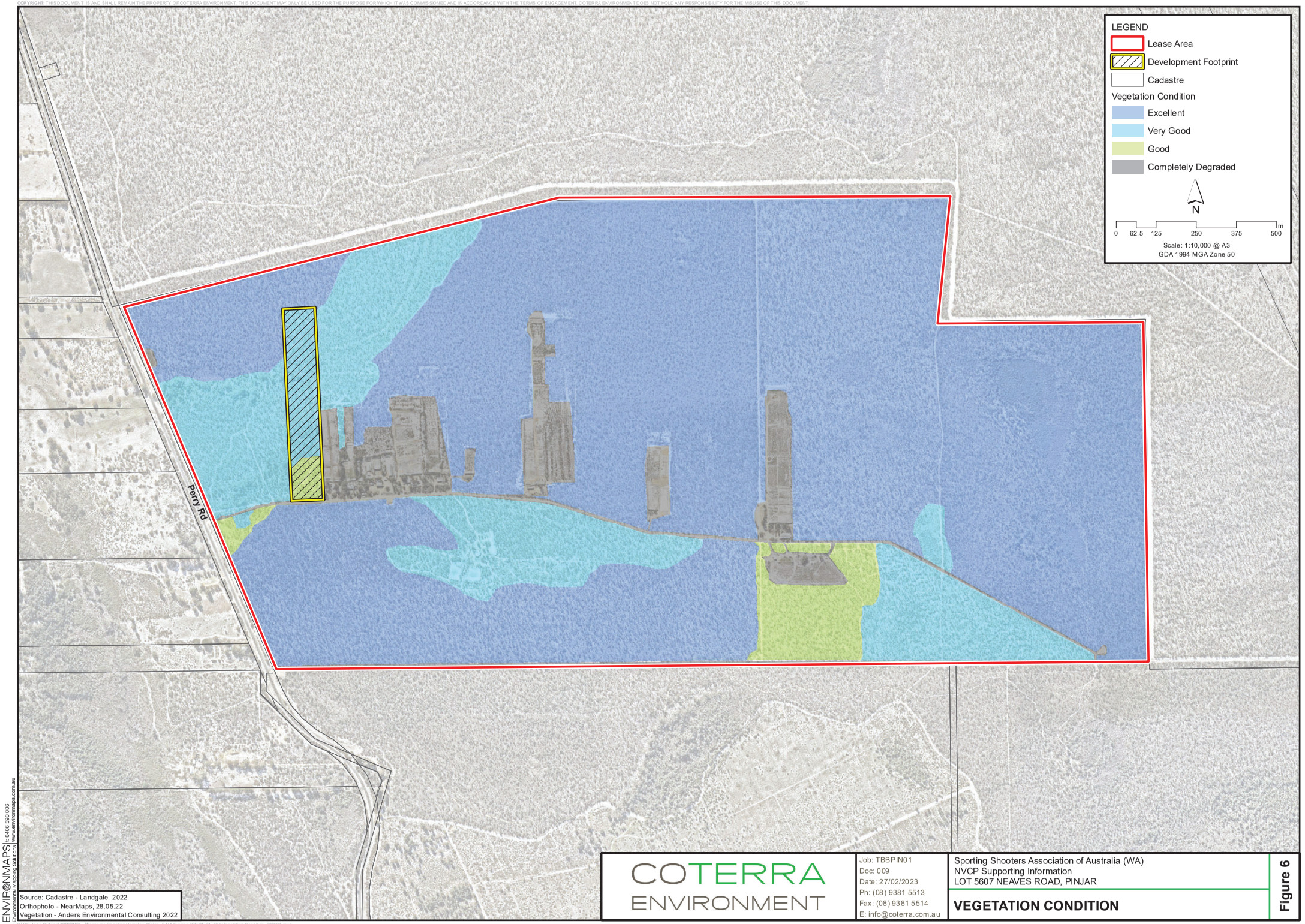
LOT 5607 NEAVES ROAD, PINJAR

VEGETATION TYPE

Figure 5



Source: Cadastre - Landgate, 2022
Orthophoto - NearMaps, 28.05.22
Vegetation - Anders Environmental Consulting 2022

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Environmental Mapping Solutions | www.environmaps.com.au

