Native Vegetation Clearing Permit – Supporting Report

Flora, Vegetation and Fauna Habitat Assessment at Borrow Pit 5 – Lake MacLeod

02 April 2024

RTIO-1054229

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Document Status

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Executive Summary

Rio Tinto, on behalf of Dampier Salt Limited (the **Proponent**), is proposing to undertake extraction of material from an existing borrow pit at Lake Macleod. The area has previously been cleared under Native Vegetation Clearing Permit 973/1. This permit has now expired, and native vegetation has regrown on the borrow pit. Approval for further clearing of native vegetation associated with the Proposal is required via a Native Vegetation Clearing Permit (**NVCP**) under Section 51A of *the Environmental Protection Act 1986* (**EP Act**). The Study Area is 7.26 ha.

The Study Area was surveyed by Rio Tinto botanist Kyle Wood and Rio Tinto ecologist Alicia Michael on the 2nd and 3rd of April 2024. The Study Area was assessed in accordance with the Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment and Environmental Factor Guideline – Flora and Vegetation (EPA, 2016a, 2016c). Fauna habitats were confirmed with reference to Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment and Environmental Factor Guideline – Terrestrial Fauna (EPA, 2016b, 2020).

One vegetation unit was identified within the Study Area. The vegetation unit was described as *Acacia synchronicia (+/- Acacia sclerosperma subsp. sclerosperma and Solanum lasiophyllum) open shrubland to scattered low shrubs over *Cenchrus ciliaris scattered tussock grasses*. The vegetation occurring within the Study Area does not represent any Priority Ecological Communities (PECs) listed by DBCA or Threatened Ecological Communities (TECs) listed under either the BC Act or EPBC Act.

A total of 34 flora taxa from 26 genera representing 16 families were recorded during the survey. The number of taxa recorded during the survey is reflective of the previously disturbed nature of borrow pit and extensive presence of **Cenchrus ciliaris* within the Study Area. No Threatened or Priority flora species were recorded in the Study Area, and none are considered likely to occur following the field survey.

One broad fauna habitat type was recorded within the Study Area and consisted of regrowth within the previously disturbed borrow pit. This habitat corresponds to the Chenopod Shrubland habitat mapped by Outback Ecology (2011). Outback Ecology (2011) mapped 1,285 ha of the habitat in the vicinity of Lake MacLeod and determined the condition of the habitat to be completely degraded due to heavy grazing from sheep and goats. The previously disturbed nature of the Study Area and widespread nature of the surrounding habitat indicates the Study Area is of limited conservation significance.

No significant fauna species were detected during the field survey. Of the 72 significant fauna species identified during the desktop study, none are considered to have potential to occur based on the habitat present within the Study Area and the known ecology of each species.

The Proposal was assessed against the 10 clearing principles as defined in Schedule 5 (Principles for Clearing Native Vegetation) of the *Environmental Protection Act 1986*. A specialist assessment against the 10 Clearing Principles determined that:

- Principles (a), (b), (c), (d), (e), (f), (g), (h), (i) and (j) are not at variance;

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1. Introduction

1.1 Project background and Study Area location

Rio Tinto, on behalf of Dampier Salt Limited (the **Proponent**), is proposing to undertake extraction of material from an existing borrow pit at Lake Macleod (the **Proposal**). The area has previously been cleared under Native Vegetation Clearing Permit 973/1. The permit expired in 2011, and native vegetation has regrown on the Proposal area. Approval for further clearing of native vegetation associated with the Proposal is required via a Native Vegetation Clearing Permit (**NVCP**) under Section 51A of *the Environmental Protection Act 1986* (**EP Act**).

Vegetation, flora and fauna assessments at Borrow Pit 5 (the Study Area) were required to address the 10 Clearing Principles as part of the NVCP application process. The Study Area covers approximately 7.26 ha of previously disturbed ground and is located approximately 60 km north-west of Carnarvon, within the Midwest region of Western Australia (WA) (**Figure 1-1**).

1.2 Scope of survey

This report describes the methodology employed for the flora, vegetation and fauna habitat assessment of the Study Area, and documents the results of the survey. In particular, this report identifies vegetation, flora and fauna habitats of significance relevant to the Study Area.

This report is intended as a supporting document for an NVCP application by Rio Tinto and has been prepared on the basis of a review of existing information for the Study Area, combined with a site field survey.

This report includes a description of the:

- Local environment of the Study Area including flora, vegetation, fauna habitats, geology, landforms, and hydrology;
- Methods employed during the field survey;
- Locations and populations of significant flora (if applicable), including photographs and mapping;
- Vegetation associations occurring in the Study Area, an assessment on their condition and significance for the locality and sub-region, including mapping;
- Fauna habitats present, assessment of their significance for the locality and sub-region, including mapping; and
- Potential impacts of the Proposal on the local environment through application of the 10 clearing principles, as outlined in Schedule 5 of the EP Act.

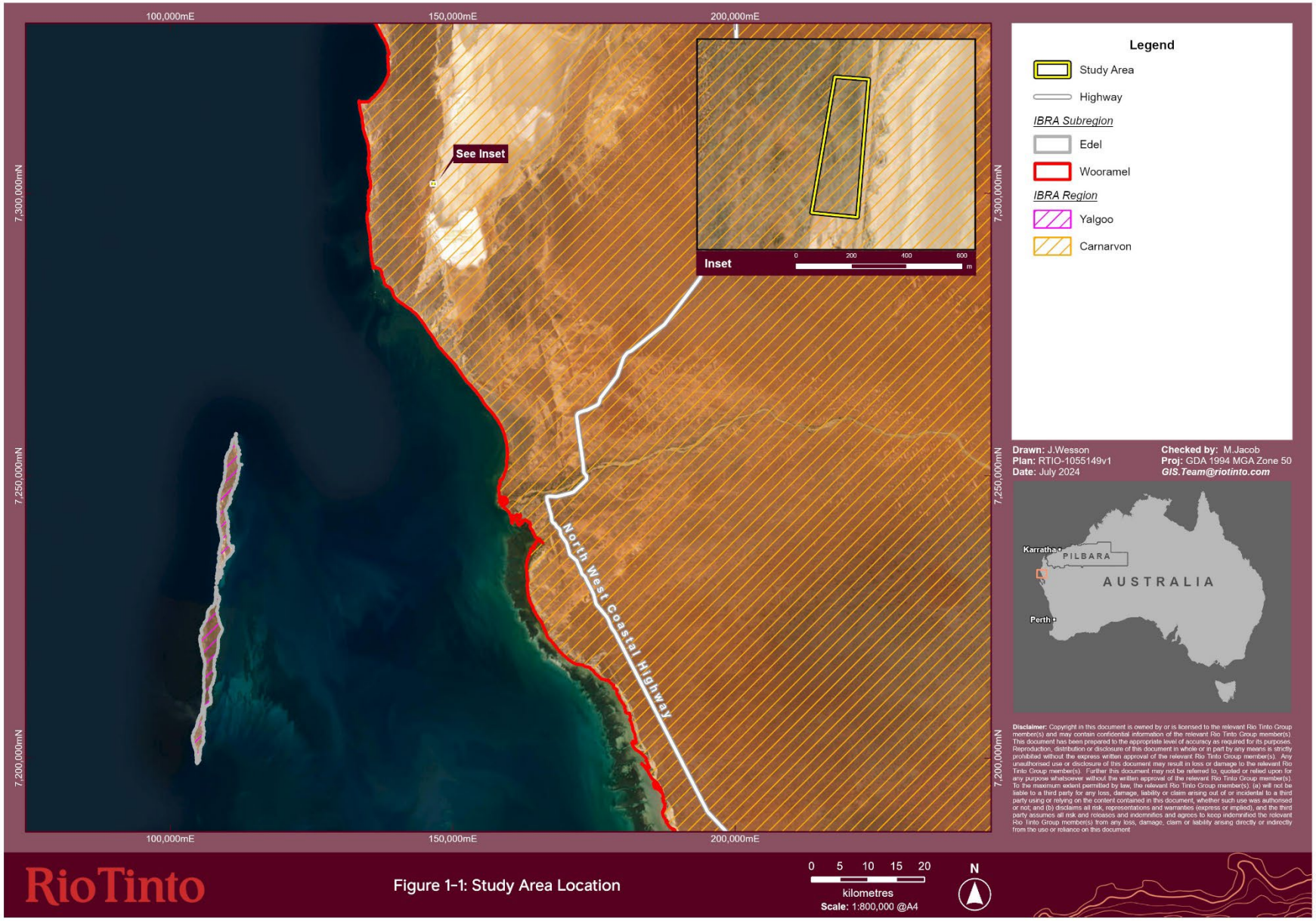

Figure 1-1: Location of the Study Area

1.3 Limitations

Limitations of the current survey of the Study Area are summarised in **Table 1-1** below.

Table 1-1: Constraints and limitations of the current study.

Constraint	Limitation
Sources of information	A number of local and regional surveys have been conducted previously in the vicinity of Lake MacLeod. These surveys were reviewed as part of the desktop assessment prior to the survey and are summarised in **Table 2-1** and **Table 2-2**. Sources of information were not considered a limitation in this assessment.
Scope of works	The survey requirements of a targeted terrestrial flora, vegetation and fauna survey for a NVCP application were met. No quadrat sampling or fauna trapping was undertaken, however, relevés were undertaken to record the vegetation associations in addition to foot traverses of the Study Area.
Completeness of survey	The Study Area was fully surveyed to the satisfaction of a reconnaissance flora and vegetation and basic fauna survey. The entire Study Area was traversed for significant flora and fauna species. No additional surveys were deemed necessary for the purpose of this assessment.
Intensity of survey	The entire Study Area was surveyed by targeted traverses on foot at 20m spacing. Five relevés were sampled within the Study Area resulting in one vegetation type being described. Intensity of survey was not considered a limitation in this assessment.
Timing, weather, season, cycle	The survey was conducted in April 2024 in accordance with the recommended primary survey season for the Eremaean botanical province (EPA, 2016c). Carnarvon received 83.8 mm of rainfall in the three months preceding the survey. The average amount of rainfall for this period is 48.3 mm, indicating seasonal conditions were above average for the survey. Survey timing and seasonal conditions were not considered a limitation in this assessment.
Disturbances	The Study Area has previously been cleared under Native Vegetation Clearing Permit 973/1, however existing information of the vegetation prior to disturbance was available in Outback Ecology (2010). The vegetation was in degraded condition with a dominance of **Cenchrus ciliaris* in the Study Area. There have been no recent fires within the Study Area. Grazing from introduced herbivores (*Rabbit) was also apparent in the Study Area. Disturbances were not considered a limitation in this assessment.
Resources	The biologists undertaking the surveys and subsequent reports as part of the studies were suitably qualified to identify flora and fauna. Kyle Wood (field studies and report writing) has more than seven years of experience as a botanist/biologist in Western Australia, with significant experience working in the Eremaean province. Alicia Michael (field studies and report writing) has more than 15 years of experience as an ecologist working across Australia. Steven Dillon, Senior Taxonomist from the Western Australian Herbarium, completed the plant specimen identifications. Resources were not considered a limitation in this assessment.
Accessibility / remoteness	The Study Area was adequately traversed on foot. No parts of the Study Area were inaccessible. Accessibility / remoteness were not considered a limitation in this assessment.

1.4 Climate

The closest Meteorological station providing long term data for rainfall and temperature is Carnarvon (006011), located approximately 60 km to the southeast of the Study Area. Rainfall and temperature data from the Bureau of Meteorology (**BoM**) for Carnarvon is presented in **Figure 1-2** below (BOM, 2024a).

The climate is typically arid, semi-desert to sub-tropical with variable summer and winter rainfall. Occasional tropical cyclones producing large regional rainfall events in the summer months. For Carnarvon, the mean annual rainfall for the period 1945 to 2024 is 221.0 mm, with most precipitation occurring in the winter months. Carnarvon received 83.8 mm of rainfall in the three months preceding the survey (**Figure 1-2**). The average amount of rainfall for this period is 48.3 mm, indicating seasonal conditions were above average for the survey.

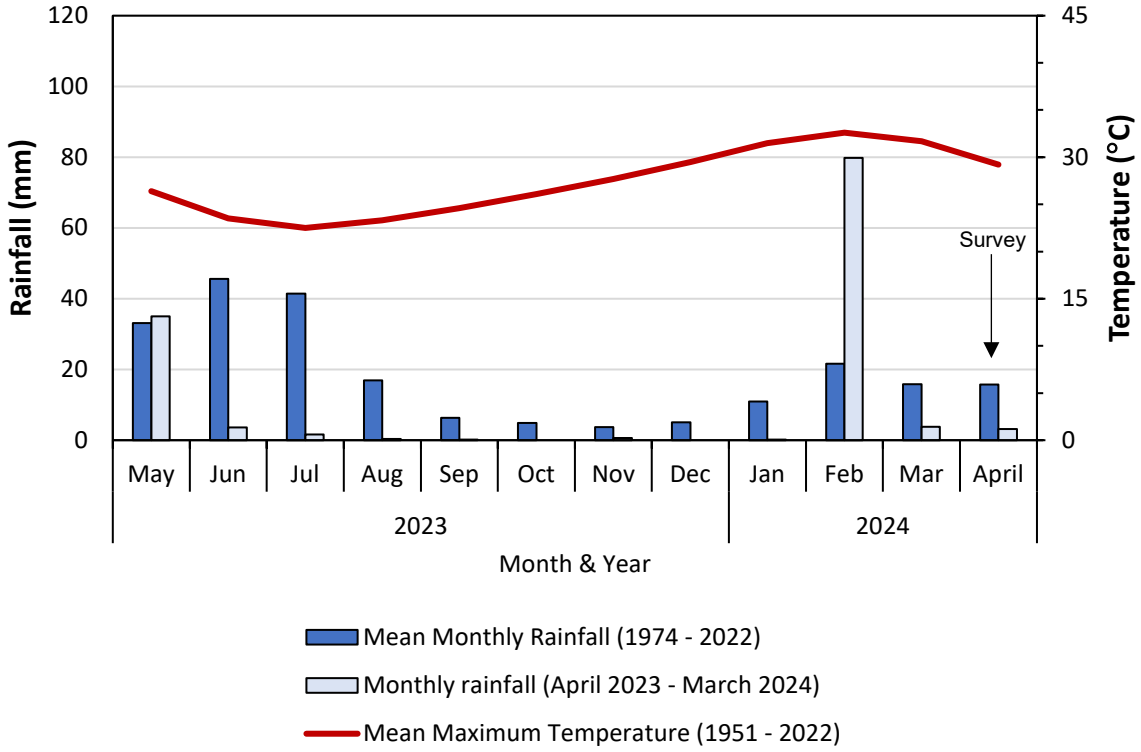

Figure 1-2: Comparison of rainfall and temperatures at Carnarvon.

1.5 Geology and soils

The Study Area was comprised of one major geological unit based on 1:250,000 scale map sheet series published by DMIRS (2024). The Study Area occurs on bundera calcrenite geology (JN code: g4904;Qb) defined as calcarenite to calcirudite; coralgal reef deposits, shallow marine, littoral, and minor aeolian.

1.6 Surface hydrology and groundwater

The Study Area is located at the western edge of Lake McLeod. The Lake MacLeod System is currently identified as a wetland of national importance under the Directory of Important Wetlands in Australia (DoEE, 2024). The Study Area also lies within the Gascoyne Artesian Basin groundwater subarea (DWER, 2024b). The Gascoyne River is located 58km south of the Study Area. The Study Area does not intersect any drainage lines or the Lake Macleod Lake surface.

1.7 Land systems

Land systems are defined as an area or group of areas throughout which there is a recurring pattern of topography, soils and vegetation. An understanding of land systems provides an indication of the occurrence and distribution of vegetation types within the Study Area The most recent land system mapping of the Carnarvon bioregion, in which the Study Area lies, was completed by Payne et al. (1987) The mapping classifies the Carnarvon region into 93 land systems.

The Study Area is located within the Warroora Land System described by Payne et al. (1987). The Warroora Land System occurs around the margins of Lake MacLeod and consists of flat saline alluvial plains supporting tall *Acacia* shrublands and low shrublands of saltbush, bluebush, and samphire. Geology of the land system is comprised of quaternary calcarenite, coquinite, alluvium and colluvium with minor aeolian sand. The regional and local extent of the Warroora Land System within the Study Area are presented below (**Table 1-2; Figure 1-4**).

Table 1-2: Land Systems occurring within the Study Area.

Land System	Carnarvon bioregion (ha)	Study Area (ha)	Study Area (%)	% of land system extent
Warroora (WRO)	80,883.80	7.26	100.00	<0.01

1.8 IBRA bioregions and subregions

The Interim Biogeographic Regionalisation of Australia (**IBRA7**) recognises 89 bioregions across Western Australia. The Study Area is located in the Carnarvon (**CAR**) bioregion as defined by IBRA. The Carnarvon bioregion has been further subdivided into two subregions: Cape Range (**CAR1**) and Wooramel (**CAR2**).

The Study Area falls within the Wooramel sub-region and is described by Desmond (2001) as alluvial plains associated with downstream sections and deltas of Gascoyne, Minilya and Wooramel Rivers. Includes Lake MacLeod and Kennedy Range. Tree to shrub steppe over hummock grasslands on and between aeolian red sand dune fields are extensive in the north and east as well as on top of Kennedy Range. Permian sediments are common in northern parts. Southern areas comprise limestone plateaux overlain by red sand plains. *Acacia* shrublands (Mulga, Bowgada and *A. coriacea*) over bunch grasses on red sandy ridges and plains. Mangroves are confined to small areas around Lake MacLeod and near Carnarvon. Saline alluvial plains with samphire and saltbush low shrublands occur in near-coastal areas.

1.9 Beard's regional vegetation mapping

Shepherd (2002) identified the Carnarvon bioregion as having largely intact native vegetation owing to the lack of widespread intensive agricultural land use practices. Although the native vegetation remains

widespread and largely intact, the floristic composition and structural characteristics have almost certainly changed since European settlement by grazing and altered fire regimes (Shepherd, 2002).

Vegetation type and extent has been mapped at a regional scale by Beard (1975) who categorised vegetation into broad vegetation associations. Based on this mapping at a scale of 1:1,000,000, the Department of Agriculture and Food WA (**DAFWA**) has compiled a list of vegetation extent and types across WA (Shepherd, 2002) One pre-European vegetation unit (Coastal Dunes 328) was identified within the Study Area (**Table 1-3**; **Figure 1-5)**. The Coastal Dunes (328) described as succulent steppe with scrub; waterwood & *Acacia sclerosperma* over saltbush & samphire (DBCA, 2024d).

