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HEGS Geotech Investigation – Section 51DA Clearing Referral

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Executive Summary

The Rottnest Island Authority is seeking approval under a clearing referral to undertake limited vegetation disturbance associated with geotechnical investigations and the construction of three under-rail service crossings on Wadjemup / Rottnest Island. The proposed works are required to inform project design and enable the early delivery of critical infrastructure, while ensuring potential environmental constraints are identified and appropriately managed.

The geotechnical investigation comprises 24 proposed test sites to confirm subsurface conditions, including groundwater depth and the potential presence of acid sulfate soils. Of these, vegetation disturbance is required at only two sites, where access through vegetated areas is necessary and no existing tracks are available. Disturbance at these locations will be limited to temporary flattening or compression of ground-level vegetation associated with access by a soft-tracked drill rig and the establishment of small work pads. The investigation methodology and site selection have been refined to avoid and minimise vegetation disturbance to the greatest extent practicable.

In addition, this clearing referral includes limited clearing to facilitate the construction of three under-rail service crossings in the South Thomson area of Wadjemup / Rottnest Island. The crossings will be constructed using a micro-tunnelling methodology, requiring excavation of launch and receival pits on either side of the rail corridor. One of the geotechnical investigation locations (BH1) aligns with a proposed pit location, allowing disturbance to be consolidated within the same footprint. This approach further minimises the extent of vegetation disturbance and avoids open trenching within the rail reserve.

Desktop and fieldbased environmental assessments confirmed that the proposed works do not occur within, or impact, any Threatened Ecological Communities or Environmentally Sensitive Areas requiring additional protection beyond those already identified. Fauna habitat within the disturbance footprint is common and well represented elsewhere on the island, and the limited scale of the clearing is not expected to result in a material impact on conservation significant fauna species.

Overall, the proposed vegetation clearing is localised and confined to the smallest practicable footprint necessary to safely undertake the works. The clearing referral demonstrates that impacts have been avoided and minimised through careful planning, colocation of activities, and selection of lowimpact construction methods, consistent with the clearing principles and environmental management objectives of the Department of Water and Environmental Regulation.

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1. Introduction

The Rottnest Island Authority (RIA) is proposing to upgrade the existing hybrid power system on Wadjemup / Rottnest Island. The upgrades will involve developing a new Hybrid Electricity Generating System (**HEGS**). Approval documentation for this project (referral to the Environmental Protection Authority (**EPA**) and an application to the Department of Water and Environmental Regulation (**DWER**) for a clearing permit) are planned to be submitted mid-2026.

As part of the project planning process for HEGS, a Geotechnical investigation has been identified as a requirement to support referral to the EPA and DWER. Geotechnical investigations will confirm subsurface conditions along the HEGS preferred and optional cable routes and will target locations where ground levels are <3 m AHD and/or where acid sulfate soil (ASS) risk has been identified, to determine the depth to groundwater and whether ASS is present (**Figure 1**). The proposed cable installation will involve burial at approximately 1.1 m depth (providing 900 mm cover to the top of a 150 mm conduit), with the potential for horizontal directional drilling (**HDD**) to extend slightly deeper if required. Where ASS is encountered, alternative routing may be necessary to avoid disturbance, while intercepting the water table would trigger a change from open trenching to HDD. Conducting the geotechnical investigation at this stage ensures these constraints and potential construction method changes are understood and can be incorporated into project planning before referral. To minimize environmental impacts, RIA is also seeking to combine power and water routes and installation works where possible with geotechnical investigations to also cover requirements for water network planning. The water geotechnical investigations require greater depths than can be achieved by hand-portable augers.

In addition to the Geotechnical investigation, further works are proposed under this clearing referral to enable the early delivery of critical enabling infrastructure within an area that aligns with the geotechnical investigation locations. These additional works involve the construction of three under-rail crossings in the South Thomson area (**Figure 2**). Only the under-rail crossings are proposed at this stage and included in this clearing referral. The proposed works involve the construction of three under-rail service crossings using a micro-tunnelling methodology. Each crossing will require the excavation of a launch and receival pit measuring approximately 4.0 m long by 3.0 m wide and 2.0 m deep to accommodate the micro-tunnel drill rig. Pit excavation will be undertaken using a small 8–10 tonne excavator. The crossings beneath the rail corridor will be constructed using a compact micro-tunnelling machine, which thrust-bores service sleeves beneath the rail alignment, avoiding the need for open trenching within the rail reserve. This construction method has been previously used successfully on Wadjemup / Rottnest Island during delivery of the Quod Sewer project.

Although 24 geotechnical test sites are proposed, vegetation disturbance will occur at only two sites (**Figure 3**). This demonstrates that the scope and investigation methodology have been refined to avoid and minimise vegetation disturbance to the greatest extent practicable. Of the 24 test sites, nine will be undertaken using hand-portable augering, three will rely on existing historic geotechnical data from a previous project, and twelve will be accessed using a soft tracked drill rig, with vegetation disturbance required at only two of these sites (Figure 4). Geotechnical investigation location ‘BH1’ (**Figure 3**) coincides with the area of the additional proposed works associated with the construction of three under-rail crossings (**Figure 2**).

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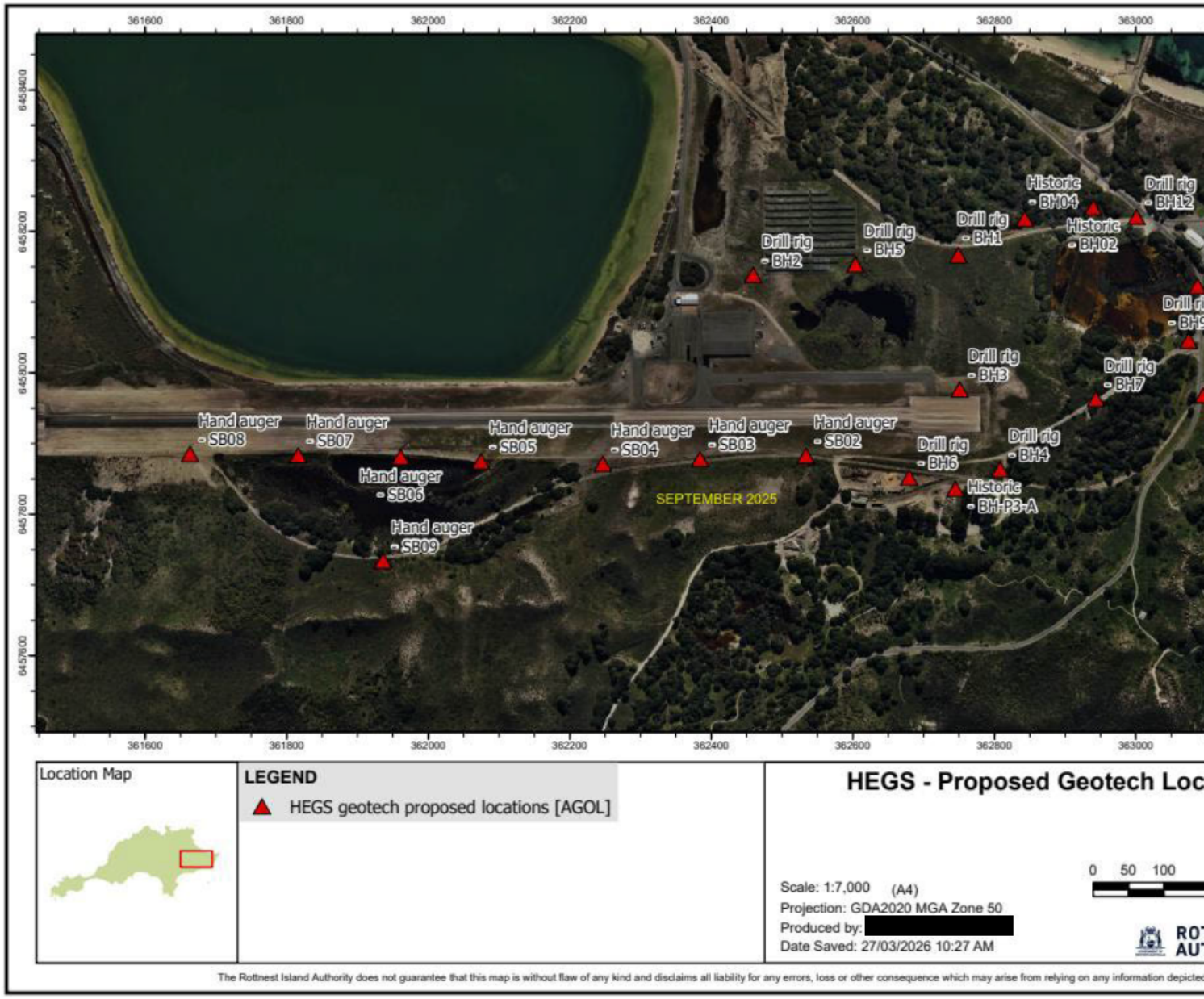

Figure 1: Proposed Geotechnical test sites. Only two of the sites (BH1 and BH4) require vegetation disturbance.

