

# ***Environmental Impact Assessment (EIA)***

## **Frederick Stubbs Upgrade Carpark and Surrounds**

67 Ocean Drive, QUINNS ROCKS  
Lot 15454 on DP 40341

Native Vegetation Clearing Permit Application  
Supporting Documentation

July 2024

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## 1. Introduction

The City of Wanneroo (the City) is proposing to undertake the clearing of vegetation within the boundaries of Lot 15454, 67 Ocean Drive, QUINNS ROCKS. The proposed clearing will enable the upgrade of the Frederick Stubbs Carpark and Surrounds, including parking infrastructure, beach access and amenities. This EIA document (3. Environmental Impact Assessment (EIA)) focuses on the impact of the proposed Frederick Stubbs Upgrade on the Quinns Rocks Foreshore, QUINNS ROCKS.

Table 1 below contains detailed land parcel information of the proposed Frederick Stubbs Upgrade Carpark and Surrounds clearing permit area. A Certificate of Title for the affected land parcel is included as 5. Certificate of Title.

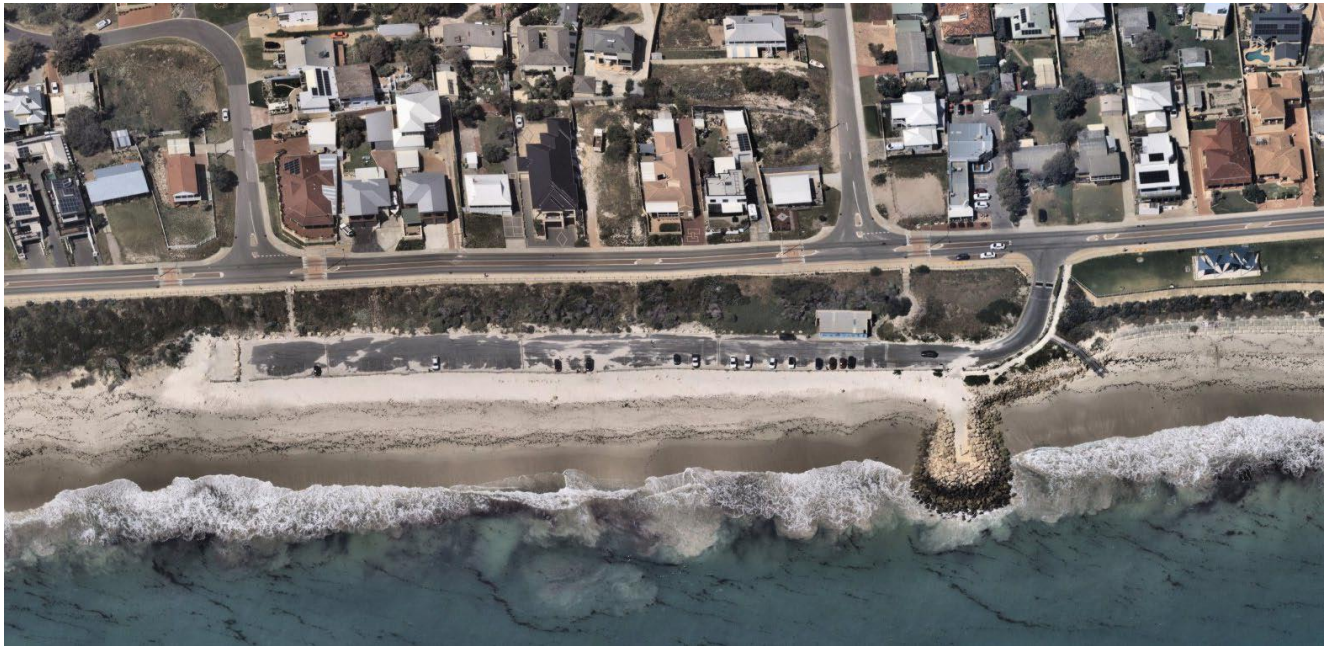
**Table 1.** Ownership and zoning of the land affected by the proposed clearing works.

