

Road Reserve Reconnaissance Flora and Vegetation Survey

Peel Business Park Trunk Infrastructure Extension

Prepared by: RPS AUSTRALIA WEST PTY LTD

Level 2, 27-31 Troode Street
West Perth, WA 6005
Australia
PO Box 170 West Perth WA 6872

Prepared for: LANDCORP

Level 6
40 The Esplanade
PERTH WA 6000

T: +61 8 9211 1111

E: environment@rpsgroup.com.au

Author: Giles Glasson

Reviewed: John Halleen

Approved: John Halleen

No: EEL11266.006

Version: Rev 0

Date: April 2018

Document Status

| Version | Purpose of Document | Author | Reviewed by | Review Date |
|---------|-------------------------|--------|-------------|-------------|
| Draft A | Draft for Client Review | CarGil | GilGla | 13.11.17 |
| Rev 0 | Final for Issue | GilGla | JohHal | 27.03.18 |
| | | | | |
| | | | | |

Approval for Issue of Final Report

| Name | Signature | Date |
|------------|---|----------|
| J. Halleen |  | 04.04.18 |

This report was prepared by [RPS Australia West Pty Ltd ('RPS')] within the terms of its engagement and in direct response to a scope of services. This report is strictly limited to the purpose and the facts and matters stated in it and does not apply directly or indirectly and must not be used for any other application, purpose, use or matter. In preparing the report, RPS may have relied upon information provided to it at the time by other parties. RPS accepts no responsibility as to the accuracy or completeness of information provided by those parties at the time of preparing the report. The report does not take into account any changes in information that may have occurred since the publication of the report. If the information relied upon is subsequently determined to be false, inaccurate or incomplete then it is possible that the observations and conclusions expressed in the report may have changed. RPS does not warrant the contents of this report and shall not assume any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report howsoever. No part of this report, its attachments or appendices may be reproduced by any process without the written consent of RPS. All enquiries should be directed to RPS.

Contents

| | |
|---|-----------|
| SUMMARY | 1 |
| Conclusions | 3 |
| 1 INTRODUCTION..... | 4 |
| 1.1 Project Background | 4 |
| 1.2 Report Objectives..... | 4 |
| 1.3 Legislative Context | 4 |
| 1.3.1 Flora of Conservation Significance | 5 |
| 1.3.2 Vegetation of Conservation Significance | 5 |
| 1.3.3 Revised Draft Referral Guideline for Black Cockatoos | 5 |
| 2 METHODS | 7 |
| 2.1 Desktop Assessment..... | 7 |
| 2.2 Field Survey | 8 |
| 2.2.1 Reconnaissance Flora and Vegetation Assessment | 8 |
| 2.2.2 Significant Tree Inventory | 8 |
| 2.3 Data Analysis..... | 8 |
| 2.3.1 Flora and Taxonomy | 8 |
| 2.3.2 Vegetation Mapping | 9 |
| 3 EXISTING INFORMATION | 10 |
| 3.1 Climate | 10 |
| 3.2 Geology and Soils..... | 10 |
| 3.3 Interim Biogeographical Regionalisation of Australia | 10 |
| 3.4 Beard Vegetation Mapping..... | 10 |
| 3.5 Hedde Vegetation Complexes..... | 11 |
| 4 RESULTS..... | 12 |
| 4.1 Desktop Assessment..... | 12 |
| 4.1.1 Threatened and Priority Flora Database Search Results | 12 |
| 4.1.2 Ecological Communities Database Search Results | 13 |
| 4.1.3 Geomorphic Wetlands of the Swan Coastal Plain | 14 |
| 4.1.4 Environmentally Sensitive Areas..... | 15 |
| 4.1.5 DBCA Managed Lands..... | 15 |
| 4.2 Field Survey | 15 |
| 4.2.1 Flora | 15 |
| 4.2.2 Vegetation | 16 |
| 4.2.3 Significant Trees..... | 23 |
| 5 DISCUSSION | 24 |
| 5.1 Floristic Diversity and Representation | 24 |
| 5.1.1 Rarity | 24 |
| 5.1.2 Biodiversity | 24 |

| | | |
|------------|---|-----------|
| 5.2 | Vegetation Conservation Significance | 24 |
| 5.2.1 | Bioregional Representation | 24 |
| 5.2.2 | National Threatened Ecological Communities | 24 |
| 5.2.3 | Western Australian Threatened and Priority Ecological Communities | 26 |
| 5.3 | Fauna Habitat | 26 |
| 5.4 | Other Conservation Significant Features | 26 |
| 6 | CONCLUSIONS | 27 |
| 7 | REFERENCES | 28 |

Tables

(contained within report text)

| | | |
|---------|--|----|
| Table 1 | Pre-European Extent, Current Extent and Reservation Status within the Perth IBRA Subregion of the Swan Coastal Plain (SWA02) of the Beard Vegetation Associations Represented within the Survey Area | 11 |
| Table 2 | Pre-European Extent, 2013 Extent and Reservation Status on the Swan Coastal Plain of the Hedde Vegetation Complexes Represented within the Survey Area..... | 11 |
| Table 3 | Threatened and Priority Flora Recorded within a 5 km Radius of the Survey Area | 12 |
| Table 4 | TEC / PEC Records Within a 3 km Radius of the Survey Area | 13 |
| Table 5 | Geomorphic Wetlands of the SCP in the Vicinity of the Survey Area..... | 14 |
| Table 6 | ESAs Intersecting the Survey Area..... | 15 |
| Table 7 | Dominant Families within the Survey Area | 15 |
| Table 8 | Dominant Genera within the Survey Area..... | 16 |
| Table 9 | Tree Species Recorded with a DBH >500 mm | 23 |

Figures

(compiled at rear of report)

| | |
|---------------------|-----------------------|
| Figure A | Site Location |
| Figures B-1 to B-16 | Desktop Study Results |
| Figures C-1 to C-16 | Vegetation Units |
| Figures D-1 to D-16 | Vegetation Condition |

Plates

(contained within report text)

| | | |
|---------|--|----|
| Plate 1 | Remnant <i>Eucalyptus gomphocephala</i> (Tuart), Gordon Rd Reserve | 17 |
| Plate 2 | Planted Trees and Shrubs, Gordon Rd and Lakes Rd | 17 |
| Plate 3 | Remnant <i>Corymbia calophylla</i> (Marri), Lakes Rd | 18 |
| Plate 4 | <i>Eucalyptus rudis</i> subsp. <i>rudis</i> (Flooded Gum) Woodland, Serpentine River, Lakes Rd | 18 |

| | | |
|----------|--|----|
| Plate 5 | Eucalyptus rudis subsp. rudis (Flooded Gum) Forest over Sedgeland, Serpentine River, Lakes Rd..... | 19 |
| Plate 6 | Casuarina obesa Closed Forest over Closed Sedgeland, Serpentine River, Lakes Rd..... | 19 |
| Plate 7 | Samphire-dominated Saltmarsh, Serpentine River, Lakes Rd | 20 |
| Plate 8 | Banksia Woodland, Fowler and Fishhawk Rds..... | 20 |
| Plate 9 | Remnant <i>Melaleuca preissiana</i> Trees, Lakes, Gull and Patterson Rds | 21 |
| Plate 10 | Melaleuca Closed Forest, CCW UFI 4832, Patterson Rd..... | 21 |
| Plate 11 | Remnant Mixed Trees, Patterson Rd..... | 22 |
| Plate 12 | <i>Kunzea glabrescens</i> / <i>Adenanthos cygnorum</i> / <i>Jacksonia furcellata</i> Scrub, Patterson Rd | 22 |

Appendices

| | |
|------------|----------------------------------|
| Appendix A | Definitions |
| Appendix B | Flora Inventory |
| Appendix C | Black Cockatoo Habitat Tree Data |

Summary

RPS Australia West Pty Ltd (RPS) was commissioned by LandCorp to undertake a reconnaissance flora and vegetation survey, inclusive of a targeted black cockatoo tree assessment, of approximately 15.7 kilometres (km) of road reserve in the Parklands, Stake Hill and Nambelup localities (the survey area).

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

The findings of the assessment can be summarised as follows:

- A total of 69 plant taxa were recorded for the current survey 14 of which were exotic (weed) species.
- No Threatened Flora (TF) species listed under the *Wildlife Conservation Act 1950*¹ (WC Act) or under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded within the survey area.
- No Priority Flora (PF) species listed by the Department of Biodiversity Conservation and Attractions (DBCA) were recorded within the survey area.
- Naturalised bushland weeds were recorded at high densities throughout all of the survey area, except for areas mapped in "Very Good" condition where disturbance by weeds was low.
- Of the 14 weed species recorded, none were determined to be Declared Pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) nor were they classified as Weed of National Significance (WONS).
- Eleven upland and dampland/wetland vegetation units were described and mapped for the remnant vegetation within the survey area. A description of these vegetation units follows
 - Remnant Tuart (Upland) – *Eucalyptus gomphocephala* (tuart) remnant trees over a degraded understorey of annual and perennial naturalised alien (weed) herbs and grasses
 - Planted Trees and Shrubs (Upland) – planted (non-endemic) eucalypts over emergent and planted native shrubs
 - Remnant Marri (Upland/Damplands) – *Corymbia calophylla* (marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses
 - Flooded Gum Woodland (Dampland) – *Eucalyptus rudis* subsp. *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
 - Flooded Gum Forest over Sedgeland (Dampland) – *Eucalyptus rudis* subsp. *rudis* and *Melaleuca raphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland
 - *Casuarina obesa* Forest (Wetland) – *Casuarina obesa* Closed Forest over *Lepidosperma* sp., *Baumea juncea*, *Gahnia trifida* and *Juncus krausii* Closed Sedgeland

¹ The *Biodiversity Conservation Act 2016* will eventually fully replace the *Wildlife Conservation Act 1950* in listing threatened species and regulating the protection of native species, however these provisions cannot be brought into effect until the necessary Biodiversity Conservation Regulations have been endorsed.

- Samphire-dominated Saltmarsh (Wetland) – *Tecticornia ?halocnemoides*, *T indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland
 - Banksia Woodland (Upland) – Scattered *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) over *Banksia menziesii*, *B attenuata* and *ilicifolia* Low Open Woodland over mixed Shrubland over an exotic Closed Grassland
 - Remnant *Melaleuca preissiana* (Dampland/Wetland) – *Melaleuca preissiana* remnant trees over a degraded understorey of exotic grasses
 - *Melaleuca* Closed Forest (Wetland) – *Eucalyptus rudis* subsp. *rudis* (flooded gum) and *Melaleuca raphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus*, *Baumea juncea*, *Lepidosperma* sp. and **Watsonia* sp. Closed Sedgeland/Herbland
 - Remnant Mixed Trees (Upland and Dampland) – Scattered *Eucalyptus marginata* (jarrah), *Corymbia calophylla* (marri), *Allocasuarina fraseriana* (sheoak), *Banksia* spp. and *Melaleuca preissiana* trees over a degraded understorey of naturalised alien (weed) herbs and grasses
 - Scrub (Dampland) – *Kunzea glabrescens* / *Adenanthos cygnorum* / *Jacksonia furcellata* Closed Tall Scrub to Tall Shrubland over a degraded understorey of naturalised alien (weed) herbs and grasses.
- Vegetation condition ranged from “Very Good” to “Completely Degraded” throughout the survey area, with the majority of the vegetation within the road reserve, and areas adjacent to the road reserve and within the survey area, recorded in “Completely Degraded” condition. The vegetation associated with the Conservation Category Wetlands (CCW) was generally floristically and structurally intact and was mapped variously as “Good”, “Good to Very Good” and “Very Good” condition.
 - In assessing the conservation significance of flora within the survey area, consideration is given to rarity, biodiversity, endemism and representativeness of the flora in the area. Outcomes were as follows
 - Rarity of the survey area flora was assessed as low.
 - Floristic diversity was assessed as moderate.
 - Banksia Woodland vegetation within the survey area is not considered to have adequate conservation value to be considered a Matter of National Environmental Significance (MNES), and protected under the EBPC Act.
 - The samphire-dominated saltmarsh vegetation within the survey area is considered to have adequate conservation value to be considered a MNES, and protected under the EBPC Act.
 - The remnant *Eucalyptus gomphocephala* (tuart) remnant trees mapped within the survey area are associated with a large mapped patch of tuart woodland they would likely be considered a high priority for protection and management.
 - The 74 remnant trees within the survey area with a diameter at breast height (DBH) greater than 500 millimetres (mm) are considered potential night roosting and breeding habitat for black cockatoo species and therefore conservation significant.
 - The survey area lies adjacent to, and in some places intersects with, environmental features identified in the desktop survey, most notably CCWs associated with Goegrup Lake and the Serpentine River on Gordon Road (Rd), and the CCW on Patterson Rd.

Conclusions

Much of the 15.7 km survey area alignment is in “Degraded” or worse condition with little or no intact native understorey. Sections of the survey area, however, are adjacent to, or intersect environmental features identified in the desktop survey such as mapped CCWs, records of the EPBC Act listed Subtropical and Temperate Coastal Saltmarsh ecological community and remnant trees associated with potential black cockatoo habitat.

1 Introduction

1.1 Project Background

RPS was commissioned by LandCorp to undertake a reconnaissance flora and vegetation survey, inclusive of a targeted black cockatoo tree assessment, of approximately 15.7 km of road reserve in the Parklands, Stake Hill and Nambelup localities (the survey area; Figure A).

The Peel Business Park project requires the delivery of trunk infrastructure (sewer, power and water services) between Gordon Rd, Parklands, in the City of Mandurah to Paterson Rd, Nambelup, in the Shire of Murray. The purpose of the reconnaissance survey is to investigate the flora and vegetation values and identify potential black cockatoo habitat within the proposed trunk infrastructure alignment and in the immediate vicinity. The findings of the reconnaissance survey will be used to inform the location of the trunk infrastructure and construction methods to be employed.

Much of the 15.7 km alignment (the eastern half) traverses cleared agricultural land where vegetation within the road reserves comprises scattered native trees over an understorey of weeds. However along Gordon Rd, Lakes Rd, Fowler Rd and Fishhawk Rd (the western portion of the alignment), native vegetation is generally more intact with areas of Tuart Woodland, Banksia Woodland, wetland-fringing *Eucalyptus rudis* subsp. *rudis* and *Melaleuca* spp. over sedgeland, either within or adjacent to the road reserve. This western portion of the alignment intersects a mapped Environmentally Sensitive Area (ESA) and Confirmed Roosting Habitat for black cockatoos (Western Australian Local Government Authority [WALGA] 2017).

1.2 Report Objectives

This reconnaissance flora and vegetation survey report presents the findings of the vegetation assessment and black cockatoo habitat tree assessment within the survey area. The assessment includes:

- desktop survey involving
 - a review of available literature, aerial imagery and spatial datasets to identify records of conservation significant flora, vegetation, and fauna
 - searches of the DBCA's Threatened and Priority Flora database (DEFL) and the Western Australian Herbarium's (WAH) Specimen and Ecological Communities database to identify records of significant flora and vegetation within the vicinity
- site visit to assess the vegetation type and condition within the 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 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 ESAs).

1.3 Legislative Context

State and Commonwealth legislation pertaining to the conservation of native flora, vegetation and fauna include (but are not limited to) the *Environmental Protection Act 1986* (EP Act), WC Act and EPBC Act.

Section 4A of the EP Act states that the following principles should be adhered to in order to protect the environment:

- 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.
- 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.
- Principle of the Conservation of Biological Diversity and Ecological Integrity – Conservation of biological diversity and ecological integrity should be a fundamental consideration.

1.3.1 Flora of Conservation Significance

TF are listed under listed if they are considered to be in danger of extinction, rare or otherwise in need of special protection. These taxa are legally protected under the WC Act. The removal of these taxa or impact to their surroundings is not permitted without prior ministerial approval. The DBCA maintains a list of PF species, which may be rare or threatened but for which there are either insufficient survey data to accurately determine their status, or which are rare but not currently considered to be threatened. A PF taxon is assigned to one of five priority categories. TF and PF categories are defined in Appendix A (Table A-1).

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

1.3.2 Vegetation of Conservation Significance

Floristic Community Types (FCTs) are based on a survey of the vegetation of the Swan Coastal Plain (SCP) from Seabird to Dunsborough, completed by Gibson *et al.* (1994). The purpose of the Gibson *et al.* (1994) survey was to determine the number and type of vegetation communities present across the southern SCP and to then assess how much of each remained and whether they were protected within reserves. There were 509 bounded 10 metres (m) × 10 m floristic sites surveyed. Each FCT defined as a result of Gibson *et al.* (1994) was given a Reservation Status and a Conservation Status (Appendix A, Tables A-3 and A-4).

Most of the SCP Threatened Ecological Communities (TECs) and/or Priority Ecological Communities (PECs) are defined by their FCT in Gibson *et al.* (1994).

TECs classified by DBCA in one of the TEC categories (Appendix A, Table A-5) have limited protection under State legislation. Other ecological communities are classified by DBCA in the category of PEC pending further survey and/or definition. PECs are not currently protected. Some TECs are also listed under the EPBC Act.

1.3.3 Revised Draft Referral Guideline for Black Cockatoos

The Revised Draft Referral Guideline for the Three Threatened Black Cockatoo Species (Department of the Environment and Energy [DEE] 2017) provides updated information and requirements on habitat quality, survey expectations, standards for mitigating impacts and significant impacts for black cockatoo species.

In addition to the information contained in the earlier 2012 guidance, the revised draft referral guideline identifies that the following actions are likely to result in significant impacts to these species:



1. Clearing of known nesting tree² or breeding habitat.
2. Complete clearance of roost sites that are close to high quality foraging habitat and water resources in non-breeding areas.
3. Clearing very high to high quality foraging habitat.

² Any existing tree in which breeding has been recorded or suspected.

2 Methods

The reconnaissance flora and vegetation survey 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 survey area was traversed to compile a flora inventory, and to search for conservation significant taxa that were identified in the desktop study as potentially occurring there.

2.1 Desktop Assessment

The main objective of the desktop assessment was to determine any environmental constraints that occur, or are likely to occur within the survey area or vicinity, and so assist in identifying conservation significant features during the field survey. Constraints included:

- ESAs (Declared by the Minister under section 51B of the EP Act)
- MNES (Protected under the EPBC Act)
- flora taxa and vegetation communities of conservation significance.

A review was undertaken of the flora, vegetation and other environmental data available for the survey area and surrounds which incorporated the following:

- regional historical climate, geological, soil and landform data
- regional vegetation mapping and datasets.

In addition, searches of the following State and Commonwealth databases were undertaken to identify constraints that may occur in the vicinity of the survey area:

- DBCA Flora and Ecological Communities databases
- NatureMap database – conservation significant flora and vegetation
- Protected Matters Search Tool (DEE) - MNES
- Landgate WAATLAS Shared Land Information Platform portal – Geomorphic Wetlands of the Swan Coastal Plain.

The database searches were conducted within a 5 km radial area of the alignment for the DBCA flora database search and a 3 km radial area of the alignment for the DBCA ecological communities database search.

2.2 Field Survey

2.2.1 Reconnaissance Flora and Vegetation Assessment

The reconnaissance survey was carried out by qualified RPS Botanist Caroline Gill (under Licence for Scientific or Other Prescribed Purposes No. SL012170) between 26 and 27 September 2017 in accordance with the methods prescribed in the EPA's Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

The field survey involved traversing the survey area in a vehicle and on foot to:

- Verify the data from the desktop survey at a local scale.
- Characterise the vegetation within the road reserve.
- Record mature remnant eucalyptus and corymbia trees within the road reserve 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 section 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 road reserve
- description of the remnant vegetation type (if any) and condition (adapted from Keighery 1994 and Trudgen 1988) within the road reserve
- 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 survey area.

2.2.2 Significant Tree Inventory

The Significant Tree Inventory was undertaken concurrently with the reconnaissance flora and vegetation assessment. The survey methods were informed by the Revised Draft Referral Guideline for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo. (DEE 2017a).

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

2.3 Data Analysis

2.3.1 Flora and Taxonomy

A vascular flora inventory was compiled from flora species recorded and collected within the road reserve survey area. Flora specimens were either identified in the field, or collected and identified using the resources (keys, publications and databases) of the WAH. Nomenclature was aligned with the current names in the DPaw WAH public interface database (WAH 2017).

2.3.2 Vegetation Mapping

Mapping was conducted using a combination of publicly available datasets (Hedde vegetation complexes, Geomorphic Wetlands of the Swan Coastal Plain, ESAs and DBCA Conservation Estates), aerial photo-interpretation, and on-ground validation.

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).

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-7).

3 Existing Information

3.1 Climate

The survey area is located on the SCP, which experiences a Mediterranean climate characterised by hot, dry summers and cool, wet winters, with an average maximum summer temperature of 30.5 °C and an average minimum winter temperature of 7 °C (Bureau of Meteorology 2017).

3.2 Geology and Soils

The SCP consists of five major geomorphological elements as defined by McArthur and Bettanay (1960). From west to east these are the Quindalup Dunes, Spearwood Dunes, Bassendean Dunes, Pinjarra Plain; and Ridge Hill Shelf. These systems lie roughly parallel to the coast and are distinguished by their geology, topography, vegetation and soils. The survey area traverses the Spearwood Dune System to the west of Goegrup Lake, and Bassendean Dunes and Pinjarra Plain east of Goegrup Lake. The Spearwood Dune System consists of slightly calcareous aeolian sand remnant from leaching of the underlying Pleistocene Tamala limestone. The Bassendean Dune System is described as being of generally low relief, often with broad swales or relatively flat sand sheets between the low dunes. Soils are predominantly deep grey leached quartz sands. The Pinjarra Plain is a piedmont and valley-flat alluvial plain consisting predominantly of clayey alluvium that has been transported by rivers and streams from the Darling and Dandaragan Plateaus.

3.3 Interim Biogeographical Regionalisation of Australia

The Interim Biogeographic Regionalisation for Australia (IBRA) divides Australia into bioregions based on major biological and geographical/geological attributes (Thackway and Cresswell 1995). The IBRA currently recognises 89 bioregions and 419 biological subregions in Australia. The survey area lies within the Perth (SWA02) subregion of the SCP bioregion.

The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats and coastal limestone and the vegetation is described by Mitchell *et al.* (2002) as Heath and/or Tuart woodlands on limestone, Banksia and Jarrah-Banksia woodlands on Quaternary marine dunes of various ages and Marri on colluvial and alluvials.

3.4 Beard Vegetation Mapping

The survey area is situated in South West Botanical Province and the Darling Botanical District (Beard 1990). This region typically consists of forest country with related woodlands and is divided into four botanic subdistricts. The survey area is located within the SCP Subregion in the Drummond Botanical Subdistrict, which consists mainly of the following vegetation communities according to Beard (1990):

- *Banksia* Low Woodland on leached sands and *Melaleuca* Swamps in poorly drained areas
- woodland of tuart (*Eucalyptus gomphocephala*); and jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) on less leached soils.

Vegetation mapping of the region was completed by Beard (1981) at a scale of 1:250,000. Shepherd *et al.* (2002) reassessed Beard's existing mapping dividing some of the broader vegetation units into smaller units.

The vegetation within the survey area is mapped as:

- Vegetation Association 1001 – Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina

- Vegetation Association 1000 – Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; teatree (*Melaleuca* spp.)
- Vegetation Association 968 – Medium woodland; jarrah, marri and wandoo.

The remnant extent and reservation status of these vegetation associations within the IBRA Subregion is presented in Table 1.

Table 1 Pre-European Extent, Current Extent and Reservation Status within the Perth IBRA Subregion of the Swan Coastal Plain (SWA02) of the Beard Vegetation Associations Represented within the Survey Area

| Vegetation Association | Pre-European Extent (ha) | Current Extent (ha) | Extent Remaining (%) | Extent Remaining Protected for Conservation (%) |
|------------------------|--------------------------|---------------------|----------------------|---|
| 968 | 136,188 | 8,967 | 6.5 | 1.19 |
| 1000 | 94,175 | 23,670 | 25.13 | 2.06 |
| 1001 | 57,410 | 12,792 | 22.28 | 2.80 |

Source: Government of Western Australia 2016

3.5 Heddle Vegetation Complexes

Vegetation complexes are vegetation associations that are characteristic of various combinations of soil, landform and rainfall. A large part of the SCP has been mapped for vegetation complexes by Heddle *et al.* (1980). These complexes are closely related to the SCP Dune Systems (Quindalup, Spearwood, Bassendean, and Pinjarra Plain) and north to south variations in climate and rainfall.

Heddle *et al.* (1980) mapped the vegetation within the survey area (west to east) as:

- Yoongarillup Complex: Woodland to tall woodland of *E. gomphocephala* with *Agonis flexuosa* in the second storey. Less consistently an open forest of *E. gomphocephala* - *E. marginata* - *E. calophylla*
- Herdsman Complex: Sedgelands and fringing Woodlands
- Bassendean Complex Central and South: Vegetation ranges from woodland of *E. marginata* – *C. fraserana* – *Banksia* spp. to low woodland of *Melaleuca* spp. and sedgelands on the moister sites.

The remnant extent and reservation status of these vegetation complexes on the SCP is presented in Table 2. Vegetation complex mapping is presented in Figure B.

Table 2 Pre-European Extent, 2013 Extent and Reservation Status on the Swan Coastal Plain of the Heddle Vegetation Complexes Represented within the Survey Area

| Vegetation Complex | Pre-European Extent (ha) | 2013 Extent (ha) | Extent Remaining (%) | Extent Remaining with Formal Protection (%) |
|------------------------------|--------------------------|------------------|----------------------|---|
| Yoongarillup | 26,982 | 10,448 | 38.72 | 15.41 |
| Herdsman | 8,309 | 2,877 | 34.63 | 21.41 |
| Bassendean Central and South | 87,392 | 24,206 | 27.70 | 2.57 |

Source: Perth Biodiversity Program 2013

4 Results

4.1 Desktop Assessment

4.1.1 Threatened and Priority Flora Database Search Results

Searches of the DBCA Threatened and Priority Flora database and the WAH Specimen database were undertaken within a 5 km radius of the centre of the survey area.

A total of 22 species of conservation significance were found to occur within the 5 km search radius comprising six Threatened flora species, one Priority 1, two Priority 2, five Priority 3 and eight flora taxa (Table 3). Table 3 additionally identifies the listed species protection status under the EPBC Act.

The listed species were ranked in terms of their “likelihood of occurrence” within the survey area based on proximity of known records and habitat preference. Thirteen species listed in Table 3 were assessed as likely or possibly occurring within, or in close proximity to, the survey area based primarily on habitat preferences.

Conservation significant species records in the vicinity of the survey area are shown in Figure B.

Table 3 Threatened and Priority Flora Recorded within a 5 km Radius of the Survey Area

| Species | WC Act Status* | EPBC Act Status† | Likelihood of Occurrence within the Survey Area |
|---|----------------|------------------|---|
| <i>Caladenia huegelii</i> | T | CR | Unlikely |
| <i>Diuris drummondii</i> | T | VU | Unlikely |
| <i>Drakaea elastica</i> | T | CR | Likely/Possible |
| <i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) | T | CR | Possible |
| <i>Synaphea</i> sp. Pinjarra (R. Davis 6578) | T | CR | Unlikely |
| <i>Tetraria australiensis</i> | T | VU | Unlikely |
| <i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026) | P1 | - | Possible |
| <i>Acacia benthamii</i> | P2 | - | Possible |
| <i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> | P2 | - | Possible |
| <i>Beyeria cinerea</i> subsp. <i>cinerea</i> | P3 | - | Unlikely |
| <i>Boronia capitata</i> subsp. <i>gracilis</i> | P3 | - | Possible |
| <i>Cyathochaeta teretifolia</i> | P3 | - | Possible |
| <i>Dillwynia dillwynioides</i> | P3 | - | Likely/Possible |
| <i>Pimelea calcicola</i> | P3 | - | Unlikely |
| <i>Caladenia speciosa</i> | P4 | - | Possible |
| <i>Drosera occidentalis</i> subsp. <i>occidentalis</i> | P4 | - | Unlikely |
| <i>Eucalyptus rudis</i> subsp. <i>cratyantha</i> | P4 | - | Likely/Possible |

| Species | WC Act Status* | EPBC Act Status† | Likelihood of Occurrence within the Survey Area |
|---------------------------------|----------------|------------------|---|
| <i>Jacksonia sericea</i> | P4 | - | Unlikely |
| <i>Microtis quadrata</i> | P4 | - | Unlikely |
| <i>Ornduffia submersa</i> | P4 | - | Possible |
| <i>Parsonsia diaphanophleba</i> | P4 | - | Possible |
| <i>Rumex drummondii</i> | P4 | - | Possible |

*WC Act

† EPBC Act.

4.1.2 Ecological Communities Database Search Results

A search of the DBCA's Ecological Communities database was undertaken for TECs and PECs with records within a 3 km radius of the survey area.

The database searches returned 382 records of two EPBC listed TECs, Banksia Woodlands of the Swan Coastal Plain (371 records); and Subtropical and Temperate Coastal Saltmarsh ecological communities (seven records), one record of a Priority 3 PEC, and two records of a P2 PEC within a 3 km radius of the survey area. It should be noted that a number of FCTs, defined as part of the Floristic Survey of the SCP (Gibson *et al.* 1994), are included within the Banksia Woodlands ecological community. Some of these sub-communities within the Banksia Woodlands are highly restricted and listed as TECs or PECs in Western Australia. These have higher significance than sub-types known to be more common and should be provided specific or additional protection, particularly where assigned a higher threat rank than the Banksia Woodlands listing (DEE 2016). In this case FCTs 22 and 21c, listed as PECs are considered components of the EPBC listed Banksia Woodlands of the Swan Coastal Plain TEC.

Conservation significant ecological community records in the vicinity of the survey area are shown in Figure B. A description of these ecological communities is presented in Table 4. The survey area intersects the buffers of two of these EPBC listed TECs, Banksia Woodlands of the Swan Coastal Plain ecological community and Subtropical and Temperate Coastal Saltmarsh ecological community.