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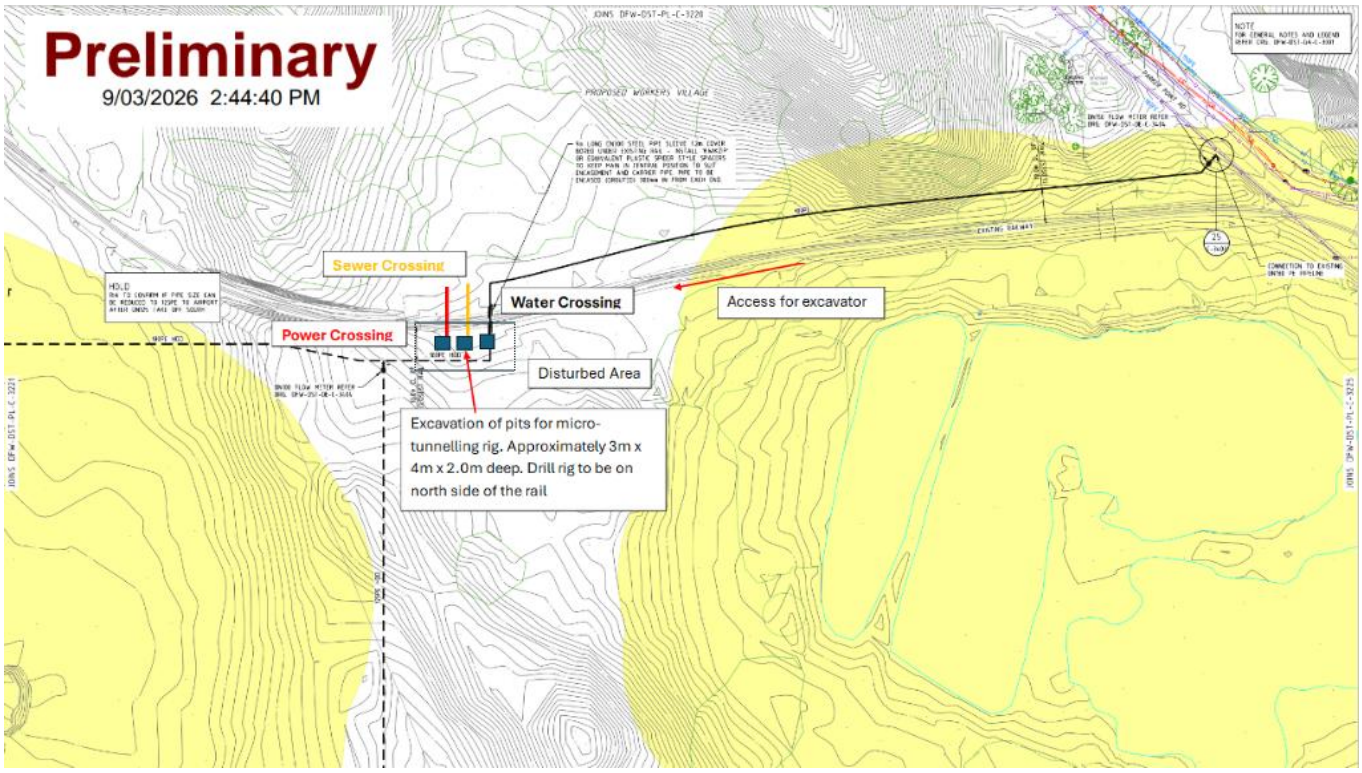

Figure 2: Location of the construction of three under-rail crossings.

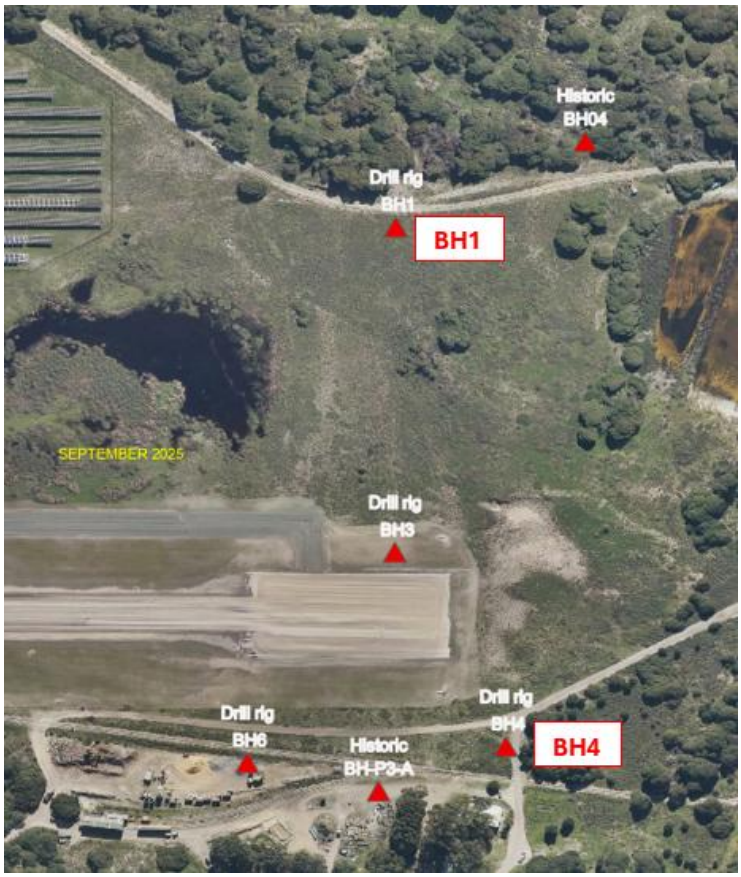

Figure 3: Two proposed geotechnical test sites (BH1 and BH4) that involve vegetation disturbance associated with a soft tracked drill rig. Other drill sites shown are on cleared areas or are historic.