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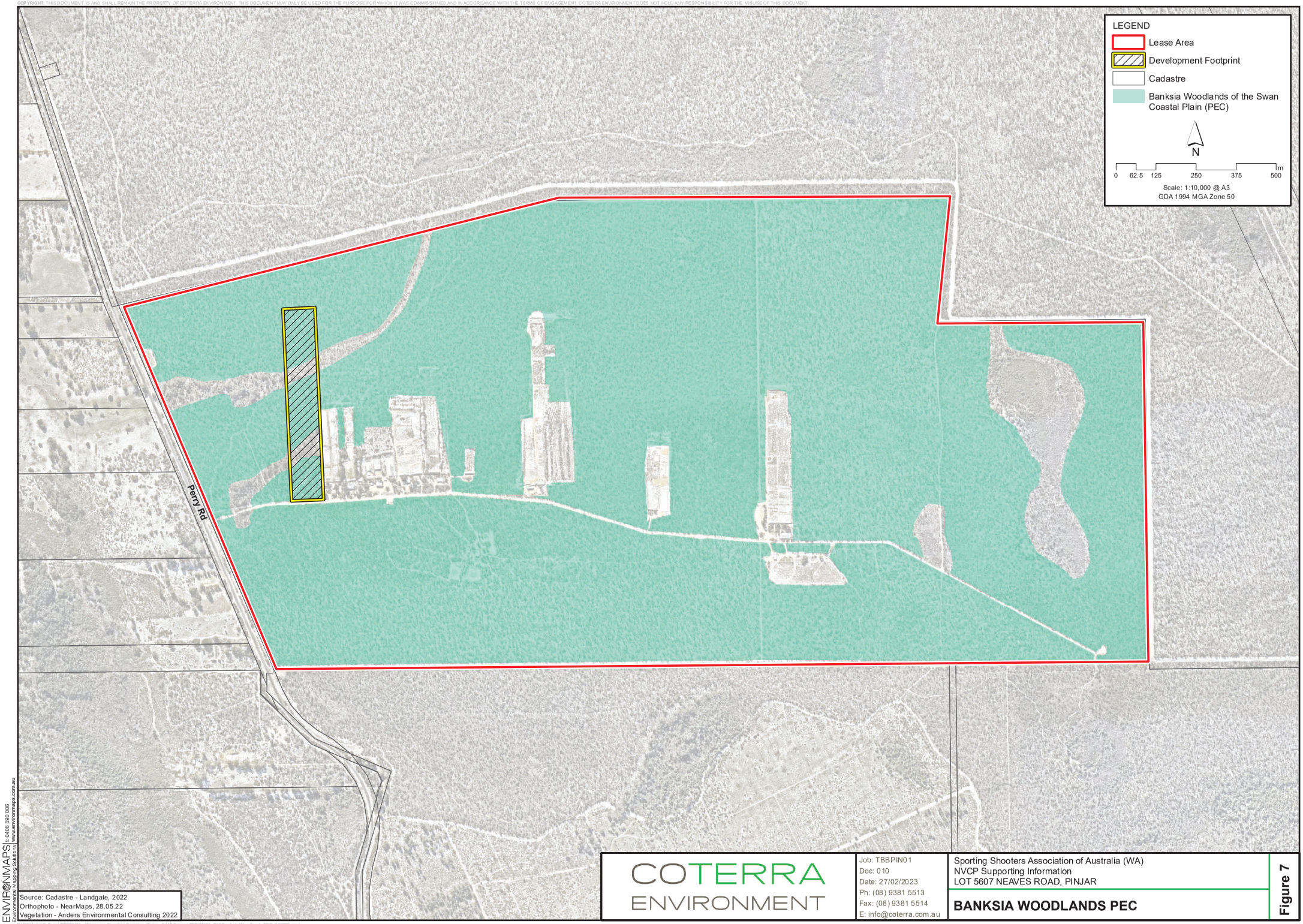
LOT 5607 NEAVES ROAD, PINJAR

VEGETATION CONDITION

Figure 6



Source: Cadastre - Landgate, 2022
Orthophoto - NearMaps, 28.05.22
Vegetation - Anders Environmental Consulting 2022

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Environmental Mapping Solutions | www.environmaps.com.au

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NVCP Supporting Information
LOT 5607 NEAVES ROAD, PINJAR

BANKSIA WOODLANDS PEC

Figure 7

Source: Ortho - Nearmaps 28.05.22
Fauna Habitat - Ecoscape (2022)