Table 4 TEC / PEC Records Within a 3 km Radius of the Survey Area

| TEC / PEC | Description | WC Act Status* | EPBC Act Status† |
|--|---|----------------|------------------|
| Banksia Woodlands of the Swan Coastal Plain ecological community | The ecological community is a woodland associated with the Swan Coastal Plain of south-west Western Australia. A key diagnostic feature is a prominent tree layer of Banksia, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy. The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs. The ecological community is characterised by a high endemism and considerable localised variation in species composition across its range (DEE 2016). | - | Endangered |

| TEC / PEC | Description | WC Act Status* | EPBC Act Status† |
|---|---|----------------|------------------|
| Subtropical and Temperate Coastal Saltmarsh ecological community | The Subtropical and Temperate Coastal Saltmarsh (hereafter Coastal Saltmarsh) ecological community occurs within a relatively narrow margin of the Australian coastline, within the subtropical and temperate climatic zones south of the South-east Queensland IBRA bioregion boundary at 23°37' latitude along the east coast and south of (and including) Shark Bay at 26° on the west coast. The community consists mainly of salt-tolerant vegetation (halophytes) including grasses, herbs, reeds, sedges and shrubs. Succulent herbs and grasses generally dominate and vegetation is generally <0.5 m tall with the exception of some reeds and sedges. Many species of non-vascular plants are also found in saltmarsh, including epiphytic algae, diatoms and cyanobacterial mats (DEE 2013). | Priority 3 | Vulnerable |
| FCT 22 – <i>Banksia ilicifolia</i> woodlands (A component of the Endangered Banksia Woodlands of the Swan Coastal Plain EPBC listed TEC) | Low lying sites generally consisting of <i>Banksia ilicifolia</i> – <i>B. attenuata</i> woodlands, but <i>Melaleuca preissiana</i> woodlands and scrubs are also recorded. Occurs on Bassendean and Spearwood systems in the central Swan Coastal Plain north of Rockingham. Typically has very open understorey, and sites are likely to be seasonally waterlogged. | Priority 3 | Endangered |
| FCT 21c – Low-lying <i>Banksia attenuata</i> woodlands or shrublands (A component of the Endangered Banksia Woodlands of the Swan Coastal Plain EPBC listed TEC) | This type occurs sporadically between Gingin and Bunbury, and is largely restricted to the Bassendean system. The type tends to occupy lower lying wetter sites and is variously dominated by <i>Melaleuca preissiana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> , <i>Regelia ciliata</i> , <i>Eucalyptus marginata</i> or <i>Corymbia calophylla</i> . Structurally, this community type may be 23 either a woodland or occasionally shrubland. | Priority 3 | Endangered |

*WC Act
†EPBC Act

4.1.3 Geomorphic Wetlands of the Swan Coastal Plain

DBCA has developed a dataset which maps the location, boundaries and management category of wetlands on the SCP. A management category (Conservation, Resource Enhancement and Multiple Use in order of conservation priority) was assigned to each wetland to guide their management and protection.

The survey area intersects the mapped extents of three CCWs and one Resource Enhancement Wetland (REW) (Figure B; Table 5). The definitions and management objectives for the three wetland management categories see Appendix A, Table A-8).

Table 5 Geomorphic Wetlands of the SCP in the Vicinity of the Survey Area

| ID | Management Category | Location | Figure No. |
|-------|----------------------|------------------------------------|------------|
| 3941 | Conservation | Survey area crosses river | Figure B-3 |
| 15239 | Conservation | Survey area abuts wetland boundary | Figure B-4 |
| 14608 | Conservation | Survey area intersects wetland | Figure B-9 |
| 4832 | Conservation | Survey area intersects wetland | Figure B-9 |
| 4585 | Resource Enhancement | Survey area abuts wetland boundary | Figure B-7 |

4.1.4 Environmentally Sensitive Areas

ESAs are declared by the Minister for Environment under section 51B of the EP Act and protected under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Regulations) in an effort to prevent the incremental degradation of important environmental values such as TF, TECs or conservation significant wetlands (CCWs and REWs).

Exemptions for the clearing of native vegetation under the Regulations do not apply in ESAs. Clearing permits are generally required to support the clearing of native vegetation within ESAs.

The ESAs intersecting the survey area are presented in Table 6 and shown in Figure B.

Table 6 ESAs Intersecting the Survey Area

| Environmentally Sensitive Areas | Figure No. |
|--|----------------------------|
| Subtropical and Temperate Coastal Saltmarsh – EPBC-listed TEC buffer Conservation Category Wetland UFI 3941 – Serpentine River and buffer | Figure B-3 |
| Conservation Category Wetland UFI 15239 – Serpentine River and buffer | Figure B-4 |
| Conservation Category Wetland UFI 4832 and 14608 and buffer | Figure B-9 and Figure B-10 |

4.1.5 DBCA Managed Lands

The survey area adjoins one A Class Nature Reserve (Goegrup Lake Nature Reserve) on Gordon Rd, Parklands (Figure B-2).

4.2 Field Survey

4.2.1 Flora

4.2.1.1 Flora Statistics

A total of 69 plant taxa were recorded for the current survey 14 of which 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 for the survey area 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 54 genera from 25 families. The families and genera represented by the greatest number of species are presented in Table 7 and Table 8.

Table 7 Dominant Families within the Survey Area

| Family | Common Name | No. of Taxa |
|---------------|--------------------|--------------------|
| MYRTACEAE | Myrtles | 14 |
| POACEAE | Grasses | 7 |
| PROTEACEAE | Proteas | 6 |
| CYPERACEAE | Sedges | 6 |
| FABACEAE | Peas | 6 |

Table 8 Dominant Genera within the Survey Area

| Genus | Common Name | No. of Taxa |
|---------------------|-------------|-------------|
| Banksia | Banksias | 4 |
| Eucalyptus/Corymbia | Eucalypts | 4 |
| Jacksonia | | 3 |

4.2.1.2 Flora of Conservation Significance

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

No PF species as currently listed by the DBCA were recorded within the survey area.

4.2.1.3 Introduced Flora (Weeds)

Fourteen introduced flora taxa were recorded from the survey area representing 20% of the total flora taxa recorded. Naturalised bushland weeds were recorded at high densities throughout all of the survey area except for areas mapped in “Very Good” condition where disturbance by weeds was low.

The Western Australian Organism List (WAOL) database was searched to determine the legal status of each weed recorded, and any control requirements. Of the 14 weed species recorded, none were determined to be Declared Pests under the BAM Act nor were they classified as WONS.

4.2.2 Vegetation

4.2.2.1 Vegetation Units

For the current survey eleven upland and dampland/wetland vegetation units were described and mapped for all of the remnant vegetation within the survey area. It should be noted that most of these units represented highly modified vegetation in degraded condition no longer representative of the original floristic communities that would have occurred there. The only units representing structurally and floristically intact vegetation communities were those associated with the Serpentine River and Goegrup Lake foreshores, and to a lesser extent the CCW wetland (UFI 4832) on Patterson Rd, Nambelup (Flooded Gum Woodland; *Casuarina obesa* Woodland; Samphire-dominated Saltmarsh; and Melaleuca Closed Forest).

A description of these 11 vegetation units follows. Vegetation Unit mapping is presented in Figure C at the rear of the report.

4.2.2.1.1 Remnant Tuart (Upland)

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 Gordon and Lakes Rds within the western portion of the survey area. Remnant Tuart trees within the road reserve are shown in Figures C-1; C-2; and C-3 and Plate 1. The trees recorded along Gordon Rd belong to a medium-sized patch (>10 ha ≤ 100 ha) as defined by DEE (2017b) of mapped Tuart Woodland (WALGA 2017).

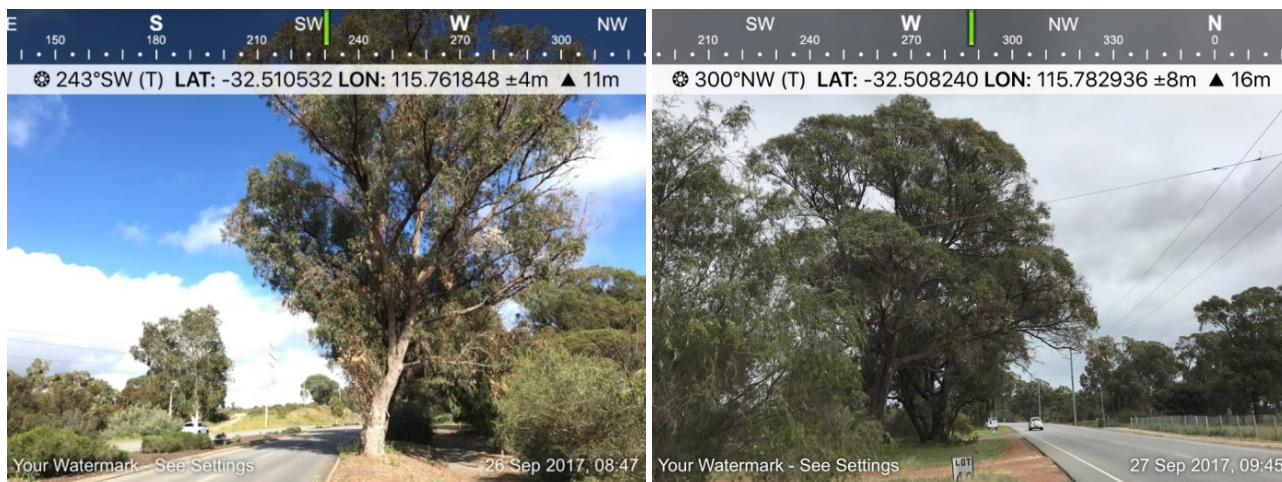


Plate 1 Remnant *Eucalyptus gomphocephala* (Tuart), Gordon Rd Reserve

4.2.2.1.2 Planted Trees and Shrubs (Upland)

Planted (non-endemic) eucalypts over emergent and planted native shrubs occurred within the southern road reserve of Gordon Rd (Figure C1 and Plate 2), and are the product of historical road-side landscaping.

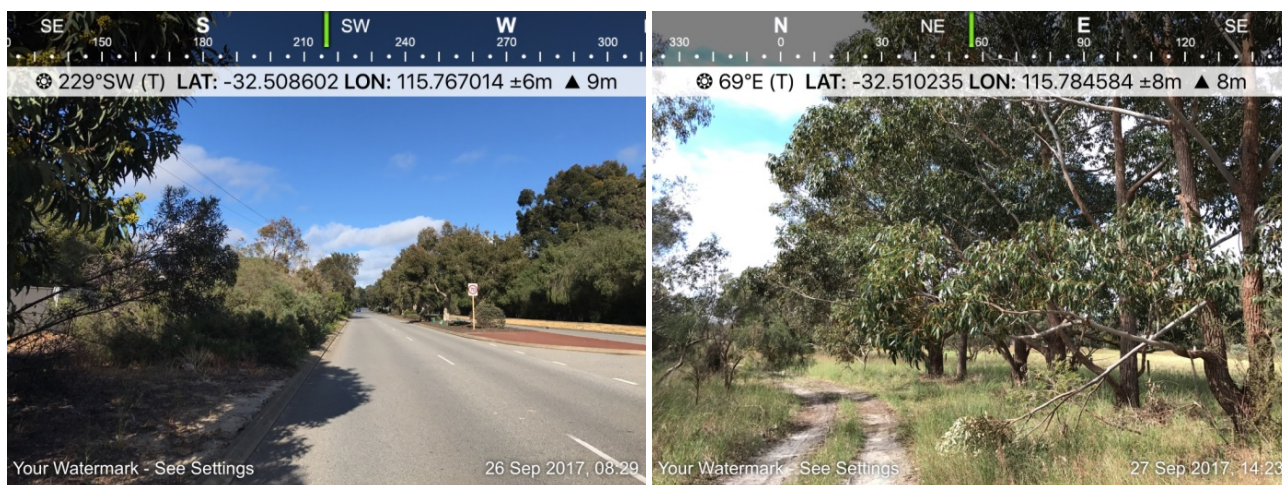


Plate 2 Planted Trees and Shrubs, Gordon Rd and Lakes Rd

4.2.2.1.3 Remnant Marri (Upland/Dampland)

Corymbia calophylla (Marri) remnant trees over a degraded understorey of naturalised alien (weed) herbs and grasses occurred at numerous locations along the alignment (Figure C3, C4, C5, C9, and C10 and Plate 3) within and adjacent to the road reserve. These trees were mature and generally in excellent health except for several dead individuals recorded on Patterson Rd.



Plate 3 Remnant *Corymbia calophylla* (Marri), Lakes Rd

4.2.2.1.4 Flooded Gum Woodland (Dampland)

Eucalyptus rudis subsp. *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. This vegetation was in “Good” to “Very Good” condition and recorded on Lakes Rd in close proximity to the Serpentine River (Figure B-3 and Plate 4). This vegetation comprised remnant and recovering (after clearing) vegetation with an altered structure but floristically intact.



Plate 4 *Eucalyptus rudis* subsp. *rudis* (Flooded Gum) Woodland, Serpentine River, Lakes Rd

4.2.2.1.5 Flooded Gum Forest over Sedgeland (Dampland)

Eucalyptus rudis subsp. *rudis* and *Melaleuca raphiophylla* Low Open to Closed Forest over *Baumea juncea* and *Lepidosperma* sp. Closed Sedgeland (Figure B-3 and Plate 5). This vegetation interfaced the Flooded Gum Woodland upslope (described above) and the *Casuarina obesa* Closed Forest. It was intact structurally and floristically and ranged in condition from “Very Good” to “Good” depending on the disturbance level from weeds.



Plate 5 *Eucalyptus rudis* subsp. *rudis* (Flooded Gum) Forest over Sedgeland, Serpentine River, Lakes Rd

4.2.2.1.6 *Casuarina obesa* Forest (Wetland)

Casuarina obesa Closed Forest over *Lepidosperma* sp., *Baumea juncea*, *Gahnia trifida* and *Juncus kraussii* Closed Sedgeland (Figure B-3 and Plate 6). This vegetation fringed the saltmarsh and extended along the river foreshore on both sides of the Serpentine River.



Plate 6 *Casuarina obesa* Closed Forest over Closed Sedgeland, Serpentine River, Lakes Rd

4.2.2.1.7 Samphire-dominated Saltmarsh (Wetland)

Tecticornia ?halocnemoides, *T. indica* subsp. *bidens* and *Cotula coronopifolia* Closed Herbland. This saltmarsh vegetation is fringed by *Casuarina obesa* Closed Forest and extends from the foreshore of the Serpentine River to the shore of Goegrup Lake to the west (Figure B-3 and Plate 7). This vegetation is synonymous with the conservation significant Subtropical and Temperate Coastal Saltmarsh ecological community which is listed as Vulnerable under the EPBC Act and Priority 3 by the Western Australian state government. The extent of this ecological community record buffer (retrieved from the DBCA database search) is presented in Figure B-3.



Plate 7 Samphire-dominated Saltmarsh, Serpentine River, Lakes Rd

4.2.2.1.8 Banksia Woodland (Upland)

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 (Plate 8). This vegetation was mapped within the road reserve along Fowler and Fishhawk Rds (Figures C-3 and C-4), with condition generally ranging from “Degraded” to “Good” throughout its extent (Figures D-3 and D-4).



Plate 8 Banksia Woodland, Fowler and Fishhawk Rds

4.2.2.1.9 Remnant *Melaleuca preissiana* (Dampland/Wetland)

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



Plate 9 Remnant *Melaleuca preissiana* Trees, Lakes, Gull and Patterson Rds

4.2.2.1.10 Melaleuca Closed Forest (Wetland)

Eucalyptus rudis subsp. *rudis* (Flooded Gum) and *Melaleuca raphiophylla* Closed Forest over *Taxandria linearifolia* and *Astartea scoparia* Open Shrubland over *Juncus pallidus*, *Baumea juncea*, *Lepidosperma* sp. and **Watsonia* Sp. Closed Sedgeland/Herbland (Figures C-9 and C-10; Plate 10). This vegetation unit was mapped for the CCW UFI 4832 on Patterson Rd and was in generally “Good” condition based on the high weed load within the understorey.



Plate 10 Melaleuca Closed Forest, CCW UFI 4832, Patterson Rd

4.2.2.1.11 Remnant Mixed Trees (Upland and Dampland)

Scattered *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Allocasuarina fraseriana* (Sheoak), *Banksia* spp. and *Melaleuca preissiana* trees over a degraded understorey of naturalised alien (weed) herbs and grasses (Plate 11). This vegetation was mapped for sections of Patterson Rd (Figure C-10 to C-12).



Plate 11 Remnant Mixed Trees, Patterson Rd

4.2.2.1.12 Scrub (Dampland)

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). This vegetation was mapped for sections of Patterson Rd (Figure C-13 and C-14).

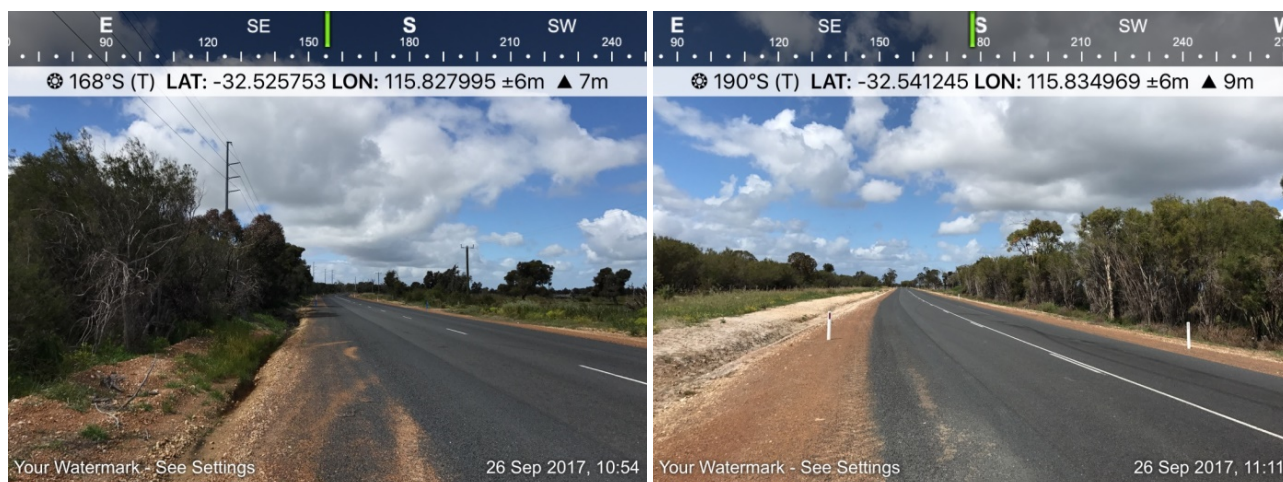


Plate 12 *Kunzea glabrescens* / *Adenanthos cygnorum*/*Jacksonia furcellata* Scrub, Patterson Rd

4.2.2.2 Vegetation Condition

Vegetation condition ranged from “Very Good” to “Completely Degraded” throughout the survey area, with the majority of the vegetation within the road reserve, and areas adjacent to the road reserve and within the survey area, recorded in “Completely Degraded” condition. The vegetation associated with the CCW wetlands (Serpentine River and CCW UFI 4832 on Patterson Rd, Nambeelup) was generally floristically and structurally intact and was mapped variously as “Good”, “Good to Very Good” and “Very Good” condition, apart from these small intact areas however, most of the vegetation within the survey area had a generally high weed load. Vegetation condition mapping is presented in Figures D-1 to D-16 at the rear of the report.

4.2.3 Significant Trees

A total of 74 trees with a DBH greater than 500 mm within the survey area were recorded (Appendix C; Figures C-1 to C-16). The number of trees recorded for each species is presented in Table 9.

Table 9 Tree Species Recorded with a DBH >500 mm

| Species | Number recorded |
|--|-----------------|
| <i>Eucalyptus gomphocephala</i> (tuart) | 23 |
| <i>Corymbia calophylla</i> (marri) | 18 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> (flooded gum) | 20 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (jarrah) | 9 |
| Planted non-endemic eucalypt | 4 |

Eucalyptus gomphocephala (tuart), *Corymbia calophylla* (marri), *Eucalyptus rudis* subsp. *rudis* (flooded gum), and *Eucalyptus marginata* (jarrah) are recognised by the DEE (2017a) to provide potential breeding and night-roosting habitat for black cockatoos.

5 Discussion

5.1 Floristic Diversity and Representation

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

5.1.1 Rarity

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

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

No PF species as currently listed by DBCA were recorded within the survey area.

The rarity of the survey area flora was assessed as low.

5.1.2 Biodiversity

A total of fifty-six native taxa were recorded for the survey area.

Floristic diversity was assessed as moderate.

5.2 Vegetation Conservation Significance

5.2.1 Bioregional Representation

On a regional scale the survey area is mapped as vegetation association Vegetation Associations 968; 1000; and 1001 (Shepherd *et al.* 2002) and Bassendean Complex Central and South; Herdsman Complex; and Yoongarillup Complex (Hedde *et al.* 1980). Of these three associations the one with the least remaining is Vegetation Association 968 (Medium woodland; jarrah, marri & wandoo) which has only 6.5% (8,967 ha) of its original (pre-European) extent remaining and only 1.2% protected for conservation (Government of Western Australia 2016). Vegetation Association 968 is mapped for a patch of remnant vegetation adjacent to a section of road reserve on Patterson Rd (Figure D-12 and D-13), however, the intact portions of this patch occur outside the survey area to the east of the road reserve. There are no records of this vegetation in "Good" or better condition within the survey area.

5.2.2 National Threatened Ecological Communities

The survey area intersects the buffers of two EPBC listed TECs, Banksia Woodlands of the Swan Coastal Plain ecological community and Subtropical and Temperate Coastal Saltmarsh ecological community.

A third potential nationally significant ecological community also intersects the survey area - the state listed Priority 3 PEC Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community has recently been nominated to the Australian Government to be considered for listing as threatened under the EPBC Act. The nomination was assessed by the independent Threatened Species Scientific Committee and the outcomes documented in the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain Ecological Community Draft Conservation Advice (DEE 2017b).

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

5.2.2.1 Banksia Woodlands of the Swan Coastal Plain Ecological Community

The Banksia Woodland vegetation mapped for the survey area potentially corresponds to the Banksia Woodlands of the Swan Coastal Plain Ecological Community TEC. However, in order to qualify as a legitimate TEC record the Banksia vegetation within the survey area must satisfy the key diagnostic characteristics for the ecological community as set out in the Conservation Advice for the species (DEE 2016) in terms of its location and physical environment, soils and landform, structure and composition. It must:

- occur within the Swan Coastal Plain IBRA bioregion
- occur on well-drained, low nutrient soils on deep Bassendean sands
- have a distinctive upper sclerophyllous layer of low trees, dominated by *Banksia attenuata* (and/or *B. ilicifolia*), have an emergent tree layer (*Eucalyptus marginata*), have an understorey of a layer of sclerophyllous shrubs of various heights and a herbaceous ground layer of cord rushes, sedges and perennial and ephemeral forbs, that sometimes includes grasses.

Additionally the vegetation must meet the minimum condition threshold of Good (adapted from Keighery 1994 and Trudgen 1988).

Finally, the vegetation must meet the minimum patch size thresholds (>0.5 ha in “Excellent” condition; >1 ha in “Very Good” condition; or 2 ha in “Good” condition).

Although the Banksia Woodland within the survey area meets the diagnostic characteristics for the TEC, it does not meet the minimum condition or patch size thresholds because there is less than 1 ha in “Good” condition within the survey area.

The Banksia Woodland vegetation within the survey area is not considered to be representative of the EPBC listed Banksia Woodlands of the Swan Coastal Plain Ecological Community TEC.

5.2.2.2 Subtropical and Temperate Coastal Saltmarsh Ecological Community

Subtropical and Temperate Coastal Saltmarsh ecological community, is listed by DBCA as a Priority 3 PEC, and listed under the EPBC Act as a Vulnerable TEC.

Documented occurrences of this community are located at Goegrup Lake and at the Lakes Rd crossing of the Serpentine River within the survey area (Figures B-1 to B-3). The samphire-dominated saltmarsh vegetation unit described and mapped for the current survey (Figure C-3; Section 4.2.2.1) was assessed against the key diagnostic characteristics set out in the Conservation Advice (Threatened Species Scientific Committee 2013) in order to determine if this vegetation constitutes a record of the TEC. As stated in the Conservation Advice, to qualify as a record of this TEC the vegetation must:

- occur south of 23° 37' S latitude - from the central Mackay coast on the east coast of Australia, southerly around to Shark Bay on the west coast of Australia (26° latitude), and including the Tasmanian coast and islands within the above range
- occur on the coastal margin, along estuaries and coastal embayments and on low wave energy coasts
- occur on places with at least some tidal connection, including rarely-inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences, but not areas receiving only aerosol spray
- occur on sandy or muddy substrate and may include coastal clay pans (and the like)
- consist of dense to patchy areas of characteristic coastal saltmarsh plant species (i.e. salt-tolerant herbs, succulent shrubs or grasses, that may also include bare sediment as part of the mosaic)
- have proportional cover by tree canopy such as mangroves, Melaleucas or Casuarinas not greater than 50%.

Additionally the vegetation must meet the minimum condition threshold of < 50% weed cover i.e. the saltmarsh must be dominated by native saltmarsh plants, and the patch must be greater in size than 0.1 ha.

The samphire-dominated saltmarsh vegetation within the survey area meets the diagnostic characteristics for the TEC, and the minimum condition and patch size thresholds.

The samphire-dominated saltmarsh vegetation within the survey area is considered to have adequate conservation value to be considered a MNES, and protected under the EBPC Act.

5.2.2.3 Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain Ecological Community

The remnant *Eucalyptus gomphocephala* (Tuart) remnant trees mapped for the current survey within the road reserve along sections of Gordon and Lakes Rds in the western portion of the survey area were assessed against the key diagnostic characteristics set out in the Conservation Advice (DEE 2017b) in order to determine if this vegetation constitutes a record of the TEC. As stated in the Conservation Advice, to qualify as a record of this TEC the vegetation must:

- 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, or below the Darling and Whicher escarpments where they define a plateau to the east of the Swan Coastal Plain
- 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 tuart (*Eucalyptus gomphocephala*)
- have established tuart trees present, meeting the patch definition.

The remnant *Eucalyptus gomphocephala* (Tuart) remnant trees mapped within the road reserve along Gordon and Lakes Rds have not retained an intact native understorey and are in “Degraded” condition however, because they are associated with a large mapped patch of Tuart Woodland (WALGA 2017) they would likely be considered a high priority for protection and management.

5.2.3 Western Australian Threatened and Priority Ecological Communities

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

The three EPBC-listed TECs discussed in Section 5.2.2 are listed at a state level as PECs.

5.3 Fauna Habitat

The 74 remnant trees within the survey area with a DBH greater than 500 mm are considered potential night roosting and breeding habitat for black cockatoos and therefore conservation significant.

5.4 Other Conservation Significant Features

The survey area lies adjacent to, and in some places intersects with, environmental features identified in the desktop survey such as CCWs and ESAs. Most notably these include the CCWs associated with Goegrup Lake and the Serpentine River on Gordon Rd, and the CCW on Patterson Rd.

6 Conclusions

Much of the 15.7 km survey area alignment is in Degraded or Completely Degraded condition with little or no intact native understorey. Sections of the survey area, however, are adjacent to, or intersect environmental features identified in the desktop survey such as remnant tuart trees associated with Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community which is listed as Endangered and protected under the EPBC Act, records of Subtropical and Temperate Coastal Saltmarsh ecological community which is listed as Vulnerable and protected under the EPBC Act, Conservation Category Wetlands, and potential breeding and roosting habitat trees for Endangered Fauna species (black cockatoos)

No conservation significant flora (TF or PF), identified in the database searches as occurring within a 5 km radius of the alignment, were recorded. Given that most of the survey area lacks an intact native understorey, and/or vegetation in “Good” or better condition (deemed suitable habitat) it is not likely that any remnant vegetation within the road reserve is necessary for the continued existence of TF or PF.

7 References

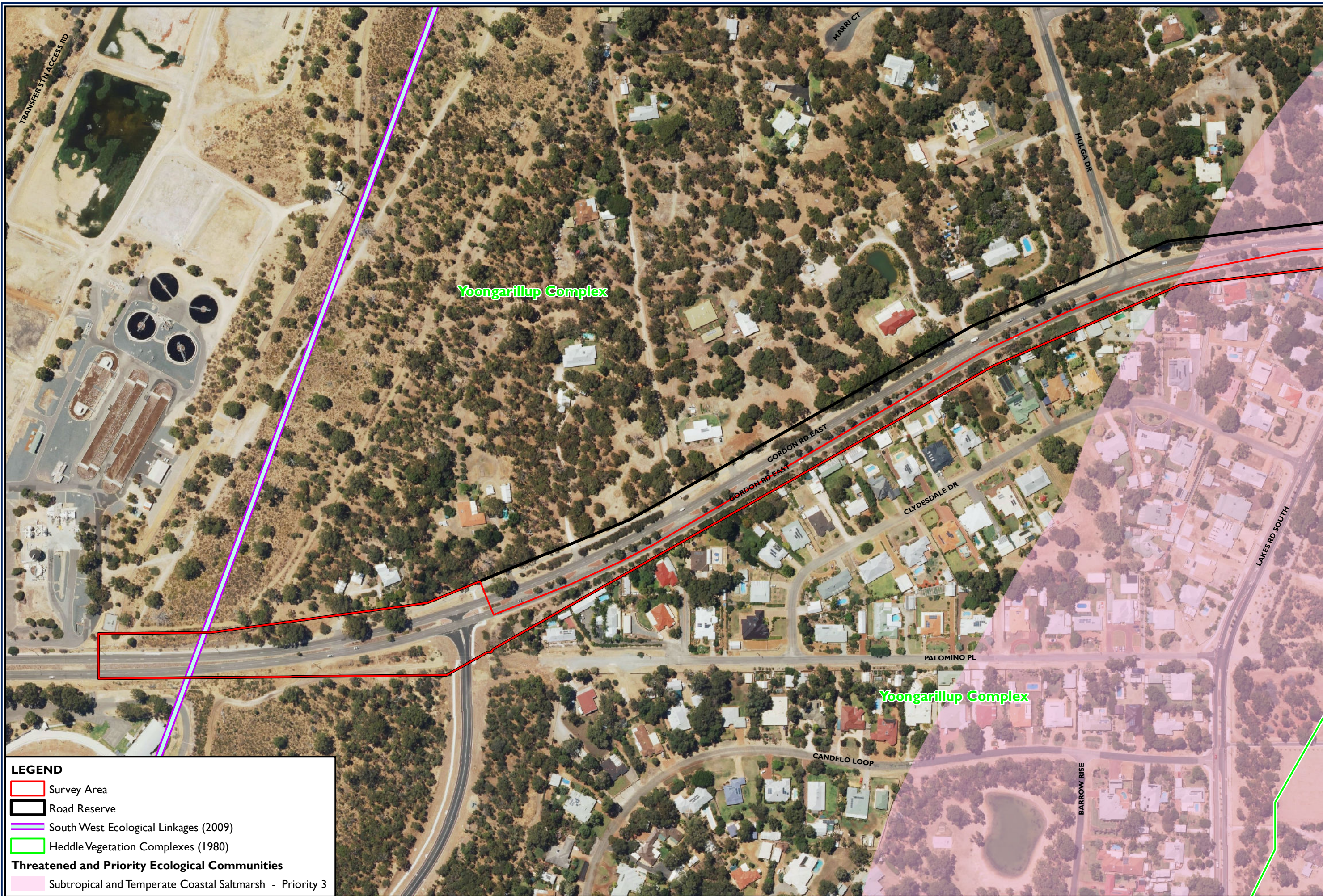
- Beard, J.S. 1981. Vegetation Survey of WA: the Vegetation of the Perth Area WA, map and explanatory memoir 1:250,000 series, Applecross, Vegmap Publications.
- Beard, J.S. 1990. Plant Life of WA, Perth, Kangaroo Press
- Bureau of Meteorology. 2017. Climate Data Online, retrieved October 2017, from <http://www.bom.gov.au/climate/data/>.
- Department of the Environment and Energy. 2013. Commonwealth Conservation Advice for Subtropical and Temperate Coastal Saltmarsh. Canberra: Department of Sustainability, Environment, Water, Population and Communities. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/118-conservation-advice.pdf>.
- Department of the Environment and Energy. 2016. Environmental Protection and Biodiversity Conservation Act 1999 Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the SCP ecological community, retrieved October 2017, from <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/131-conservation-advice.pdf>
- Department of the Environment and Energy. 2017a. Revised Draft Referral Guideline 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 banksia naso*. Canberra: Australian Capital Territory.
- Department of the Environment and Energy. 2017b. Tuart (*Eucalyptus Gomphocephala*) Woodlands And Forests Of The Swan Coastal Plain Ecological Community Draft Conservation Advice Including Draft Listing Advice, Canberra: Australian Capital Territory
- Department of Parks and Wildlife. 2008. Definitions, Categories and Criteria for Threatened and Priority Ecological Communities and Priority Ecological Communities List for Western Australia. Department of Environment and Conservation (Threatened Communities Branch), Kensington.
- English, V., Blyth, J. 1997. Identifying and conserving threatened ecological communities in the South West Botanical Province (ANCA National Reserves System Cooperative Program No. N702). Department of Conservation and Land Management, Wanneroo.
- Environmental Protection Authority. 2004. Environmental Protection of Wetlands – Position Statement No. 4, Government of Western Australia, November 2004.
- Environmental Protection Authority. 2016, Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, Environmental Protection Authority, WA.
- Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. 1994. A Floristic Survey of the Southern Swan Coastal Plain. Unpublished Report for the Australian Heritage Commission prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia (Inc.).

