



# **Two Rocks Beach Access Road**

***Native Vegetation Clearing Permit Application  
Supporting Documentation***

**January 2022**

## 1. Introduction

The City of Wanneroo (the “City”) is proposing to undertake the clearing of vegetation within the boundaries of Lot 8613 on Deposited Plan 213232; Lot 8989 on Deposited Plan 213232; and Lot 15452 on Deposited Plan 40341, in Two Rocks. The proposed clearing will initially facilitate the completion of an Unexploded Ordnance (UXO) remediation search; followed by a geotechnical survey to enable final design completion; and finally to facilitate the construction of a beach access and car park. Land ownership and zoning within the project area is detailed in Table 1 below.

**Table 1: Land ownership and zoning within project area**

Lot Number	Land Owner	MRS Zoning	Reserve Purpose
Lot 8613 on Deposited Plan 213232	Crown land – COW Managed	Parks and Recreation	Public Recreation
Lot 8989 on Deposited Plan 213232	Western Australian Planning Commission	Parks and Recreation, Urban	NA - Freehold
Lot 15452 on Deposited Plan 40341	Crown land – COW Managed	Parks and Recreation, Waterways	Recreation and Purposes Incidental Thereto

## 2. Background

Council, at its Ordinary Meeting of 11 December 2018, considered a petition from Acumen Development Solutions (Acumen) to construct a beach access track and car park, accessed from Two Rocks Road, near Blaxland Avenue, Two Rocks. At this meeting, Council’s recommendation was as follows:

*“REQUESTS Administration to commence a feasibility study to determine the need for an additional beach access in the Two Rocks area and if a need is determined, to assess the most appropriate location and present outcomes to Ordinary Council in April 2019,”*

Consultants were appointed to undertake the Feasibility Study in January 2019, which was received on 29 March 2019 and presented to Ordinary Council on 7 May 2019. The Study recommended the need for an additional beach access in Two Rocks on the basis that:

- The City’s current approved structure plans and population forecasts for Two Rocks indicate ongoing pressures for additional safe and accessible beach accesses in the southern Two Rocks area;
- There is currently a lack of access to identifiable swim beach zones in Two Rocks and limited public car park availability in proximity to beach zones and other beach side infrastructure; and
- The 2014 Coastal Aquatic Risk Assessment (**CARA**) conducted by Surf Life Saving WA recommended formalising existing informal tracks in the area due to imminent demand.

The feasibility study considered three potential locations for the beach access, including the proposed location from Acumen (Figure 1). Given the context of anticipated future development and population forecasts in Two Rocks, an additional beach access was

recommended, between Leeman's Landing and the Spot. Location A is considered to be the best location for the beach access based on the following:

- It provides the shortest route from Two Rocks Road through Crown land to the beach which will lessen the potential for environmental disturbances and the need for vegetation clearing;
- It is considered to be the safest and most suitable option from a traffic safety perspective of the options proposed;
- The road alignment in this location is considered to be the least undulating and presents fewer impacts on existing dunes;
- It requires minimal stormwater management; and
- It is the lowest cost option and presents the best outcome for the community and the lowest risk of the options proposed.

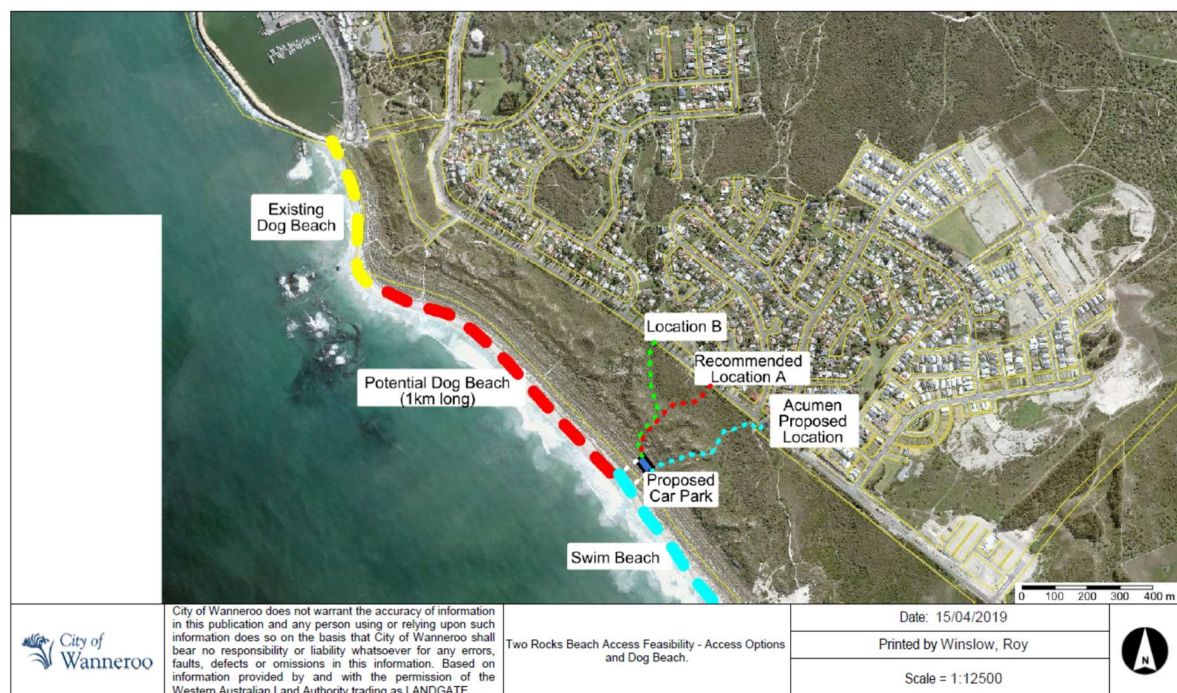


Figure 1: Preferred Beach Access Location

Council, at its Ordinary Meeting of 30 July 2019, approved the construction of a new beach access and car park in Two Rocks as identified by the Two Rocks Beach Access Feasibility Study (City of Wanneroo, 2019). The facilities proposed within the beach access track and car park facility are listed in Table 2 below:

**Table 2: Proposed Beach Access and associated facilities**

Beach access and car park infrastructure	Associated Infrastructure
<ul style="list-style-type: none"><li>• Beach access road</li><li>• Car park</li><li>• Concrete path</li></ul>	<ul style="list-style-type: none"><li>• Drainage and scour protection</li><li>• Conservation fencing</li><li>• Kerbing</li><li>• Solar Lighting</li><li>• Removable bollard(s)</li><li>• Planting and mulch</li><li>• Bicycle rack</li><li>• Informative signage</li><li>• Rubbish Bins</li></ul>

To facilitate the completion of an unexploded ordnance search and remediation; as well as the construction of the proposed beach access track and carpark, Two Rocks, the City submitted documentation to assist the Department of Water and Environmental Regulation's (DWER) assessment of the City's clearing permit application (CPS 8807) on the 13<sup>th</sup> February 2020.