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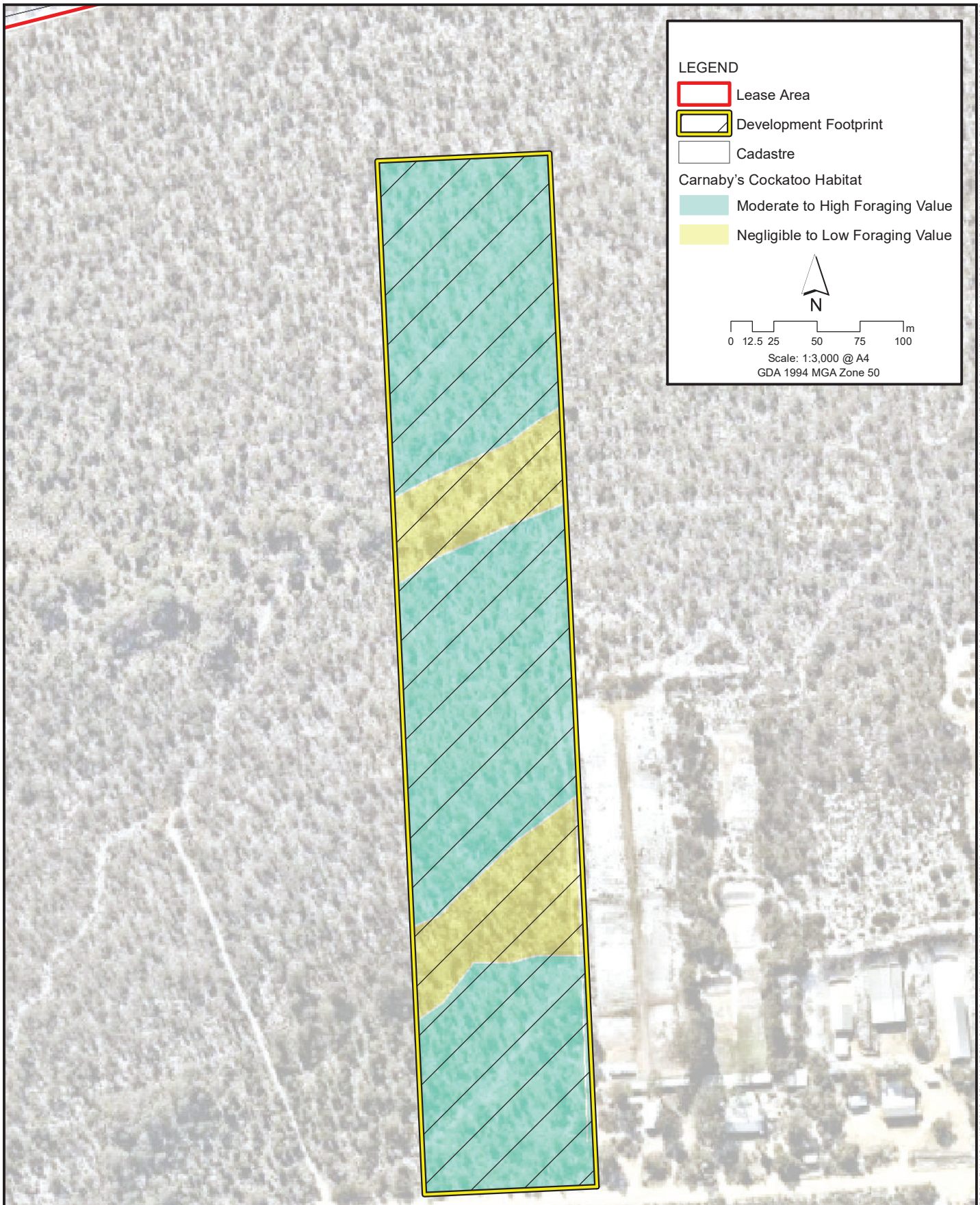
LOT 5607 NEAVES ROAD, PINJAR

FAUNA HABITAT

Figure 8



Source: Ortho - Nearmaps 28.05.22
Fauna Habitat - Ecoscape (2022)

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LOT 5607 NEAVES ROAD, PINJAR

CARNABY'S COCKATOO HABITAT

Figure 10

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C:\GIS\Jobs\CoTerra\TBBPIN01 - Wanneroo Shooting Complex, Pinjar - SAM\Figures\TBBPIN01_F06 Carnaby's Cockatoo Habitat_230227.mxd

Source: Ortho - Nearmaps 28.05.22
Fauna Habitat - Ecoscape (2022)

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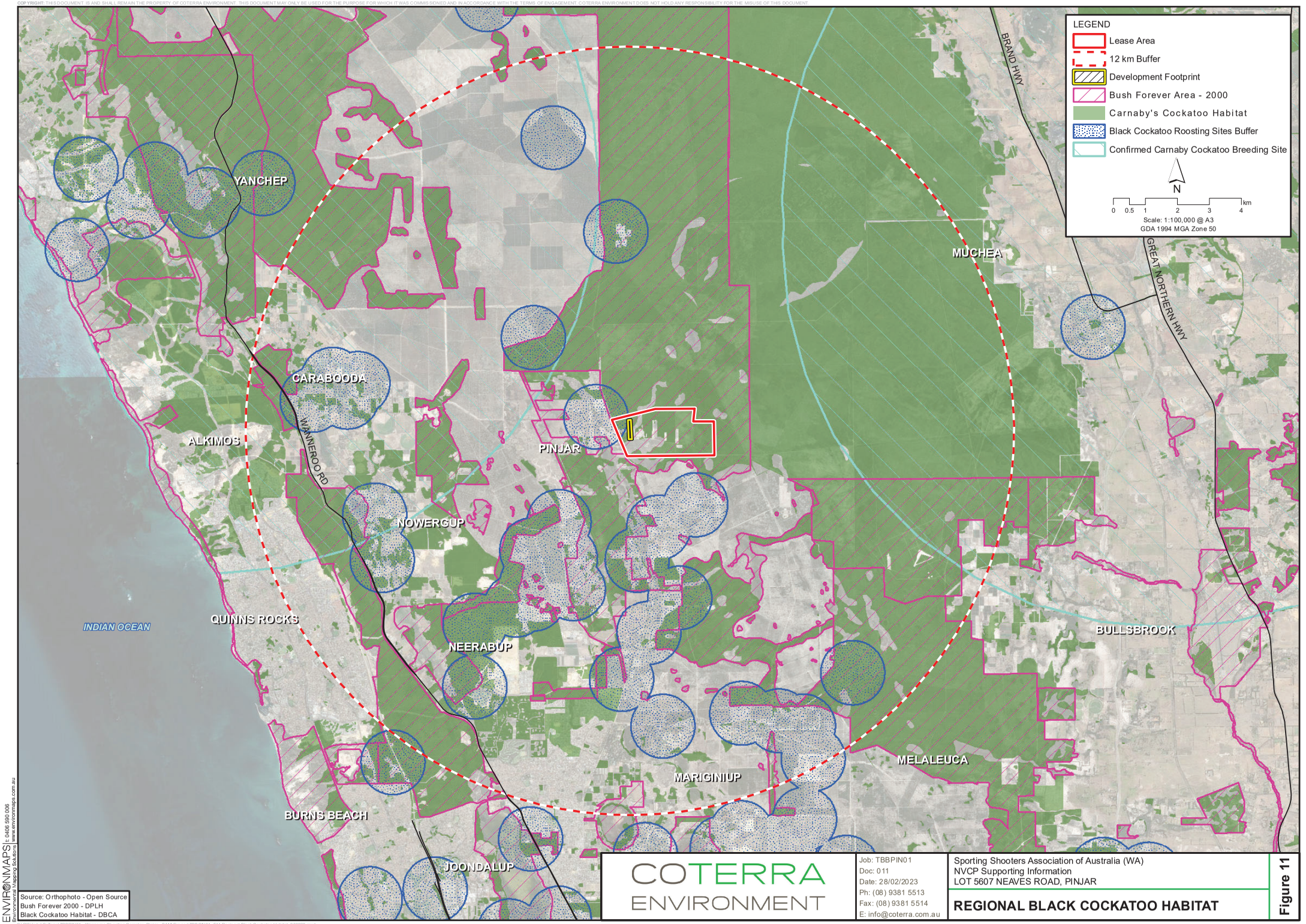
LOT 5607 NEAVES ROAD, PINJAR