Table 1-3: Pre-European Vegetation within the Study Area.

Mapping Unit	Pre-European extent (ha)	Current extent (ha)	Proportion remaining (%)
Coastal Dunes (328)	10,236.89	9,954.66	97.24

1.10 Conservation areas and environmentally sensitive areas

Environmentally Sensitive Areas (**ESAs**) are defined in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005* under section 51B of the WA State EP Act. ESAs include areas declared as: World Heritage; included on the Register of the National Estate; defined wetlands; vegetation containing rare (Threatened) flora; Threatened Ecological Communities (**TEC**); and Bush Forever sites. The Study Area does not lie within any DBCA managed lands or ESAs. However, the study site is located approximately 30 m west of Lake Macleod which is listed as an Environmentally Sensitive Area (6930).

1.11 Significant Vegetation

Priority Ecological Communities (**PECs**) are possible TECs that do not meet survey criteria or are not adequately defined to be considered for inclusion in the TEC list by the DBCA and are ranked as Priorities 1, 2, 3 and 4.

The study area does not intersect any known PECs. The nearest PEC to the Study Area was the '*Lyell Land System'* which comprises of acacia shrublands and saltbush over sandplains and dunes. The buffer boundary of this Priority 3 Ecological Community is located 17.4 km to the southeast of the Study Area (**Figure 1-6).** The 'Lake MacLeod Invertebrate Assemblages' PEC is located 31.6 km to the north of the Study Area. Neither of these PECs intersect the Study Area.

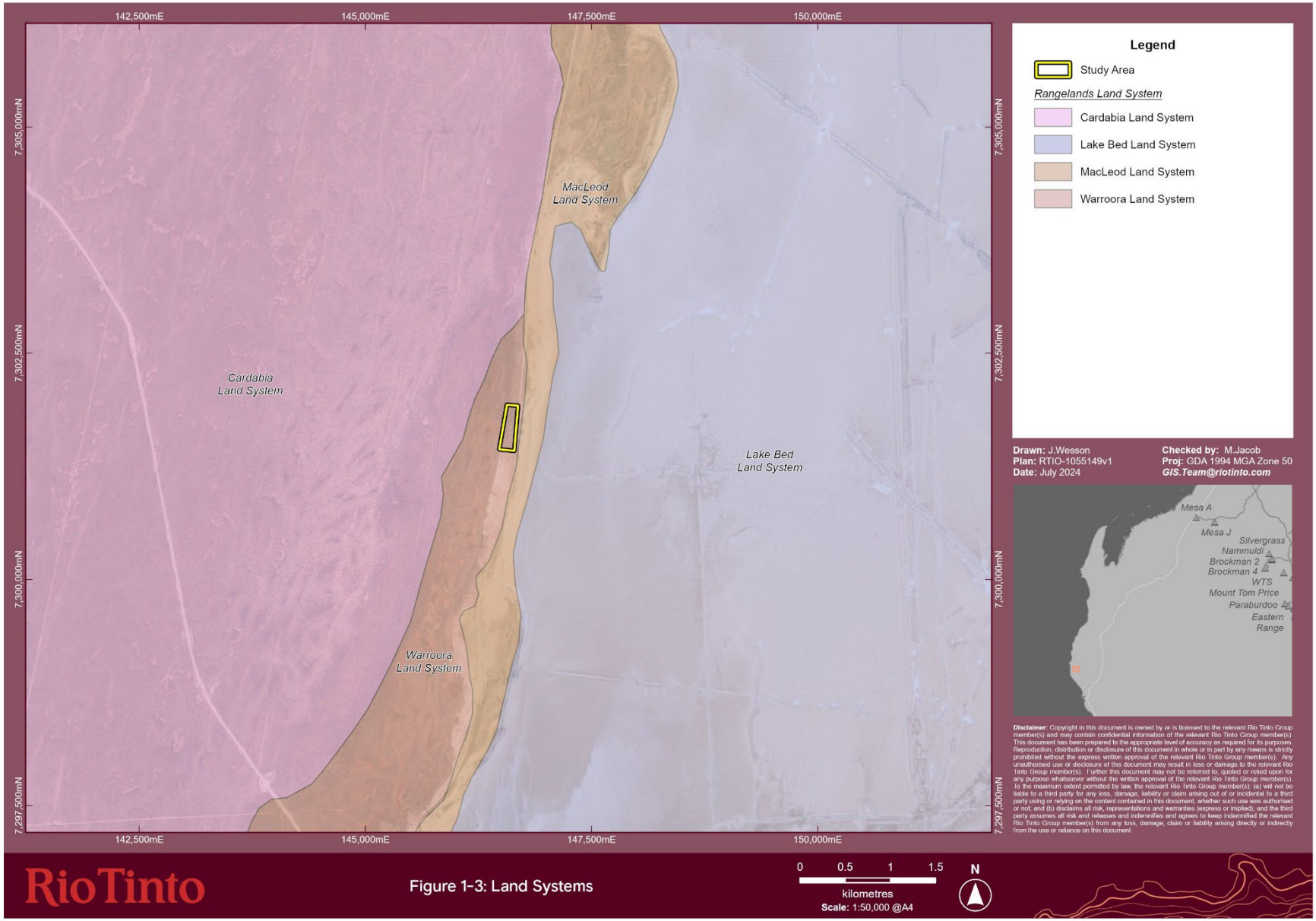

Figure 1-3: Land systems within the Study Area.

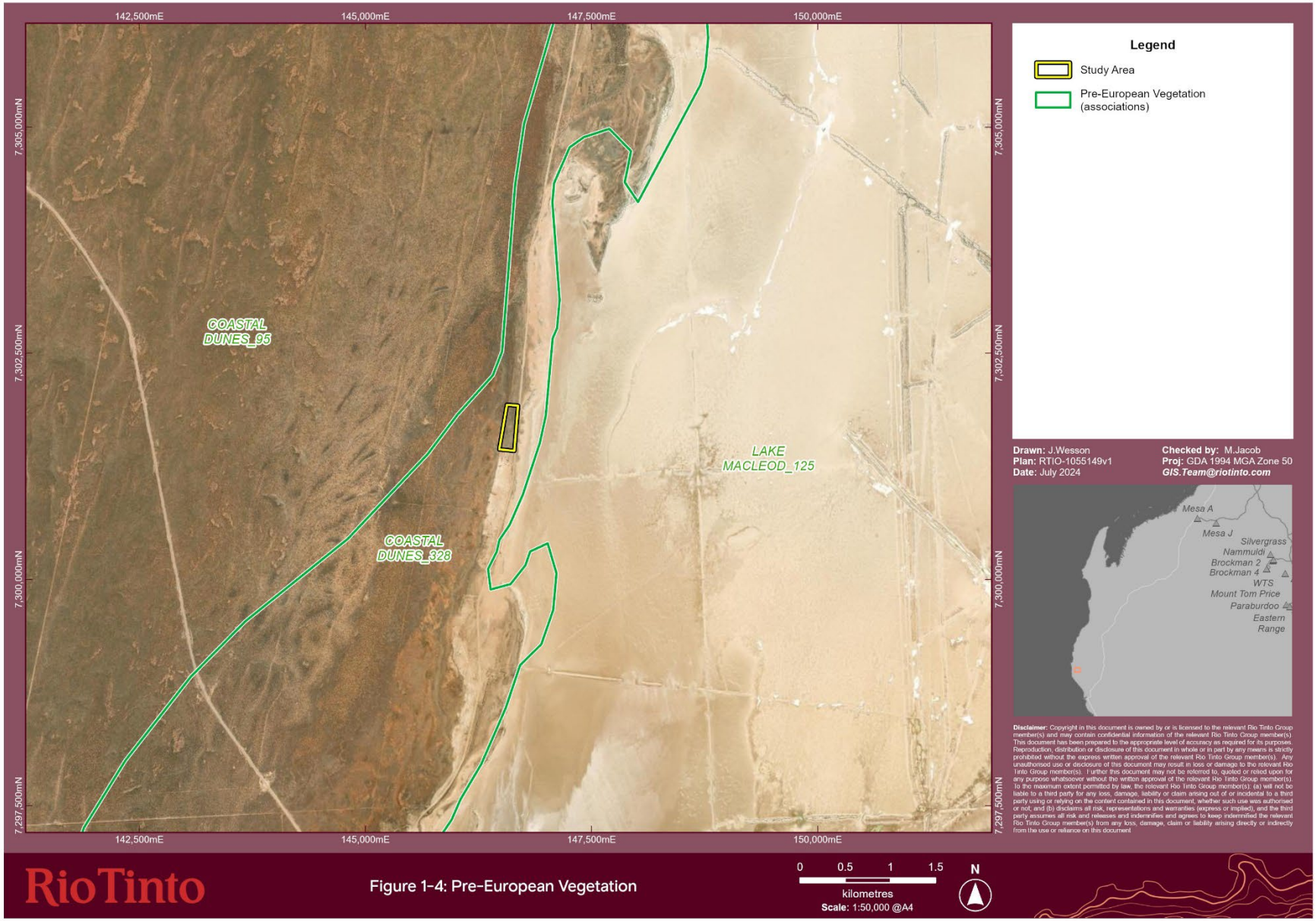

Figure 1-4: Beard's / Shepherd's vegetation associations in proximity to the Study Area.

2. Methodology

This report has been compiled following a desktop assessment and field visit undertaken by RTIO botanist and ecologist. The Study Area was assessed in accordance with the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* and *Environmental Factor Guideline – Flora and Vegetation (EPA, 2016a, 2016c).* Fauna habitats were confirmed with reference to *Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* and *Environmental Factor Guideline – Terrestrial Fauna* (EPA, 2016b, 2020).

2.1 Literature review

A literature review was undertaken of publicly available flora and fauna reports previously conducted in the vicinity of the Study Area (**Figure 2-1**). The findings of these surveys and database search results were used to determine the potential presence of significant species, vegetation associations and fauna habitats within the Study Area. The following reports were primarily reviewed as part of the literature review:

- Outback Ecology (2010) Stage 2: Lake MacLeod Flora and Vegetation Survey.
- Outback Ecology (2011) Stage 2: Lake MacLeod Terrestrial Fauna Assessment.

A summary of the findings of this report is presented in **Table 2-1** and **Table 2-2**. A review of additional published and unpublished reports of relevance to the bioregion and Lake MacLeod system were also conducted prior to completing the survey and report (DEC, 2009; Desmond, 2001; Keighery et al., 2000; Payne et al., 1987; Phillips, 2005; Tyler, 1987).

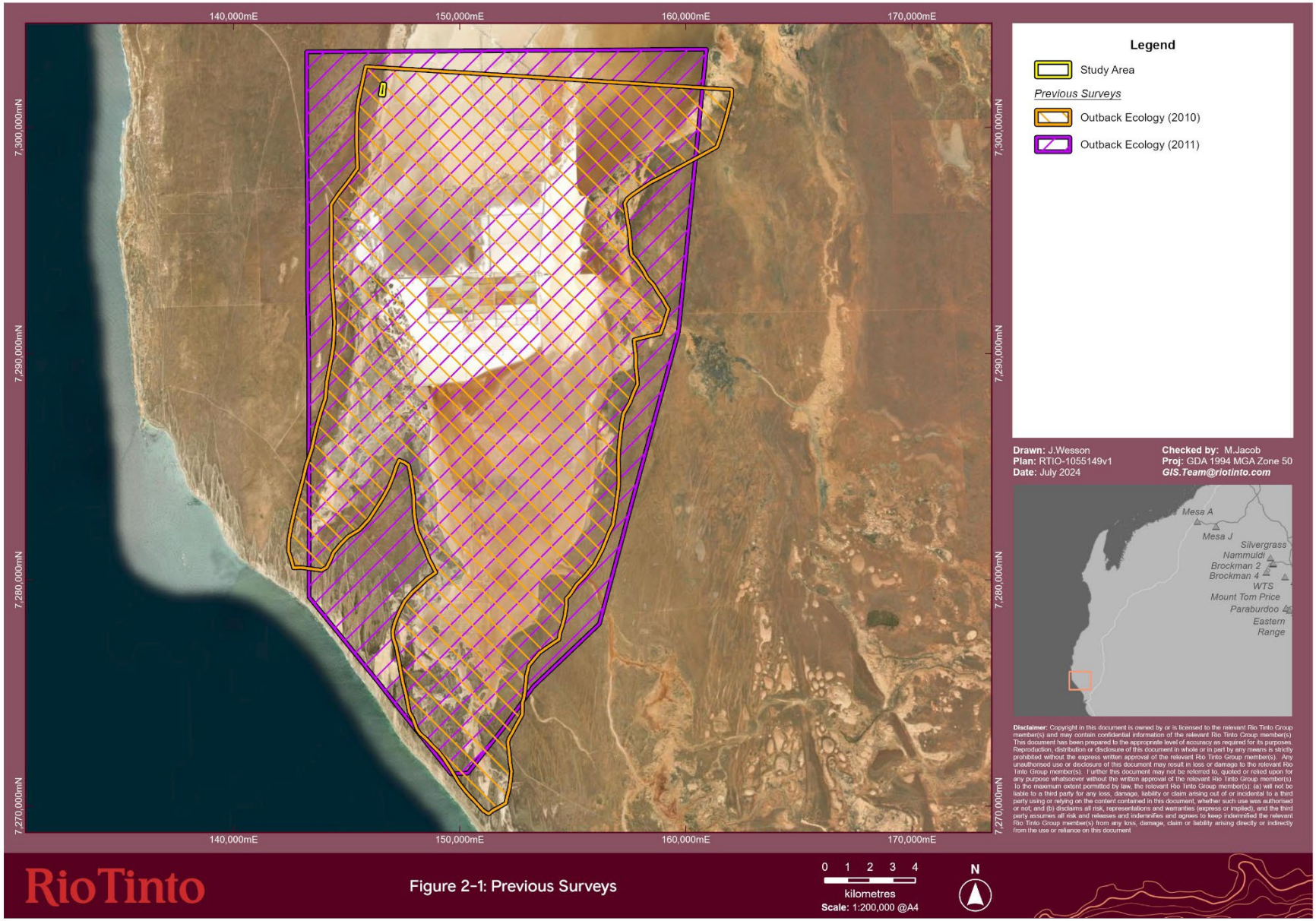

Figure 2-1: Previous surveys conducted in the vicinity of the Study Area.

Table 2-1: Summary of previous flora & vegetation survey reports.

Report and level of survey	Size (ha)	Number of taxa	Significant flora	Weeds	Vegetation of significance
Outback Ecology (2010) Stage 2 Lake MacLeod Flora and Vegetation Survey.	34,500	154	*Abutilon* sp. Hamelin (A.M. Ashby 2196) (P2)	**Rumex vesicarius* **Asphodelus fistulosus* **Brassica tournefortii* **Cenchrus ciliaris* **Cynodon dactylon* **Eragrostis barrelieri* **Mesembryanthemum crystallinum* **Sonchus oleraceus*	Lyell Land System (Priority 3)

Table 2-2: Summary of previous fauna habitat reports.

Report and level of survey	Size (ha)	Number of taxa	Significant fauna	Fauna habitat	Fauna habitat of significance
Outback Ecology (2011) Stage 2 Lake MacLeod Terrestrial Fauna Assessment	44,400	81	• *Tringa* (*Actitis*) *hypoleucos* (MI) • *Glareola maldivarum* (MI)	Salt lake *Acacia tetragonophylla* shrubland on floodplain Low coastal shrubland/heath Mixed samphire shrubland Unconsolidated white sand dune Soak (water dependent vegetation)	soak (water dependent vegetation) stands of inland mangroves low coastal shrubland/heath

2.2 Database searches

Database searches were completed to generate a list of species and communities previously recorded within, and in the vicinity of, the Study Area, with an emphasis on species and communities of significance and introduced species. Seven database searches were conducted based on either the Study Area polygon or a central Study Area coordinate and are provided in **Table 2-3** below.

Table 2-3: Database searches conducted for the desktop assessment.

Custodian	Database Name	Buffer	Date of Receipt
ALA (2024)	Atlas of Living Australia	50 km	06/03/2024
DBCA (2024g)	Threatened and Priority Flora Database	50 km	16/03/2024
DBCA (2024i)	Western Australian Herbarium Specimen Database	50 km	16/03/2024
DBCA (2024e)	Threatened and Priority Ecological Communities Database	50 km	06/03/2024
DBCA (2024a)	Dandjoo biodiversity data platform	50 km	06/03/2024
DBCA (2024f)	Threatened and Priority Fauna Database	50 km	12/03/2024
DCCEEW (2024)	Protected Matters Search Tool	50 km	06/03/2024

2.3 Likelihood of occurrence assessment

2.3.1 Flora

The results of the database searches were used to create a list of significant flora (BC Act and Priority flora) previously recorded or with potential to occur within the Study Area. The likelihood of significant flora occurring within the Study Area were assessed through consideration of available habitats in the Study Area and each species' ecology in accordance with the criteria outlined at **Appendix 2**. This list was then updated following the field survey to better reflect the habitats observed.

2.3.2 Fauna

A likelihood of occurrence assessment was performed to identify habitats within the Study Area for which significant fauna (BC Act and Priority fauna) may have specific dependence. For the purpose of this study, 'specific dependence' is defined as core habitat including roosting, denning, shelter and breeding habitat. The likelihood of significant fauna species occurring within the Study Area was determined prior to the field survey based on the location of database records, availability of potentially suitable habitat and knowledge of the species ecology. This list was then updated following the field survey to better reflect the habitats. Exclusively marine fauna was excluded from the likelihood assessment as the Study Area does not contain marine habitat and is therefore not able to support these species.

2.4 Field survey

The Study Area was surveyed by Rio Tinto botanist Kyle Wood and Rio Tinto ecologist Alicia Michael on the 2nd and 3rd of April 2024. Relevés, typically 30 x 30 m in size (to represent a 900 m^2 quadrat size) were established in representative areas of all vegetation associations within the Study Area. A total of five relevés were surveyed in the Study Area. The layout and co-ordinates of each relevé from the study are presented in **Appendix 4**, and track logs presented in **Figure 2-4.** At each relevé site, the location was recorded, and photographs were taken. Data was collected on the flora species present, including percentage cover and average height; site slope; aspect; topography; soil texture and colour; and landform type and habitat features. Locations of significant flora, weeds and other observations were recorded opportunistically. Where populations of significant flora were encountered; estimates of density or numbers of individuals, habitats and associated flora were recorded. Density or numbers of individuals of introduced flora species were also recorded.

