RECONNAISSANCE FLORA AND VEGETATION SURVEY ADDENDUM

Peel Business Park

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Reconnaissance flora and vegetation survey addendum
Rev 0
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Contents

Tables
(contained within report text)

Plates
(contained within report text)

Figures
(compiled at rear of report)

Appendices

1 INTRODUCTION

1.1 Project background

The Peel Business Park requires the delivery of trunk services infrastructure (sewer, power and water) between Gordon Road, Parklands, in the City of Mandurah to Paterson Road, Nambeelup, in the Shire of Murray to support future industrial development. The installation of underground power along Patterson Road was completed in 2019, however the installation of sewer and water infrastructure from the Water Corporation's Mandurah No 1 Wastewater Treatment Plant to Lot 600 Lakes Road, Stake Hill is still pending.

The route for the extension of the sewer and water infrastructure was subject to a Reconnaissance Flora and Vegetation Survey, inclusive of a targeted black cockatoo tree assessment, in September 2017 (RPS 2018). The proposed engineering design and construction methods for the installation of the sewer and water services were informed by the findings of the RPS 2018 ecological survey and sensitive flora and fauna values avoided.

A Purpose Clearing Permit (CPS 8037/1) was approved by the Department of Water and Environmental Regulation (DWER) in September 2018.

The Water Corporation has recently advised that alternative approaches to the siting and construction of the sewer and water infrastructure may be required, including situating the infrastructure on the opposite side of the road and changing construction methodologies from boring to trenching. The entire extent of the previously proposed sewer and water infrastructure alignment was surveyed as part of RPS (2018). However, there are additional areas within the Lakes Road reservation and to the east of the Serpentine River which have been identified as potential future locations for the sewer and water infrastructure which were not surveyed as part of RPS (2018), and are also outside of the clearing area approved under CPS 8037/1.

This reconnaissance flora and vegetation addendum has been undertaken to identify the flora and vegetation values within the additional areas (hereafter referred to as 'the addendum survey area').

1.2 Scope of works

The flora and vegetation field survey was undertaken for the addendum survey area to assist in informing potential revisions to the sewer and water infrastructure alignment. This reconnaissance flora and vegetation addendum relies on previous relatively recent desktop mapping undertaken as part of RPS (2018) to identify environmental values relating to flora and vegetation for the additional areas.

1.3 Report objectives

This reconnaissance flora and vegetation survey addendum presents the findings of the flora and vegetation field survey and black cockatoo habitat tree assessment undertaken within the addendum survey area. This reconnaissance flora and vegetation survey addendum included:

- Site visit to assess the vegetation type and condition within the addendum survey area', confirm the presence of significant features identified in the database searches, and to produce maps of the proposed alignment identifying the location of any constraints identified
- Targeted search for any Threatened Flora (TF) or Priority Flora (PF) species known from the area (as recorded in the Department of Biodiversity Conservation and Attractions (DBCA) database and NatureMap searches) in likely habitat
- Targeted tree survey to identify potential black cockatoo breeding habitat
- Assessment of the conservation significance of the vegetation and the identification of other mapped environmental constraints (e.g. wetlands and Environmentally Sensitive Areas (ESAs)).

1.4 Legislative context

Commonwealth and state legislation pertaining to the conservation of native flora, vegetation and fauna include the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *Biodiversity Conservation Act 2016* (BC Act) and the *Environmental Protection Act 1986* (EP Act). The EP Act is the primary legislation that governs environmental impact assessment and protection in Western Australia. The aim of the EP Act is "to provide for an Environmental Protection Authority, for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with foregoing".

Section 4A of the EP Act states that the following principles, applicable to native flora and vegetation should be adhered to in order to protect the environment of Western Australia:

1. The Precautionary Principle: Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
2. The Principle of Intergenerational Equity: The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
3. The Principle of the Conservation of Biological Diversity and Ecological Integrity: Conservation of biological diversity and ecological integrity should be a fundamental consideration.

1.5 Conservation significant flora

Within Western Australia, Threatened, Extinct and Specially Protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted under Part 2 of the BC Act. The Western Australian conservation categories for flora and fauna are defined in Appendix A, Table A-1.

Many flora and fauna species listed under the BC Act have additional protection under one of six threat categories (Extinct, Extinct in the wild, Critically Endangered, Endangered, Vulnerable or Conservation Dependent) listed in the EPBC Act. These threatened species are defined as MNES under the EPBC Act and penalties apply for any damage to individuals, populations or habitats of these species. EPBC Act conservation category codes are defined in Appendix A, Table A-2.

1.6 Conservation significant vegetation

Under the BC Act and the EP Act, Threatened Ecological Communities (TECs), classified by the DBCA in one of the TEC categories (Appendix A, Table A-3) have limited protection. Other ecological communities are classified by DBCA in the category of Priority Ecological Communities (PECs) (Appendix A, Table A-4) pending further survey and/or definition. A subset of the DBCA-listed TECs are also listed and protected as MNES under the EPBC Act. EPBC Act threat categories for TECs are defined in Appendix A, Table A-5.

2 METHODS

The reconnaissance flora and vegetation survey of the addendum survey area was undertaken in accordance with the EPA's Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

As stated in the guidance, a reconnaissance level survey is undertaken to provide context and gather broad information about a survey area. Generally, a reconnaissance survey is required where flora and vegetation values are well defined, the area is not likely to support significant flora or vegetation and the scale and nature of potential impacts are not likely to be significant. A reconnaissance survey is undertaken to verify the information obtained from the desktop study, characterise the flora and delineate the vegetation units present using low intensity sampling of the flora and vegetation, and identify the potential impacts of the proposed development on local flora and vegetation values particularly flora taxa of conservation significance.

In addition to delineation of vegetation units, the addendum survey area was traversed to search for conservation significant taxa that were identified in the desktop study as potentially occurring there.

2.1 Field survey

2.1.1 Reconnaissance flora and vegetation assessment

The reconnaissance survey was carried out by qualified on 19 November 2019 in accordance with the methods prescribed in EPA (2016).

The field survey involved traversing the addendum survey area by vehicle and on foot to:

- Verify the data from the desktop survey (undertaken as part of RPS (2018) at a local scale.
- Characterise the vegetation within the addendum survey area in terms of the NVIS vegetation structure classes (Appendix A, Table A-6 and Table A-7).
- Record mature remnant *Eucalyptus* spp. and *Corymbia* spp. trees within the addendum survey area that were of adequate size to provide roosting and nesting habitat for black cockatoo species.
- Identify any constraints and potential impacts of the proposed development on local flora, vegetation and fauna values, or other environmental features such as wetlands.

The total alignment was divided up into 16 sections (map units). For each portion of the addendum survey area the following was documented and mapped:

- Waypoint recorded on a hand-held GPS marking the photo-point and the point where the information was recorded
- Photographs of the vegetation
- Description of the remnant vegetation type (if any) and condition (adapted from Keighery 1994 and Trudgen 1988) within the addendum survey area (Appendix A, Table A-8)
- Identified constraints to clearing of the vegetation including vegetation in "Good" or better condition, flora or vegetation of conservation significance, mature remnant native trees, conservation significant wetlands and ESAs
- Inventory of all the flora species recorded within the addendum survey area.

2.1.2 Significant tree inventory

The significant tree inventory was undertaken concurrently with the reconnaissance flora and vegetation assessment. The survey methods were informed by Referral Guidelines for Three Threatened Black Cockatoo Species: Carnaby's Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso* (Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) 2012).

All *Eucalyptus* spp. and *Corymbia* spp. trees (alive and dead) that occurred within the addendum survey area and had a diameter at breast height (DBH) of 500 millimetres (mm) or greater were recorded using a hand-held GPS. The tree species name, health and presence of hollows were noted.

2.1.3 Assessment of tuart woodlands and forests of the Swan Coastal Plain ecological community TEC

The *Eucalyptus gomphocephala* (tuart) remnant trees mapped within the addendum survey area and the original survey area were assessed against the key diagnostic characteristics set out in the Conservation Advice for the tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community TEC (Department of the Environment and Energy (DEE) 2019) in order to determine if any of this vegetation represented the TEC. This assessment is required for the entire sewer and water infrastructure alignment, including those areas previously surveyed by RPS (2018). A TEC assessment was not undertaken at the time of the RPS (2018) survey because the tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community TEC was only listed for protection under the EPBC Act in July 2019.

In accordance with the Conservation Advice (DEE 2019) the three steps in identifying patches of the nationally protected ecological community are:

1. Decide if the area meets the diagnostic characteristics of the ecological community.
2. Determine the size of each patch
    a. < 0.5 ha
    b. ≥ 0.5 < 5 ha
    c. ≥ 5 ha

    and consider the patch condition in the context of the patch size.
3. Consider the surrounding context of a patch that meets the size and condition thresholds.

As stated in the Conservation Advice, to qualify as a TEC record the vegetation must meet all the following diagnostic characteristics:

- Occur in the Swan Coastal Plain bioregion within the state of Western Australia and primarily occur on the Spearwood and Quindalup dune systems, but can also occur on the Bassendean dunes and Pinjarra Plain,on the banks of rivers and wetlands
- Occur (most commonly) as a woodland, or in a variety of structural forms, including closed forest, open forest, woodland, open woodland, closed mallee forest, open mallee forest, mallee woodland and open mallee woodland
- Have a dominant canopy of *Eucalyptus gomphocephala* (tuart)
- Have at least two living established *Eucalyptus gomphocephala* (tuart) trees in the uppermost canopy layer, although they may co-occur with trees of other species
- Have a gap of no more than 60 m between the outer edges of the canopies of adjacent tuart trees.

The patch size and condition thresholds used in assessing potential TEC patches are presented in Appendix A, Table A-9).

2.2 Data analysis

2.2.1 Flora and taxonomy

A vascular flora inventory was compiled from flora species recorded and collected within the addendum survey area. Flora specimens were either identified in the field, or collected and identified using the resources (keys, publications and databases) of the Western Australian Herbarium (WAH). Nomenclature was aligned with the current names in Florabase (WAHa 2019).

2.2.2 Vegetation mapping

Vegetation description and mapping was conducted using a combination of aerial photo-interpretation, regional vegetation mapping, on-ground confirmation and vegetation structure data. Each vegetation unit was defined by the dominant plant species using the vegetation structure classes established under Bush Forever (Western Australian Planning Commission 2000) (Appendix A, Table A-6 and A.7).

Vegetation condition mapping was conducted using aerial photo-interpretation and on-site confirmation. Vegetation condition was assessed using the Vegetation Condition Scale adapted from Keighery (1994) and Trudgen (1988) recommended in the EPA's Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016) (Appendix A, Table A-8).

3 RESULTS

3.1 Flora

3.1.1 Flora statistics

A total of 45 plant taxa were recorded for the addendum survey area of which 17 were exotic (weed) species. In addition to this there were numerous planted tree and shrub species which were not recorded for this survey. The list of species recorded is presented in Appendix B. It should be noted that this list is by no means exhaustive - this reconnaissance level survey involved low-level sampling of the flora, with a focus primarily on dominant and keystone species (to accurately characterise the vegetation types present), as well as species of conservation significance (including environmentally significant weeds). As such the list does not include some common pasture weeds (grasses and herbs) and native and weed microflora which were likely present at the time of the survey.

These taxa represent 37 genera from 15 families. The families represented by the greatest number of species are presented in Table 1.

Table 1: Dominant families within the addendum survey area

Family	Common name	No. of taxa
Myrtaceae	Myrtles	11
Poaceae	Grasses	10
Fabaceae	Peas	7

3.1.2 Flora of conservation significance

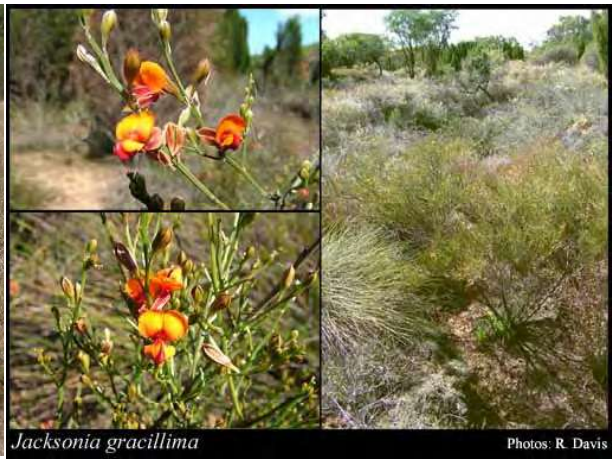
No TF species listed under the BC Act or under the EPBC Act were recorded within the addendum survey area.

One PF species as currently listed by the DBCA was recorded within the addendum survey area. *Jacksonia gracillima*, a Priority 3 taxon, was recorded within Lot 329 Lakelands Rd, Barragup. A total of 16 individuals were recorded at three locations within the *Melaleuca preissiana* remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses vegetation unit (Plate 1). The locations are shown in Figure B-9 and the coordinates tabulated in Appendix C. Additional information on the species is provided below.

3.1.2.1 *Jacksonia gracillima* (P3)

Jacksonia gracillima (Plate 2) is a prostrate, spreading or scrambling shrub that grows up to 1 metre (m) high. It has orange-red flowers in October and November (WAH 2020).