Project	Lot number	Deposited Plan	Reserve Number	Address	Land Owner	MRS Zoning	Reserve Purpose
Frederick Stubbs Upgrade Carpark and Surrounds	15454	40340	22915	67 Ocean Drive, QUINNS ROCKS	Crown Land – City of Wanneroo Management	Parks and Recreation	Recreation and Parking

To facilitate the clearing of coastal vegetation within the boundaries of Lot 15454, 67 Ocean Drive, QUINNS ROCKS, the City submits this supporting documentation to assist the Department of Water and Environmental Regulation (DWER) assessment of the clearing permit application.

## 2. Background

Frederick Stubbs Park is a public park located at 67 Ocean Drive, Quinns Rocks. The park is situated along the Quinns Rock coast in an environmentally sensitive area. The park is divided into two main areas: the upper public open space and the lower carpark. The lower carpark is constructed of flexible pavement and has approximately 82 car bays. The park also features turf, a playground, sandbag revetment wall, footpaths, fencing, beach access, staircase, toilet block, outdoor shower, rock armoured groyne, sandbag, and rock revetment to manage ongoing coastal erosion. This site location is shown in **Figure 1 and 2**.



*Figure 1 Frederick Stubbs Carpark (Nearmap)*

The Quinns Rocks Community is actively involved in the management of the park and has strong views on coastal management, carpark upgrades, and infrastructure placement in the neighbourhood. In liaison with the community in late March, the City has identified the following issues;

- Safety concerns for both road users and pedestrians due to the steep decline and incline required to enter and exit the carpark,
- Accessibility of the carpark and its integration with the other existing assets in the area,
- Drainage infrastructure is deemed inadequate, as the carpark experiences wave overtopping and/or high rainfall during unfavourable weather conditions, which causes significant scouring in the vicinity,
- Existing toilet block floor plan is deemed adequate, however, there are concerns regarding compliance, accessibility, security, functionality, aesthetic, and integration of the toilet block with other infrastructure in the vicinity,
- Ongoing coastal erosion of the coastline causing scouring of the western edge of the carpark despite of the active efforts of managing the erosion issues via sand renourishment, rock armoured groynes, sandbags and rock revetment works.

The City is planning to upgrade the carpark and the ablution block to address the issues stated above and historical coastal erosion issues at the Frederick Stubbs Carpark and surrounds.

This project plan includes consultation with the community and development of the concept plans in year 1, detailed design and approval stage in year 2, followed by construction in year 3, 4 and 5. The proposed clearing date is anticipated in 2025/2026 Financial Year (FY) and delivery will be broken down into stages to spread costs over two (2) financial years:

- Stage 1 will be civil works in 2025/2026 FY,
- Stage 2 will be building works in 2026/2027 FY.

The proposed clearing requirements for the Fredrick Stubbs Carpark and surrounds equal 0.597 hectares (5,970 m<sup>2</sup>).



Figure 2 Location of the existing Frederick Stubbs Carpark within Quinns Rocks Foreshore Reserve, QUINNS ROCKS.

### 3. Avoidance, Impacts and Mitigations

#### 3.1 How impacts have been avoided

Unfortunately, there are no alternatives to clearing coastal vegetation in this instance. The decision was made to protect this carpark from erosion rather than disposing of it. Now that coastal protection works have been completed, the standard and form of the carpark needs to be reinstated, thus providing parking facilities to those visiting the coastline.

The Quinns Rocks Beach profile was surveyed against historical profiles, and this was used in various erosion modelling scenarios, including a SPP2.6 design storm as this is considered a 100-year ARI event in terms of erosion. The modelling demonstrated the existing carpark needs to be offset and maximum of 13 meters assuming a beach buffer is required, and a maximum of 8 meters assuming a retaining wall is installed. To cater for SPP2.6 design event, the maximum safe setback distance was chosen to increase the life of the infrastructure and safety to the public using the space. The choice to install limestone retaining walls, rock protection and sandfill allowed the setback to be reduced

(compared to the beach buffer) and thus reducing the impact of the surrounding environment.