FOREST RED-TAILED BLACK COCKATOO HABITAT

Figure 11

C:\GIS\Jobs\CoTerra\TBBPIN01 - Wanneroo Shooting Complex, Pinjar - SAM\Figures\TBBPIN01_F07 Forest Red-tailed Black Cockatoo Habitat_230227.mxd



Source: Orthophoto - Open Source
Bush Forever 2000 - DPLH
Black Cockatoo Habitat - DBCA

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Environmental Mapping Solutions | www.environmaps.com.au

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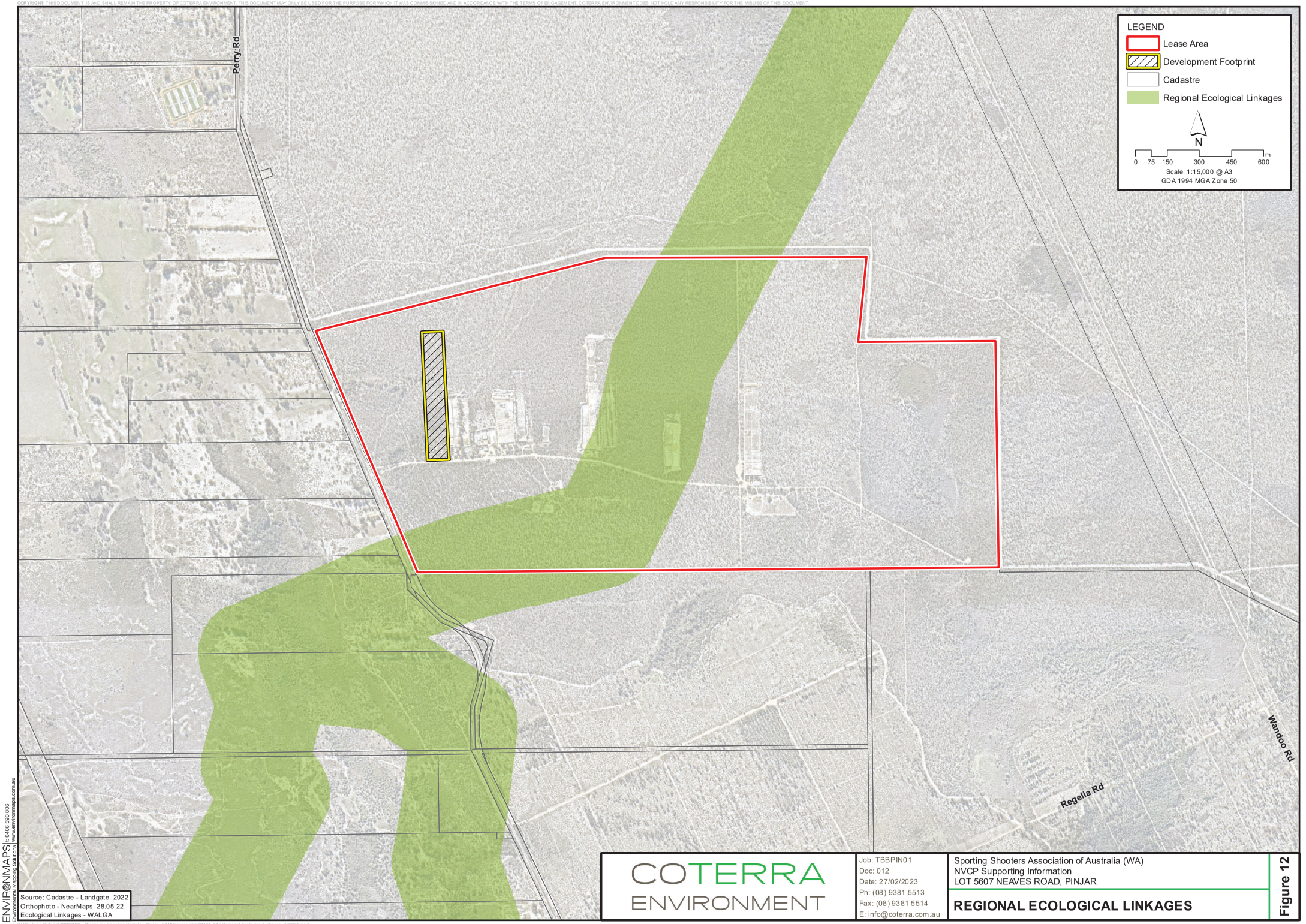
LOT 5607 NEAVES ROAD, PINJAR