Plate 1: *Jacksonia gracillima* within Lot 329 Lakelands Road, Barragup



(Source: WAH 2020)

Plate 2: *Jacksonia gracillima*

3.1.3 Introduced flora (weeds)

Seventeen introduced flora taxa were recorded from the addendum survey area representing 38% of the total flora taxa recorded. Naturalised bushland weeds were recorded at high densities throughout the addendum survey area.

The Western Australian Organism List database was searched to determine the legal status of each weed recorded, and any control requirements. Of the 17 weed species recorded, none were determined to be Declared Pests under the *Biosecurity and Agricultural Management Act 2007* nor were they classified as Weeds of National Significance.

3.2 Vegetation

3.2.1 Vegetation units

RPS (2018) assessment defined and mapped eleven upland and dampland / wetland vegetation units. No new vegetation units were defined for the addendum survey area. Of the eleven units defined previously six were represented within the addendum survey area. These units represented highly modified vegetation in degraded condition no longer representative of the original floristic communities that would have occurred there.

A description of these six vegetation units follows. Vegetation unit mapping is presented in Figures B-1 to B-9.

3.2.1.1 Remnant tuart (Unit 10)

Eucalyptus gomphocephala (tuart) remnant trees over a degraded understorey of annual and perennial naturalised alien (weed) herbs and grasses. This vegetation occurred within the road reserve along sections of Lakes Road and within Lot 526 Lakes Road, in the western portion of the addendum survey area. Remnant tuart trees within the addendum survey area are shown in Figures B-1; B-2; and B-3 and Plate 3 and Plate 4.

Plate 3 and Plate 4: Remnant *Eucalyptus gomphocephala* (tuart), Lakes Road

3.2.1.2 Planted trees and shrubs (Unit 6)

Planted (non-endemic) eucalypts over emergent and planted native shrubs occurred within the southern road reserve of Gordon Road (Figure C-1 and Plate 5 and Plate 6) and are the result of historical road-side landscaping.


Plate 5 and Plate 6: Planted trees and shrubs, Lakes Road and Kwinana Freeway

3.2.1.3 Remnant marri (Unit 7)

Within the addendum survey area *Corymbia calophylla* (marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses was mapped within Lot 526 Lakes Road (Figure B-3 and Plate 7). These trees were mature and generally in excellent health.

Plate 7: Remnant *Corymbia calophylla* (marri), Lot 526 Lakes Road

3.2.1.4 Remnant *Melaleuca preissiana* (Unit 8)

Melaleuca preissiana remnant trees over a degraded understorey of exotic grasses (Plate 8 and Plate 9). This vegetation occurred throughout much of the eastern portion of the addendum survey area along Lakes Road, Gull Road and Patterson Road (Figures C-5 to C-9 and C-14 to C-16. This vegetation unit is in "Completely Degraded" condition due to the absence of an intact understorey.

Plate 8 and Plate 9: Remnant *Melaleuca preissiana*, Lot 329 Lakelands Road and Gull Road

3.2.1.5 Remnant mixed trees (Unit 9)

Scattered *Eucalyptus marginata* (jarrah), *Corymbia calophylla* (marri), *Allocasuarina fraseriana* (sheoak), *Banksia* spp., *Eucalyptus rudis* and *Melaleuca preissiana* trees over a degraded understorey of naturalised alien (weed) herbs and grasses (Plate 10 and Plate 11). This vegetation was mapped for a portion of Lot 526 Lakes Road and Lot 329 Lakelands Road (Figure B-3 and B-9).

Plate 10 and Plate 11: Remnant mixed trees, Lot 526 Lakes Road, Stakehill and Lot 329 Lakelands Road, Barragup

3.2.1.6 Scrub (Unit 12)

Kunzea glabrescens / *Adenanthos cygnorum* / *Jacksonia furcellata* Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses (Plate 12 and Plate 13). This vegetation was mapped for a section of Lakes Road (Figure B-3).


Plate 12 and Plate 13: ***Kunzea glabrescens* / *Adenanthos cygnorum* / *Jacksonia furcellata* / *Banksia* spp. scrub, Lakes Road**

3.2.2 Vegetation condition

Vegetation condition ranged from Degraded to Completely Degraded throughout the addendum survey area, with most of the vegetation within the road reserve, and areas adjacent to the road reserve and within the addendum survey area, recorded as Completely Degraded. All of the vegetation within the addendum survey area had a high weed load. Vegetation condition mapping is presented in Figures C-1 to C-9.

3.2.3 Significant trees

A total of 22 trees with a DBH greater than 500 mm were recorded within the addendum survey area (Appendix D; Figures B-1 to B-9). The number of trees recorded for each species is presented in Table 2.

Table 2: Tree species recorded with a DBH >500 mm

Species	Number recorded
Eucalyptus gomphocephala (tuart)	14
Corymbia calophylla (marri)	3
Eucalyptus rudis subsp. rudis (flooded gum)	4
Eucalyptus marginata subsp. *marginata* (jarrah)	1

Eucalyptus gomphocephala (tuart), *Corymbia calophylla* (marri), *Eucalyptus rudis* subsp. *rudis* (flooded gum), and *Eucalyptus marginata* subsp. *marginata* (jarrah) are recognised by DSEWPAC (2012) to provide potential breeding and night-roosting habitat for black cockatoos.

4 DISCUSSION

4.1 Floristic diversity and representation

In assessing the conservation significance of flora within the addendum survey area, consideration is given to rarity, biodiversity, endemism and representativeness of the flora in the area.

4.1.1 Rarity

The rarity of the flora was assessed via the various categories of TF (protected under the BC Act and under the EPBC Act) and PF (listed by DBCA).

No TF were recorded within the addendum survey area for the current survey.

One Priority 3 PF species, *Jacksonia gracillima* was recorded within a portion of the addendum survey area (in Lot 329 Lakelands Road, Barragup).

The rarity of the addendum survey area flora was assessed as moderate.

4.1.2 Biodiversity

A total of 28 native taxa were recorded for the addendum survey area mostly comprising remnant trees and emergent shrubs. There was no native intact understorey recorded within the addendum survey area.

Floristic diversity was assessed as low.

4.2 Vegetation conservation significance

4.2.1 Bioregional representation

On a regional scale the addendum survey area is mapped as Vegetation Associations 968; 1000; and 1001 (Shepherd et al. 2002) and Bassendean Complex Central and South; Herdsman Complex; and Yoongarillup Complex (Heddle et al. 1980). Of these three associations the one with the least remaining is Vegetation Association 968 (Medium woodland; jarrah, marri and wandoo) which has only 6.62% (9,017.32 ha) of its original (pre-European) extent remaining in the Swan Coastal Plain IBRA bioregion, and only 1.18% protected for conservation (Government of Western Australia 2018), however, there are no records of this vegetation in Good or better condition within the addendum survey area.

4.2.2 National threatened ecological communities

The addendum survey area intersects the buffers of three EPBC listed TECs, Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered), Subtropical and Temperate Coastal Saltmarsh ecological community (Vulnerable) and tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community (Critically Endangered).

These three nationally-significant communities and their representation within the addendum survey area are discussed below.

4.2.2.1 Banksia woodlands of the Swan Coastal Plain ecological community

No Banksia woodland vegetation was recorded within the addendum survey area therefore none of the vegetation described and mapped for the survey represents the Banksia Woodlands of the Swan Coastal Plain ecological community TEC.

4.2.2.2 Subtropical and Temperate Coastal Saltmarsh ecological community

No saltmarsh vegetation was recorded within the addendum survey area therefore none of the vegetation described and mapped for the survey represents the Subtropical and Temperate Coastal Saltmarsh ecological community TEC.

4.2.2.3 Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community

The *Eucalyptus gomphocephala* (tuart) remnant trees mapped within the addendum survey area in the western portion of the proposed alignment were assessed against the key diagnostic characteristics set out in the Conservation Advice for the tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community TEC (DEE 2019) to determine if this vegetation should be considered a record of the TEC.

The assessment determined that one patch of tuart woodland, which intersects the original survey area and the addendum survey area, meets all of the diagnostic characteristics, as well as the minimum patch size and condition requirements for the ecological community, and therefore is considered a record of the TEC and protected under the EPBC Act. As stated in the Conservation Advice the patch boundary extends 30 m beyond the outer canopy of the tuart trees, and trees belong to the same patch if there is < 60 m between their 30 m buffers. This patch is mapped within road reserve on Lakes Road and within Lot 526 Lakes Road (Figure D-2). This patch meets the criteria and is considered part of the EPBC Act listed TEC because although the understorey is in Degraded or Completely Degraded condition it consists of numerous mature and very large tuart trees covering an area of ≥ 5 ha.

There is also an area of tuart woodland mapped within the road reserve on Lakes Road at the western-most end of the addendum survey area (Figure D-1), which is 2.02 ha in size. The understory is in Completely Degraded condition and therefore this patch, on its own, does not meet the minimum condition and size thresholds and so is not considered part of the protected ecological community. However, aerial imagery indicates that this 'patch' is contiguous with a large area of intact woodland to the north, which is on private land, and is likely to comprise tuart woodland or forest vegetation which is ≥ 5 ha in size. This patch therefore represents a 'potential' TEC record.

4.2.3 Western Australian Threatened and Priority ecological communities

No state-listed TECs were recorded within the addendum survey area for the current survey.

The three EPBC-listed TECs discussed in Section 4.2.2 are listed at a state level as PECs.

4.3 Fauna habitat

The 22 significant trees recorded within the addendum survey area are considered potential night roosting and breeding habitat for black cockatoos and therefore conservation significant.

4.4 Other conservation significant features

The addendum survey area lies adjacent to, and in some places intersects, environmental features identified in the desktop survey such as Conservation Category Wetlands, associated with Goegrup Lake and the Serpentine River on Gordon Road.

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FIGURES

Figure A

Location plan and map index

GDA 1994 MGA Zone 50

0 250 500 1,000 m

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Date: 04.12.19
Scale: 1:18,770 @ A3
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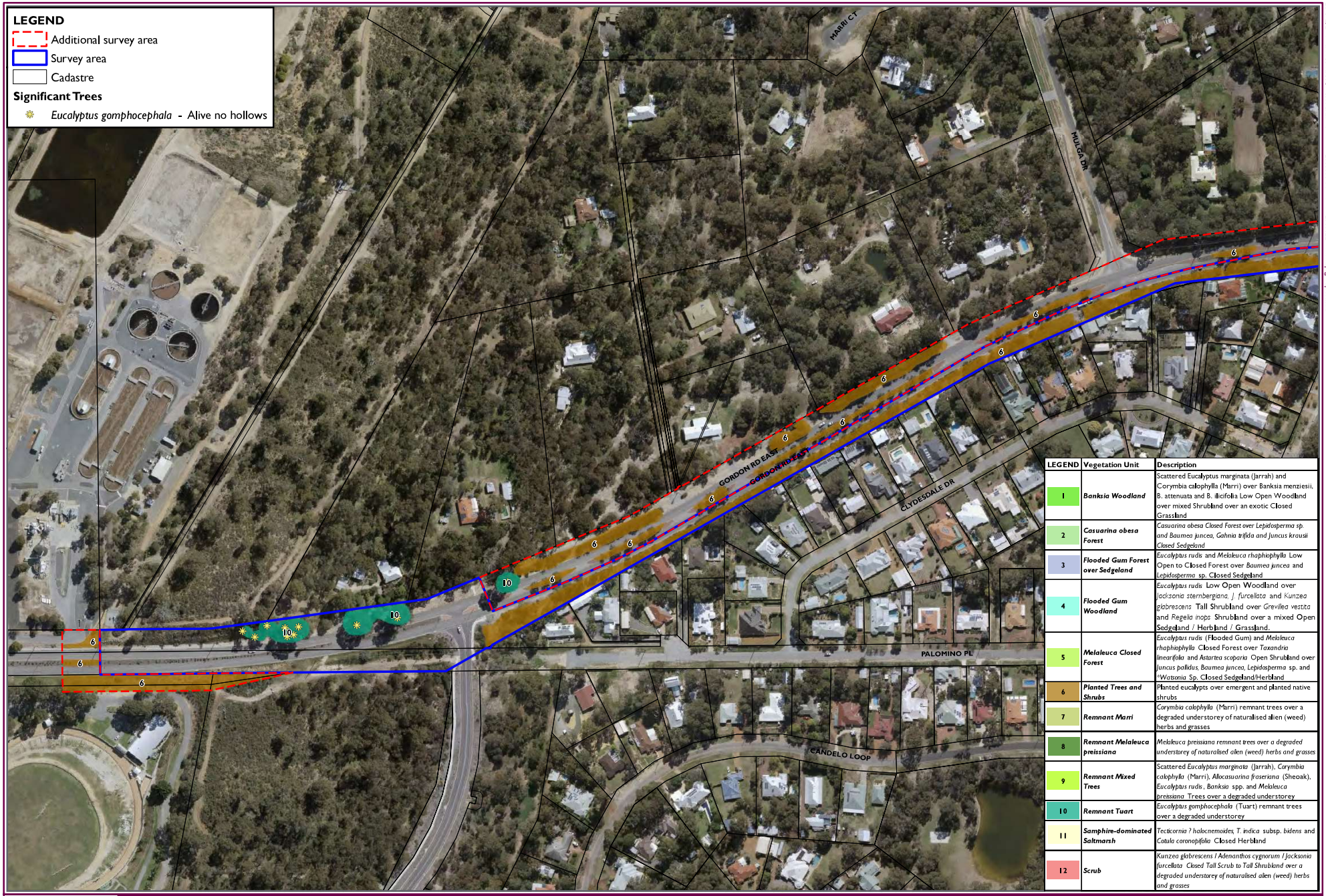