The City assessed two (2) design options including a cul-de-sac and one way in and one way out option. The one way in and one way out design option was selected based on design safety, accessibility, and practical operational requirements for ongoing beach renourishment despite the marginally bigger footprint relative to cul-de-sac option.

### 3.2 How impacts have been minimised

A summary of how the City proposes to mitigate impacts to the surrounding coastal foreshore reserve is listed below:

- Surveying, and clearly delineating, the proposed clearing area with boundary fencing and/or flagging to ensure that during demolition and construction activities, no unauthorised clearing occurs in the surrounding Quinns Rocks coastal foreshore reserve, and that vegetation outside the approved clearing area is not adversely affected.
- A Construction Management Plan (CMP) will be submitted, reviewed, and approved by the City outlining how the Carpark and surrounds will be constructed including clearing activities and methodology, the demolition of the existing structures and removal of demolished materials, site hygiene, dust suppression methods and material storage, among other considerations.
- Areas temporarily disturbed due to demolition and construction works will be stabilized and revegetated where possible following the completion of construction activities. Temporarily cleared areas associated with the carpark will be planted with local native species such as:
  - *Spinifex longifolius*
  - *Olearia axillaris*
  - *Scaevola crassifolia*
  - *Rhagodia baccata*
  - *Leucophyta brownii*
  - *Carpobrotus virescens*

A concept design outlining the toilet block structure, carpark, and revegetation is shown in Figure 3.

- North and South interfaces between the proposed Frederick Stubbs Carpark and the remaining native vegetation will be contoured via civil works to match the existing dune face. The north and south clearing boundaries will be revegetated with local native coastal species with the aim to match existing vegetation structures, allowing fauna (specifically Quenda) movement through the site and dune system.



Figure 3 Carpark & Building Concept Perspective Drawings, North View

## 4 Scope

The purpose of this document is to provide an assessment of the Frederick Stubbs Carpark clearing areas against the *Environmental Protection Act 1986 – Ten Clearing Principles* to determine the significance of the proposed Frederick Stubbs Carpark clearing areas and the impact on the environment. The clearing of coastal vegetation proposed within Lot 15454 for the Frederick Stubbs Carpark Site is 0.597 hectares (5,970m<sup>2</sup>) (Figure 4; Attachment A - Clearing Plan; and Attachment B – Proposed Clearing Area Shapefiles).



Figure 4 Location of the proposed Frederick Stubbs Carpark clearing area, totaling 0.597 hectares (5,970m<sup>2</sup>) to support the upgrades to the existing carpark infrastructure, QUINNS ROCKS.

## 5 Flora and Vegetation

### 5.1 General information

Frederick Stubbs Carpark and surrounds retains native vegetation representative of the Quindalup and coastal dune vegetation complex, including low closed forest and closed shrub. (Hedde et al. 1980). The vegetation within the proposed clearing site was assessed in April 2024 and was predominantly in a degraded condition. More information can be found in section 5.2 below.

#### 5.1 Site Assessment and Photographs

On 09 April 2024 and 10 October 2021, the City's Environmental Officer (Stephanie Legg) conducted vegetation assessments of the proposed 0.597 hectare Frederick Stubbs Carpark and surrounds clearing area (Attachment A – Clearing Plan and Attachment B – Clearing Area Shapefiles) identifying a total of 38 species, including 18 native flora (including 3 planted) and 20 weed species.

The Frederick Stubbs Carpark and surrounds clearing area subject to this application are predominately in degraded condition, with approximately 30% native species cover (Figure 6). Dominant native species include *Lepidosperma gladiatum*, and *Scaevola crassifolia*. (Attachment C – Site Photographs, Attachment D – Photograph Locations and Flora List, Table 2 and Figure 5 below). The site was observed to have high weed cover with the dominant weed species being *Gazania linearis*, *Oenothera drummondii*, *Tetragonia decumbens* (Sea Spinach), and *Leptospermum laevigatum* thickets.



