CPS 10868/1

Brazier Road and Parking Bay Construction 2025

Revegetation and Rehabilitation Plan

May 2025

City of Wanneroo

Table of Contents

1. Introduction

1.1 Proposed Clearing Plan Brazier Road

The City is planning to construct a footpath and parallel parking bays to connect the existing footpath on Yanchep Road to the beachfront, enhancing pedestrian safety, visitor parking, and community connectivity. This project aims to benefit the Yanchep community while minimizing environmental impacts.

To facilitate construction, a total of 0.135 hectares will be impacted. A total of 0.106 hectares of native vegetation will be temporarily cleared, with full revegetation planned upon project completion. An additional 0.029 hectares will be permanently cleared to accommodate the footpath and parking bays.

Construction activities will include service location, excavation, subgrade preparation, limestone sub-base installation, drainage works, asphalt paving, pram ramp installation, and the final construction of the footpath and parking bays.

Clearing will be conducted as per Table 1 below.

Table 1: Location of Revegetation Area

Location	**Lot Number**	**Deposit Plan**	**Proposed hectares (ha)**
Newman Park	522	406005	0.106ha
	PIN		
Road Reserve	12186401		

1.2 Clearing Permit Number

This revegetation plan has been drafted as a supporting document to **CPS 10868/1** clearing permit application.

1.3 Key Contacts and details of person who developed the Plan

Table 2: Key Contacts and Details

Clearing Permit Number: CPS 10868/1	
Contact Person	Natasha Musungwa
Position	Environmental Asset Planner
Contact Details	Phone: (08) 9405 5633 Email: Natasha.Musungwa@wanneroo.wa.gov.au Email: assetsenvironmentalmailbox@wanneroo.wa.gov.au
Level of Qualification	Master of Environmental Science 5 years working Experience

1.4 Background of Proposed Clearing

The City plans to construct a footpath and parallel parking bays to link the existing footpath on Yanchep Road to the beachfront. This connection, extending from Yanchep Road to Brazier Road, aims to enhance pedestrian safety, provide additional parking for visitors to the shore, and improve overall connectivity for the Yanchep community.

The City proposes to temporarily clear approximately 0.106 hectares of native vegetation to accommodate construction activities. Upon completion, this area will be fully revegetated.

An additional 0.029 hectares of vegetation will be permanently cleared to facilitate the installation of parallel parking bays, and a footpath. The construction process will include locating underground services, excavation and filling, subgrade preparation with compaction, laying and compacting a 200mm limestone sub-base, installing drainage lintels, asphalt works, pram ramps, and the final installation of the parallel car park and footpath.

Figure 1: Area applied to be cleared in yellow

2. Proposed Onsite Revegetation

To mitigate the impact of clearing of the key environmental values, the City plans to do the following:

2.2 Onsite Revegetation of Brazier Road

To mitigate the impact of the construction works south of Brazier Road, the City proposes to **revegetate a minimum of 0.106 ha** of the temporary cleared vegetation along Brazier Road. The onsite revegetated area is displayed in Figure 2 below.