LEGEND	Vegetation Unit	Description
1	**Banksia Woodland**	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	**Casuarina obesa Forest**	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	**Flooded Gum Forest over Sedgeland**	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	**Flooded Gum Woodland**	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	**Melaleuca Closed Forest**	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	**Planted Trees and Shrubs**	Planted eucalypts over emergent and planted native shrubs
7	**Remnant Marri**	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	**Remnant Melaleuca preissiana**	*Melaleuca preissiana remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses*
9	**Remnant Mixed Trees**	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	**Remnant Tuart**	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	**Samphire-dominated Saltmarsh**	*Tecticornia ? halocnemoides, T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	**Scrub**	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses*

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0 12.5 25 50 75 100 m

Figure B-1

Vegetation Units

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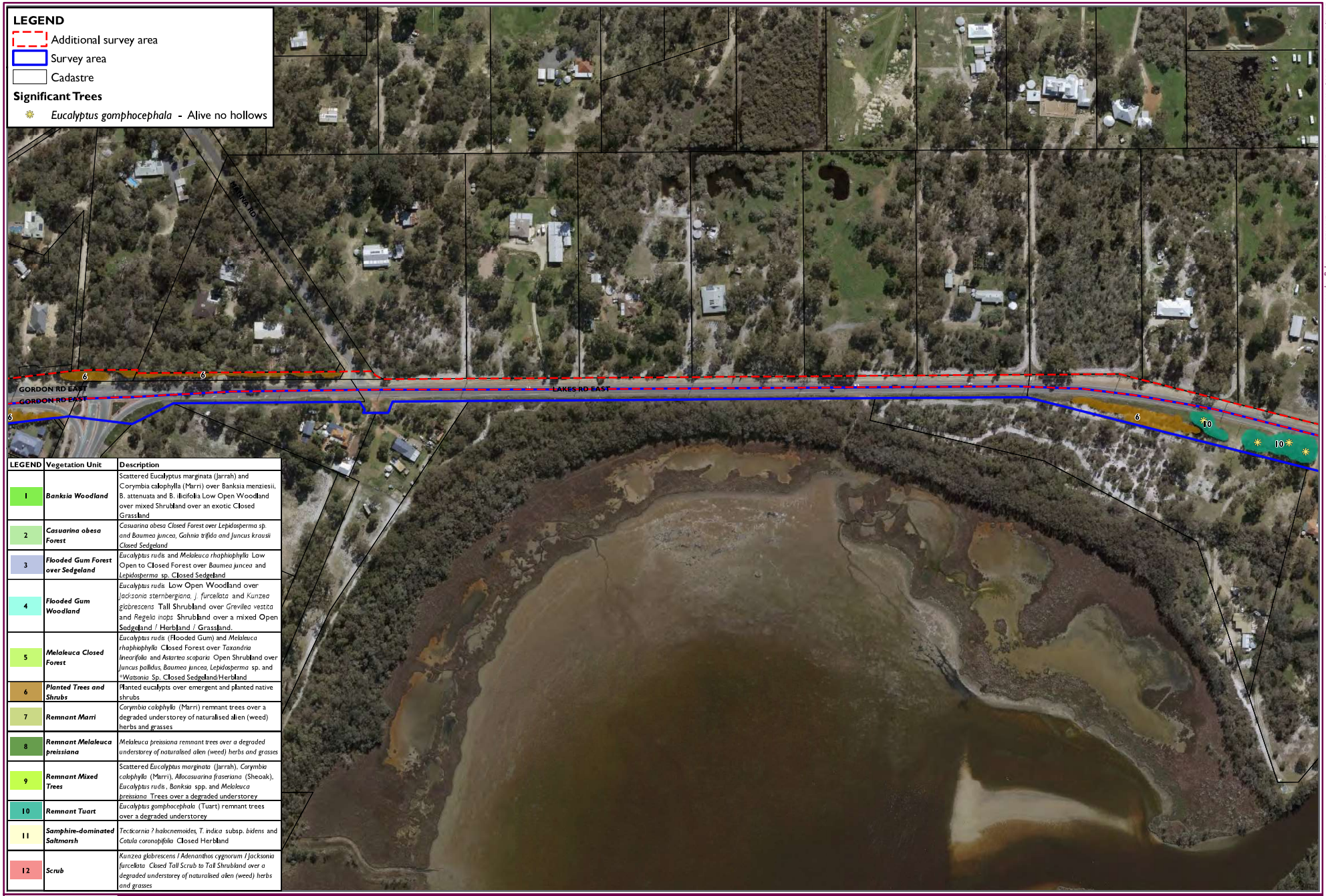

LEGEND	Vegetation Unit	Description
1	**Banksia Woodland**	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	**Casuarina obesa Forest**	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	**Flooded Gum Forest over Sedgeland**	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	**Flooded Gum Woodland**	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	**Melaleuca Closed Forest**	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	**Planted Trees and Shrubs**	Planted eucalypts over emergent and planted native shrubs
7	**Remnant Marri**	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	**Remnant Melaleuca preissiana**	*Melaleuca preissiana remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses*
9	**Remnant Mixed Trees**	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	**Remnant Tuart**	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	**Samphire-dominated Saltmarsh**	*Tecticornia ? halocnemoides, T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	**Scrub**	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses*

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0 12.5 25 50 75 100 m

Figure B-2

Vegetation Units

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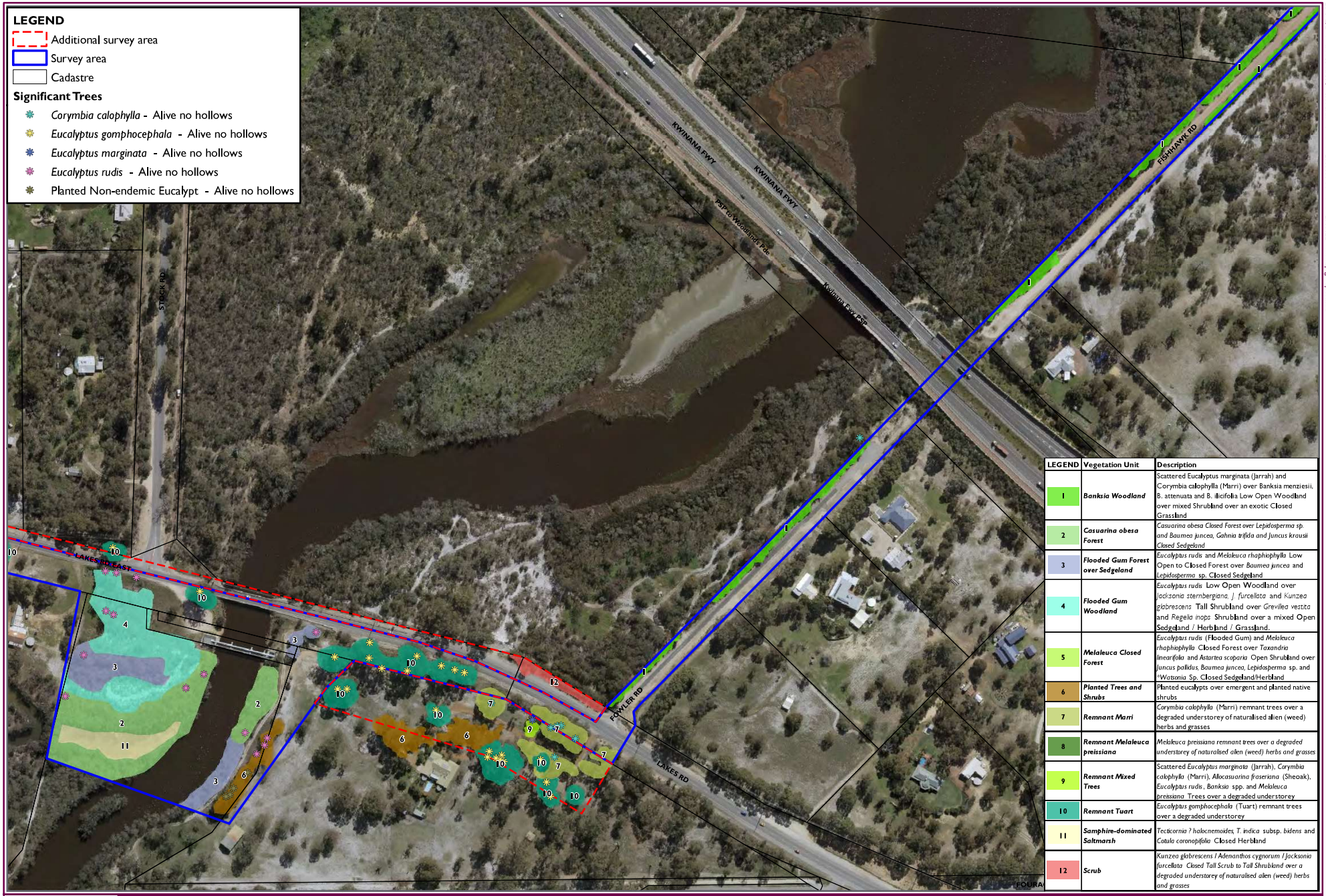

LEGEND	Vegetation Unit	Description
1	**Banksia Woodland**	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	**Casuarina obesa Forest**	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	**Flooded Gum Forest over Sedgeland**	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	**Flooded Gum Woodland**	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	**Melaleuca Closed Forest**	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	**Planted Trees and Shrubs**	Planted eucalypts over emergent and planted native shrubs
7	**Remnant Marri**	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	**Remnant Melaleuca preissiana**	*Melaleuca preissiana remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses*
9	**Remnant Mixed Trees**	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	**Remnant Tuart**	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	**Samphire-dominated Saltmarsh**	*Tecticornia ? halocnemoides, T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	**Scrub**	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses*

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0 12.5 25 50 75 100 m

Figure B-3

Vegetation Units

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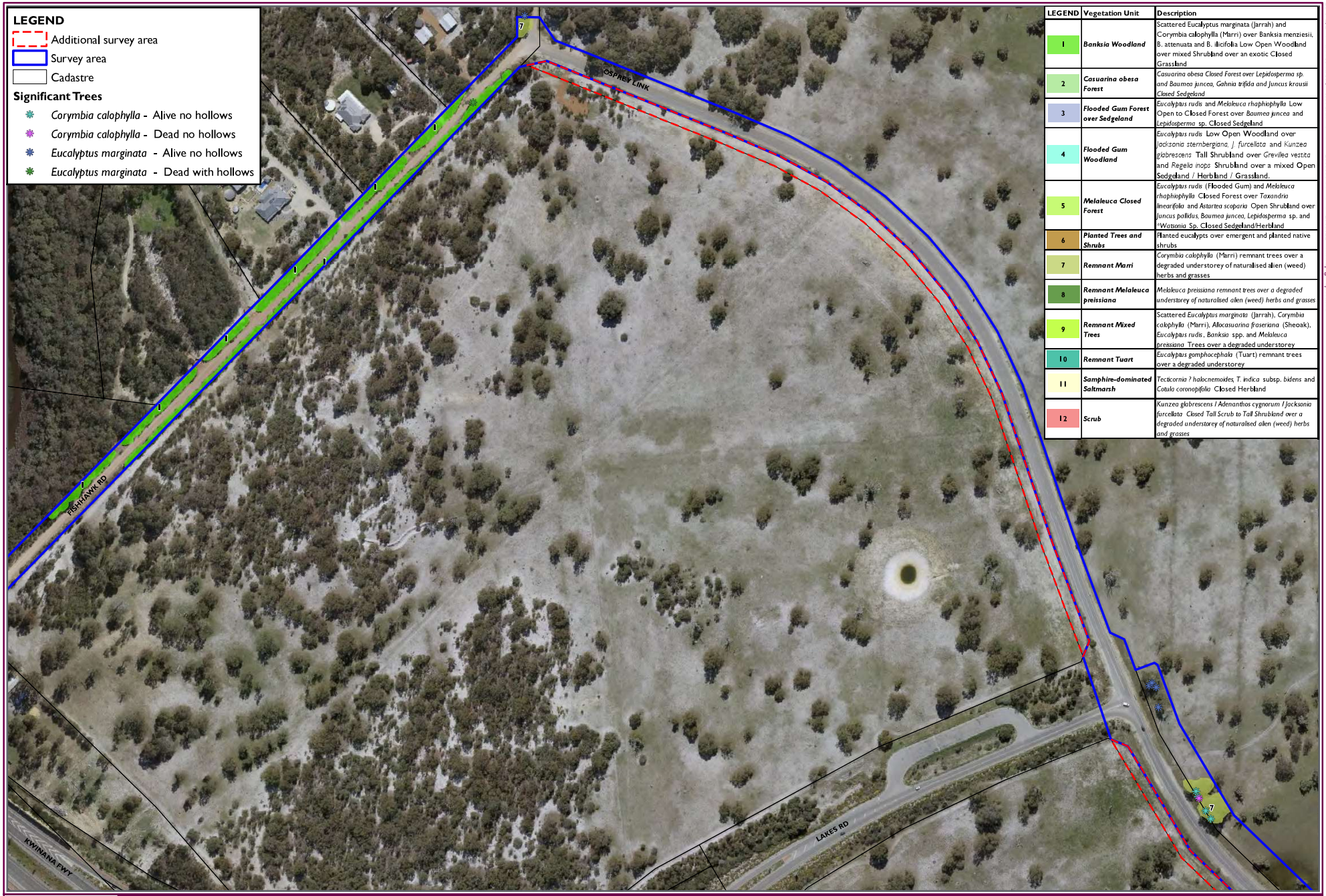