- Government of Western Australia. 2016. 2016 State-wide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report), Current as of October 2016, Perth WA, Department of Biodiversity, Conservation and Attractions, retrieved October 2017, from <https://www2.landgate.wa.gov.au/web/guest/downloaderhttps://www2.landgate.wa.gov.au/web/guest/downloader>
- Government of Western Australia. 2017. 2016 South West Vegetation Complex Statistics, Current as of December 2016, Perth WA, retrieved October 2017, from <https://catalogue.data.wa.gov.au/dataset/dpaw/resource/688c6f7c-08c6-4f2e-b629-24d8aea47974>
- Hedde, E.M., Loneragan. O.W. and Havel J.J. 1980. Vegetation Complexes of the Darling System, WA, in Atlas of Natural Resources, Darling System WA, Department of Conservation and Environment.
- Keighery, B.J. 1994. Bushland Plant Survey: A Guide to Plant Community Survey for the Community, Wildflower Society of WA (Inc.), Nedlands, WA.
- Mitchell, D., Williams, K. and Desmond, A. 2002. SCP 2 (SWA2 — SCP subregion), in Department of Conservation and Land Management (ed), A Biodiversity Audit of WA's 53 Biogeographical Subregions in 2002, pp 724.
- Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. 2002. Native Vegetation in WA – Extent, Type and Status, Resource Management Technical Report 249, Department of Agriculture, WA.
- Thackway, R. and Cresswell, I.G. 1995 (Eds.,. An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves, Version 4.0. Australian Nature Conservation Agency, Canberra.
- Trudgen, M.E. 1988. A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished report prepared for Bowman Bishaw and Associates, West Perth.
- Western Australian Herbarium 2017. FloraBase – The Western Australian Flora. Online database of the Western Australian Herbarium. <http://florabase.DPaW.wa.gov.au>. Department of Environment and Conservation, Kensington.
- Western Australia Local Government Authority. 2017. Local Biodiversity Project Environmental Planning Tool. Available online from <http://walga.asn.au/Subscription-Services/Environmental-Planning-Tool.aspx>
- Western Australian Planning Commission. 2000. Bush Forever: Volumes 1 & 2, Keeping the Bush in The City – Policies, Principles and Processes and Directory of Bush Forever Sites. Perth.

RPS

Figures





LEGEND

- Survey Area
- Road Reserve
- South West Ecological Linkages (2009)
- Heddle Vegetation Complexes (1980)

Threatened and Priority Ecological Communities

- Subtropical and Temperate Coastal Saltmarsh - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

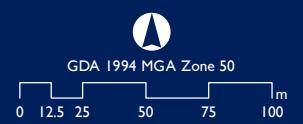
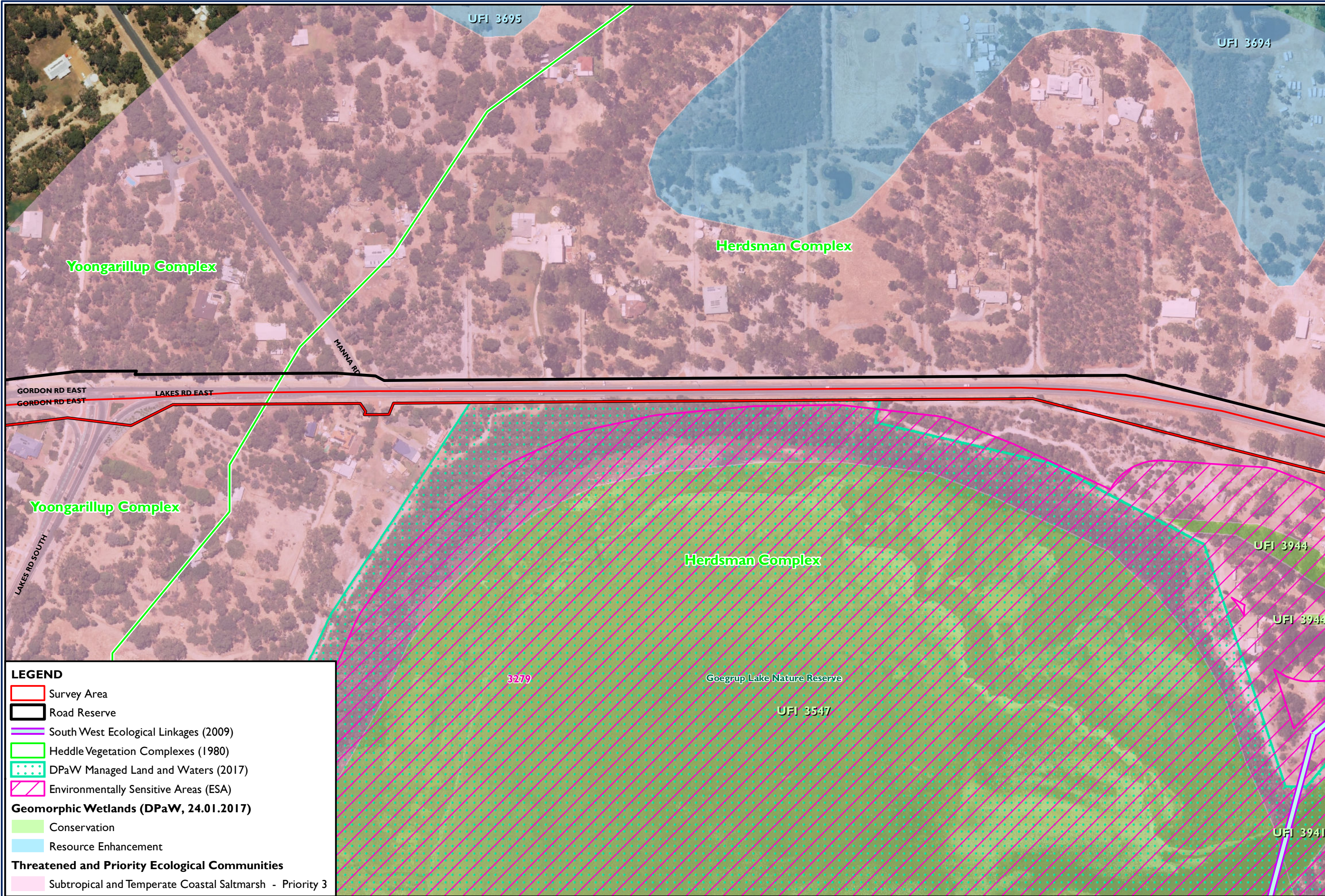


Figure B-1

Desktop Study Results



LEGEND

- Survey Area
- Road Reserve
- South West Ecological Linkages (2009)
- Heddle Vegetation Complexes (1980)
- DPaW Managed Land and Waters (2017)
- Environmentally Sensitive Areas (ESA)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation
- Resource Enhancement

Threatened and Priority Ecological Communities

- Subtropical and Temperate Coastal Saltmarsh - Priority 3

LEGEND

- Survey Area
- Road Reserve
- South West Ecological Linkages (2009)
- Heddle Vegetation Complexes (1980)
- DPaW Managed Land and Waters (2017)
- Environmentally Sensitive Areas (ESA)

Threatened and Priority Flora (DPaW, 2017)

- Threatened *Drakaea elastica*

Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation
- Resource Enhancement

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3
- Subtropical and Temperate Coastal Saltmarsh - Priority 3



Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

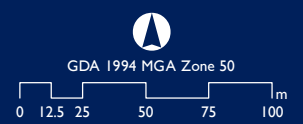
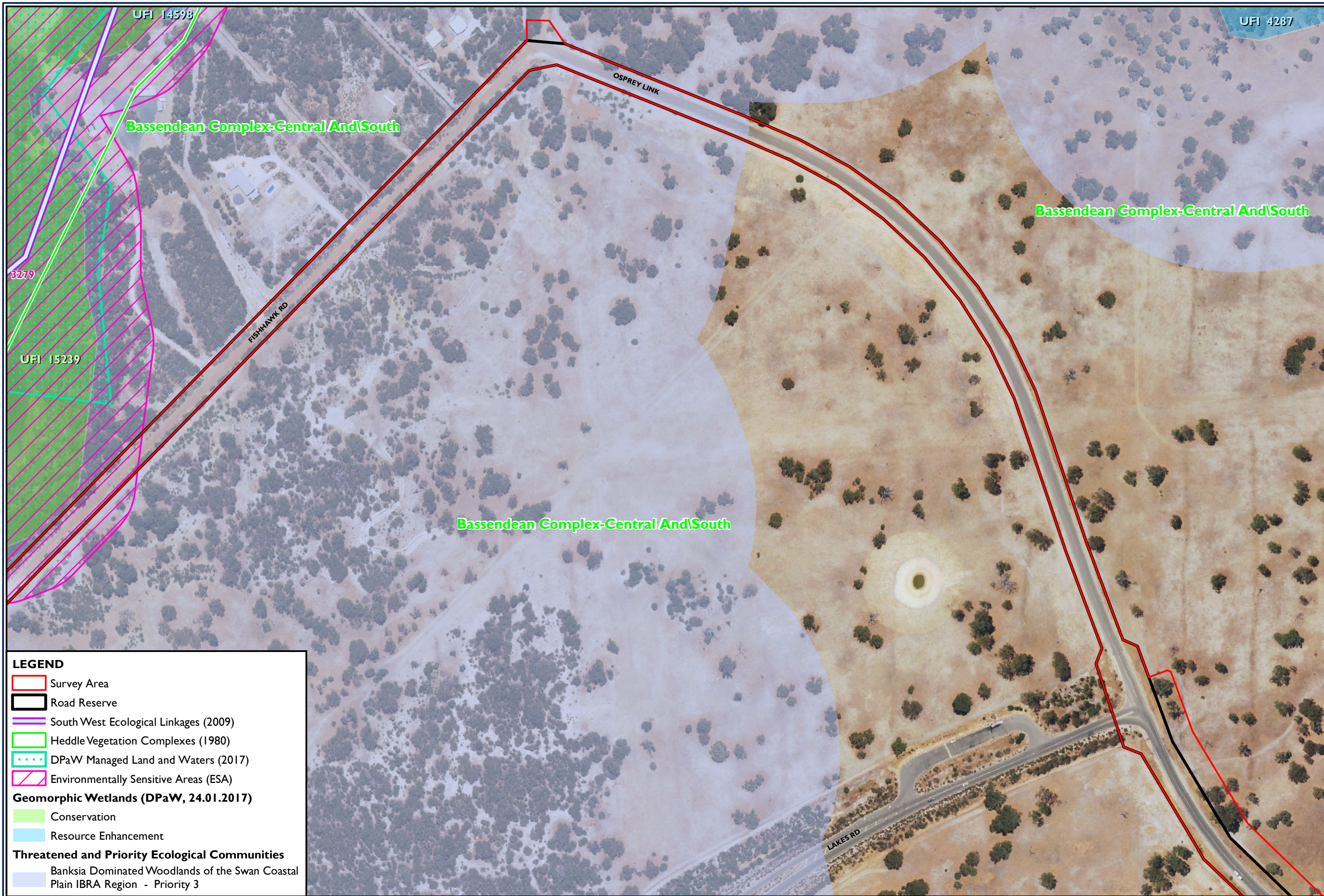


Figure B-3

Desktop Study Results



LEGEND

- Survey Area
- Road Reserve
- South West Ecological Linkages (2009)
- Heddl Vegetation Complexes (1980)
- DPaW Managed Land and Waters (2017)
- Environmentally Sensitive Areas (ESA)

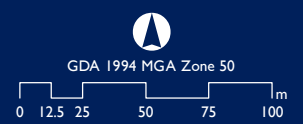
Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation
- Resource Enhancement

Threatened and Priority Ecological Communities

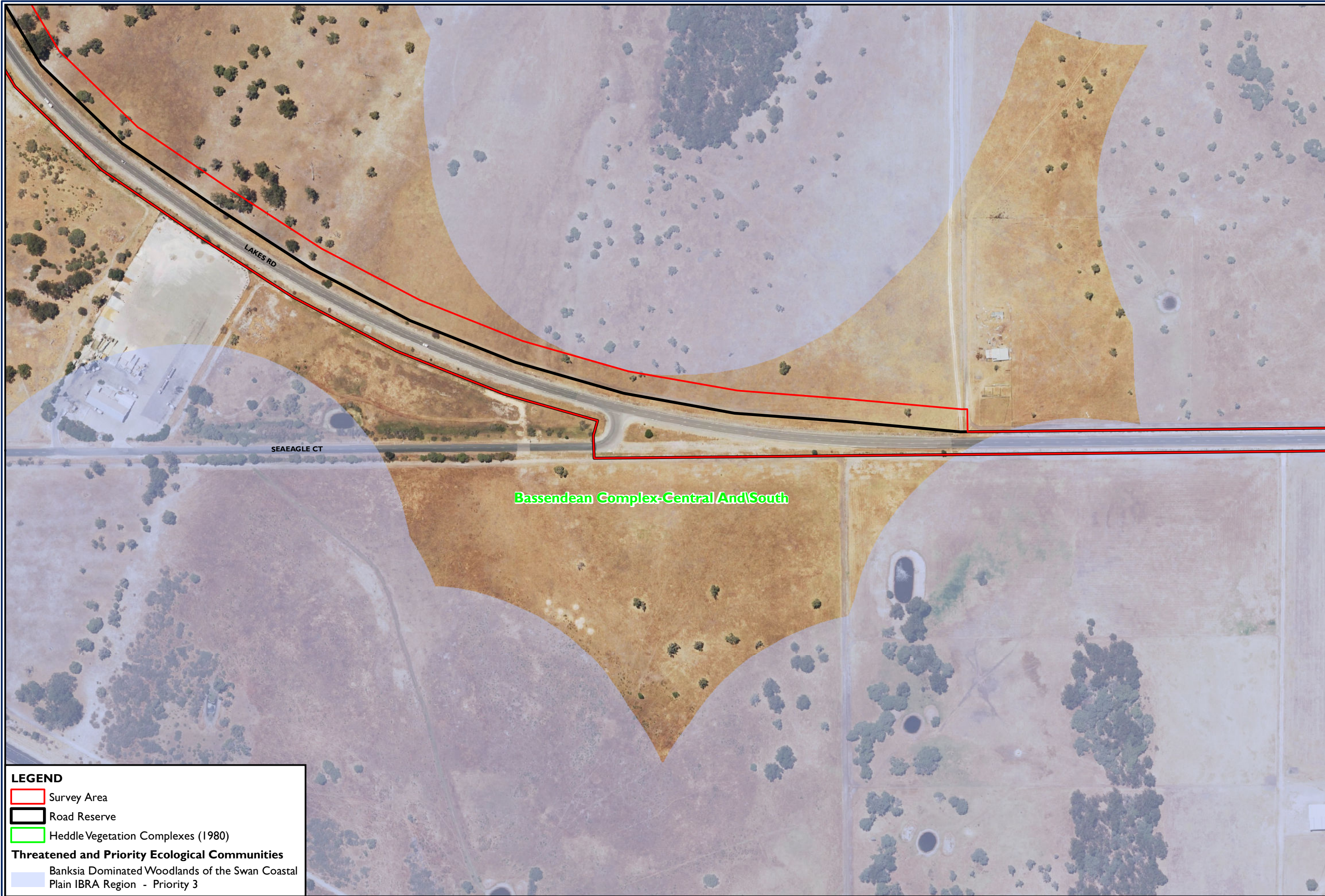
- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017



Level 2, 27-31 Troode Street West Perth | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au

Figure B-4



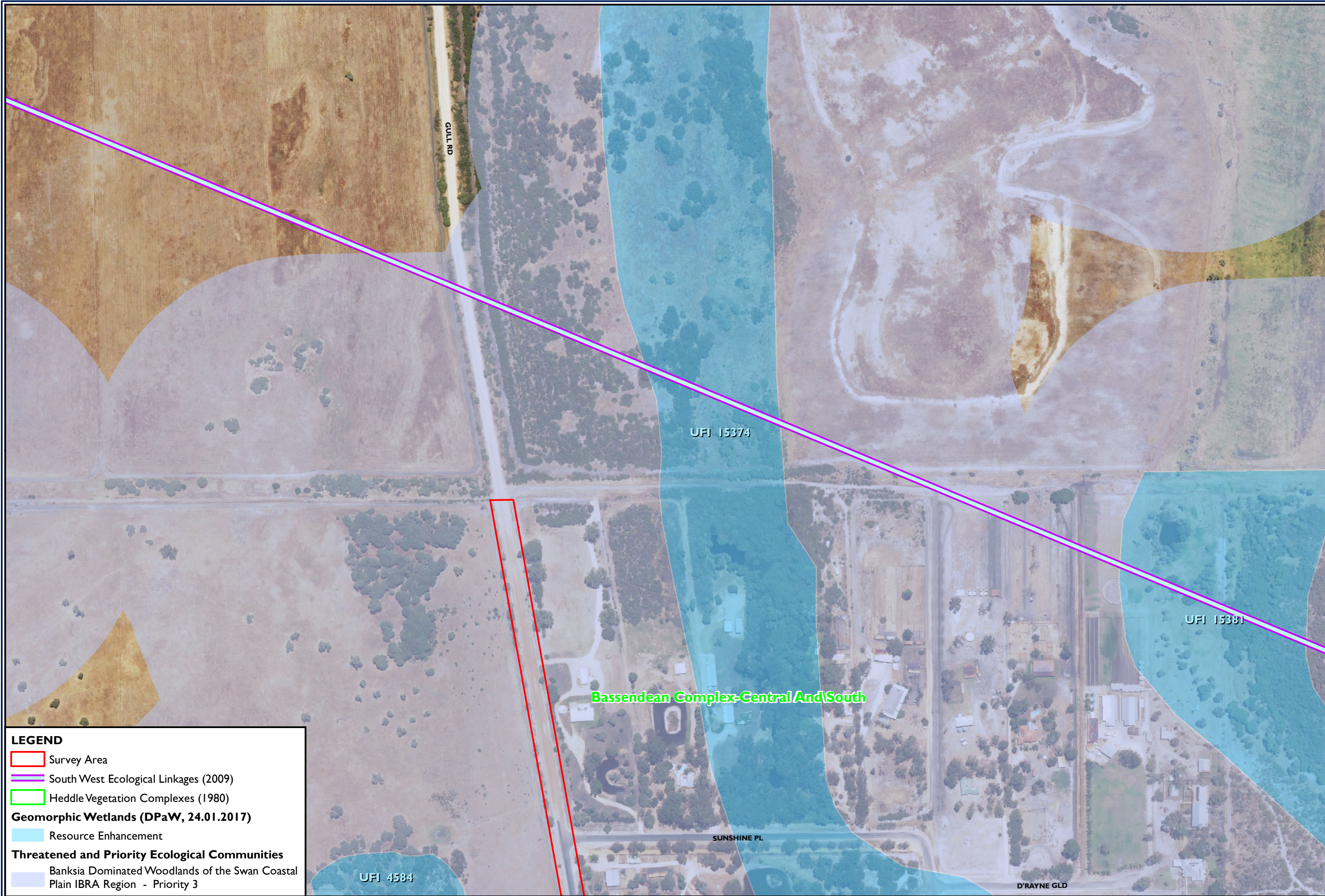
LEGEND

- Survey Area
- Road Reserve
- Heddle Vegetation Complexes (1980)

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Bassendean Complex-Central And South



LEGEND

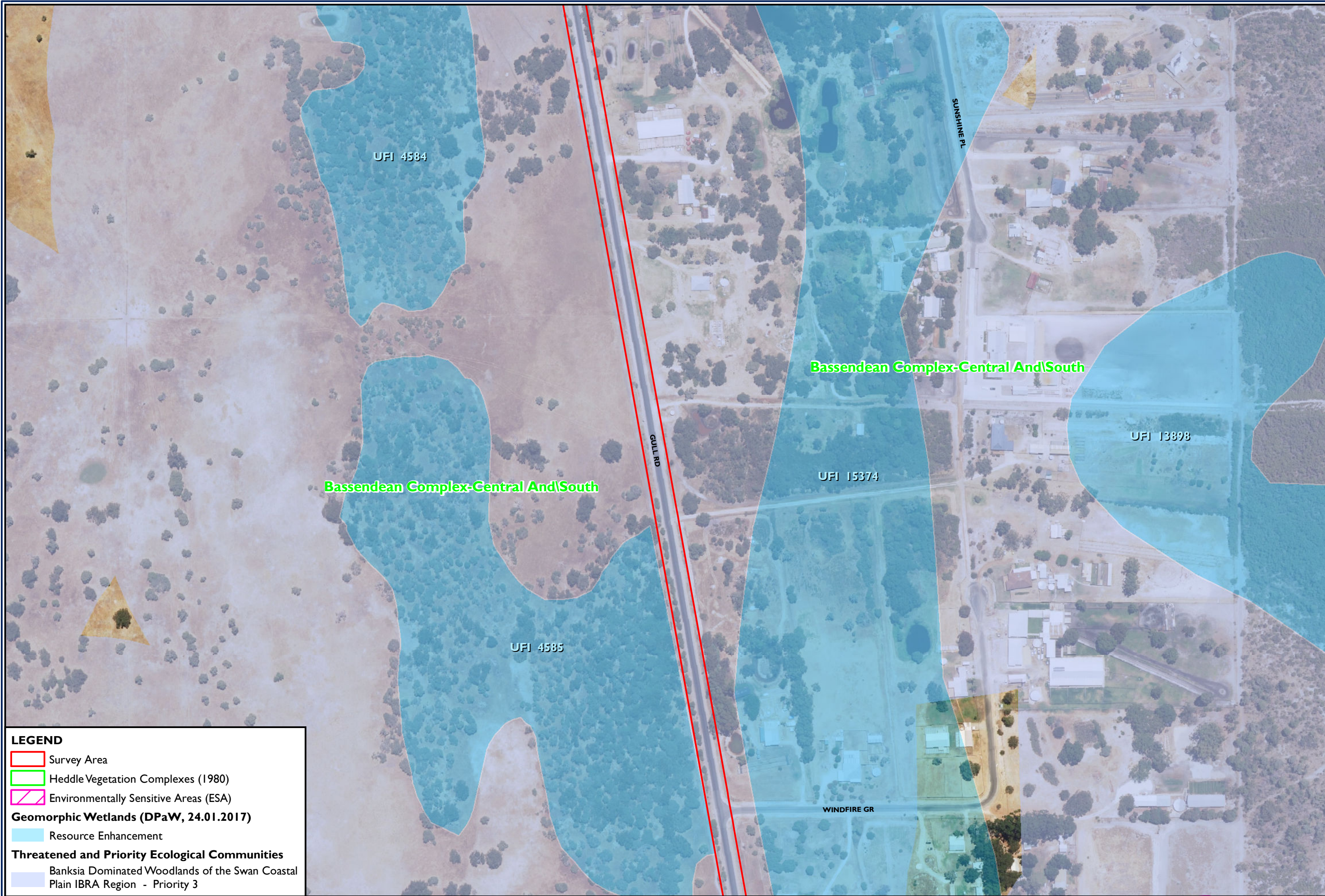
- Survey Area
- South West Ecological Linkages (2009)
- Heddl Vegetation Complexes (1980)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Resource Enhancement

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3



LEGEND

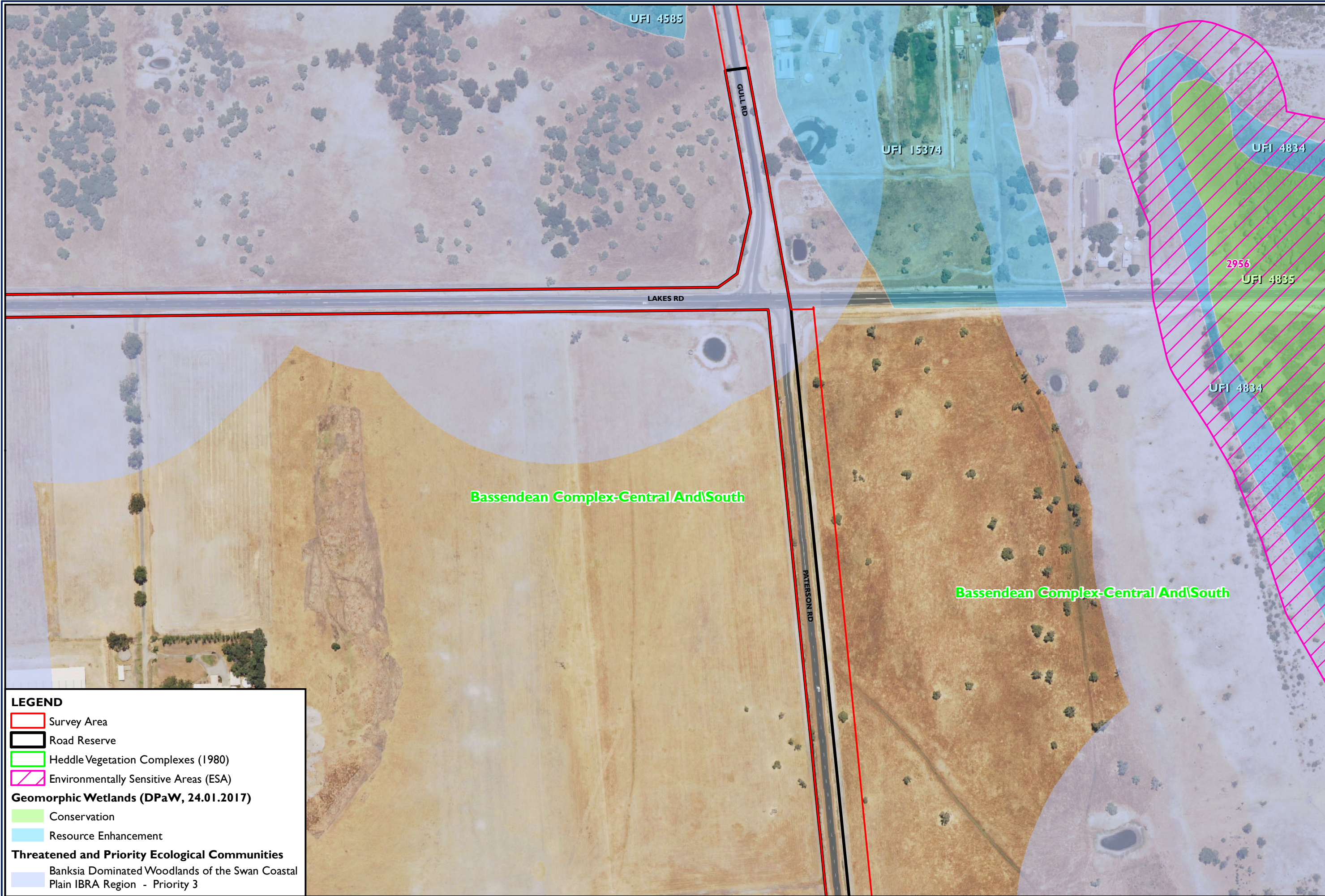
- Survey Area
- Heddle Vegetation Complexes (1980)
- Environmentally Sensitive Areas (ESA)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Resource Enhancement

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3



LEGEND

- Survey Area
- Road Reserve
- Heddle Vegetation Complexes (1980)
- Environmentally Sensitive Areas (ESA)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation
- Resource Enhancement