Figure 2-2: Survey effort within the Study Area

2.5 Vegetation, descriptions, condition assessment and mapping

Vegetation descriptions for the Study Area were based on Specht (1970) with modification by Aplin (1979) (**Appendix 3**). Descriptions were taken at relevés and during traverses if changes in the vegetation structure were observed. Assessment of the overall condition of each vegetation association was made based on Trudgen (1988) (**Appendix 3**).

The mapping data gathered in the field was used to prepare a draft map of vegetation, utilising aerial photography as the background. The vegetation boundaries were digitised on-screen using ArcGIS Pro 3.1.0. The resulting polygons were attributed with the relevant information including the vegetation type, description and condition. Point locations of each relevé recorded were also uploaded into ArcGIS Pro, together with visual photographs which were used to assist with the finalising of vegetation boundaries.

2.6 Other vegetation of significance

Vegetation not legally protected or classified as part of regulatory ratings may still be regarded as being of significance. Vegetation that may fall under this category includes (but is not limited to) vegetation supporting elevated floristic diversity, habitats supporting numerous significant species, ecosystems at risk (Desmond, 2001). novel floristic associations, groundwater dependant ecosystems, uncommon vegetation, and associations on novel landforms. Vegetation associations or biological features assigned a significance classification are, for the purpose of this document, considered to be of elevated significance when compared to all other identified associations or features that are common or widespread and therefore well represented.

2.7 Flora identification

An interim species list was compiled in the field covering common species identified with confidence by the botanists. Voucher samples of unknown or potentially significant flora were taken and pressed and dried in the field. Each sample was assigned a unique sample number.

Flora samples collected in the field were identified using relevant taxonomic publications and compared to collections at the Western Australian Herbarium (**WAH**). Sample identifications were conducted by Western Australian Herbarium senior taxonomist Steven Dillon (WAH). Nomenclature was aligned with the Western Australian Plant Census (DBCA, 2024b).

2.8 Fauna habitat assessment

Broad fauna habitats were identified and mapped based on landforms and vegetation associations identified during the current survey. Habitats were then assessed for their potential to support species of significance, considering relevant State and Commonwealth guidelines to support identification of ‘potential’ habitat. Supporting evidence such as sightings, the presence of microhabitats was recorded throughout the Study Area. Representative traverses were also completed throughout all habitats present within the Study Area. Fauna habitats were assessed and mapped as per Factor Guideline and Technical Guidance for Terrestrial Fauna (EPA, 2016b, 2020).

2.9 Opportunistic fauna records

Opportunistic fauna sightings were recorded whilst traversing the Study Area with a focus on significant species and supporting evidence (i.e. scats). Potential fauna assemblages were based on the desktop review of previous surveys in the area and database searches.

3. Results

3.1 Desktop assessment results

3.1.1 Flora diversity

The desktop assessment returned a total of 346 flora species from 64 families and 179 genera (**Table 3-1**). Of these, 18 are of conservation significance, while 17 species are considered alien to Western Australia. The genera with the highest species richness were *Acacia* (12 species), followed by *Atriplex* (11 species), *Eremophila* (nine species), *Eragrostis* (nine species) and *Scaevola* (nine species). The family with the highest species richness was Asteraceae (47 species). Followed by Chenopodiaceae (46 species) and Poaceae (34 species).

Table 3-1: Summary of flora species returned from the desktop assessment.

Flora group	Number of potential species
Families	64
Genera	179
Species	346
Significant	18
Weeds	17

3.1.2 Significant flora returned by desktop assessment

The desktop assessment returned a total of 18 significant flora species (**Figure 3-1, Appendix 3**), comprising one Priority 1 species; eight Priority 2 species; eight Priority 3 species and one presumed extinct flora species. No significant flora species have been recorded within the Study Area previously, and none were considered likely to occur based on the criteria in **Appendix 2**. Eight species were considered to have potential to occur (**Appendix 3**). The remaining species were all considered unlikely to occur within the Study Area.

The likelihood rating of significant flora returned by the database search was later updated post-field assessment (**Appendix 3**), including factors such as if there was suitable habitat present within the Study Area; whether that species was likely to have been overlooked during the survey (e.g. a large perennial versus a small annual life form), or if the species was unlikely to be present due to unsuitable survey timing and conditions.

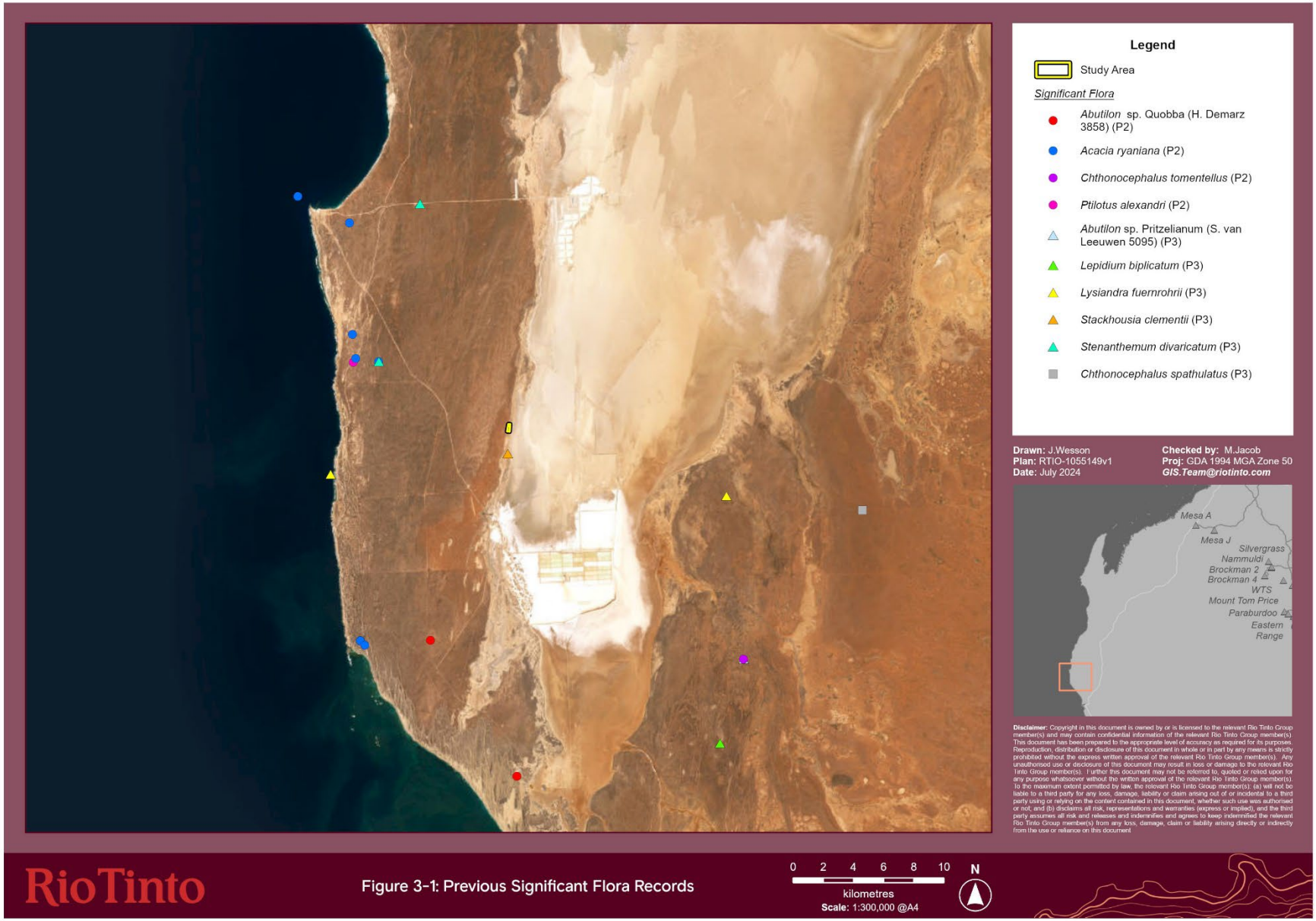

Figure 3-1: Significant flora previously recorded nearby to the Study Area.

3.1.3 Fauna diversity

Table 3-3 presents a summary of terrestrial vertebrate fauna taxa returned by the database searches. A consolidated list of all fauna taxa identified in the desktop assessment is provided in **Appendix 1.** Due to the proximity of the Study Area to the coastline, marine taxa such as cetaceans, pinnipeds and fish were excluded from the database results as none of these groups have potential to occur within the Study Area.

Table 3-2: Summary of terrestrial fauna species returned by the database searches.

Fauna group	Number of potential species
Amphibians	8
Reptiles	79
Avifauna	206
Mammals	24
Significant	72
Total	317

3.1.4 Significant fauna returned by desktop study

A total of 72 significant fauna taxa were identified in the surrounding 50 km by the database searches (**Figure 3-2, Appendix 3**), comprising:

- Five critically Endangered taxa;
- 11 Endangered taxa;
- 19 Vulnerable taxa;
- 49 Migratory taxa;
- One Priority 1 taxa;
- One Priority 3 taxa;
- Five Priority 4 taxa;
- One Other Specially Protected (OS) taxa; and
- One Presumed Extinct taxa.

No significant fauna taxa have been recorded within the Study Area previously and none are considered ‘likely’ to occur. two taxa, the Southern Whiteface (VU) and the Fork-tailed Swift (Mi), were considered to have ‘potential’ to occur within the Study Area primarily due to their widespread distribution and generalist habitat requirements. The remaining 70 taxa were considered ‘unlikely’ to occur, based on the criteria used to assess the pre-field likelihood of occurrence (**Appendix 2; Appendix 3**).

The likelihood rating of significant fauna returned by the database search was later updated post field assessment (**Appendix 3**) including factors such as if there was suitable habitat present within the Study Area or if the taxa may not have been present (e.g. the Study Area was not surveyed at a suitable time).

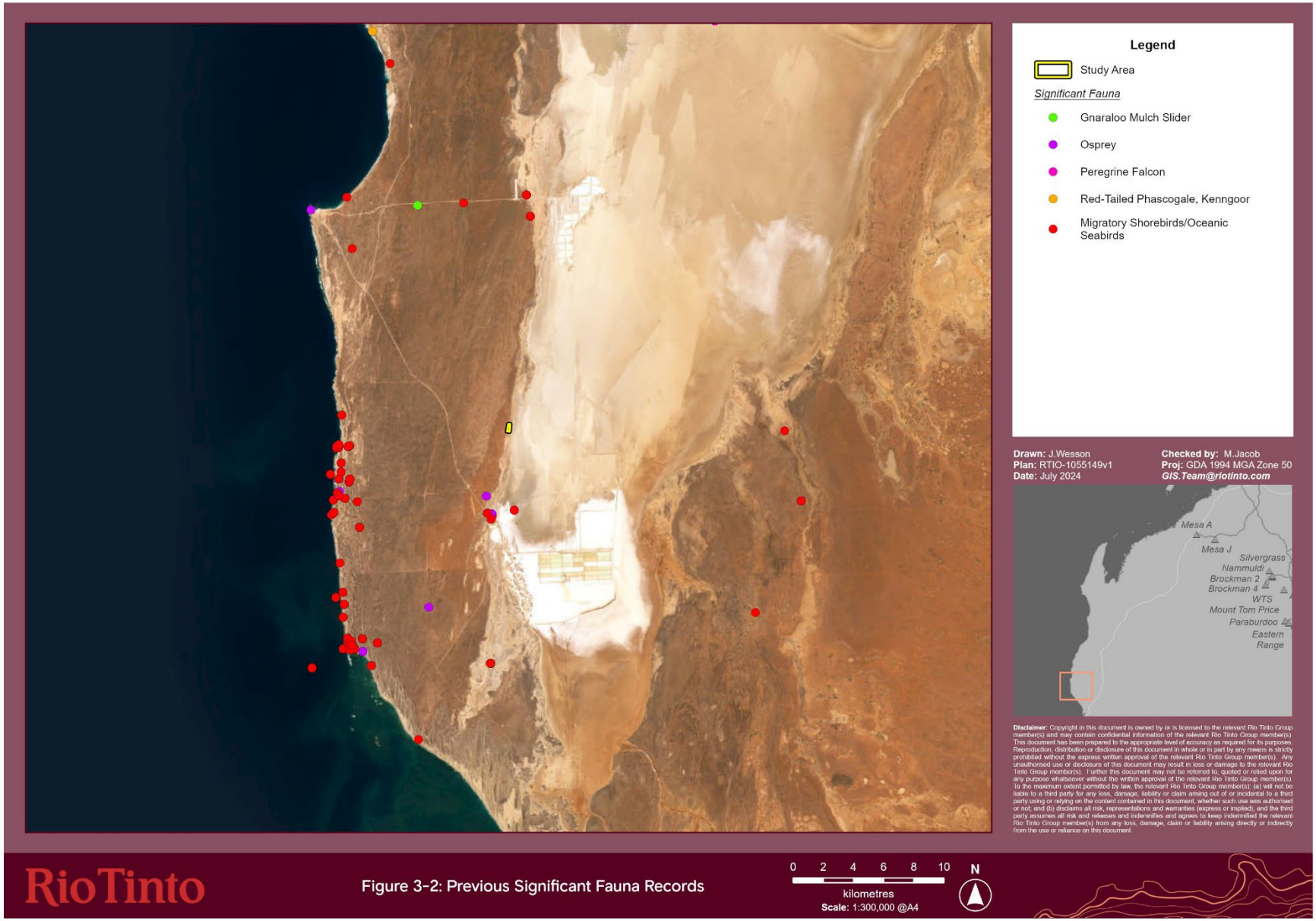

Figure 3-2: Significant fauna previously recorded nearby to the Study Area.

3.2 Field results

3.2.1 Vegetation of the Study Area

One vegetation association (AsyAssSolCc) was identified within the Study Area and is described in detail in **Section 3.2.2.** AsyAssSolCc is described as: *Acacia synchronicia* (+/- *Acacia sclerosperma* subsp. *sclerosperma* and *Solanum lasiophyllum*) open shrubland to scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses.

This vegetation is considered analogous to the AspAsp vegetation association described by Outback Ecology (2010). The AspAsp was described as 'Scattered *Acacia* spp. over Low Open Shrubland of *Frankenia pauciflora, Maireana polypterygia, Ptilotus obovatus* and *Atriplex* spp. over Very Open Grassland of *Cenchrus ciliaris*' and was associated with the limestone slopes and calcrete plains adjacent to the western edge of Lake MacLeod. Associated species of AspAsp include *Acacia sclerosperma, Acacia synchronicia, Acacia tetragonophylla, Alectryon oleifolius* subsp. *oleifolius, Atriplex* ? *bunburyana, Atriplex vesicaria, Brachyscome iberidifolia, Calandrinia remota, Calotis multicaulis, Chenopodium gaudichaudianum, Enchylaena tomentosa, Exocarpos aphyllus, Maireana tomentosa, Rhagodia preissii* subsp. *obovata, Scaevola tomentosa, Solanum lasiophyllum,* and *Tetragonia diptera.*

The Study Area was originally mapped as AspAsp vegetation prior to disturbance for the borrow pit, and the AsyAssSolCc vegetation observed during the survey is the early stages of regrowth of AspAsp following disturbance.

3.2.2 Detailed vegetation description

AsyAssSolCc	***Acacia synchronicia* (+/- *Acacia sclerosperma* subsp. *sclerosperma* and *Solanum lasiophyllum*) open shrubland to scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses.**
Landform and soils	This unit was recorded from reddish brown sandy clay loam soils over limestone.
Distribution	This unit comprised 100% of the Study Area (7.26 ha) and is representative of regrowth of the widespread vegetation AspAsp described by Outback Ecology (2010).
Associated species	Shrubs: *Frankenia pauciflora, Rhagodia eremaea, Ptilotus obovatus* var. *obovatus, Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266), and *Acacia tetragonophylla*. Herbs: *Boerhavia coccinea, Ptilotus exaltatus,* and *Sida fibulifera* Grasses: N/A
Significant flora	No significant flora were identified within this vegetation association.
Weeds	**Cenchrus ciliaris*
Condition	Degraded – previously cleared, weed species and grazing from introduced species observed.
Sampling sites	Relevés: R01, R02, R03, R04, R05
Fire and disturbance	This unit has not been affected by significant recent fire.
Photo	

3.2.3 Vegetation condition

The vegetation within the Study Area was rated as being in degraded condition (**Table 3-3**) (Trudgen, 1988). **Cenchrus ciliaris*, an aggressive introduced species, was considered the dominant understory species within the Study Area. The previously cleared nature of the Study Area, as well as introduced grazing pressure contributed to the condition value assigned to the vegetation.

Table 3-3: Vegetation condition of the Study Area.

Condition	Area (ha)	Proportion (%) of Study Area
Degraded	7.26	100
Total	7.26	100

3.2.4 Vegetation of significance

The vegetation within the Study Area does not correspond to any listed Threatened Ecological Communities under the EPBC or BC Act and none are consistent with any Priority Ecological Communities listed by DBCA (2024e). The vegetation within the Study Area is also not considered representative of any Ecosystems at Risk identified by Desmond (2001). The vegetation is not considered significant based on the criteria of the EPA (2016c).

3.2.5 Native flora

A total of 34 taxa from 26 genera representing 16 families were recorded during the field survey (**Table 3-4, Appendix 5**). The most taxon-rich families were: Chenopodiaceae (seven taxa), Malvaceae (seven taxa) and Fabaceae (three taxa). The most species rich genera were: *Acacia* (three taxa) and Solanum (three taxa). The dominant plant groups are consistent with other surveys of the broader locality. The species recorded within the current Study Area are consistent to those found within the surrounding vegetation during the larger survey of Lake MacLeod (Outback Ecology, 2010)

Table 3-4: Summary of flora richness recorded during survey.

Flora group	Number recorded
Families	16
Genera	26
Species	34
Priority species	0
Weeds	2

3.2.6 Significant flora

No significant flora species were recorded within the Study Area, and none are considered to have potential to occur based on the post-survey likelihood of occurrence assessment (**Appendix 3**). None of the flora taxa collected during the survey that could not be identified to species level are considered likely to represent any significant species.

One flora species of other significance was recorded during the survey. A specimen collected during the field survey was identified as *Euphorbia philochalix*, which represents a 174 km range extension of the species to the north of its current known distribution in Western Australia (DBCA, 2024b) (**Figure 3-3**). *Euphorbia philochalix* is also known to occur in the Northern Territory (Halford & Harris, 2012).