LEGEND	Vegetation Unit	Description
1	**Banksia Woodland**	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	**Casuarina obesa Forest**	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	**Flooded Gum Forest over Sedgeland**	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	**Flooded Gum Woodland**	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	**Melaleuca Closed Forest**	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	**Planted Trees and Shrubs**	Planted eucalypts over emergent and planted native shrubs
7	**Remnant Marri**	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	**Remnant Melaleuca preissiana**	*Melaleuca preissiana remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses*
9	**Remnant Mixed Trees**	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	**Remnant Tuart**	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	**Samphire-dominated Saltmarsh**	*Tecticornia ? halocnemoides, T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	**Scrub**	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses*

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0 12.5 25 50 75 100 m

Figure B-4

Vegetation Units

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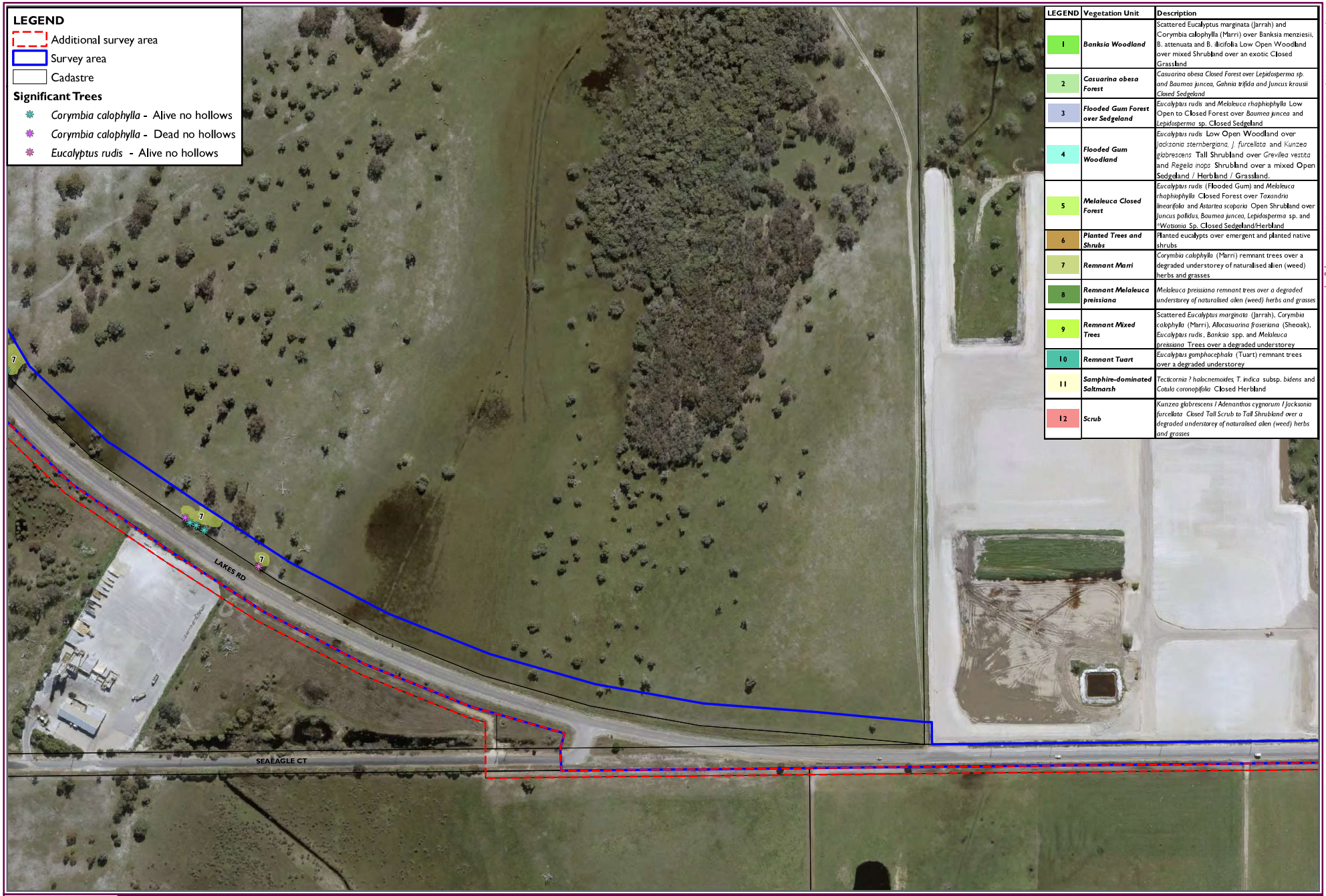

LEGEND	Vegetation Unit	Description
1	***Banksia Woodland***	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	***Casuarina obesa Forest***	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	***Flooded Gum Forest over Sedgeland***	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	***Flooded Gum Woodland***	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	***Melaleuca Closed Forest***	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	***Planted Trees and Shrubs***	Planted eucalypts over emergent and planted native shrubs
7	***Remnant Marri***	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	***Remnant Melaleuca preissiana***	*Melaleuca preissiana* remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
9	***Remnant Mixed Trees***	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	***Remnant Tuart***	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	***Samphire-dominated Saltmarsh***	*Tecticornia ? halocnemoides T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	***Scrub***	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata* Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses

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Figure B-5

Vegetation Units

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LEGEND	Vegetation Unit	Description
1	***Banksia Woodland***	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	***Casuarina obesa Forest***	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	***Flooded Gum Forest over Sedgeland***	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	***Flooded Gum Woodland***	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	***Melaleuca Closed Forest***	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	***Planted Trees and Shrubs***	Planted eucalypts over emergent and planted native shrubs
7	***Remnant Marri***	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	***Remnant Melaleuca preissiana***	*Melaleuca preissiana remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses*
9	***Remnant Mixed Trees***	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	***Remnant Tuart***	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	***Samphire-dominated Saltmarsh***	*Tecticornia ? halocnemoides, T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	***Scrub***	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses*

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Figure B-6

Vegetation Units

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LEGEND	Vegetation Unit	Description
1	***Banksia Woodland***	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	***Casuarina obesa Forest***	*Casuarina obesa Closed Forest over Lepidosperma sp. and Baumea juncea, Gahnia trifida and Juncus krausii Closed Sedgeland*
3	***Flooded Gum Forest over Sedgeland***	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	***Flooded Gum Woodland***	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana, J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	***Melaleuca Closed Forest***	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus, Baumea juncea, Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	***Planted Trees and Shrubs***	Planted eucalypts over emergent and planted native shrubs
7	***Remnant Marri***	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	***Remnant Melaleuca preissiana***	*Melaleuca preissiana remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses*
9	***Remnant Mixed Trees***	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	***Remnant Tuart***	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	***Samphire-dominated Saltmarsh***	*Tecticornia ? halocnemoides, T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	***Scrub***	*Kunzea glabrescens / Adenanthos cygnorum / Jacksonia furcellata Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses*

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Figure B-7

Vegetation Units

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LEGEND	Vegetation Unit	Description
1	***Banksia* Woodland**	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	***Casuarina obesa* Forest**	*Casuarina obesa* Closed Forest over *Lepidosperma* sp. and *Baumea juncea*, *Gahnia trifida* and *Juncus krausii* Closed Sedgeland
3	***Flooded Gum* Forest over Sedgeland**	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	***Flooded Gum* Woodland**	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana*, *J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	***Melaleuca* Closed Forest**	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus*, *Baumea juncea*, *Lepidosperma* sp. and *Watsonia* Sp. Closed Sedgeland/Herbland
6	***Planted Trees and Shrubs***	Planted eucalypts over emergent and planted native shrubs
7	***Remnant Marri***	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	***Remnant Melaleuca preissiana***	*Melaleuca preissiana* remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
9	***Remnant Mixed Trees***	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	***Remnant Tuart***	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	***Samphire*-dominated Saltmarsh**	*Tecticornia ? halocnemoides*, *T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	***Scrub***	*Kunzea glabrescens* / *Adenanthos cygnorum* / *Jacksonia furcellata* Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses

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0 12.5 25 50 75 100 m

Figure B-8

Vegetation Units

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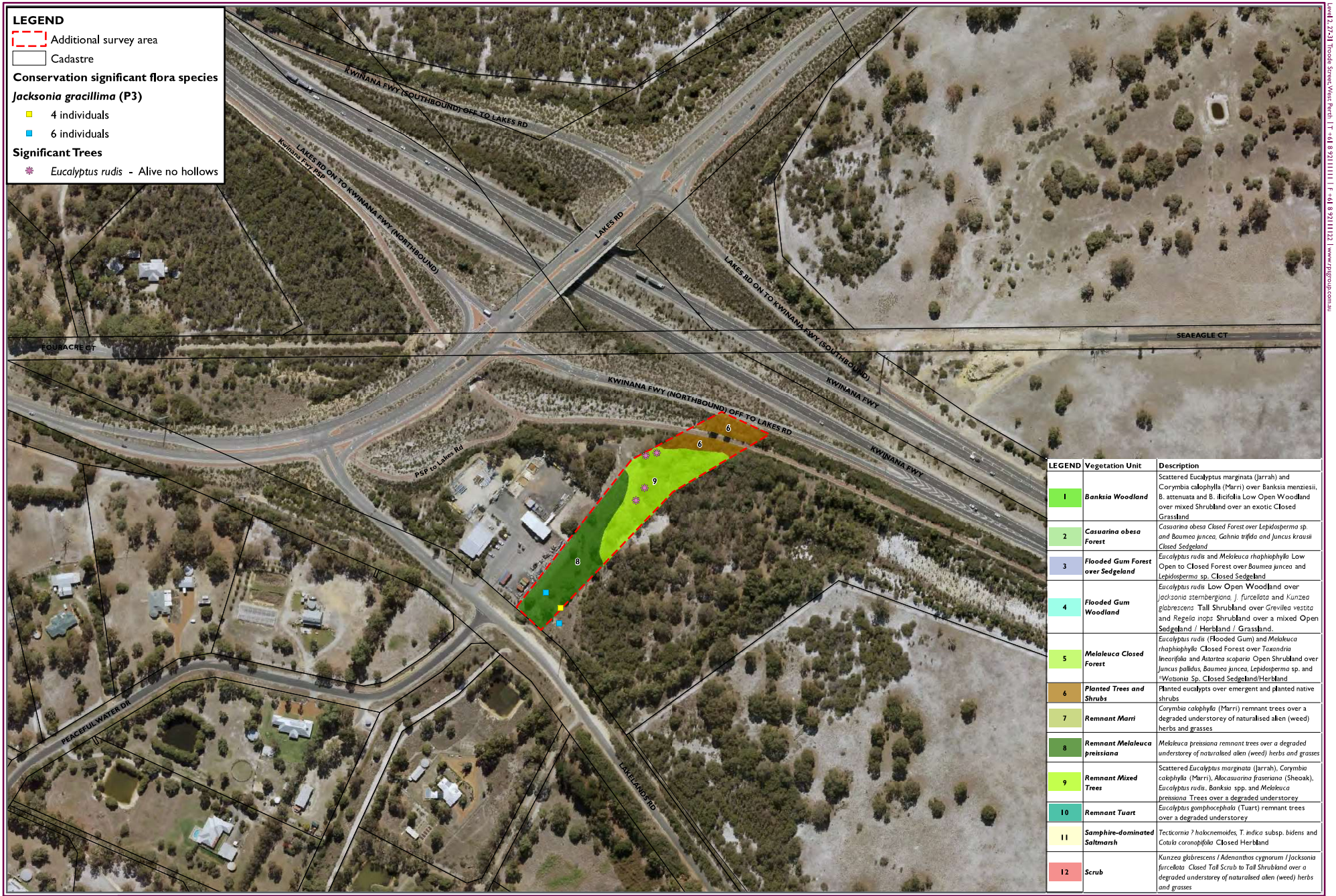

LEGEND	Vegetation Unit	Description
1	***Banksia* Woodland**	Scattered Eucalyptus marginata (Jarrah) and Corymbia calophylla (Marri) over Banksia menziesii, B. attenuata and B. ilicifolia Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
2	***Casuarina obesa* Forest**	*Casuarina obesa* Closed Forest over *Lepidosperma* sp. and *Baumea juncea*, *Gahnia trifida* and *Juncus krausii* Closed Sedgeland
3	***Flooded Gum Forest over Sedgeland***	*Eucalyptus rudis* and *Melaleuca rhaphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
4	***Flooded Gum Woodland***	*Eucalyptus rudis* Low Open Woodland over *Jacksonia sternbergiana*, *J. furcellata* and *Kunzea glabrescens* Tall Shrubland over *Grevillea vestita* and *Regelia inops* Shrubland over a mixed Open Sedgeland / Herbland / Grassland.
5	***Melaleuca* Closed Forest**	*Eucalyptus rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus*, *Baumea juncea*, *Lepidosperma* sp. and **Watsonia* Sp. Closed Sedgeland/Herbland
6	***Planted Trees and Shrubs***	Planted eucalypts over emergent and planted native shrubs
7	***Remnant Marri***	*Corymbia calophylla* (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
8	***Remnant Melaleuca preissiana***	*Melaleuca preissiana* remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
9	***Remnant Mixed Trees***	Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Eucalyptus rudis*, *Banksia* spp. and *Melaleuca preissiana* Trees over a degraded understorey
10	***Remnant Tuart***	*Eucalyptus gomphocephala* (Tuart) remnant trees over a degraded understorey
11	***Samphire-dominated Saltmarsh***	*Tecticornia ? halocnemoides*, *T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
12	***Scrub***	*Kunzea glabrescens* / *Adenanthos cygnorum* / *Jacksonia furcellata* Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses

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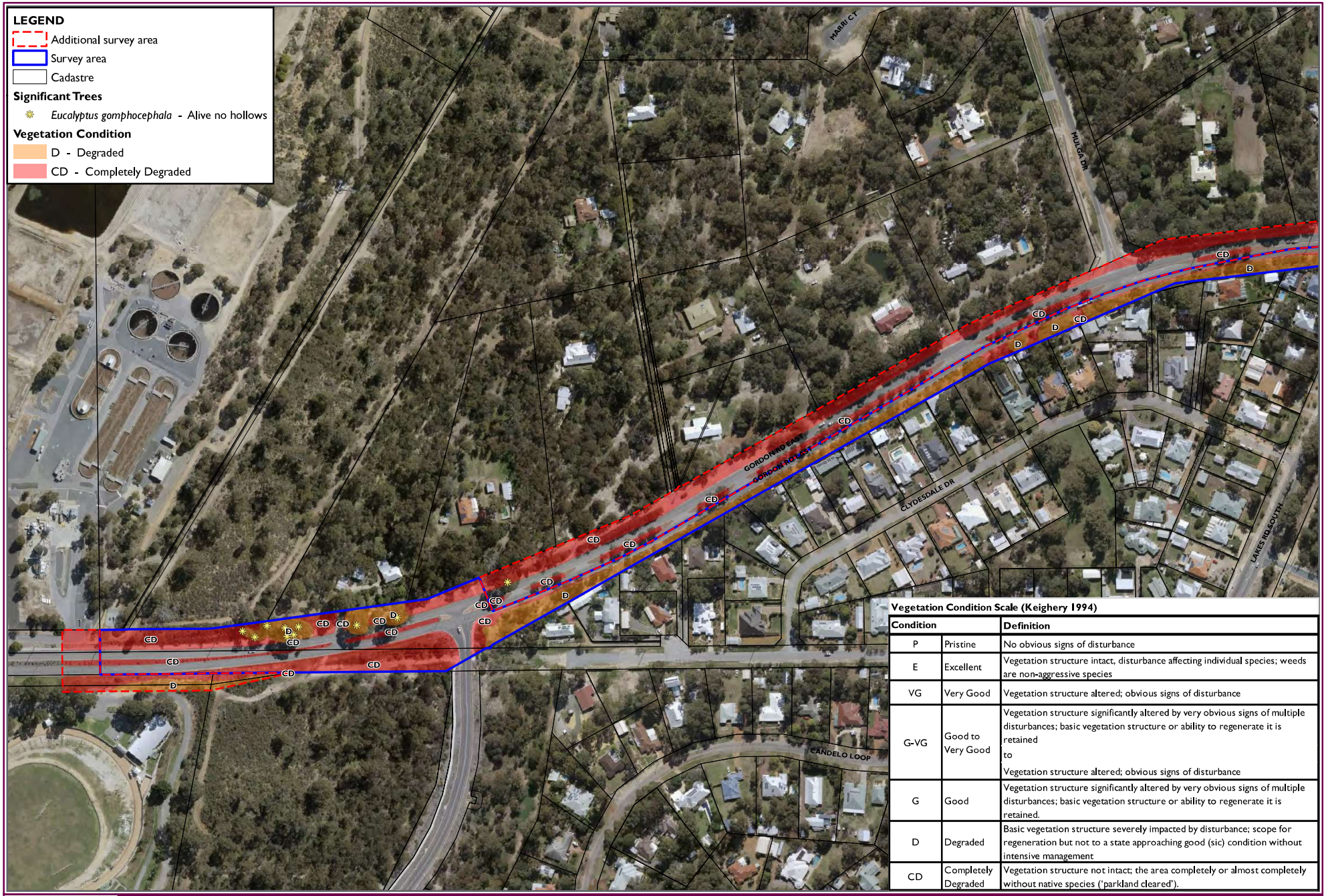
GDA 1994 MGA Zone 50
0 12.5 25 50 75 100 m

Figure B-9

Vegetation Units

Document Path: G:\Jobs\L_Jobs\L11266 - LandCorp Nambeelup Industrial Estate\Figures L11266 11 Flora Reconnaissance R\L11266_011_R_000_FigB 1-8 Map Book Vegetation Units_191204.mxd



Vegetation Condition Scale (Keighery 1994)

Condition		Definition
P	Pristine	No obvious signs of disturbance
E	Excellent	Vegetation structure intact, disturbance affecting individual species; weeds are non-aggressive species
VG	Very Good	Vegetation structure altered; obvious signs of disturbance
G-VG	Good to Very Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances; basic vegetation structure or ability to regenerate it is retained to Vegetation structure altered; obvious signs of disturbance
G	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances; basic vegetation structure or ability to regenerate it is retained.
D	Degraded	Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching good (sic) condition without intensive management
CD	Completely Degraded	Vegetation structure not intact; the area completely or almost completely without native species ('parkland cleared').

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GDA 1994 MGA Zone 50
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Figure C-1

Vegetation Condition

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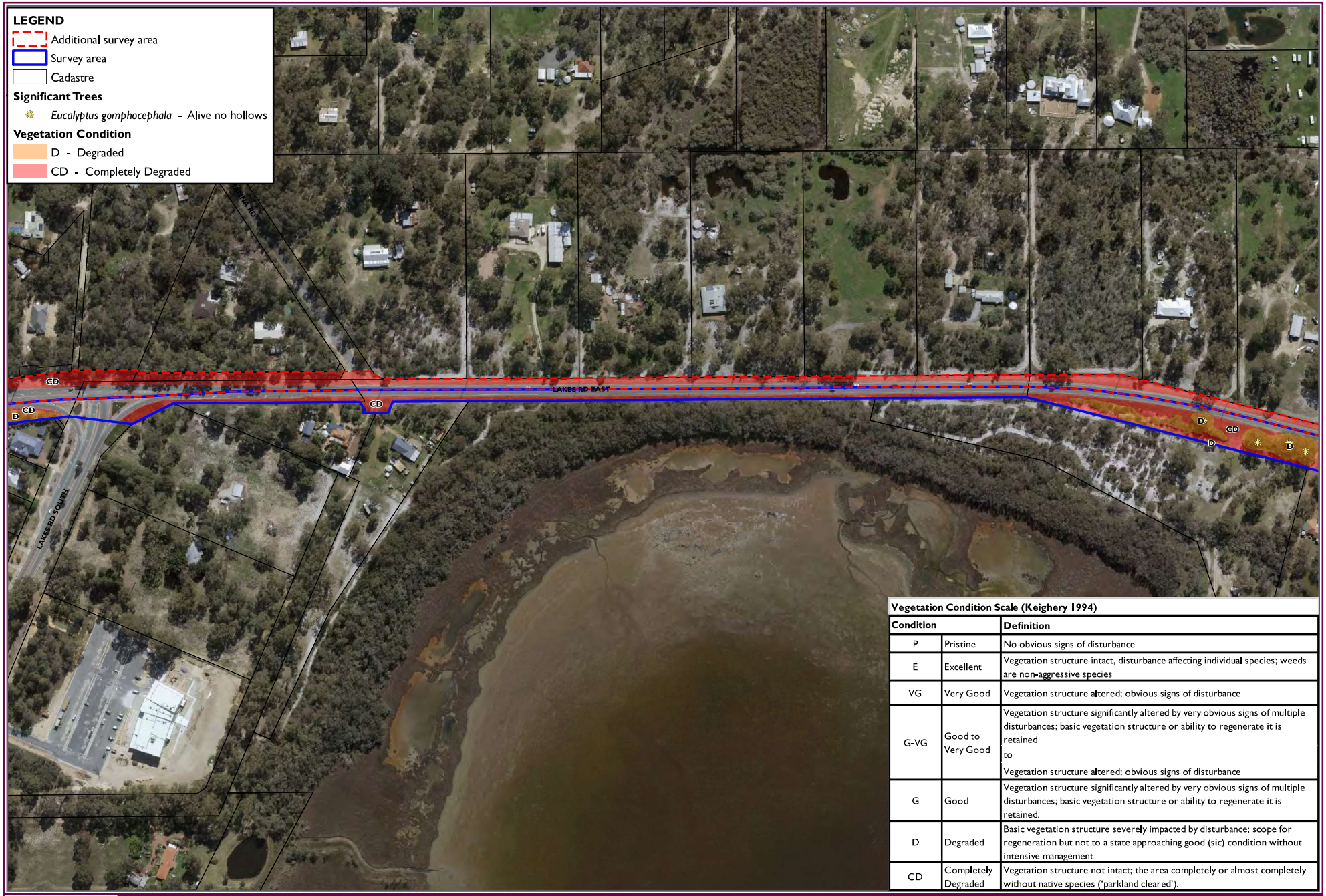

Vegetation Condition Scale (Keighery 1994)

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GDA 1994 MGA Zone 50
0 12.5 25 50 75 100 m

Figure C-2

Vegetation Condition

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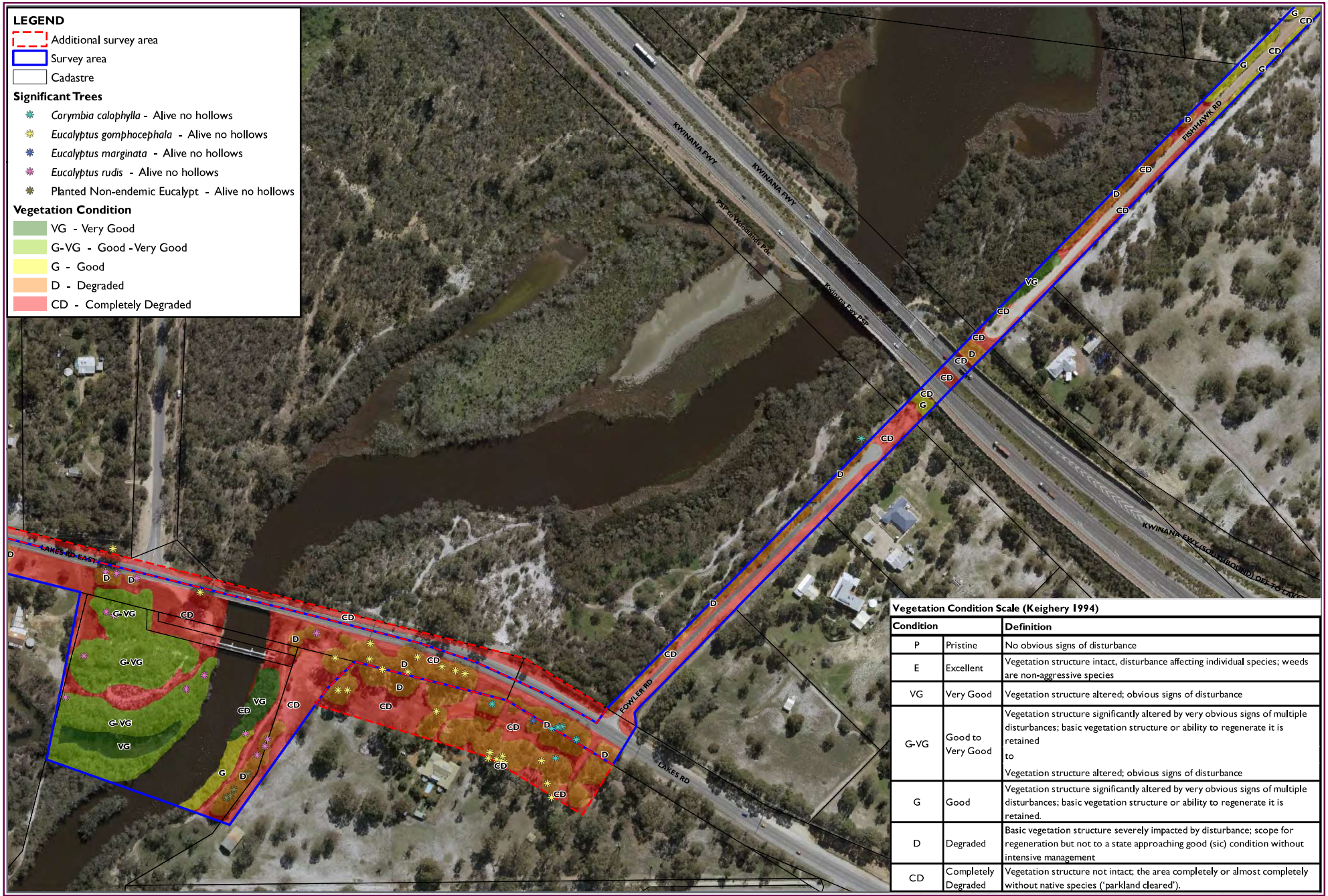

