FLORA AND VEGETATION ASSESSMENT OF

ALINTA GAS PIPELINE

STAGE 5

GERALDTON TO DAMPIER

REPORT AND APPENDICES

Prepared for:

Alinta

Prepared by:

Mattiske Consulting Pty Ltd

September 2006

MATTISKE CONSULTING PTY LTD

FLORA AND VEGETATION ASSESSMENT OF

ALINTA GAS PIPELINE

STAGE 5

GERALDTON TO DAMPIER

MAPS

Prepared for:

Alinta

Prepared by:

Mattiske Consulting Pty Ltd

September 2006

MATTISKE CONSULTING PTY LTD

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

Page

TABLES

FIGURES

APPENDICES

1. SUMMARY

Mattiske Consulting Pty Ltd was commissioned by Alinta to conduct a flora and vegetation survey for the proposed northern section of the Stage 5 gas pipeline from Bunbury to Perth. This report summarizes the key findings on the Stage 5 route north of Geraldton. Reference is made to the work on the Stage 4 loops in order to place the work on Stage 5 into context.

The specific work was undertaken over a six month period following above average annual rainfalls in the survey area. These higher rainfall recordings during the survey period were so extensive that the rainfall events led to local and regional flooding that restricted access to some of the route for several weeks. These latter areas were revisited in the month following these rainfall events and consequently the survey effort could be considered to be more than adequate.

A total of 614 taxa (including subspecies and varieties) from 223 genera and 68 families were recorded at the regular recording sites along the proposed pipeline route from Geraldton to Dampier, Appendix A. The proposed pipeline traversed a diverse range of environments and botanical districts with a consequential marked variation in the dominance of different families and communities along the proposed route. Representation was greatest amongst the families – Poaceae (74 taxa), Mimosaceae (60 taxa), Chenopodiaceae (50 taxa), Amaranthaceae (40 taxa), Myrtaceae (36 taxa), Papilionaceae (33 taxa), Asteraceae (33 taxa) and Malvaceae (31 taxa). The dominance of the families varied between botanical district which supports earlier classification systems as developed by earlier authors including Beard (1975, 1976, 1990). The introduced species occur largely within the agricultural areas to the east and south of Geraldton and within the creeklines and river beds of the northern part of the pipeline from Geraldton to Dampier. Several of the introduced species are aggressive and as a result vehicle hygiene practices developed in consultation with government agencies and as summarized in the CEMP should be maintained. In recommending the latter there is a need to be mindful of the difficulty of controlling the range of factors that are beyond the management responsibility of the gas pipeline teams that may influence the spread and intensification of introduced species along the alignment (e.g. seasonal flooding, wind blown seed and other vectors such as cattle and feral animals).

Dames and Moore Pty Ltd (2000) undertook a desktop study of CALM database to produce a list of Declared Rare and Priority Species that have been recorded near the current DBNGP corridor. Prior to the recent field work on this project, an updated search of the DEC databases was sought for the gas pipeline from Dampier to Bunbury. The Department of Environment and Conservation (2006a) records indicate that no Rare, twenty-three Priority 1, twenty-three Priority 2, twenty Priority 3 and eight Priority 4 taxa may potentially occur in the pipeline route and associated facility areas from Geraldton to Dampier. The results of this database search show that the majority of all Declared Rare and Priority Flora species, which could potentially be found along the pipeline alignment, are located in the Northern Sandplains Botanical Region and Swan Coastal Plain Botanical Subregion.

During the recent studies, no Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a and 2006b) were located during the survey. No plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.

During the recent studies undertaken by Mattiske Consulting Pty Ltd and as reported in this document, no Rare, no Priority 1, four Priority 2, eight Priority 3 and no Priority 4 taxa were recorded on the Stage 4 and Stage 5 sections of the pipeline route. As indicated in the following text, none of these Priority flora species are restricted to the pipeline route or the associated facilities.

In the previous studies from Dampier to Bunbury a total of 98 and 42 vegetation communities were defined and mapped for the gas pipeline corridor for the areas north of East Bullsbrook and from Kwinana to Australind respectively (Mattiske Consulting Pty Ltd 2002, 2003).

No threatened ecological communities as defined by the EPBC Act (1999) (Department of Environment and Heritage 2006b) or by the Department of Environment and Conservation (2006c) were recorded on the Stage 5 area north of Geraldton. A range of threatened ecological communities have been recorded south of geraldton near the pipeline. The occurrence of threatened ecological communities is restricted largely to the remnant pockets of native vegetation south of Perth and south of Geraldton. These areas have either been dealt with in Woodman Environmental Consulting 2006) for Loops 8 and 9 or in Mattiske Consulting Pty Ltd (2002 and 2003) for the areas south of Geraldton. An updated list of the threatened ecological communities near the gas pipeline from Dampier to Australind (or Bunbury) is also supplied in the attachments of this report.

The condition of the vegetation along the pipeline route was largely reflecting the land use activities in the respective areas. The northern sections of the pipeline route have been subjected to extensive pastoral activities and as the route tends to occur on the less undulating landscapes, these areas area subject to the grazing pressures of largely introduced stock (cattle and sheep) and to feral animals such as goats and camels. The recent higher rainfall events in the northern sections of the pipeline route were reflected in a rapid growth of annual species belonging to the Poaceae, Asteraceae and Amaranthaceae families. In these northern sections the condition of the vegetation ranged from excellent to very good. The gas pipeline route from Geraldton to Dampier is not influenced by the Phytophthora diseases, although the latter is a key consideration on the southern section of the gas pipeline route.

The condition of the vegetation in the southern sections of Stage 5 nearer Geraldton was influenced by the extent of past clearing activities for agriculture. Many of the southern sections were therefore degraded or completely degraded. The native species were generally restricted to either river crossings in the southern section of the pipeline corridor or to remnant areas of native vegetation.

2. INTRODUCTION

Alinta is currently expanding the pipeline facilities from Bunbury to Dampier. Mattiske Consulting Pty Ltd was commissioned to assess the key botanical values on the northern section of this alignment. The work was split into Stages 4 and 5 and this report concentrates on the Stage 5 component of the route, with regular references to the Stage 4 areas to enable the work on Stage 5 to be placed into context. There has been extensive studies undertaken on the remainder of the route by a range of authors, including Dames and Moore (2000), Mattiske and Consulting Pty Ltd (2000, 2001a, 2001b, 2001c, 2001d, 2001e, 2002).

The work along the gas pipeline route has also been extended to cover wider areas near the major creek and river crossings and also to encompass associated expansion of facilities such as temporary camp site and also expansions to turkey nests and compressor stations along the alignment and in nearby facilities.

Previous studies by Mattiske Consulting Pty Ltd on the proposed expansion of the DBNGP corridor were chosen due to the sensitive nature of the site, such nature reserves with a high disturbance potential or river crossings, and consisted of specific areas between Eneabba and East Bullsbrook. These studies were carried out as requested at various times between 2000 and 2002, as follows:

- Muchea, Red Gully Road, Minyulo, Badgingarra and Eneabba Deviation Inspection (Mattiske Consulting 2000)
- Red Gully Road (Mattiske Consulting 2001a)
- Minyulo Reserve (Mattiske Consulting 2001b)
- Badgingarra Deviation (Mattiske Consulting 2001c)
- Twyata Reserve and Hill River (Mattiske Consulting 2001d)
- Neaves Road Area, Bullsbrook (Mattiske Consulting 2001e)
- Dampier to East Bullsbrook (Mattiske Consulting Pty Ltd 2002)
- Kwinana to Australind (Mattiske Consulting Pty Ltd 2003)

Further it is intended to undertaken additional botanical studies in the spring months of 2006 south of Geraldton to supplement these earlier studies. This data is still being collected and updated.