Figure 5 Photograph of vegetation taken on 9 April 2024, South view



**Table 2.** Species identified during the vegetation assessment on 09 April 2024 and 10 October 2021 combined.

<b>Native</b>	<b>Weeds</b>	<b>Revegetation</b>
<i>Acacia saligna</i>	<i>Agave americana</i>	<i>Spinifex longifolius</i>
<i>Acanthocarpus preissii</i>	<i>Arctotis stoechadifolia</i>	<i>Olearia axillaris</i>
<i>Allocasuarina lehmanniana</i>	<i>Bromus diandrus</i>	<i>Leucophyta brownii</i>
<i>Carpobrotus virescens</i>	<i>Cakile maritima</i>	
<i>Cassytha flava</i>	<i>Crassula glomerata</i>	
<i>Ficinia nodosa</i>	<i>Cynodon dactylon</i>	
<i>Hardenbergia comptoniana</i>	<i>Dimorphotheca ecklonis</i>	
<i>Lepidosperma gladiatum</i>	<i>Ehrhata longiflora</i>	
<i>Melaleuca systema</i>	<i>Euphorbia paralias</i>	
<i>Myoporum insulare</i>	<i>Euphorbia terracina</i>	
<i>Rhagodia baccata</i>	<i>Gazania linearis</i>	
<i>Scaevola crassifolia</i>	<i>Lagurus ovatus</i>	
<i>Spinifex hirsutus</i>	<i>Leptospermum laevigatum</i>	
<i>Spyridium globulosum</i>	<i>Lolium rigidum</i>	
<i>Threlkeldia diffusa</i>	<i>Melaleuca nesophila</i>	
	<i>Oenothera drummondii</i>	
	<i>Pelargonium capitatum</i>	
	<i>Sonchus oleraceus</i>	
	<i>Stenotaphrum secundatum</i>	
	<i>Tetragonia decumbens</i>	



Figure 6 Photographs of weed species cover and degraded areas within proposed clearing site, Left: April 2024, Right: October 2021

## 5.2 Bush Forever

Frederick Stubbs Carpark and surrounds intersects Bush Forever Site number 397 and forms an Ecological Linkage north-south through the foreshore reserves (Figure 7).



Figure 7 Bush Forever Site 397 shown in green hatching and Regional Ecological Linkage shown in light blue shading.

## 5.4 Environmentally Sensitive Areas (ESA) and Ecological Linkages

The proposed clearing area lies within an Environmentally Sensitive Area (ESA) (Figure 8) and therefore no possible exemptions may be applied under *Part V* of the *Environmental Protection Act 1986*.