REGIONAL BLACK COCKATOO HABITAT

Figure 11



Source: Cadastre - Landgate, 2022
Orthophoto - NearMaps, 28.05.22
Ecological Linkages - WALGA

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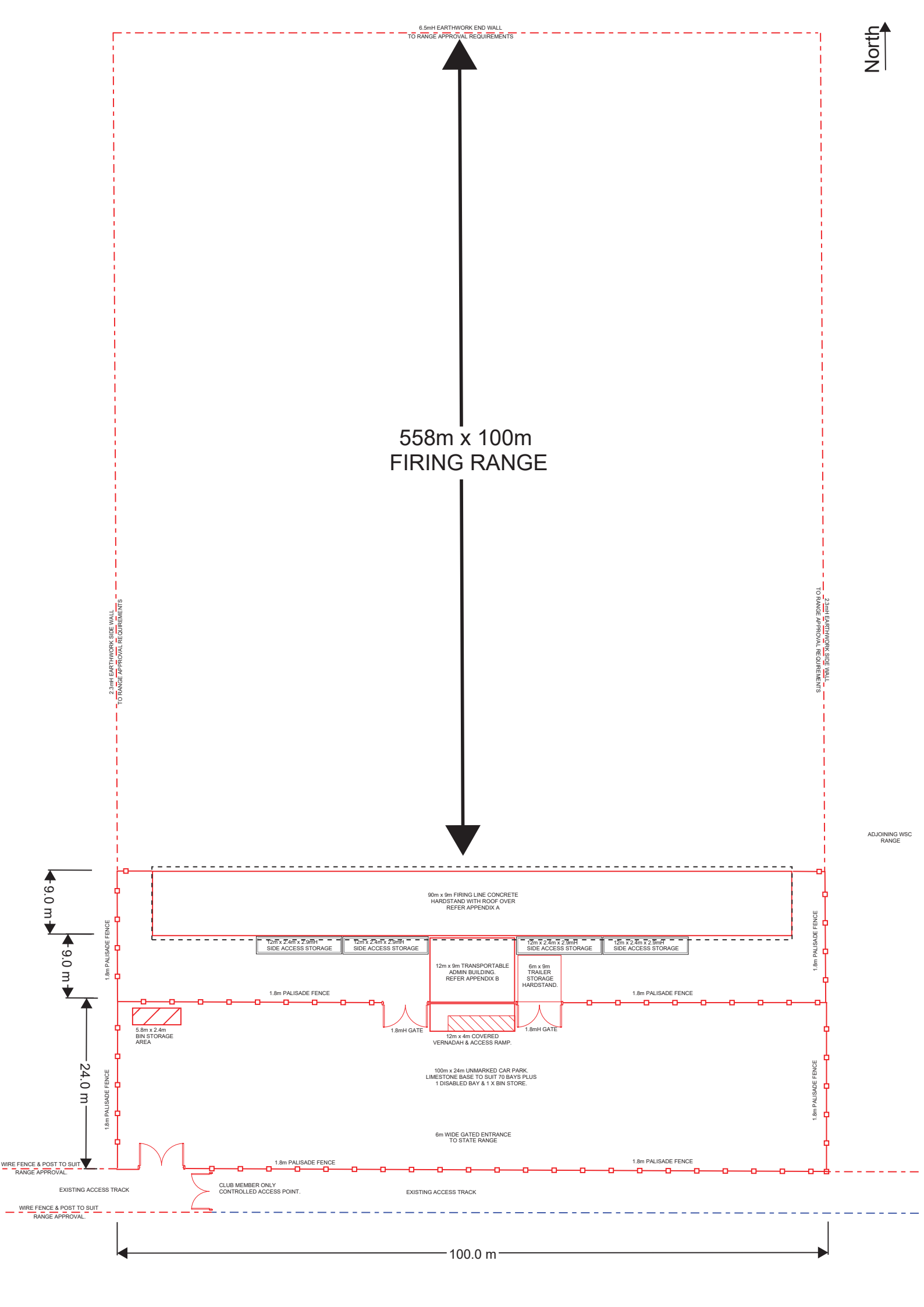
LOT 5607 NEAVES ROAD, PINJAR