Further information was requested by the DWER throughout the assessment process. These enquiries and suggested mitigation strategies were considered by the City, with possible mitigation strategies and additional information provided (eg. updated IBSA information; authority to access; and certificates of title) and subsequently incorporated into the revised design. An offset package (including on and offsite rehabilitation) and a comprehensive rehabilitation plan was submitted in October 2020, with revised drawings and shape files submitted to the DWER in 29 March 2021.

On 19 July 2021, the Office of Appeals notified the City that the clearing permit had been appealed and a copy of the appellants concerns were provided. The City commenced discussions with its key stakeholders, including a telephone conversation with the Wildflower Society's President (Brett Loney) on 10 August 2021. Mr Loney briefly discussed the Wildflower Society's concerns and was invited to attend the City's offices on 27 August 2021, to discuss improvement opportunities in relation to the City's infrastructure projects, clearing and rehabilitation processes and more specifically to the details of the Two Rocks beach access project and clearing permit application. This was a great opportunity for both parties to discuss concerns and improve the long-term relationship between the City of Wanneroo and the Wildflower Society. The City invited the Wildflower Society to increased involvement in future applications.

After discussions with key internal and external stakeholders, including both DWER and the Appeals Office, the City concluded that it would refine the beach access design and revoked the clearing permit application on the 9 September 2021. This revocation was subsequently approved by DWER on 29 September 2021.

The City is now resubmitting the clearing permit application for the Two Rocks beach access, based on key stakeholder feedback and reducing the clearing footprint. This involves a 62% reduction, with 3.78 ha (Figure 2, Drawing 3786-1) proposed in the February 2020 original application compared to 1.43 ha (Figure 4, Drawing 3786-2-2) in this revised

application. This has also resulted in reducing the final footprint of permanently cleared areas by 30%, specifically with 0.93 ha proposed in the rehabilitation plan application (Figure 3, Drawing 3876-1-2) in October 2020 to 0.65 ha in this revised application.

This will ultimately result in a reduced requirement for offset rehabilitation, with improvements in the order of a 40% improvement, from the previously required offset calculation of 1.85 ha (October 2020) to 1.11 ha (January 2022)<sup>1</sup>.

Further details of the approved offset requirement will be included in the future revised rehabilitation plan.

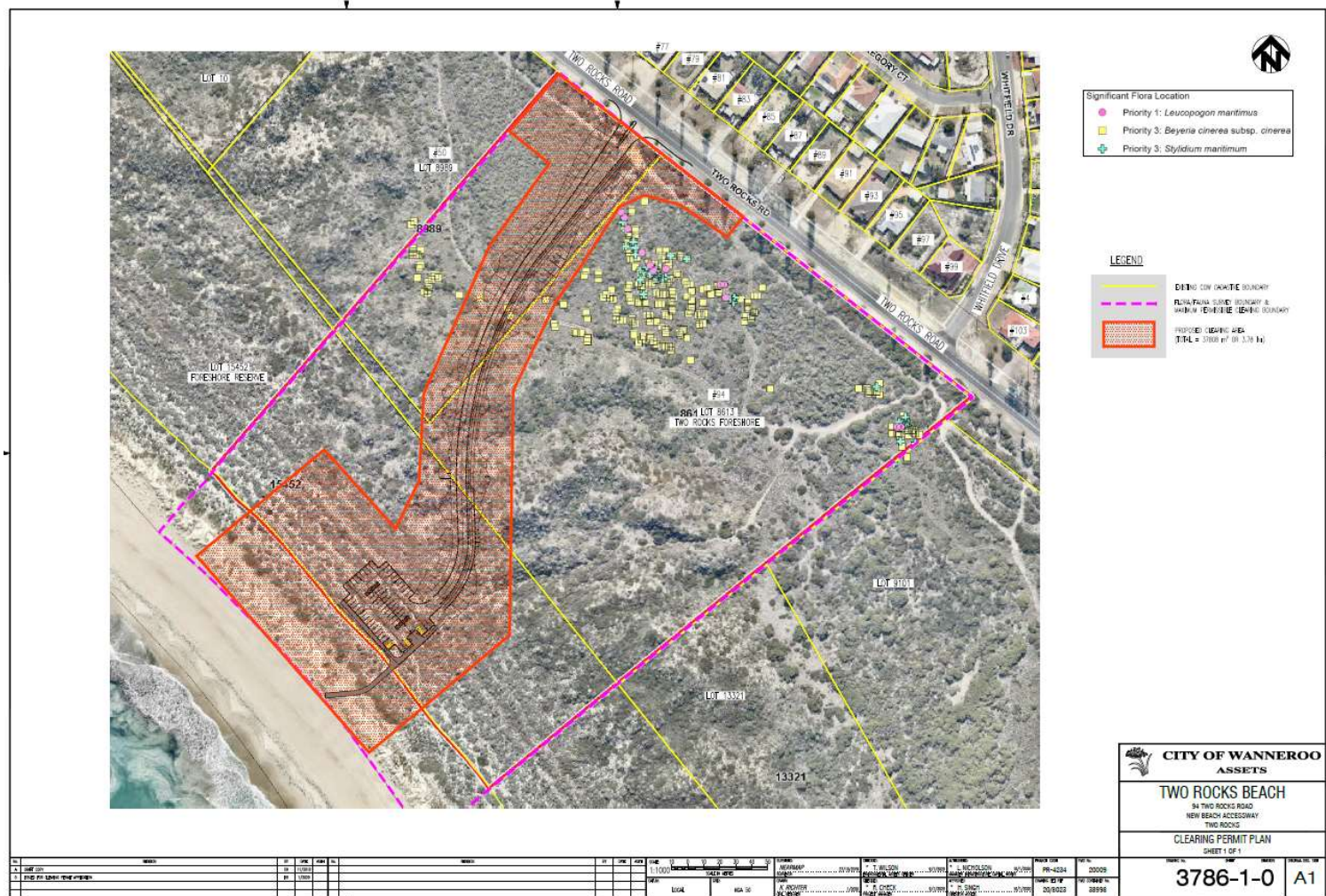
Figures 2 – 4 illustrate the improved changes in the beach access design, from the following applications:

- Original clearing permit application, February 2020, Drawing 3786-1-0;
- Rehabilitation Plan, October 2020, Drawing 3786-1-2; and
- Current (this) clearing permit application, January 2022, Drawing 3786-2-2.

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<sup>1</sup> NB: This calculation includes factors such as the Bush Forever offset ratio; areas not including native vegetation and already cleared areas that were not included previously.