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

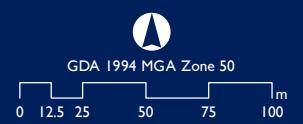
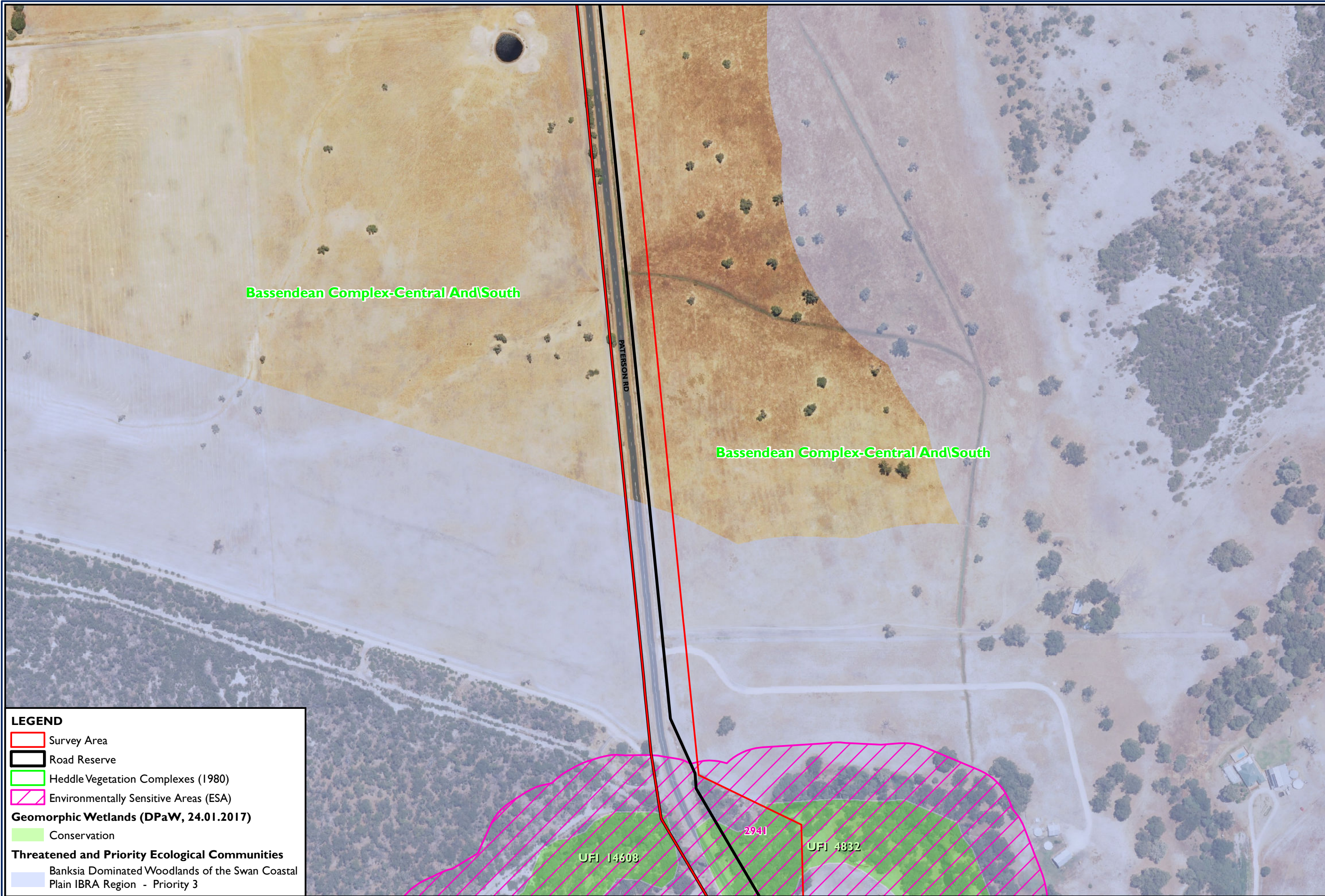


Figure B-8



LEGEND

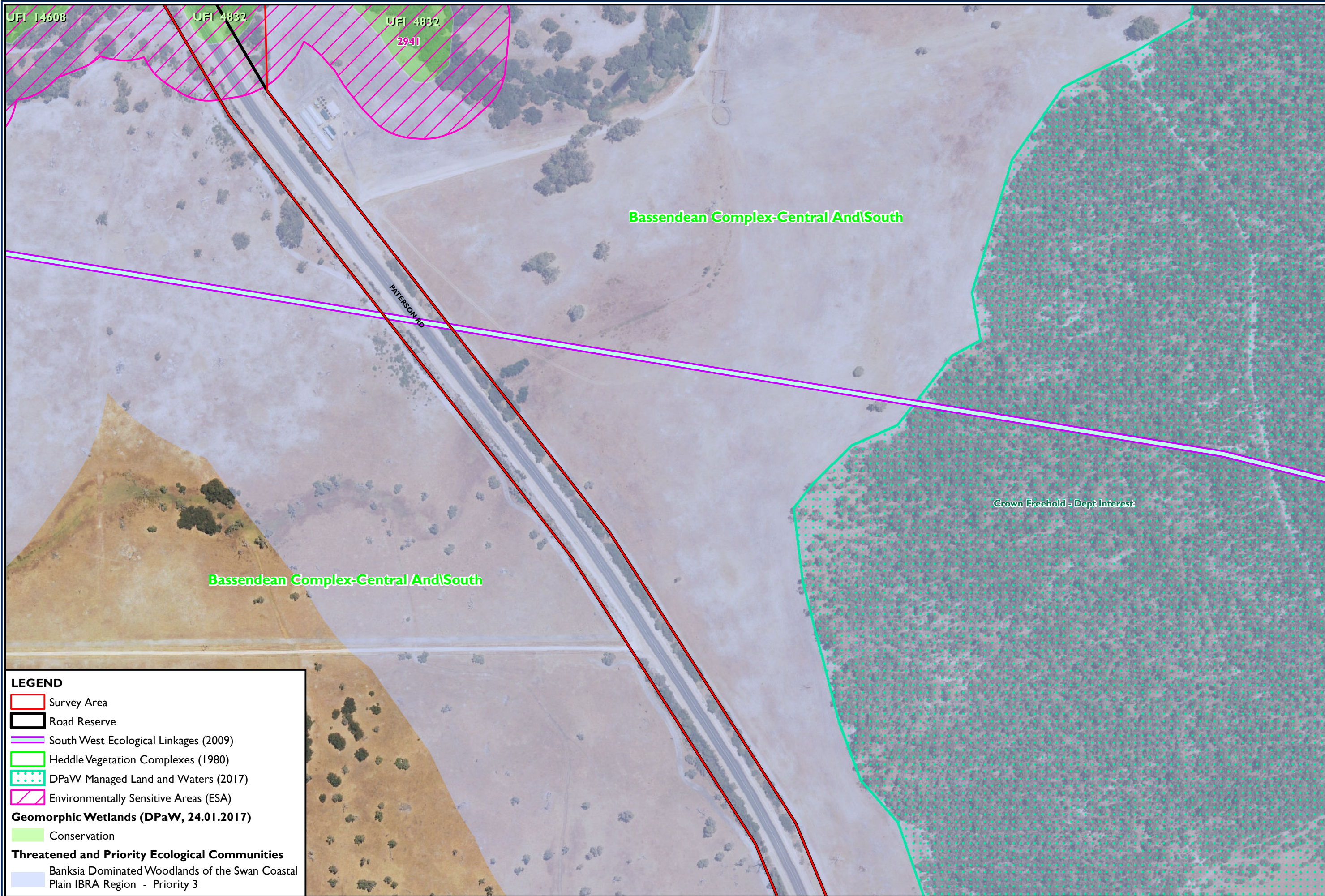
- Survey Area
- Road Reserve
- Heddl Vegetation Complexes (1980)
- Environmentally Sensitive Areas (ESA)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3



LEGEND

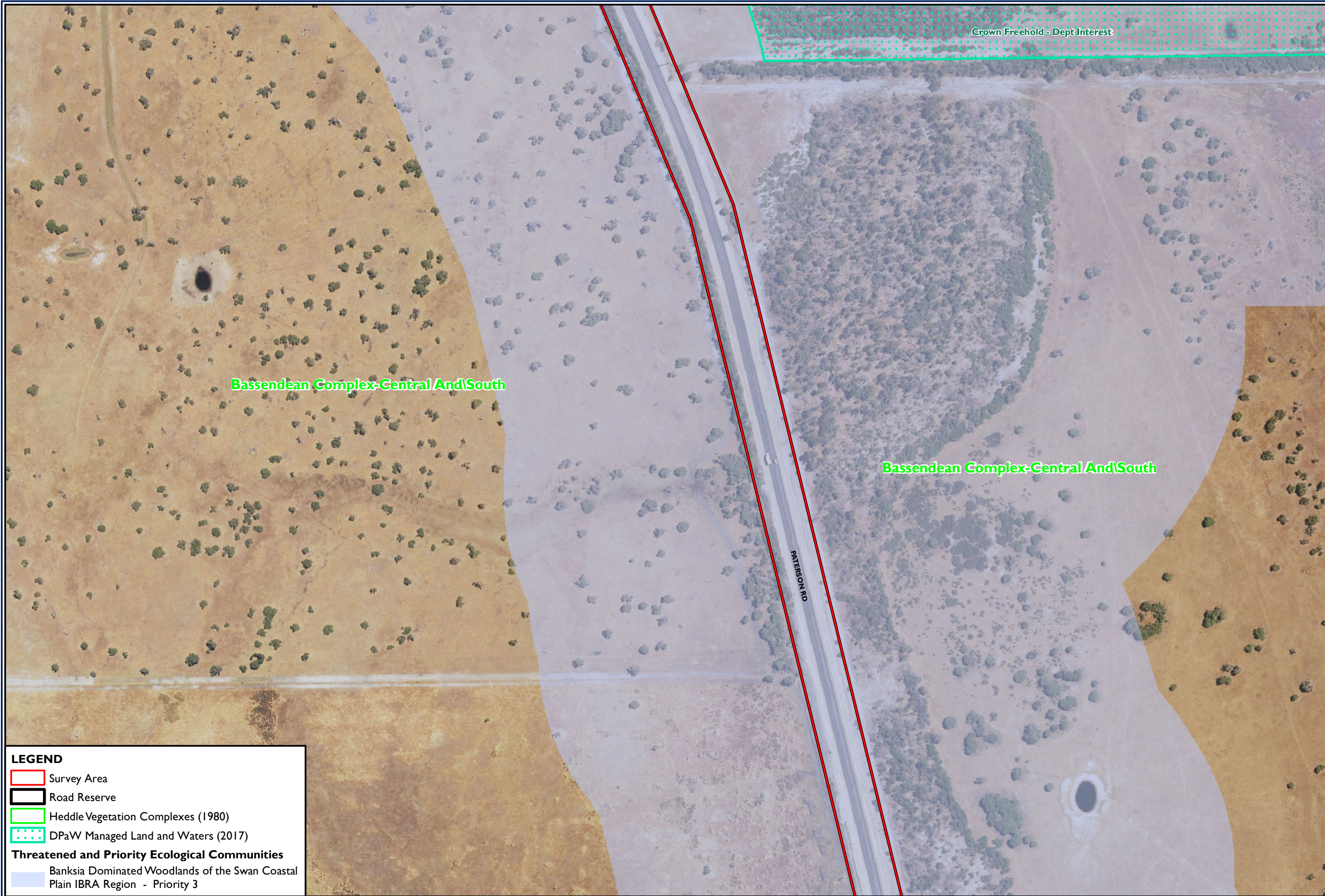
- Survey Area
- Road Reserve
- South West Ecological Linkages (2009)
- Heddle Vegetation Complexes (1980)
- DPaW Managed Land and Waters (2017)
- Environmentally Sensitive Areas (ESA)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3



LEGEND

- Survey Area
- Road Reserve
- Heddl Vegetation Complexes (1980)
- DPaW Managed Land and Waters (2017)

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

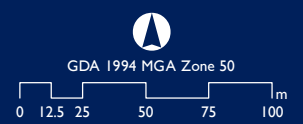
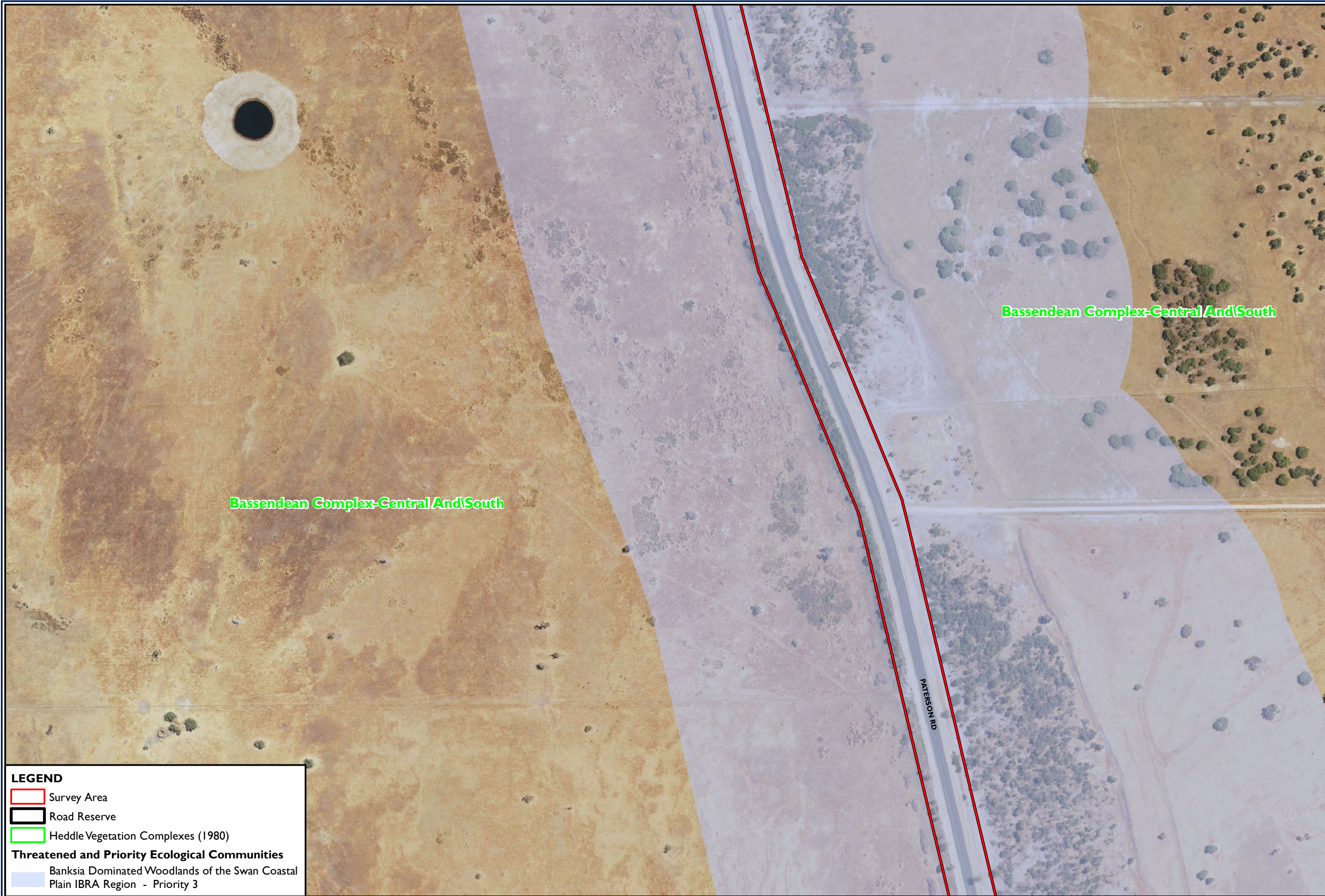


Figure B-11

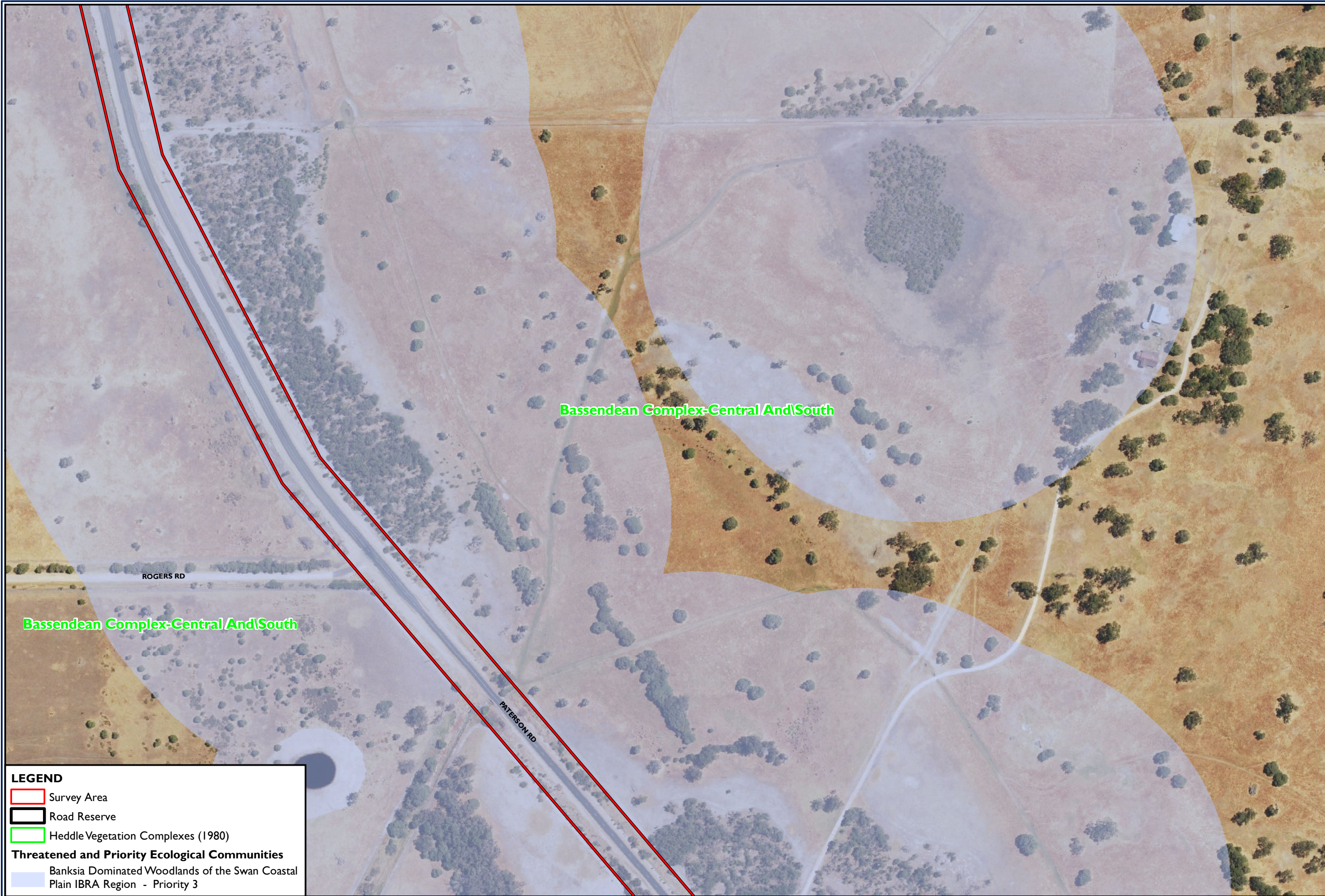


LEGEND

- Survey Area
- Road Reserve
- Heddle Vegetation Complexes (1980)

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3



LEGEND

- Survey Area
- Road Reserve
- Heddle Vegetation Complexes (1980)

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

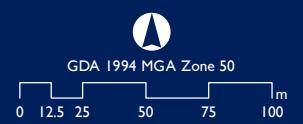
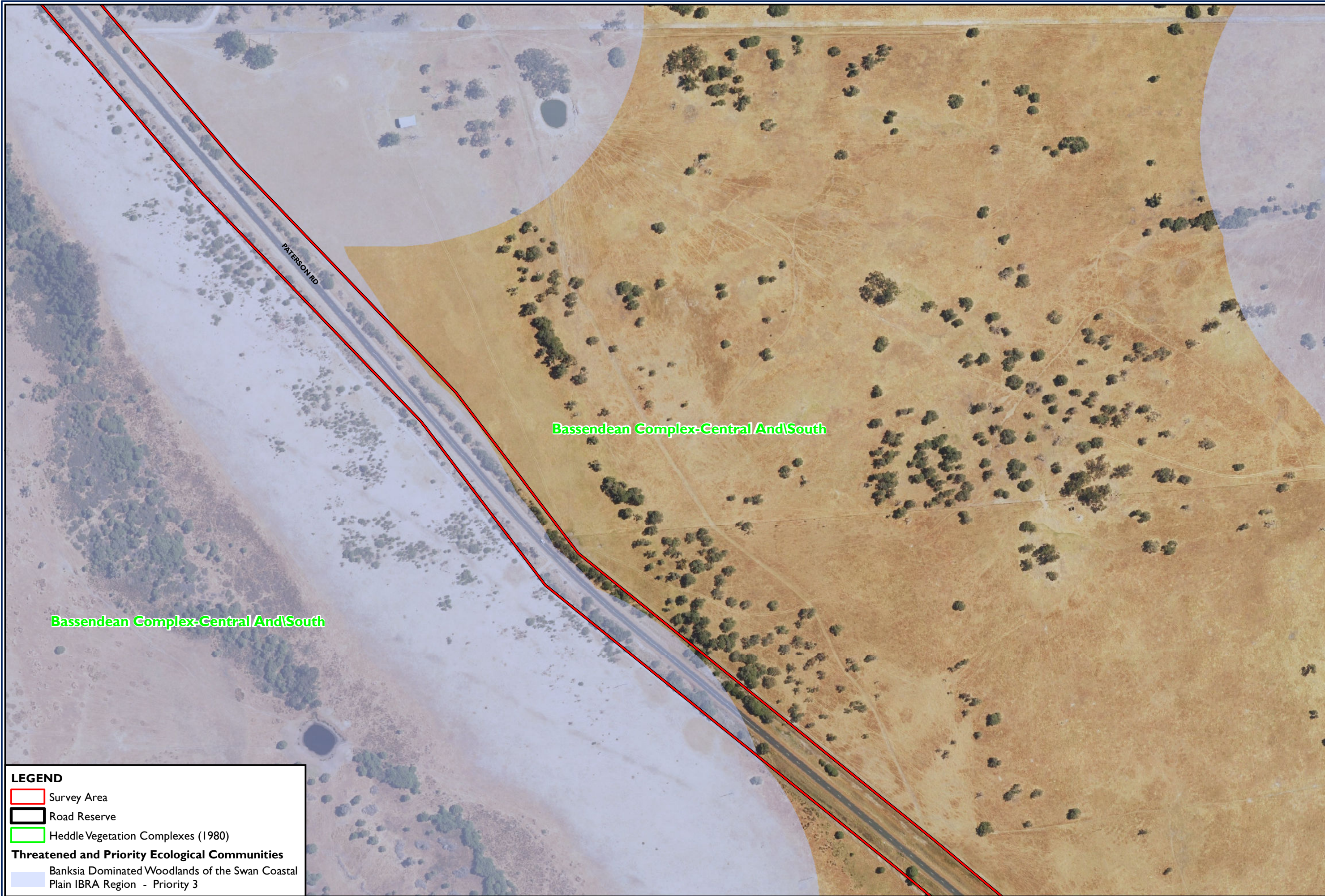


Figure B-13

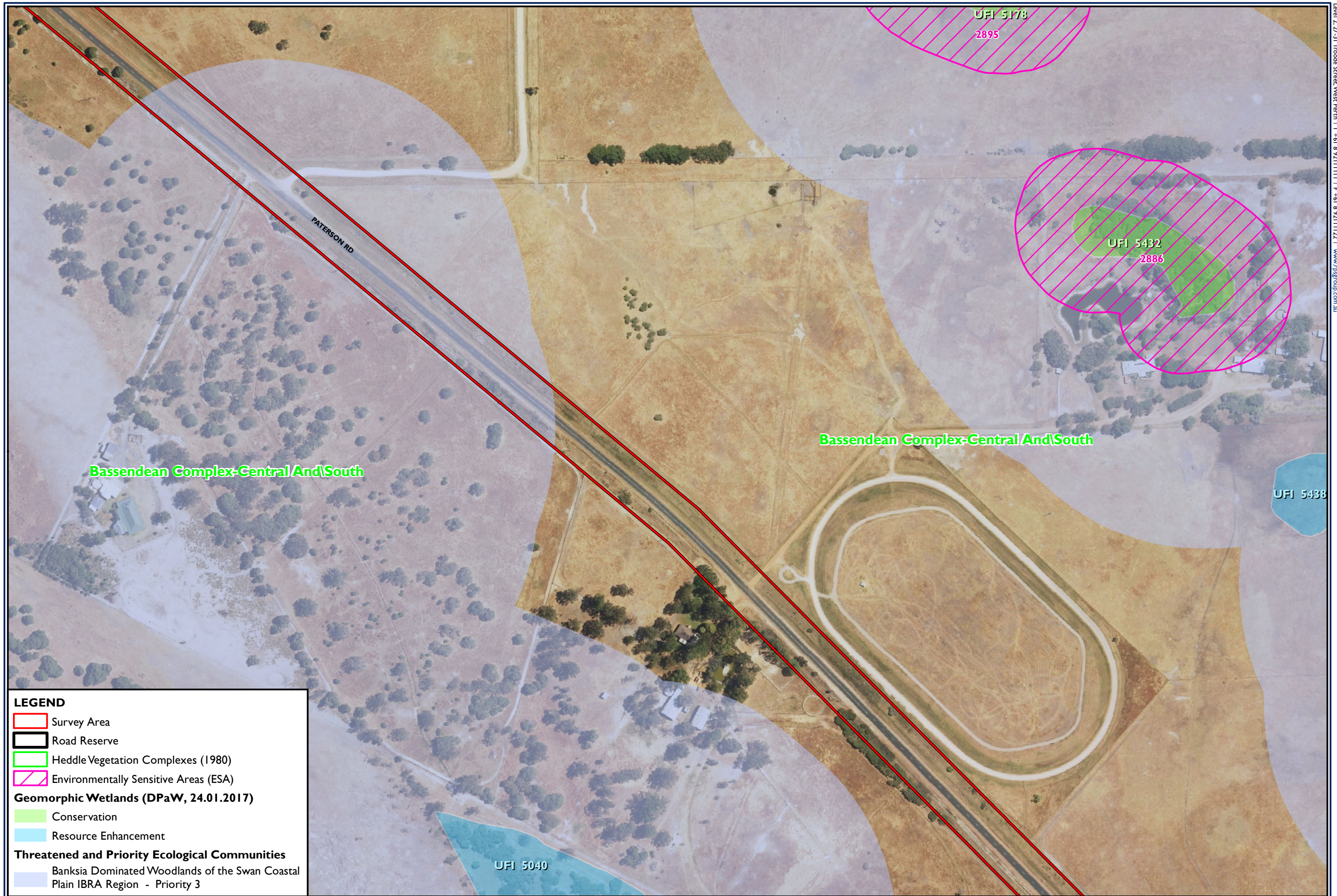


LEGEND

- Survey Area
- Road Reserve
- Heddle Vegetation Complexes (1980)

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3



LEGEND

- Survey Area
- Road Reserve
- Heddle Vegetation Complexes (1980)
- Environmentally Sensitive Areas (ESA)

Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation
- Resource Enhancement

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

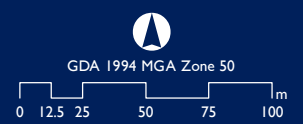
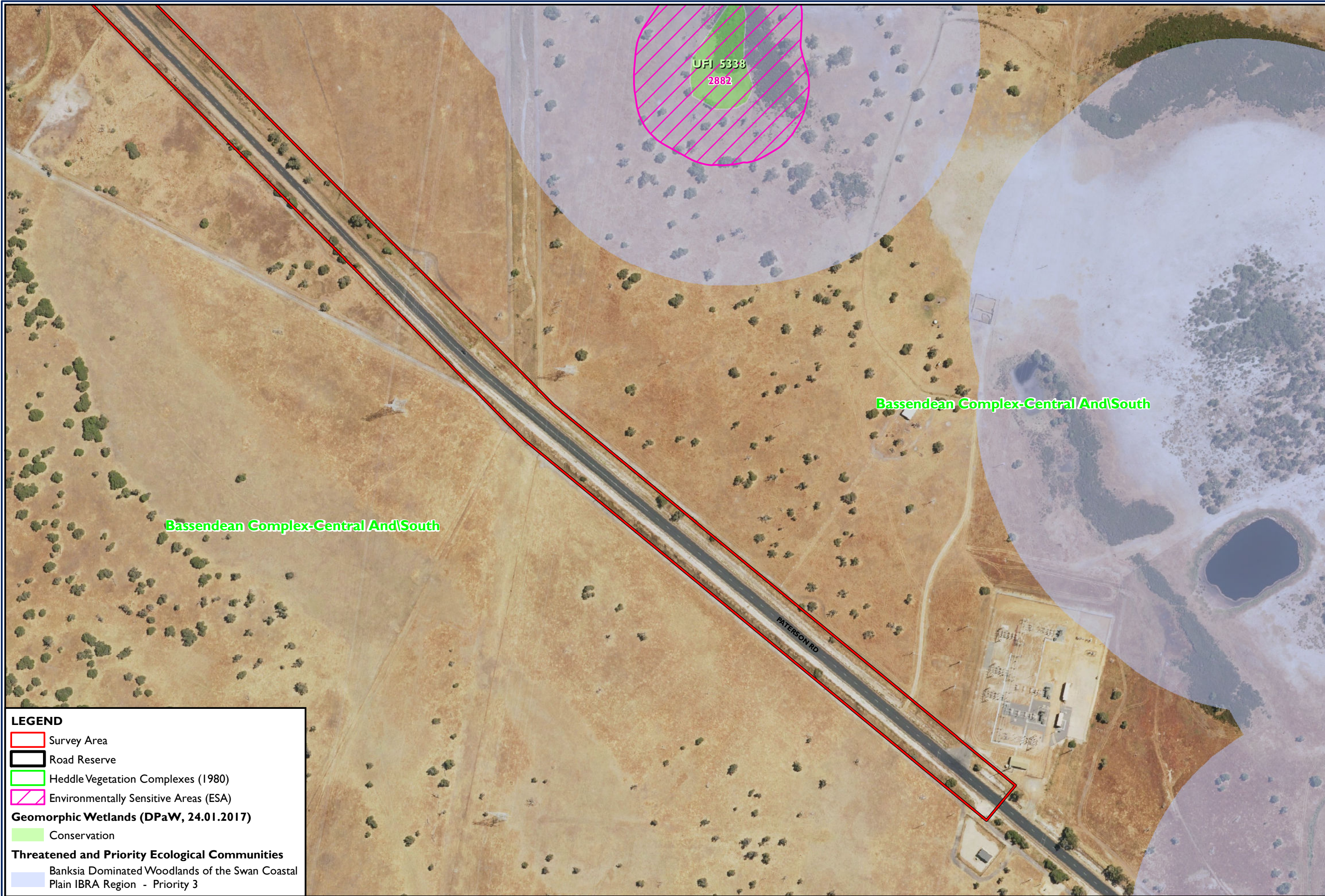


Figure B-15



LEGEND

- Survey Area
- Road Reserve
- Heddl Vegetation Complexes (1980)
- Environmentally Sensitive Areas (ESA)

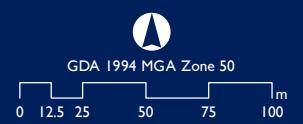
Geomorphic Wetlands (DPaW, 24.01.2017)

- Conservation

Threatened and Priority Ecological Communities

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region - Priority 3

Job Number: L11266.006
 Doc Number: 001
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017