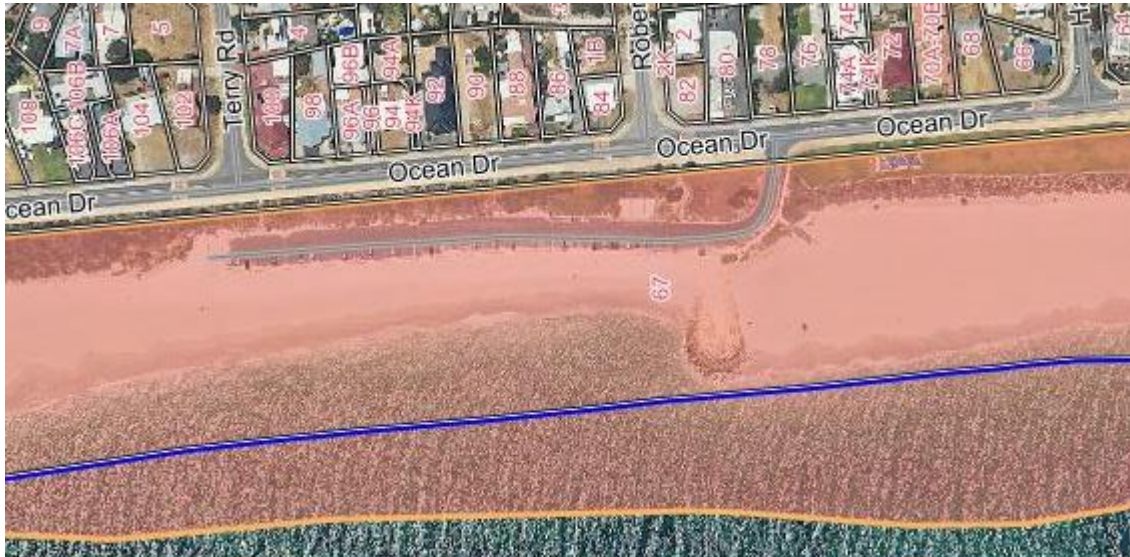


Figure 8 Environmentally Sensitive Area (ESA) shown in orange shading and the location of Quinns Rocks Foreshore.

## 6 Fauna

### 6.1 General information

No fauna was documented within the extent of the proposed clearing area during the 09 April 2024 or 10 October 2021 Vegetation Assessments.

The City of Wanneroo's (the City's) Intramap's Environmental Planning Considerations Report (EPCR) identified a Vulnerable reptile species within the selected footprint (see Attachment F for further details).

Within a 5km to 6km radius of the proposed clearing area, the City's EPCR, identified the following (see Attachment F for further details):

- Records of State and Federally listed Threatened fauna species.
- Records of State Priority listed fauna species.
- 'Possible' Roosting Area Buffer for Carnaby's Cockatoo (*Zanda latirostris*).
- Key Biodiversity Area for Birds (Northern Swan Coastal Plain IBA). The IBA is bounded by Moore River to the north, Darling Range to the east, Swan River to the South and Indian Ocean to the West and includes remnant vegetation in Spearwood and Bassendean North Hedde vegetation types.
- Contains vegetation mapped as Potential Quenda (*Isoodon obesulus*) Habitat.

## 7 Clearing Principles

An Environmental Planning Considerations Report (EPCR) (Attachment F) and a Desktop Assessment Report for Native Vegetation Clearing (NVC) Application (Attachment E) were generated for the Frederick Stubbs Upgrade Carpark and surrounds using the City's mapping program 'Intramaps' as supporting documentation for the below clearing principle assessment. These two (2) reports, along with additional data sources provided by various state and federal departments, were reviewed to determine the level of impact and the level of variance to the clearing principles.

The following table summarises potential environmental impacts and the level of variance against the 10 clearing principles.

**Table 3.** Assessment of the Frederick Stubbs Upgrade Carpark and Surrounds project’s likely impacts against the 10 Clearing Principles.  
**Red** – Likely to be at variance, **Orange** – May be at variance, **Green** – Not likely to be or not at variance.

Clearing Principle and Impacts (Flag colour)	Proposed Project Impacts
<p><b>Principle (a) – Native vegetation should not be cleared if it comprises a high level of biodiversity</b></p>	<p>The 09/04/2024 Vegetation Assessment identified the proposed Frederick Stubbs Carpark project area as predominantly degraded condition, containing variable coverage of native species and weed species.</p> <p>Frederick Stubbs Park has historically experienced disturbance in the form of unauthorised vehicle and pedestrian access prior to residential development and ongoing weed invasion. Following construction of the Frederick Stubbs Carpark, bare foreshore dune areas were intentionally planted with native coastal species for the purposes of dune stabilisation and revegetation.</p> <p>The proposed clearing area is located within Bush Forever site 397 (DPLH, 2019) and is a mapped Environmentally Sensitive Area.</p> <p>The City’s Intermaps EPCR (Attachment F) identifies the following flora and fauna attributes within the proposed application area:</p> <ul style="list-style-type: none"> <li>• No Federal or State listed TECs.</li> <li>• No records of PEC’s, Threatened and Priority Flora records within the selected boundaries.</li> <li>• No records of EPBC and State listed (Threatened/Specially protected) Fauna, or Priority Fauna recorded within the selected boundaries.</li> <li>• The proposed clearing area is within an important birding area (Northern Swan Coastal Plain IBA) and</li> <li>• Contains vegetation mapped as Potential Quenda (<i>Isodon obesulus</i>) Habitat.</li> </ul> <p>The City’s Intramap EPC (Attachment F) identifies the following flora and fauna attributes within 6kms of the proposed Frederick Stubbs Carpark site:</p> <ul style="list-style-type: none"> <li>• 22 Federal listed, and 16 State listed TECs (or their buffers) located within a 5km radius of the proposed application area</li> <li>• 29 PECs (or their buffers) located within a 5km radius of the proposed application area</li> </ul>