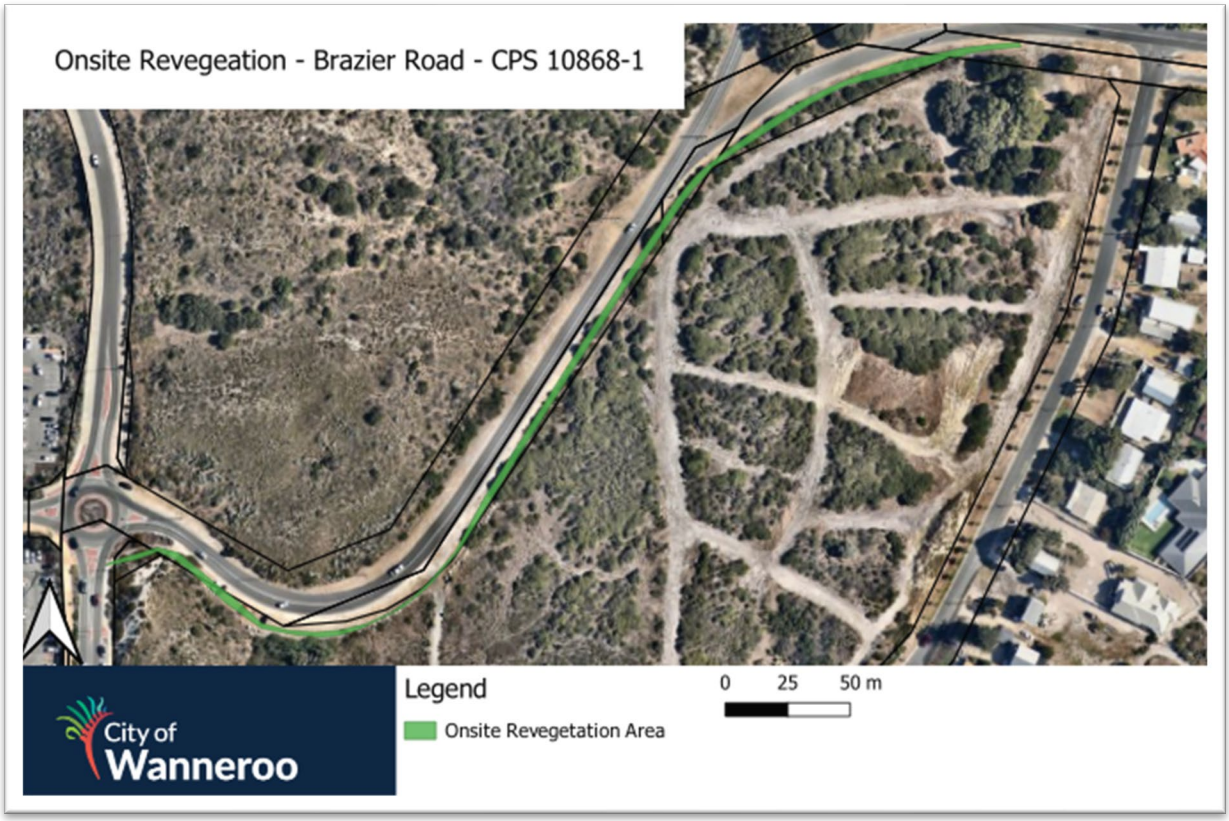


Figure 2: Onsite Revegetation Area- Brazier Road

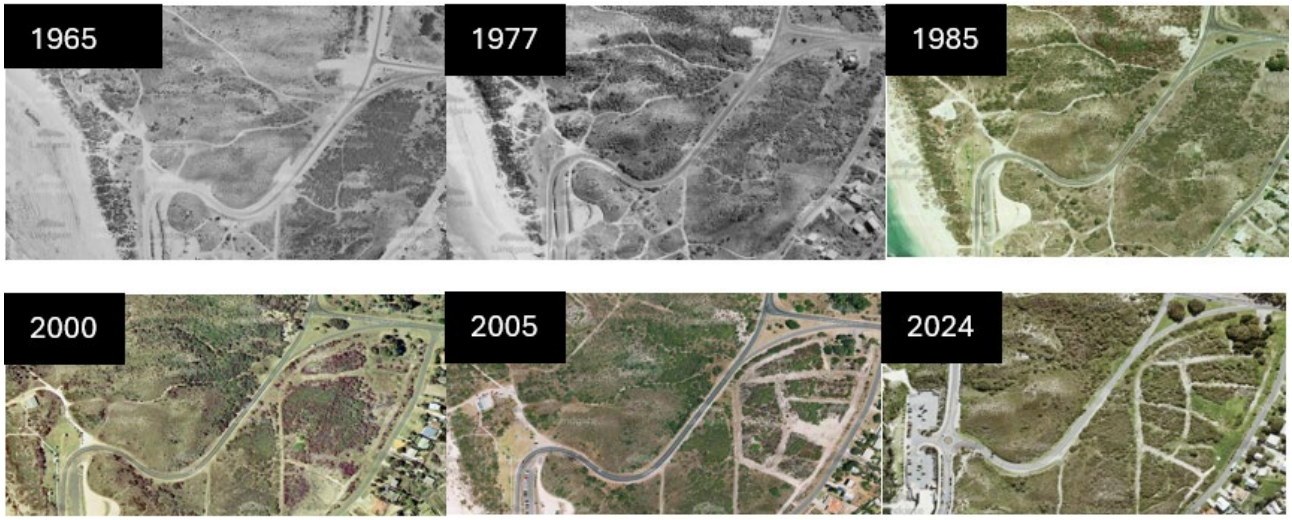
3. Background of Revegetation Site

3.2 Brazier Road, YANCHEP

3.2.1 Site History

As illustrated in **Plate 1**, Brazier Road has been used as a transport route since 1965, the surrounding environment showing minimal impact at the time. However, the vegetation has experienced various forms of human disturbance over the years, including the construction of an access track through the dunes and the development of the lagoon area late 1985.
The area proposed for revegetation has been in a degraded condition since the establishment of the road in 1965. The ongoing degradation is primarily attributed to the presence of the road and periodic clearing activities required to maintain a trafficable road verge.

Plate 1: Brazier Road, Historical Aerials (Landgate, Accessed May 2025)



3.2.2 Existing Land Use and Adjacent Tenure

As mentioned above land use has been a road reserve since 1965, depicted by the earliest Landgate photos provided above. The adjacent land use has been identified as being complicated due to its proximity to the Yanchep Lagoon (One Tree Botanical, 2020). Currently the adjacent land north and south of Brazier road is listed as a Class A Reserve under the management by the City and is also a bush forever site.

3.2.3 Geology and Soils

The project area is part of the Swan Coastal Plain. It is the Quindalup Dunes, which are described as calcareous sands formed into parabolic dunes and beach plains. The topography of the site is generally flat, with most of the site being 20mAHD (DWER, 2025).

3.2.4 Climate

The nearest Bureau of Meteorology (BoM) operational station is Tamala Park (Site No. 009264). The average annual rainfall for the station is 611.9 mm, with most of the rainfall occurs between April and September (BoM, 2025).

3.2.5 Hydrology

Ground water levels in the proposed site are at a depth of 16.74mbgl (metres below ground level). Groundwater salinity levels range between 500-1000 Total Dissolved Solids (TDS). From the ground water levels and contours the water ground water flows east to the west of the site (DWER, 2024).

3.2.6 Remnant Vegetation