2.1 Climate

Climate varies across the survey area. Rainfall levels decrease dramatically from west to east (Beard 1990). Bioclimate is a climatic index that represents the climate characteristics that are most important for vegetation and therefore correlates well with vegetation boundaries. Bioclimates are defined principally by the number of 'dry' months in a year, which is when precipitation is inadequate to sustain plant growth. Bioclimate varies across the survey area, from dry mediterranean (5 to 6 dry months per year) in the extreme south of the survey area to semi-desert tropical (9 to 11 dry months) in the centre to desert intermediate (12 dry months) in the north (Beard 1990). The intermediate desert in the northern part of the survey area has on average an inadequate rainfall for plant growth; rainfall of sufficient amount may be expected on average, three times a year but droughts are common.

Prior to the recent survey work, a series of post-cyclonic rainfall events occurred to the extent that several of the major river systems that cross the pipeline were in flood and restricted access to the survey teams for several weeks.

2.2 Landforms and Soils

Vegetation communities reflect the underlying geology of the area as well as rainfall. In a very generalised form, Western Australia's landscape is represented by a gently undulating highly weathered plateau (Beard 1990).

The topography and soils of the Fortescue Botanical District is highly mountainous rising to 1250mm. Soils are typically hard alkaline red on plains and shallow on the ranges (Beard 1990).

The Austin Botanical District is also mountainous with low ranges and broad valleys. Soils consist of shallow earthy loams overlying red-brown hardpan on plains with shallow stony soils on the ranges (Beard 1990).

The Carnarvon Botanical District consists of a gently undulating plain with fields of longitudinal dunes and mesa-shaped remnants in the east. Hard alkaline red soils predominate in the plains with red sands in the dunefields (Beard 1990).

The Irwin Botanical District consists of an extensive lateritic sandplain. The sandplains are covered with leached sandy soils near the coast and yellow sands further inland overlying laterite (Beard 1990).

The Swan Coastal Plain Subregion can be described as a low-lying often swampy coastal plain with sandhills. Soils are mainly recent sands or swamp deposits (Beard 1990).

2.3 Declared Rare, Priority and Threatened Species

Species of flora and fauna are defined as Declared Rare or Priority conservation status where their populations are restricted geographically or threatened by local processes. The Department of Environment and Conservation recognises these threats of extinction and consequently applies regulations towards population and species protection.

Rare Flora species are gazetted under Subsection 2 of Section 23F of the Wildlife Conservation Act (1950) and therefore it is an offence to "take" or damage rare flora without Ministerial approval. Section 23F of the Wildlife Conservation Act (1950-1980) defines "to take" as "… to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means."

Priority Flora are under consideration for declaration as 'rare flora', but are in need of further survey (Priority One to Three) or require monitoring every 5-10 years (Priority Four). Table 1 presents the definitions of Declared Rare and the four Priority ratings under the Wildlife Conservation Act (1950) as extracted the Department of Environment and Conservation (2006a, 2006b).

Table 1: Definition of Rare and Priority Flora Species (Department of Environment and Conservation 2006a)

Conservation Code	Category
R	**Declared Rare Flora – Extant Taxa** "Taxa which 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."
P1	**Priority One – Poorly Known Taxa** "Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey."
P2	**Priority Two – Poorly Known Taxa** "Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but urgently need further survey."
P3	**Priority Three – Poorly Known Taxa** "Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (ie. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but need further survey."
P4	**Priority Four – Rare Taxa** "Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years."

Threats of extinction of species are also recognised at a Federal Government level and are categorised according to the Environmental Protection and Biodiversity Conservation Act (EPBC Act), 1999 (Department of Environment and Heritage 2006a). Categories of threatened species are summarised in Table 2.

Table 2: Categories of Threatened Flora Species (Environmental Protection and Biodiversity Conservation Act, 1999)

Category Code	Category
Ex	**Extinct** Taxa for which there is no reasonable doubt that the last member of the species has died.
ExW	**Extinct in the Wild** Taxa which are known only to survive in cultivation, in captivity or as naturalised populations well outside past ranges; or have not been recorded in known and/or expected habitats, at appropriate seasons, anywhere in past ranges, despite exhaustive surveys over time frames appropriate to their life cycles and forms.
CE	**Critically Endangered** Taxa which face an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	**Endangered** Taxa which are not critically endangered and face a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	**Vulnerable** Taxa which are not critically endangered or endangered and face a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which are the foci of specific conservation programs, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

2.4 Local and Regional Significance

The Environmental Protection Authority (2004) in Guidance Statement 51 stated that species, subspecies, varieties, hybrids and ecotypes may be significant other than as Declared Rare Flora or Priority Flora, for a variety of reasons, including:

". a keystone role in a particular habitat for threatened species, or supporting large populations representing a significant proportion of the local regional population of a species;
. relic status;
. anomalous features that indicate a potential new discovery;
. being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
. the presence of restricted subspecies, varieties, or naturally occurring hybrids;
. local endemism/a restricted distribution;
. being poorly reserved."

Plant communities or vegetation may be significant for a range of reasons, other than a statutory listing as a Threatened Ecological Community or because the extent is below a threshold level. The Environmental Protection Authority (2004) in Guidance Statement 51 stated that significant vegetation may include communities that have:

". scarcity;
. unusual species;
. novel combinations of species;
. a role as a refuge;
. a role as a key habitat for threatened species or large populations representing a significant proportion of the local to regional total population of a species;
. being representative of the range of a unit (particularly, a good local and/or regional example of a unit in "prime" habitat, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
. a restricted distribution."

The application of the degree of significance may apply at a range of scales. Plant communities may be referred to as locally significant where the presence of Priority Flora species has been recorded, where they provide a range extension of particular taxa from previously recorded locations, or where they are very restricted to one or two locations or where they occur as small isolated communities. In addition, communities that exhibit unusually high structural and species diversity are also of local significance (Mattiske EM, pers. comm.). Plant communities may be referred to as regionally significant where they are limited to specific landform types, are uncommon or restricted plant community types within the regional context, or support populations of Declared Rare Flora (Mattiske EM, pers. comm.).

2.5 Vegetation

The pipeline corridor crosses five natural regions and botanical districts as defined by Beard (1990).The botanical regions and districts occurring along the pipeline corridor are:

Eremaean Botanical Province

- Fortescue Botanical District within the Pilbara Region;
- Carnarvon Botanical District within the Carnarvon Region; and
- Austin Botanical District within the Gascoyne Region.

Southwest Botanical Province

- Irwin Botanical District within the Northern Sandplains Region; and
- Darling Botanical District within the Southwest Forest Region. The survey area can be further categorised into the Swan Coastal Plain Subregion of the Drummond Botanical Subdistrict (Beard 1972, 1990).