	<ul style="list-style-type: none"> <li>• No Federal listed Threatened Flora records located within a 5km radius of the proposed application area</li> <li>• Four (4) State listed Threatened, and five (5) Priority Flora records located within a 5km radius of the proposed application area</li> <li>• 69 Federal listed, and 70 State listed Threatened Fauna, and 38 Priority listed Fauna recorded within a 5km radius of the proposed application area</li> <li>• 'Possible' Roosting Area for Carnaby's Cockatoo within a 6km radius of the proposed application area.</li> </ul> <p>Considering the above, the Frederick Stubbs Upgrade Carpark and surrounds application area is likely to be at variance with principle (a).</p>								
<p><b>Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna</b></p>	<p>The City's NVC (Attachment E) and EPC (Attachment F) identified the application area being within an important birding area (Northern Swan Coastal Plan IBA), containing vegetation mapped as potential Quenda habitat, and within 6km's of Carnaby's Cockatoo 'Possible' roosting area.</p> <p>The vegetation assessments on 9/04/2024 and 10/10/2021 identified no suitable breeding, or roosting, vegetation (trees) being present within the application area and as such, no hollows suitable for nesting are present. Vegetation conditioned during the vegetation assessment ranged from Degraded to Good, with majority being in Degraded Condition.</p> <p>Civil works will contour the north and south clearing interfaces to align with the existing dune structure. Additional revegetation within the clearing area will allow safe fauna movement (specifically Quenda) through the sight.</p> <p>Considering the above, the application area is not likely to be at variance with principle (b).</p>								
<p><b>Principle (c) – Native vegetation should not be cleared if it includes or is necessary for the continued existence of threatened flora</b></p>	<p>No threatened or priority flora species are identified within the application area during the 9/04/2024 or 10/10/2021 Vegetation Assessments or within the desktop assessment; however, there are threatened, and priority flora species found within 5km's of the proposed clearing area, summarised in the Table below (CoW, 2024a and Attachment F).</p> <p><b>Table 4.</b> Threatened and Priority flora species within 5km of the Frederick Stubbs Carpark project area.</p> <table border="1" data-bbox="562 1163 2029 1342"> <thead> <tr> <th>Conservation Status</th> <th>Number of Records</th> </tr> </thead> <tbody> <tr> <td>EPBC Act Listed</td> <td>0</td> </tr> <tr> <td>State Listed</td> <td>4 Threatened (includes Endangered and Vulnerable records)</td> </tr> <tr> <td>Priority</td> <td>5 (includes Priority 1, Priority 2 and Priority 3 records)</td> </tr> </tbody> </table>	Conservation Status	Number of Records	EPBC Act Listed	0	State Listed	4 Threatened (includes Endangered and Vulnerable records)	Priority	5 (includes Priority 1, Priority 2 and Priority 3 records)
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	<p>Considering the application area does not contain rare, or priority, flora and the vegetation contains both planted and remnant flora ranging from a Degraded condition, the application area is not likely to be at variance with clearing principle (c).</p>												
<p><b>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.</b></p>	<p>The City's EPCR (Attachment F) identified Threatened Ecological Communities (and buffers) within a 5km radius of the application area, however no threatened or priority communities are present within the City's proposed 0.597 hectare clearing area summarised in the Table below (CoW, 2024a and Attachment F).</p> <p><b>Table 5.</b> Threatened and Priority Ecological Communities within 5km of the Frederick Stubbs Carpark project area.</p> <table border="1" data-bbox="562 523 2022 703"> <thead> <tr> <th>Conservation Status</th> <th>Number of Records</th> </tr> </thead> <tbody> <tr> <td>EPBC Act Listed</td> <td>22 (includes Critically Endangered records)</td> </tr> <tr> <td>State Listed</td> <td>16 Threatened (includes Endangered and Priority 3 records)</td> </tr> <tr> <td>Priority</td> <td>29 (includes Threatened and Priority 1, Priority 2 and Priority 4 records)</td> </tr> </tbody> </table> <p>Due to the absence of an identified TEC within the Frederick Stubbs Carpark and surrounds application area, the City's proposed clearing is not likely to be at variance to clearing principle (d).</p>	Conservation Status	Number of Records	EPBC Act Listed	22 (includes Critically Endangered records)	State Listed	16 Threatened (includes Endangered and Priority 3 records)	Priority	29 (includes Threatened and Priority 1, Priority 2 and Priority 4 records)				
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<p><b>Principle (e) - Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been significantly cleared.</b></p>	<p>The vegetation proposed for clearing to facilitate the upgrade to carpark and surrounds works at Frederick Stubbs Carpark contains remnant native vegetation belonging to the Quindalup Complex.</p> <p>The table below summarises the native vegetation statistics as described by Department of Biodiversity Conservation and Attractions (DBCA) (Government of WA, 2019).</p> <p><b>Table 6.</b> Native vegetation statistics (Government of WA, 2019).</p> <table border="1" data-bbox="562 1066 2022 1316"> <thead> <tr> <th></th> <th>Pre-European extent (ha)</th> <th>Current extent (ha)</th> <th>Extent remaining (%)</th> <th>Current extent in all DBCA managed lands (ha)</th> <th>Extent remaining in all DBCA managed lands (proportion of pre-European extent) (%)</th> </tr> </thead> <tbody> <tr> <td><b>IBRA bioregion</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of pre-European extent) (%)	<b>IBRA bioregion</b>					
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<b>IBRA bioregion</b>													