REGIONAL ECOLOGICAL LINKAGES

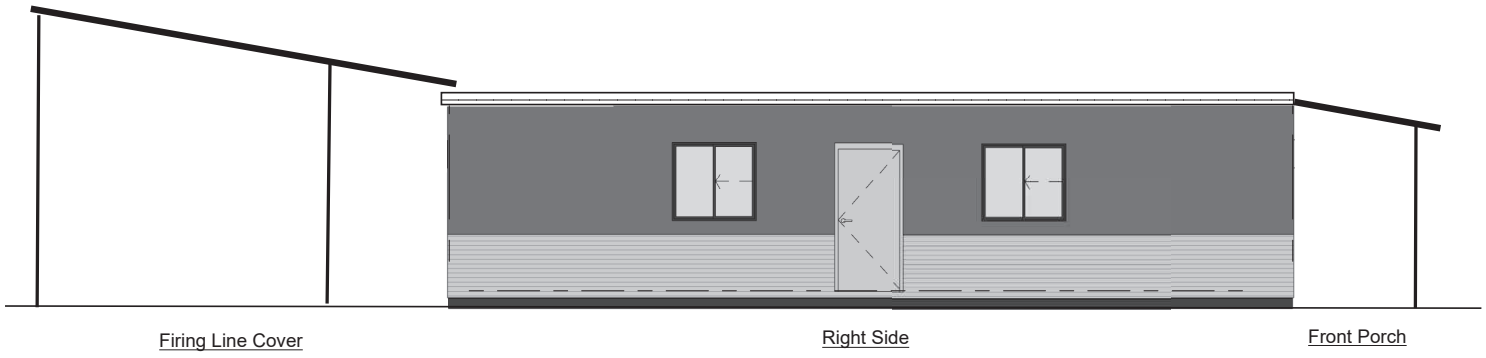
Figure 12

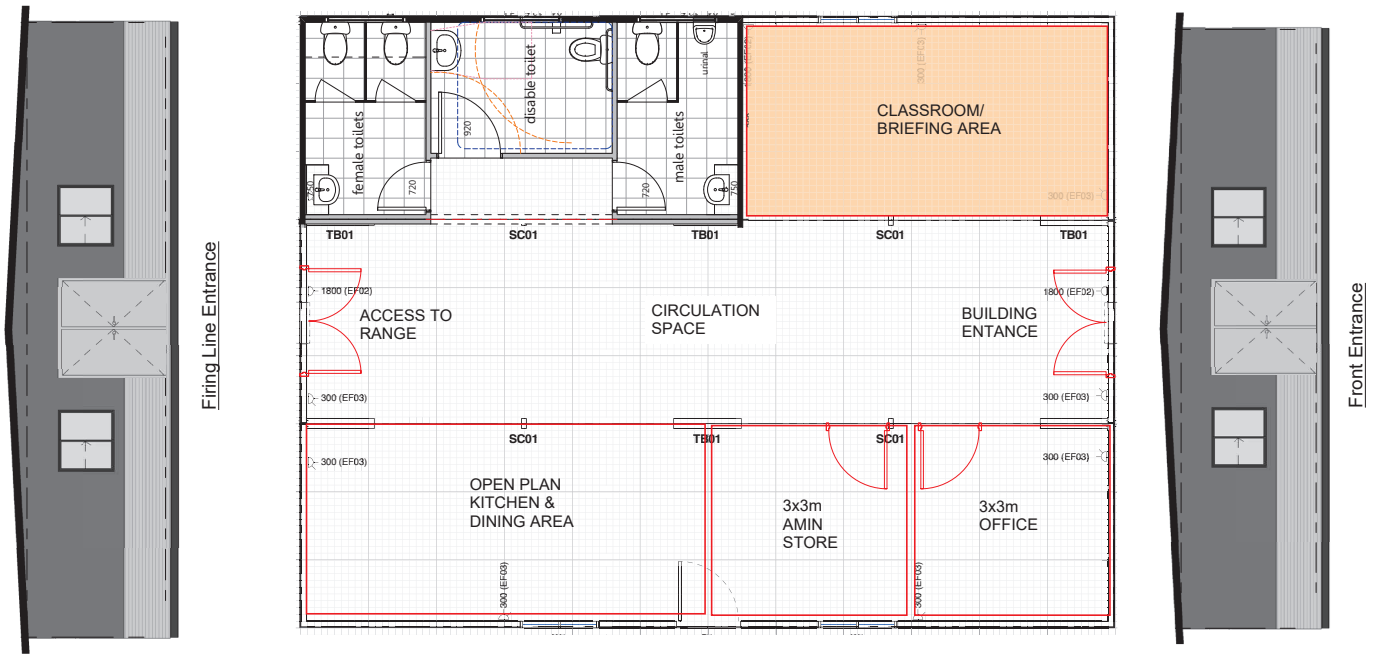
Appendix 1 Development Plan

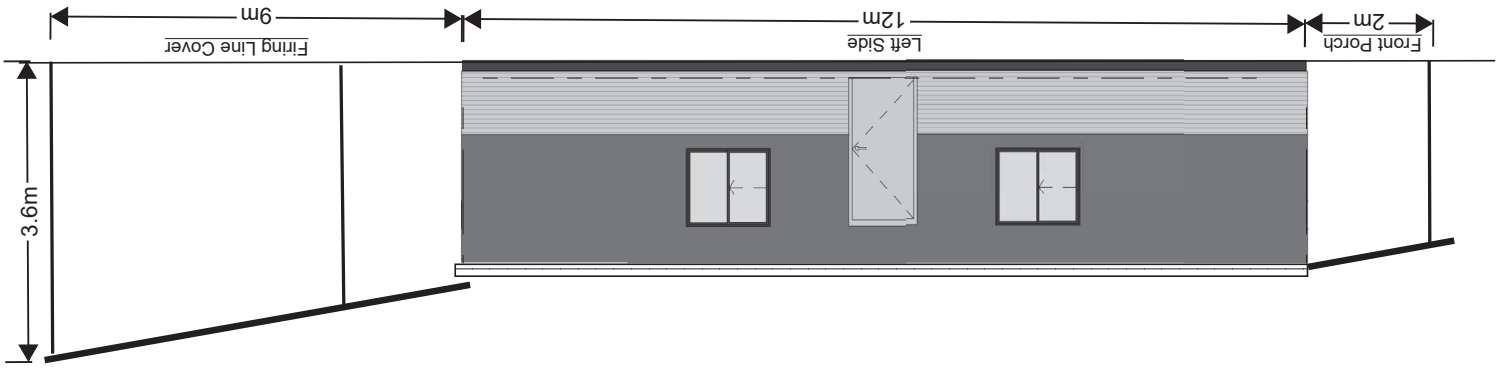

6.5mH EARTHWORK END WALL
TO RANGE APPROVAL REQUIREMENTS
North
558m x 100m
FIRING RANGE
2.3mH EARTHWORK SIDE WALL
TO RANGE APPROVAL REQUIREMENTS
2.3mH EARTHWORK SIDE WALL
TO RANGE APPROVAL REQUIREMENTS
ADJOINING WSC
RANGE
9.0 m
9.0 m
24.0 m
1.8m PALISADE FENCE
1.8m PALISADE FENCE
90m x 9m FIRING LINE CONCRETE
HARDSTAND WITH ROOF OVER
REFER APPENDIX A
12m x 2.4m x 2.9mH
SIDE ACCESS STORAGE
12m x 2.4m x 2.9mH
SIDE ACCESS STORAGE
12m x 2.4m x 2.9mH
SIDE ACCESS STORAGE
12m x 2.4m x 2.9mH
SIDE ACCESS STORAGE
12m x 9m TRANSPORTABLE
ADMIN BUILDING.
REFER APPENDIX B
6m x 9m
TRAILER
STORAGE
HARDSTAND.
1.8m PALISADE FENCE
1.8m PALISADE FENCE