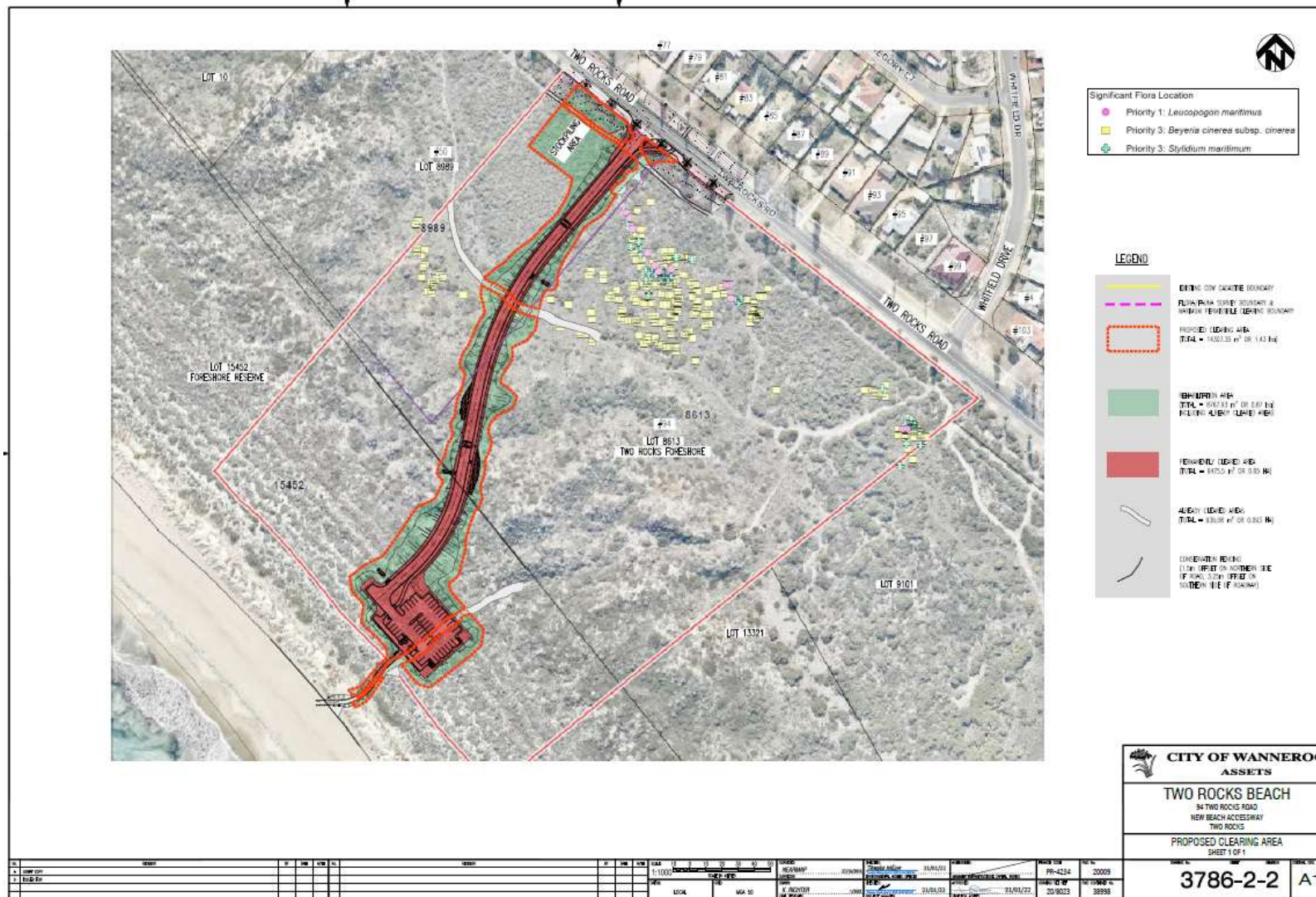




**Figure 2:** Drawing 3786-1-0, February 2020, Proposed clearing presented in original clearing permit application for the UXO search; geotechnical survey; beach access track; and associated infrastructure within the Two Rocks foreshore, Two Rocks.







**Figure 4:** Drawing 3786-2-2, January 2022, Current and revised clearing for the UXO search; geotechnical survey; beach access track; and associated infrastructure within the Two Rocks foreshore, Two Rocks, (Attachment A).



### 3. Scope

The purpose of this document is to provide an assessment against the *Environmental Protection Act 1986* – Ten Clearing Principles to determine whether the clearing is likely to have a significant impact on the environment. The clearing of vegetation is proposed within the Two Rocks foreshore reserve, south of the Two Rocks Marina, bound by the Indian Ocean to the west and Two Rocks road to the east. The proposed clearing will occur within a boundary of 12.68 ha, with 1.43 ha required for the UXO search and proposed clearing for the beach access way and carpark (Figure 4 (above), Attachment A - Clearing Plan and Attachment B - shapefiles).

This revised clearing plan is based on the preliminary design contained within the Two Rocks Beach Access Feasibility Study (City of Wanneroo, 2019) and updated designs, illustrated in Figures 2 – 4. The purpose of the revised designs is to reduce the overall permanently cleared footprint and thus reduce the overall environmental impact to the local environment and address key stakeholder feedback received from the previous clearing permit application (CPS 8807) and resulting appeal. The alignment and geometry of the civil design has been chosen to minimise the impact on the vegetation and, specifically, priority species, while endeavouring to limit the extent of works through challenging topography. Further detailed information on how the reduced footprint has been achieved is provided in this document.

In order to finalise the final design of the beach access way and carpark, a geotechnical survey is required. The risk however, is that the project area lies within a slight to substantial risk area for the likely presence of Unexploded Ordnances (UXO), namely the “Yanchep Two Rocks Artillery Range”. Since WWII, this area has been used as a target area by Armed forces and Allies, including use of high explosive bombs/shells from aircraft, naval vessels and Army artillery, armour and infantry ammunition.

Consequently, the geotechnical design cannot safely proceed without the completion of an UXO search and potential remediation. To enable the UXO search to occur, vegetation must be slashed to 10-30 cm to enable detection units to effectively identify the UXOs. In the previous CPS application, DWER queried if alternative systems such as drones, could be utilised for UXO detection. The City enquired with several contractors, however the aforementioned process is the only technology available. The removal of UXOs may result in the removal of vegetation to enable a thorough search, safely extract and remove the UXOs from the project area.

Additional assessments to assist in the confirmation of the final footprint and design of the beach access way and car park facilities have progressed, including:

- A Foreshore Management Plan - a draft was prepared by Emerge and Associates. However, as the alignment changed the FMP will need to be reworked. We will recommence work on the FMP in April 2022 and a revised draft will be expected by December 2022;
- Aboriginal heritage - An archaeological survey was completed on the site with no evidence of material of Aboriginal heritage. Typically an ethnographic survey would also

need to be completed. However, due to COVID restrictions this could not be done. The South West Aboriginal Land and Sea Corporation were satisfied with the assessment however, advised to engage their 'ground monitors' to witness site disturbances during construction; and

- The Coastal Aquatic Risk Assessment was completed October 2019 (internal reference HPE 20/43071).

## 4. Flora and vegetation

The City engaged One Tree Botanical to undertake a botanical assessment (Attachment C) consistent with the Technical Guide Flora and Vegetation Surveys for Environmental Impact Assessment; Targeted and Detailed Surveys (EPA, 2016). The assessment occurred over two sampling periods, 13 – 16 September and 19 - 21 October 2019.