Vegetation Condition Scale (Keighery 1994)

Condition		Definition
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GDA 1994 MGA Zone 50
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Figure C-3

Vegetation Condition

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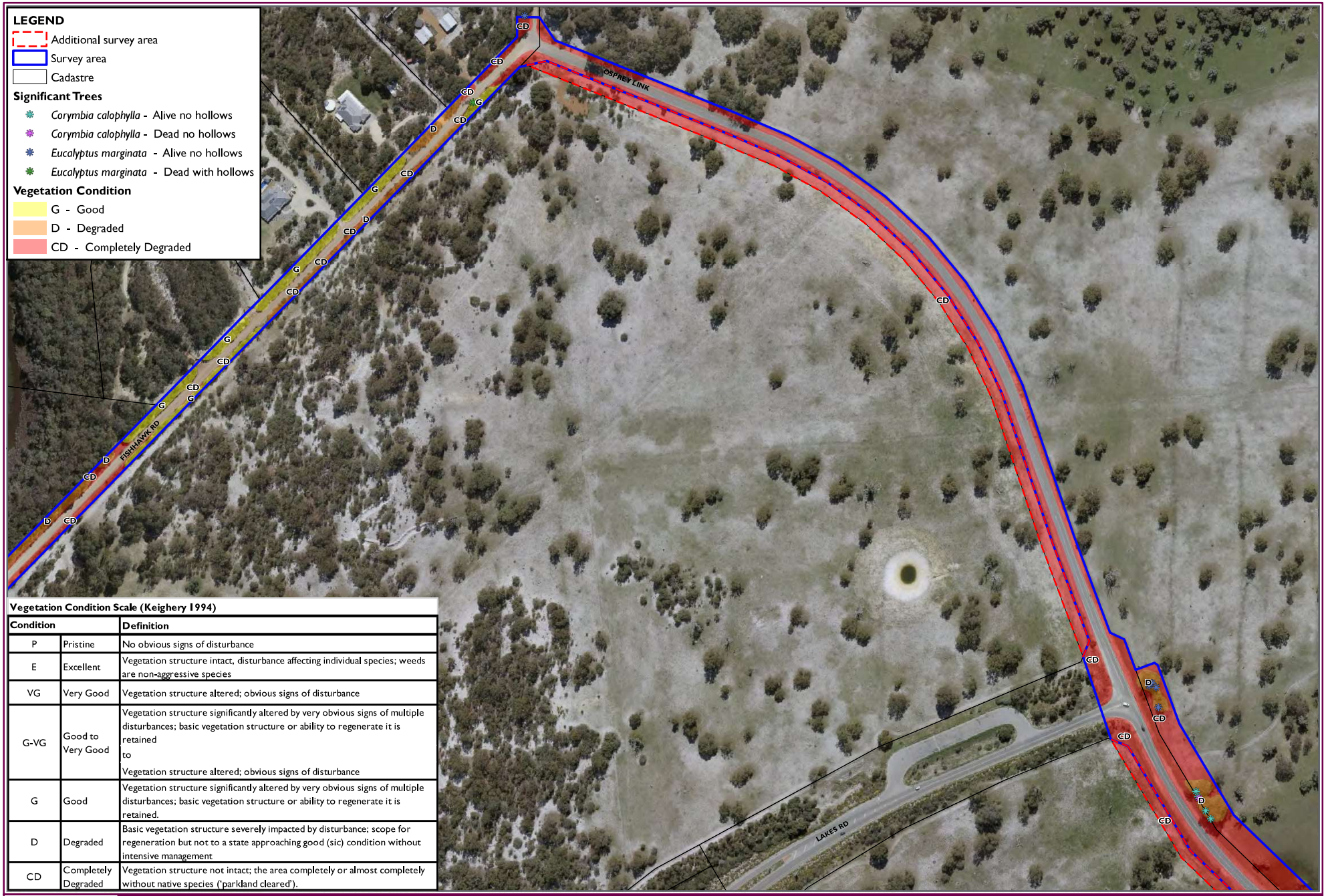

Vegetation Condition Scale (Keighery 1994)

Condition		Definition
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E	Excellent	Vegetation structure intact, disturbance affecting individual species; weeds are non-aggressive species
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CD	Completely Degraded	Vegetation structure not intact; the area completely or almost completely without native species ('parkland cleared').

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GDA 1994 MGA Zone 50
0 12.5 25 50 75 100 m

Figure C-4

Vegetation Condition

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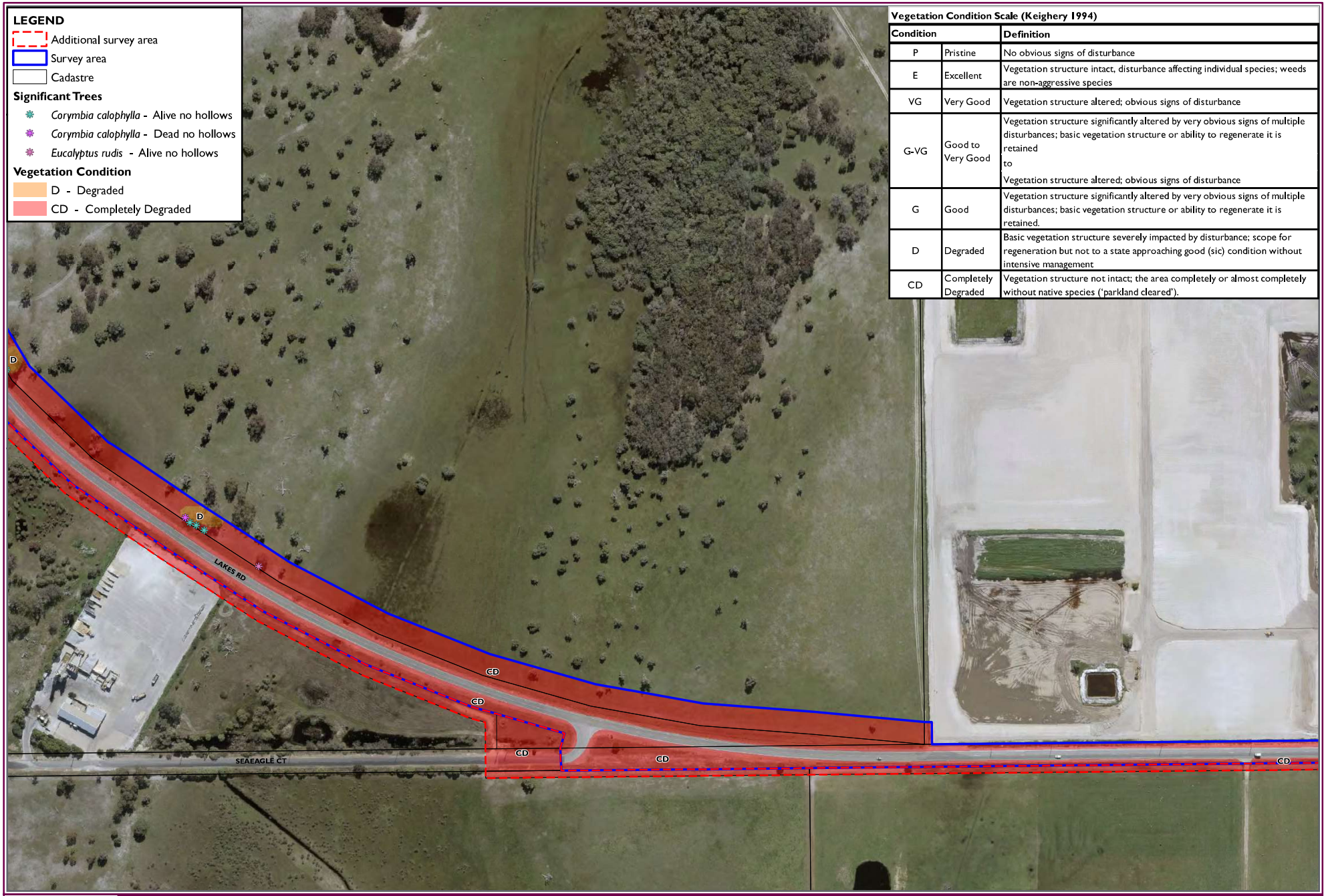

Vegetation Condition Scale (Keighery 1994)

Condition		Definition
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Figure C-5

Vegetation Condition

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Vegetation Condition Scale (Keighery 1994)

Condition		Definition
P	Pristine	No obvious signs of disturbance
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Figure C-6

Vegetation Condition

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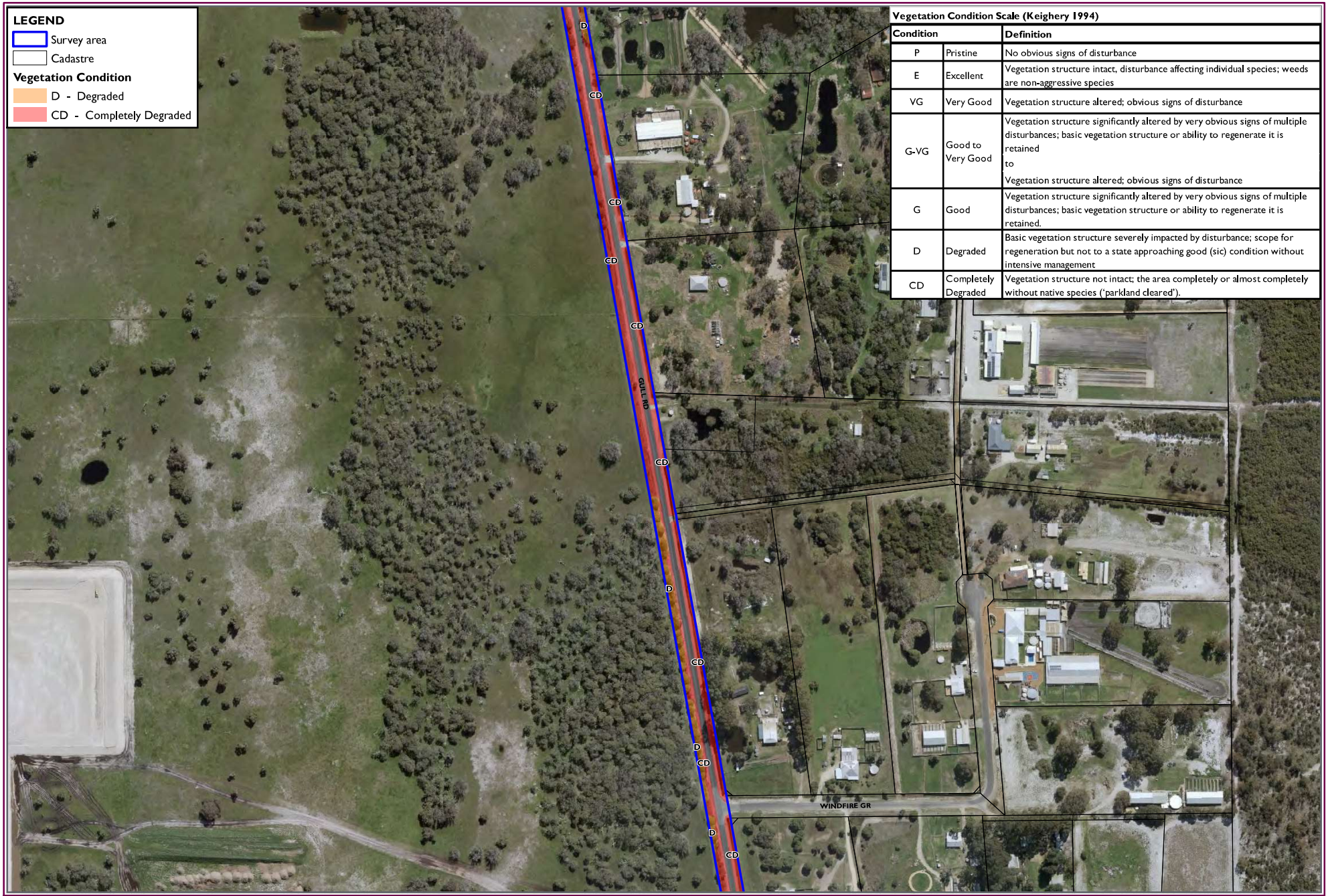

Vegetation Condition Scale (Keighery 1994)

Condition		Definition
P	Pristine	No obvious signs of disturbance
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Figure C-7