5.8m x 2.4m
BIN STORAGE
AREA
1.8mH GATE
12m x 4m COVERED
VERNADAH & ACCESS RAMP.
1.8mH GATE
100m x 24m UNMARKED CAR PARK.
LIMESTONE BASE TO SUIT 70 BAYS PLUS
1 DISABLED BAY & 1 X BIN STORE.
1.8m PALISADE FENCE
1.8m PALISADE FENCE
6m WIDE GATED ENTRANCE
TO STATE RANGE
WIRE FENCE & POST TO SUIT
RANGE APPROVAL.
1.8m PALISADE FENCE
1.8m PALISADE FENCE
EXISTING ACCESS TRACK
CLUB MEMBER ONLY
CONTROLLED ACCESS POINT.
EXISTING ACCESS TRACK
WIRE FENCE & POST TO SUIT
RANGE APPROVAL.
100.0 m

SSAA(WA) STATE RANGE
ADMINSTRATION BUILDING

BUILDING DIMENSIONS:
9m Wide x 12m Deep x 3.05m High

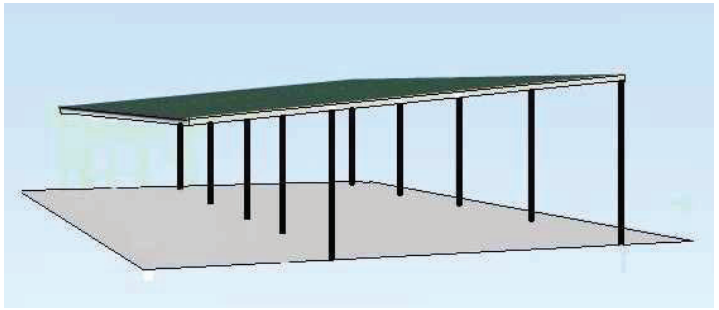




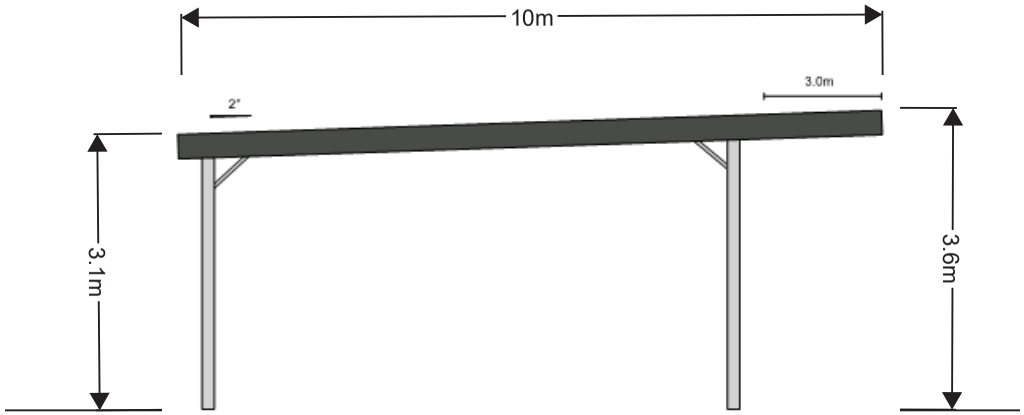


SSAA(WA) STATE RANGE
FIRING LINE - CANTILEVER PLATFORM COVER

DIMENSIONS:
90m Wide x 10m Deep.
Height to south side - 3.1m
Height to north side - 3.6m