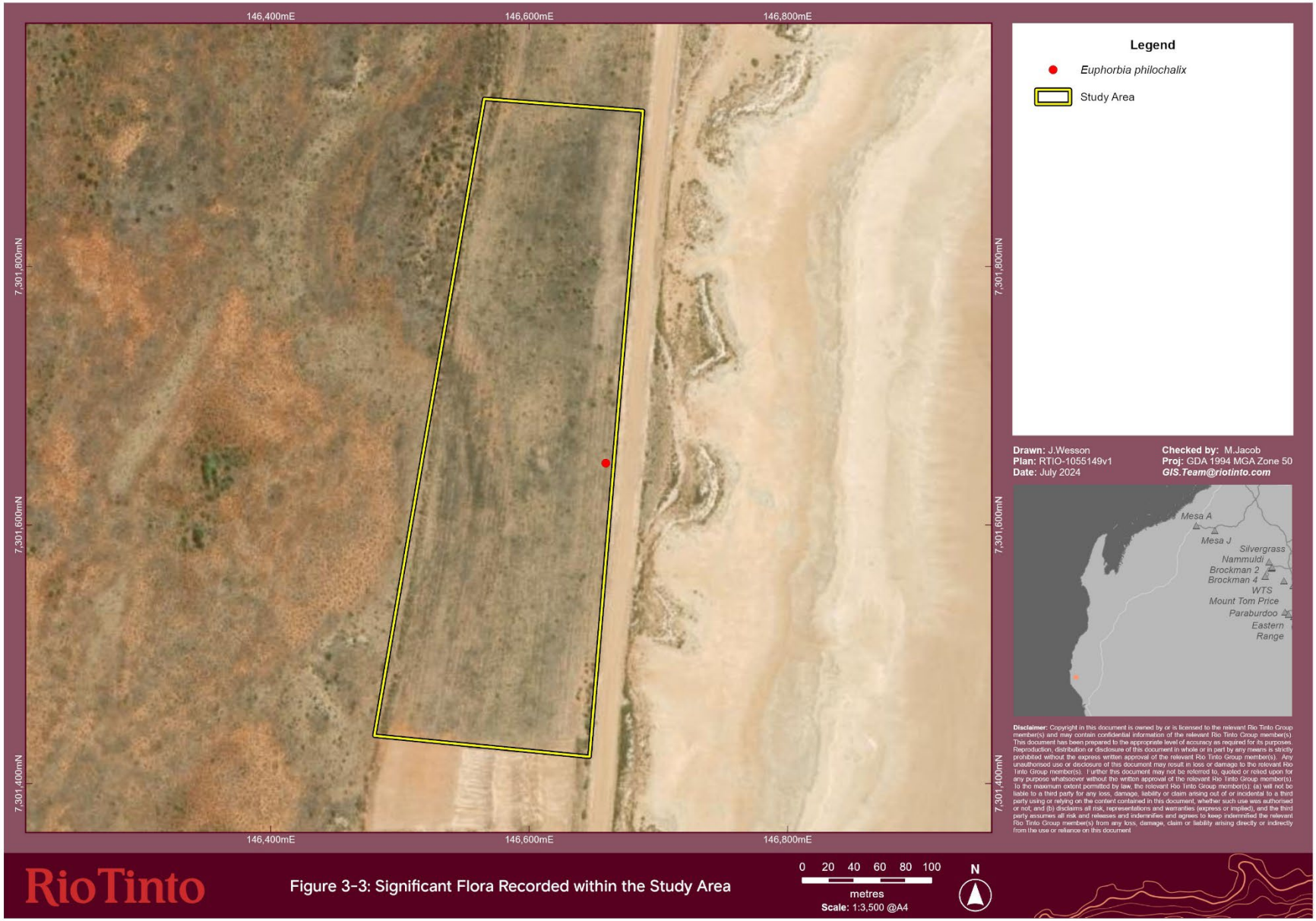

Figure 3-3: Significant flora recorded within the Study Area.

3.2.7 Introduced flora

Two introduced (weed) species were recorded from the Study Area, **Cenchrus ciliaris* (**Appendix 7**). **Cenchrus ciliaris* was considered the dominant understory species within the Study Area. **Cenchrus ciliaris* is considered to have a high ecological impact and rapid invasiveness as per the DBCA Prioritisation process DBCA (2024h), however is not listed as a Declared Pest under the State *Biosecurity and Agriculture Management Act 2007* (BAM Act) (DPIRD, 2024). **Mesembryanthemum crystallinum* was also recorded opportunistically during the field survey.

3.2.8 Fauna habitat of the Study Area

One broad fauna habitat type was described from the Study Area and consisted of regrowth within the previously disturbed borrow pit. This habitat corresponds to the Chenopod Shrubland habitat mapped by Outback Ecology (2011), which described the habitat as a:

'Scattered *Acacia* spp. over Low Open Shrubland of *Frankenia pauciflora, Maireana polypterygia*, *Ptilotus obovatus* and *Atriplex* spp. over Very Open Grassland of *Cenchrus ciliaris*. Substrate of compacted sandy loam over shallow limestone calcrete.'

Outback Ecology (2011) mapped 1,285 ha of the habitat in the vicinity of Lake MacLeod and determined the condition of the habitat to be completely degraded due to heavy grazing from sheep and goats. The fauna habitat present occurring within the Study Area does not correspond to any ecosystems listed as Threatened under the EPBC Act/BC Act or any listed PECs by DBCA (DBCA, 2023, 2024e). The previously disturbed nature of the Study Area and widespread nature of the surrounding habitat indicates the Study Area is of limited conservation significance. No significant fauna species are considered reliant on the fauna habitat within the Study Area.

Table 3-5: List of habitat types within the Study Area.

Habitat	Fauna habitat description	Extent (ha) within Study Area	Proportion (%) within Study Area
Chenopod Shrubland (aligns with associated habitat from Outback Ecology (2011))	Previously disturbed borrow pit. Vegetation comprised of low regrowth of *Acacia synchronicia* (+/- *Acacia sclerosperma* subsp. *sclerosperma* and *Solanum lasiophyllum*) open shrubland to scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses. The landform is comprised of a sandy loam underlain by limestone. No mesic microhabitats were present within the Study Area.	7.26	100
Total		7.26	100

3.2.9 Fauna

A total of five fauna species were opportunistically recorded during the survey, which are summarised in Table 3-6. Two of the species are introduced.

Table 3-6: Fauna species recorded within the Study Area.

Group	Species	Common Name	Observation type
Mammals	*Canis familiaris*	Dog/Dingo	Tracks
	Osphranter rufus	Red Kangaroo	Scats
	Oryctolagus cuniculus	Rabbit*	Scats and diggings

Reptiles	*Varanus* sp.	Goanna	Tracks
	Ctenophorus sp.	Dragon	Diggings

No significant fauna species were detected during the field survey. Of the 72 significant fauna species identified during the desktop study, none are considered to have potential to occur based on the habitat present within the Study Area, high level of disturbance, vegetation condition, and the known ecology of each species (**Appendix 3**).

4. Statement addressing the 10 clearing principles

The Proposal was assessed against the 10 clearing principles as defined in Schedule 5 (Principles for Clearing Native Vegetation) of the *Environmental Protection Act 1986*. Based on specialist assessment of the Study Area and discussion below, it is deemed that:

- Principles (a), (b), (c), (d), (e), (f), (g), (h), (i) and (j) are not at variance.

4.1 Principle (a) Comprises high level of biological diversity.

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

The Study Area falls within the Wooramel sub-region and is described by Desmond (2001) as alluvial plains associated with downstream sections and deltas of Gascoyne, Minilya and Wooramel Rivers. The extensive and diverse wetland system of Lake MacLeod is rich in aquatic invertebrates and waterbirds. The region is a centre of evolutionary radiation for the lizard genus *Lerista* and has many locally endemic species.

One vegetation unit was described from the Study Area. The AsyAssSolCc vegetation unit is described as*: Acacia synchronicia* (+/- *Acacia sclerosperma* subsp. *sclerosperma* and *Solanum lasiophyllum*) open shrubland to scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses. This vegetation is considered analogous to the AspAsp vegetation association described by Outback Ecology (2010). The AspAsp was described as 'Scattered *Acacia* spp. over Low Open Shrubland of *Frankenia pauciflora, Maireana polypterygia, Ptilotus obovatus* and *Atriplex* spp. over Very Open Grassland of *Cenchrus ciliaris*' and was associated with the limestone slopes and calcrete plains adjacent to the western edge of Lake MacLeod. The Study Area was originally mapped as AspAsp vegetation prior to disturbance for the borrow pit, and the AsyAssSolCc vegetation observed during the survey is the early stages of regrowth of AspAsp following disturbance.

The vegetation within the Study Area was rated as being in degraded condition (Trudgen, 1988). **Cenchrus ciliaris*, an aggressive introduced species, was considered the dominant understory species within the Study Area. The previously cleared nature of the Study Area, as well as introduced grazing pressure contributed to the condition value assigned to the vegetation. The vegetation identified within the Study Area is considered to be of low conservation value and are widely distributed both locally and throughout the sub-region.

A total of 34 flora species from 26 genera representing 16 families were recorded during the current survey. The number of taxa recorded by the current study is reflective of the previously disturbed nature of borrow pit and extensive presence of **Cenchrus ciliaris* within the Study Area. No Threatened or Priority flora species were recorded in the Study Area, and none are considered likely to occur.

One broad fauna habitat type was recorded within the Study Area and consisted of regrowth within the previously disturbed borrow pit. This habitat corresponds to the Chenopod Shrubland habitat mapped by Outback Ecology (2011), which described the habitat as 'Scattered *Acacia* spp. over Low Open Shrubland of *Frankenia pauciflora, Maireana polypterygia*, *Ptilotus obovatus* and *Atriplex* spp. over Very Open Grassland of *Cenchrus ciliaris*. Substrate of compacted sandy loam over shallow limestone calcrete. Outback Ecology (2011) mapped 1,285 ha of the habitat in the vicinity of Lake MacLeod and determined the condition of the habitat to be completely degraded due to heavy grazing from sheep and goats. The previously disturbed nature of the Study Area and widespread nature of the surrounding habitat indicates the Study Area is of limited conservation significance.

No significant fauna species were detected during the field survey. Of the 72 significant fauna species identified during the desktop study, none are considered to have potential to occur based on the habitat present within the Study Area and the known ecology of each species.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.2 Principle (b) Potential impact to any significant habitat for native fauna.

One broad fauna habitat type was recorded within the Study Area and consisted of regrowth within the previously disturbed borrow pit. This habitat corresponds to the Chenopod Shrubland habitat mapped by Outback Ecology (2011), which described the habitat as 'Scattered *Acacia* spp. over Low Open Shrubland of *Frankenia pauciflora, Maireana polypterygia*, *Ptilotus obovatus* and *Atriplex* spp. over Very Open Grassland of *Cenchrus ciliaris*. The substrate of compacted sandy loam over shallow limestone calcrete.

Outback Ecology (2011) mapped 1,285 ha of the habitat in the vicinity of Lake MacLeod and determined the condition of the habitat to be completely degraded due to heavy grazing from sheep and goats. The previously disturbed nature of the Study Area and widespread nature of the surrounding habitat indicates the Study Area is of limited conservation significance.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.3 Principle (c) Potential impact to any rare flora.

Native vegetation should not be cleared if it includes or is necessary for the continued existence of rare flora.

No Threatened or Priority flora species were recorded in the Study Area, and none are considered likely to occur following the field survey. No Threatened flora species were identified by the database searches as occurring within 50 km of the Study Area. Only one threatened flora species is known to occur within the Carnarvon Bioregion (*Eucalyptus beardiana*), which occurs more than 200 km south of the Study Area growing in sand dunes and ridges.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.4 Principle (d) Presence of any threatened ecological communities.

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).

The vegetation occurring within the Study Area does not represent any PECs listed by DBCA or TECs listed under either the BC Act or EPBC Act. The closest PEC to the Study Area is the 'Lyell Land System', occurring 17.4 km to the south-east of the Study Area. The 'Lyell Land System' is described as *Acacia* shrublands and saltbush over sandplains and dunes. The Study Area is located within the Warroora Land System described by Payne et al. (1987). The Warroora Land System occurs around the margins of Lake MacLeod and consists of flat saline alluvial plains supporting tall *Acacia* shrublands and low shrublands of saltbush, bluebush, and samphire.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.5 Principle (e) Significance as a remnant of native vegetation in the area that has been extensively cleared.

Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.

Shepherd (2002) identified the Carnarvon bioregion as having largely intact native vegetation owing to the lack of widespread intensive agricultural land use practices. Although the native vegetation remains widespread and largely intact, the floristic composition and structural characteristics have almost certainly changed since European settlement by grazing and altered fire regimes (Shepherd, 2002).

One pre-European vegetation unit (Coastal Dunes 328) was identified within the Study Area. The Coastal Dunes (328) described as succulent steppe with scrub; waterwood & *Acacia sclerosperma* over saltbush & samphire. The Coastal Dunes (328) had a pre-European extent of 10,236.89 ha, of which over 97% is still remaining (DBCA, 2024d). The AsyAssSolCc vegetation mapped within the Study Area is considered representative of regrowth of the AspAsp vegetation association described by Outback Ecology (2010). The vegetation within the Study Area is The AspAsp vegetation is widespread is the surrounding area.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.6 Principle (f) Impact on any watercourse and/or wetlands.

Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

The Proposal does not intersect any major or minor watercourses mapped by the State GIS database. However, the edge of Lake MacLeod, which has been identified as a wetland of national importance, is located approximately 30m to the east of the Study Area (BOM, 2024b; DoEE, 2024; DWER, 2024a, 2024b). Given the Study Area does not intersect Lake MacLeod and occurs on a borrow pit that has been previously cleared, the proposed clearing is unlikely to have a significant impact on the surrounding watercourses or wetlands.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.7 Principle (g) Potential to cause appreciable land degradation.

Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.

The Study Area lies within the Warroora Land System. This Land System occurs around the margins of Lake MacLeod and consists of saline plains supporting *Acacia* shrublands and low shrublands of saltbush, bluebush, and samphire. The geology of the Warroora Land System comprises of quaternary calcarenite, coquinite, alluvium and colluvium.

The proposed clearing will occur on land that has previously been cleared and is therefore will not cause any further land degradation. The Proposal is not expected to result in soil erosion, nutrient export, waterlogging/flooding, acidification, salinization or deep subsoil compaction.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.8 Principle (h) Potential to impact on the environmental values of adjacent or nearby conservation areas.

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 Study Area does not lie within any DBCA managed lands or ESAs. However, the study site is located approximately 30 m west of Lake Macleod which is listed as an Environmentally Sensitive Area

(6930). The proposed clearing will occur on land that has previously been cleared and is therefore will not have potential to impact on the environmental values of Lake MacLeod.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.9 Principle (i) Potential deterioration in the quality of surface or underground water.

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 Study Area occurs adjacent to Lake MacLeod and is located within the Gascoyne Artesian Basin. Given the small scale of Proposal, there is no reason to expect that the Proposal would affect groundwater quality in the region.

Based on specialist assessment, the proposal is considered not at variance to this principle.

4.10 Principle (j) Potential of clearing to cause, or exacerbate, the incidence or intensity of flooding.

Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.

Local flooding occurs seasonally in the Gascoyne region as a result of cyclonic activity and sporadic thunderstorm activity. No ephemeral drainage lines or streams run through the Study Area. The small scale of cleared proposed is not expected to exacerbate the incidence or intensity of flooding in the area.

Based on specialist assessment, the proposal is considered not at variance to this principle.

5. Conclusions

Rio Tinto, on behalf of Dampier Salt Limited, is proposing to undertake extraction of material from an existing borrow pit at Lake Macleod. The proposed Study Area covers approximately 7.26 ha of previously cleared ground. Vegetation, flora and fauna assessments at Borrow Pit 5 (the Study Area) were required to address the 10 Clearing Principles as part of the NVCP application process.

The Study Area was surveyed by Rio Tinto botanist Kyle Wood and Rio Tinto ecologist Alicia Michael on the 2nd and 3rd of April 2024. The Study Area was assessed in accordance with the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* and *Environmental Factor Guideline – Flora and Vegetation (EPA, 2016a, 2016c).* Fauna habitats were confirmed with reference to *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* and *Environmental Factor Guideline – Terrestrial Fauna* (EPA, 2016b, 2020).

One vegetation unit was identified within the Study Area. The vegetation unit was described as *Acacia synchronicia (+/- Acacia sclerosperma subsp. sclerosperma and Solanum lasiophyllum) open shrubland to scattered low shrubs over *Cenchrus ciliaris scattered tussock grasses*. The vegetation occurring within the Study Area does not represent any PECs listed by DBCA or TECs listed under either the BC Act or EPBC Act.

A total of 34 flora species from 26 genera representing 16 families were recorded during the current survey. The number of taxa recorded by the current study is reflective of the previously disturbed nature of borrow pit and extensive presence of **Cenchrus ciliaris* within the Study Area. No threatened or Priority flora species were recorded in the Study Area, and none are considered likely to occur following the field survey.

One broad fauna habitat type was recorded within the Study Area and consisted of regrowth within the previously disturbed borrow pit. This habitat corresponds to the Chenopod Shrubland habitat mapped by Outback Ecology (2011). In total 1,285 ha of Chenopod Shrubland habitat was mapped in the vicinity of Lake MacLeod. Outback Ecology (2011) determined the condition of the habitat to be completely degraded due to heavy grazing from sheep and goats. The previously disturbed nature of the Study Area and widespread nature of the surrounding habitat indicates the Study Area is of limited conservation significance.

No significant fauna species were detected during the field survey. Of the 72 significant fauna species identified during the desktop study, none are considered to have potential to occur based on the habitat present within the Study Area and the known ecology of each species.

The Proposal was assessed against the 10 clearing principles as defined in Schedule 5 (Principles for Clearing Native Vegetation) of the *Environmental Protection Act 1986*. A specialist assessment against the 10 Clearing Principles determined that:

- Principles (a), (b), (c), (d), (e), (f), (g), (h), (i) and (j) are not at variance.

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7. Appendices

Appendix 1: Results of database searches.

Table 1: Flora Species

A: ALA (2024) Occurrence Search.

B: DBCA (2024a) Danjoo Biodiversity Platform.

C: DBCA (2024g) TPFL Database.

D: DBCA (2024i) WA Herbarium Database.

E: DCCEEW (2024) Protected Matters Search Tool.