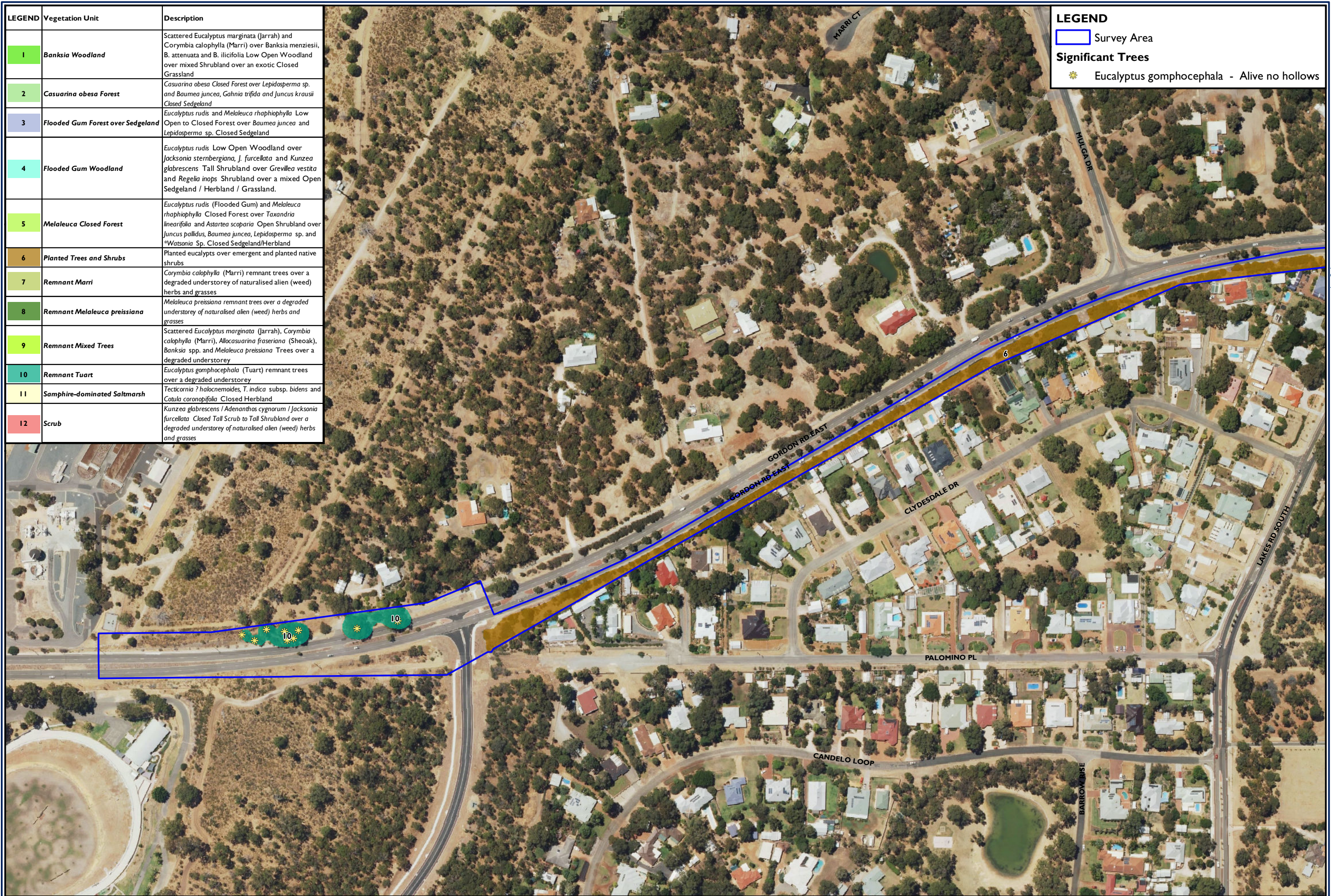
| LEGEND | Vegetation Unit | Description |
|--------|-----------------------------------|--|
| 1 | Banksia Woodland | Scattered <i>Eucalyptus marginata</i> (Jarrah) and <i>Corymbia calophylla</i> (Marri) over <i>Banksia menziesii</i> , <i>B. attenuata</i> and <i>B. ilicifolia</i> Low Open Woodland over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

LEGEND

Survey Area

Significant Trees

Eucalyptus gomphocephala - Alive no hollows



Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

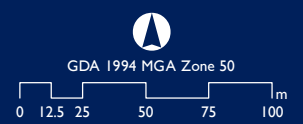




Figure C-1

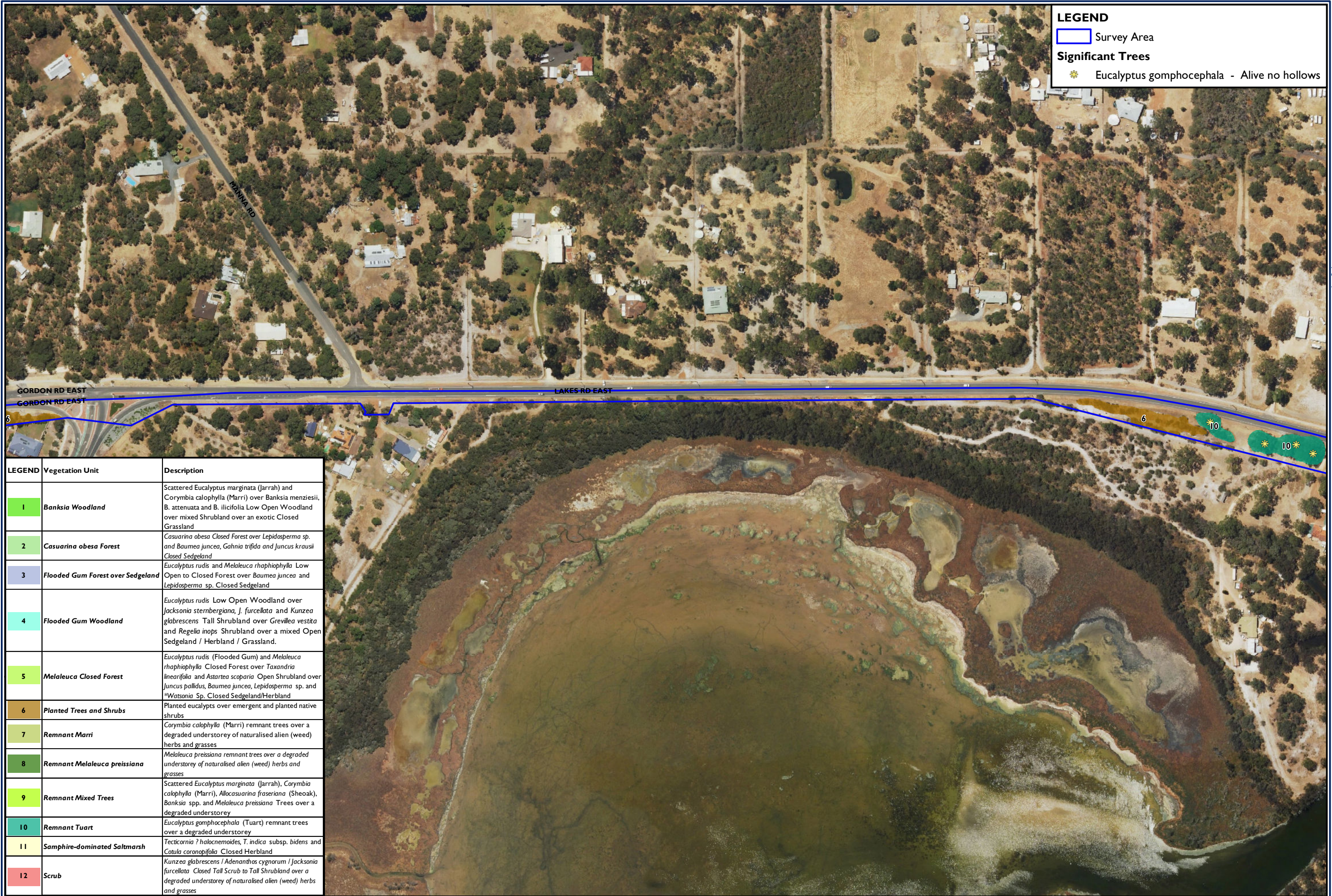
Vegetation Units

LEGEND

 Survey Area

Significant Trees

 Eucalyptus gomphocephala - Alive no hollows



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



Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

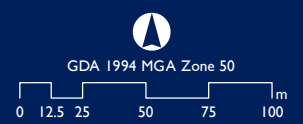


Figure C-2

Vegetation Units

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

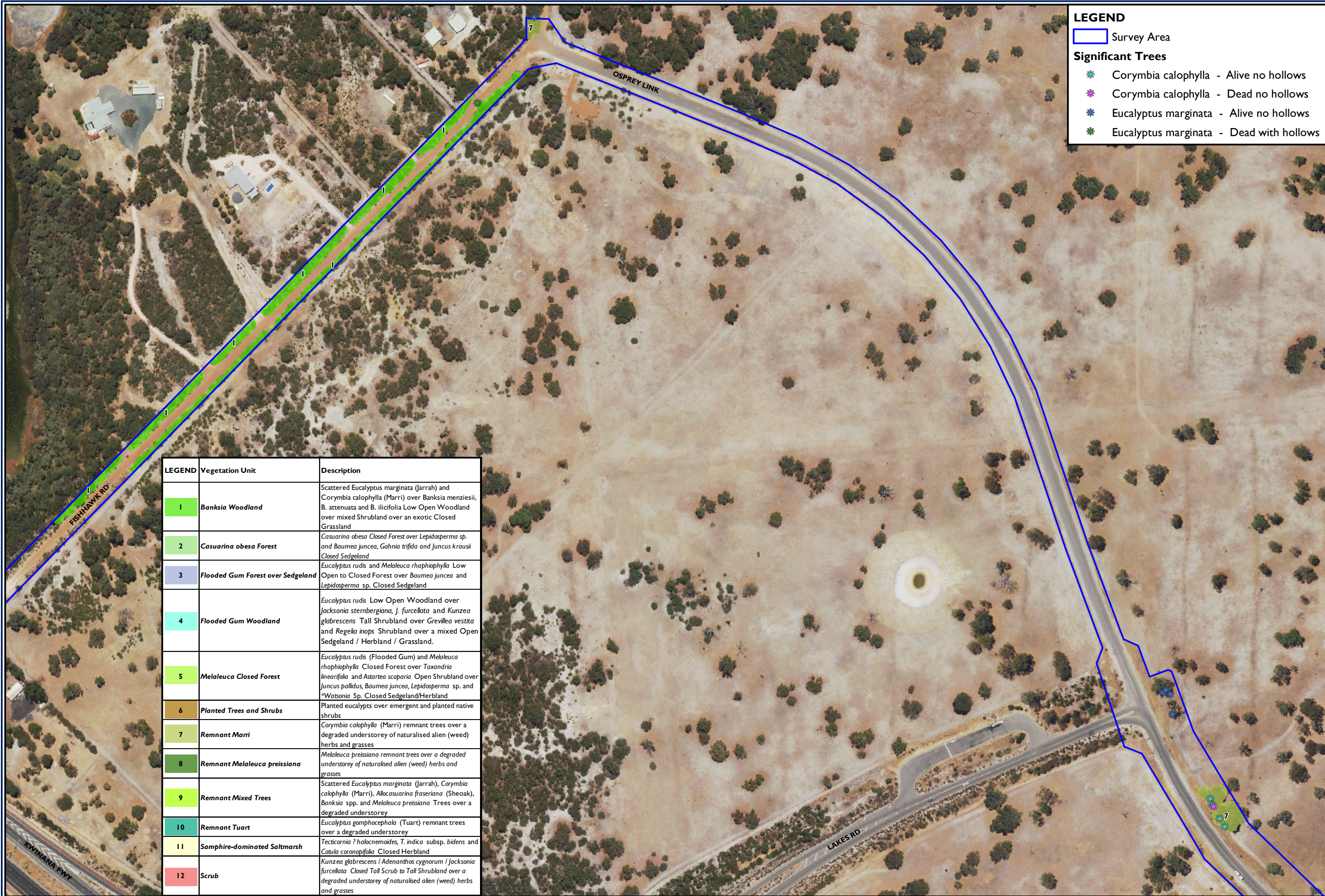


LEGEND

Survey Area

Significant Trees

- * *Corymbia calophylla* - Alive no hollows
- * *Eucalyptus gomphocephala* - Alive no hollows
- * *Eucalyptus rudis* - Alive no hollows
- * Planted Non-endemic Eucalypt - Alive no hollows



LEGEND

Survey Area

Significant Trees

- ★ Corymbia calophylla - Alive no hollows
- ★ Corymbia calophylla - Dead no hollows
- ★ Eucalyptus marginata - Alive no hollows
- ★ Eucalyptus marginata - Dead with hollows

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



LEGEND

Survey Area

Significant Trees

- * *Corymbia calophylla* - Alive no hollows
- * *Corymbia calophylla* - Dead no hollows
- * *Eucalyptus rudis* - Alive no hollows

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



Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

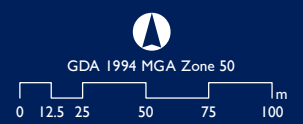
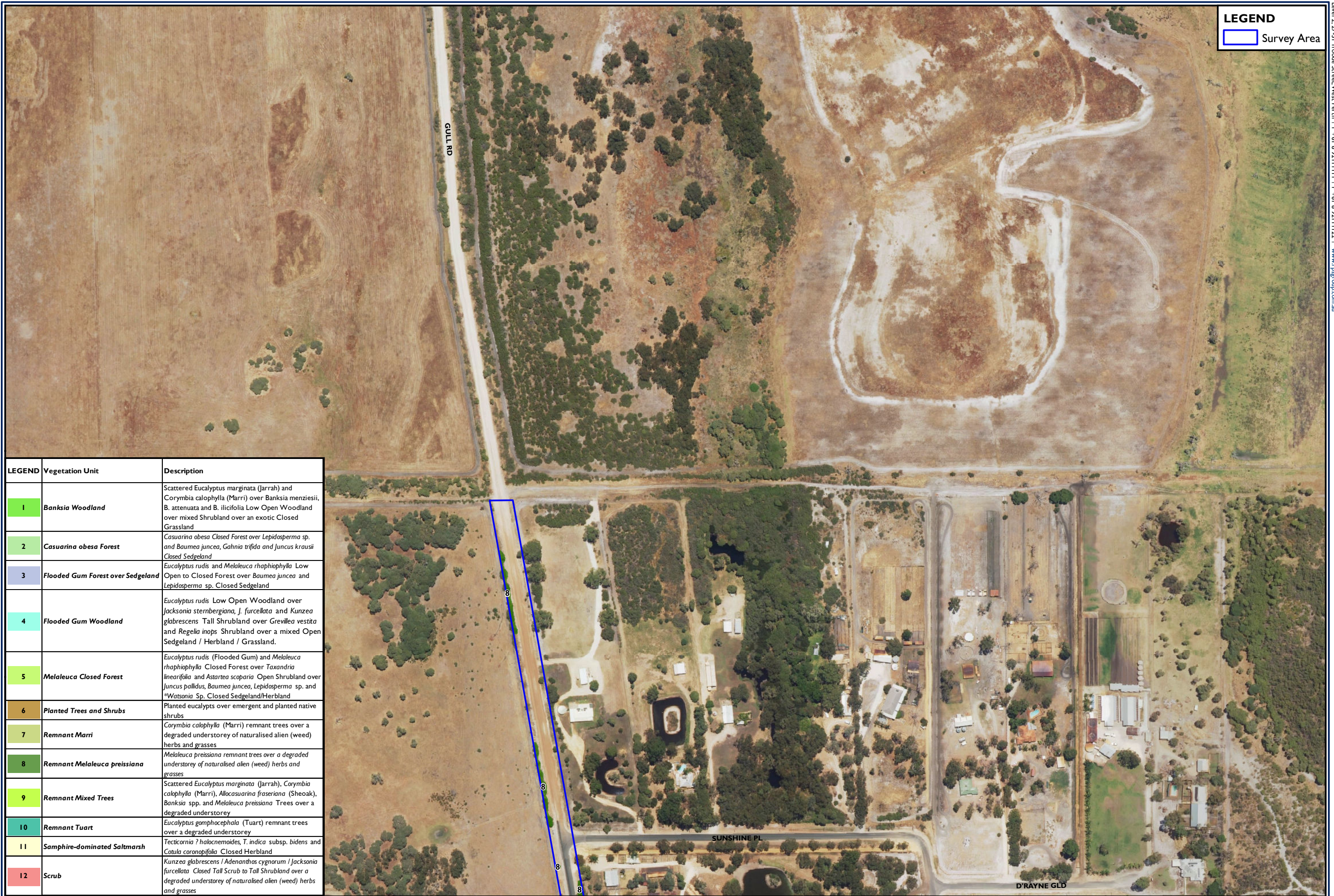


Figure C-5

Vegetation Units

LEGEND
 Survey Area



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

RPS

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

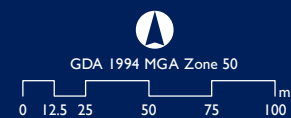
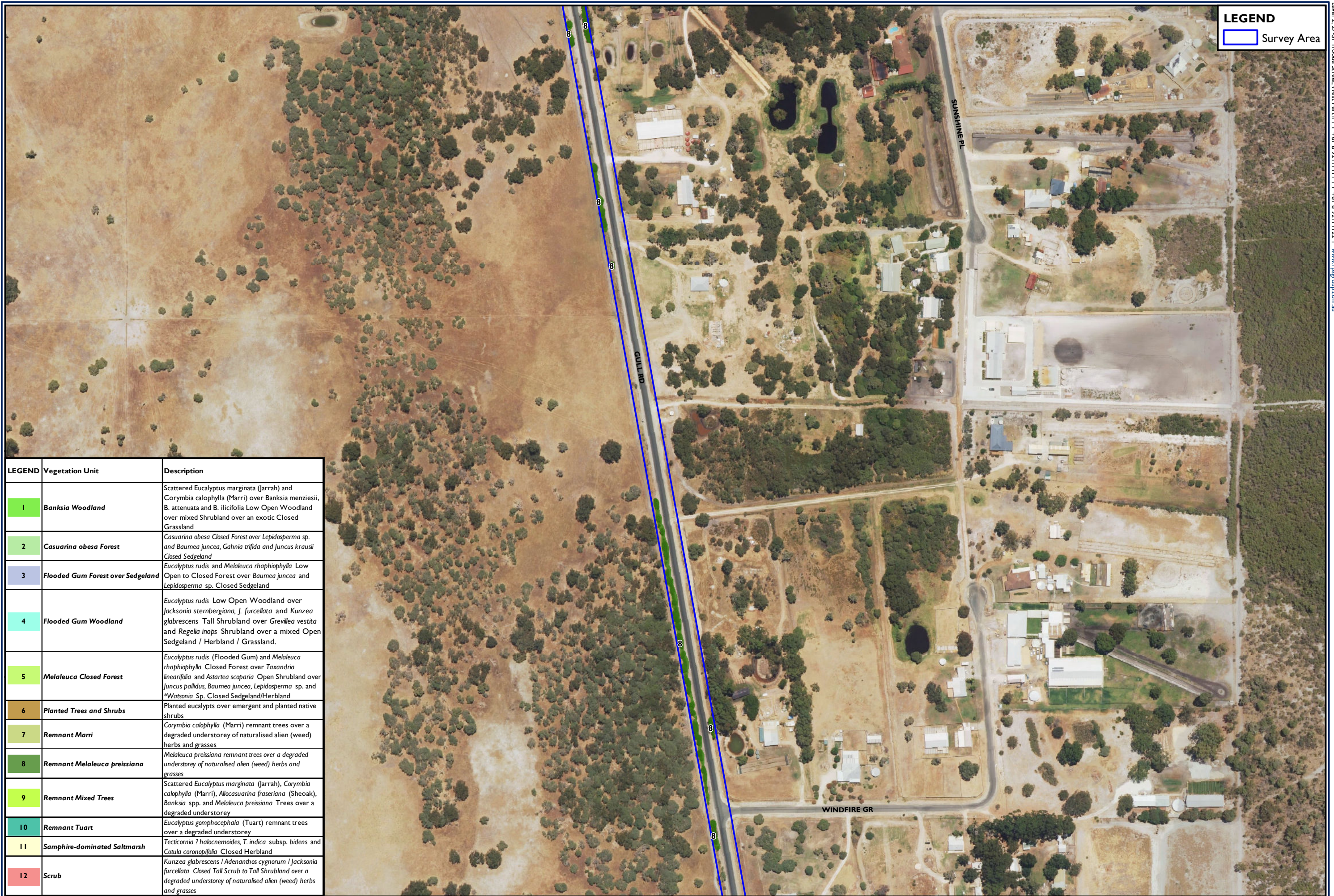


Figure C-6

Vegetation Units

LEGEND
 Survey Area



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

RPS

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

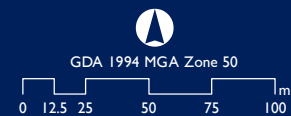
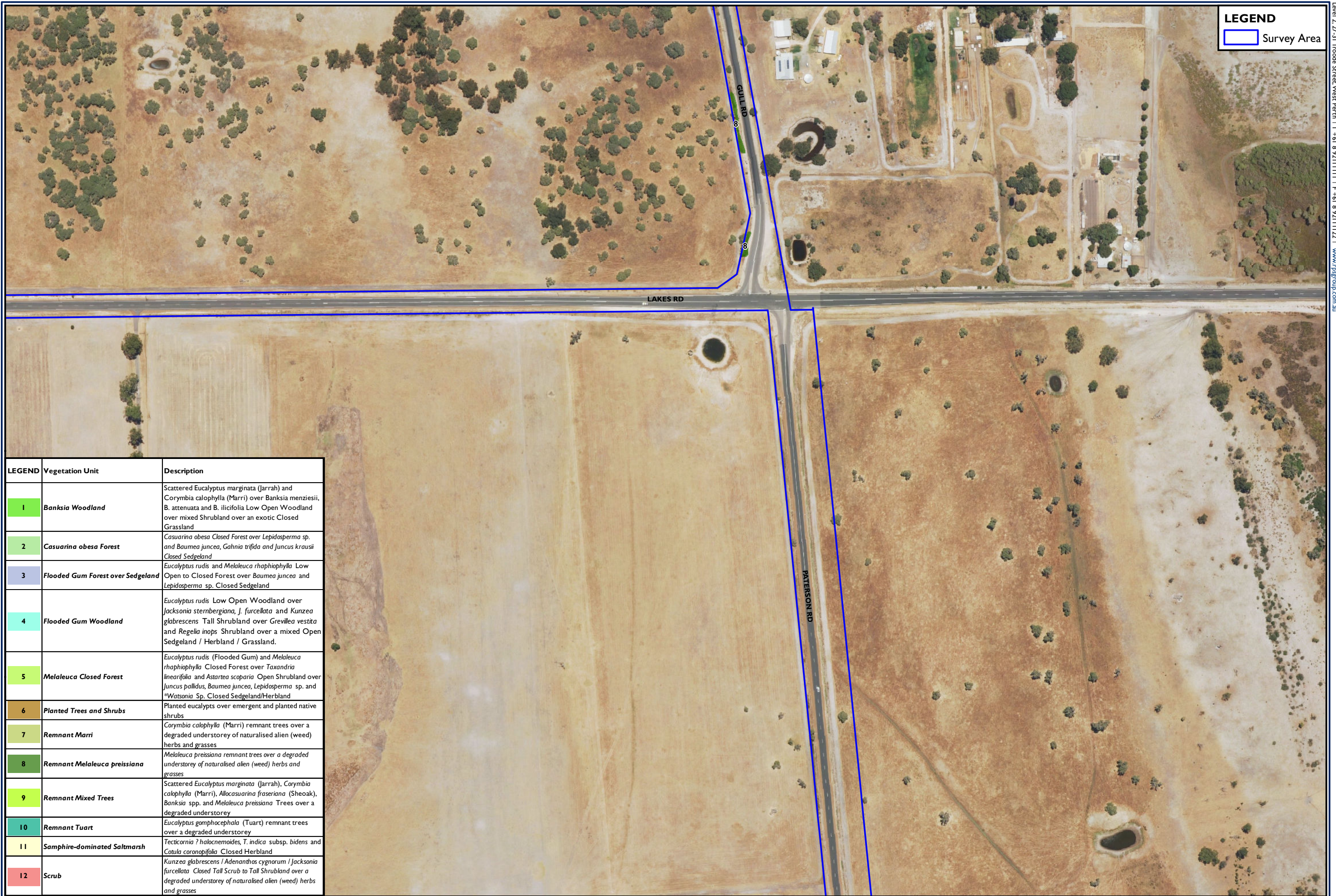


Figure C-7

Vegetation Units

LEGEND
 Survey Area



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

RPS

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

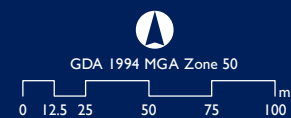
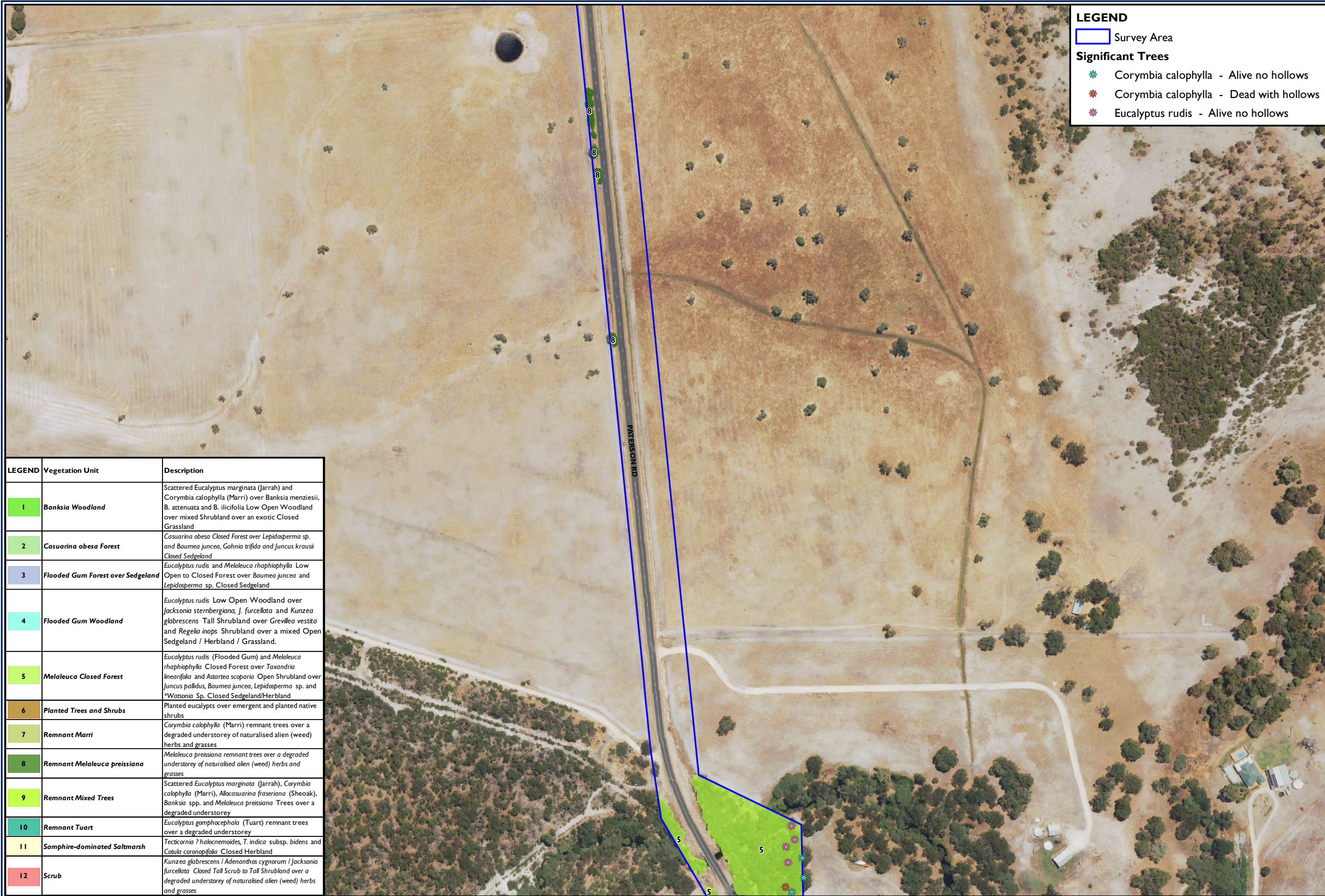


Figure C-8

Vegetation Units



LEGEND

Survey Area

Significant Trees

- ✿ *Corymbia calophylla* - Alive no hollows
- ✿ *Corymbia calophylla* - Dead with hollows
- ✿ *Eucalyptus rudis* - Alive no hollows

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

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

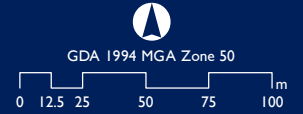
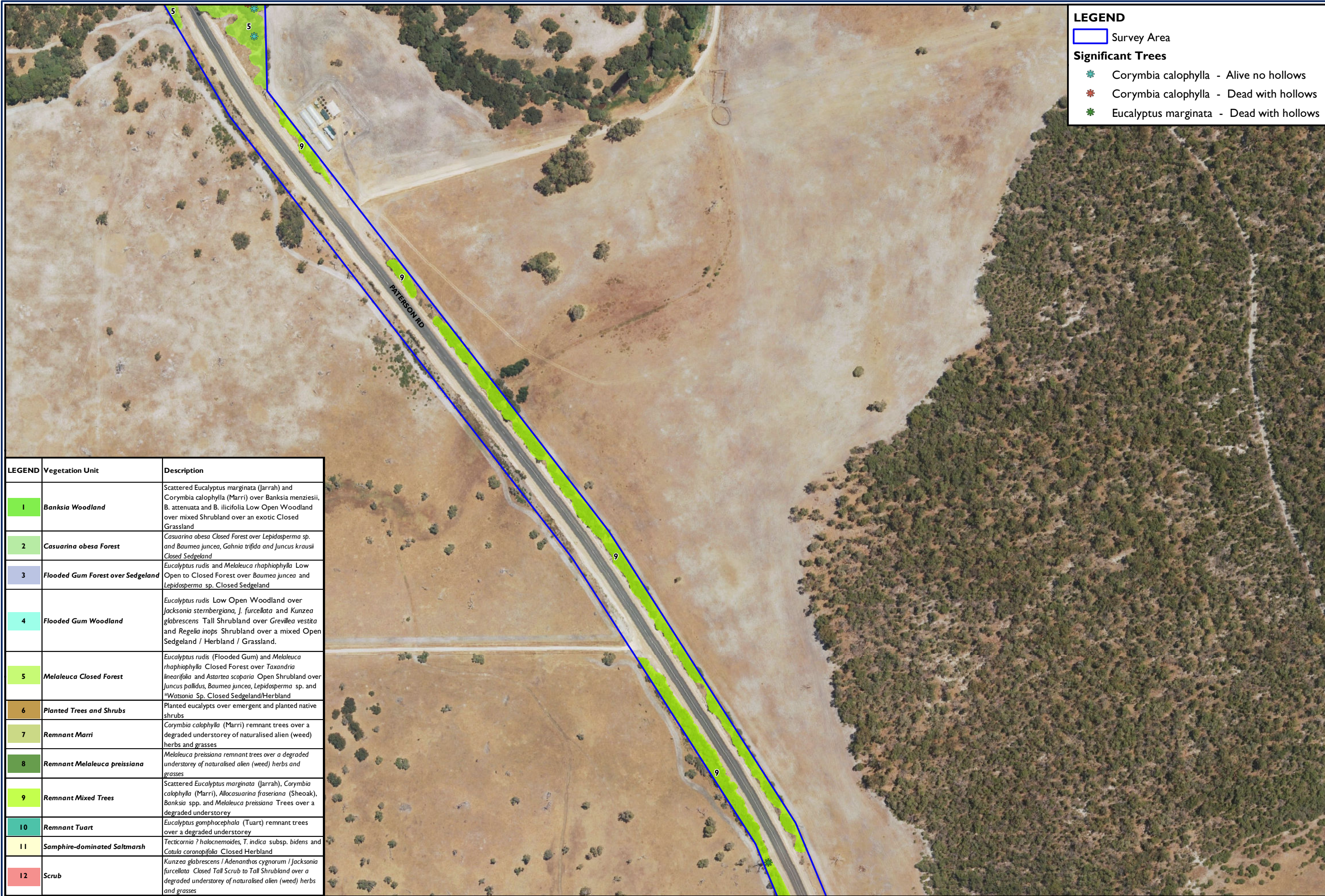