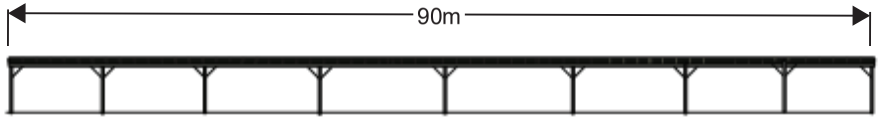


Sample Perspective



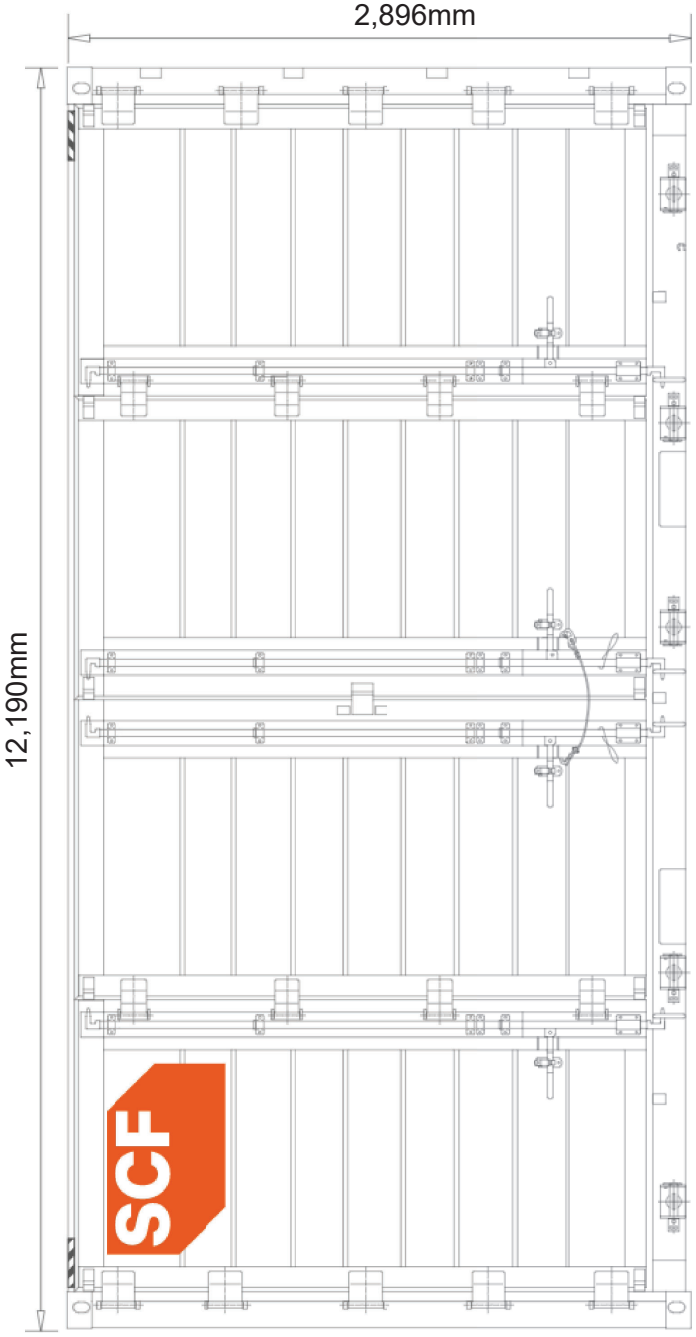
Side View

Sample Photo of Similar Firing Line Structure
View to area under structure

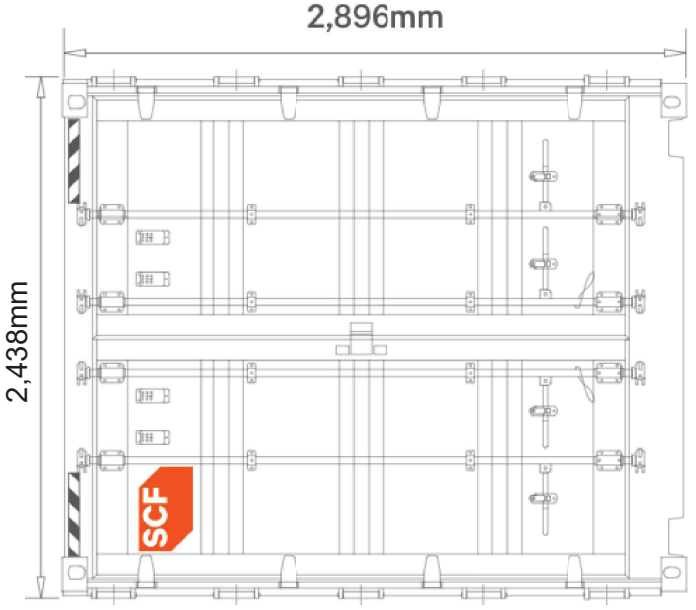


Front View

Sample Photo of Similar Firing Line Structure



SIDE ELEVATION



END ELEVATION