Three Priority Flora species were recorded within the study area:

- *Leucopogon maritimus* (Priority 1);
- *Beyeria cinerea subsp. cinerea* (Priority 3); and
- *Stylidium maritimum* (Priority 3).

Figure 3 illustrates the location of significant flora species within the survey area.

Priority Flora is not common in near coastal areas and three in a single near-coastal vegetation type is unusual. This is an unusually high number for a very small 12.68 hectare near-coastal area. All three species were dominant species within a small area of a single vegetation type (Vegetation Type C - Figure 5) (One Tree Botanical, 2019).

As per Figure 4, the original alignment of the Dual Use Path coincided with 36 of the following Priority Species:

- Priority 1 *Leucopogon maritimus* x 4;
- Priority 3 *Beyeria cinerea subsp. Cinerea* x 15; and
- Priority 3 *Stylidium maritimum* x 17.

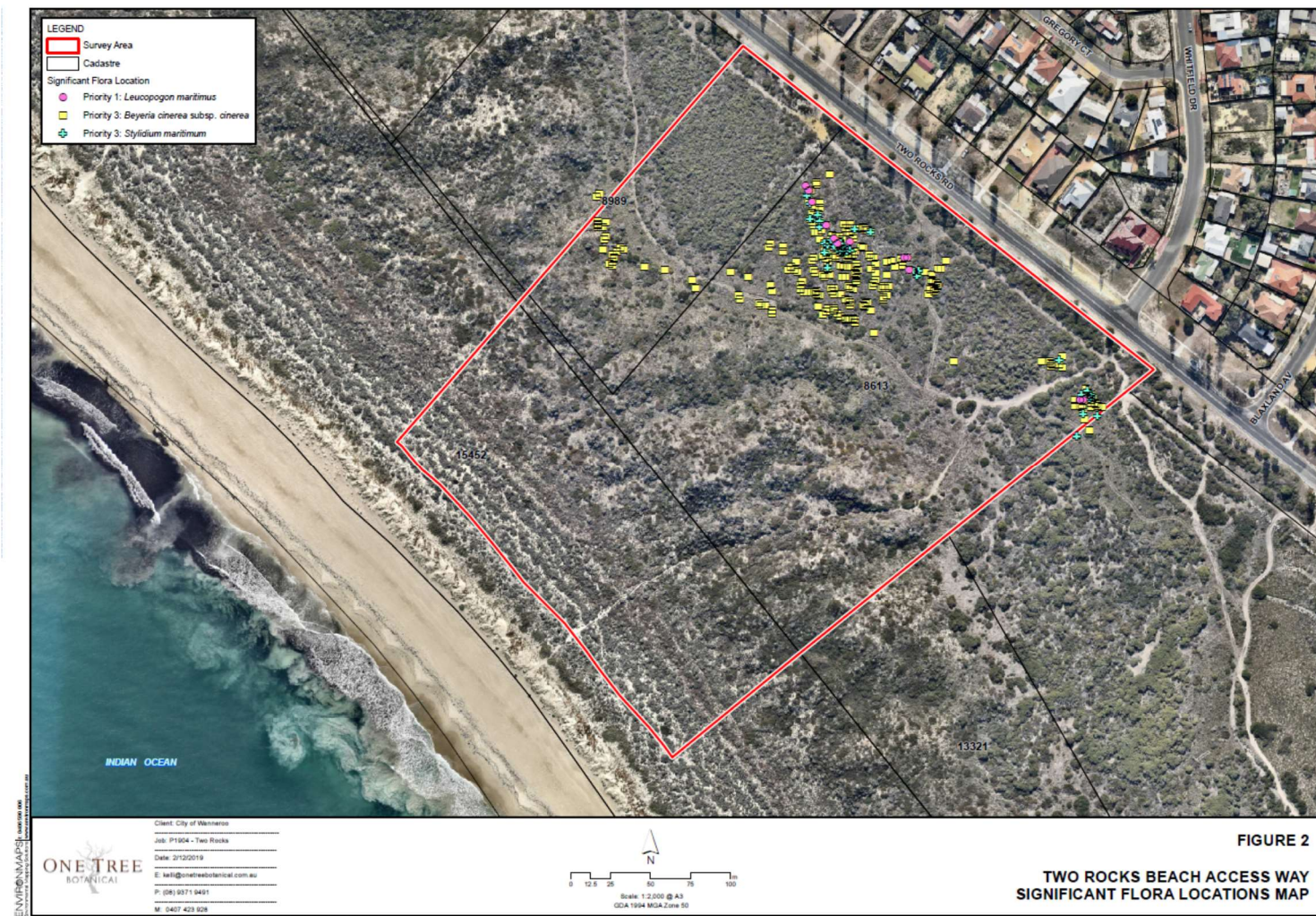
To reduce the direct impact on priority species, the beach accessway and carpark has been realigned. The realignment (Figure 6) reduces the clearing impact from 36 Priority species to four Priority 3 species.

To ensure that these priority species are not disturbed, the following mitigation strategies will be implemented:

- Identify, photograph and demarcate the priority species in the field prior to any work commencing;
- Include information about priority species within the contractor procurement stage for the UXO search, construction and rehabilitation;
- Provide contractors and key stakeholders with GPS coordinates and shapefiles of the project location boundaries and locations of the priority flora, as well as photos for identifying these species;