F: Outback Ecology (2010) Stage 2: Lake MacLeod Flora and Vegetation Survey.

Table 2: Fauna Species

A: ALA (2024) Occurrence Search.

B: DBCA (2024a) Danjoo Biodiversity Platform.

C: DBCA (2024f) Threatened and Priority Fauna Database.

D: DCCEEW (2024) Protected Matters Search Tool.

E: Outback Ecology (2011) Stage 2: Lake MacLeod Terrestrial Fauna Assessment

Family	Species	Status	Introduced	A	B	C	D	E	F
Acanthaceae	*Dicladanthera forrestii*			X	X				X
	Dipteracanthus australasicus subsp. *australasicus*			X	X				X
Aizoaceae	*Carpobrotus rossii*								X
	Carpobrotus virescens								X
	Gunniopsis septifraga			X	X				
	Mesembryanthemum crystallinum		*	X					X
	Sesuvium portulacastrum subsp. *portulacastrum*			X	X				
	Tetragonia diptera			X	X				X
Amaranthaceae	*Amaranthus mitchellii*			X	X				
	Ptilotus alexandri	P2		X	X		X		
	Ptilotus divaricatus			X	X				X
	Ptilotus exaltatus			X	X				X
	Ptilotus gaudichaudii			X	X				X
	Ptilotus obovatus var. *obovatus*			X	X				X
	Ptilotus polakii subsp. *juxta*			X	X				
	Ptilotus polystachyus			X	X				
	Ptilotus villosiflorus			X	X				X
Apiaceae	*Daucus glochidiatus*			X	X				
Apocynaceae	*Alyxia buxifolia*			X	X				
	Cynanchum viminale subsp. *australe*								X
Araliaceae	*Hydrocotyle glochidiata*			X	X				
	Trachymene elachocarpa			X	X				
Asparagaceae	*Acanthocarpus humilis*			X	X				
	Acanthocarpus preissii			X	X				X
	Acanthocarpus robustus			X	X				X
	Acanthocarpus verticillatus			X	X				X
	Dichopogon preissii			X	X				
	Dichopogon tyleri			X	X				
	Thysanotus exfimbriatus			X	X				
	Thysanotus speckii			X	X				
Asphodelaceae	*Asphodelus fistulosus*		*	X	X				X
Asteraceae	*Actinobole condensatum*			X	X				
	Angianthus cunninghamii			X	X				
	Angianthus milnei			X	X				
	Angianthus tomentosus			X	X				X
	Brachyscome ciliaris			X	X				
	Brachyscome iberidifolia			X	X				X
	Calotis multicaulis			X	X				X
	Centaurea melitensis		*	X					
	Cephalipterum drummondii			X	X				X
	Chthonocephalus spathulatus	P3			X	X	X		
	Chthonocephalus tomentellus	P2		X	X		X		
	Cratystylis subspinescens			X	X				X
	Flaveria trinervia		*	X	X				
	Gnephosis arachnoidea			X	X				
	Gnephosis brevifolia			X	X				
	Gnephosis tenuissima			X	X				
	Helipterum craspedioides			X					
	Hypochaeris glabra		*	X	X				
	Millotia tenuifolia var. *tenuifolia*								X
	Myriocephalus nudus	EX			X				
	Olearia axillaris			X	X				X
	Olearia sp. Kennedy Range (G. Byrne 66)			X	X				
	Pembertonia latisquamea			X	X				X
	Podolepis aristata subsp. *aristata*			X					
	Podolepis gardneri			X	X				
	Podotheca angustifolia			X	X				X
	Pogonolepis muelleriana			X	X				
	Rhodanthe charsleyae			X	X				
	Rhodanthe chlorocephala			X	X				
	Rhodanthe citrina			X					
	Rhodanthe humboldtiana			X	X				X
	Rhodanthe psammophila			X	X				X

Family	Species	Status	Introduced	A	B	C	D	E	F
	Rhodanthe stricta								X
	Roebuckiella cheilocarpa var. *quobbensis*			X	X				
	Schoenia ayersii								X
	Schoenia cassiniana			X					
	Schoenia filifolia						X		
	Senecio conferruminatus			X					X
	Senecio glossanthus			X	X				
	Senecio pinnatifolius var. *pinnatifolius*			X					
	Siemssenia microcephala				X				
	Sonchus oleraceus		*	X	X				X
	Sondottia glabrata	P2			X		X		
	Waitzia corymbosa			X					
	Waitzia nitida			X	X				
	Waitzia podolepis			X	X				
	Waitzia suaveolens			X	X				
Boraginaceae	*Halgania cyanea*			X	X				
	Heliotropium ammophilum			X					
	Trichodesma zeylanicum var. *grandiflorum*								X
	Trichodesma zeylanicum var. *zeylanicum*			X					
Brassicaceae	*Brassica tournefortii*		*	X	X				X
	Lepidium biplicatum	P3			X		X		
	Lepidium linifolium			X	X				
	Lepidium pseudoruderale			X	X				X
	Lepidium rotundum								X
	Stenopetalum pedicellare			X	X				X
	Stenopetalum sphaerocarpum			X	X				
Cactaceae	*Cylindropuntia fulgida* var. *mamillata*		*	X	X				
Campanulaceae	*Lobelia heterophylla*			X	X				
	Wahlenbergia tumidifructa			X	X				
Capparaceae	*Capparis spinosa* subsp. *nummularia*			X	X				
Celastraceae	*Stackhousia clementii*	P3		X	X	X	X		
	Stackhousia muricata			X	X				X
	Stackhousia sp. Mid west coastal (D. & B. Bellairs 6561)			X	X				
Chenopodiaceae	*Atriplex amnicola*			X					
	Atriplex bunburyana			X	X				X
	Atriplex codonocarpa			X	X				X
	Atriplex holocarpa								X
	Atriplex isatidea			X	X				
	Atriplex lindleyi subsp. *conduplicata*	P3			X				
	Atriplex nummularia			X					
	Atriplex paludosa subsp. *baudinii*			X	X				
	Atriplex paludosa subsp. *moquiniana*			X	X				
	Atriplex semilunaris			X	X				X
	Atriplex vesicaria			X	X				X
	Chenopodium curvispicatum			X	X				
	Chenopodium gaudichaudianum			X	X				X
	Didymanthus roei			X	X				
	Dissocarpus paradoxus								X
	Dysphania kalpari								X
	Dysphania melanocarpa			X					X
	Dysphania plantaginella			X	X				
	Dysphania rhadinostachya subsp. *inflata*			X					
	Enchylaena tomentosa var. *tomentosa*			X					X
	Maireana appressa			X	X				
	Maireana integra								X
	Maireana lanosa			X	X				
	Maireana lobiflora			X	X				
	Maireana polypterygia								X
	Maireana tomentosa			X	X				X
	Maireana trichoptera			X	X				
	Neobassia astrocarpa			X	X				X
	Rhagodia eremaea								X
	Rhagodia latifolia subsp. *latifolia*			X	X				

Family	Species	Status	Introduced	A	B	C	D	E	F
	Rhagodia preissii subsp. *obovata*			X	X				X
	Salsola australis								X
	Sclerolaena densiflora			X	X				
	Sclerolaena diacantha			X	X				X
	Sclerolaena eurotioides			X	X				
	Sclerolaena recurvicuspis			X	X				
	Sclerolaena uniflora			X	X				
	Suaeda australis			X					
	Tecticornia disarticulata			X	X				
	Tecticornia halocnemoides			X	X				X
	Tecticornia indica subsp. *bidens*			X	X				X
	Tecticornia indica subsp. *indica*								X
	Tecticornia peltata								X
	Tecticornia pruinosa			X	X				X
	Tecticornia sp. Dennys Crossing (K.A. Shepherd & J. English KS 552)								X
	Threlkeldia diffusa			X	X				X
Codiaceae	*Codium spongiosum*			X					
Colchicaceae	*Wurmbea odorata*			X	X				
Convolvulaceae	*Convolvulus angustissimus*				X				
	Convolvulus clementii			X	X				
	Convolvulus remotus								X
	Duperreya sericea								X
Crassulaceae	*Crassula colorata*			X	X				X
Cucurbitaceae	*Citrullus colocynthis*		*	X					
Cyperaceae	*Bulbostylis barbata*			X	X				
	Cyperus bulbosus			X	X				
Dictyotaceae	*Lobophora variegata*				X				
Didymiaceae	*Didymium anellus*				X				
	Didymium squamulosum				X				
Droseraceae	*Drosera hamiltonii*			X					
Euphorbiaceae	*Euphorbia australis* var. *australis*			X	X				
	Euphorbia boophthona			X	X				X
	Euphorbia drummondii			X	X				X
	Euphorbia sharkoensis			X	X				
	Euphorbia tannensis subsp. *eremophila*			X					
Fabaceae	*Acacia anastema*								X
	Acacia chartacea			X	X				
	Acacia coriacea subsp. *coriacea*			X	X				X
	Acacia gregorii			X	X				
	Acacia ligulata			X	X				X
	Acacia rostellifera			X	X				
	Acacia ryaniana	P2		X	X	X	X		
	Acacia sclerosperma subsp. *sclerosperma*			X	X				X
	Acacia sp. Ripon Hills (B.R. Maslin 8460)			X					
	Acacia spathulifolia			X	X				
	Acacia synchronicia								X
	Acacia tetragonophylla			X	X				X
	Chorizema racemosum								X
	Daviesia benthamii			X	X				
	Daviesia hakeoides			X	X				
	Glycine canescens			X	X				
	Indigofera melanosticta			X	X				
	Labichea cassioides			X	X				X
	Leptosema macrocarpum			X	X				
	Lotus australis			X	X				
	Lotus cruentus			X	X				
	Rhynchosia minima			X	X				X
	Senna glutinosa subsp. *chatelainiana*			X	X				X
	Swainsona calcicola			X	X				
	Swainsona ecallosa	P1			X		X		
	Swainsona gracilis								X
	Swainsona kingii			X	X				
	Swainsona pterostylis			X	X				X

Family	Species	Status	Introduced	A	B	C	D	E	F
	Tephrosia rosea			X					
Frankeniaceae	*Frankenia cinerea*			X	X				X
	Frankenia pauciflora			X	X				X
Gentianaceae	*Schenkia australis*			X	X				
Geraniaceae	*Erodium crinitum*								X
	Erodium cygnorum			X	X				
Goodeniaceae	*Dampiera incana* var. *incana*			X	X				
	Goodenia berardiana			X	X				X
	Goodenia ochracea			X	X				
	Goodenia triodiophila			X	X				
	Lechenaultia subcymosa			X	X				
	Scaevola anchusifolia			X	X				
	Scaevola crassifolia			X	X				X
	Scaevola cuneiformis				X				
	Scaevola cunninghamii			X					
	Scaevola sericophylla			X	X				
	Scaevola spicigera			X					X
	Scaevola spinescens			X	X				X
	Scaevola thesioides			X	X				
	Scaevola tomentosa			X	X				X
Gyrostemonaceae	*Codonocarpus cotinifolius*			X					
Haloragaceae	*Haloragis gossei* var. *inflata*			X	X				
Hemerocallidaceae	*Corynotheca micrantha*			X					X
	Dianella revoluta								X
Hydrocharitaceae	*Najas marina*			X	X				
Juncaginaceae	*Triglochin calcitrapa*			X	X				
	Triglochin centrocarpa			X	X				
Lamiaceae	*Quoya loxocarpa*			X	X				
	Quoya paniculata			X	X				
Loranthaceae	*Amyema preissii*								X
Malvaceae	*Abutilon cunninghamii*			X	X				
	Abutilon geranioides								X
	Abutilon otocarpum			X	X				
	Abutilon oxycarpum			X	X				
	Abutilon sp. Hamelin (A.M. Ashby 2196)	P2							X
	Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	P3		X	X	X	X		
	Abutilon sp. Quobba (H. Demarz 3858)	P2		X	X	X	X		
	Alyogyne cuneiformis			X	X				
	Corchorus crozophorifolius			X	X				
	Corchorus walcottii			X	X				X
	Hannafordia quadrivalvis subsp. *recurva*				X				
	Hibiscus sturtii			X	X				X
	Lawrencia densiflora			X	X				X
	Lawrencia spicata			X	X				
	Lawrencia viridigrisea			X	X				X
	Sida calyxhymenia			X	X				
	Sida ectogama								X
	Sida fibulifera			X	X				
	Sida kingii			X	X				
Meliaceae	*Owenia acidula*	P3				X	X		
Montiaceae	*Calandrinia baccata*			X	X				
	Calandrinia eremaea			X	X				X
	Calandrinia polyandra			X	X				X
	Calandrinia remota			X	X				X
	Calandrinia sp. Shark Bay (A. Markey 1405)			X	X				
Moraceae	*Ficus brachypoda*			X	X				
Myrtaceae	*Calothamnus borealis* subsp. *borealis*			X	X				
	Calothamnus chrysanthereus			X	X				
	Calytrix truncatifolia			X	X				
	Eucalyptus baiophylla			X	X				
	Eucalyptus fruticosa			X	X				
	Eucalyptus obtusiflora subsp. *obtusiflora*			X	X				
	Eucalyptus prominens			X	X				

Family	Species	Status	Introduced	A	B	C	D	E	F
	Melaleuca cardiophylla			X	X				
	Pileanthus limacis			X	X				
	Scholtzia sp. Folly Hill (M.E. Trudgen 12097)	P2					X		
	Thryptomene baeckeacea			X	X				X
	Thryptomene dampieri			X	X				
	Thryptomene decussata			X	X				
Nitrariaceae	*Nitraria billardierei*			X	X				X
Nyctaginaceae	*Commicarpus australis*			X	X				X
Oleaceae	*Jasminum calcareum*			X	X				
Ophioglossaceae	*Ophioglossum lusitanicum*			X	X				
Phyllanthaceae	*Dendrophyllanthus erwinii*								X
	Lysiandra fuernrohrii	P3			X		X		
Physaraceae	*Badhamia macrocarpa*				X				
	Badhamia melanospora				X				
	Physarum gravidum				X				
Plumbaginaceae	*Muellerolimon salicorniaceum*			X	X				X
Poaceae	*Aristida holathera* var. *holathera*			X	X				
	Austrostipa elegantissima			X					
	Austrostipa nitida			X	X				X
	Cenchrus ciliaris	*		X	X				X
	Chloris virgata	*		X	X				
	Cymbopogon obtectus			X	X				
	Cynodon dactylon	*							X
	Dactyloctenium radulans			X	X				
	Eragrostis barrelieri	*		X	X				X
	Eragrostis cilianensis	*		X					
	Eragrostis cumingii			X	X				
	Eragrostis dielsii			X	X				
	Eragrostis eriopoda			X	X				
	Eragrostis falcata								X
	Eragrostis lanipes			X	X				
	Eragrostis pergracilis			X	X				
	Eragrostis xerophila								X
	Eriachne helmsii			X					
	Eriachne mucronata			X					
	Eriachne pulchella subsp. *dominii*			X	X				
	Eulalia aurea								X
	Paractaenum novae-hollandiae subsp. *novae-hollandiae*			X	X				
	Paspalidium basicladum			X	X				X
	Rostraria pumila	*		X	X				
	Setaria dielsii			X					
	Spinifex longifolius			X					
	Themeda quadrivalvis	*		X					
	Tragus australianus			X	X				
	Triodia basedowii			X	X				
	Triodia epactia			X	X				X
	Triodia glabra			X	X				
	Triodia lanigera								X
	Triodia pungens			X	X				
	Triraphis mollis			X	X				
Polygonaceae	*Rumex crystallinus*	P2					X		
	Rumex vesicarius		*						X
Portulacaceae	*Portulaca oleracea*			X	X				
Primulaceae	*Samolus junceus*			X	X				
	Samolus repens			X	X				
	Samolus sp. Shark Bay (M.E. Trudgen 7410)			X	X				
Proteaceae	*Banksia ashbyi* subsp. *boreoscaia*			X	X				
	Grevillea eriostachya			X					
	Hakea stenophylla subsp. *stenophylla*								X
Rhamnaceae	*Stenanthemum divaricatum*	P3		X	X		X		
Santalaceae	*Anthobolus foveolatus*			X	X				
	Exocarpos aphyllus			X	X				X
	Exocarpos sparteus			X	X				

Family	Species	Status	Introduced	A	B	C	D	E	F
	Santalum acuminatum			X	X				
	Santalum spicatum			X	X				X
Sapindaceae	*Alectryon oleifolius* subsp. *oleifolius*			X	X				X
	Diplopeltis eriocarpa			X					
	Diplopeltis intermedia var. *incana*			X	X				
	Diplopeltis intermedia var. *intermedia*			X	X				
	Diplopeltis petiolaris			X					
	Dodonaea bursariifolia			X	X				X
	Dodonaea viscosa								X
Sargassaceae	*Sargassopsis decurrens*				X				
	Sargassum carpophyllum				X				
	Sargassum fissifolium				X				
	Sirophysalis trinodis				X				
Scrophulariaceae	*Eremophila glabra* subsp. *albicans*			X	X				
	Eremophila glabra subsp. *tomentosa*								X
	Eremophila latrobei subsp. *latrobei*								X
	Eremophila longifolia								X
	Eremophila mackinlayi subsp. *mackinlayi*			X	X				
	Eremophila maculata								X
	Eremophila maitlandii			X	X				
	Eremophila oppositifolia subsp. *angustifolia*			X	X				
	Eremophila setacea			X	X				
	Myoporum montanum			X	X				
Solanaceae	*Anthocercis littorea*			X	X				
	Lycium australe			X	X				
	Nicotiana occidentalis			X	X				X
	Solanum lasiophyllum			X	X				X
	Solanum orbiculatum								X
Surianaceae	*Stylobasium spathulatum*			X	X				X
Thymelaeaceae	*Pimelea microcephala* subsp. *microcephala*			X	X				X
Zygophyllaceae	*Roepera ammophila*			X	X				