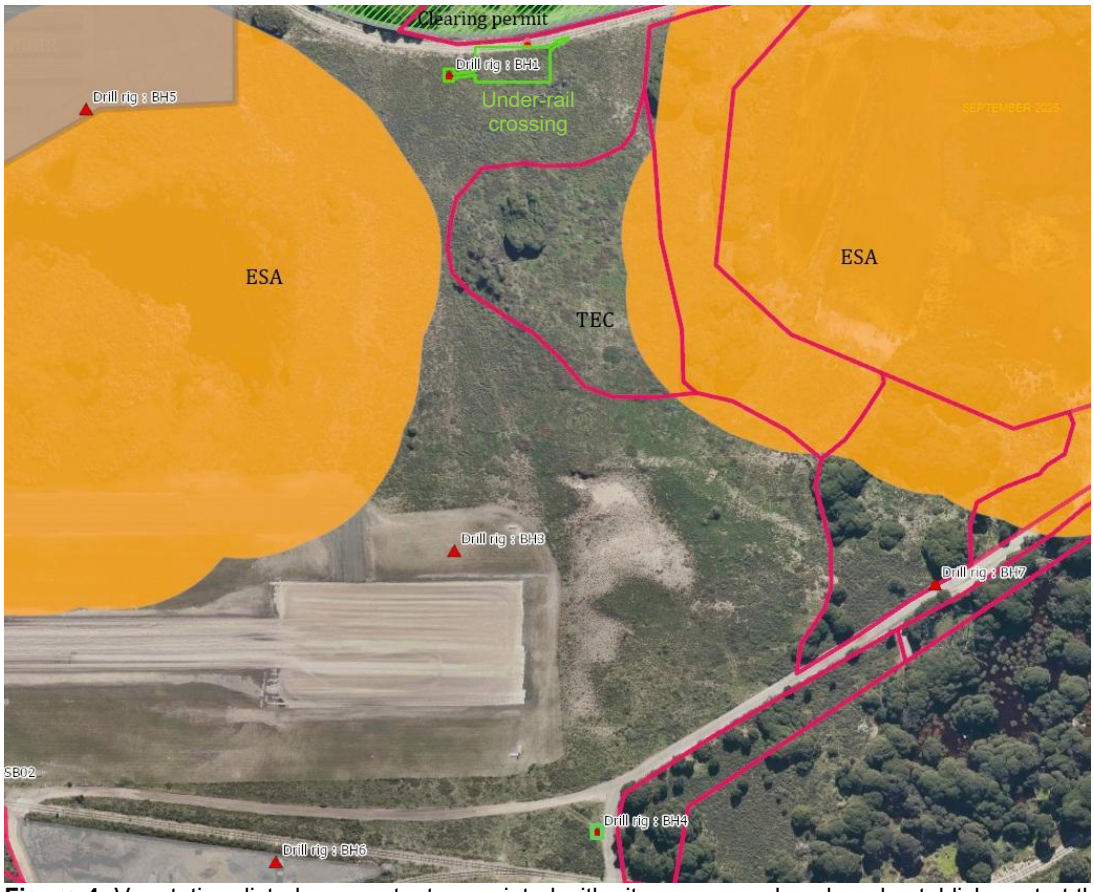

Figure 4: Vegetation disturbance extent associated with site access and work pad establishment at the two proposed geotechnical test sites and the vegetation disturbance associated with the under-rail crossing. Disturbance footprint outlined in light green. The area shaded in diagonal light green stripes is covered by existing clearing permit CPS 10450/1.

1.1 Project background

RIA is proposing to upgrade the existing hybrid power system to meet a forecast increase in demand due to new developments on Wadjemup / Rottnest Island and achieve up to 75% of the annual energy produced from renewable sources for the first three years of operation (currently operating at 21%). This will be achieved by developing a new HEGS, comprising a battery energy storage system (**BESS**), new solar array and new diesel power station in the southern part of the island and associated network connections. The HEGS will be supported by the progressive introduction of rooftop solar and distributed battery systems on the island.

To enable the early delivery of critical enabling infrastructure upgrades on Wadjemup / Rottnest Island, additional works are proposed as part of the Water Distribution Network project, comprising the construction of three under-rail service crossings in the South Thomson area to provide future sewer, water, and power services to the proposed Light Industrial Area (LIA) and Airport. With commencement of the Worker Accommodation project north of the rail line imminent, the timely construction of these underrail crossings is required to avoid potential delays. Only the underrail crossings are proposed at this stage and are included in this clearing referral. The works will be undertaken using a microtunnelling methodology.

1.2 Description of proposed clearing

1.2.1 Purpose

A geotechnical investigation is required to inform detailed project design and confirm subsurface conditions along the proposed alignment. Two of the proposed geotechnical test sites occur within vegetated areas (**Figure 4**), where access and subsurface sampling will be undertaken using a soft tracked drill rig (**Figure 5**). Vegetation disturbance will be limited to temporary flattening or compression of ground-level vegetation associated with drill rig access,

manoeuvring and the establishment of a small work pad at each test site. This clearing referral addresses the temporary vegetation disturbance required to facilitate geotechnical drilling, which has been minimised through careful route planning and site selection and confined to the smallest practicable footprint.

Figure 5: Geoprobe Model 7822DT.

In addition, clearing is required to facilitate the construction of three under-rail service crossings within the South Thomson area (**Figure 2**). One of the proposed geotechnical investigation locations (**BH1**) aligns with the location of a launch and receival pit for the under-rail crossings, allowing these works to be co-located and disturbance to be consolidated within the same footprint. The crossings will be constructed using a micro-tunnelling methodology, with pits excavated on either side of the rail corridor to enable installation of service sleeves beneath the rail alignment without open trenching (**Figure 6**). Vegetation disturbance will be limited to areas required for pit excavation, access, and safe operation of machinery. This clearing referral addresses the vegetation disturbance associated with these works, which has been minimised through careful coordination and planning with the geotechnical investigation and confined to the smallest practicable footprint.

Figure 6: Example of works showing the drill rig in the pit.

1.2.2 Location

Vegetation disturbance is limited to locations where project works intersect vegetated areas and no existing tracks or access paths are available. This includes selected geotechnical test sites and an area associated with the construction of under rail service crossings. In these locations, access for plant and equipment may require traversal or manoeuvring over ground level vegetation. Alternative access routes and work layouts will be considered wherever possible to minimise vegetation disturbance.

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Vegetation disturbance associated with the geotechnical investigation will occur where soft tracked drill rig access is required and will involve:

- Compression or flattening of ground-level vegetation for the drill rig to reach test sites.
- Minor disturbance of vegetation that sits directly under the drill auger.
- Establishment of small (approximately 4m wide x 5m long) work pads at drilling points, where vegetation will be temporarily compressed under the rig footprint and personnel movement around the rig.

The extent of vegetation disturbance required to complete the geotechnical investigation is limited to the ground contact area of the soft tracked drill rig where access through vegetation is required. The estimated vegetation disturbance associated with the drill rig access to the two geotechnical test sites (Figure 4) is summarised in Table 1. In addition, vegetation disturbance will occur at the location of the proposed under-rail service crossings in the South Thomson area (Figure 2). One of the geotechnical investigation locations (BH1) aligns with the proposed pit, enabling the disturbance associated with these works to be consolidated within the same general footprint (Table 1).

Table 1: Estimated vegetation disturbance associated with geotechnical drilling and under-rail service crossings.

Location	Distance to site from nearest existing access track (metres)	Estimated vegetation disturbance from access (ha)	Estimated vegetation disturbance from works (ha)	Total estimated vegetation disturbance (ha)
BH1	50 m	0.0075 ha	0.002 ha	0.0095 ha
BH4	0 m	0 ha	0.002 ha	0.002 ha
Under-rail crossing	0 m	0 ha	0.042 ha (construction pit)	0.042 ha
Total (note access track to BH1 crosses through the construction pit disturbance area)				**0.0535 ha**

1.2.3 Clearing methods and timing

Access to the two geotechnical test sites within vegetated areas will be undertaken using a soft tracked drill rig (Geoprobe Model 7822DT) (Figure 5). Vegetation disturbance at these sites will be limited to the temporary flattening or compression of ground-level vegetation resulting from drill rig access, manoeuvring, and operation, with minor disturbance of vegetation that sits directly under the drill auger. The drill rig is expected to be present at each test site for approximately 5 hours, after which the rig will be removed and vegetation allowed to recover naturally.

Clearing associated with the construction of the three under-rail service crossings will involve excavation of launch and receival pits on either side of the rail corridor using a small (8–10 tonne) excavator. The pit location has been co-located with geotechnical investigation works, at BH1, to consolidate disturbance within the same footprint. Clearing vegetation at this location will be limited to that required for pit excavation, access, and safe operation of plant and equipment. The under-rail crossings will be installed using a micro-tunnelling methodology, which avoids open trenching within the rail corridor and limits vegetation disturbance to the immediate pit area. The RIA would like to progress these works in April 2026 (pending the outcome of this clearing referral).

1.3 Proponent details

Rottnest Island Authority is the proponent for the proposed clearing, as summarised below.

Name: Rottnest Island Authority
Postal address: PO Box 693, Fremantle WA 6959
ABN: 38836160172

The key contact is:

Name: [redacted]
Position: Environment Compliance and Approvals Coordinator

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[redacted]

1.4 Supporting technical reports

1.4.1 Flora and vegetation

Three flora and vegetation surveys have been undertaken as summarised below:

- Flora and Vegetation Survey, South Thomson and Kingstown, Rottnest Island (Wadjemup) (Focused Vision Consulting, 2022) (Figure 7)
- Flora and Vegetation Assessment Various Areas, Rottnest (Emerge Associates, 2025)
- Spring Flora Survey 2024: Porpoise Bay, Lake Baghdad and Wind Turbine (Natural Areas Management Services, 2024)
- Flora and Vegetation Assessment, proposed Light Industrial (Focused Vision Consulting, 2026)

Data from these surveys have been used to support this clearing referral.