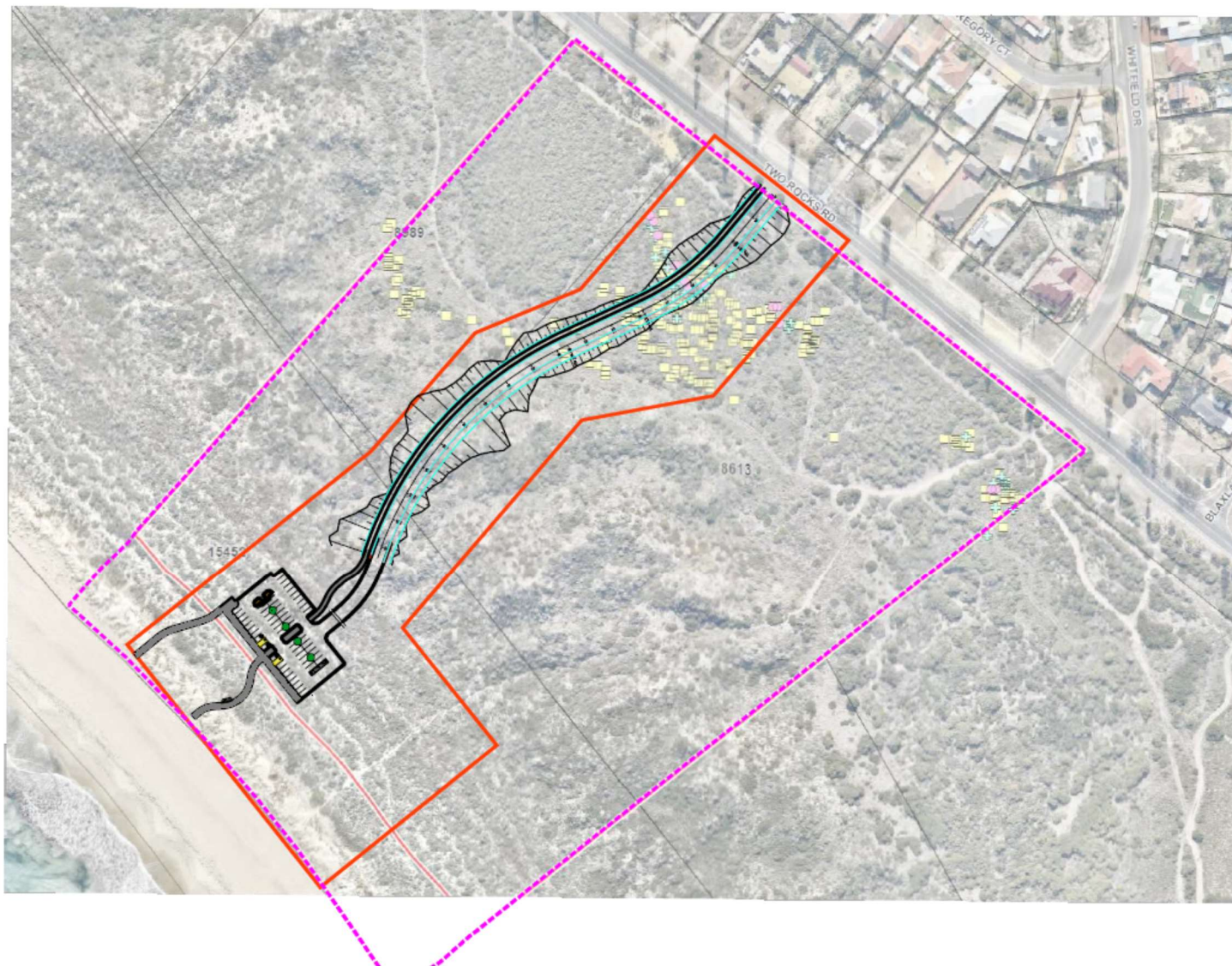
- During the onsite safety induction with contractors and key stakeholders, identify the priority species in the adjacent area; provide a key and show these species in the field. Explain that these species are not to be disturbed, with the exception of the four species within the approved boundary;
- Only if safe to do so, attempt to recover the four priority species from the clearing area before the UXO search occurs. This may need to occur at the same time as the UXO search to ensure that the species can be safely recovered without placing anyone at risk;
- Prior to the completion of the UXO search and construction, a qualified surveyor will be engaged to mark out the clearing area, with a maximum 20 metres between survey pegs (depending on visibility). The survey pegs shall be clearly visible - highlight paint or survey tape will be used to demarcate between the different vegetation types and the approved clearing area; and
- Post the UXO survey, a 2m buffer area will be demarcated within the approved clearing area to ensure that construction does not breach the approved clearing area.





**Figure 5:** Two Rocks Beach Access Way - Significant Flora Locations Map (Source: One Tree Botanical (2020))





**Figure 6:** Two Rocks Beach Access Way – Original concept and Significant Flora Locations Map

Six vegetation communities and cleared areas were mapped within the Survey Area (One Tree Botanical, 2020) which forms part of a coastal mosaic, typical of dune systems. The vegetation types included one grassland and five shrublands, including:

- Low-Lying Primary Dunes on Unconsolidated Sand A1: Incipient Foredune (younger): Uniform regrowth of Grassland *\*Thinopyrum distichum* (0.137 ha - within the biological survey boundary);
- Low-Lying Primary Dunes on Unconsolidated Sand A2: Established Foredune (older): Sparse Shrubland *Olearia axillaris* over Grassland *Spinifex longifolius* and *\*Thinopyrum distichum* (0.243 ha - within the biological survey boundary);
- Low-Lying Primary Dunes on Unconsolidated Sand A3: Beach-ridge Plain: Open Shrubland *Olearia axillaris*, *Rhagodia baccata subsp. baccata* and *\*Pelargonium capitatum* over Sparse Grassland *Spinifex longifolius* and Sparse Vineland *Cassytha flava var. flava* (0.67 ha - within the biological survey boundary);
- Tall Secondary Dunes On Unconsolidated Sand B1: Shrubland dominated by *Acacia cyclops*, *Scaevola crassifolia*, *Spyridium globulosum*, *Santalum acuminatum*, *Myoporum insulare*, *Olearia axillaris*, *Rhagodia baccata subsp. baccata* and *Acanthocarpus preissii*, Sparse Vineland *Hardenbergia comptoniana* and *Cassytha flava var. flava*. Over Forbland dominated by *Senecio pinnatifolius var. latilobus* (1.18 ha - within the biological survey boundary);
- Low Dunes On Semi-Consolidated Sand C1: Species rich low Shrubland dominated by *Melaleuca systema* and species rich Forbland dominated by *Lomandra maritima* and Sparse Sedgeland *Lepidosperma calcicola* and Sparse Rushland *Desmocladus asper* (0.291 ha - within the biological survey boundary);
- Low Rises With Limestone Outcropping D1: Closed Shrubland *Melaleuca cardiophylla* with other typical shrubs *Melaleuca huegelii*, *Acacia xanthina* and *Dodonaea aptera* with Sparse Vineland *Cassytha aurea var. aurea* over Forbland of native and introduced herbs (0.97 ha - within the biological survey boundary); and
- Cleared Areas E1: Historically cleared areas; informal walking paths, informal vehicular sand tracks (unused and partially overgrown) (0.182 ha - within the biological survey boundary).

Of these, B1 is the most commonly represented vegetation community within the TRBA alignment.

Improved species verification has resulted in the ability to reduce the overall clearing footprint and potentially improve the overall diversity of the frontal dune through future rehabilitation of the A1 vegetation type. The previously identified species *Spinifex longifolius* in A1, was later verified to be weed species, *Thinopyrum distichum* (Sea Wheatgrass). This was the sole species in the clearing footprint of the frontal dune, resulting in an updated botanical survey.

From aerial imagery, it appears the species may have either emerged or been planted in the 1990s (Landgate, 2020), when it was commonly used as a rehabilitation species to stabilise dunes (Dixon, 2011). This species will be retained within vegetation type A1 (and where it has proceeded into the A2 vegetation community) to ensure ongoing dune stabilisation, however it will not be replanted as a revegetation species. Infill planting and weed management will occur in a gradual ongoing basis to ensure that the dune stabilisation continues with an eventual overall improvement in native revegetation.

To ensure improved rehabilitation success, as well as consistency with best practice and approved DWER rehabilitation guidelines, each vegetation type area will be demarcated, with the respective vegetation and topsoil cleared and stockpiled separately. This will enable the respective material to be replaced into the appropriate rehabilitation areas.