The Fortescue Botanical District is characterised by tree and shrub-steppe communities. Dominant genera of the area are *Eucalyptus*, *Acacia* and *Triodia*. Its southern boundary is a major biogeographic boundary, the *Acacia-Triodia* line. To the north of the area is predominately *Triodia* while to the south is dominated by *Acacia* shrublands. Some mulga (*Acacia aneura*) vegetation occurs in valleys and short-grass plains on alluvia (Beard 1990).

Dominant genera of the Carnarvon Botanical District are *Acacia* and *Triodia* with occurrences of species from the Chenopodiaceae (Chenopods) family, such as *Halosarcia, Atriplex* and *Maireana* on flats and claypans. The vegetation of the area is varied and is dominated by *Acacia* in the south and changes to *Triodia* dominated in the north.

The vegetation of the Ashburton Botanical District consists almost entirely of different forms of *Acacia aneura* (mulga) with other *Acacia* sp. as shrubs on hills and woodlands on flats (Beard 1990). Other dominant species generally include *Eremophila* and *Senna*. Historically, different forms of mulga have been separated on the width and colour of the leaf. Since their revision in 1998, the different forms of the "*aneura*" group, e.g. weeping form and Xmas tree form, have not been recognised by the Western Australian Herbarium. However, the "*aneura*" group is presently undergoing further taxonomic revision (Bruce Maslin, pers. comm.). In order to maintain accuracy until this revision is published, this report contains the taxon *Acacia aneura* and varieties as reported.

The Ashburton Botanical District contains the "mulga region" of Western Australia, this being the dominant vascular plant taxa and significant component of the most extensive communities (Beard 1990). Mulga (*Acacia aneura)* and *Acacia ayersiana* grow as trees on the more favourable soils, but on less favourable soils it grows as a shrub. The mulga woodlands/shrublands may be continuous or interrupted with bare patches. Perennial grasses such as *Triodia* species (spinifex) are usually confined to patches of sandy soil, where the sands tend to occur in low, raised banks. Annual grasses and daisies are common in spring and late winter or occur opportunistically after significant rainfall events.

Dominant plant families within the Irwin Botanical District include Proteaceae (*Grevillea*, *Banksia*), Myrtaceae (*Eucalyptus*, *Melaleuca*), Mimosaceae (*Acacia*), Casuarinaceae (*Casuarina*, *Allocasuarina*), Asteraceae (daisies), Chenopodiaceae (salt bushes) and Poaceae (grasses). The Irwin Botanical District is characterised by scrub heath and *Acacia-Casuarina* thickets with occasional areas of *Acacia* scrub with scattered *Eucalyptus* trees, and covers 1.6% of the area of the state of Western Australia.

The Darling Botanical District is further classified into the Swan Coastal Plain Subregion of the Drummond Botanical Subdistrict. This area is characterised by *Banksia* low woodland on leached sands with *Melaleuca* swamps in less drained areas. Woodlands of tuart (*Eucalyptus gomphocephala*), jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) occur on less leached soils (Beard 1990).

The northern section of Stage 5 is located overlaps two Provinces, the South West and Eremaean, and into three botanical districts. The most southern of these is the Irwin District which is a part of the South West Province, followed by the Carnarvon and the Fortescue Districts which are located in the Eremaean Province. The Ashburton district is located in the Eremaean Province and although Stage 5 works do not directly pass through this district, it may describe changes in vegetation.

2.6 Threatened Ecological Communities

Communities are described as 'Threatened Ecological Communities' (TEC's) if they have been defined by the Western Australian Threatened Ecological Communities Scientific Advisory Committee and found to be Presumed Totally Destroyed (PD), Critically Endangered (CR), Endangered (EN) or Vulnerable (VU). For definitions of TEC categories and criteria refer to English and Blyth (1997) and Department of Environment and Conservation (2006c). Selected plant communities have also been listed as "Threatened Ecological Communities" under the Environmental Protection and Biodiversity Conservation Act (EPBC Act 1999). The TEC's at the national level are defined on the Environment Australia website (www.ea.gov.au).

2.7 Wetlands

Wetlands are recognized as key biological components at the local, regional, national and international scales (Department of Environment and Heritage 2006c). The gas pipeline route passes through a series of wetlands. In the north the main wetlands are associated with the series of creek and river crossings. These areas have been handled separately within the CEMP as prepared by Alinta in view of the potential risks to the pipeline and the wetland values.

Another key factor associated with these wetlands is the presence of larger trees associated with the proximity and availability of soil moisture. Some of these larger trees have hollows and therefore are potential habitat trees for a range of vertebrate fauna species. These habitat trees were assessed during the survey of the northern section of the Stage 5 project and will be assessed further in the surveys being undertaken on the southern sections of the Stage 5 gas pipeline route (south of Geraldton).

3. OBJECTIVES

The specific objectives of the flora and vegetation survey were to: .

- identify all vascular plant species present;
- review the conservation status of the vascular plant species by reference to current literature and current listings by the Department of Environment and Conservation (2006a and 2006b) and the Department of the Environment and Heritage web site under the EPBC Act (1999);
- compare the plant communities at each site with those defined by Beard (1975 and 1976) to aid in assessing their local and regional significance;
- assess the condition of the vegetation in the respective areas; and
- produce a report summarising the findings.

4. METHODS

The flora of the Alinta pipeline route from Geraldton to Dampier was described and collected systematically at recording sites over a four month period following substantial rains in the early part of 2006 (Figure 1). At each site the following floristic and environmental notes were made: topography, percentage litter cover, soil types, percentage of bare ground, outcropping rocks and their type, pebble type and size, and time since fire. For each species recorded, the average height and percent foliage cover of species both alive and dead was noted. The condition of each plant community was rated according to the scale used for assessing Bush Forever sites (Government of Western Australia 2000). The scale is summarised in Table 3.

All plant specimens collected during the field surveys were dried and fumigated in accordance with the requirements of the West Australian Herbarium. The plant species were identified and then compared with pressed specimens housed at the West Australian Herbarium. Where appropriate, plant taxonomists with specialist skills were consulted. Nomenclature of the species recorded follows standards as defined by Department of Environment and Conservation (2006a and 2006b).

The survey effort was undertaken over a four month period from February 2006 to May 2006 in response to post-cyclonic rainfall events from the northwest area of Western Australia. The use of a standard data collection form ensured the data was collected in a systematic and consistent manner. At each site the following records were made: topography, percentage litter cover, soil ratio, percentage of bare ground, outcropping rocks and their type, pebble type and size, and age since fire. For each species recorded, the average height and percent foliage cover of species both alive and dead was noted.

Aerial photography and soil mapping was used to extrapolate and map vegetation communities in combination with running notes made along the pipeline expansion corridor during the course of the survey. The adjacent areas were not surveyed and the degree of clearing may be less than designated on the maps. The vegetation communities recorded in the project area were defined based on Beard (1990) and Specht *et al.* (1974).

In addition to the extensive work already undertaken on previous mapping project (Mattiske Consulting Pty Ltd 2002), a further 237 detailed recording sites were established in representative communities.

The vegetation structure was described according to the terminology of Beard (1990). All vascular plants were recorded, and any that were unknown were collected for later identification at the Western Australian Herbarium.