	<b>Swan Coastal Plain / Perth (SWA02)</b>	850,785.09	276,461.42	32.49	51,457.07	3.25
	<b>Swan Coastal Plain vegetation complexes</b>					
	<b>Quindalup Complex</b>	54,573.87	33,011.64	60.49	5,994.64	10.98
<p>In accordance with DBCA's South-west Vegetation Complex Statistics, vegetation representation within the Quindalup Complex is greater than 30%, with 60.49% currently persisting (Government of WA, 2019).</p> <p>The City's proposed clearing is not likely to be at variance with clearing principle (e) due to the current extent of the Vegetation Complex and the small clearing requirement of 0.579 hectares.</p>						
<b><i>Principle (f) - Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or a wetland</i></b>	<p>Wetlands or watercourses are not located within the Frederick Stubbs Carpark and surrounds clearing permit application area, or within 50 metres of the application area (CoW, 2024b – Attachment E). The coastal foreshore vegetation within the Frederick Stubbs Upgrade Carpark and surrounds application area is therefore, not growing in association with a wetland, or watercourse.</p> <p>The closest lake to the application area is Neerabup Lake, located approximately 5.07km, and Nowergup Lake, located approximately 5.3km from the application area (CoW, 2024b).</p> <p>Given the above, the proposed clearing is therefore not likely to be at variance to clearing principle (f).</p>					
<b><i>Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</i></b>	<p>Department of Primary Industry and Regional Development's (DPIRD) Natural Resource Information (WA) mapping tool identifies the application area as Quindalup South third dune Phase (211Qu_Q3) described as irregular dunes with high relief and slopes up to 20%. Calcareous sands have some organic staining and incipient cementation at depth. These dunes are in the youngest phase with loose pale brown sand with no soil profile development (DPIRD, 2024).</p> <p>DWER's Perth Groundwater Map identifies the surface geology within the application area as aeolian and beach lime sand (DWER, 2024).</p> <p>The Groundwater Salinity (Total Dissolved Solids) at the proposed clearing site is Marginal with a salinity range of between 250 - 1000mg/L (DWER, 2024).</p> <p>The proposed clearing area footprint receives an annual mean rainfall of 729mm and is not located within an Acid Sulfate Soil risk area (CoW, 2024b – Attachment E).</p>					



The table below summarises the land degradation risk as described by DPIRD (2024).