Figure C-9

Vegetation Units



LEGEND

Survey Area

Significant Trees

- ✱ *Corymbia calophylla* - Alive no hollows
- ✱ *Corymbia calophylla* - Dead with hollows
- ✱ *Eucalyptus marginata* - Dead with hollows

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

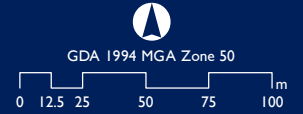
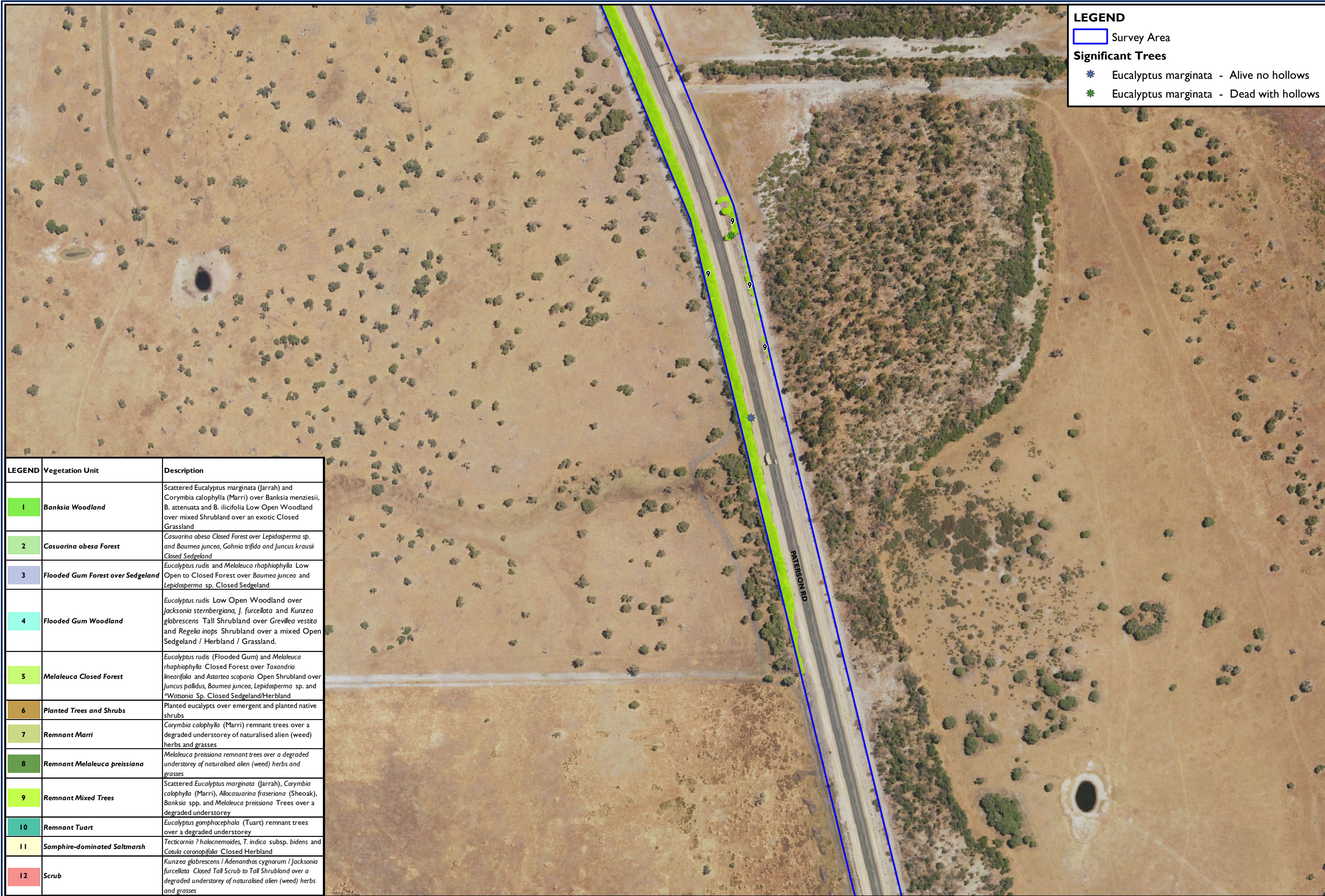


Figure C-10
Vegetation Units



LEGEND

Survey Area

Significant Trees

- * Eucalyptus marginata - Alive no hollows
- * Eucalyptus marginata - Dead with hollows

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



Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

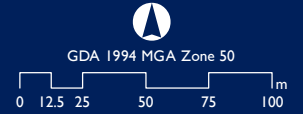

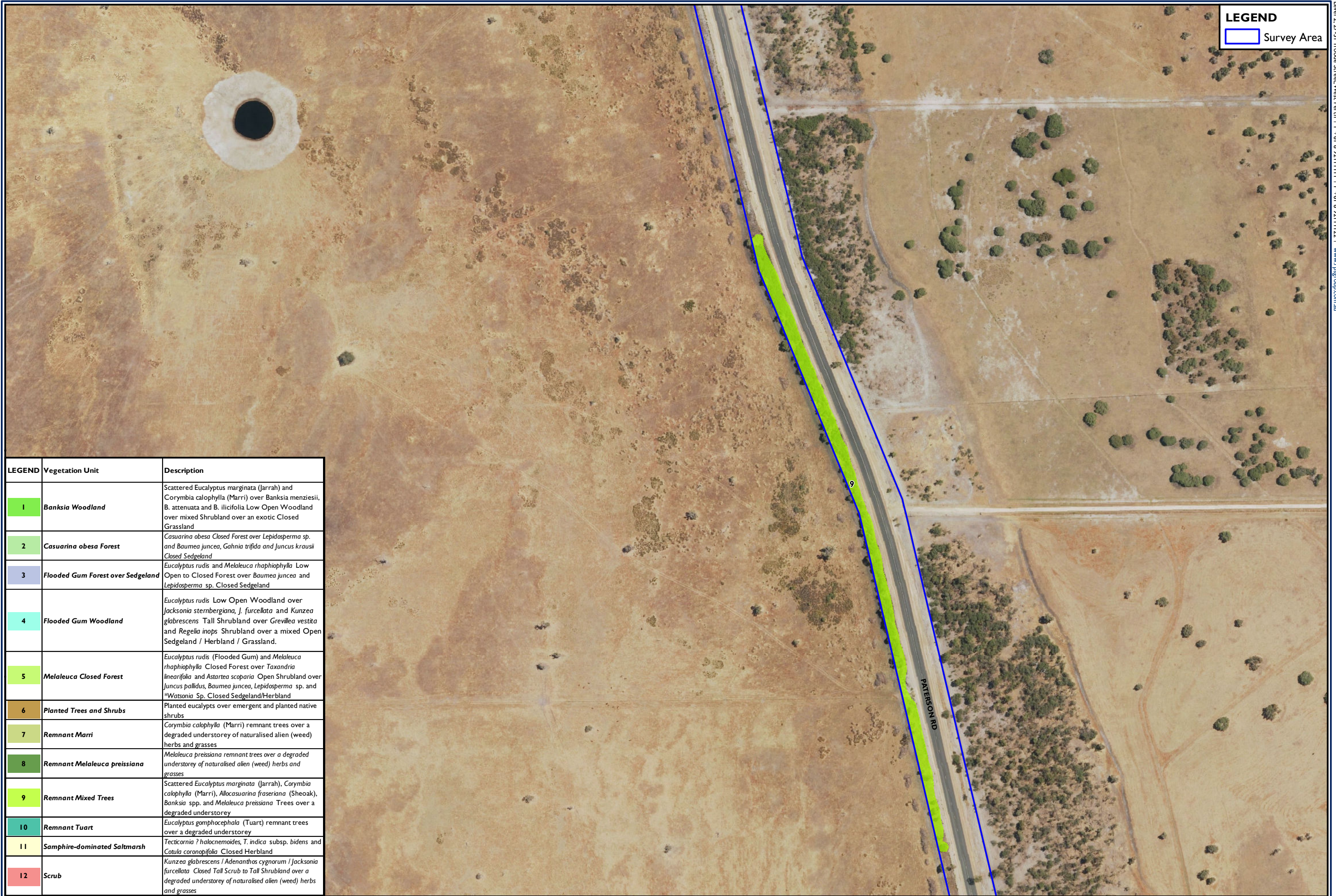


Figure C-11

Vegetation Units

LEGEND
 Survey Area



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

RPS

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

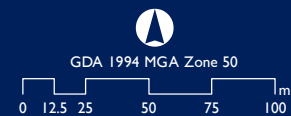


Figure C-12

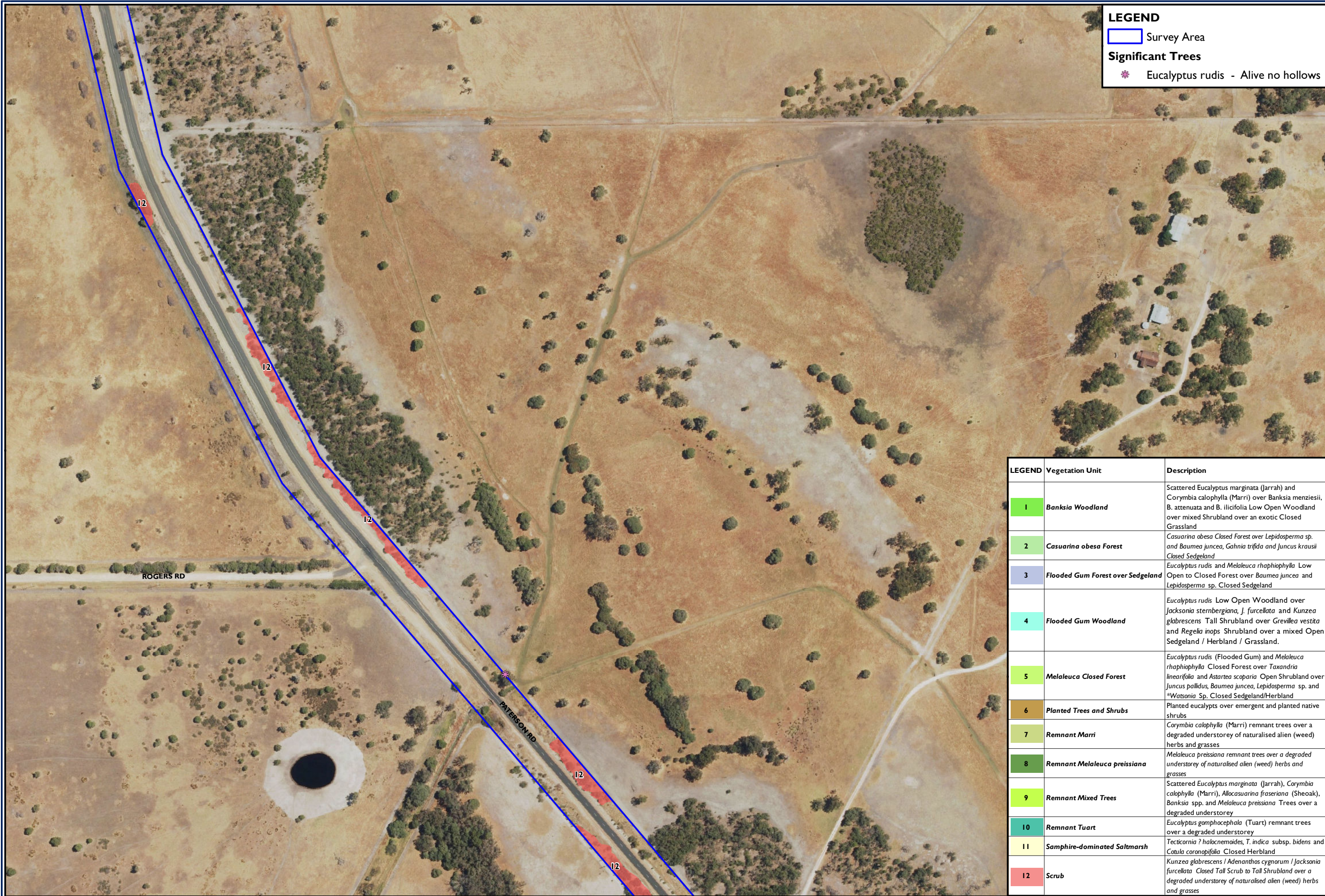
Vegetation Units

LEGEND

Survey Area

Significant Trees

* Eucalyptus rudis - Alive no hollows



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



Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

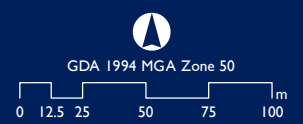
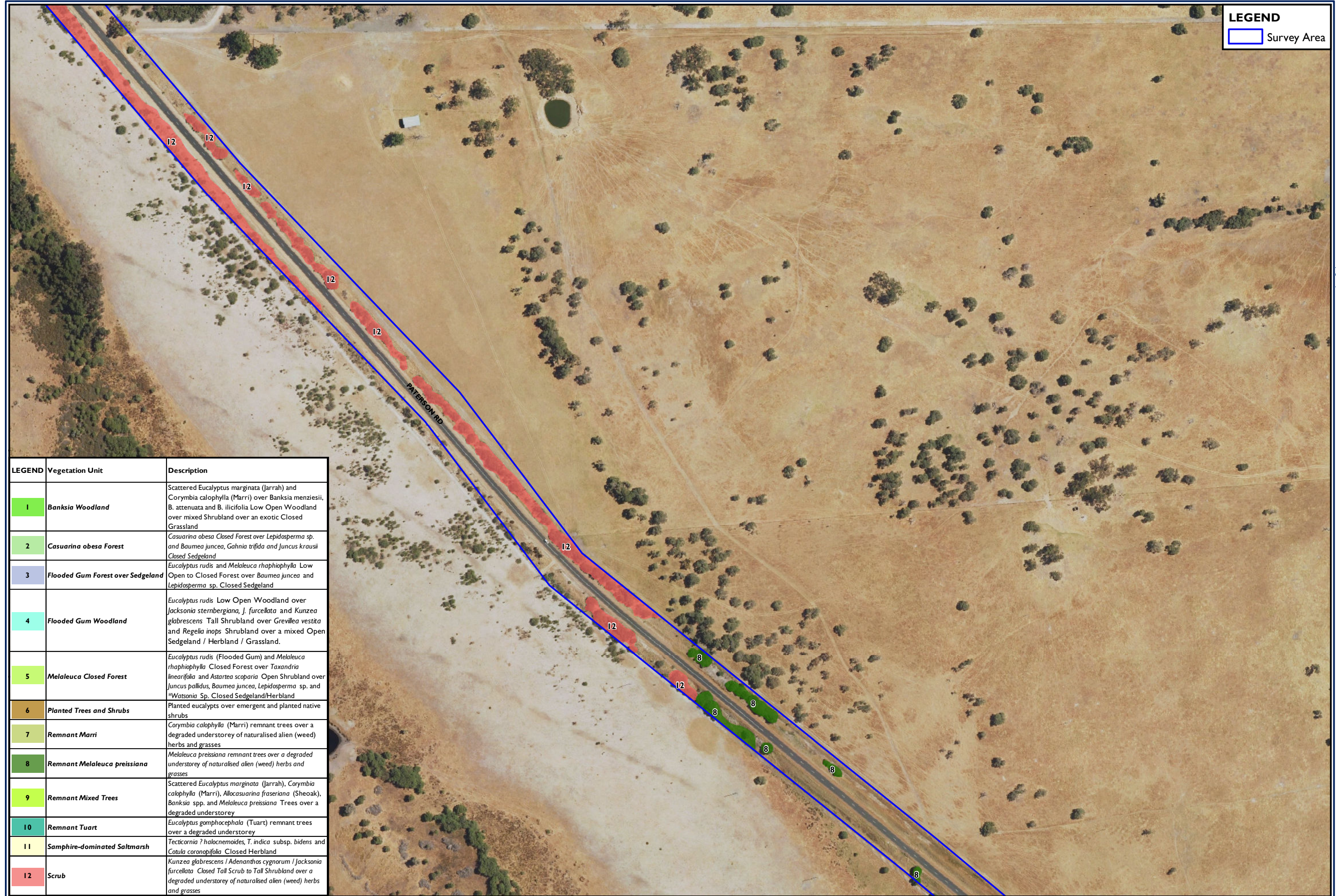


Figure C-13

Vegetation Units

LEGEND
 Survey Area



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

Level 2: 27-31 Troode Street West Perth | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au

RPS

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

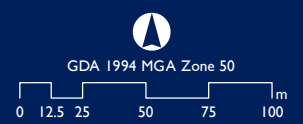
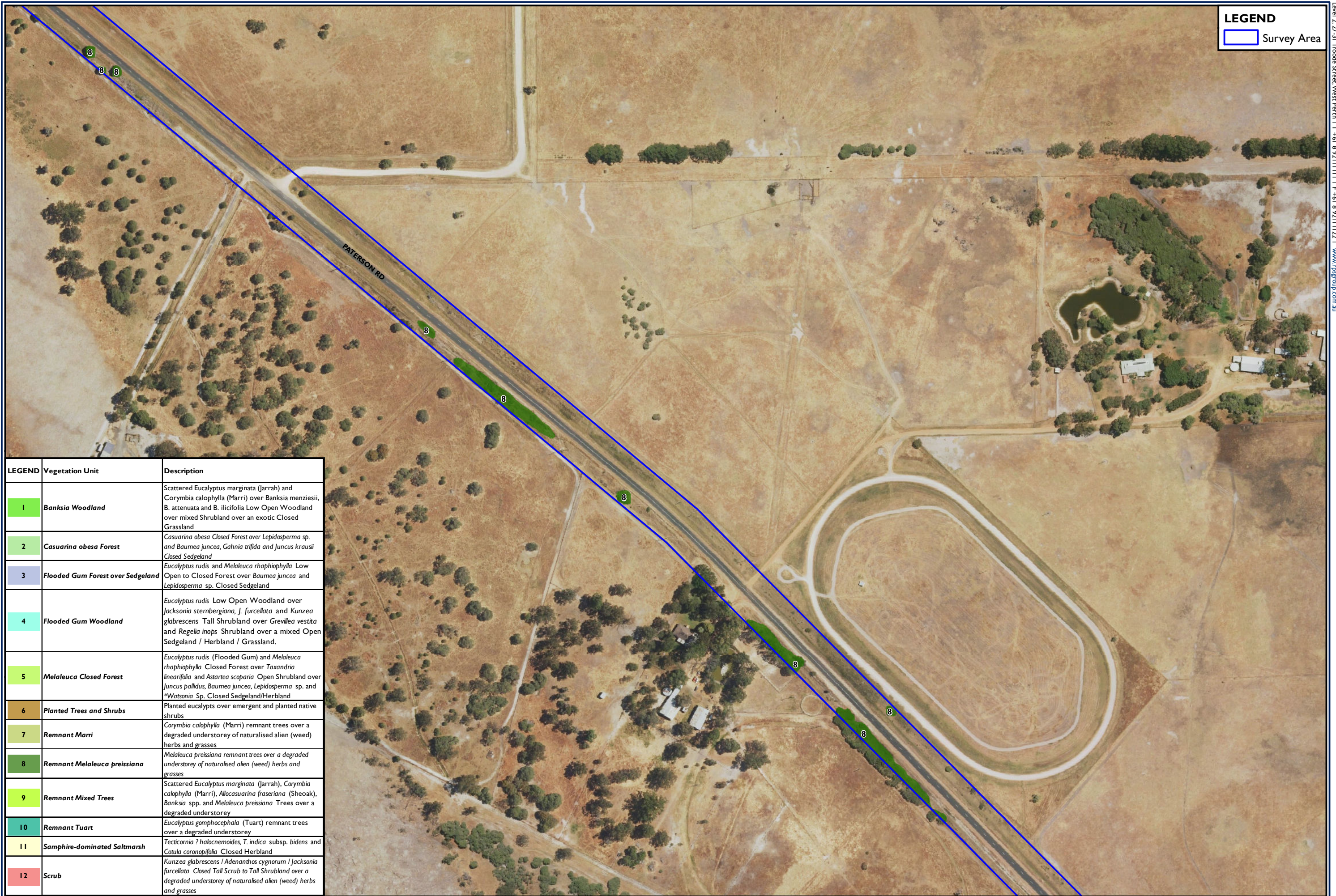


Figure C-14

Vegetation Units

LEGEND
 Survey Area



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

RPS

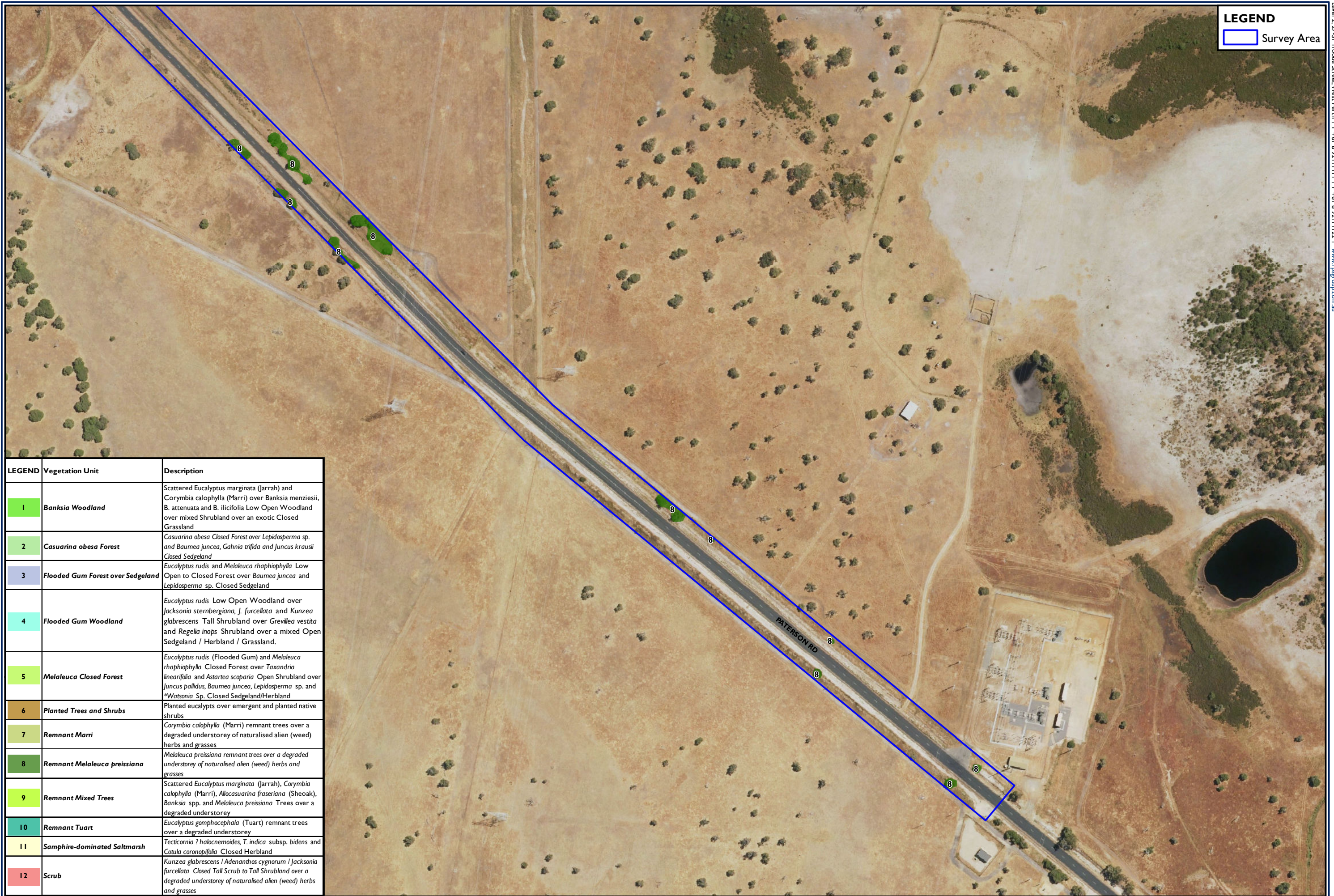
Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017



Figure C-15

Vegetation Units

LEGEND
 Survey Area



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

RPS

Job Number: L11266.006
 Doc Number: 003
 Date: 08.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

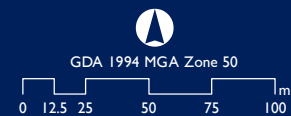

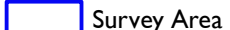


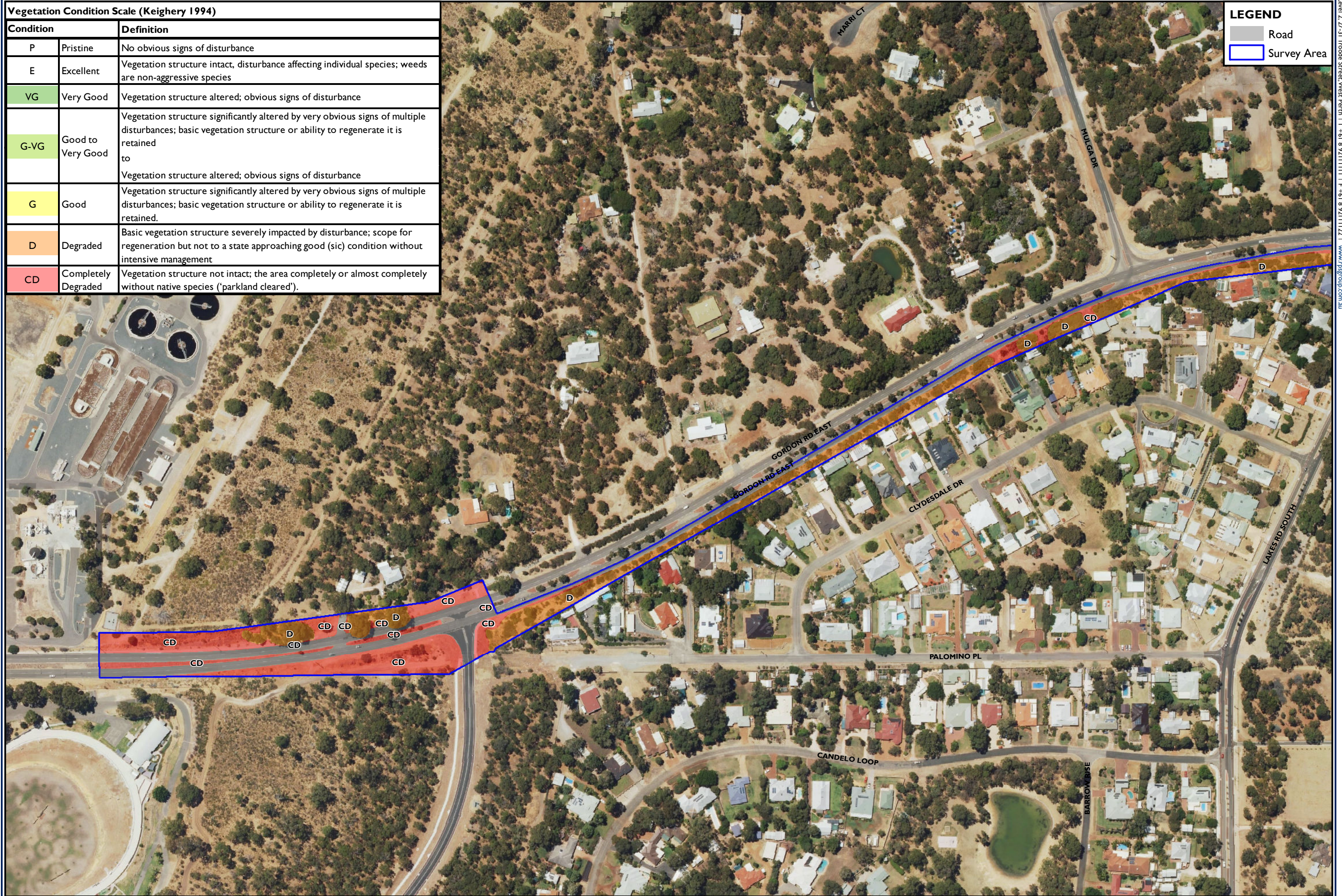
Figure C-16

Vegetation Units

| 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 |
| 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'). |

LEGEND

-  Road
-  Survey Area



Level 2, 27-31 Troode Street, West Perth | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

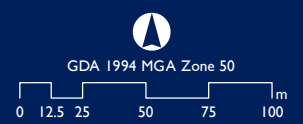




Figure D-1

Vegetation Condition

| 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 |
| 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'). |

LEGEND

-  Road
-  Survey Area



Level 2, 27-31 Troode Street, West Perth | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

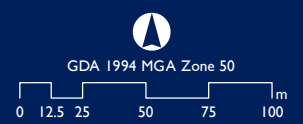


Figure D-2

Vegetation Condition

LEGEND
 Road
 Survey Area



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 |
| G | Good Vegetation structure altered; obvious signs of disturbance 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'). |