Table 3: Condition rating scale from Bush Forever (Government of Western Australia 2000 based on Keighery 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging, grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing.
6	Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas often described as "parkland cleared" with the flora comprising weed or crop species with isolated native trees or shrubs.

5. RESULTS

5.1 Flora

A total of 614 taxa (including subspecies and varieties) from 223 genera and 68 families were recorded at the regular recording sites along the proposed pipeline route from Geraldton to Dampier, Appendix A.

The proposed pipeline traversed a diverse range of environments and botanical districts with a consequential marked variation in the dominance of different families and communities along the proposed route. Representation was greatest amongst the families – Poaceae (74 taxa), Mimosaceae (60 taxa), Chenopodiaceae (50 taxa), Amaranthaceae (40 taxa), Myrtaceae (36 taxa), Papilionaceae (33 taxa), Asteraceae (33 taxa) and Malvaceae (31 taxa). The dominance of the families varied between botanical district which supports earlier classification systems as developed by earlier authors including Beard (1975, 1976, 1990).

A total of 22 introduced species was recorded on the proposed pipeline route in the recent survey work, Table 4.

Table 4: Introduced Species located along the Dampier to Geraldton Natural Gas Pipeline Corridor

Introduced Species	Common Name
Aerva javanica	Kapok Bush
Asphodelus fistulosus	Onion weed
Avena barbata	Oats
Bidens bipinnata	Beggers ticks
Brassica tournefortii	Wild Turnip
Bromus sp.	Brome
Carrichtera annua	Wards Weed
Cenchrus ciliaris	Buffel Grass
Cenchrus setigerus	Birdwood Grass
Centaurea melitensis	Maltese Cockspur
Citrullus colocynthis	Colocynthis melon
Cucumis melo subsp. agrestis	
Cucumis myriocarpus	Prickly Paddy Melon
Cynodon dactylon	Couch
Cyperus involucratus	
Datura leichhardtii	Leichhardt's thornapple
Malvastrum americanum	Spiked Malvastrum
Mesembryanthemum nodiflorum	Ice plant
Ocimum basilicum	Sweet Basil
Oxalis corniculata	Yellow Wood Sorrell, Creeping Oxalis
Pentaschistis airoides subsp. *airoides*	False Hair Grass
Sonchus oleraceus	Sowthistle

5.2 Rare and Priority Flora

The Department of Environment and Conservation (2006a) records indicate that no Rare, twenty-three Priority 1, twenty-three Priority 2, twenty Priority 3 and eight Priority 4 taxa may potentially occur in the pipeline route and associated facility areas from Geraldton to Dampier.

During the recent studies undertaken by Mattiske Consulting Pty Ltd and as reported in this document, no Rare, no Priority 1, four Priority 2, eight Priority 3 and no Priority 4 taxa were recorded on the Stage 4 and Stage 5 sections of the pipeline route, Table 5.

The location of the rare and priority species as extracted from the Department of Environment and Conservation (2006a) databases and the recent data as collected are summarized in Figures 2-1 to 2-32.

Table 4: Summary of Rare and Priority Species recorded in Stages 4 and 5
SCC = State Conservation Code; P2 = Priority 2, P3 = Priority 3
(N.B. None of these species are listed pursuant to the EPBC Act 1999)

Stage Loop	SCC	40	41	42	43	44	45	46	50	51	52	53	54	55	56	57
Acanthocarpus parviflorus	P3							X							X	
Dicrastylis incana	P2														X	
Dicrastylis linearifolia	P3													X	X	
Eremophila physocalyx (ms)	P3						X							X		
Frankenia glomerata	P3											X				
Goodenia pascua	P3									X						
Grevillea stenostachya	P3							X					X	X	X	
Hibiscus brachysiphonius	P3			X					X							
Microcorys tenuifolia	P3														X	
Olearia fluvialis	P2				X						X					
Philotheca kalbarriensis	P2														X	
Scaevola chrysopogon	P2												X			

5.3 Vegetation - Regional

The pipeline route from Geraldton to Dampier passes through two provinces, four natural regions and botanical districts as defined by Beard (1990).

The botanical provinces, districts and regions occurring along the pipeline corridor are:

Eremaean Botanical Province
- Fortescue Botanical District within the Pilbara Region;
- Ashburton Botanical District in the Gascoyne Region; and
- Carnarvon Botanical District within the Carnarvon Region

Southwest Botanical Province
- Irwin Botanical District within the Northern Sandplains Region

5.4 Vegetation – Stage 5

In the previous studies from Dampier to Bunbury a total of 98 and 42 vegetation communities were defined and mapped for the gas pipeline corridor for the areas north of East Bullsbrook and from Kwinana to Australind respectively (Mattiske Consulting Pty Ltd 2002, 2003). The occurrence of threatened ecological communities is restricted largely to the remnant pockets of native vegetation south of Perth and south of Geraldton. These areas have either been dealt with in Woodman Environmental Consulting 2006) for Loops 8 and 9 or in Mattiske Consulting Pty Ltd (2002 and 2003) for the areas south of Geraldton. An updated list of the threatened ecological communities near the gas pipeline from Dampier to Australind (or Bunbury) is also supplied in the attachments of this report. Low Open Woodland of *Eucalyptus* sp. over *Acacia coriacea* subsp. *sericophylla*, *Acacia trachycarpa* and *Wahlenbergia* sp. in sandy soils.

5.5 Stage 5 – 0 - North of CS1 to Dampier

5.5.1 Flora

A total of 29 families, 79 genera and 121 taxon were recorded. Of these 121 taxa, four were introduced species, Appendix B.

This number of species largely reflects the shift within this loop from the *Acacia xiphophylla, Acacia ancistrocarpa* and *Acacia synchronicia* shrublands to the extensive grasslands dominated by *Triodia, Eriachne, Eragrostis* and *Aristida* species.

5.5.2 Rare and Priority Flora

During the recent studies, no Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a and 2006b) were located during the survey. No plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.

One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Hibiscus brachysiphonius* (P3).

- *Hibiscus brachysiphonius* (P3) Family: Malvaceae

Hibiscus brachysiphonius is a procumbent perennial, shrub or herb growing from 10 to 30 centimetres in height. Pink flowers are produced from August to October. This species prefers a clay substrate and is most likely to be found on creeklines or clay flats. May be found in shrublands or grasslands. There are currently thirteen records of this species held at the Western Australian herbarium. This species was recorded at 432961:7682588. This species was also recorded in Loop 2 of Stage 4 (316277:7508588). This species is not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.5.3 Introduced Flora

Four introduced or weed species were found on Loop 0 of Stage 5. These were **Aerva javanica*, **Cenchrus ciliaris*, **Citrullus colocynthis* and **Malvastum americanum*, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.5.4 Vegetation

Loop 0 of Stage 5 of the Dampier to Bunbury Natural Gas Pipeline occurs south of Karratha in the Eremaean Province in the Fortescue Botanical District. Loop 0 occurs within the extensive grasslands and *Acacia* shrublands and scrub as delineated and mapped by Beard (1974, 1990). This loop occurs in the Pilbara Region. This change is reflected in the shift from extensive sedimentary deposits to low undulating hills and extensive plains.

The communties mapped by Beard (1975) as occurring in this area are listed below.