To reduce the overall footprint of the proposed clearing area, a staged approach to the removal and storage of vegetation and topsoil stockpiling has been developed to reduce the overall footprint required for the laydown and stockpile area. This involves the removal of denser vegetation areas (Vegetation types B1 – D1, see Figure 7) to be stockpiled in the compound area in their respective individual stockpiles. The road within these vegetation types will be cleared and primarily constructed prior to progressing to the construction within less vegetated areas (Vegetation types A1 – A3). Excess fill material will be utilised or disposed as construction within the areas of Vegetation types B1 – D1 occurs, with topsoil and vegetation replaced on constructed batters.

Vegetation in lightly vegetated areas (Vegetation types A1 – A3) will be pushed-up with topsoil stockpiles and stored in the future location of the carpark. This will enable increased area for temporary stockpile storage and enable transfer of stockpiles between storage areas, eliminating the need to clear for additional storage space.

During the construction procurement phase, if contractors are unable to achieve the above staged methodology, alternative construction methodology will be required to be provided within the approved clearing footprint area, and if possible, demonstrate further minimisation of clearing within the project clearing footprint.

In addition to the aforementioned mitigation strategies, reduced environmental impact and smaller footprint is achieved by the following:

- Deducting previously cleared areas from the total clearing footprint. Already cleared areas, lying within the proposed rehabilitation footprint will be fully rehabilitated in accordance with the surrounding vegetation types, resulting in an improved rehabilitated footprint;
- Revising the practicality and constructability of the design;
- Incorporating further topographical information into the design; and
- Amalgamating the machinery and equipment laydown compound; excavated fill material; vegetation and topsoil stockpiles; into one shared area.

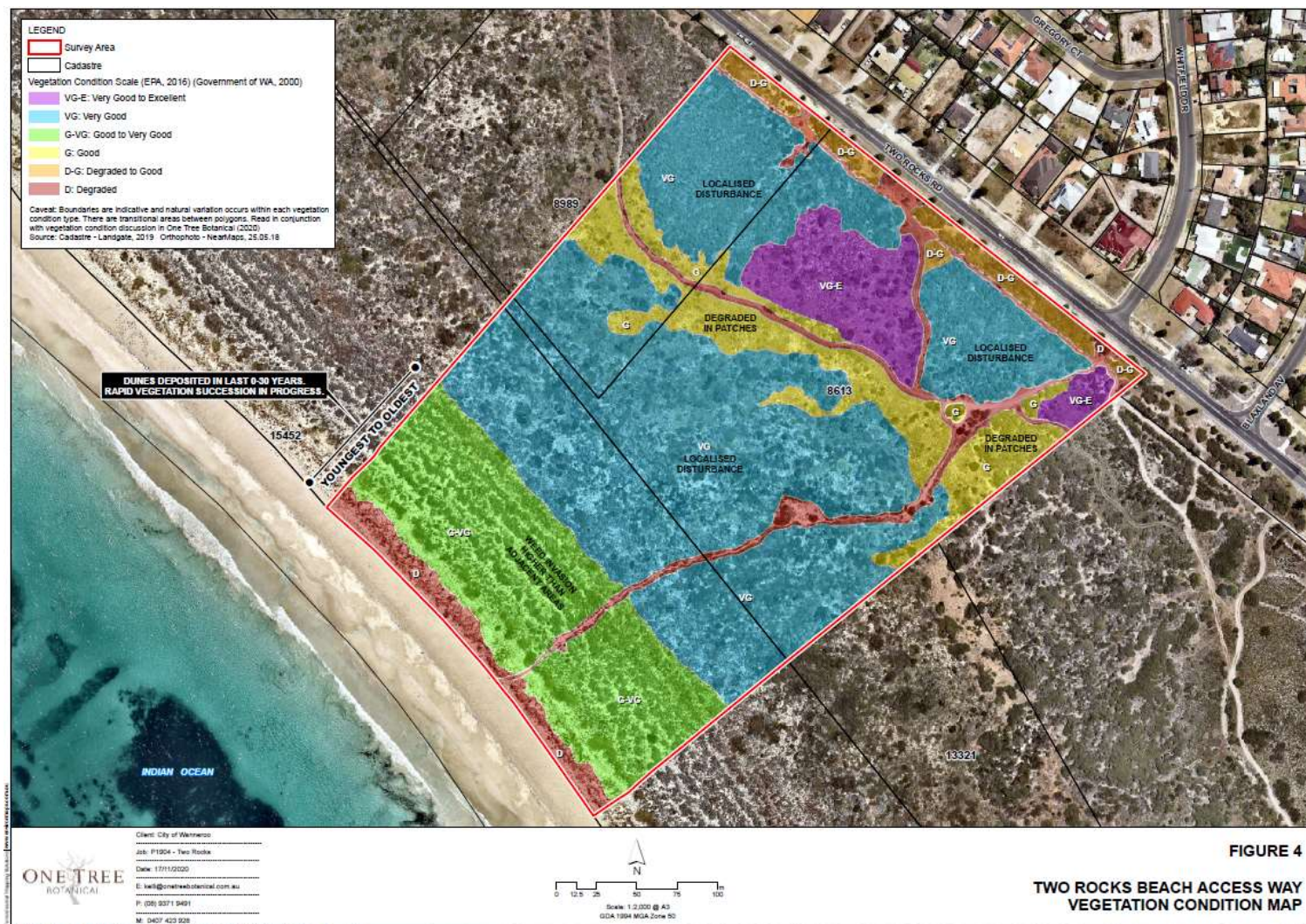
Further information will be provided in the subsequent approved rehabilitation plan, which will be provided once an agreed offset plan has been determined.

Photos and further information for each of the vegetation types in the area proposed to be cleared are provided in Section 5.2.2 of the Flora and Vegetation Survey (Attachment C). Figures 7 and 8 illustrate the vegetation type and vegetation condition within the survey area, respectively.



Figure 7: Two Rocks Beach Access Way – Vegetation Type Map (Source: One Tree Botanical (2020))





**Figure 8:** Two Rocks Beach Access Way – Vegetation Condition Map (Source: One Tree Botanical (2020))



No Threatened Ecological Communities (TEC) protected under the *Biodiversity Conservation Act 2016* or the *Environmental Protection Biodiversity Conservation Act 1999* were recorded in the study area.

Two Priority 3 Ecological Communities (PECs) were recorded in the study area; SCP24: Northern Spearwood shrublands and woodlands and SCP29a: Coastal shrublands on shallow sands. Both of these occur within the proposed 1.43 ha clearing area. Further details will be provided in the future Rehabilitation Plan.

The vegetation structure varies in condition within the survey boundary, from Very Good to Excellent and Degraded condition (Figure 9), however the vegetation within the biological survey boundary is mostly consistent of Very Good to Excellent condition. A total of 158 taxa were recorded from the study area, of which 99 or 63% were natives. Near-coastal areas are usually very species poor. For a study area 12.68 hectares in size on the coast, this is relatively high species diversity. This was due to the diversity of vegetation types and habitats present, which is also relatively uncommon on near-coastal areas (One Tree Botanical, 2020).