Family	Scientific Name	Common Name	WA	EPBC	A	B	C	D	E
Amphibians									
Limnodynastidae	*Neobatrachus fulvus*	Tawny Trilling Frog			X				
	Neobatrachus sutor	Shoemaker Frog			X				
	Neobatrachus wilsmorei	Plonking Frog			X				
	Platyplectrum spenceri	Centralian Burrowing Frog			X				
Myobatrachidae	*Uperoleia russelli*	Northwest Toadlet			X				
Pelodryadidae	*Cyclorana maini*	Sheep Frog			X				
	Cyclorana occidentalis	Western Water-holding Frog			X				
	Litoria rubella	Little Red Tree Frog			X				
Birds									
Acanthizidae	*Acanthiza iredalei*	Slender-billed Thornbill				X			
	Acanthiza robustirostris	Slaty-backed Thornbill			X				
	Acanthiza uropygialis	Chestnut-rumped Thornbill			X	X			X
	Aphelocephala leucopsis	Southern Whiteface		VU		X		X	
	Calamanthus campestris	Rufous Fieldwren			X	X			X
	Gerygone tenebrosa	Dusky Gerygone			X	X			
	Pyrrholaemus brunneus	Redthroat			X	X			X
	Sericornis frontalis balstoni	West Coast Spotted Scrubwren			X	X			
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk				X			
	Accipiter fasciatus fasciatus	Brown Goshawk			X	X			
	Aquila audax	Wedge-tailed Eagle			X				X
	Circus approximans	Swamp Harrier				X			
	Circus assimilis	Spotted Harrier				X			X
	Elanus scriptus	Letter-winged Kite	P4		X	X	X		
	Erythrotriorchis radiatus	Red Goshawk	VU	VU				X	
	Haliaeetus leucogaster	White-bellied Sea-Eagle			X	X			
	Haliastur indus	Brahminy Kite				X			
	Haliastur sphenurus	Whistling Kite				X			
	Hieraaetus morphnoides	Little Eagle			X				
	Lophoictinia isura	Square-tailed Kite				X			
	Milvus migrans	Black Kite			X	X			
	Pandion haliaetus cristatus	Eastern Osprey	MI	MI	X	X	X		X
Acrocephalidae	*Acrocephalus australis*	Australian Reed-Warbler				X			
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar				X			
Alaudidae	*Mirafra javanica*	Horsfield's Bushlark				X			
Alcedinidae	*Dacelo leachii leachii*	Northern Blue-winged Kookaburra			X	X			
	Todiramphus chloris	Collared Kingfisher				X			
	Todiramphus pyrrhopygius	Red-backed Kingfisher				X			
	Todiramphus sanctus	Sacred Kingfisher				X			
Anatidae	*Anas gracilis*	Grey Teal				X			X
	Anas superciliosa	Pacific Black Duck				X			X
	Cygnus atratus	Black Swan				X			
	Dendrocygna arcuata australis	Torresian Wandering Whistling-Duck				X			
	Spatula rhynchotis	Australasian Shoveler				X			
Anhingidae	*Anhinga novaehollandiae novaehollandiae*	Australian Darter				X			
Anseranatidae	*Anseranas semipalmata*	Magpie Goose				X			
Apodidae	*Apus pacificus*	Fork-tailed Swift	MI	MI	X	X	X		
Ardeidae	*Ardea alba modesta*	Eastern Great Egret				X			
	Ardea intermedia	Intermediate Egret				X			
	Ardea pacifica	White-necked Heron				X			
	Botaurus poiciloptilus	Australasian Bittern	EN	EN		X	X		
	Butorides striata	Striated Heron (Mangrove Heron)			X				
	Egretta novaehollandiae	White-faced Heron			X	X			
	Nycticorax caledonicus	Nankeen Night Heron (Rufous Night Heron)			X				
Artamidae	*Artamus cinereus*	Black-faced Woodswallow				X			
	Artamus leucorynchus	White-breasted Woodswallow			X	X			
	Artamus minor	Little Woodswallow				X			
	Artamus personatus	Masked Woodswallow				X			
	Cracticus nigrogularis	Pied Butcherbird				X			X
	Cracticus torquatus	Grey Butcherbird				X			
	Gymnorhina tibicen	Australian Magpie				X			
Burhinidae	*Esacus magnirostris*	Beach Stone-curlew				X			
Cacatuidae	*Cacatua sanguinea*	Little Corella				X			

Family	Scientific Name	Common Name	WA	EPBC	A	B	C	D	E
	Eolophus roseicapilla	Galah			X	X			X
	Nymphicus hollandicus	Cockatiel				X			
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike			X	X			X
Caprimulgidae	*Eurostopodus argus*	Spotted Nightjar			X	X			
Casuariidae	*Dromaius novaehollandiae novaehollandiae*	Emu			X	X			X
Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover	VU	VU & MI	X	X	X	X	
	Charadrius mongolus	Lesser Sand Plover	EN	EN & MI		X	X		
	Charadrius ruficapillus	Red-capped Plover				X			
	Elseyornis melanops	Black-fronted Dotterel				X			
	Erythrogonys cinctus	Red-kneed Dotterel				X			
	Pluvialis fulva	Pacific Golden Plover	MI	MI	X	X	X		
	Pluvialis squatarola	Grey Plover	MI	MI		X	X		
	Vanellus tricolor	Banded Lapwing				X			
Columbidae	*Columba livia*	*Rock Dove			X	X			
	Geopelia cuneata	Diamond Dove			X	X			
	Ocyphaps lophotes	Crested Pigeon			X	X			X
	Spilopelia senegalensis	*Laughing Dove				X			
Corvidae	*Corvus bennetti*	Little Crow			X	X			X
	Corvus coronoides	Australian Raven				X			
	Corvus orru	Torresian Crow			X	X			
Cuculidae	*Chalcites basalis*	Horsfield's Bronze-Cuckoo			X	X			
	Chalcites lucidus	Shining Bronze-Cuckoo				X			
	Chalcites osculans	Black-eared Cuckoo			X	X			X
	Heteroscenes pallidus	Pallid Cuckoo				X			
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird				X			
Diomedeidae	*Thalassarche carteri*	Indian Yellow-nosed Albatross	EN	VU & MI				X	
	Thalassarche cauta steadi	White-capped Albatross	VU	VU & MI		X	X	X	
	Thalassarche chlororhynchos	Atlantic Yellow-nosed Albatross	VU	MI		X	X		
	Thalassarche impavida	Campbell Albatross	VU	VU & MI				X	
	Thalassarche melanophris	Black-browed Albatross	EN	VU & MI				X	
Estrildidae	*Emblema pictum*	Painted Finch				X			
	Neochmia ruficauda	Star Finch				X			
	Taeniopygia guttata castanotis	Australian Zebra Finch			X	X			X
Falconidae	*Falco berigora*	Brown Falcon				X			
	Falco cenchroides	Australian Kestrel (Nankeen Kestrel)			X	X			X
	Falco hypoleucos	Grey Falcon	VU	VU	X	X	X	X	
	Falco longipennis longipennis	Southern Australian Hobby				X			
	Falco peregrinus macropus	Australian Peregrine Falcon	OS		X	X	X		
Fregatidae	*Fregata ariel*	Lesser Frigatebird	MI	MI	X				
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	MI	MI	X		X		X
	Stiltia isabella	Australian Pratincole				X			
Haematopodidae	*Haematopus fuliginosus*	Sooty Oystercatcher			X	X			
	Haematopus longirostris	Pied Oystercatcher				X			
Hirundinidae	*Cheramoeca leucosterna*	White-backed Swallow			X	X			X
	Hirundo neoxena	Welcome Swallow			X	X			X
	Petrochelidon ariel	Fairy Martin			X	X			
	Petrochelidon nigricans	Tree Martin			X	X			X
Laridae	*Anous stolidus*	Brown Noddy	MI	MI		X	X		
	Anous tenuirostris	Lesser Noddy				X			
	Chlidonias hybrida	Whiskered Tern				X			X
	Chlidonias leucopterus	White-winged Black Tern	MI	MI		X	X		
	Chroicocephalus novaehollandiae	Silver Gull			X	X			
	Gelochelidon nilotica	Common Gull-billed Tern	MI	MI		X	X		
	Hydroprogne caspia	Caspian Tern	MI	MI		X	X		
	Larus pacificus	Pacific Gull			X	X			
	Onychoprion anaethetus anaethetus	Indo-Pacific Bridled Tern	MI	MI	X	X			
	Sterna dougallii	Roseate Tern	MI	MI		X	X		
	Sterna hirundo	Common Tern	MI	MI	X	X	X		
	Sternula albifrons	Little Tern	MI	MI		X	X		
	Thalasseus bengalensis	Lesser Crested Tern			X	X			
	Thalasseus bergii	Crested Tern	MI	MI	X	X	X		
Locustellidae	*Cincloramphus cruralis*	Brown Songlark			X	X			
	Cincloramphus mathewsi	Rufous Songlark				X			

Family	Scientific Name	Common Name	WA	EPBC	A	B	C	D	E
	Poodytes gramineus	Little Grassbird				X			
Maluridae	*Amytornis textilis textilis*	Shark Bay Western Grasswren	P4		X				
	Malurus assimilis assimilis	Purple-backed Fairy-wren			X	X			X
	Malurus assimilis bernieri	Shark Bay Variegated Fairy-wren	VU		X				
	Malurus leucopterus	White-winged Fairy-wren			X	X			X
	Malurus splendens	Splendid Fairy-wren				X			
Megapodiidae	*Leipoa ocellata*	Malleefowl	VU	VU		X	X		
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater				X			
	Certhionyx variegatus	Pied Honeyeater				X			
	Epthianura albifrons	White-fronted Chat				X			
	Epthianura aurifrons	Orange Chat				X			
	Epthianura tricolor	Crimson Chat				X			
	Gavicalis virescens	Singing Honeyeater			X	X			X
	Manorina flavigula	Yellow-throated Miner			X	X			
	Ptilotula penicillata	White-plumed Honeyeater			X	X			
	Purnella albifrons	White-fronted Honeyeater				X			
	Sugomel niger	Black Honeyeater				X			
Meropidae	*Merops ornatus*	Rainbow Bee-eater			X	X			
Monarchidae	*Grallina cyanoleuca*	Magpie-lark			X	X			
Motacillidae	*Anthus australis*	Australian Pipit			X				X
	Anthus novaeseelandiae	Australasian Pipit				X			
Oceanitidae	*Oceanites oceanicus*	Wilson's Storm-Petrel	MI	MI	X	X	X		
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird			X	X			X
Otididae	*Ardeotis australis*	Australian Bustard				X			
Pachycephalidae	*Colluricincla harmonica rufiventris*	Western Grey Shrike-thrush			X	X			
	Pachycephala lanioides	White-breasted Whistler			X				
	Pachycephala rufiventris	Rufous Whistler			X	X			
Pardalotidae	*Pardalotus rubricatus*	Red-browed Pardalote				X			
	Pardalotus striatus	Striated Pardalote			X	X			
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican				X			
Petroicidae	*Melanodryas cucullata*	Hooded Robin			X	X			X
	Petroica goodenovii	Red-capped Robin			X	X			
Phaethontidae	*Phaethon rubricauda*	Red-tailed Tropicbird	MI & P4	MI		X	X	X	
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant				X			
Phasianidae	*Coturnix pectoralis*	Stubble Quail				X			
Podargidae	*Podargus strigoides brachypterus*	Western Tawny Frogmouth			X	X			
Podicipedidae	*Poliocephalus poliocephalus*	Hoary-headed Grebe				X			
	Tachybaptus novaehollandiae	Australasian Grebe (Black-throated Grebe)				X			
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler			X	X			X
	Pomatostomus temporalis	Grey-crowned Babbler				X			
Procellariidae	*Ardenna carneipes*	Fleshy-footed Shearwater	VU	MI		X	X		
	Ardenna pacifica	Wedge-tailed Shearwater	MI	MI	X	X	X		
	Calonectris leucomelas	Streaked Shearwater	MI	MI		X	X		
	Macronectes giganteus	Southern Giant Petrel	MI	EN & MI	X	X	X	X	
	Pterodroma mollis	Soft-plumaged Petrel		VU				X	
	Puffinus huttoni	Hutton's Shearwater	EN			X	X		
Psittacidae	*Barnardius zonarius*	Australian Ringneck				X			
	Melopsittacus undulatus	Budgerigar				X			
	Neopsephotus bourkii	Bourke's Parrot				X			
	Pezoporus occidentalis	Night Parrot	CR	EN				X	
	Psephotus varius	Mulga Parrot				X			
Psophodidae	*Psophodes occidentalis*	Chiming Wedgebill			X	X			X
Rallidae	*Fulica atra*	Eurasian Coot				X			
	Hypotaenidia philippensis	Buff-banded Rail				X			
	Tribonyx ventralis	Black-tailed Nativehen				X			
Recurvirostridae	*Cladorhynchus leucocephalus*	Banded Stilt				X			
	Himantopus himantopus	Black-winged Stilt				X			
	Recurvirostra novaehollandiae	Red-necked Avocet				X			
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail				X			
	Rhipidura leucophrys	Willie Wagtail			X	X			X
	Rhipidura phasiana	Mangrove Fantail			X				
Rostratulidae	*Rostratula australis*	Australian Painted Snipe	EN	EN	X			X	
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	MI	MI	X	X	X		X

Family	Scientific Name	Common Name	WA	EPBC	A	B	C	D	E
	Arenaria interpres	Ruddy Turnstone	MI	MI	X	X	X		
	Calidris acuminata	Sharp-tailed Sandpiper	MI	MI	X	X	X	X	
	Calidris alba	Sanderling	MI	MI		X	X		
	Calidris canutus	Red Knot	EN	EN & MI	X	X	X	X	
	Calidris ferruginea	Curlew Sandpiper	CR	CR & MI	X	X	X	X	
	Calidris ruficollis	Red-necked Stint	MI	MI	X	X	X		
	Calidris subminuta	Long-toed Stint	MI	MI			X		
	Calidris tenuirostris	Great Knot	CR	CR & MI		X	X		
	Limosa lapponica menzbieri	Russkoye Bar-tailed Godwit	CR	CR & MI	X	X	X	X	
	Limosa limosa	Black-tailed Godwit	MI	MI		X	X		
	Numenius madagascariensis	Eastern Curlew	CR	CR & MI	X	X	X	X	
	Numenius minutus	Little Curlew	MI	MI		X	X		
	Numenius phaeopus	Whimbrel	MI	MI		X	X		
	Tringa brevipes	Grey-tailed Tattler	MI & P4	MI	X	X	X		
	Tringa glareola	Wood Sandpiper	MI	MI			X		
	Tringa nebularia	Common Greenshank	MI	MI	X	X	X	X	
	Tringa stagnatilis	Marsh Sandpiper	MI	MI			X		
	Xenus cinereus	Terek Sandpiper	MI	MI		X	X		
Stercorariidae	*Stercorarius antarcticus lonnbergi*	Subantarctic Brown Skua	P4			X	X		
	Stercorarius pomarinus	Pomarine Jaeger	MI	MI		X	X		
Strigidae	*Ninox novaeseelandiae*	Southern Boobook				X			
Sulidae	*Morus serrator*	Australasian Gannet				X			
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	MI	MI		X	X		
	Threskiornis molucca	Australian White Ibis			X	X			X
	Threskiornis spinicollis	Straw-necked Ibis			X	X			
Zosteropidae	*Zosterops lateralis chloronotus*	Western Silvereye			X	X			X
	Zosterops luteus	Australian Yellow White-eye			X	X			
Mammals									
Bovidae	*Capra aegagrus hircus*	*Goat			X				X
Canidae	*Vulpes vulpes*	*Red Fox			X				X
Dasyuridae	*Phascogale calura*	Red-tailed Phascogale	CD	VU			X		
	Sminthopsis crassicaudata	Fat-tailed Dunnart			X	X			
	Sminthopsis macroura	Stripe-faced Dunnart			X	X			X
	Sminthopsis youngsoni	Lesser Hairy-footed Dunnart			X	X			
Felidae	*Felis catus*	*Cat			X	X			X
Leporidae	*Oryctolagus cuniculus*	*Rabbit			X	X			X
Macropodidae	*Lagorchestes hirsutus bernieri*	Rufous Hare-wallaby (Bay Is.)	VU	VU	X				
	Lagostrophus fasciatus fasciatus	Banded Hare-wallaby	VU	VU	X				
	Osphranter robustus erubescens	Euro, Biggada			X				X
	Osphranter rufus	Red Kangaroo, Marlu				X			
Molossidae	*Chaerephon jobensis colonicus*	Greater Northern Free-tailed Bat			X				
Muridae	*Mus musculus*	*House Mouse			X	X			
	Notomys alexis alexis	Spinifex Hopping-mouse			X	X			
	Pseudomys albocinereus albocinereus	Ash-grey Mouse			X				X
	Pseudomys gouldii	Shark Bay Mouse		EX	X				
	Pseudomys hermannsburgensis	Sandy Inland Mouse			X	X			X
Peramelidae	*Perameles bougainville*	Shark Bay Bandicoot or Little Marl	VU	EN	X				
Potoroidae	*Bettongia lesueur lesueur*	Shark Bay Burrowing Bettong	CD	VU	X				
Tachyglossidae	*Tachyglossus aculeatus acanthion*	Short-beaked Echidna			X				X
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat			X				X
	Nyctophilus geoffroyi geoffroyi	Lesser Long-eared Bat			X				X
	Vespadelus finlaysoni	Finlayson's Cave Bat			X				X
Reptiles									
Agamidae	*Ctenophorus clayi*	Collared Dragon			X				
	Ctenophorus maculatus badius	Spotted Military Dragon			X				
	Ctenophorus maculatus maculatus	Spotted Military Dragon			X	X			X
	Ctenophorus nuchalis	Central Netted Dragon			X	X			X
	Ctenophorus parviceps	Northern Heath Dragon			X	X			
	Ctenophorus reticulatus	Western Netted Dragon			X	X			
	Ctenophorus rubens	Red Dragon			X	X			
	Ctenophorus scutulatus	Lozenge-marked Dragon			X				
	Gowidon longirostris	Long-nosed Dragon			X	X			
	Moloch horridus	Thorny Devil			X	X			X