Vegetation within the proposed project area is generally degraded. One Tree Botanical report (2020) classified the area as degraded to completely degraded with the adjacent vegetation classified as good to very good condition. (One Tree Botanical 2020).

4. Current Disturbances

4.1 Human Traffic

The southern portion of Brazier Road (the project area) currently experiences significant human traffic and is subjected to informal parking due to the proximity to a popular beach access. These disturbances are largely driven by the public's need to access the lagoon. Over the years, the limited availability of designated parking spaces near the lagoon has led to persistent informal parking practices. This ongoing activity has contributed to the degradation of the project area and encroaching impacts into the adjoining reserve to the south.

4.2 Weeds

Due to the anthropogenic activities the project area has experienced the introduction of weed species. As a result, a targeted weed management strategy is imperative to mitigate the current weed proliferation at the proposed revegetation site.

4.3 Feral Animals

The project area is highly vulnerable to feral animal intrusions, particularly rabbits, which indiscriminately consume native vegetation, consequently fostering invasive species proliferation and therefore diminishing the quality of native vegetation.

5. Reference Site Floristic Data

In 2019 the City commissioned One Tree Botanical to conduct a baseline survey of vegetation adjacent to the proposed footpath and car park site. This florist data will be used as the baseline data for the purposes of this revegetation plan.
One Tree Botanical conducted a survey of the Yanchep Lagoon, during this survey a number of vegetation types were identified. The vegetation communities that have been identified within the area, and will be used for the purpose of this revegetation works have been listed below:

- **TALLER INLAND DUNES ON SEMI-CONSOLIDATED SAND**
  C1: Dune Slopes and Swales: Taller Shrubland (1-2m) *Acacia cyclops, Spyridium globulosum, Olearia axillaris, Templetonia retusa* and *Rhagodia baccata* subsp. *baccata* over lower Shrubland *Melaleuca systena,* Forbland *Lomandra maritima,* Sparse Tussock Grassland *Poa porphyroclados* and *Austrostipa flavescens*, Sparse Sedgeland *Lepidosperma calcicola* and Sparse Rushland *Desmocladus asper*. FCT29a, FCT29b, FCT24, S11.