RPS

Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

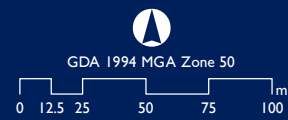
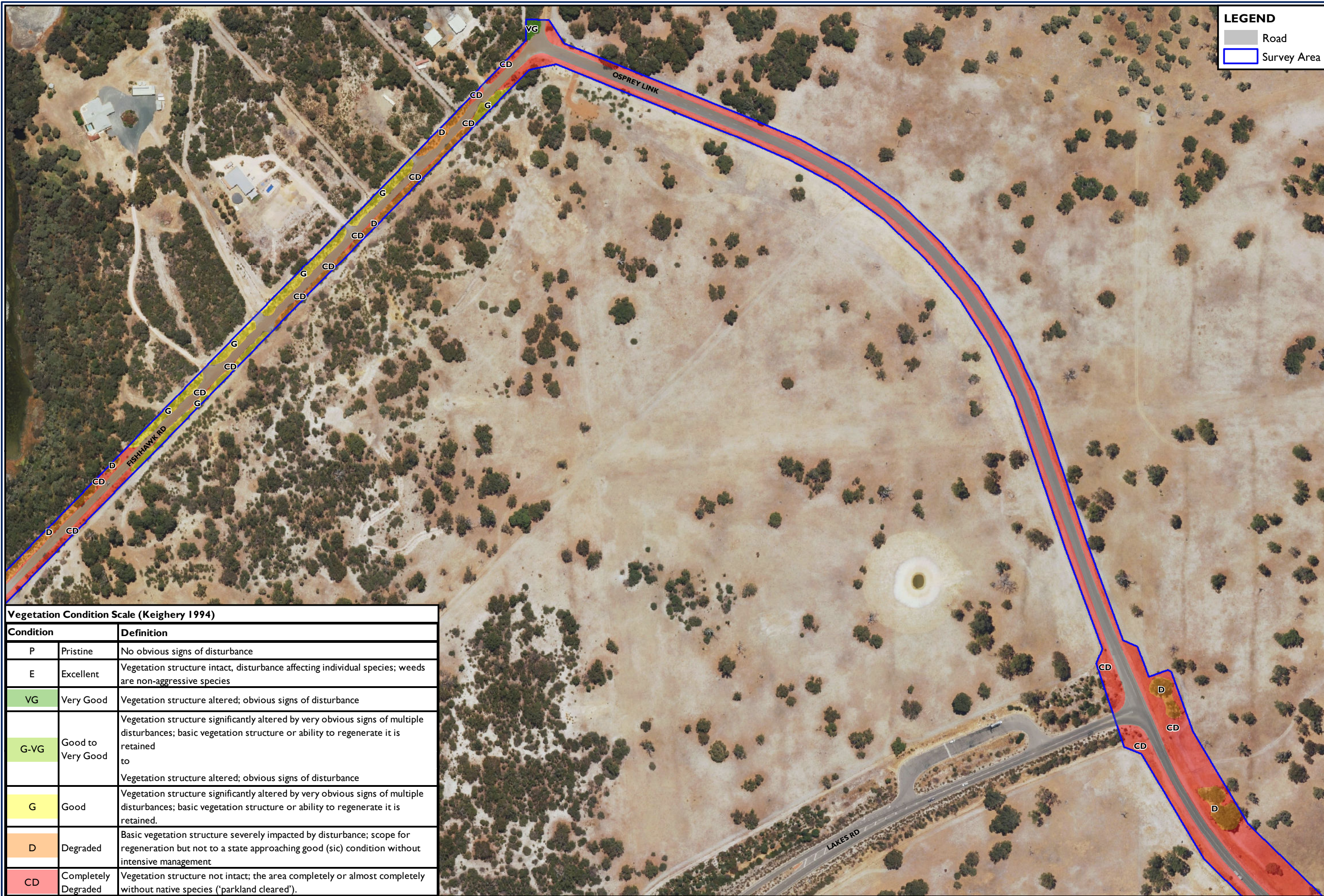


Figure D-3

Vegetation Condition



LEGEND

- Road
- Survey Area

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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

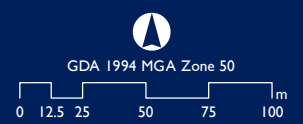
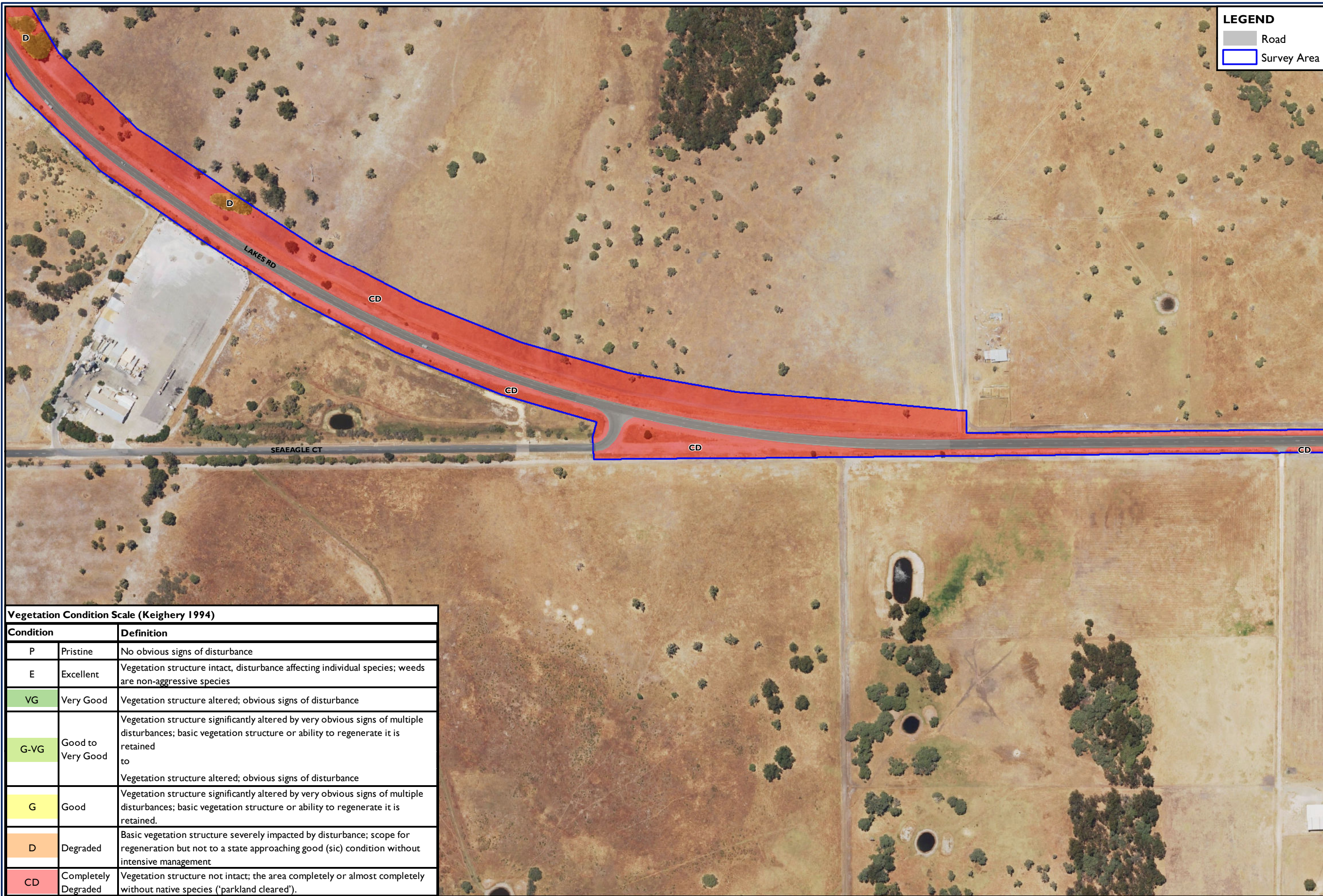


Figure D-4

Vegetation Condition



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

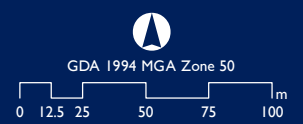
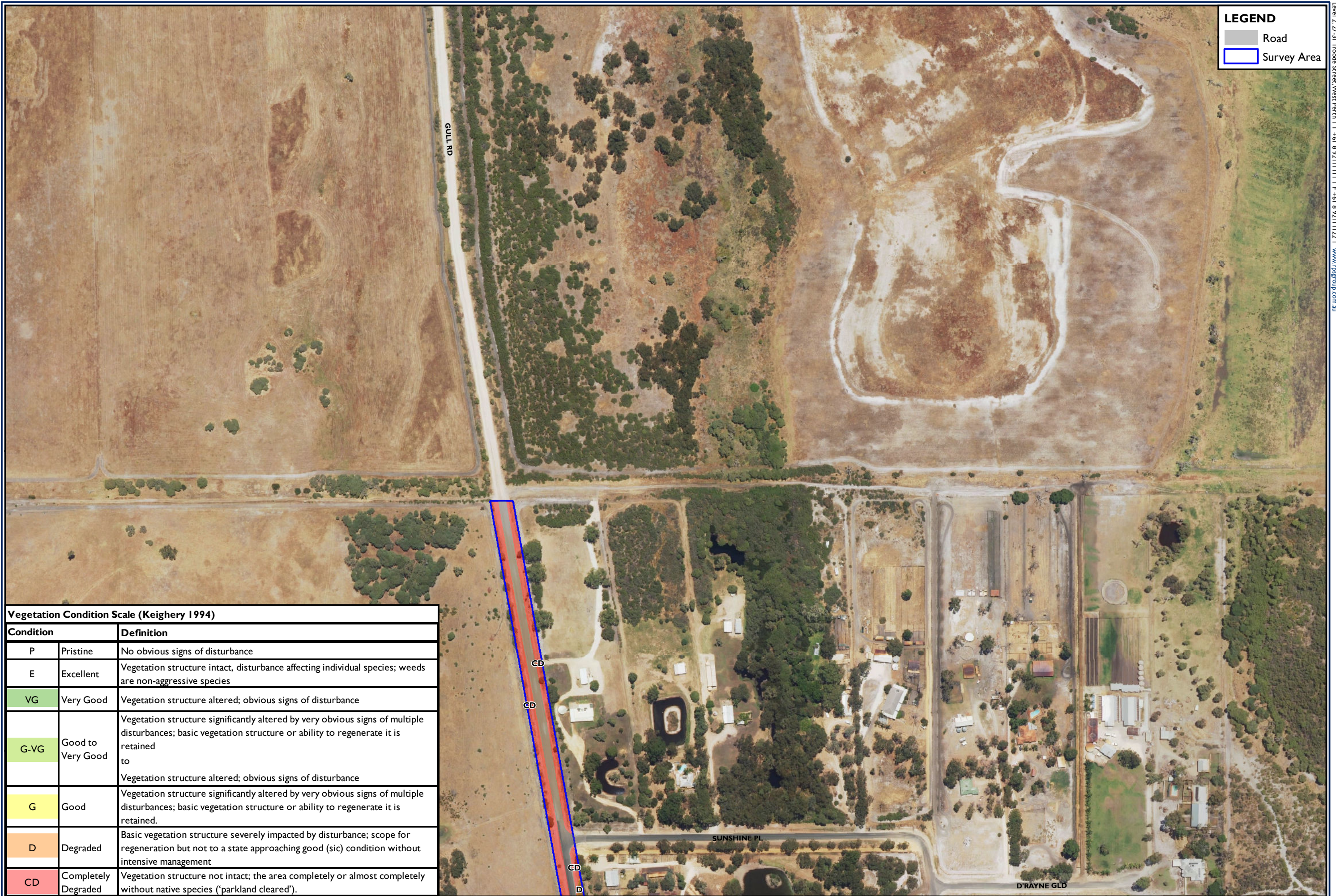


Figure D-5

Vegetation Condition

LEGEND
 Road
 Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

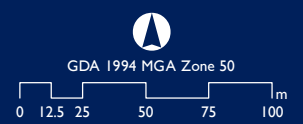
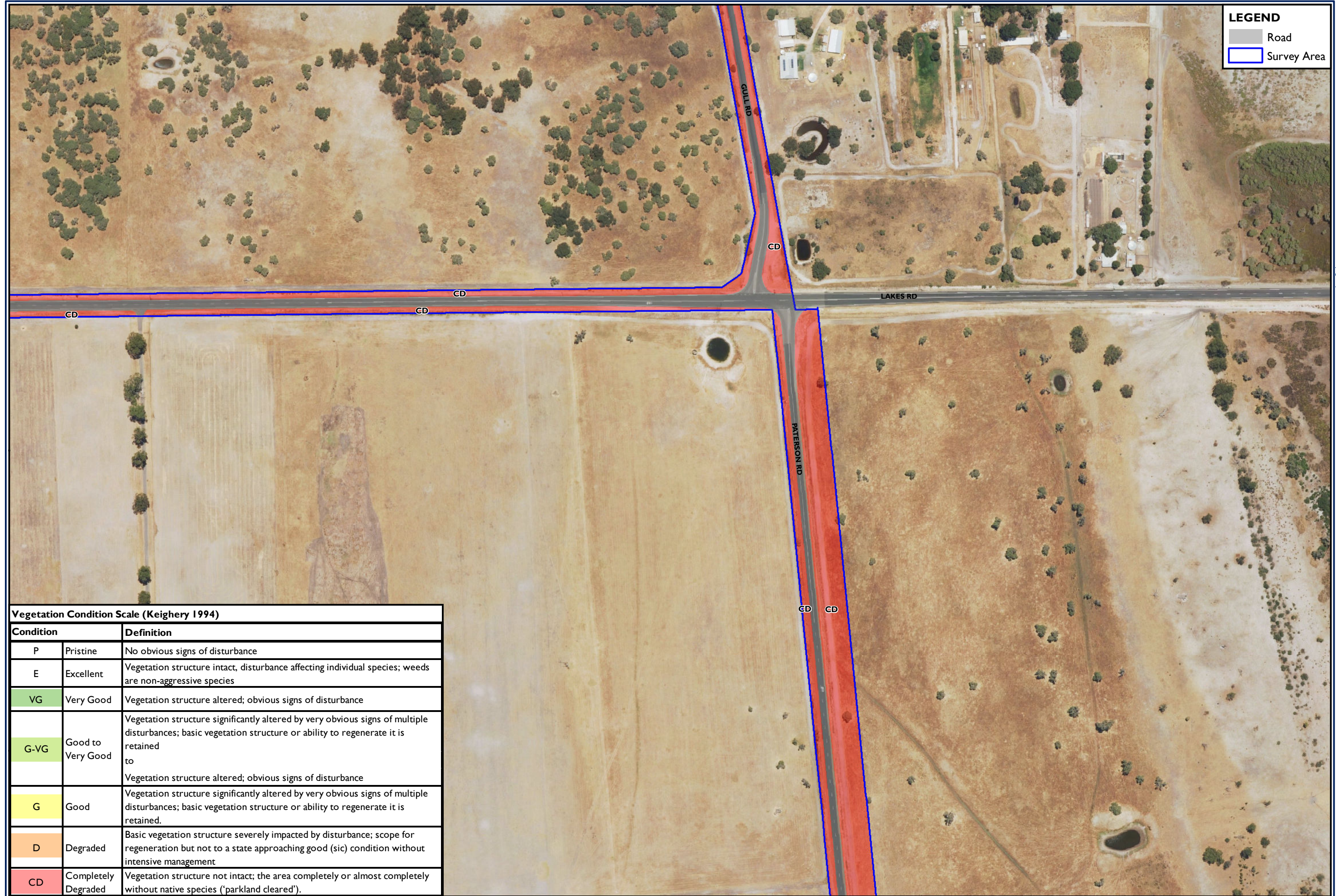


Figure D-6

Vegetation Condition

LEGEND

- Road
- Survey Area



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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

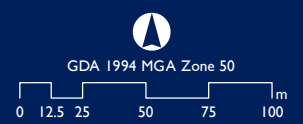
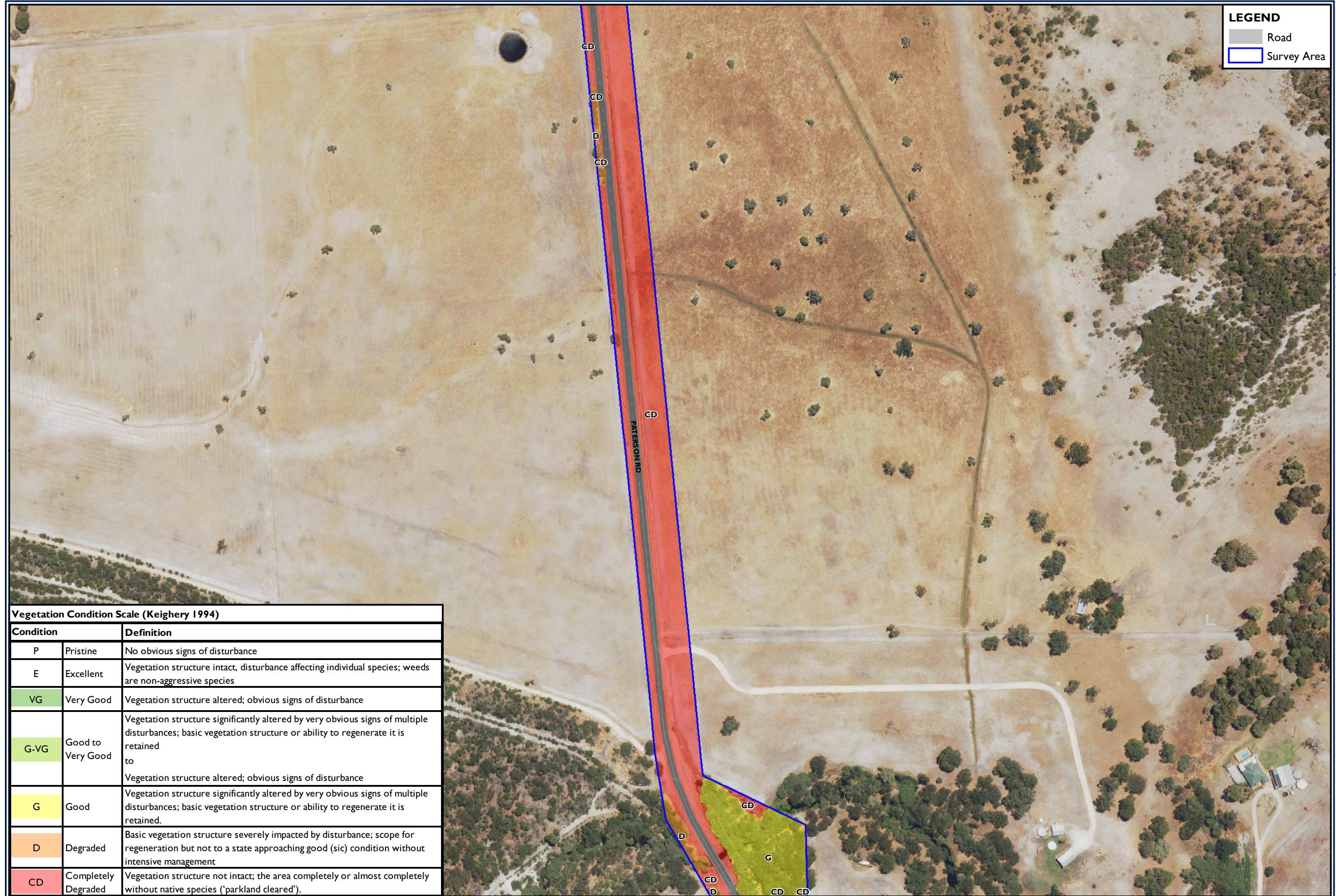


Figure D-8

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

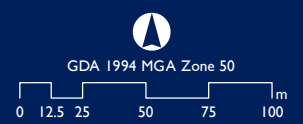
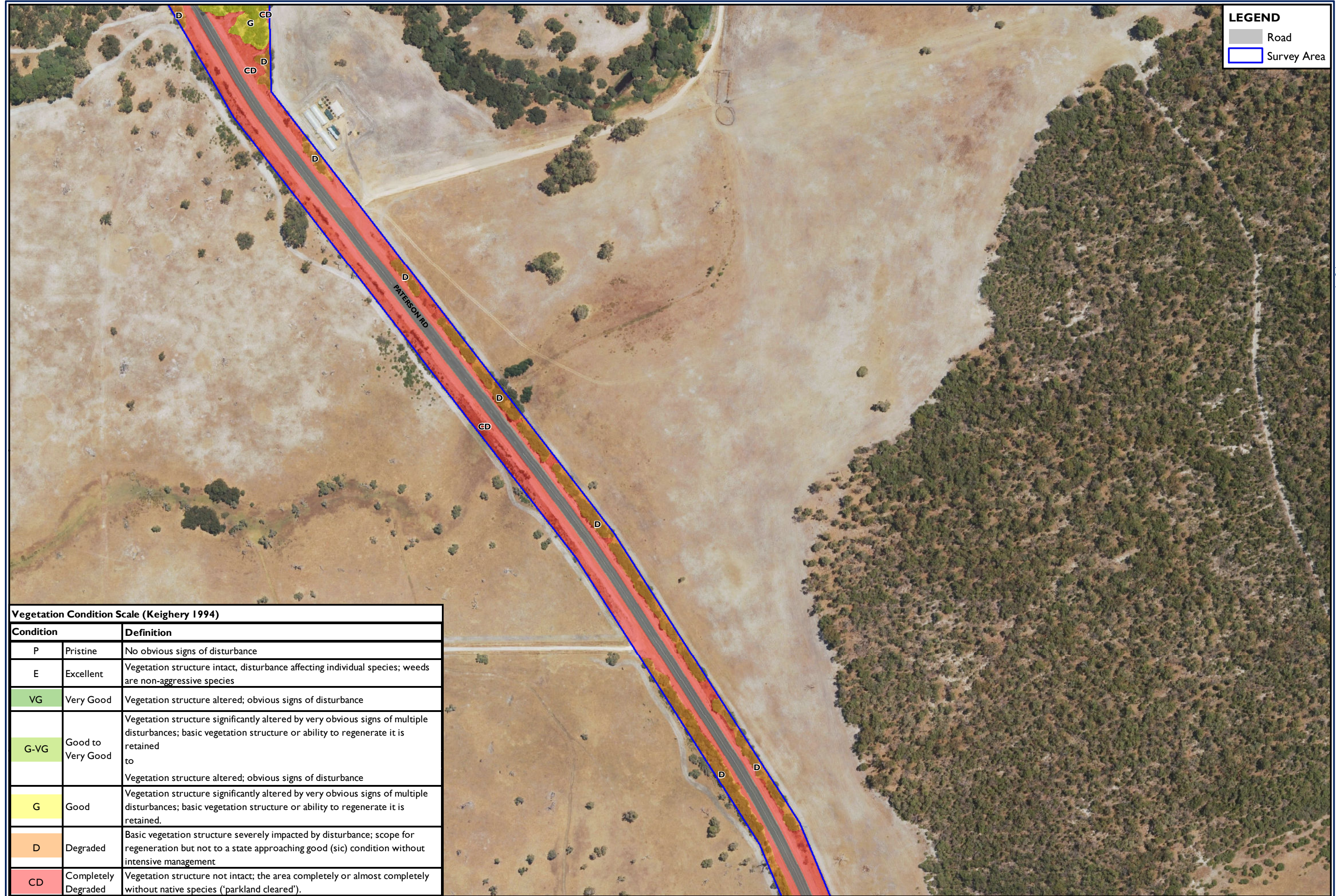


Figure D-9

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

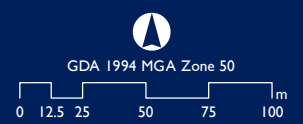
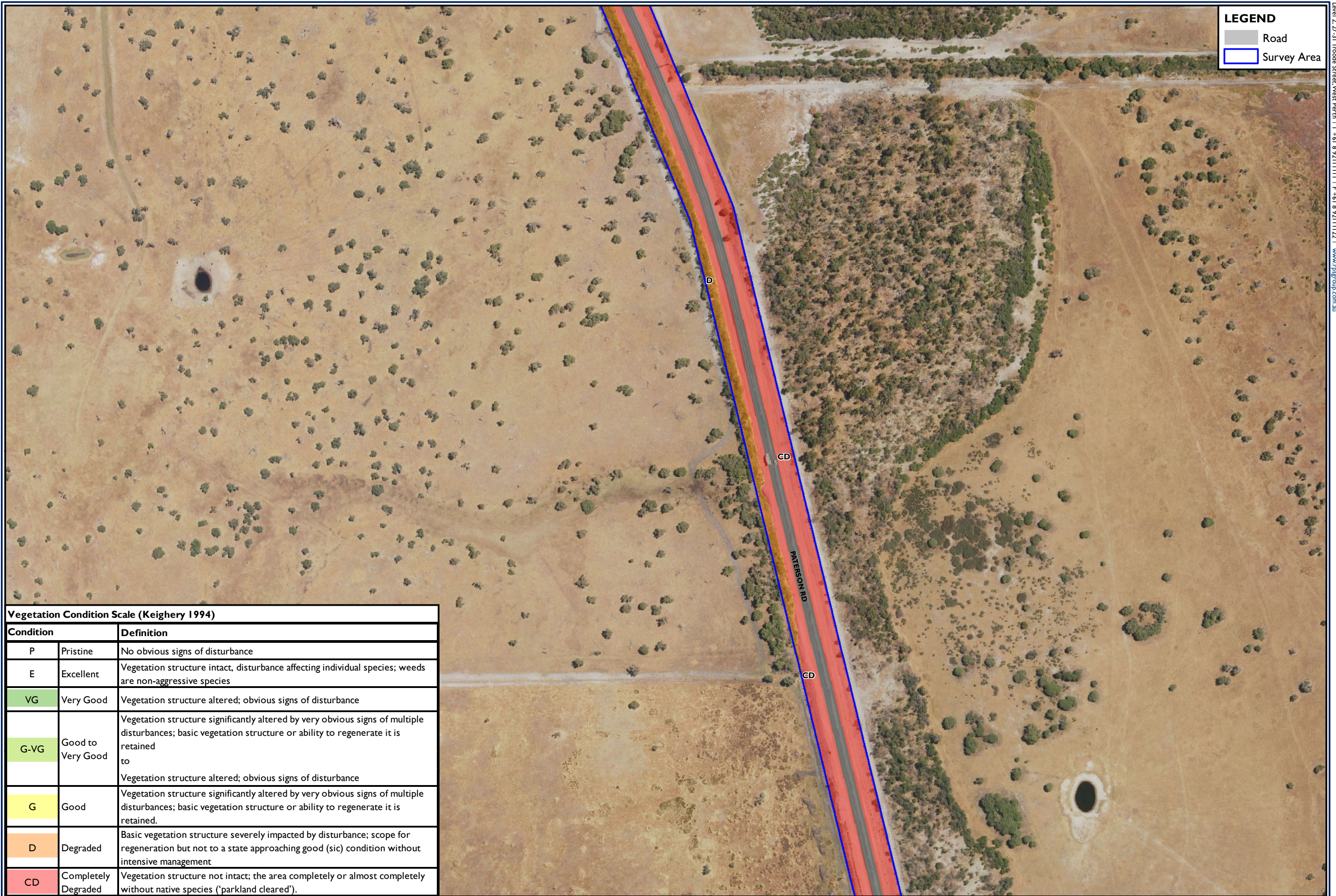


Figure D-10

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

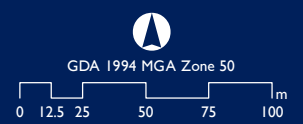
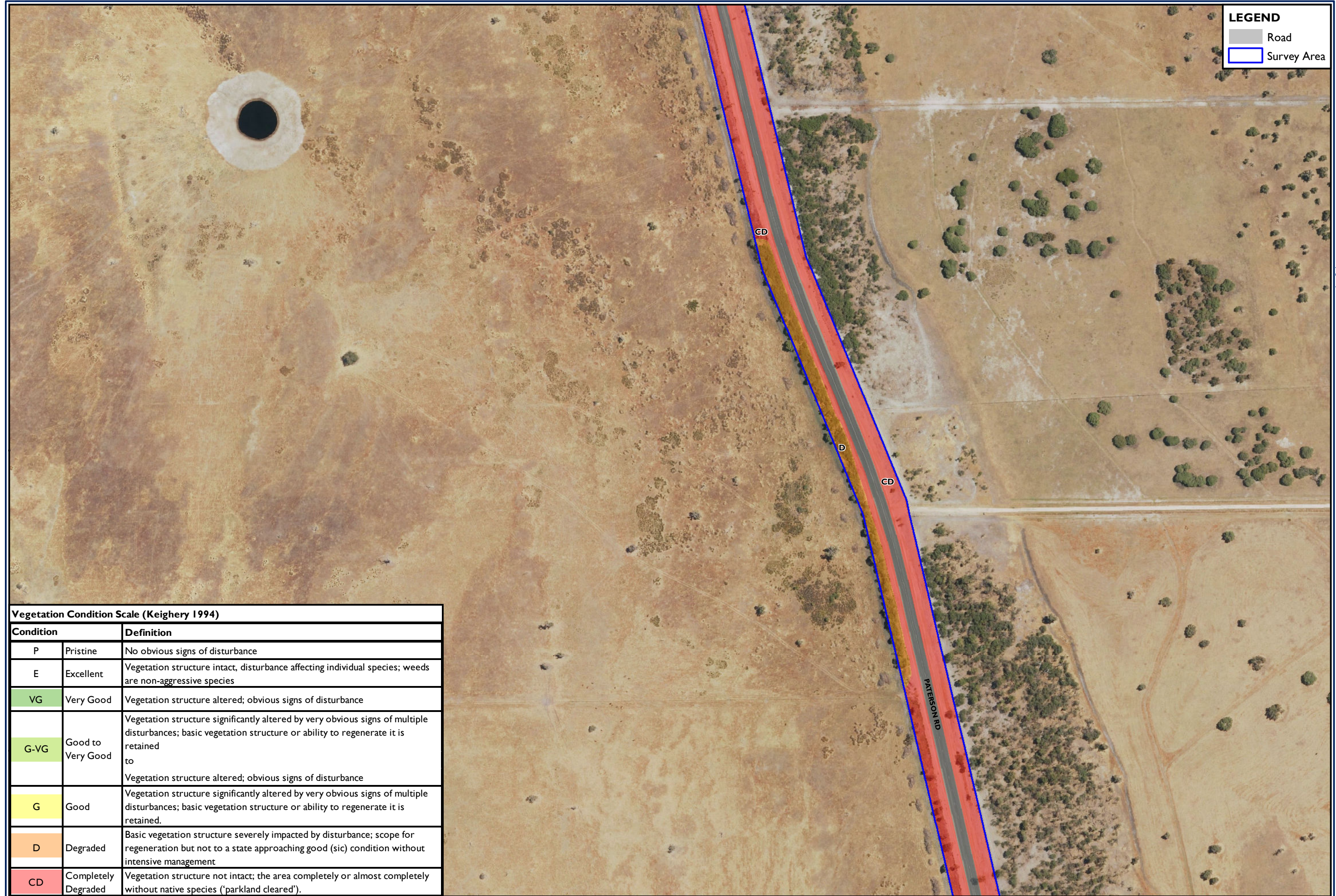