- *Acacia xiphophylla* sparse shrubland over mixed grassland with patches of *Acacia pyrifolia* scrubland over *Triodia pungens* hummock grassland
- Sparse *Acacia pyrifolia* over *Triodia pungens* open hummock grassland
- Mixed grassland with patches of *Triodia pungens* open hummock grassland
- *Triodia wiseana* hummock grassland.
- *Eucalyptus brevifolia* low woodland over *Triodia wiseana* hummock grassland.

The following communities were defined and mapped for the Stage 5 – Loop 0 area.

Community 1t
Low Open Woodland of *Eucalyptus* sp. over *Acacia coriacea* subsp. *sericophylla*, *Acacia trachycarpa* and *Wahlenbergia* sp. in sandy soils.

Community 1u
Low Open Woodland of *Corymbia zygophylla* over *Triodia pungens, Eriachne aristidea* and *Acacia ancistrocarpa* with *Eremophila ramiflora* over mixed shrub species in red silty soils with quartz pebbles.

Community 1am
Open Woodland of *Corymbia* sp. aff. *aspera* and *Eucalyptus victrix* over *Acacia coriacea* subsp. *sericophylla*, *Acacia* sp. and *Ptilotus obovatus* var. *obovatus* in association with major flow lines.

Community 4g
Low Open Shrubland of *Acacia acradenia, Acacia ancistrocarpa, Acacia bivenosa* and *Acacia inaequilatera* over *Triodia pungens, *Cenchrus ciliaris*, *Salsola tragus*, *Corchorus ?congener* (ms), *Senna notabilis* and **Aerva javanica* with occasionally emergent *Corymbia lenziana* and *Eucalyptus* sp. in sandy loam soils.

Community 6c
Tall Open Shrubland of *Melaleuca glomerata* with occasionally emergent *Eucalyptus* sp. and *Acacia ancistrocarpa* over *Gomphrena canescens* subsp. *canescens* in association with the Fortescue River.

5.5.5 Wetlands and River Crossings

Maitland River
The Maitland River is a sizeable watercourse, and together with its riparian zone was approximately 400m wide at the pipeline crossing point. The banks were lined with a Woodland of *Eucalyptus victrix* and *E. camaldulansis* var. *obtusa* over an Open Scrub of *Acacia citrinoviridis, A. pyrifolia* and *Sesbania cannabina.* Although there was a strong presence of **Cenchrus ciliaris* among the ground cover, it was only dominant in patches and there remained a wide range of native shrubs, herbs and grasses. There was no obvious damage from cattle, but kangaroo scats and prints were evident.

Yanyare River
The Yanyare River banks supported a Low Forest of *Eucalyptus victrix* and *E. camaldulansis* var. *obtusa* over a Scrub/Low Woodland of *Acacia citrinoviridis A. trachycarpa* and *Melaleuca glomerata.* The ground stratum was quite diverse, with *Triodia pungens* and **Cenchrus ciliaris* being subdominant. Other weeds such as **Malvastrum americanum* and **Citrullus colocynthis* were present, but did not form a significant component of the ground cover. A habitat tree is growing within the corridor at 449777mE: 7692285mN.

Devil Creek
Devil Creek was lined by Woodland of *Eucalyptus camaldulansis* var. *obtusa* and *E. victrix* over a Low Woodland *Acacia citrinoviridis* and *Melaleuca glomerata.* Much of the ground stratum was dominated by **Cenchrus ciliaris*, but native species were still prevalent. The standing water appeared eutrophic, presumably due to fouling by cattle. There were no habitat trees within the pipeline corridor.

McKay Creek
McKay Creek was lined with a Scrub of *Melaleuca glomerata* and regenerating *Eucalyptus victrix* saplings over a mixed Grassland/Herbland. The ground stratum was partly dominated by the exotic grasses **Cenchrus ciliaris* and **Cenchrus setigerus,* but a moderate range of native species persisted. Cattle hoof prints were seen along the creek bed and the water was fouled.

Fortescue River
Fortescue River is a high energy river with multiple flow lines near the proposed crossing of the pipeline. The vegetation has been modified regularly by flood events. The latter is evident from the degree of erosion on the embankments and the litter in the upper layers of the trees within the creekbeds. The River bed is dominated by *Eucalyptus camaldulensis, Eucalyptus victrix* and *Melaleuca* species over a range of sedges and grasses (including the introduced *Cenchrus* species). Few habitat trees persist in the current alignment as the area has been cleared historically. There are remnant trees with hollows away from the immediate alignment and these should be avoided wherever possible during construction activities.

Trevarton Creek
The Trevarton Creek riparian zone supported a Low Woodland/Scrub of *Acacia citrinoviridis, A. pyrifolia, A. trachycarpa* and *A. aneura* var. *aneura.* The ground stratum dominated by **Cenchrus ciliaris* though many native herbs and grasses were also present. The typical wetland trees *Eucalyptus camaldulansis* var. *obtusa* and *E. victrix* were absent from the pipeline crossing area, and cattle tracks were observed along the creek bed.

5.5.6 Condition of Vegetation

The condition of most of the vegetation between he northernmost end of the survey area and Compressor Station 1 was assessed as Excellent (2). This country was not considered to be Pristine (1) as the grasslands appear have been modified by cattle grazing and frequent burning. There was little damage from vehicles or other anthropogenic disturbances however, and there were few weeds. A few well-drained areas were weed free and were classified Pristine (1). Weeds, especially the exotic grass **Cenchrus ciliaris*, were most prevalent along water courses and in other low lying areas. Disturbances from cattle were noted on some creeks, particularly where there was standing water. Despite the weed infestations and trampling, the original vegetation structure was intact and a range of native species was still present. These sites were therefore classified as Very Good (3).

5.5.7 Key Findings

Table 6: Key Findings on Loop 0 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a and 2006b) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Hibiscus brachysiphonius* (P3).	No action required.
Habitat Trees –Creeklines	The proposed alignment crosses several smaller creeklines. One significant habitat tree was recorded at Yanyare River.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) – Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Four introduced or weed species were found, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Aerva javanica*, **Cenchrus ciliaris*, **Citrullus colocynthis* and **Malvastum americanum*.	Follow hygiene measures as defined previously in EMP.

5.5.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some *Eucalyptus camaldulensis* and *Eucalyptus victrix* trees on the river crossings. However no significant habitat trees were present in the proposed alignment.

As the other areas were dominated by *Triodia pungens* hummock grasslands with the occasional *Corymbia candida* subsp. *candida* or *Acacia* shrublands there were few larger habitat trees.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. The main weeds are *Cenchrus ciliaris* and *Amaranthus mitchelii.* Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.6 Stage 5 – Loop 1

5.6.1 Flora

During the survey, a total of 120 taxa were found within Loop 1 of Stage 5, comprising 115 species, from 65 genera and 29 families. These totals included three introduced species and one Priority species, Appendix B.

5.6.2 Rare and Priority Flora

During the recent studies, no Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a and 2006b) were located during the survey. No plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.

One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Goodenia pascua* (P3).

- *Goodenia pascua* (P3) Family: Goodeniaceae

The ascending to erect herb, *Goodenia pascua*, grows up to 0.5 meters in height. Yellow flowers are produced from May to August. This species prefers red sandy soils on the extensive plains. There are nine records of this species held at the Western Australian Herbarium. This species was recorded at 361358:7585342 in the recent survey.