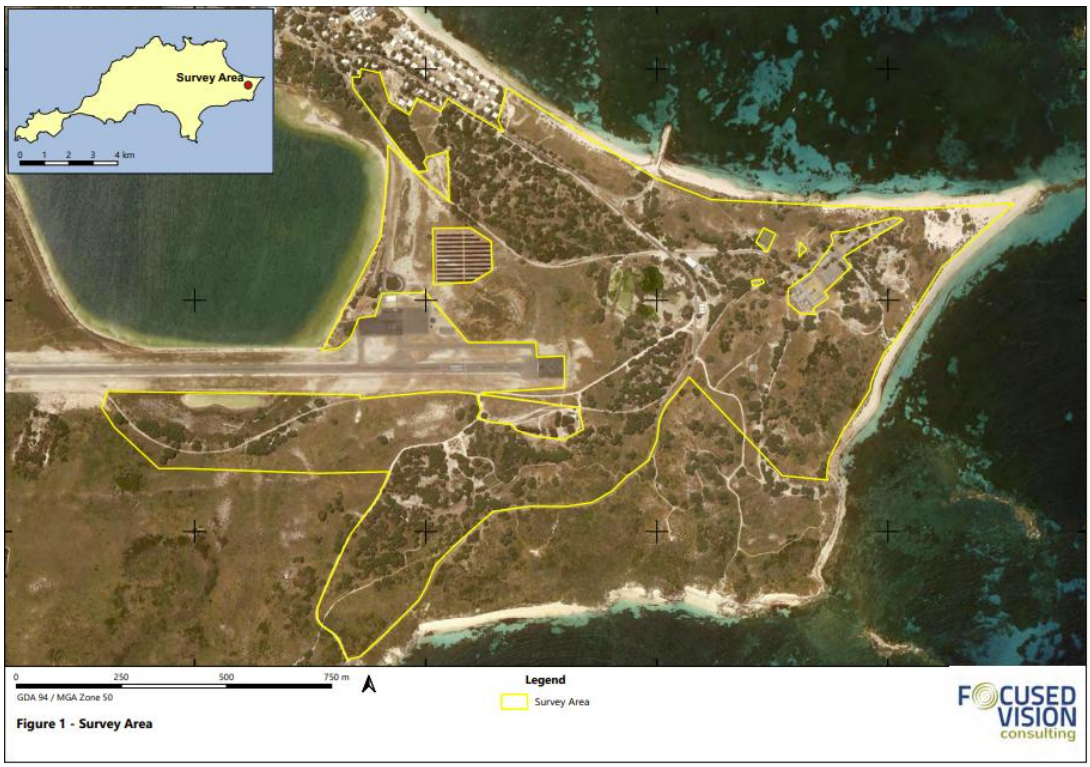

Figure 7: Focused Vision Consulting survey area.

2. Stakeholder engagement

The RIA has identified that a number of proposed geotechnical test sites are located within Environmentally Sensitive Areas (ESA). Two sites require vegetation disturbance to enable access and subsurface investigation although these are not located within an ESA. The remaining geotechnical test sites are accessible via existing tracks or the railway and will not require vegetation disturbance. In addition, limited vegetation disturbance is proposed at the location of the three under rail service crossing in the South Thomson area. During a pre-clearing referral submission meeting with Meenu Vitarana from the DWER, it was concluded that the proposed vegetation disturbance meets the criteria of a clearing referral application.

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3. Existing environment

3.1 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalisation for Australia (IBRA) divides Australia into bioregions based on major biological and geographical/geological attributes. The geotechnical test sites and location of the proposed under rail crossing are situated within the Perth (SWA02) subregion of the Swan Coastal Plain bioregion. The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats and coastal limestone. Woodlands and associated heath communities are the primary vegetation group of this area whilst Melaleuca forests and woodlands comprise the secondary vegetation group of the geotechnical test sites and location of the proposed under rail crossing.

3.2 Topography

The topography of the geotechnical test sites and location of the proposed under rail crossing is relatively flat at approximately less than 5 metres Australian Height Datum (AHD) (Figure 8).

Figure 8: Topography.

3.3 Soil landscape mapping

Soil landscapes and land system mapping of Western Australia describes the broad soil and landscape characteristics from regional to local scales. The geotechnical test sites and location of the proposed under rail crossing comprises the Quindalup South System (211Qu) which comprises coastal dunes of the Swan Coastal Plain, with calcareous deep sands and yellow sands (Figure 9).

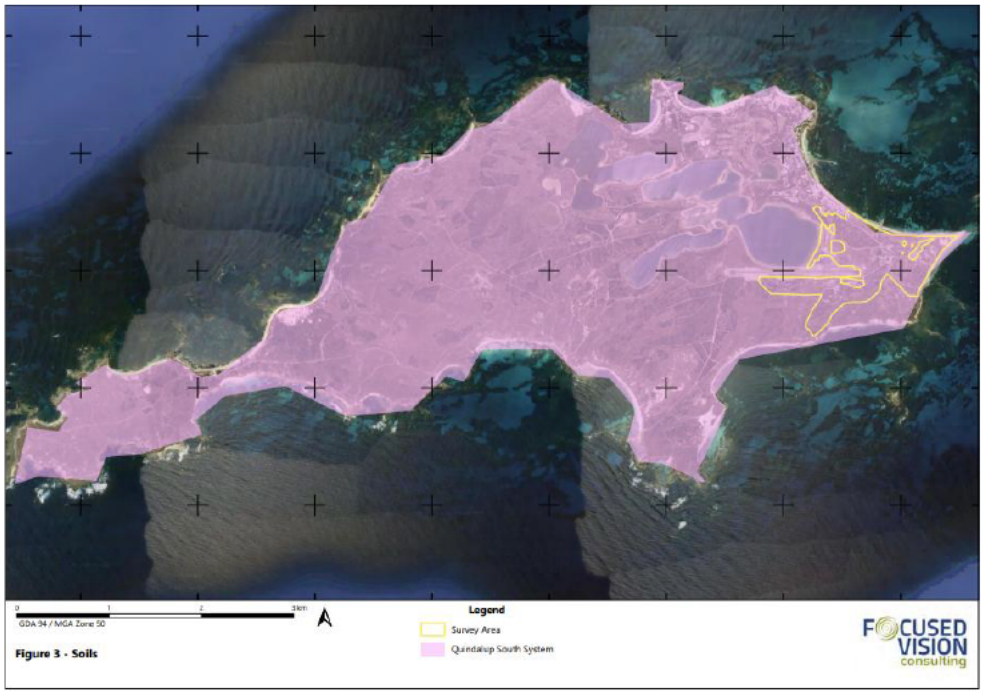

Figure 9: Soils.

3.4 Vegetation and flora

3.4.1 Vegetation complex

Vegetation complexes within the geotechnical test sites and location of the proposed under rail crossing have also been defined by Heddle et al. (1980) and are based on vegetation in association with landforms and underlying geology. Only the Quindalup Complex occurs within the investigation area and this complex is described as coastal dune consisting of two alliances, the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low, closed forest of *Melaleuca lanceolata* (Rottnest Teatree) and the *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low, closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay.

The pre-European extent and current known extent of this complex is summarised in Table 2. In the absence of specific data for Rottnest Island (Wadjemup), information relevant to the Swan Coastal Plain and the City of Cockburn, as the island falls within the district of the City of Cockburn.

Table 2: Regional extent of the Quindalup Complex

Region	Pre-European extent (ha)	Current extent (ha)	Pre-European extent remaining (%)
Swan Coastal Plain	54,573.87	33,011.64	60.49
City of Cockburn	1,021.62	728.23	71.28

The Commonwealth's National Targets and Objectives for Biodiversity Conservation (Environment Australia 2001) recognises that the retention of 30%, or more, of the preclearing extent of each ecological community is necessary if Australia's biological diversity is to be protected. The EPA uses vegetation complexes as the basis for regional representation of biodiversity and has an objective to seek to retain at least 30% of the preclearing extent of each vegetation community (EPA 2015). The remaining extent for the Heddle et al. (1980) Quindalup Complex exceeds the 30% threshold for the Swan Coastal Plain IBRA region and City of Cockburn extents (Table 2).