## 5. Fauna

The City engaged Terrestrial Ecosystems to undertake a Level 1 fauna survey within the Two Rocks foreshore reserve, south of the Two Rocks Marina, bound by the Indian Ocean and to the west and Two Rocks road to the east (Attachment A). A site visit was completed on 29 August 2019 to assess and record the fauna habitat types and condition within the survey area, as well as assessing the possible presence of and recording of conservation significant fauna (Attachment D).

The level 1 fauna survey determined that there were three main habitat types within the survey area:

- coastal low heath on sand;
- mixed open shrubland and heath on sand; and
- mixed closed shrubland over sand and limestone.

Some of the site is highly disturbed or cleared and provides no habitat value (Terrestrial Ecosystems, 2019). Representative photos of the fauna habitat types are available in Section 4.1 of Attachment D.

It is probable that the Quenda (*Isodon fusciventer*) (Priority 4) and Black-striped Snake (Priority 3) (*Neelaps calonotos*) are present in the survey area. Carnaby's and Forest Red-tailed Black-Cockatoo (*Calyptrorhynchus banksii naso*) may infrequently be seen flying over the site, but the area is not their preferred foraging habitat, nor would they roost or nest in the area. The Osprey (*Pandion haliaetus*) may be regularly seen flying over the site but there is a very low probability that the Peregrine Falcon (*Falco peregrinus*) would be seen near project area (Terrestrial Ecosystems, 2019).

To minimise injury to native fauna species, the movement of vehicles and machinery will be utilised in a manner that enables fauna to safely relocate during construction. Where fauna is unable to be moved safely out of the area, a competent wildlife handler will be required to safely relocate the fauna. This information will be included in the procurement tender phase of the relevant contractors.

It was noted during the site visit that there was a high abundance of rabbits, and moderate density of cats and foxes utilising the project area (Terrestrial Ecosystems, 2019).

## 6. Clearing Principles

The City of Wanneroo generated a 'Desktop Assessment Report for Native Vegetation Clearing Application' using the WALGA Environmental Planning Tool (Attachment E), the impacts listed in the report are categorised in Table 3, below. An Environmental Impact Assessment has been undertaken by Terrestrial Ecosystems (Attachment G). The following table summarises the identified environmental impacts and the level of variance against the clearing principles.

**Table 3: Assessment of the likely impacts against clearing principles and level of variance.**

Clearing Principle	Impacts*	Justification of variance	Variance
<b><i>Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity</i></b>	Red	<p>The Desktop Assessment Report for Native Vegetation Clearing Application identifies the reason for variance is due to the impacts of the proposed clearing on clearing principles b and d. The assessment area is also within an Environmentally Sensitive Area.</p> <p>No Threatened Ecological Communities (TEC) protected under the <i>Biodiversity Conservation Act 2016</i> or the <i>Environmental Protection Biodiversity Conservation Act 1999</i> was recorded in the survey area.</p> <p>The proposed clearing for the UXO survey, geotechnical survey and proposed beach access track and associated infrastructure construction extent lies within two PEC's, including:</p> <ul style="list-style-type: none"> <li>• P3 PEC 24 Northern Spearwood shrublands and woodlands; and</li> <li>• P3 PEC 29a Coastal shrublands on shallow sands.</li> </ul> <p>PEC 24 is represented within vegetation type C1 (Figure 5) and accounts for 14.2% of the overall survey boundary. PEC 29a is represented within vegetation types A3, B1 and D1 (Figure 5) and accounts for 64.9% of the overall survey boundary.</p>	Likely to be at variance with principle (a).



		<p>The presence of PEC's is indicative of environmental values worthy of protection, therefore the proposed clearing is likely to be at variance with this principle. To minimise this variance, all temporarily cleared areas will be either conserved or rehabilitated within the construction boundary.</p> <p>The level 1 fauna survey determined that there were three main habitat types within the survey area with some of the site being highly disturbed or cleared and providing no habitat value (Terrestrial Ecosystems, 2019). Although it was considered probable for Quenda (<i>Isoodon fusciventer</i>) (Priority 4) and Black-striped Snake (Priority 3) (<i>Neelaps calonotos</i>) to be present in the survey area, it was not considered likely that other conservation significant species would utilise the area.</p> <p>It was noted during the site visit that there was a high abundance of rabbits, and moderate density of cats and foxes utilising the project area (Terrestrial Ecosystems, 2019).</p> <p>Approximately 56.9% (8.12 ha) of the survey boundary occurs within an Environmentally Sensitive Area – Bush Forever 397 and EPA Redbook 1976-91 reserve (WALGA, 2019). All temporarily cleared vegetation will be rehabilitated to a similar species of the existing remnant vegetation.</p> <p>Further mitigation strategies are discussed in the Flora section of this document.</p>	
Principle (b) – Significant habitat for fauna	Red	<p>The Desktop Assessment Report for Native Vegetation Clearing Application identifies the reason for variance is due to the potential for Carnaby's Cockatoo habitat; Specially Protected Fauna within 5km; and the possibility of being an Important Birding Area.</p> <p>The areas proposed for clearing contains habitat for indigenous fauna in varying conditions, with some of the site being highly disturbed or cleared and providing no habitat value (Terrestrial Ecosystems, 2019).</p> <p>Carnaby's Black-Cockatoo (<i>Calyptorhynchus latirostris</i>) has been recorded in other fauna surveys in the vicinity of the project area and were observed nearby during the site investigations, however, due to a lack of suitable</p>	Not likely to be at variance with Principle (b).

		<p>foraging, nesting and roosting habitat they are unlikely to utilise the project area (Terrestrial Ecosystems, 2019).</p> <p>The Biological Survey noted that it is probable that two species of conservation significance are present in the project area - Quenda (<i>Isoodon fusciventer</i>) (Priority 4) and Black-striped Snake (Priority 3) (<i>Neelaps calonotos</i>). This fauna is not restricted to the habitat proposed for clearing and suitable habitat is present outside of the proposed clearing areas.</p> <p>The Desktop Assessment Report for Native Vegetation Clearing Application also identified that the project area is within the Northern Swan Coastal Plain Important Birding Area (26933).</p> <p>The Biological Survey noted that the Forest Red-tailed Black-Cockatoo (<i>Calyptorhynchus banksii naso</i>) is unlikely to frequent the project area as there are very few plants that offer a food resource. There is no Forest Red-tailed Black-Cockatoo nesting or roosting sites in the project area due to a lack of suitable trees. Similarly, the Osprey (<i>Pandion haliaetus</i>) can be regularly seen flying over the project area but there are no roosting trees and therefore unlikely to roost in the project area.</p> <p>Other bird species that were identified to potentially occur in the area but not present due to a lack of suitable habitat include the Australasian Bittern (<i>Botaurus poiciloptilus</i>) and Balston's Pygmy Perch (<i>Nannatherina balstoni</i>).</p> <p>It is unlikely to be at variance with this principle due to the lack of suitable habitat for special fauna that may occur within this project area.</p>	
Principle (c) – Habitat for rare flora	Orange	<p>The Desktop Assessment Report for Native Vegetation Clearing Application identifies the reason for variance is due to two Declared Rare Flora records occurring within 5km of the project area.</p> <p>Three Priority Flora species were recorded within the study area:</p> <ul style="list-style-type: none"> <li>• <i>Leucopogon maritimus</i> (Priority 1);</li> <li>• <i>Beyeria cinerea subsp. cinerea</i> (Priority 3); and</li> <li>• <i>Stylidium maritimum</i> (Priority 3).</li> </ul>	May be at variance with principle (c).