This species is not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.6.3 Introduced Flora

Three introduced or weed species were found on Loop 1 of Stage 5. These were **Cenchrus ciliaris*, **Cenchrus setigerus* and **Citrullus colocynthis*, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.6.4 Vegetation

Loop 1 is located in the Eremaean Province in the Fortescue Botanical District, but it starts near the edge of the Carnarvon/Fortescue botanical district boundary. The communties mapped by Beard (1975) as occurring in this area are listed below.

- Sparse *Acacia xiphophylla* over *Triodia basedowii* hummock grassland
- *Triodia pungens* and *Triodia wiseana* hummock grassland
- *Acacia pyrifolia* and *Acacia bivenosa* sparse shrubland over *Triodia basedowii* and *Triodia wiseana* hummock grassland.
- *Acacia aneura* open low woodland
- *Acacia bivenosa* sparse shrubland over *Triodia wiseana* hummock grassland

The following communities were defined and mapped for the Stage 5 – Loop 1 area.

Community 1t
Low Open Woodland of *Eucalyptus* sp. over *Acacia coriacea* subsp. *sericophylla*, *Acacia trachycarpa* and *Wahlenbergia* sp. in sandy soils.

Community 1u
Low Open Woodland of *Corymbia zygophylla* over *Triodia pungens, Eriachne aristidea* and *Acacia ancistrocarpa* with *Eremophila ramiflora* over mixed shrub species in red silty soils with quartz pebbles.

Community 1am
Open Woodland of *Corymbia* sp. aff. *aspera* and *Eucalyptus victrix* over *Acacia coriacea* subsp. *sericophylla*, *Acacia* sp. and *Ptilotus obovatus* var. *obovatus* in association with major flow lines.

Community 4h
Open Scrub of *Acacia synchronicia* over *Aristida* ?*latifolia*, *Acacia trachycarpa, Senna artemisioides* subsp. *oligophylla* and *Cullen leucanthum* over *Eriachne* ?*flaccida* and **Cenchrus ciliaris* in degraded silty soils.

Community 6c
Tall Open Shrubland of *Melaleuca glomerata* with occasionally emergent *Eucalyptus* sp. and *Acacia ancistrocarpa* over *Gomphrena canescens* subsp. *canescens* in association with the major watercourses.

Community 8a
Hummock Grassland of *Triodia pungens* with *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia wanyu* over *Streptoglossa adscendens* with occasionally emergent *Eucalyptus* sp. in silty soils.

Community 8b
Hummock Grassland of *Triodia pungens* with *Acacia* ?*sessilis*, *Acacia synchronicia* and *Rhagodia latifolia* subsp. *latifolia* over *Salsola tragus* and *Trianthema turgidifolia* in silty clay soils.

5.6.5 Wetlands and River Crossings

Peters Creek
Peters Creek was lined with a Low Woodland of *Eucalyptus camaldulansis* var. *obtusa* and *E. victrix* over scattered shrubs (*Acacia citrinoviridis, Acacia trachycarpa, Sesbania cannabina*) over a grassy ground stratum of *Eragrostis tenellula, *Cenchrus ciliaris, *Cenchrus setigerus, Eragrostis cumingii and Schoenoplectus laevis.* The were some habitat trees to the east of the pipeline route and numerous Budgerigars (*Melopsittacus undulatus*) were seen among the higher branches. The banks were not steep and there were many cattle tracks along the creek bed. The water of the river pools appeared eutrophic, with thick algal growth, yet it still supported populations of aquatic insects.

Robe River
The Robe River was split into two widely separated channels at the pipeline crossing point. The river banks supported a Woodland of *Eucalyptus camaldulansis* var. *obtusa* and *E. victrix* over occasional *Melaleuca glomerata* shrubs, with a few trees were growing in the channel shingle. There were several habitat trees on either side of the pipeline within the survey corridor. The vegetation of the floodplain to the north of the northern channel consisted of a Closed Grassland of **Cenchrus ciliaris, Triodia pungens* and *Eragrostis cumingii* with a few scattered *Sesbania cannabina and Acacia trachycarpa* shrubs.

Warramboo Creek
The riparian zone of Warramboo Creek supported a Woodland of *Eucalyptus camaldulansis* var. *obtusa* and *E. victrix* over an Open Low Shrubland of *Acacia inaequilatera, Acacia tumida, Acacia bivenosa, Erythrina vespertilio* and *Acacia trachycarpa.* The ground stratum consisted of a Closed Grassland dominated by **Cenchrus ciliaris* and *Triodia pungens.* The channel banks were steep at the pipeline crossing point, and there were a few shallow pools along the creek bed. No habitat trees were noted within the pipeline corridor.

Peedamulla Creek
Peedamulla Creek was lined with a Low Woodland of *Eucalyptus victrix* and *E. camaldulansis* var. *obtusa* over scattered shrubs (*Acacia ancistrocarpa* and *Acacia trachycarpa*) over Closed Grassland of **Cenchrus ciliaris*, *Triodia pungens* and *Chrysopogon fallax.* Buderigars and Galahs were seen among the trees and the shallow pools of the channel contained tadpoles. The trees within the corridor did not appear to have nesting hollows.

Cane River
The riparian zone of Cane River supported a Forest of *Eucalyptus camaldulansis* var. *obtusa* and *E. victrix* over scattered shrubs (*Acacia trachycarpa, Acacia ancistrocarpa, Sesbania cannabina, Melaleuca glomerata*) over a Closed Grassland of *Triodia pungens* and *Eragrostis tenellula* with a range of small native herbs and grasses. The channel was dry at the time of the survey.

5.6.6 Condition of Vegetation

Disturbances from cattle were lighter along this section of the route than on the section to the north of Compressor Station 1. The vegetation along most of the pipeline route, especially the well-drained country, was therefore classified as Pristine (1) due to the lack of obvious physical disturbances and the scarcity of weeds. Some lower lying areas and watercourses were classified as Excellent (2), rather than Pristine (1) mainly due to the presence of **Cenchrus ciliaris,* which was common on moister ground even where there were no signs of disturbance.

5.6.7 Key Findings

Table 7: Key Findings on Loop 1 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Goodenia pascua* (P3).	Avoid population of the Priority species if possible.
Habitat Trees –Creeklines	The proposed alignment crosses several smaller creeklines. No significant habitat trees were present.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) - Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Three introduced or weed species were found, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Cenchrus ciliaris*, **Cenchrus setigerus* and **Citrullus colocynthis*,.	Follow hygiene measures as defined previously in EMP.

5.6.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some *Eucalyptus camaldulensis* and *Eucalyptus victrix* trees on the river crossings. However no significant habitat trees were present in the proposed alignment.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.7 Stage 5 – Loop 2

5.7.1 Flora

During the survey, a total of 143 taxa were found within Loop 2 of Stage 5, comprising 133 species, from 72 genera and 31 families. These totals included five introduced species and one Priority species (Appendix B).

5.7.2 Rare and Priority Flora

No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area. No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a), were located during the survey.

One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey, namely *Olearia fluvialis* (P2).