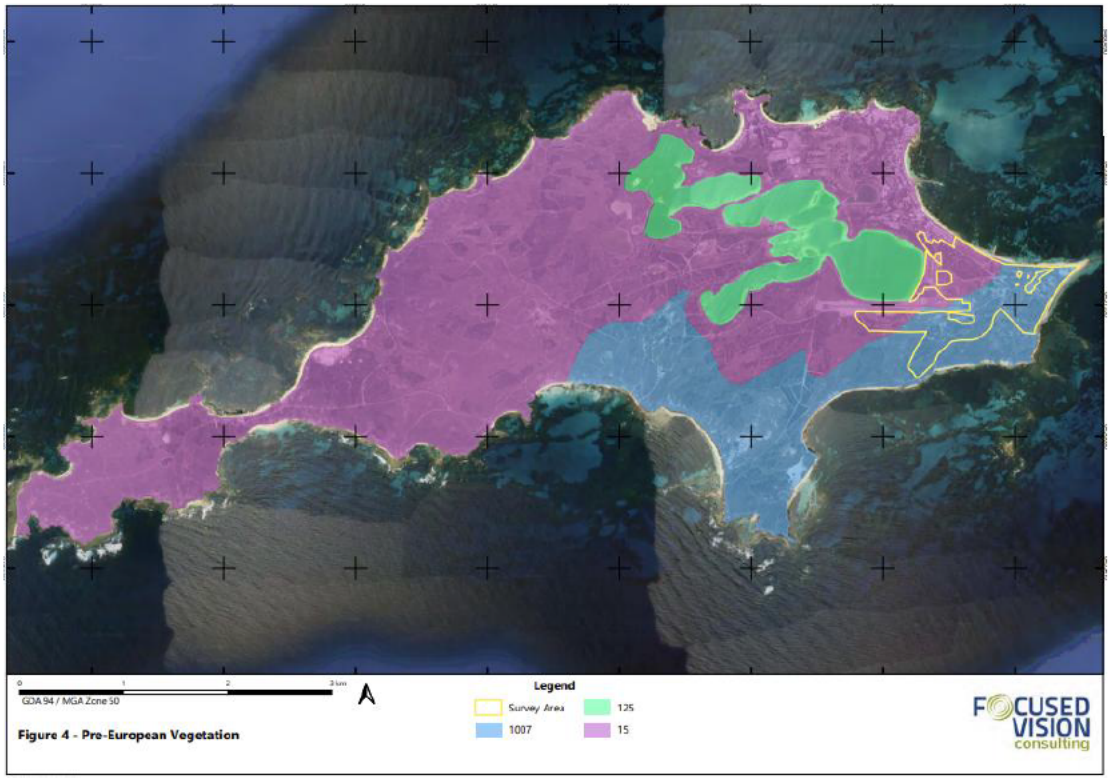

Figure 10: Pre-European Vegetation.

3.4.2 Vegetation types

One vegetation type was recorded within the geotechnical test sites and location of the proposed under rail crossing by Focused Vision Consulting (2023, 2026), as described below.

- *Melaleuca lanceolata* and *Callitris preissii* Tall Sparse Shrubland over *Guichenotia ledifolia, Acanthocarpus preissii* and *Rhagodia baccata* Shrubland over *Trachyandra divaricata* Low Sparse Forbland (MIGI).

This vegetation type is described in Table 3 and shown in Figure 11.

Table 3: Vegetation types within the two geotechnical test sites and location of the proposed under rail crossing.

Vegetation type	Description	Location	Photograph
Melaleuca/ Guichenotia Shrubland (MIGI)	*Melaleuca lanceolata* and *Callitris preissii* Tall Sparse Shrubland over *Guichenotia ledifolia, Acanthocarpus preissii* and *Rhagodia*		

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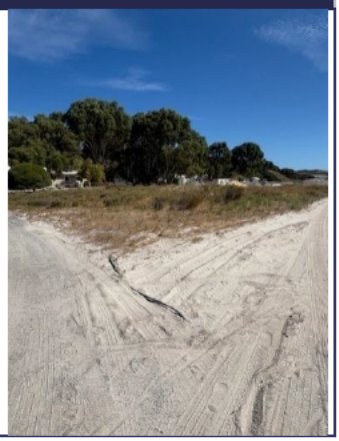
Vegetation type	Description	Location	Photograph
	baccata Shrubland over *Trachyandra divaricata* Low Sparse Forbland		

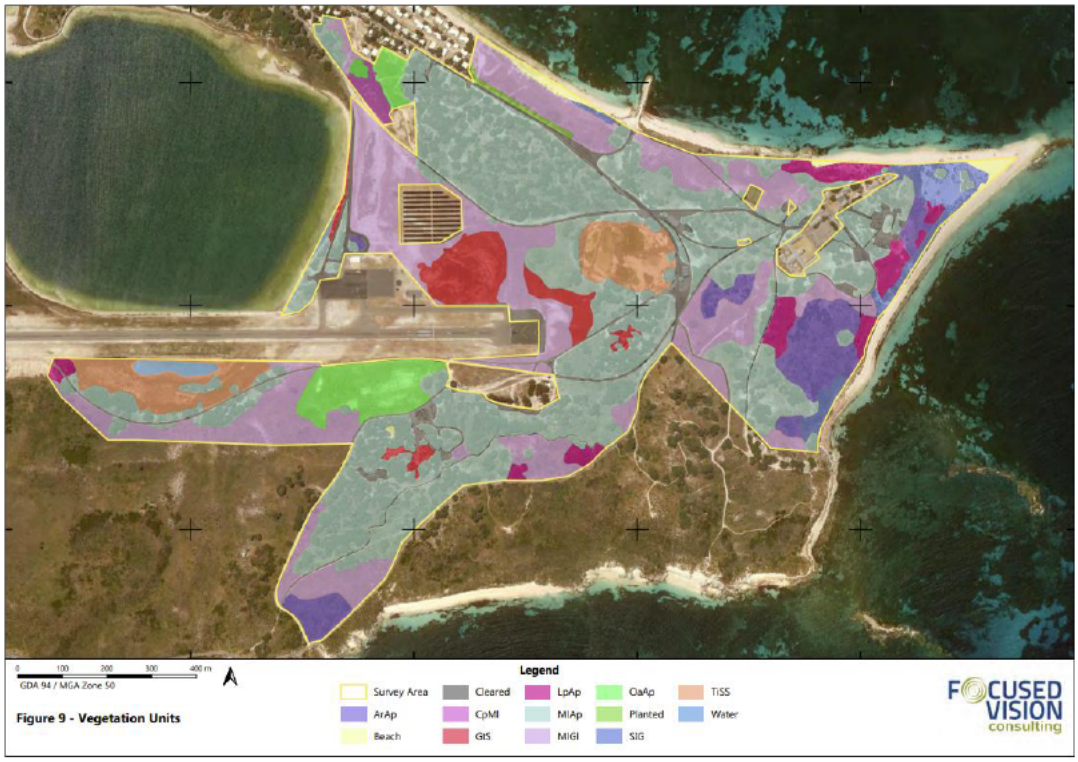


Figure 11: Vegetation Units.

3.4.3 Vegetation condition

According to Focused Vision Consulting (2023), the condition of the vegetation within the investigation area was found to range from 'Excellent' to 'Completely Degraded' with one other classification (Open Water). The drill rig test sites are all in a 'Degraded' condition (Figure 12). The spatial extent of the varying vegetation condition from the 2023 survey is presented in Figure 12.

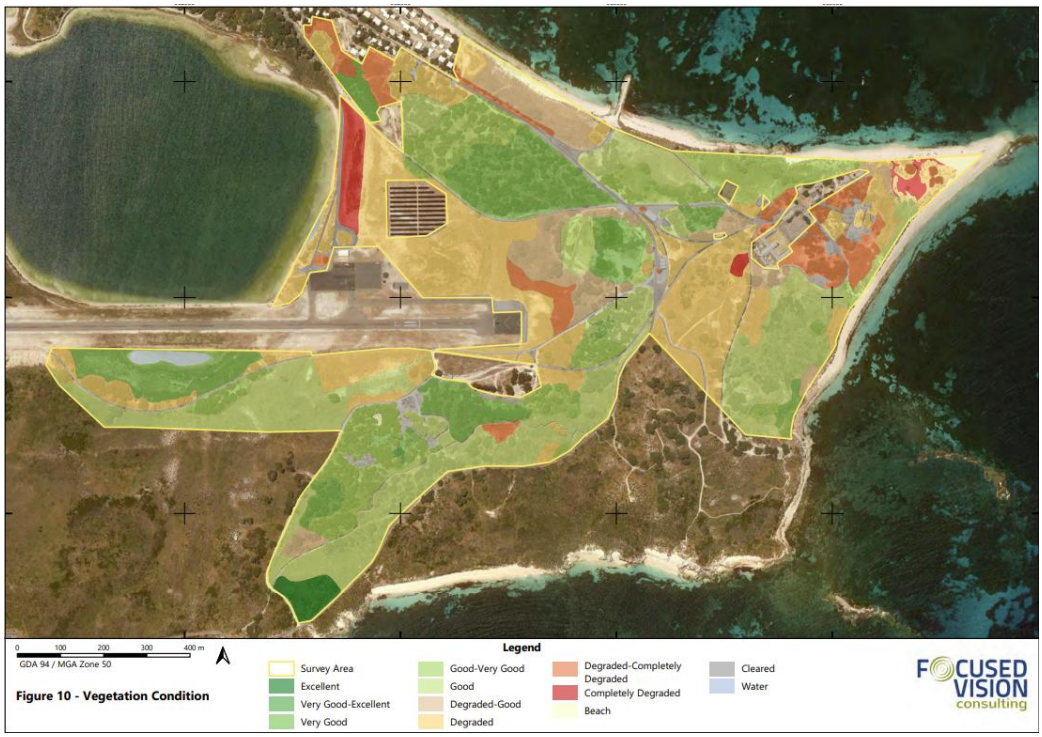


Figure 12: Vegetation condition.