		<p>One Tree Botanical (2019) noted that Priority Flora is not common in near coastal areas, with three occurring in a single near-coastal vegetation type being unusual.</p> <p>The alignment of the original concept drawing aligned with a number of priority flora. The original concept design of the beach access track (Figure 4) traverses with 36 priority species. The track was redesigned to minimise the clearing of these priority species (Figure 2), resulting in a reduction of the number of priority species that will be impacted by the clearing within the project area, from 36 to 4.</p> <p>The vegetation structure within the survey area is mostly consistent of Very Good to Excellent condition; with approximately 63% native species. Typically, near-coastal areas are usually very species poor however this area indicates a relatively high species diversity. This was due to the diversity of vegetation types and habitats present, which is also relatively uncommon on near-coastal areas (One Tree Botanical, 2019).</p> <p>Considering priority flora species were recorded during the Biological Survey, clearing may be at variance with this principle. It should be noted however that the path has been realigned to minimise the potential loss of these priority species. Further mitigation strategies are discussed in the Flora section of this document.</p>	
Principle (d) – Habitat for TEC's	Orange	<p>The Desktop Assessment Report for Native Vegetation Clearing Application identifies the reason for variance is due to a Threatened Ecological Community (buffer) occurring within 5km of the project area.</p> <p>No Threatened Ecological Communities (TEC) protected under the <i>Biodiversity Conservation Act 2016</i> or the <i>Environmental Protection Biodiversity Conservation Act 1999</i> were recorded in the survey area. It is therefore unlikely to be at variance with this principle.</p>	Not likely to be at variance with principle (d).
Principle (e) – Significant remnant in an extensively cleared area	Red	<p>The Desktop Assessment Report for Native Vegetation Clearing Application identifies the reason for variance is due to Vegetation complexes with only 400 ha or 10% or less protected for conservation on the Swan Coastal Plain portion of Perth and Peel; and vegetation complexes with less than 10% of</p>	May be at variance with principle (e).

		<p>pre-European extent protected within the Swan Coastal Plain and Jarrah Forest IBRA regions.</p> <p>The study area is in the Interim Biogeographical Regionalisation of Australia (IBRA) region of the Swan Coastal Plan (SCP) in sub-region SWA2: Perth (Thackway and Cresswell, 1995) (Department of Environment and Heritage, 2000).</p> <p>According to 1:250,000-scale vegetation mapping by Heddle et al. (1980), the study area is in vegetation complex 55: Quindalup. The original extent of Quindalup Complex within the IBRA region of Swan Coastal Plain has been calculated as 54,573.87 hectares, of which 33,011.637 hectares or 60.49% remains (Government of Western Australia, 2019a). 0.92 ha (0.003% of the remaining extent) lies within the construction extent of the access road and therefore will be permanently lost as a result of the project, with the remaining vegetation either being conserved or rehabilitated to a similar species of the existing remnant vegetation.</p> <p>Beard (1979) mapped the study area as occurring within Vegetation Association 1007: "Coastal heath and thicket on recent dunes". Vegetation Association 1007 is described as originally consisting of 30,408 hectares of which 20,691 hectares or 68% remains. Of what remains, 2,755 hectares or 13.31% is protected or proposed for protection (Government of WA, 2019b). 0.92 ha (0.004% of the remaining extent) lies within the construction extent of the access road and therefore will be permanently lost as a result of the project, with the remaining vegetation either being conserved or rehabilitated to a similar species of the existing remnant vegetation.</p> <p>Although a small percentage of vegetation complexes will be permanently lost as a result of the project, the clearing may be at variance with this principle.</p> <p>Further mitigation strategies are discussed in the Flora section of this document.</p>	
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Principle (f) – Growing in association with a watercourse or wetland	Green	<p>No wetlands or watercourses are mapped within the proposed clearing area.</p> <p>Lake Loch McNess is located more than 6km to the southeast; therefore the proposed clearing is not likely to cause deterioration in surface water quality through sedimentation or eutrophication.</p> <p>The proposed clearing is not likely to be at variance to principle (f).</p>	Not likely to be at variance with principle (f).
Principle (g) – Likely to cause appreciable land degradation	Green	<p>The area proposed for clearing is not mapped for being in an area containing Acid Sulphate Soils. Batters and cleared areas will be rehabilitated with locally native species following construction. Clearing of 3.78 hectares of linear vegetation is not likely to cause appreciable land degradation. The proposed clearing is not likely to be at variance to principle (g).</p>	Not likely to be at variance with principle (g).
Principle (h) – Impacts to conservation area	Red	<p>Approximately 56.9% (8.12 ha) of the survey boundary occurs within an Environmentally Sensitive Area – Bush Forever 397 and EPA Redbook 1976-91 reserve (WALGA, 2019). 10.4% (1.31 ha) of this ESA lies within the construction extent of the access road and therefore will be permanently lost as a result of the project, with the remaining vegetation either being conserved or rehabilitated to a similar species of the existing remnant vegetation.</p> <p>The proposed clearing is unlikely to cause fragmentation of the vegetation or impede movement of fauna throughout the reserve. Conservation significant fauna species are unlikely to be restricted to the habitat proposed for clearing.</p> <p>Given the proposed clearing will not reduce the conservation values of the conservation area, the proposed clearing is unlikely to be at variance with principle (h).</p>	Not likely to be at variance with principle (h).
Principle (i) – Deterioration in the quality of surface or underground water	Green	<p>No surface water expressions are present within the proposed clearing area and the minimum depth to groundwater is 8m, therefore; the proposed clearing is not likely to cause deterioration in the quality of surface or</p>	Not likely to be at variance to principle (i).

		<p>underground water.</p> <p>Given the small size of the clearing, it is not considered the proposed clearing will increase groundwater salinity.</p>	
Principle (j) – Flooding	NA	<p>The construction footprint will require clearing of a linear area of vegetation and is therefore unlikely to result in a significant increase in surface water runoff or incidence of flooding. The clearing does not widen or lengthen existing water courses as none are present within the project area.</p>	<p>Not likely to be at variance to principle (j).</p>

\***Red** – Likely to be at variance, **Orange** – May be at variance, **Green** – Not likely to be or not at variance

## 7. Conclusion

The City of Wanneroo has assessed the proposed clearing against the 10 clearing principles and has found that the clearing is likely to be at variance with Principle (a) – high biodiversity, and may be at variance with Principle (c) – Habitat for rare flora and Principle (e) – Significant remnant in an extensively cleared area.

Considering the mitigation strategies outlined within this document, the City considers that these risks will be effectively minimised and managed accordingly.

## 8. References

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