C2: Dune Crests: Low Shrubland (<0.5m) species-rich but typically *Melaleuca systena, Acacia lasiocarpa* var. *lasiocarpa*, *A. cochlearis*, *Leucopogon parviflorus*, *L. insularis*, *Santalum acuminatum, Phyllanthus calycinus, Templetonia retusa, Olearia axillaris, Myoporum insulare* and *Rhagodia baccata* subsp. *baccata*. Forbland also species rich but dominated by *Lomandra maritima, Acanthocarpus preissii* and *Conostylis candicans* intergrade *pauciflora*. Sparse Sedgeland *Lepidosperma calcicola*, Sparse Rushland *Desmocladus asper* and Sparse Tussock Grassland *Austrostipa flavescens* and *Poa porphyroclados.* FCT29a, FCT24, S11.

C3: Dunes: Open Forest Tuart *Eucalyptus gomphocephala* (possibly planted or spread from plantings in area) over Shrubland of *Rhagodia baccata* subsp. *baccata*, *Spyridium globulosum*, *Acacia xanthina* and *Exocarpos sparteus* over Tussock Grassland of weeds **Ehrharta longiflora* and **Bromus diandrus*. FCT29a, S11.

- **SHALLOW SANDS OVER LIMESTONE**

D1: Slopes with Sparse Limestone Outcrop: Sparse to Closed Shrubland Melaleuca cardiophylla with other typical shrubs *Acacia xanthina, Spyridium globulosum, Rhagodia baccata subsp. baccata.* Sparse Shrubland is more open with diverse understorey of forbs, sedges, rushes and grasses. Often weedy underneath Closed Shrubland with Forbland dominated by **Galium murale, *Minuartia mediterranea, *Stellaria media and grass *Ehrharta longiflora*. FCT29a, FCT29b, S11.
Reference data for brazier road will come from the Flora and Vegetation Survey, Yanchep Lagoon in Yanchep by One Tree botanical 2020.
Please refer to **Appendix A** for the floristic data.

5.1 Flora to be Planted

Due to the limited size and close proximity of the revegetation area to the road, not all of the flora species listed above are suitable for use. The selected species have been carefully chosen to meet the environmental conditions of the site, complement the surrounding vegetation, and accommodate traffic safety requirements by maintaining low-growing plants to preserve road visibility.
The Following vegetation will be propagated and planted:
Acacia l. var. lasiocarpa
Acacia lasiocarpa Benth
Acanthocarpus preissii
Conostylis sp
Dianella revoluta
Ficinia nodosa
Hardenbergia comptoniana
Hemiandra glabra
Kennedia prostrata
Lomandra maritima
Melaleuca systena
Myoporum insulare
Olearia axillaris
Phyllanthus calycinus
Rhagodia b. subsp. Baccata
Scaevola t. subsp. Thesioide

6. Revegetation Commitment and Completion Criteria

6.1 Revegetation Commitments

The intent of this plan is to provide a clear description of the techniques and strategies to be utilised to ultimately improve **0.106 ha** of land along Southern part of Brazier Road. The City acknowledges however that it may not be possible to restore the vegetation to their original state. The revegetation should be similar in structure and content to the comparable naturally occurring vegetation near or adjacent to the proposed revegetation site