Vegetation within the investigation area remains classified as MIGI and in degraded condition, as identified in a flora and vegetation survey completed by Focused Vison Consulting in November 2025, however, this survey did not encompass the area in which BH4 is located.

3.4.4 Ecological communities

A review of available vegetation mapping confirms that the proposed geotechnical test sites and location of the proposed under rail crossing do not occur within a Threatened Ecological Community (TEC). While the vegetation present includes species associated with TECs known from the Swan Coastal Plain, the composition, structure, and condition of vegetation at the investigation area does not meet the criteria for a listed TEC under the state *Biodiversity Conservation Act 2016*.

3.4.4.1 Habitat for the threatened ecological community

The proposed geotechnical test sites, location of the proposed under rail crossing and associated access routes do not include or support habitat for any TEC.

3.4.5 Conservation significant flora

No state listed Priority or Threatened flora or EPBC listed Threatened flora were recorded within the proposed geotechnical test sites and location of the proposed under rail crossing (FVC 2023, 2026).

3.4.6 Environmentally sensitive areas

Environmentally Sensitive Areas (ESA) are prescribed under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* and have been identified to protect native vegetation values of areas surrounding significant, threatened or scheduled flora, vegetation communities or ecosystems. ESAs are declared by the Minister for Environment under Section 51B of the EP Act. The following areas are declared to be ESAs:

- Declared World heritage property as defined in section 13 of the EPBC Act

- Area that is included on the Register of the National Estate, because of its natural heritage value, under the *Australian Heritage Council Act 2003*
- Defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands
- Conservation Category Wetlands and nationally important wetlands
- Area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located
- Area covered by a TEC
- Bush Forever site listed in Bush Forever policy.

Several of the proposed geotechnical test sites are located within an ESA, however no vegetation disturbance is expected at these sites as they are all accessible using existing tracks. The ESA designation relates to Government House Lake, which is part of the Rottnest Island Lakes (WA089) and listed under the Directory of Important Wetlands in Australia.

3.5 Inland water

3.5.1 Hydrology and surface water

No surface water features occur within the proposed geotechnical test sites or the under-rail crossing. However, the geotechnical test sites are located adjacent to the mapped boundary of Bickely Swamp and Government House Lake, which form part of the Rottnest Island Lakes (WA089) listed in the Directory of Important Wetlands in Australia. The nearest geotechnical test site is separated from Bickely Swamp by approximately 112 metres of Heath vegetation and from Government House Lake by approximately 400 metres (Figure 13).

Figure 13: Surface water.

3.5.2 Groundwater

CMW Geosciences (2024) undertook a geotechnical investigation for the RIA in relation to the proposed Sewer and Fuss Village. The borehole from this investigation closest to the proposed geotechnical test sites and under rail crossing recorded a surface elevation of 1.74m AHD and a depth to groundwater of 1.61m. This corresponds to a groundwater elevation of approximately 0.13m AHD. Groundwater levels were measured from standpipes installed approximately four weeks after completion of field investigations and are therefore considered to provide a reliable indication of groundwater conditions. Measured groundwater elevations were at, or slightly above, mean sea level (RL 0 m AHD), which is consistent with expectations given the high permeability of the Tamala Sand.

3.6 Terrestrial fauna

A desktop assessment and likelihood of occurrence assessment were undertaken to identify conservation significant fauna species with the potential to occur within the geotechnical investigation area and location for the proposed under rail crossing (Table 4). As the investigation area does not contain marine or wetland habitats, fauna species reliant on these habitat types were excluded from the assessment. While conservation significant fauna species may occur within the area, the fauna habitats present are well represented elsewhere on the island, and any vegetation disturbance associated with the proposal is not expected to result in a material reduction in the availability of habitat for these species.

Emerge Associates (2025) conducted a basic and targeted fauna assessment that included the investigation area. During this assessment, a skin shed of a Rottnest Island bobtail (*Tiliqua rugosa konowi*; Vulnerable) was opportunistically recorded within dune habitat. Two skin sheds attributable to a single Rottnest Island dugite (*Pseudonaja affinis*; Priority 4) were also recorded within woodland and dune habitats. These records indicate that both species are likely to occur at low densities within the area.

The limited number of records provides little information regarding population distribution or habitat preferences within the investigation area; however, low scrubland, woodland and dune habitats are considered the most suitable for these species. The Perth slider (*Lerista lineata*; Priority 3) was not detected during the assessment. The Quokka (*Setonix brachyurus*; Vulnerable) were recorded frequently across the site.

Table 4: Conservation significant fauna species with the potential to occur within the geotechnical investigation area and location of the proposed under rail crossing.

Species	Conservation Status		Habitat	Likelihood assessment
	EPBC Act	BC Act / DBCA		
Setonix brachyurus **(Quokka)**	Vulnerable	Vulnerable	The quokka prefers dense understorey, less than ten years since fire, adjacent vegetation age that is greater than 25 years and the absence of feral predators. The understorey structure of the habitats currently inhabited by the quokka consist of dense, low vegetation that provides refuge from predation. These covered/shady microhabitats may also be important during the hotter months, particularly on Rottnest Island (Wadjemup), where animals converge in dense thickets of *Gahnia* spp. And *Acanthocarpus* spp.	**Present** Suitable habitat is present within the investigation area and the Quokka is widespread across the island, occurring in most habitat types.
Pandion haliaetus **(Eastern osprey)**	-	Vulnerable	The Eastern osprey occurs in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging.	**Unlikely** Marginal habitat for this species is present within the investigation area, however there are no tall trees suitable perching. The species is highly mobile and may utilise the investigation area as a transient visitor.
Tiliqua rugosa konowi **(Rottnest Island bobtail)**	-	Vulnerable	Rottnest Island bobtails are common around limestone rocks and prefer limestone heath, woodland, and coastal habitats.	**Likely** Suitable habitat is present within the investigation area.
Lerista lineata **(Perth slider)**	-	Priority 3	The species was recorded in *Acacia rostellifera* scrub on Rottnest Island (Wadjemup) in 2016. Occurs in white sand.	**Likely** Suitable habitat is present within the investigation area.
Pseudonaja affinis exilis **(Rottnest Island dugite)**	-	Priority 4	Dugites live in abandoned burrows or hollow logs and prefer coastal habitat, limestone heath, woodland, and the Settlement areas of the island.	**Likely** Suitable habitat is present within the investigation area.

3.6.1 Ecological linkages

The majority of Rottnest Island is vegetated, providing habitat connectivity across the island. Vegetation within the investigation area is contiguous with extensive areas of vegetation across the remainder of the island (Emerge Associates, 2025). The proposed disturbance is not considered to compromise an ecological linkage.

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3.7 Terrestrial environmental quality

3.7.1 Acid sulfate soils

Acid sulfate soils (ASS) are naturally occurring soils containing iron sulfide minerals formed under saturated anoxic conditions. In an undisturbed state below the water table, these soils are benign and non-acidic. However, if the soils are exposed to the atmosphere through activities such as drainage, excavation or dewatering, the sulfides may react with oxygen to form sulfuric acid. A review of RIA's ASS mapping indicates that one of the geotechnical test sites (BH4) is within a moderate to low ASS risk area (Figure 14).