- *Olearia fluvialis* (P2) Family: Asteraceae

Olearia fluvialis is a shrub growing up to 60 centimetres in height. This species produces flowers in blue, purple, white and yellow from April to May. This species is found on stony creek beds preferring iron rich alluvium and pebbly sands. The Western Australian Herbarium currently holds five collections of this species, all originating from the Hamersley Range. This species was recorded at 297806:7453249. This species was also recorded on Stage 4 – Loop 3 (at 313704:7360815). This species is not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.7.3 Introduced Flora

Five introduced or weed species were found on Loop 2 of Stage 5. These were **Aerva javanica*, **Cenchrus ciliaris*, **Cenchrus setigerus*, **Cynodon dactylon* and **Cyperus involucrata*, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.7.4 Vegetation

Loop 2 is located in the Eremaean Province in the Carnarvon Botanical District and the Fortescue Botanical District, it also runs close to the edge of the Ashburton Botanical District. The communities mapped by Beard (1975) as occurring in this area are listed below.

- *Acacia aneura, Acacia xiphophylla* and *Acacia eremaea* low woodland
- Sparse *Acacia pyrifolia* over *Triodia basedowii* open hummock grassland
- *Acacia victoriae* and *Acacia xiphophylla* scrubland over patches of *Triodia basedowii* open hummock grassland
- *Eucalyptus* low woodland over *Acacia* scrubland over *Triodia basedowii* open hummock grassland
- *Eucalyptus victrix* and *Eucalyptus camaldulensis* woodland
- *Acacia xiphophylla* scrubland
- *Triodia basedowii* and *Triodia wiseana* hummock grassland.

The following communities were defined and mapped for the Stage 5 – Loop 2 area.

Community 1u
Low Open Woodland of *Corymbia zygophylla* over *Triodia pungens, Eriachne aristidea* and *Acacia ancistrocarpa* with *Eremophila ramiflora* over mixed shrub species in red silty soils with quartz pebbles.

Community 4h
Open Scrub of *Acacia synchronicia* over *Aristida* ?*latifolia*, *Acacia trachycarpa, Senna artemisioides* subsp. *oligophylla* and *Cullen leucanthum* over *Eriachne* ?*flaccida* and **Cenchrus ciliaris* in degraded silty soils.

Community 4i
Tall Open Shrubland of *Acacia ?validinervia, Acacia coriacea* subsp. *sericophylla*, *Acacia ancistrocarpa* and *Acacia translucens* over *Triodia pungens*, *Senna notabilis* and *Pterocaulon sphacelatum* in red sandy clay soils.

Community 4j
Low Shrubland of *Acacia ancistrocarpa* with *Corchorus lasiocarpus* subsp. *lasiocarpus* (ms), *Pterocaulon sphacelatum*, *Cullen martinii* over *Triodia pungens* with occasionally emergent *Corymbia deserticola* subsp. *deserticola* and *Acacia acradenia* in red sandy clay soils.

Community 4k
Tall Open Shrubland of *Acacia acradenia* over *Acacia synchronicia, Eremophila cuneifolia* and *Senna artemisioides* subsp. *oligophylla* over dead Poaceae spp. in red sandy clay soils.

Community 4l
Tall Open Shrubland of *Acacia synchronicia*, *Acacia acradenia* and *Hakea preissii* over *Eremophila cuneifolia*, *Senna artemisioides* subsp. *oligophylla* and *Streptoglossa decurrens* in red sandy clay soils.

In addition, several narrow creek and river crossings supported a woodland of *Eucalyptus victrix* and *Eucalyptus camaldulensis.*

5.7.5 Wetlands and River Crossings

Yannarie River

The dry, gravelly river banks of the Yannarie River supported a Woodland of *Eucalyptus victrix and Eucalyptus camaldulensis* over Scrub consisting of *Melaleuca glomerata* and *Acacia citrinoviridis*. The Closed Grassland was dominated by *Triodia lanigera,* (particuarly on the southern bank) as well as *Cyperus gymnocaulos*, *Solanum lasiophyllum* and *Eragrostis japonica*. Flocks of Budgerigar were observed flying overhead. No significant habitat trees were recorded.

Lyndon River

The dried up river channel of the Lyndon River was lined by Open Woodland consisting of *Eucalyptus victrix and Eucalyptus camaldulensis* over Open Shrubs including *Sesbania cannabina, Cullen lachnostachys* and *Abutilon amplum*. A Closed Grassland was dominated by dense clumps of **Cenchrus ciliaris*, although native herbs such as *Eriachne glauca* var. *barbinodis and Chloris pumilio* were present. No significant habitat trees were recorded.

5.7.6 Condition of Vegetation

The majority of the vegetation between Compressor Stations 2 and 3 was rated as Pristine (1), due to a lack of physical disturbances and few naturalized weed species. Some low lying areas adjacent to watercourses (e.g. Yannarie and Lyndon Rivers) which had intact native vegetation were rated as Excellent (2) or Very Good (3) due to the presence of naturalized weed species such as **Cenchrus ciliaris, *Cyperus involucratus and *Cenchrus setigerus*.

5.7.7 Key Findings

Table 8: Key Findings on Loop 2 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Olearia fluvialis* (P2).	No action required as likely to be a seeder and regenerate rapidly from seed in river crossings.
Habitat Trees –Creeklines	The proposed alignment crosses several smaller creeklines. No significant habitat trees were present.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) - Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Five introduced or weed species were found, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Aerva javanica*, **Cenchrus ciliaris*, **Cenchrus setigerus*, **Cynodon dactylon* and **Cyperus involucrata*,.	Follow hygiene measures as defined previously in EMP.

5.7.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some *Eucalyptus camaldulensis* and *Eucalyptus victrix* trees on the river crossings. However no significant habitat trees were present in the proposed alignment.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.8 Stage 5 – Loop 3

5.8.1 Flora

During the survey, a total of 154 taxa were found within Loop 3 of Stage 5, comprising 144 species, from 75 genera and 34 families. These totals included four introduced species, and one Priority species which may represent a range extension.

5.8.2 Rare and Priority Flora

No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area. No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a), were located during the survey.

One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey, namely *Frankenia glomerata* (P3).

- *Frankenia glomerata* (P3) Family: Frankeniaceae

The prostrate shrub, *Frankenia glomerata,* produces pink and white flowers in November. This species prefers a substrate of white sands. The Western Australian Herbarium currently holds seven records of this species. The finding of this species on Loop 3 of Stage 5 may represent a range extension for this species. This species was recorded at 327459:7276628. This species is not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.8.3 Introduced Flora

Four introduced or weed species were found on Loop 3 of Stage 5. These were **Cenchrus ciliaris*, **Citrullus colocynthis,* **Datura leichhardtii* and **Malvastrum americanum.* Of these, one species, namely *Datura leichhardtii*, commonly known as Leichhardt's Thornapple, is a Declared Plant as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006). Leichhardt's Thornapple is a vigorous summer-growing plant which forms a dense shrub up to 1.5m in height and produces poisonous seeds (Department of Agriculture and Food 2006).

5.8.4 Vegetation

Loop 3 is located within the Eremaean Province in the Carnarvon Botanical District. The communties mapped by Beard (1976) as occurring in this area are listed below.

- *Acacia victoriae, Acacia xiphophylla* and *Acacia eremaea* low woodland
- *Acacia victoriae, Acacia xiphophylla* and *Acacia eremaea* Shrubland
- *Acacia aneura* scrubland
- *Acacia ramulosa* scrubland
- *Acacia sclerosperma* and *Acacia victoriae* scrubland

The following communities were defined and mapped for the Stage 5 – Loop 3 area.