6.2 Completion Criteria Brazier Road Yanchep

Table 3: Completion Criteria Brazier Road Yanchep

Criterion	Reference area data	Completion Targets	Completion Criteria	Monitoring
A(i) Total Species Richness	Area species richness is 16 (native sp. only).	Minimum of 60% of native species returned, based on reference site data.	Minimum of 10 native species to be present in the revegetation areas.	Years 3, 4 & 5.
B(i) Total Species Density	An average plant density of **2** stems/m^2 in dryland environments is used as a baseline measure.	Minimum of 60% of native species returned, based on reference site data.	The revegetation site needs a minimum of 2 stems/m^2.	Years 3, 4 & 5.
C(i) Weed Cover	Weed Cover recorded within quadrats was very low <20% observed	Weed cover to be ≤10%	Weed cover is ≤10%	Years 3, 4 & 5.
C(ii) Declared weeds	No Declared weeds or Weeds of National Significance identified	No declared weeds to be present within the revegetation areas.	0% declared weed cover.	Years 3, 4 & 5.
D(ii) Survival rate to be achieved	Survival rate to be achieved.	If after year 2 and 3 of planting, a survival rate of at least 50% is not achieved all planted tubestock that have not survived must be replanted within 12 months and monitored for a further 2 years.	The revegetation site needs to ensure a survival rate for trees of at least 50% is achieved after five years and replant any trees within 12 months of dying.	Years 3, 4 & 5.

7. Site Preparation

Prior to planting at the proposed revegetation site will require preparation to ensure that the revegetation is successful. Below describes details of site preparation at both sites.

7.1 Weed Control

Prior to tube stock planting, the site will be treated with herbicide to prevent and remove the current weed infestations. Once the herbicide has taken effect and soil conditions are appropriate, the site will be planted using a planting auger. Selective herbicides will be used continuously throughout the revegetation program to target identified weeds, preventing their growth. Weed control will continue throughout the revegetation program to ensure completion criteria are met.

7.2 Bollards

The revegetation site is directly adjacent to the footpath and parking bays. To distinguish between the revegetation area and newly installed assets, bollards will be installed around the revegetation site to prevent human interference.

7.3 Feral Animal Control

Feral animal activity has been recorded at the site, the City is proposing the release of RHDV and cage trapping as part of their feral animal mitigation project. Feral animals such as rabbits eat the freshly planted vegetation and hinder revegetation progress. The control of feral animals is required to ensure that completion criteria are met.

7.4 Seed Collection, Plant Salvage and Propagation

The City will engage a contractor to collect seeds from the reserve south of the revegetation area and from the area that will be cleared. Plant salvaging will be carried out in winter and spring to secure sufficient diversity and quantity for the project area.
Plant propagation will involve growing a variety of native species from seeds and cuttings collected at these sites, providing an adequate supply for revegetation efforts.

7.5 Vegetation Establishment

7.4.1 Installing Tube stocks

Tube stock will be planted by hand with the use of an auger. This method increases the seedlings' survival chances, as they are gentle placed into the soil. Tree bags will also be used in this area to prevent feral animals from consuming the new growth on the revegetation area.

7.4.2 Mulch application

Mulch will be harvested from the vegetation that is cleared within the area, and stockpiled until application is required. The mulch will be spread across the revegetation sites to aid in moisture

retention, which will support successful plant establishment. Additionally, as the mulch composts, it will enrich the soil with nutrients, further benefiting the revegetation efforts.

7.6 Signage

The City will install temporary signage informing the public of the active revegetation activities occurring. The signage will also include information on the benefits of revegetation in the area. The information will hopefully increase positive behaviour of the community towards the revegetation areas.

8. Revegetation Schedule

The City has prepared a detailed schedule of actions, including high-level start times for activities, such as site preparations, vegetation establishment maintenance and reporting. Table 6 below outlines the schedule necessary for the City to meet the completion criteria for CPS 10868/1.

Table 4 Revegetation Schedule

Stage	Actions	Timing	Responsibility	Year 1	Year 2	Year 3	Year 4	Year 5
Site Preparation	Weed Control	Initial weed control applications	Project Manager	●	●			
	Bollard/ Bollard repairs and Signs	Year 1	Project Manager	●	●	●	●	●
	Seed Collection	Ongoing starting Year 1	Project Manager	●	●	●	●	
	Plant Propagation	Ongoing starting Year 1	Project Manager	●	●	●	●	●
Vegetation Establishment	Mulching	Year 1	Project Manager	●				
	Watering	Commencing Year 2, then annually thereafter	Project Manager		●	●	●	●
	Planting and infill planting	Ongoing	Project Manager	●	●	●	●	●
	Monitoring of Revegetation site	Commencing in Year 3 then annually thereafter	Project Manager			●	●	●
Maintenance	General Maintenance and rubbish	Ongoing	Project Manager	●	●	●	●	●
	Weed Control	Ongoing	Project Manager	●	●	●	●	●
	Feral Animal control	Ongoing	Project Manager	●	●	●	●	●
	Pruning	Ongoing	Project Manager	●	●	●	●	●
Reporting	Annual Compliance Reporting/ Data collection	Annually	Project Manager			●	●	●