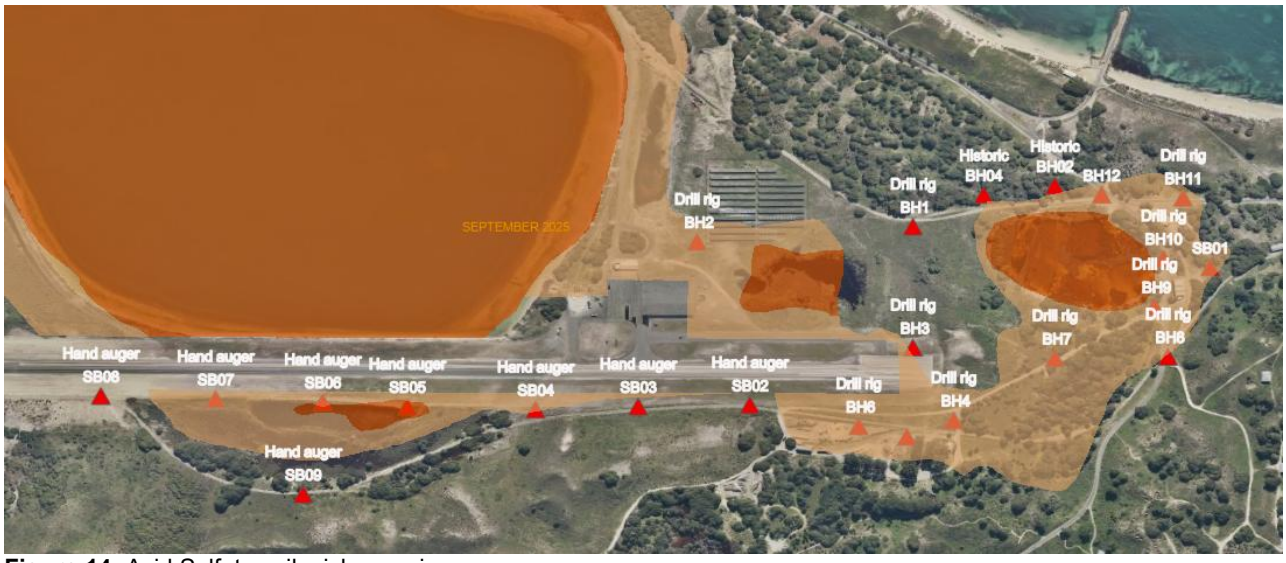

Figure 14: Acid Sulfate soils risk mapping.

3.7.2 Contaminated sites

A review of the DWER Contaminated Sites Database did not identify any registered contaminated sites which may impact the geotechnical study or under rail crossing. One possibly contaminated site where investigation is required is located approximately 630 metres from the closest geotechnical test site (Figure 15).

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Figure 15: Contaminated sites mapping.

3.8 Social surroundings

3.8.1 Aboriginal heritage and culture

A search of the RIA and Department of Planning, Lands and Heritage's (DPLH) registered and lodged Aboriginal Heritage places, did not identify any Registered or Lodged Aboriginal cultural heritage sites within the geotechnical test sites and location of the proposed under rail crossing. There are several Lodged sites, a Registered site and a site awaiting lodgement surrounding the investigation area (Figure 16). Activity Notice #59 (LIA to Porpoise Bay) completed in 2023 did not identify any Aboriginal heritage artefacts in this area.

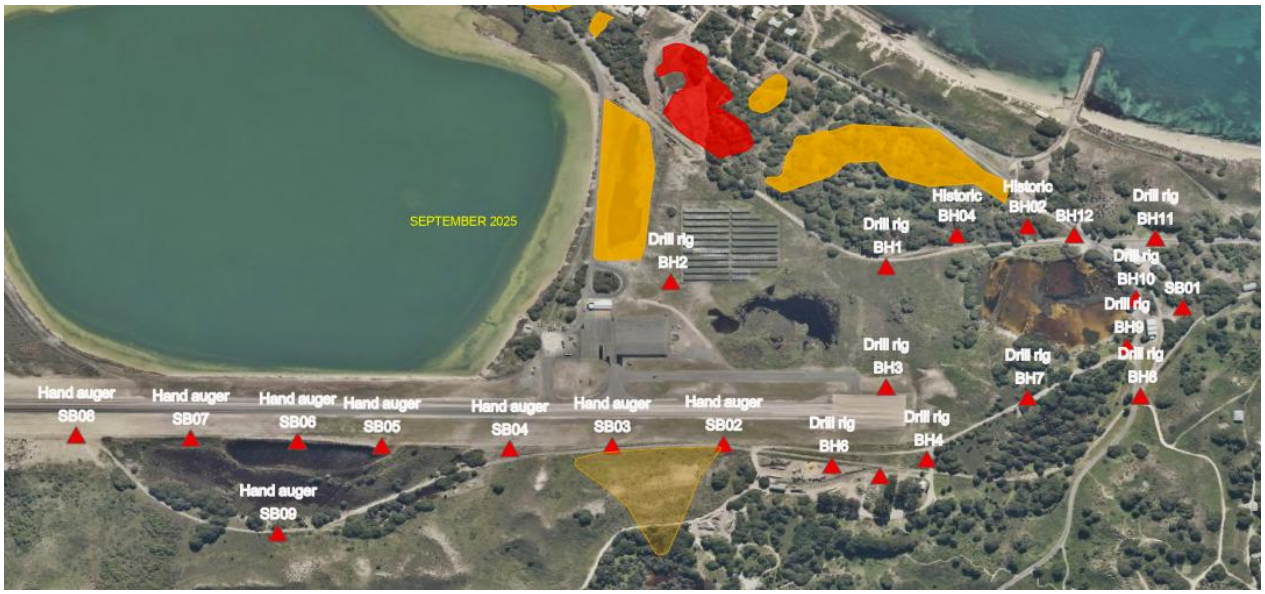

Figure 16: Aboriginal cultural heritage mapping.

3.8.2 Historic heritage

A search of the Heritage Council's inHerit database did not identify any heritage places within the investigation area that would be impacted by the proposed vegetation disturbance. The closest historic heritage place to the area is Heritage Place number 525 (Kingstown Barracks), Wadjemup / Rottnest Island), located approximately 135 metres to the east of the closest geotechnical test site (Figure 17).

Figure 17: European Heritage mapping.

4. Impact assessment

4.1 Summary of proposed clearing

The works include the use of a drill rig to access locations to complete drilling for geotechnical and environmental purposes and a small excavator and micro-tunnelling rig for construction of three under-rail service crossings. A total of up to 0.0535 ha is proposed to be disturbed. It is considered that the activity of driving over vegetation will not result in the complete death of all vegetation outlined in the clearing referral, however, for conservativeness the RIA has included this activity in the clearing referral.

4.2 Avoidance and mitigation measures

RIA has applied the principles of avoidance and mitigation as best as practically possible to avoid vegetation disturbance. The key mitigation and avoidance measures implemented are summarised below.

- A total of 24 locations are required to be investigated to achieve the objectives of the investigation. Out of this total number, RIA has reduced the number of locations requiring a drill rig over vegetation to the lowest number possible, being two locations, by either:
    - Selecting locations that are on existing tracks or road shoulders that do not require any vegetation disturbance.
- Utilising a hand auger or hand-portable powered augur in areas devoid of vegetation to avoid vegetation disturbance.
    - Utilising information gathered from previous investigations to eliminate locations that might be otherwise required.
- RIA will procure a drilling contractor that is confident in working in sensitive environments.
- The drill rig has rubber tracks to reduce the physical impact to vegetation as best as possible.
- Rubber mats can be laid for the drill rig to drive over to help prevent vegetation disturbance.
- Selection of access routes with the lowest possible distance of travel across vegetation areas.
- Limiting turning and pivoting of the drill rig and mobile equipment will also reduce the impact to vegetation as it is considered that this action causes the greatest physical damage to underlying vegetation.

4.3 Assessment against the 10 clearing principles

Table 5 provides and assessment of the proposed clearing against the 10 clearing principles as outlined in Schedule 5 of the *Environmental Protection Act 1986* to determine whether the proposed clearing is at variance to the principles.

Table 5: Assessment of the proposed clearing against the 10 clearing principles.

Principle	Assessment	Outcome
Principle (a) – native vegetation should not be cleared if it comprises a high level of biological diversity	The flora survey completed by FVC (2023, 2026) identified vegetation at the works area as comprising *Melaleuca/Guichenotia* (MIGI) shrubland. Photos of the site shown in Table 3 of this clearing referral shows the vegetation specific for these locations. The number of native species present is limited. Native vegetation does not comprise a high level of biological diversity.	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
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	FVC (2023, 2026) did not identify vegetation communities at the works area that would considered to be of state significance with respect to supporting fauna. A fauna study completed by Emerge Associates (2025) did not identify any fauna at these specific locations,	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.