Family	Scientific Name	Common Name	WA	EPBC	A	B	C	D	E
	Pogona minor minor	Western Bearded Dragon			X	X			X
Carphodactylidae	*Nephrurus levis occidentalis*	Smooth Knob-tailed Gecko			X	X			X
Diplodactylidae	*Crenadactylus occidentalis*	Western Clawless Gecko			X	X			
	Diplodactylus bilybara	Western Fat-tailed Gecko			X	X			
	Diplodactylus klugei	Kluge's Gecko			X	X			
	Diplodactylus ornatus	Ornate Gecko			X	X			X
	Diplodactylus pulcher	Pretty Gecko			X				
	Lucasium alboguttatum	White-spottted Ground Skink			X	X			
	Lucasium squarrosum	Mottled Ground Gecko			X	X			X
	Strophurus rankini	Exmouth Spiny-tailed Gecko			X	X			X
	Strophurus strophurus	Western Spiny-tailed Gecko				X			X
Elapidae	*Demansia calodera*	Black-necked Whipsnake			X	X			X
	Demansia psammophis psammophis	Yellow-faced Whipsnake			X				X
	Demansia psammophis reticulata	Yellow-faced Whipsnake			X				
	Furina ornata	Moon Snake			X				
	Neelaps bimaculatus	Black-naped Snake			X				X
	Pseudechis australis	Mulga Snake			X				X
	Pseudonaja mengdeni	Western Brown Snake			X	X			X
	Pseudonaja modesta	Ringed Brown Snake			X				X
	Pseudonaja nuchalis	Gwardar; Northern Brown Snake			X				X
	Simoselaps bertholdi	Jan's Banded Snake			X				X
	Simoselaps littoralis	West Coast Banded Snake			X	X			X
Gekkonidae	*Gehyra variegata*	Variegated gehyra			X	X			X
	Hemidactylus frenatus	*Asian House Gecko			X				
	Heteronotia binoei	Bynoe's Gecko			X	X			X
Pygopodidae	*Aprasia litorea*	Gnaraloo Worm Lizard			X	X			
	Delma butleri	Spinifex Delma			X	X			
	Delma nasuta	Sharp-snouted Delma			X	X			
	Delma tincta	Black-necked Delma			X	X			
	Lialis burtonis	Burton's Legless lizard			X	X			
	Pygopus nigriceps	Western Hooded Scaly-foot			X	X			X
Scincidae	*Carlia munda*	Striped Rainbow Skink			X				
	Ctenotus fallens	West Coast Ctenotus			X	X			X
	Ctenotus hanloni	Nimble Ctenotus			X	X			
	Ctenotus iapetus	North West Cape Ctenotus			X	X			
	Ctenotus leonhardii	Common Desert Ctenotus			X				
	Ctenotus mimetes	Checker-sided Ctenotus			X				
	Ctenotus pantherinus pantherinus	Leopard Ctenotus			X	X			
	Ctenotus schomburgkii	Barred-Wedge-snouted Ctenotus			X	X			
	Ctenotus severus	Stern Rock Ctenotus			X	X			
	Ctenotus uber uber	Western Spotted Ctenotus			X				
	Cyclodomorphus celatus	Western Slender Blue-tongue			X				
	Egernia depressa	Southern Pygmy Spiny-tailed Skink			X				
	Egernia stokesii badia	Western Spiny-tailed Skink	VU	EN				X	
	Lerista allochira	Cape Range Slider	P3		X		X		
	Lerista connivens	Blinking Broad-striped Slider			X				
	Lerista elegans	Elegant Slider				X			X
	Lerista haroldi	Gnaraloo Three-toed Slider	PX		X	X	X		
	Lerista lineopunctulata	Southern Dotted-line Robust Slider			X	X			X
	Lerista macropisthopus fusciceps	Unpatterned Robust Slider			X	X			X
	Lerista micra	Micro Three-toed Slider			X	X			
	Lerista miopus	Northern Dotted-line Robust Slider			X	X			
	Lerista muelleri	Mueller's Three-toed Slider			X				X
	Lerista occulta	Hidden Three-toed Slider			X				
	Lerista planiventralis planiventralis	Keeled Slider			X	X			X
	Lerista praepedita	West Coast Worm Slider			X	X			X
	Lerista uniduo	Slender Broad-striped Slider			X	X			X
	Lerista varia	Variable-striped Robust Slider			X				
	Menetia greyii	Common Dwarf Skink			X	X			
	Morethia lineoocellata	West Coast Pale-flecked Morethia			X	X			X
	Tiliqua multifasciata	Central Blue-tongue			X				
	Tiliqua occipitalis	Western Bluetongue			X	X			
	Tiliqua rugosa palarra	Shark Bay Bobtail			X				

Family	Scientific Name	Common Name	WA	EPBC	A	B	C	D	E
	Tiliqua rugosa rugosa	Bobtail			X	X			X
Typhlopidae	*Anilios grypus*	Northern Beaked Blind Snake			X	X			
	Anilios hamatus	Northern Hook-snouted Blind Snake			X				X
Varanidae	*Varanus eremius*	Pygmy Desert Goanna			X	X			X
	Varanus giganteus	Perentie				X			
	Varanus gouldii	Sand Goanna			X	X			X

Appendix 2: Likelihood of occurrence criteria for flora and fauna species

Likelihood of occurrence criteria for flora and fauna species:

- Likelihood: Previously recorded

  The species has previously been recorded within Study Area from DEC database search results and/or from previous surveys of the Study Area, and/or the species has been confirmed through a current vouchered specimen at WA Herbarium.

- Likelihood: Likely

  The species has not previously been recorded from within the Study Area. However:

  - The species has been recorded in proximity (<5 km) to the Study Area, and occurs in similar habitat to that which occurs within the Study Area.
  - Core habitat and suitable landforms for the species occurs within the Study Area either year-round or seasonally. In relation to fauna species, this could be that a host plant is seasonally present on site, or habitat features such as caves are present that may be used during particular times during its life cycle e.g. for breeding. In relation to both flora and fauna species, it may be there are seasonal wetlands present.

  There is a medium to high probability that a species uses the Study Area.

- Likelihood: Potential

  The species has not previously been recorded from within the Study Area. However:

  - Targeted surveys may locate the species based on records occurring in proximity to the Study Area (5-15 km) and suitable habitat occurring in the Study Area.
  - The Study Area has been assessed as having potentially suitable habitat through habitat modelling.
  - The species is known to be cryptic and may not have been detected despite extensive surveys.
  - The species is highly mobile and has an extensive foraging range so may not have been detected during previous surveys.

  The species has been recorded in the Study Area by a previous consultant survey or there is historic evidence of species occurrence within the Study Area. However:

  - Doubt remains over taxonomic identification, or the majority of habitat does not appear suitable (although presence cannot be ruled out due to factors such as species ecology or distribution).
  - Coordinates are doubtful.

- Likelihood: Unlikely

  The species has been recorded locally through DEC database searches. However, it has not been recorded within the Study Area and:

  - It is unlikely to occur due to the site lacking critical habitat, having at best marginally suitable habitat, and/or being severely degraded.

- It is unlikely to occur due to few historic record/s and no other current collections in the local area.

The species has been recorded within the bioregion based on literature review but has not been recorded locally or within the Study Area through DEC database searches.

The species has not been recorded in the Study Area despite adequate survey efforts, such as a standardised methodology or targeted searching within potentially suitable habitat.

- Likelihood: Nil

The species is not known to occur within the IBRA bioregion based on current literature and distribution.

The Study Area lacks important habitat for a species that has highly selective habitat requirements.

The species has been historically recorded within Study Area or locally; however it is considered locally extinct due to significant habitat changes such as land clearing and/or introduced predators.

Appendix 3: Likelihood of occurrence assessment results.

Species	Status	Nearest record	Habitat	Flowering time	Likelihood of occurrence (pre-field)	Likelihood of occurrence (post-field)
Swainsona ecallosa	P1	-	Stony flats.	Aug - Oct	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Abutilon sp. Hamelin (A.M. Ashby 2196)	P2	-	Sand or loam. Limestone rises.	Jul - Sep	**Possible** Identified as occurring nearby by Outback Ecology (2010). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Abutilon sp. Quobba (H. Demarz 3858)	P2	14.7 km	Sandplain, brown clayey sand or rock.	Jul - Oct	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Acacia ryaniana	P2	9.5 km	White or red sand, coastal sand dunes, flats.	May - Nov	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Chthonocephalus tomentellus	P2	21.6 km	Red sand. Undulating plains, sand dunes, near saline depressions.	Aug - Nov	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Ptilotus alexandri	P2	-	Red-white sand and dunes.	Aug - Oct	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Rumex crystallinus	P2	-	Arid & semi-arid areas. Clay pans.	Aug	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Scholtzia sp. Folly Hill (M.E. Trudgen 12097)	P2	-	Sand dunes.	Aug - Oct	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Sondottia glabrata	P2	-	Saline flats	Sep - Oct	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	P3	21.6 km	Coastal and near coastal sand dunes, margins of estuaries and coastal plains. Red sand or clay.	Jun - Nov	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Atriplex lindleyi subsp. *conduplicata*	P3	-	Crabhole plains, salt flats, saline soils and saline swamp edges.	Unknown	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Chthonocephalus spathulatus	P3	23.9 km	Red-brown loam or sandy clay. Undulating plains.	Aug	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Lepidium biplicatum	P3	24.9 km	Coastal regions	Sep	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Lysiandra fuernrohrii	P3	12.0 km	Pale red sandy loam, near salt flat. Red soil over limestone.	Feb	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.
Owenia acidula	P3	47.0 km	Drainage Lines, floodplains.	Unknown	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Stackhousia clementii	P3	1.5 km	Skeletal soils, sand, clay. Sandstone hills, cracking clays, gibber plains, gilgai, limestone flats and ridges.	Nov - Mar	**Possible** Identified as occurring nearby by DBCA (2024g). Suitable habitat may be present.	**Unlikely** Species not detected despite appropriate survey effort.

Species	Status	Nearest record	Habitat	Flowering time	Likelihood of occurrence (pre-field)	Likelihood of occurrence (post-field)
Stenanthemum divaricatum	P3	9.5 km	White or yellow sand over sandstone.	Unknown	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.
Myriocephalus nudus	EX	-	Moist areas, along rivers & creeks, granite outcrops.	Jan - Apr - Nov	**Unlikely** No suitable habitat is present.	**Unlikely** No suitable habitat is present.

Name	WA	EPBC	Source	Nearest Record	Likelihood of occurrence (pre-field)	Likelihood of occurrence (post-field)
Birds						
Night Parrot (*Pezoporus occidentalis*)	CR	EN	D	-	**Unlikely** The Night Parrot is a highly cryptic bird which was presumed extinct until its rediscovery in 2013. As such, habitat requirements are still being researched. At the time of this report Night Parrots are thought to roost and nest in clumps of dense vegetation, primarily old and large spinifex (Triodia) clumps, but sometimes other vegetation types are used. Little is known about foraging sites, but favoured sites are considered likely to vary across the range of the species. Triodia is also likely to provide a good food resource for night parrots, in times of mass flowering and seeding, but they also rely heavily on a range of other food species. Sclerolaena has been shown to be a source of food and moisture (DBCA, 2024c; DPAW, 2017). No nearby records were detected during the desktop assessment and suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Australasian Bittern (*Botaurus poiciloptilus*)	EN	EN	A, C	15.4 km	**Unlikely** The Australasian Bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal Wetlands. It favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water (DCCEEW, 2024). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Australian Painted Snipe (*Rostratula australis*)	EN	EN	B, D	-	**Unlikely** The Australian Painted Snipe is usually found in shallow inland wetlands, either freshwater or brackish, that are either permanently or temporarily filled. Suitable wetlands usually support a mosaic of low, patchy vegetation, as well as lignum and canegrass (Birdlife International, 2024)The Australian Painted Snipe can use modified habitats, such as low-lying woodlands converted to grazing pasture, sewage farms, dams, bores and irrigation schemes (Marchant, 1993) Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Red Goshawk (*Erythrotriorchis radiatus*)	VU	VU	D	-	**Unlikely** The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia (Marchant, 1993). Riverine forests are also used frequently. The Red Goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water (DCCEEW, 2024). No nearby records were detected during the desktop assessment and suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Grey Falcon (*Falco hypoleucos*)	VU	VU	A, B, C, D	37.0 km	**Unlikely** The Grey Falcon is a wide roaming species and prefers habitats such as lightly treed inland plains, gibber deserts, sand ridges, pastoral lands, timbered watercourses. They are seldom in the driest deserts (Pizzey, 2012). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Malleefowl (*Leipoa ocellata*)	VU	VU	A, C	37.0 km	**Unlikely** The Malleefowl is found in semi-arid to arid shrublands and low woodlands, especially those dominated by mallee and/or acacias. A sandy substrate and abundance of leaf litter are required for breeding (DCCEEW, 2024). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Southern Whiteface (*Aphelocephala leucopsis*)	-	VU	A, D	-	**Possible** Southern Whitefaces live in a wide range of sparsely treed woodlands and shrublands where there is an understorey of grasses or shrubs or both, usually in habitats dominated by A*cacia* ssp. or *Eucalyptus* ssp. on ranges, foothills and lowlands and plains (DCCEEW, 2024). Suitable habitat may be present within the Study Area.	**Unlikely** No suitable habitat is present. Study Area previously cleared and degraded. Species not detected despite appropriate survey effort.
Shark Bay Variegated Fairy-wren (*Malurus assimilis bernieri*)	VU		B	-	**Unlikely** The Shark Bay subspecies is found only on Dirk Hartog Island in Shark Bay (DBCA, 2024a). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Australian Peregrine Falcon (*Falco peregrinus macropus*)	OS		A, B, C	15.4 km	**Unlikely** The Peregrine Falcon occupies most environments with suitable nest sites: cliff faces are preferred, including man-made ones, and it commonly uses stick nests built by other species (Menkhorst, 2017). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Letter-winged Kite (*Elanus scriptus*)	P4		A, B, C	14.9 km	**Unlikely** Letter-winged Kites are endemic to Australia and occur primarily in the eastern Australian arid zone, but occasionally irrupt to other areas of the arid and semi-arid zones, and dispersing individuals have been encountered at the coastal margins of all mainland states. This is a largely nocturnal species, hunting at night, and tending to rest in coolabah trees (Eucalyptus coolabah) during the day. It inhabits open or sparsely wooded country, usually in flocks, but also seen as pairs and singles (Birdlife International, 2024). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Shark Bay Western Grasswren (*Amytornis textilis textilis*)	P4		B	-	**Unlikely** The Shark Bay Western Grasswren prefers habitat with dense cover and is currently known from shrublands where foliage is low (less than 1 metre) but forms dense clumps and thickets. The species is restricted to the Shark Bay region within Francis Peron National Park and nearby pastoral stations (DBCA, 2024a). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.

Name	WA	EPBC	Source	Nearest Record	Likelihood of occurrence (pre-field)	Likelihood of occurrence (post-field)
Eastern Osprey (*Pandion haliaetus cristatus*)	MI	MI	A, B, C	4.5 km	**Unlikely** Ospreys occur 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 (Marchant, 1993; Menkhorst, 2017; Morcombe, 2003). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Fork-tailed Swift (*Apus pacificus*)	MI	MI	A, B, C	5.7 km	**Possible** The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over a wide range of habitats from inland plains, dry or open habitats, riparian woodland, tea-tree swamps, low scrub, heathland, saltmarsh, over cliffs, beaches, islands and well out to sea, above foothills or in coastal areas. They also occur over settled areas, including towns, urban areas and cities (DCCEEW, 2024). Suitable habitat may be present within the Study Area.	**Unlikely** No suitable habitat is present. Study Area previously cleared and degraded. Species not detected despite appropriate survey effort.
Migratory or ocean bearing seabirds from the following families: • Charadriidae • Diomedeidae, • Fregatidae, • Glareolidae, • Laridae, • Oceanitidae, • Phaethontidae, • Procellariidae, • Scolopacidae, • Stercorariidae, • Threskiornithidae	CR, EN, VU, MI, P4	CR, EN, VU, MI	A, B, C, D	-	**Unlikely** This group includes 49 species of state or federally listed migratory (including those listed under the BONN, CAMBA, JAMBA and/or ROKAMBA conventions) birds. These species either require specific wetland or coastal habitats (e.g intertidal mudflats, estuaries and lagoons, sandflats, beaches, saltmarshes) or are marine species (e.g albatrosses) that nest on offshore islands and forage well out to sea. While Lake MacLeod occurs nearby (which is known to support migratory shorebirds, none of the riparian or lakebed habitat intersects the Study Area. As such, all these species are considered unlikely within the Study Area.	**Unlikely** No suitable habitat is present.
Mammals						
Shark Bay Bandicoot or Little Marl (*Perameles bougainville*)	VU	EN	B	-	**Unlikely** The only remnant wild populations of the Shark Bay bandicoot occur on Bernier and Dorre Islands in Shark Bay off the coast of Western Australia (Van Dyck & Strahan, 2008). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Rufous Hare-wallaby (Bay Is.) (*Lagorchestes hirsutus bernieri*)	VU	VU	B	-	**Unlikely** The only remnant wild populations of the Rufous Hare-wallaby (Bay Is.) occur on Bernier and Dorre Islands in Shark Bay off the coast of Western Australia (DBCA, 2012; Van Dyck & Strahan, 2008). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Banded Hare-wallaby (*Lagostrophus fasciatus fasciatus*)	VU	VU	B	-	**Unlikely** The only remnant wild populations of the Banded Hare-wallaby occur on Bernier and Dorre Islands in Shark Bay off the coast of Western Australia (DCCEEW, 2023b; Van Dyck & Strahan, 2008). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Red-tailed Phascogale (*Phascogale calura*)	CD	VU	C	27.5 km	**Unlikely** The red-tailed phascogale is largely confined to woodlands with old-growth hollow-producing eucalypts, particularly Wandoo (*Eucalyptus wandoo*) and York gum (*E. loxophleba*), often with associated rock sheoak (*Allocasuarina huegeliana*), but has also been recorded in shrublands and various mosaics of woodland, shrubland and scrub-heath (Short & Hide, 2012; Short et al., 2011). Suitable habitat is unlikely to be present within the Study Area.	**Unlikely** No suitable habitat is present.
Shark Bay Burrowing Bettong (*Bettongia lesueur lesueur*)	CD	VU	B	-	**Unlikely** The only remnant wild populations of the Shark Bay Burrowing Bettong occur on Bernier, Dorre and Barrow Islands off the coast of Western Australia (DCCEEW, 2023a). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Shark Bay Mouse (*Pseudomys gouldii*)		EX	B	-	**Unlikely** The Shark Bay Mouse is currently listed as presumed extinct under the *EPBC Act 1999,* however research by Roycroft et al. (2021) determined the species is genetically identical to *Pseudomys fieldi.* The only remnant wild population occurs on Bernier Island in Shark Bay. As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Reptiles						
Western Spiny-tailed Skink (*Egernia stokesii badia*)	VU	EN	D	-	**Unlikely** The only remnant wild populations of the Western Spiny-tailed Skink occur on Tattler, Seagull, Oystercatcher, Pigeon, East and West Wallabi, Middle and Murray Islands off the coast of Western Australia (DCCEEW, 2024). The species typically shelters under limestone slabs or in cracks and crevices in limestone caprock on these arid windswept islands. As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.
Gnaraloo Three-toed Slider (*Lerista haroldi*)	P1		A, B, C	15.0 km	**Unlikely** Known to occur between Gnaraloo and Cape Cuvier on the arid west coast (Wilson & Swan, 2017). There is limited information on habitat preferences, however due to the previously disturbed nature of the Study Area, the species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.