9. Monitoring and Analysis

Revegetation monitoring will be done in Spring in Years three (3), four (4) and five (5) as illustrated in the completion criteria table and schedule. **Table 7** Monitoring will include the following:

- Monitoring must address the completion criteria targets listed in **Section 6.2**.
- The City will engage qualified environmental specialist.
- Vegetation and Flora surveys will be conducted in Spring of Year's three (3), four (4) and five (5).
- Environmental specialist will establish monitoring quadrats to collect flora data that includes the following:
  - Species richness of the 0.106 hectares
  - Total species density
  - Weed cover percentage %
  - Assess presence of declared weeds
  - Measure survival rate percentage % achieved.

Monitoring will be ongoing from Year three (3) to Year five (5) after project completion to ensure revegetation completion criteria have been met and to implement contingency measure(s) where required.
Monitoring reports for the Spring events will be provided to the City of Wanneroo annually, by 30 May.

Table 5: Monitoring requirements and environmental data to be collected to measure success, through completion criteria and targets.

Data Collection Type	Aim of monitoring	Output	Duration
Site- level	A(i) Total Species Richness across entire site.	Floristic survey data, analysis, and discussions.	For the lifetime of clearing permit CPS 10868-1 or until the revegetation is considered successful and met all completion target and criteria.
	B(i)Total Species Density.	Floristic survey data, analysis, and discussions.	
	C(i) Weed Cover.	Data and mapping.	
	C(ii) Declared weeds.	Data and mapping.	
	D(ii) Survival rate to be achieved.	Floristic survey data, analysis, and discussions.	
Quadrat-level	C(i) Weed Cover.	Floristic survey data, analysis, and discussions.	
	C(ii) Declared weeds.	Floristic survey data, analysis, and discussions.	
	D(ii) Survival rate to be achieved.	Floristic survey data, analysis, and discussions.	

10. Maintenance and Contingency Measure

10.1 Revegetation Monitoring and Planting

According to the revegetation monitoring plan, the site will be monitored yearly starting from the third year to conduct survival counts. This monitoring will take place early enough to allow for the ordering of infill seedlings in October for planting the following July. Seedlings will be hand-planted using an auger and by hand to replace non-surviving plants. Large or consistently failing areas, identified as inhospitable, will be investigated to determine why plants are not thriving and if the problem cannot be fixed the areas will be avoided in future in-fill planting.

10.2 Weed Control

As part of the ongoing maintenance, weed control will be conducted starting from the first year and will continue until the completion criteria have been met.

10.3 Bollard Maintenance

Bollards will be maintained, and any necessary repairs will be carried out as needed.

10.4 Maintenance Once Revegetation Completion Criteria Has Been Met

The revegetation site will be handed over to the City's internal Tree's and Conservation Maintenance (TCM) team for ongoing management and maintenance once completion criteria have been satisfied. The TCM team will undertake inspections and the planning and scheduling works (planting, weed management, asset repairs etc) as needed.

11. References

Bureau of Meteorology (BOM) (2024). Daily Rainfall. Available at: Monthly Rainfall - 009264 - Bureau of Meteorology accessed on 15 May 2025

City of Wanneroo (2024) IntraMaps (The CoW's mapping tool for internal and external use) City of Wanneroo > Property (t1cloud.com) accessed on 16 May 2025

Department of Biodiversity, Conservation and Attractions (DBCA) (2023). Artificial Hollows for Black Cockatoos Fauna Notes. Perth. Government of Western Australia

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12. Appendices