**Table 7.** Risks of land degradation summary for Frederick Stubbs Carpark and Surrounds (DPIRD, 2024).

Risk categories	Map unit range
Wind erosion	>50% of the map unit had a high to extreme hazard
Water erosion	10-50% of the map unit has a high to extreme hazard
Water repellence	>70% of the map unit has a high susceptibility
Salinity hazard	<3% of the map unit has a moderate hazard
Subsurface acidification	<3% of the map unit has a high susceptibility
Subsurface compaction	<3% of the map unit has a high susceptibility
Flood hazard	<3% of the map unit has a moderate to very high hazard
Water logging and inundation risk	<10% of the map unit has a moderate to high hazard

The erosion risk (due to water and wind) of this site is high to extreme noting its proximity to coastal conditions. Beach nourishment works and the instillation of jute matting, revegetation works, a rock armoured groyne, sandbags, and rock revetment are actions taken to mitigate and adapt to erosion risk.

Given the above hydrogeological conditions and absence of risk factors associated with clearing within these hydrogeological features, it is not likely for the clearing to result in appreciable land degradation and therefore is not likely to be at variance to clearing principle (g).

**Principle (h) - Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

The proposed clearing occurs within the boundaries of Quinns Rocks Foreshore Reserve (BF Site 397 – Figure 7) and is 130 metres away from the adjacent City-managed Jindalee Foreshore Reserve, Jindalee (containing remnant coastal vegetation) and is 400 metres away from Mindarie Park, Quinns Rocks (City managed conservation area).

Frederick Stubbs Park is a mapped ESA and a Regional Ecological Linkage (Figure 8).

There are 4 Bush Forever Sites found within 5km's of the proposed clearing area, summarised in the Table below (CoW, 2024b – Attachment E).

**Table 8.** Bush Forever Sites within 5km of the Frederick Stubbs Carpark project area (CoW, 2024b).

	Distance	Bush Forever Site Number
	Within 1km	397 (0km)
	Within 2km	Nil
	Within 3km	322 (2.8km)
	Within 4km	383 (3.6km)
	Within 5km	323 (4.45km)
	<p>The vegetation assessment within the Quinns Rocks Foreshore Reserve identified the vegetation as majority in the degraded condition. Due to the remnant vegetation proposed for clearing being within the mapped Bush Forever Site 397, it is likely the proposed clearing is at variance to clearing principle (h).</p>	
<p><b>Principle (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.</b></p>	<p>Wetlands or watercourses are not located within the application area, or within 50 metres of the application area (CoW, 2024b – Attachment E). The coastal heath vegetation within the application area is therefore not growing in association with a wetland or watercourse.</p> <p>As no surface water is present within the proposed clearing area, the proposed clearing is not likely to cause deterioration in surface water quality through sedimentation or eutrophication.</p> <p>The proposed clearing area is not within a Public Drinking Water Source Area, however it is within the Perth Groundwater Area RIWI Act area (CoW, 2024b). Given the availability of adjacent remnant vegetation throughout Bush Forever Site 397, and the proposed small clearing area, it is not considered the proposed clearing will increase groundwater salinity.</p> <p>The proposed clearing is therefore not likely to be at variance to clearing principle (i).</p>	
	<p>According to the DAFWA Land Quality flood risk categories &lt;3% of the map unit has a moderate to high flood risk (CoW, 2024b – Attachment E). Noting this, and the small extent of the proposed clearing (0.597ha), the proposed clearing is not likely to cause, or exacerbate the incidence, or intensity of flooding.</p> <p>The proposed clearing is not likely to be at variance to clearing principle (j).</p>	
	<p>The proposed clearing is not likely to be at variance to clearing principle (j).</p>	

## 8 Conclusion

The City of Wanneroo has assessed the proposed clearing of 0.597ha (5,970m<sup>2</sup>) against the ten clearing principles and has found that the clearing may be at variance to clearing principles A, and H and not likely to be at variance to the remaining clearing principles.

## 9 References

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