Name	WA	EPBC	Source	Nearest Record	Likelihood of occurrence (pre-field)	Likelihood of occurrence (post-field)
Cape Range Slider (*Lerista allochira*)	P3		B, C	36.8 km	**Unlikely** The Cape Range Slider is known to occur within gorges, slopes and crests in limestone dominated areas of the Western portion of Cape Range (Kendrick, 1989; Wilson & Swan, 2017). As such this species is considered unlikely to occur within the Study Area.	**Unlikely** No suitable habitat is present.

A = ALA (2024) Occurrence Search, B = DBCA (2024a) Danjoo Biodiversity Platform. C = DBCA (2024e) Threatened and Priority Fauna Database, D = DCCEEW (2024b) Protected Matters Search Tool. Nearest records are only calculated for species with records available in the DBCA (2024e) Threatened and Priority Fauna Database, as ALA (2024), Danjoo (2024) and PMST (2024) do not provide specific locations of significant fauna.

Appendix 4: Vegetation structural classification and condition rating scale

Vegetation structural classification^

Stratum	70 - 100%	30 – 70%	10 – 30%	2 – 10%	< 2%
Trees over 30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland	Scattered tall trees
Trees 10-30 m	Closed forest	Open forest	Woodland	Open woodland	Scattered trees
Trees under 10 m	Low closed forest	Low open forest	Low woodland	Low open woodland	Scattered low trees
Shrubs over 2 m	Tall closed scrub	Tall open scrub	Tall shrubland	Tall open shrubland	Scattered tall shrubs
Shrubs 1-2 m	Closed heath	Open heath	Shrubland	Open shrubland	Scattered shrubs
Shrubs under 1 m	Low closed heath	Low open heath	Low shrubland	Low open shrubland	Scattered low shrubs
Hummock grasses	Closed hummock grassland	Hummock grassland	Open hummock grassland	Very open hummock grassland	Scattered hummock grasses
Grasses, Sedges, Herbs	Closed tussock grassland / sedgeland / herbland	Tussock grassland / sedgeland / herbland	Open tussock grassland / sedgeland / herbland	Very open tussock grassland / sedgeland / herbland	Scattered tussock grasses / sedges / herbs

^Based on Muir (1977) and Aplin (1979) modification of the vegetation classification system of Specht (1970).

Vegetation condition scale rating for use on Eremaean surveys^

Rating	Description
Excellent	Pristine or nearly so; no obvious signs of damage caused by human activities since European settlement.
Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activities since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of activities of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or ‘parkland cleared’ with their flora comprising weed or crop species with isolated native trees or shrubs.

^Based on Trudgen (1988) as presented in EPA Technical Guidance EPA (2016c)

Appendix 5: Field sites within the Study Area

Site	Type	Easting (mE)	Northing (mN)
R01	Relevé	755295	7303605
R02	Relevé	755384	7303679
R03	Relevé	755320	7303792
R04	Relevé	755415	7303882
R05	Relevé	755369	7304006

Appendix 6: Flora species recorded within the Study Area

Family	Species	Status
Aizoaceae	*Mesembryanthemum crystallinum*	*
Amaranthaceae	*Ptilotus exaltatus*	
	Ptilotus obovatus var. obovatus	
Asteraceae	*Pterocaulon sphacelatum*	
	Streptoglossa sp. (indet.)	
Chenopodiaceae	? *Enchylaena tomentosa*	
	Atriplex ? *paludosa*	
	Atriplex sp. (indet.)	
	Neobassia astrocarpa	
	Rhagodia eremaea	
	Rhagodia preissii subsp. obovata	
	Salsola australis	
	Tecticornia sp. (indet.)	
Euphorbiaceae	*Euphorbia philochalix*	
Fabaceae	*Acacia sclerosperma* subsp. sclerosperma	
	Acacia sp. (indet.)	
	Acacia synchronicia	
	Acacia tetragonophylla	
Frankeniaceae	*Frankenia pauciflora*	
Goodeniaceae	*Scaevola spinescens*	
Malvaceae	*Abutilon* ? *cunninghamii*	
	Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)	
	Abutilon sp.	
	Abutilon sp. (indet.)	
	Corchorus crozophorifolius	
	Hibiscus sturtii var. truncatus	
	Lawrencia densiflora	
	Lawrencia viridigrisea	
	Sida fibulifera	
	Sida sp. (indet.)	
Nyctaginaceae	*Boerhavia coccinea*	
Poaceae	*Cenchrus ciliaris*	*
	Poaceae sp. (indet.)	
Portulacaceae	*Portulaca oleracea*	
Santalaceae	*Exocarpos aphyllus*	
Sapindaceae	*Alectryon oleifolius* subsp. oleifolius	
Scrophulariaceae	*Eremophila latrobei* subsp. latrobei	
Solanaceae	*Solanum cleistogamum*	
	Solanum lasiophyllum	
	Solanum orbiculatum subsp. orbiculatum	

Note: * indicates an introduced species

Appendix 7: Framework for significance ranking of flora and fauna species

1. *Environment Protection and Biodiversity Conservation Act* 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) affords protection to species, populations and ecological communities threatened at a national level or to species listed as migratory under various international agreements (for example, CAMBE, JAMBA, RoKAMBA, and Bonn Convention). Threatened flora and fauna may be listed under section 178 of the EPBC Act in any one of the following categories:

- Extinct
- Extinct in the wild
- Critically Endangered (CE)
- Endangered (EN)
- Vulnerable (VU)
- Conservation dependent

Under the EPBC Act, a proposal which is likely to have a significant impact on threatened species, populations, or ecological communities or migratory species must be referred to the Commonwealth Minister for the Environment. A significant impact is determined through application of Significant Impact Criteria (Department of the Environment 2013).

2. *Environmental Protection Act 1986* (WA)

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The EP Act allows the Environmental Protection Authority (EPA) to prevent, control, and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.

Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

Part V of the EP Act is administered by the Department of Water and Environmental Regulation (DWER). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

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

c) Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.

d) Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.

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.

f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

g) 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.

h) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation. GHD | 613523400 Water Corporation

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.

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

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*); these exemptions do not apply in environmentally sensitive areas (ESAs).

3. *Biodiversity Conservation Act 2016* (WA)

On 1 January 2019, the *Biodiversity Conservation Act 2016* (BC Act) and *Biodiversity Conservation Regulations 2018* replaced both the *Wildlife Conservation Act 1950* and the *Sandalwood Act 1929* and their associated regulations. The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

The BC Act provides for the conservation and protecion of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia.

All native flora in Western Australia were protected under the state *Wildlife Conservation Act 1950*, and now under the BC Act. Under the BC Act, native flora can be specially protected, listed as Threatened (Critically Endangered, Endangered or Vulnerable) or Extinct in Western Australia. Threatened flora listings are reviewed annually and are published in the *Wildlife Conservation (Rare Flora) Notice 2018*. Flora species that may be rare or threatened in Western Australia, but have not been adequately surveyed for, are included in a supplementary Priority Flora list.

These conservation codes are attached below.

4. *Biosecurity and Agriculture Management Act 2007* (WA)

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Agriculture and Food Western Australia (DAFWA) and replace the repealed *Agriculture and Related Resources Protection Act 1976*. The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA;

- Manage the impact and spread of those pests already present in the state;
- Safely manage the use of agricultural and veterinary chemicals; and
- Increased control over the sale of agricultural products that contain violative chemical residues

The Western Australian Organism List (WAOL) is a database providing the status of organisms which have been categorised under the BAM Act 2007. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category as follows: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to part or all of Western Australia, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DAFWA Categories for Declared Pests under the BAM Act 2007

Control class code	Description
C1 (Exclusion)	Organisms which should be excluded from part or all of Western Australia.
C2 (Eradication)	Organisms which should be eradicated from part or all of Western Australia.
C3 (Management)	Organisms that should have some form of management applied that will alleviate the harmful impact of the organism, reduce the numbers or distribution of the organism or prevent or contain the spread of the organism.
Unassigned	Declared pests that are recognised as having a harmful impact under certain circumstances, where their subsequent control requirements are determined by a Plan or other legislative arrangements under the Act.

Categories used under the EPBC Act and BC Act.

Status	Code	Description
Extinct	EX	There is no reasonable doubt that the last member of the species has died.
Critically Endangered	CR	Taxa that are facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	EN	Taxa that are facing a very high risk of extinction in the wild in the near future
Vulnerable	VU	Taxa that are facing a high risk of extinction in the wild in the medium-term

Definitions and criteria for Priority species allocated by the DBCA.

Status	Code	Description
Priority 1	P1	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	P2	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3	P3	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4	P4	(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Appendix 8: Site Data Sheets

Site Information	
Site Name:	R01
Site Type:	Relevé
Date Sampled:	02/04/2024
Sampled By:	Kyle Wood & Alicia Michael
Location (UTM)	
Easting:	755295
Northing:	7303605
Physical Characteristics	
Landform:	Stony Plain
Slope:	Low (1-20º)
Aspect:	East
Bare Ground:	30%
Soil Type:	Sandy clay loam
Soil Colour:	Reddish Brown
Rock Type:	Limestone
Surface Water Presence:	None
Fire Age:	Unknown
Vegetation Condition:	Degraded
Disturbance Types:	Grazing, Weeds & Clearing

Site Photograph

Vegetation Description: *Acacia synchronicia* scattered low shrubs over **Cenchrus ciliaris* very open tussock grassland.

Family	Taxon	Vernacular	Collection Code	Height (m)	Cover (%)
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*			0.3	0.1
Fabaceae	*Acacia synchronicia*			1.1	1.5
Chenopodiaceae	*Atriplex* ? *paludosa*	Marsh Saltbush	R01-04	0.6	0.1
Chenopodiaceae	*Atriplex* sp. (indet.)		R01-05	0.2	0.1
Nyctaginaceae	*Boerhavia coccinea*	Tar Vine	R01-06	0.1	0.1
Poaceae	*Cenchrus ciliaris*	Buffel Grass		0.2	5
Scrophulariaceae	*Eremophila latrobei* subsp. *latrobei*	Native Fuschia		0.4	0.1
Frankeniaceae	*Frankenia pauciflora*			0.4	0.5
Malvaceae	*Hibiscus sturtii* var. *truncatus*		R03-01	0.1	0.1
Asteraceae	*Pterocaulon sphacelatum*	Apple Bush	R01-03	0.3	0.1
Amaranthaceae	*Ptilotus obovatus* var. *obovatus*			0.2	0.1
Chenopodiaceae	*Rhagodia eremaea*	Thorny Saltbush	R01-01	0.5	0.1
Solanaceae	*Solanum lasiophyllum*	Flannel Bush		0.3	0.1

Site Information	
Site Name:	R02
Site Type:	Relevé
Date Sampled:	02/04/2024
Sampled By:	Kyle Wood & Alicia Michael
Location (UTM)	
Easting:	755384
Northing:	7303679
Physical Characteristics	
Landform:	Stony Plain
Slope:	Low (1-20º)
Aspect:	East
Bare Ground:	40%
Soil Type:	Sandy clay loam
Soil Colour:	Reddish Brown
Rock Type:	Limestone
Surface Water Presence:	None
Fire Age:	Unknown
Vegetation Condition:	Degraded
Disturbance Types:	Grazing, Weeds & Clearing

Site Photograph

Vegetation Description: *Acacia synchronicia* and *Solanum lasiophyllum* scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses.

Family	Taxon	Vernacular	Collection Code	Height (m)	Cover (%)
Chenopodiaceae	? *Enchylaena tomentosa*		R02-02	0.4	0.1
Malvaceae	*Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266)		R01-02	0.1	0.1
Malvaceae	*Abutilon* sp. (indet.)			0.1	0.1
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*			0.3	0.1
Fabaceae	*Acacia synchronicia*			0.4	1
Fabaceae	*Acacia tetragonophylla*	Kurara		0.3	0.1
Poaceae	*Cenchrus ciliaris*	Buffel Grass		0.3	1
Frankeniaceae	*Frankenia pauciflora*			0.3	0.1
Aizoaceae	*Mesembryanthemum crystallinum*	Iceplant	R02-03	0.1	0.1
Amaranthaceae	*Ptilotus exaltatus*	Tall Mulla Mulla		0.5	0.1
Amaranthaceae	*Ptilotus obovatus* var. *obovatus*			0.2	0.1
Chenopodiaceae	*Rhagodia eremaea*	Thorny Saltbush	R01-01	0.4	1
Chenopodiaceae	*Salsola australis*			0.4	0.1
Solanaceae	*Solanum lasiophyllum*	Flannel Bush		0.3	1
Asteraceae	*Streptoglossa* sp. (indet.)		R02-01	0.1	0.1

Site Information	
Site Name:	R03
Site Type:	Relevé
Date Sampled:	03/04/2024
Sampled By:	Kyle Wood & Alicia Michael
Location (UTM)	
Easting:	755320
Northing:	7303792
Physical Characteristics	
Landform:	Stony Plain
Slope:	Low (1-20º)
Aspect:	East
Bare Ground:	35%
Soil Type:	Sandy clay loam
Soil Colour:	Reddish Brown
Rock Type:	Limestone
Surface Water Presence:	None
Fire Age:	Unknown
Vegetation Condition:	Degraded
Disturbance Types:	Grazing, Weeds & Clearing

Site Photograph

Vegetation Description: *Acacia synchronicia* scattered shrubs over *Solanum lasiophyllum* scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses.

Family	Taxon	Vernacular	Collection Code	Height (m)	Cover (%)
Malvaceae	*Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266)		R01-02	0.1	0.1
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*			0.5	0.1
Fabaceae	*Acacia synchronicia*			1.8	1.5
Fabaceae	*Acacia tetragonophylla*	Kurara		0.4	0.1
Poaceae	*Cenchrus ciliaris*	Buffel Grass		0.2	1.5
Frankeniaceae	*Frankenia pauciflora*			0.3	0.1
Malvaceae	*Hibiscus sturtii* var. *truncatus*		R03-01	0.2	0.1
Amaranthaceae	*Ptilotus obovatus* var. *obovatus*			0.4	0.1
Chenopodiaceae	*Rhagodia eremaea*	Thorny Saltbush	R01-01	1.1	0.5
Malvaceae	*Sida* sp. (indet.)		R03-02	0.4	0.1
Solanaceae	*Solanum cleistogamum*		R03-03	0.1	0.1
Solanaceae	*Solanum lasiophyllum*	Flannel Bush		0.3	1

Site Information	
Site Name:	R04
Site Type:	Relevé
Date Sampled:	03/04/2024
Sampled By:	Kyle Wood & Alicia Michael
Location (UTM)	
Easting:	755415
Northing:	7303882
Physical Characteristics	
Landform:	Stony Plain
Slope:	Low (1-20º)
Aspect:	East
Bare Ground:	10%
Soil Type:	Sandy clay loam
Soil Colour:	Reddish Brown
Rock Type:	Limestone
Surface Water Presence:	None
Fire Age:	Unknown
Vegetation Condition:	Degraded
Disturbance Types:	Grazing, Weeds & Clearing

Site Photograph

Vegetation Description:	*Acacia sclerosperma* subsp. *sclerosperma* and *Acacia synchronicia* open shrubland over **Cenchrus ciliaris* scattered tussock grasses.

Family	Taxon	Vernacular	Collection Code	Height (m)	Cover (%)
Fabaceae	*Acacia synchronicia*			1.9	0.5
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*			1.1	3
Poaceae	*Cenchrus ciliaris*	Buffel Grass		0.2	3
Aizoaceae	*Mesembryanthemum crystallinum*	Iceplant	R02-03	0.2	0.1
Solanaceae	*Solanum lasiophyllum*	Flannel Bush		0.4	0.1
Chenopodiaceae	*Rhagodia eremaea*	Thorny Saltbush	R01-01	0.3	0.1
Frankeniaceae	*Frankenia pauciflora*			0.3	0.1
Chenopodiaceae	*Atriplex* ? *paludosa*	Marsh Saltbush	R04-01	1.1	0.1
Chenopodiaceae	? *Enchylaena tomentosa*		R04-02	1.1	0.1
Malvaceae	*Abutilon* sp. (indet.)		R04-03	0.2	0.1
Chenopodiaceae	*Salsola australis*			0.2	0.1

Site Information	
Site Name:	R05
Site Type:	Relevé
Date Sampled:	03/04/2024
Sampled By:	Kyle Wood & Alicia Michael
Location (UTM)	
Easting:	755369
Northing:	7304006
Physical Characteristics	
Landform:	Stony Plain
Slope:	Low (1-20º)
Aspect:	East
Bare Ground:	30%
Soil Type:	Sandy clay loam
Soil Colour:	Reddish Brown
Rock Type:	Limestone
Surface Water Presence:	None
Fire Age:	Unknown
Vegetation Condition:	Degraded
Disturbance Types:	Grazing, Weeds & Clearing

Site Photograph

Vegetation Description:	*Acacia synchronicia* open *shrubland* over *Acacia sclerosperma* subsp. *sclerosperma* and *Solanum lasiophyllum* scattered low shrubs over **Cenchrus ciliaris* scattered tussock grasses.

Family	Taxon	Vernacular	Collection Code	Height (m)	Cover (%)
Malvaceae	*Abutilon* ? *cunninghamii*		R05-03	0.5	0.1
Malvaceae	*Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266)		R01-02	0.2	0.1
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*			0.8	0.5
Fabaceae	*Acacia synchronicia*			1.8	4
Chenopodiaceae	*Atriplex* ? *paludosa*	Marsh Saltbush	R04-01	0.8	0.1
Nyctaginaceae	*Boerhavia coccinea*	Tar Vine	R05-01	0.1	0.1
Poaceae	*Cenchrus ciliaris*	Buffel Grass		0.2	1.5
Malvaceae	*Corchorus crozophorifolius*		R05-02	0.6	0.1
Frankeniaceae	*Frankenia pauciflora*			0.3	0.1
Amaranthaceae	*Ptilotus obovatus* var. *obovatus*			0.2	0.1
Chenopodiaceae	*Rhagodia eremaea*	Thorny Saltbush	R01-01	0.4	0.1
Malvaceae	*Sida fibulifera*	Silver Sida		0.2	0.1
Malvaceae	*Sida* sp. (indet.)		R03-02	1.2	0.1
Solanaceae	*Solanum lasiophyllum*	Flannel Bush		0.3	0.5