Figure D-11

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

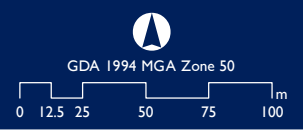
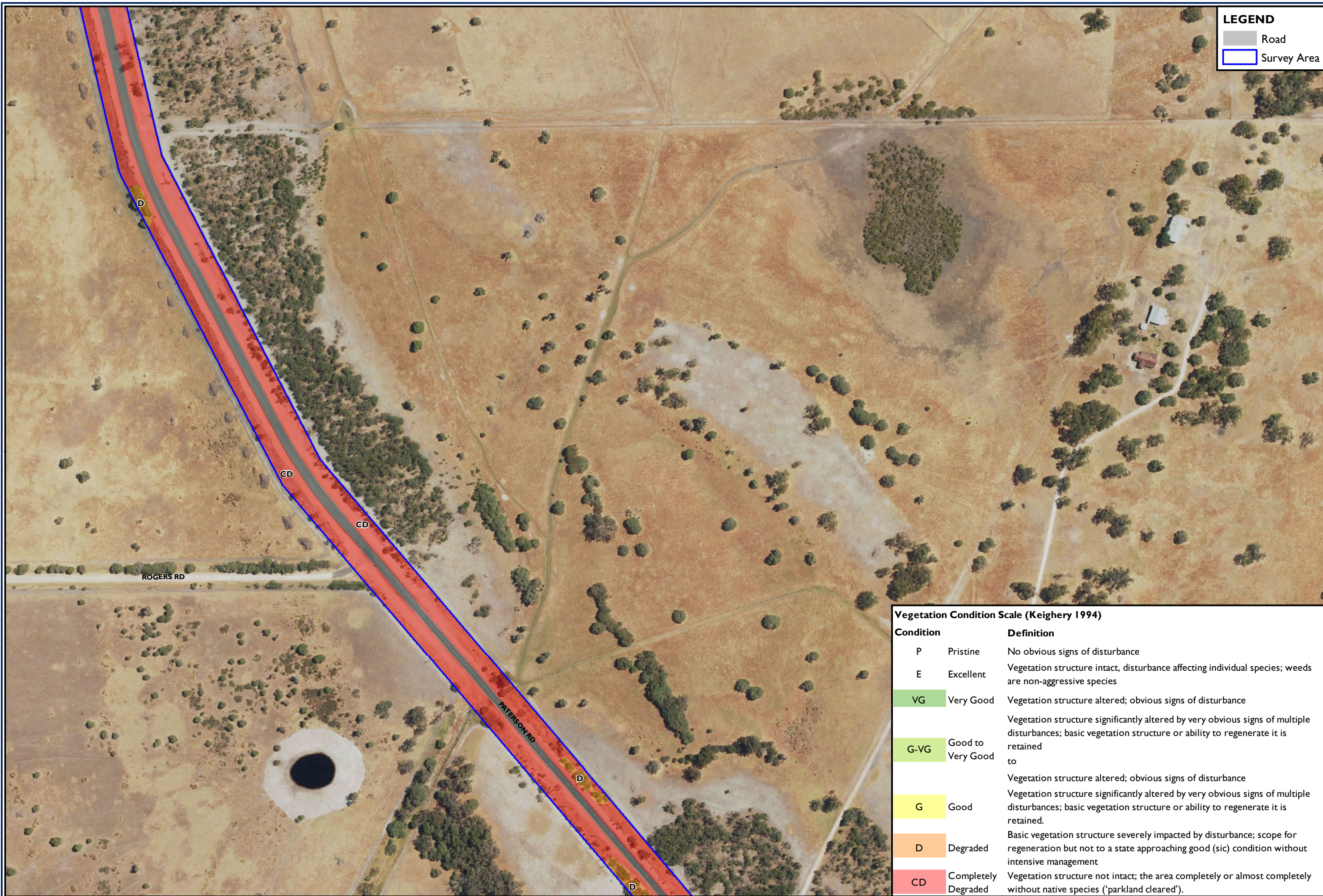


Figure D-12

Vegetation Condition



LEGEND

- Road
- Survey Area

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 |
| G | Good Vegetation structure altered; obvious signs of disturbance 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

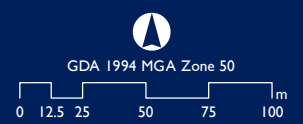
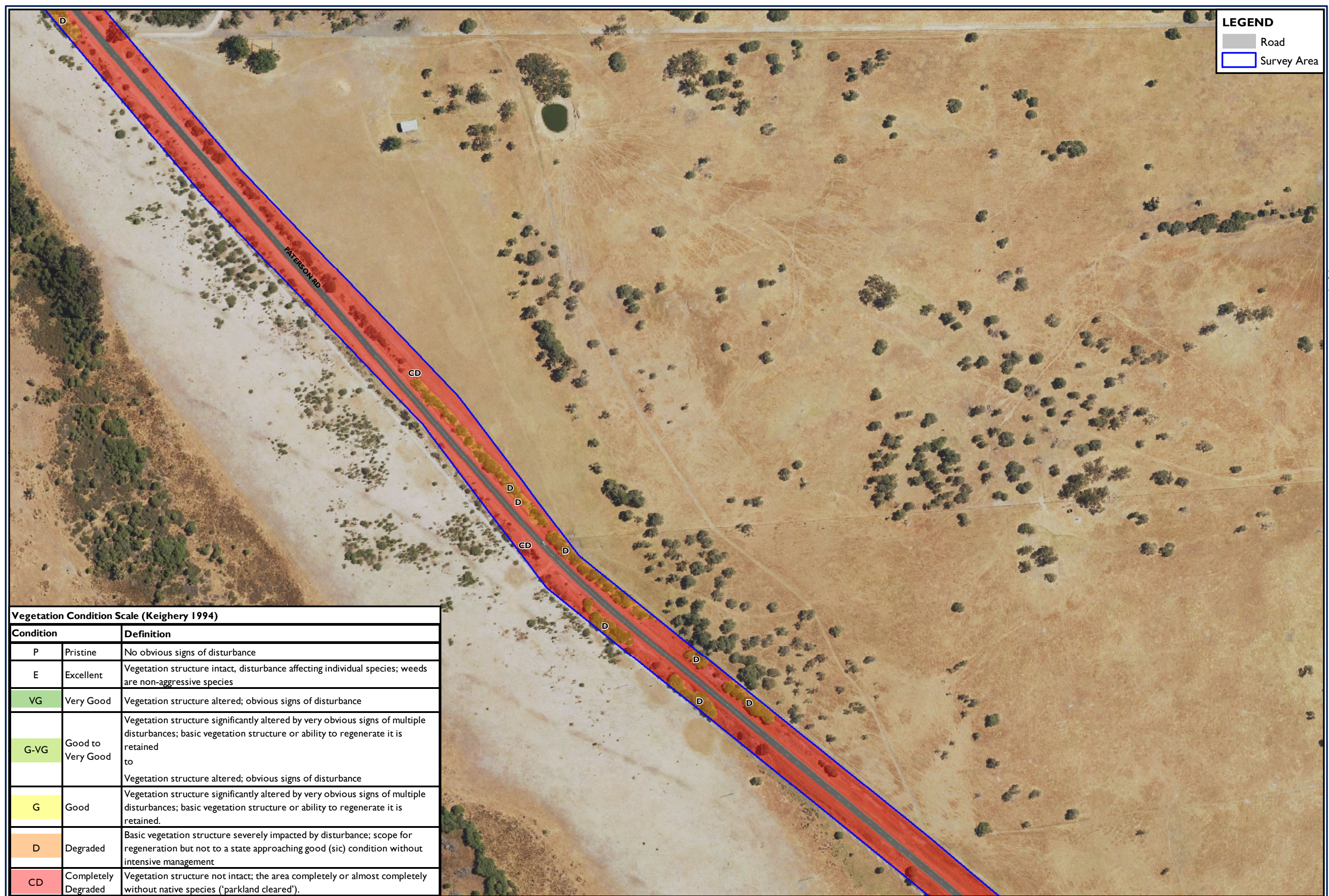


Figure D-13

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

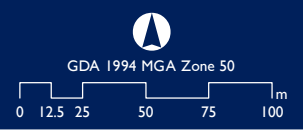
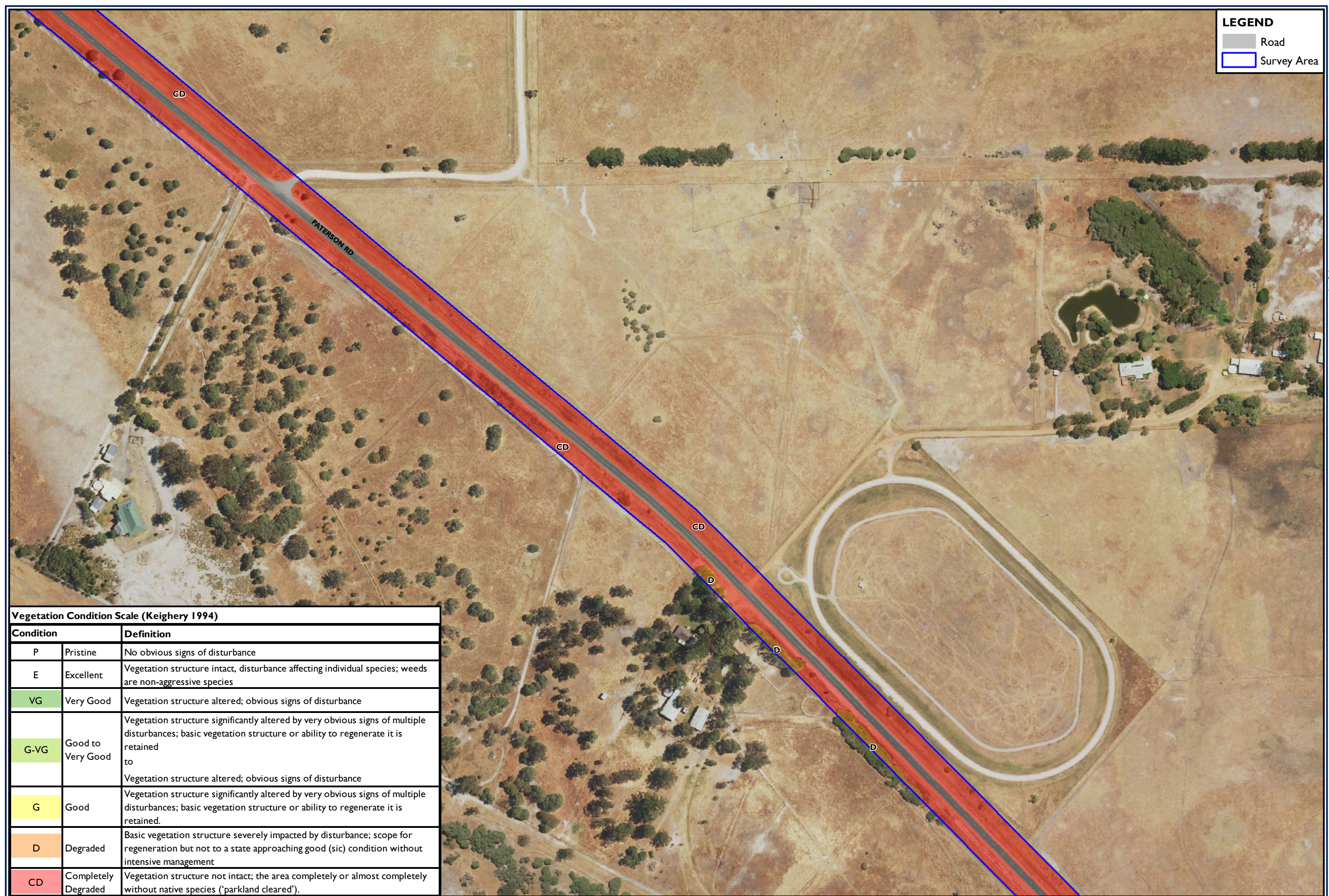


Figure D-14

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

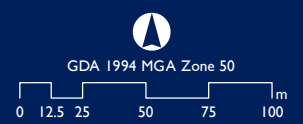
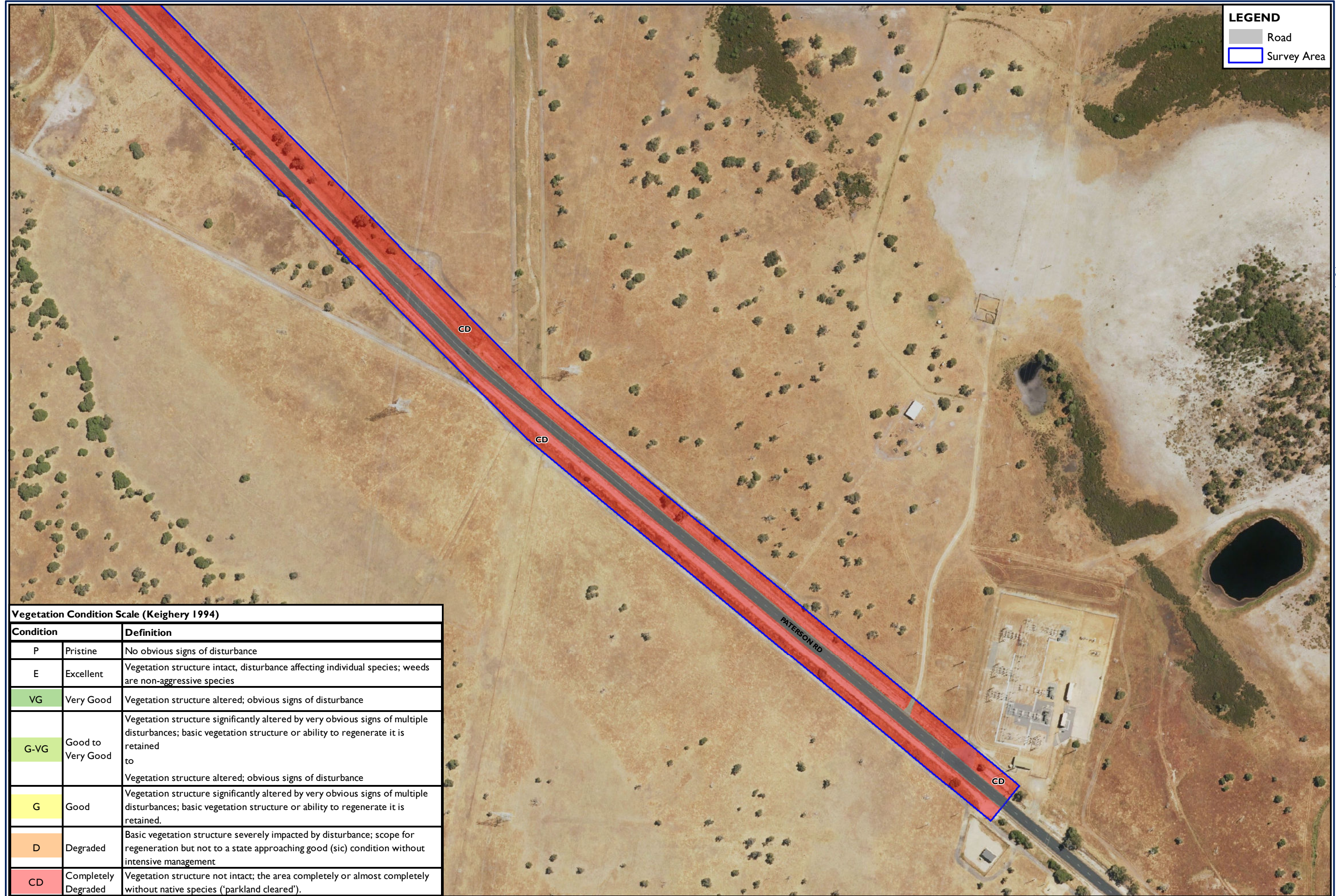


Figure D-15

Vegetation Condition

LEGEND

- Road
- Survey Area



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 |
| 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'). |



Job Number: L11266.006
 Doc Number: 004
 Date: 04.07.17
 Scale: 1:3,000 @ A3
 Created by: MA
 Source: Cadastre - Landgate, 2017 Orthophoto - Landgate, Feb 2017

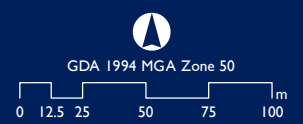


Figure D-16

Vegetation Condition

Appendix A

Definitions

Appendix A Definitions

Table A-1 Conservation Codes for Western Australian Flora (WAH 2017)

| Category | Definition |
|----------|---|
| T | <p>Threatened Flora (Extant)</p> <p>Taxa that have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such (Schedule 1 of the Wildlife Conservation (Rare Flora) Notice under the <i>Wildlife Conservation Act 1950</i>). Threatened Flora (Schedule 1) are further ranked by the Department according to their level of threat using IUCN Red List criteria:</p> <p>CR: Critically Endangered – considered to be facing an extremely high risk of extinction in the wild</p> <p>EN: Endangered – considered to be facing a very high risk of extinction in the wild</p> <p>VU: Vulnerable – considered to be facing a high risk of extinction in the wild.</p> |
| X | <p>Presumed Extinct Flora</p> <p>Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such (Schedule 2 of the Wildlife Conservation (Rare Flora) Notice under the <i>Wildlife Conservation Act 1950</i>).</p> |
| P1 | <p>Priority One: Poorly-known Taxa</p> <p>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</p> |
| P2 | <p>Priority Two: Poorly-known Taxa</p> <p>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.</p> |
| P3 | <p>Priority Three: Poorly-known Taxa</p> <p>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.</p> |
| P4 | <p>Priority Four: Rare, Near Threatened and Other Taxa in Need of Monitoring</p> <p>(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.</p> |

Table A-2 EPBC Act Conservation Codes (IUCN Red List 2017)

| Category | Definition |
|----------|--|
| EX | <p>Extinct</p> <p>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.</p> |
| EW | <p>Extinct in the Wild</p> <p>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.</p> |
| CR | <p>Critically Endangered</p> <p>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.</p> |
| EN | <p>Endangered</p> <p>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.</p> |
| VU | <p>Vulnerable</p> <p>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.</p> |
| NT | <p>Near Threatened</p> <p>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.</p> |
| LC | <p>Least Concern</p> <p>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.</p> |
| DD | <p>Data Deficient</p> <p>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.</p> |
| NE | <p>Not Evaluated</p> <p>A taxon is Not Evaluated when it has not yet been evaluated against the criteria.</p> |

Table A-3 FCT Reservation Status Categories (Gibson et al. 1994)

| Reservation Status | Description |
|--------------------|--|
| Well Reserved | Known from two or more A class National Parks or Nature Reserves |
| Poorly Reserved | Known from a single A class National Park or Nature Reserve |
| Unreserved | Not known to occur in any A class National Park or Nature Reserve. |

Table A-4 FCT Conservation Status Categories (Gibson et al. 1994)

| Conservation Status | Description |
|----------------------|--|
| Presumed Destroyed | A community that is totally destroyed or so extensively modified that it is unlikely to re-establish ecosystem processes in the foreseeable future. |
| Critical | A community with most or all of its known occurrences facing severe modification or destruction in the immediate future. |
| Endangered | A community in danger of severe modification or destruction throughout its range, if causal factors continue operating. |
| Vulnerable | A community likely to move into the endangered category in the near future if the causal factors continue operating. |
| Susceptible | A community of concern because there is evidence that it can be modified or destroyed by human activities or would be vulnerable to new threatening process. |
| Low Risk | A community that does not qualify for one of the above categories |
| Insufficiently Known | A community for which there is inadequate data to assign to one of the above categories. |

Table A-5 Threatened Ecological Communities Category of Threat (English and Blyth 1997)

| 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: <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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). |

| Category | Definition |
|-----------------|---|
| | <ul style="list-style-type: none"> • 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. <p>b. Current distribution is limited, and one or more of the following apply (i, ii or iii):</p> <ul style="list-style-type: none"> i. 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). ii. There are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes. iii. 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. <p>c. 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).</p> |
| Endangered (EN) | <p>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):</p> <p>a. 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)</p> <ul style="list-style-type: none"> i. 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). ii. 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. <p>b. Current distribution is limited, and one or more of the following apply (i, ii or iii):</p> <ul style="list-style-type: none"> i. 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). ii. There are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes. iii. 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. <p>c. 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).</p> |
| Vulnerable (VU) | <p>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):</p> <p>a. The ecological community exists largely as modified occurrences, which are likely to be capable of being substantially restored or rehabilitated.</p> <p>b. 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.</p> <p>c. 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.</p> |

| 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. |

Table A-6 Vegetation Structure Classes (WAPC 2000)

| Life Form/ Height Class | Canopy Cover (Percentage) | | | |
|----------------------------|---------------------------|-----------------|-------------------|------------------------|
| | 100% – 70% | 70% – 30% | 30% – 10% | 10% – 2% |
| Trees 10–30 m | Closed Forest | Open Forest | Woodland | Open Woodland |
| Trees <10 m | Low Closed Forest | Low Open Forest | Low Woodland | Low Open Woodland |
| Shrub Mallee | Closed Shrub Mallee | Shrub Mallee | Open Shrub Mallee | Very Open Scrub Mallee |
| Shrubs >2 m | Closed Tall Scrub | Tall Open Scrub | Tall Shrubland | Tall Open Shrubland |
| Shrubs 1–2 m | Closed Heath | Open Heath | Shrubland | Open Shrubland |
| Shrubs <1 m | Closed Low Heath | Open Low Heath | Low Shrubland | Low Open Shrubland |
| Grasses | Closed Grassland | Grassland | Open Grassland | Very Open Grassland |
| Herbs | Closed Herbland | Herbland | Open Herbland | Very Open Herbland |
| Sedges | Closed Sedgeland | Sedgeland | Open Sedgeland | Very Open Sedgeland |

(Source: Western Australian Planning Commission 2000)

Table A-7 Vegetation Condition Scale (adapted from Keighery 1994 and Trudgen 1988)

| 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"). |

**Table A-8 Wetland Management Categories and Objectives Applied to the Swan Coastal Plain
(Adapted from Environmental Protection Authority 2004)**

| Management Category | General Description | Management Objectives |
|----------------------------|---|---|
| Conservation | Wetlands which support a high level of attributes and functions. | <p>Highest priority wetlands.</p> <p>Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including:</p> <ul style="list-style-type: none"> • reservation in national parks, Crown reserves and state owned land • protection under Environmental Protection Policies • wetland covenanting by landowners. <p>No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.</p> |
| Resource Enhancement | Wetlands which may have been partially modified but still support substantial ecological attributes and functions | <p>Priority wetlands</p> <p>Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland function, structure and biodiversity. Protection is recommended through a number of mechanisms.</p> |
| Multiple Use | Wetlands with few remaining important attributes and functions | Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through land care. |

RPS

Appendix B

Flora Inventory

Appendix B Flora Inventory

| Family | Weed | Species |
|-------------------|------|---|
| ARACEAE | * | <i>Zantedeschia aethiopica</i> |
| ASPARAGACEAE | | <i>Sowerbaea laxiflora</i> |
| ASPHODELACEAE | * | <i>Trachyandra divaricata</i> |
| ASTERACEAE | * | <i>Arctotheca calendula</i> |
| | | <i>Cotula coronopifolia</i> |
| | * | <i>Ursinia anthemoides</i> |
| CASUARINACEAE | | <i>Allocasuarina fraseriana</i> |
| | | <i>Casuarina obesa</i> |
| CHENOPODIACEAE | * | <i>Chenopodium album</i> |
| CHENOPODIACEAE | | <i>Tecticornia ? halocnemoides</i> |
| CHENOPODIACEAE | | <i>Tecticornia indica subsp. bidens</i> |
| CYPERACEAE | | <i>Baumea juncea</i> |
| | | <i>Cyathochaeta avenacea</i> |
| | | <i>Gahnia trifida</i> |
| | | <i>Lepidosperma longitudinale</i> |
| | | <i>Lepidosperma sp.</i> |
| | | <i>Tetraria octandra</i> |
| DASYPOGONACEAE | | <i>Dasypogon bromelliifolius</i> |
| | | <i>Kingia australis</i> |
| DILLENiaceae | | <i>Hibbertia hypericoides</i> |
| EUPHORBIACEAE | * | <i>Euphorbia terracina</i> |
| FABACEAE | | <i>Acacia pulchella</i> |
| | | <i>Acacia saligna</i> |
| | | <i>Hardenbergia comptoniana</i> |
| | | <i>Jacksonia floribunda</i> |
| | | <i>Jacksonia furcellata</i> |
| | | <i>Jacksonia sternbergiana</i> |
| HAEMODORACEAE | | <i>Conostylis aculeata</i> |
| HEMEROCALLIDACEAE | | <i>Corynotheca micrantha</i> |
| | | <i>Dianella revoluta</i> |
| IRIDACEAE | | <i>Patersonia occidentalis</i> |
| | | <i>Watsonia sp.</i> |

| Family | Weed | Species | |
|------------------|------|---|--------------------------------|
| JUNCACEAE | | <i>Juncus kraussii</i> | |
| | | <i>Juncus pallidus</i> | |
| LAMIACEAE | | <i>Hemiandra pungens</i> | |
| LAURACEAE | | <i>Cassytha</i> sp. | |
| CAMPANULACEAE | | <i>Lobelia anceps</i> | |
| MYRTACEAE | | <i>Agonis flexuosa</i> | |
| | | <i>Astartea scoparia</i> | |
| | | <i>Calothamnus</i> sp. | |
| | | <i>Chamelaucium uncinatum</i> | |
| | | <i>Corymbia calophylla</i> | |
| | | <i>Eucalyptus gomphocephala</i> | |
| | | <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | |
| | | <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | |
| | | <i>Kunzea glabrescens</i> | |
| | | * | <i>Leptospermum laevigatum</i> |
| | | | <i>Melaleuca preissiana</i> |
| | | | <i>Melaleuca rhapsiophylla</i> |
| | | | <i>Regelia inops</i> |
| | | <i>Taxandria linearifolia</i> | |
| ORCHIDACEAE | | <i>Microtis media</i> | |
| POACEAE | * | <i>Briza maxima</i> | |
| | * | <i>Bromus diandrus</i> | |
| | * | <i>Cynodon dactylon</i> | |
| | * | <i>Ehrharta calycina</i> | |
| | * | <i>Ehrharta longiflora</i> | |
| | * | <i>Eragrostis curvula</i> | |
| | * | <i>Lolium perenne</i> | |
| PROTEACEAE | | <i>Adenanthos cygnorum</i> | |
| | | <i>Banksia attenuata</i> | |
| | | <i>Banksia grandis</i> | |
| | | <i>Banksia ilicifolia</i> | |
| | | <i>Banksia menziesii</i> | |
| | | <i>Grevillea vestita</i> | |
| RESTIONACEAE | | <i>Leptocarpus</i> sp. | |
| | | <i>Lyginia barbata</i> | |
| XANTHORRHOEACEAE | | <i>Xanthorrhoea preissii</i> | |
| ZAMIACEAE | | <i>Macrozamia riedlei</i> | |

Appendix C

Black Cockatoo Habitat Tree Data

Appendix C Black Cockatoo Habitat Tree Data

| Species | Alive/Dead/Hollows | Latitude | Longitude |
|---|--------------------|-----------|------------|
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51077 | 115.760232 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51072 | 115.760116 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51068 | 115.760348 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.5107 | 115.760518 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51077 | 115.760541 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51075 | 115.760601 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51069 | 115.760648 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51068 | 115.761203 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.51063 | 115.761588 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50798 | 115.781606 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50816 | 115.782119 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50816 | 115.782414 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50824 | 115.782573 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50838 | 115.783577 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50839 | 115.783684 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50843 | 115.783871 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50855 | 115.784473 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50889 | 115.785572 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50909 | 115.785749 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50898 | 115.786082 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.5091 | 115.786076 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50919 | 115.786195 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50921 | 115.786435 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50909 | 115.786529 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50917 | 115.786762 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50921 | 115.786888 |
| <i>Eucalyptus gomphocephala</i> | Alive no hollows | -32.50923 | 115.786979 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50967 | 115.787892 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50967 | 115.787856 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50977 | 115.788026 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50738 | 115.790764 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Dead with hollows | -32.50198 | 115.797381 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Alive no hollows | -32.5013 | 115.797924 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Alive no hollows | -32.50675 | 115.803786 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Alive no hollows | -32.50673 | 115.803813 |

| Species | Alive/Dead/Hollows | Latitude | Longitude |
|---|--------------------|-----------|------------|
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Alive no hollows | -32.50677 | 115.803854 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Alive no hollows | -32.50693 | 115.803873 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50761 | 115.804221 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50765 | 115.804237 |
| <i>Corymbia calophylla</i> | Dead no hollows | -32.50766 | 115.80425 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50776 | 115.80431 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50783 | 115.804357 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50944 | 115.806735 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50914 | 115.80622 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.5091 | 115.806145 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.50908 | 115.806085 |
| <i>Corymbia calophylla</i> | Dead no hollows | -32.50904 | 115.806044 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.54954 | 115.839416 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Alive no hollows | -32.5333 | 115.832262 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Dead with hollows | -32.53184 | 115.832094 |
| <i>Eucalyptus marginata</i> subsp. <i>marginata</i> | Dead with hollows | -32.52975 | 115.830823 |
| <i>Corymbia calophylla</i> | Dead with hollows | -32.52284 | 115.825998 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.52276 | 115.826171 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.52261 | 115.826157 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.52265 | 115.826024 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.52252 | 115.826006 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.52246 | 115.826087 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.52235 | 115.826061 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.52288 | 115.826057 |
| <i>Corymbia calophylla</i> | Alive no hollows | -32.5231 | 115.826056 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50922 | 115.784503 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50933 | 115.78433 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50938 | 115.783184 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50905 | 115.783363 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50873 | 115.783649 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.5087 | 115.783579 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50969 | 115.784889 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50974 | 115.785099 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.5098 | 115.785073 |
| <i>Eucalyptus rudis</i> subsp. <i>rudis</i> | Alive no hollows | -32.50987 | 115.784996 |
| Planted Non-endemic Eucalypt | Alive no hollows | -32.51002 | 115.784909 |
| Planted Non-endemic Eucalypt | Alive no hollows | -32.51014 | 115.784774 |
| Planted Non-endemic Eucalypt | Alive no hollows | -32.51019 | 115.784737 |
| Planted Non-endemic Eucalypt | Alive no hollows | -32.51021 | 115.784701 |