Vegetation Condition

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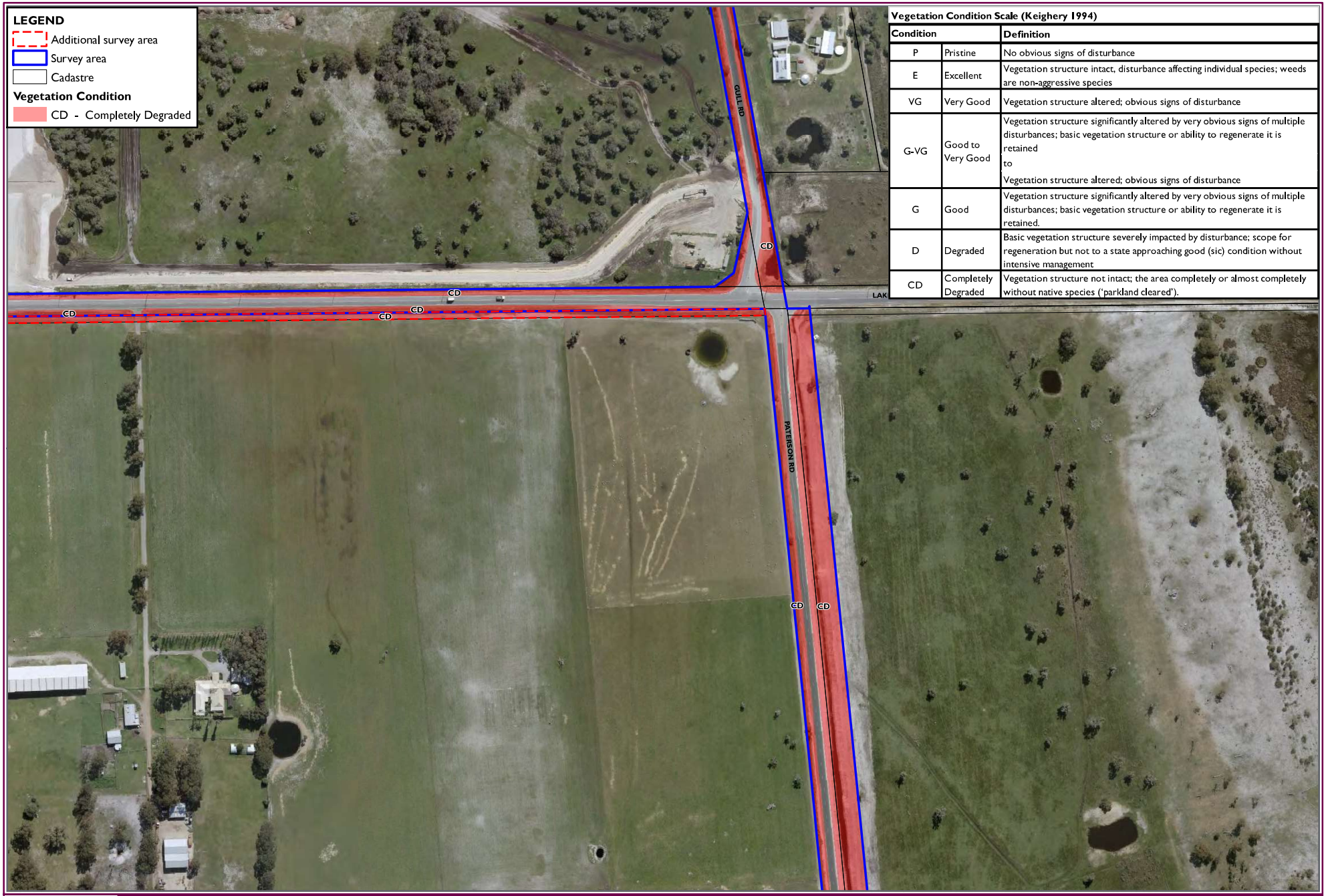

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Condition		Definition
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GDA 1994 MGA Zone 50
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Figure C-8

Vegetation Condition

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Vegetation Condition Scale (Keighery 1994)

Condition		Definition
P	Pristine	No obvious signs of disturbance
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0 12.5 25 50 75 100 m

Figure C-9

Vegetation Condition

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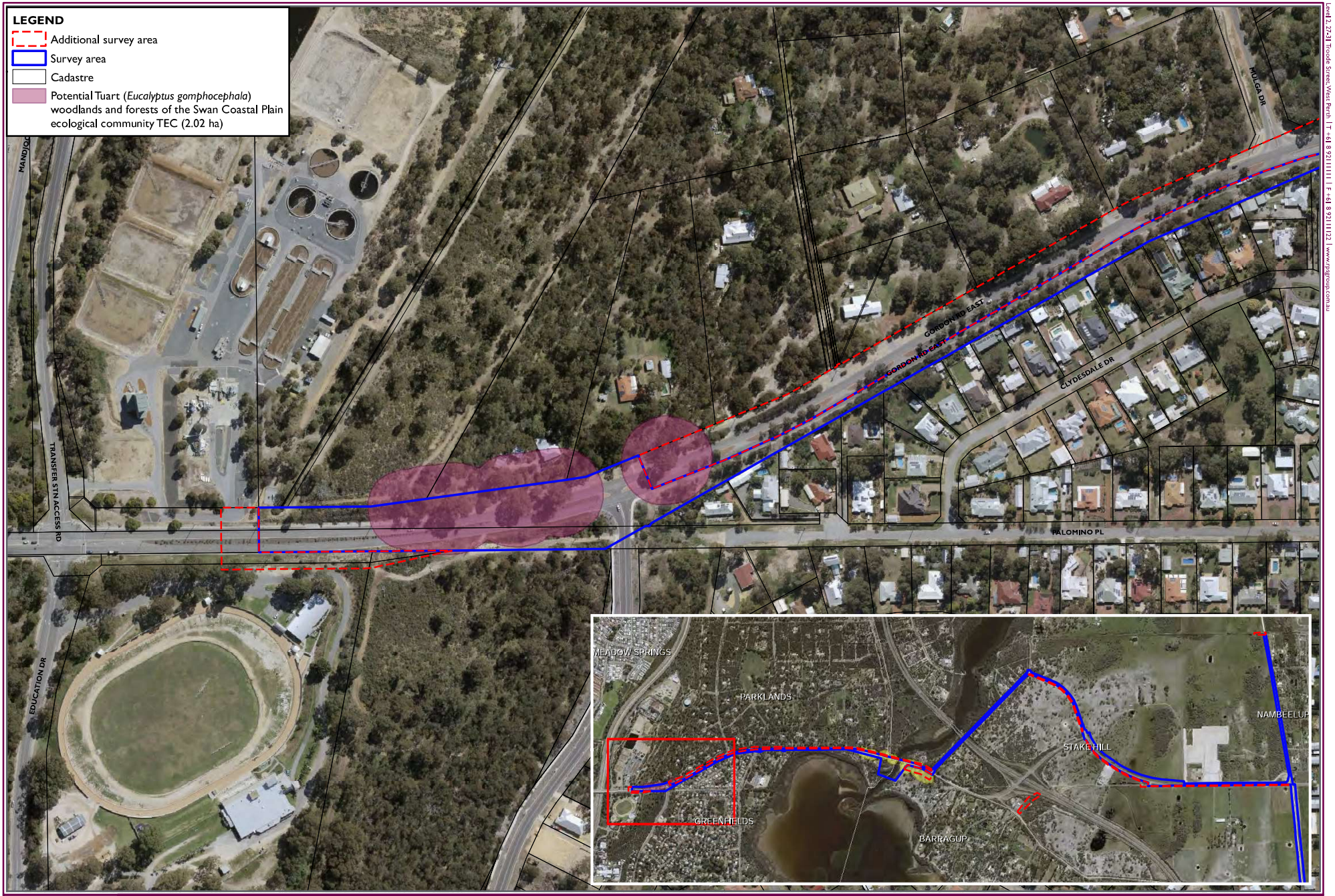

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Created by: MA
Source: Orthophoto - Landgate, Aug 2019

GDA 1994 MGA Zone 50
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Figure D-1
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community TEC

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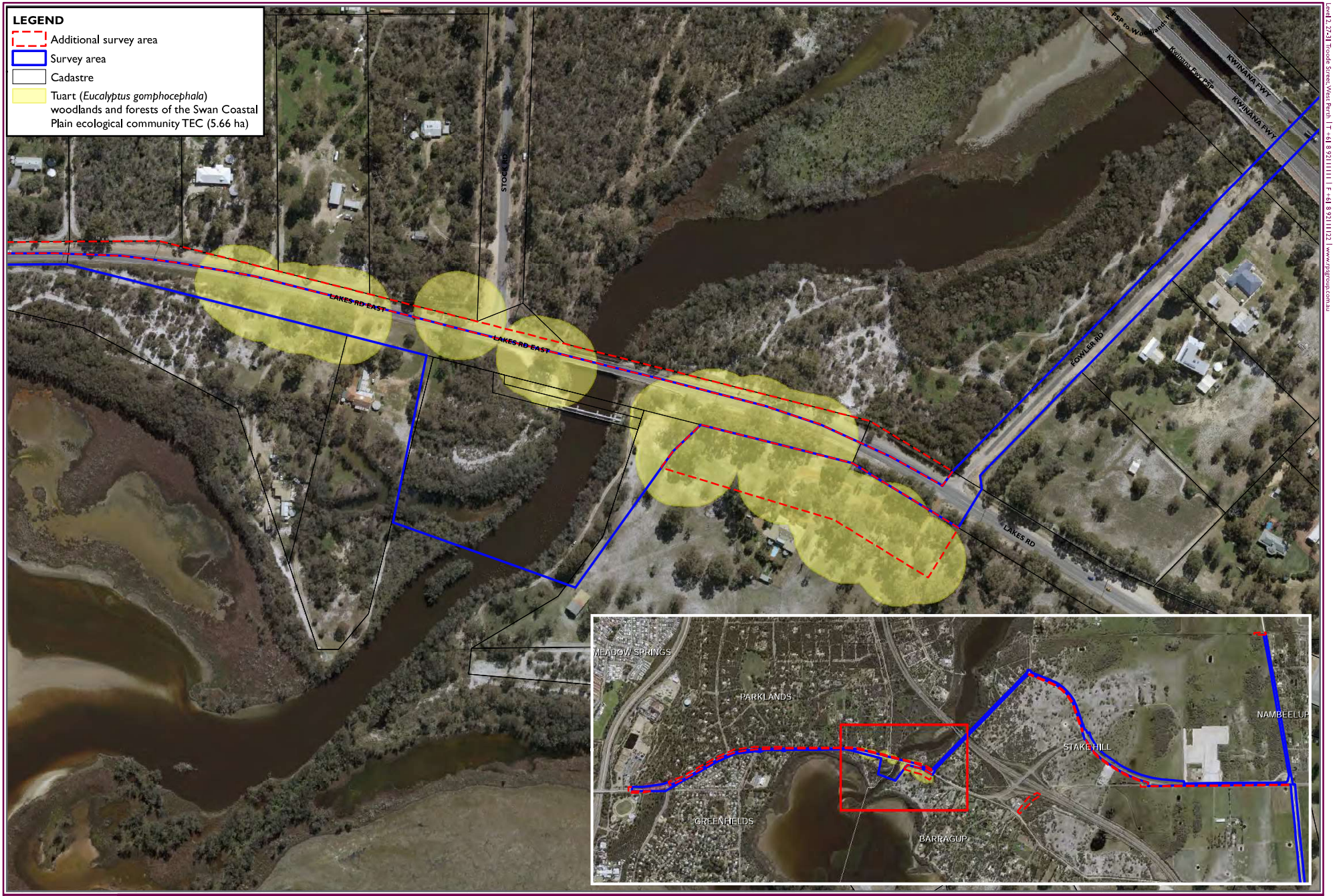

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Source: Orthophoto - Landgate, Aug 2019

GDA 1994 MGA Zone 50

0 12.5 25 50 75 100 m

Figure D-2
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community TEC

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Appendix A

Definitions

APPENDIX A: DEFINITIONS

Table A-1: Conservation codes for Western Australian flora and fauna

Category	Definition
Threatened species	
T	**Threatened species** Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act). **Threatened fauna** is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna. **Threatened flora** is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora. The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.
CR	**Critically endangered species** Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
EN	**Endangered species** Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.
VU	**Vulnerable species** Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.
Extinct species	
EX	**Extinct species** Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act). Published as presumed extinct under schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for extinct fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for extinct flora.
EW	**Extinct in the wild species** Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Category	Definition
Specially protected species	
Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.	
M	**Migratory species** Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
CD	**Species of special conservation interest (conservation dependent fauna)** Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
OS	**Other specially protected species** Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
Priority species	
P	Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
P1	**Priority 1: Poorly-known species** 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.
P2	**Priority 2: Poorly-known species** 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.
P3	**Priority 3: Poorly-known species** 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

Category	Definition
P4	**Priority 4: Rare, Near Threatened and other species in need of monitoring** (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

(Source: DBCA 2019)

Table A-2: EPBC Act conservation codes

Category	Definition
EX	**Extinct** A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual) throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
EW	**Extinct in the Wild** A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual) throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
CR	**Critically Endangered** A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see Section V), and it is therefore considered to be facing an extremely high risk of extinction in the wild.
EN	**Endangered** A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Section V), and it is therefore considered to be facing a very high risk of extinction in the wild.
VU	**Vulnerable** A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V), and it is therefore considered to be facing a high risk of extinction in the wild.
NT	**Near Threatened** A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
LC	**Least Concern** A taxon is Least Concern when it has been evaluated against the criteria and it does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.
DD	**Data Deficient** A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases, great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period has elapsed since the last record of the taxon, threatened status may well be justified.
NE	**Not Evaluated** A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

(Source: IUCN 2019)

Table A-3: Threatened ecological communities category of threat

Category	Definition
Presumed Totally Destroyed (PD)	An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies: Records within the last 50 years have not been confirmed despite thorough searches or known or likely habitats or. All occurrences recorded within the last 50 years have since been destroyed.
Critically Endangered (CR)	An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria: The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply: Geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately five years). Modification throughout its range is continuing such that in the immediate future (within approximately five years) the community is unlikely to be capable of being substantially rehabilitated. Current distribution is limited, and one or more of the following apply (i, ii or iii): Geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes, which are likely to result in total destruction throughout its range in the immediate future (within approximately five years). There are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes. There may be many occurrences, but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes. The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately five years).
Endangered (EN)	An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C): The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 70% and either or both of the following apply (i or ii) Geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term (within approximately 10 years). Modification throughout its range is continuing such that in the short-term future (within approximately 10 years) the community is unlikely to be capable of being substantially restored or rehabilitated. Current distribution is limited, and one or more of the following apply (i, ii or iii): Geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short-term future (within approximately 10 years). There are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes. There may be many occurrences, but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes. The ecological community exists only as highly modified occurrences, which may be capable of being rehabilitated if such work begins in the short-term future (within approximately 10 years).
Vulnerable (VU)	An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction in the medium to long term future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C): The ecological community exists largely as modified occurrences, which are likely to be capable of being substantially restored or rehabilitated. The ecological community can be modified or destroyed and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations. The ecological community may still be widespread but is believed likely to move into a category of higher threat in the medium to long-term future because of existing or impending threatening processes.