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habitat for, fauna indigenous to Western Australia	although the study did identify the Quokka (*Setonix brachyurus*), Rottnest Island dugite (*Pseudonaja affinis exilis*) and Rottnest Island bobtail (*Tiliqua rugosa konowi*) in the investigation area which comprised similar habitat to the works area. The desktop study noted the habitat in the area has potential to support the Perth slider (*Lerista lineata*). As these habitat types are widespread across Rottnest Island (Wadjemup), disturbance of up to 0.0535 ha of native vegetation is unlikely to materially impact these species. There is no habitat fragmentation expected from the proposed activity.	
Principle (c) Native vegetation should not be cleared if it includes or is necessary for the continued existence of rare flora	No conservation significant taxa were recorded at the works area (FVC 2023, 2026). Vegetation disturbance will not impact native vegetation necessary for the continued existence of rare flora.	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
Principle (d) – Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a Threatened Ecological Community (TEC).	No TEC was recorded by FVC (2023, 2026) at the works areas. Vegetation analogous to TEC 30a has been recorded in close proximity to the works area (FVC 2023) although this vegetation will not be affected by the proposed works.	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	The Commonwealth's National Targets and Objectives for Biodiversity Conservation (Environment Australia 2001) recognises that the retention of 30%, or more, of the preclearing extent of each ecological community is necessary if Australia's biological diversity is to be protected. The EPA uses vegetation complexes as the basis for regional representation of biodiversity and has an objective to seek to retain at least 30% of the pre-clearing extent of each vegetation community (EPA 2015). The proposed works are located in an area of one mapped vegetation complex, the Quindalup (Heddle et al. 1980), which exceeds the 30% threshold for the Swan Coastal Plain IBRA region and City of Cockburn extents (Table 2). Historical aerial imagery (Landgate 2026) shows clearing at borehole BH1 prior to 1955 and vegetation in the vicinity of BH4 in 1955 is very sparse and was most likely cleared in the years prior to 1955. Natural regeneration of the area in question is evident in the historical aerial photographs dating between 1955 and the present. Therefore, native vegetation within the works area is not considered to comprise remnant native vegetation in an area that has been extensively cleared	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland	There are no wetlands or riparian vegetation present within the works area.	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	Land degradation may include the clearing of vegetation, decline in vegetation condition (including spread of weeds, *Phytophthora* dieback), soil erosion and soil acidity (caused by wind and water erosion due to vegetation clearing), salinity or waterlogging / flooding. Within the drilling locations, the only form of land disturbance will be vegetation flattening/compression, limited to 0.0115 ha. Apart from the clearing associated	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.

	with the under-rail construction pits, no other land degradation is considered to occur.	
Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation areas	The works are not located within any ESA boundaries. Borehole BH1 is located approximately 35m from the boundary of the ESA associated with the named lake and 85m from the Bickley Swamp ESA boundary. Given the distance, it is unlikely there will be impacts to the values associated with the wetland. The proposed activities will not impact on the environmental values of any adjacent or nearby conservation areas	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
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	The works area is not mapped within a Public Drinking Water Source Area (PDWSA). Groundwater investigations completed to the north-west for the staff housing sewer project (associated with CPS 10951-1) identified a shallow unconfined aquifer lies beneath the area. Groundwater is expected to flow in part toward Thomson's Bay and in part toward Government House Lake. The proposed activities will not result in any impacts to groundwater levels or quality as summarised below: • Implementation of SWMS would reduce the risk of spills during works. • No hardstand is proposed that would change infiltration rates. • Groundwater uptake by native vegetation is unlikely to change. • No surface water features are present at the works area. The nearest water feature, an unnamed lake, is located approximately 100 m from borehole BH1, and Bickley Swamp is located approximately 135m from borehole BH1. Bickley Swamp is part of the Rottnest Island Lakes listed under the Directory of Important Wetlands (DBCA 2025). It is not expected that the proposed activities would impact the surface water quality of the unnamed lake, Bickley Swamp or groundwater in the area.	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.
Principle (j) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence of flooding	Rottnest Island (Wadjemup) receives a mean rainfall of 564.6 millimetres (mm) per annum, with the local climate consisting of cool wet winters and warm dry summers. Maximum mean rainfall occurs in July, with 111.5 mm. Flooding is unlikely to be an issue as the soil is sandy and porous. As the current land use is not proposed to change and no hard stand is proposed, the risk for flooding is unlikely to change due to the proposed works.	Clearing of vegetation for the proposed works is not considered to be at variance with this Principle.

4.4 Consideration of suitability for clearing referral

Summary of background data requirements is provided in the table below.

Table 6: Assessment of the proposed activity against the referral criteria.

Requirement	Assessment	Outcome
Clearing is not likely to be completed within two years	The works are proposed to be undertaken over a period less than two weeks.	Not at variance to this criterion. Works will not exceed the two-year threshold.

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Clearing will contravene the requirements of a soil conservation notice issued under Part V of the SLC Act	No Soil Conservation Notice has been issued under Part V of the *Soil and Land Conservation Act 1945.*	Not at variance to this criterion.
Clearing will or is likely to have a significant impact on matters of national environmental significance (in these instances, the clearing must be referred to the Commonwealth Department of Agriculture, Water and the *Environment under the Environment Protection and Biodiversity Conservation Act 1999).*	The works are not considered to impact any MNES.	Not at variance to this criterion.
Clearing includes marine native vegetation clearing activities	The works are located at least 320m from the coast. No impacts to marine native vegetation will occur as a result of the proposal.	Not at variance to this criterion. Only terrestrial native vegetation will be impacted by the proposal.
Clearing may impact on protected or otherwise significant flora or fauna	No conservation significant taxa were recorded (FVC 2023, 2026). Vegetation clearing and maintenance will not impact conservation significant flora species. A fauna study completed by Emerge Associates (2025) did not identify any fauna at the works locations, although the study did identify the Quokka (*Setonix brachyurus*), Rottnest Island dugite (*Pseudonaja affinis exilis*) and Rottnest Island bobtail (*Tiliqua rugosa konowi*) in the investigation area which comprised similar habitat to the works area. The desktop study noted the habitat in the area has potential to support the Perth slider (*Lerista lineata*). As these habitat types are widespread across Rottnest Island (Wadjemup), disturbance of up to 0.0535 ha of native vegetation is unlikely to materially impact these species.	Not at variance to this criterion.
Clearing will be within a highly cleared landscape or an area containing limited or restricted native vegetation types	Some clearing has occurred historically at the works locations although the vegetation cover has been consistent for the past few decades. The flora surveys (FVC 2023, 2026) did tno identify any restricted vegetation types.	Not at variance to this criterion.
Clearing is on land previously reserved as an environmental offset under the conditions of another approval under the EP Act	A review of available offset mapping indicates that the proposed works are not reserved as an environmental offset under the conditions of another approval under the EP Act.	Not at variance to this criterion.
Clearing is on land subject to a biodiversity conservation covenant under the *Biodiversity*	The proposed works are not on land subject to a covenant under the *Biodiversity Conservation Act 2016.*	Not at variance to this criterion.

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Conservation Act 2016		
Clearing is on land subject to a covenant under the *National Trust of Australia (WA) Act 1964*	The proposed works are not on land subject to a covenant under the *National Trust of Australia (WA) Act 1964.*	Not at variance to this criterion.

5. Conclusions

This clearing referral addresses limited and localised vegetation disturbance associated with proposed geotechnical investigations and the construction of three under-rail service crossings on Wadjemup / Rottnest Island. The scope, location, and methodology of the works have been carefully planned to minimise impacts on native vegetation and environmental values.

Vegetation disturbance is confined to a small number of locations, is highly localised in extent, and has been reduced through the use of existing access tracks, softtracked machinery, and colocation of works where practicable, including alignment of a geotechnical investigation site with an underrail crossing pit location. Environmental assessments confirm that the proposed works do not impact Threatened Ecological Communities or Environmentally Sensitive Areas, or habitat critical to conservationsignificant fauna.

The proposed clearing is considered necessary to safely and effectively undertake the geotechnical investigation and under rail crossing works and is limited to the smallest practicable footprint. Based on the information presented, the proposed vegetation disturbance is unlikely to result in significant or long-term environmental impacts and is consistent with the clearing principles administered by the Department of Water and Environmental Regulation.

6. References

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