Category	Definition
Data Deficient (DD)	An ecological community, which has not been adequately evaluated with respect to status or where there is currently insufficient information to assign it to a particular category. (An ecological community with poorly known distribution or biology that is suspected to belong to any of the above categories. These ecological communities have a high priority for survey and/or research).
Lower Risk (LR)	An ecological community that has been adequately surveyed and does not qualify for any of the above categories of threat and appears unlikely to be under threat of significant modification or destruction in the short to medium term future.

(Source: English and Blyth 1997)

Table A-4: Priority ecological communities category of threat

Category	Definition
P1	**Priority One: Poorly-known ecological communities** Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
P2	**Priority Two: Poorly-known ecological communities** Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, state forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
P3	**Priority Three: Poorly known ecological communities** Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation, or: Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; Communities made up of large, and/or widespread occurrences that may or not be represented in the reserve system but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.
P4	**Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened or that have been recently removed from the threatened list** These communities require regular monitoring. Rare. Ecological communities known from few occurrences 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 communities are usually represented on conservation lands. Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. Ecological communities that have been removed from the list of threatened communities during the past five years.
P5	**Priority Five: Conservation Dependent ecological communities** Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

(Source: DEC 2013)

Table A-5: EPBC Act listed threatened ecological communities category of threat

Category	Definition
CR	**Critically Endangered** If an ecological community is facing an extremely high risk of extinction in the wild in the immediate future.
EN	**Endangered** If an ecological community is not Critically Endangered but is facing a very high risk of extinction in the wild in the immediate future.
VU	**Vulnerable** If an ecological community is not Critically Endangered or Endangered but is facing a very high risk of extinction in the wild in the medium-term future.

Table A-6: NVIS vegetation structure classes

Stratum	Growth form	Height	Structural formation classes (% cover)					
			70-100	30-70	10-30	< 10	0-5	~0
U	Tree, palm	Tall; Mid; Low	Closed forest	Open forest	Woodland	Open woodland	Isolated trees	Isolated clumps of trees
	Tree mallee	Tall; Mid; Low	Closed mallee forest	Open mallee forest	Mallee woodland	Open mallee woodland	Isolated mallee trees	Isolated clumps of mallee trees
M	Shrub, cycad, grass-tree, tree-fern	Tall; Mid; Low	Closed shrubland	Shrubland	Open shrubland	Sparse shrubland	Isolated shrubs	Isolated clumps of shrubs
	Mallee shrub	Tall; Mid; Low	Closed mallee shrubland	Mallee shrubland	Open mallee shrubland	Sparse mallee shrubland	Isolated mallee shrubs	Isolated clumps of mallee shrubs
	Heath shrub	Tall; Mid; Low	Closed heathland	Heathland	Open heathland	Sparse heathland	Isolated heath shrubs	Isolated clumps of heath shrubs
	Chenopod shrub	Tall; Mid; Low	Closed chenopod shrubland	Chenopod shrubland	Open chenopod shrubland	Sparse chenopod shrubland	Isolated chenopod shrubs	Isolated clumps of chenopod shrubs
	Samphire shrub	Mid; Low	Closed samphire shrubland	Samphire shrubland	Open samphire shrubland	Sparse samphire shrubland	Isolated samphire shrubs	Isolated clumps of samphire shrubs
G	Hummock grass	Mid; Low	Closed hummock grassland	Hummock grassland	Open hummock grassland	Sparse hummock grassland	Isolated hummock grasses	Isolated clumps of hummock grasses
	Tussock grass	Mid; Low	Closed tussock grassland	Tussock grassland	Open tussock grassland	Sparse tussock grassland	Isolated tussock grasses	Isolated clumps of tussock grasses
	Other grass	Mid; Low	Closed grassland	Grassland	Open grassland	Sparse grassland	Isolated grasses	Isolated clumps of grasses
	Sedge	Mid; Low	Closed sedgeland	Sedgeland	Open sedgeland	Sparse sedgeland	Isolated sedges	Isolated clumps of sedges
	Rush	Mid; Low	Closed rushland	Rushland	Open rushland	Sparse rushland	Isolated rushes	Isolated clumps of rushes
	Forb (herb)	Mid; Low	Closed forbland	Forbland	Open forbland	Sparse forbland	Isolated forbs	Isolated clumps of forbs

(Source: ESCAVI 2003)

Table A-7: NVIS vegetation height classes

Height		Growth form			
Height class	Height range (m)	Tree, vine (m and u), palm (single-stemmed)	Shrub, heath shrub, chenopod shrub, ferns, samphire shrub, cycad, tree-fern, grass-tree, palm (multi-stemmed)	Tree mallee, mallee shrub	Tussock grass, hummock grass, other grass, sedge, rush, forbs, vine (g)
8	>30	Tall			
7	10-30	Mid		Tall	
6	<10	Low		Mid	
5				Low	
4	>2		Tall		Tall
3	1-2		Mid		Tall
2	0.5-1		Low		Mid
1	<0.5		Low		Low

(Source: ESCAVI 2003)

Table A-8: Vegetation condition scale

Condition		Definition
P	Pristine	No obvious signs of disturbance.
E	Excellent	Vegetation structure intact, disturbance affecting individual species; weeds are non-aggressive species
V	Very Good	Vegetation structure altered; obvious signs of disturbance
G	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance; basic vegetation structure or ability to regenerate it is retained
D	Degraded	Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching good (sic) condition without intensive management
C	Completely Degraded	Vegetation structure not intact; the area completely or almost completely without native species ("parkland cleared").

(Source: adapted from Keighery 1994 and Trudgen 1988)

Table A-9: Condition categories and thresholds for patches of Tuart woodlands and forests TEC

Biotic thresholds	Patch size			
Condition	**< 0.5 ha**	**≥ 0.5 ha < 2 ha**	**≥ 2 ha < 5 ha**	**≥ 5 ha**
Very high condition ≥80 % of all understorey^ vegetation cover is native# Or At least 12 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	NOT part of the protected ecological community	Smaller patches with very high condition understorey. PART OF THE PROTECTED ECOLOGICAL COMMUNITY	Medium sized patches with very high condition understorey. PART OF THE PROTECTED ECOLOGICAL COMMUNITY	PART OF THE PROTECTED ECOLOGICAL COMMUNITY
High condition ≥60 % of all understorey^ vegetation cover is native# Or At least 8 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	NOT part of the protected ecological community	Smaller patches with high condition understorey. AND That either: have an important landscape role (≤100 m to native vegetation) OR have a habitat role (≥2 very large trees per 0.5 ha) OR show regeneration (≥15 seedlings and/or saplings per 0.5 ha) PART OF THE PROTECTED ECOLOGICAL COMMUNITY	Medium sized patches with high condition understorey. PART OF THE PROTECTED ECOLOGICAL COMMUNITY	PART OF THE PROTECTED ECOLOGICAL COMMUNITY
Moderate condition ≥50 % of all understorey^ vegetation cover is native# Or At least 4 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	NOT part of the protected ecological community	NOT part of the protected ecological community (but may be a focus for local protection or restoration)	Medium sized patches with moderate condition understorey. AND that either have an important landscape role (≤100 m to native vegetation) OR have a habitat role (≥2 very large trees per 0.5 ha) OR show regeneration (≥15 seedlings and/or saplings per 0.5 ha) PART OF THE PROTECTED ECOLOGICAL COMMUNITY	PART OF THE PROTECTED ECOLOGICAL COMMUNITY
Poor Has minimal or no native cover and species richness. That is: <50 % of all understorey^ vegetation cover is native# And Less than 4 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	NOT part of the protected ecological community	NOT part of the protected ecological community (but may be a focus for local protection or restoration)	NOT part of the protected ecological community (but may be a focus for local protection or restoration)	PART OF THE PROTECTED ECOLOGICAL COMMUNITY

(Adapted from Table 2 in Department of the Environment and Energy (2019))

#'Native' refers to species naturally occurring in southwest Western Australia.

^ Understorey vegetation cover includes annual and perennial vascular plant species of both the ground layer and the shrub layer up to 3 m in height.

Appendix B

Flora inventory

APPENDIX B: FLORA INVENTORY

Family	Weed	Species
ASPHODELACEAE	*	*Trachyandra divaricata*
ASTERACEAE	*	*Arctotheca calendula*
	*	*Ursinia anthemoides*
CASUARINACEAE		*Allocasuarina fraseriana*
CYPERACEAE		*Baumea juncea*
DASYPOGONACEAE		*Dasypogon bromeliifolius*
DILLENIACEAE		*Hibbertia hypericoides*
EUPHORBIACEAE	*	*Euphorbia terracina*
FABACEAE		*Acacia pulchella*
		Acacia saligna
		Acacia rostellifera
		Hardenbergia comptoniana
		Jacksonia furcellata
		Jacksonia gracillima (P3)
	*	*Ornithopus compressus*
HEMEROCALLIDACEAE		*Dianella revoluta*
IRIDACEAE		*Patersonia occidentalis*
		Watsonia sp.
MYRTACEAE		*Agonis flexuosa*
		Calothamnus sp.
	*	*Chamelaucium uncinatum*
		Corymbia calophylla
		Eucalyptus gomphocephala
		Eucalyptus marginata subsp. *marginata*
		Eucalyptus rudis subsp. *rudis*
		Kunzea glabrescens
	*	*Leptospermum laevigatum*
		Melaleuca preissiana
		Melaleuca rhaphiophylla
POACEAE	*	*Avena barbata*
	*	*Briza maxima*
	*	*Bromus diandrus*
	*	*Cenchrus clandestinus*
	*	*Cynodon dactylon*
	*	*Ehrharta calycina*
	*	*Ehrharta longiflora*
	*	*Eragrostis curvula*
	*	*Lagurus ovatus*
	*	*Lolium perenne*
PROTEACEAE		*Adenanthos cygnorum*
		Banksia attenuata
		Banksia menziesii
		Grevillea vestita
XANTHORRHOEACEAE		*Xanthorrhoea preissii*
ZAMIACEAE		*Macrozamia riedlei*

Appendix C

Jacksonia gracillima locations

APPENDIX C: *JACKSONIA GRACILLIMA* LOCATIONS

Species	Conservation code (state)	No. of individuals	Latitude	Longitude
Jacksonia gracillima	Priority 3	4	-32.513134	115.797098
Jacksonia gracillima	Priority 3	6	-32.513259	115.797082
Jacksonia gracillima	Priority 3	6	-32.513007	115.796961

Appendix D

Habitat tree data

APPENDIX D: HABITAT TREE DATA

Species	Latitude	Longitude	DBH > 500 mm	Hollows
Corymbia calophylla	-32.509478	115.787232	Yes	No
Corymbia calophylla	-32.509919	115.787826	Yes	No
Corymbia calophylla	-32.509681	115.787796	Yes	No
Eucalyptus gomphocephala	-32.51033	115.762569	Yes	No
Eucalyptus gomphocephala	-32.508193	115.78365	Yes	No
Eucalyptus gomphocephala	-32.509352	115.78586	Yes	No
Eucalyptus gomphocephala	-32.509351	115.785773	Yes	No
Eucalyptus gomphocephala	-32.50953	115.786706	Yes	No
Eucalyptus gomphocephala	-32.509867	115.787206	Yes	No
Eucalyptus gomphocephala	-32.509898	115.787325	Yes	No
Eucalyptus gomphocephala	-32.509951	115.787342	Yes	No
Eucalyptus gomphocephala	-32.509932	115.787307	Yes	No
Eucalyptus gomphocephala	-32.509923	115.787269	Yes	No
Eucalyptus gomphocephala	-32.509913	115.787188	Yes	No
Eucalyptus gomphocephala	-32.510119	115.787748	Yes	No
Eucalyptus gomphocephala	-32.510234	115.787785	Yes	No
Eucalyptus gomphocephala	-32.509939	115.787694	Yes	No
Eucalyptus marginata subsp. *marginata*	-32.509616	115.78762	Yes	No
Eucalyptus rudis subsp. *rudis*	-32.512275	115.797823	Yes	No
Eucalyptus rudis subsp. *rudis*	-32.512175	115.797906	Yes	No
Eucalyptus rudis subsp. *rudis*	-32.511882	115.797988	Yes	No
Eucalyptus rudis subsp. *rudis*	-32.511869	115.797943	Yes	No