Community 4m
Tall Open Shrubland of *Acacia cuspidifolia* over *Scaevola spinescens* over dead Poaceae spp. in sandy soils with mixed pebbles.

Community 4n
Tall Open Shrubland of *Acacia acradenia* over *Acacia ancistrocarpa*, *Senna artemisioides* subsp. *oligophylla* and *Eremophila cuneifolia* over *Streptoglossa decurrens* and *Cenchrus* sp. in sandy soils with quartz pebbles.

Community 4o
Tall Open Shrubland of *Acacia acradenia* and *Acacia synchronicia* over *Eremophila cuneifolia*, *Acacia ?sessilis*, *Senna artemisioides* subsp. *oligophylla* over *Sclerolaena cuneata* and *Cenchrus* sp. in red sandy clay soils with quartz pebbles.

Community 4p
Tall Open Shrubland of *Acacia acradenia* and *Hakea preissii* over *Ptilotus polakii, Frankenia ambita, Solanum lasiophyllum* and *Acacia* ?*sessilis* in sandy soils with quartz pebbles.

5.8.5 Wetlands and River Crossings

Minilya River
The northern branch of the Minilya River was surrounded by low woodlands of *Eucalyptus* and *Acacia* consisting of *Eucalyptus victrix*, *E. camaldulensis*, *Acacia coriacea* subsp. *pendens* and *A. citrinoviridis* over scrub including *Acacia pyrifolia, Acacia tetragonophylla*, *Acacia synchronicia* and *Petalostylis labicheoides* over mixed grasses and herbs such as **Cenchrus ciliaris*, *Cleome viscosa*, *Boerhavia coccinea* and *Sida fibulifera*.

The southern floodplains of the Minilya River contained numerous channels, running west-east. The vegetation consisted of low woodlands of *Acacia* consisting of *Acacia synchronicia* and *Acacia tetragonophylla* over *Acacia prainii* and *A. victoriae* Scrub over Open Low Shrubland consisting of *Rhagodia eremaea , Ptilotus obovatus*, *Solanum lasiophyllum* and *Eremophila cuneifolia*. **Cenchrus ciliaris* and *Aristida contorta* were the forms of grasses.

Lyons River
The banks of the Lyons River are surrounded by *Eucalyptus camaldulensis* woodland over *Acacia citrinoviridis, A. xiphophylla* and *A. synchronicia* over low shrubs and mixed grasses including *Senna artemisioides* subsp. *helmsii, *Cenchrus ciliaris, Eragrostis japonica, Cyperus betchei* subsp. *commiscens*, *Ptilotus obovatus* and *Ipomoea muelleri*. There were several habitat trees (*Eucalyptus camaldulensis*) on either side of the river channel.

5.8.6 Condition of Vegetation

The condition of most of the vegetation between KP420 at the northernmost end of the survey area and Compressor Station 4 was assessed as Pristine (1). There was little damage from vehicles or other anthropogenic disturbance and few weeds. In a few areas, the presence of weeds, particularly the exotic grass **Cenchrus ciliaris*, and evidence of vehicle tracks, caused these areas to be assessed as Excellent (2).

5.8.7 Key Findings

Table 9: Key Findings on Loop 3 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	One Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Frankenia glomerata* (P3).	Avoid priority species wherever possible
Habitat Trees –Creeklines	The proposed alignment crosses several smaller creeklines. A few habitat trees were present on the edges of the creeklines.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) - Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Four introduced or weed species were found; **Cenchrus ciliaris*, **Citrullus colocynthis,* **Datura leichhardtii* and **Malvastrum americanum*. **Datura leichhardtii* is a Declared Plant as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).	Follow hygiene measures as defined previously in EMP, and as recommended by the Department of Agriculture and Food for **Datura leichhardtii*.

5.8.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some *Eucalyptus camaldulensis* and *Eucalyptus victrix* trees on the river crossings. However no significant habitat trees were present in the proposed alignment.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.9 Stage 5 – Loop 4

5.9.1 Flora

During the survey, a total of 149 taxa were found within Loop 4 of Stage 5, comprising 141 species, from 78 genera and 36 families. These totals included three introduced species, and two Priority species, Appendix B.

5.9.2 Rare and Priority Flora

No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area. No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a), were located during the survey.

Two Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Scaevola chrysopogon* (P2) and *Grevillea stenostachya* (P3).

- *Grevillea stenostachya* (P3) Family: Proteaceae

Grevillea stenostachya is a dense shrub, with a pungent odour, growing from 0.6 to 1.5 metres in height. Cream, yellow and green flowers may be produced from July to September. This species prefers a red sand or sandy loam substrate and is often found in open, tall shrublands. The Western Australian Herbarium has 25 records of this species. The *Grevillea stenostachya* (P3) was recorded at the following locations within the Stage 5 pipeline Loop 4 – 320552:6955442; 320501:6971364; 322943:7123197; 320418:6983551; 320492:7045768; 320364:6952577; 320501:6962578; 322475:7114263. This species was also recorded at 320374:6990168; 320263:7037342; 320529:6962737; 321348:7078253; 321067:7068364 on Stage 5 pipeline Loop 5. This species was also recorded on Stage 4 – Loop 6 at the following locations (320497: 6973361; 320503:6969096; 320521:6964978).

- *Scaevola chrysopogon* (P2) Family: Goodeniaceae

Scaevola chrysopogon is a perennial herb or shrub, growing from 30 to 60 centimetres in height. This species produces white or cream flowers from August to October. Preferring red and brown sands, this species favours sandplains. The Western Australian Herbarium holds ten collections of this species. *Scaevola chrysopogon* was recorded at one location with Stage 5 – Loop 4 (325086:7180832).

These species are not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.9.3 Introduced Flora

Three introduced or weed species were found on Loop 4 of Stage 5. These were **Asphodelus fistulosus*, **Cenchrus ciliaris* and **Malvastrum americanum,* none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.9.4 Vegetation

Loop 4 is located within the Eremaean Province in the Carnarvon Botanical District. The communities mapped by Beard (1976) as occurring in this area are listed below.

- *Acacia victoriae, Acacia xiphophylla* and *Acacia eremaea* open scrub with patches of mixed saltbushes and succulents.
- *Acacia ramulosa* and *Acacia sclerosperma* open scrub
- *Acacia aneura* trees over *Acacia ramulosa* open scrub on flats, *Acacia ramulosa* and *Grevillea* open scrub on sandridges.
- *Acacia ramulosa* open scrub and *Acacia sclerosperma* open scrub
- *Acacia ramulosa* open scrub and *Acacia sclerosperma* open scrub on low sandridges, *Acacia victoriae, Acacia xiphophylla* and *Acacia eremaea* open scrub on flats.
- *Acacia sclerosperma* and *Acacia victoriae* sparse shrubland on sandy rises with patches of samphire and saltbush
- *Acacia sclerosperma* and *Acacia victoriae* sparse shrubland.

The following communities were defined and mapped for the Stage 5 – Loop 4 area.

Community 1v
Low Open Woodland of *Eucalyptus camaldulensis, Acacia aneura* var. *aneura* and *Acacia distans* along creek edges over *Eremophila fraseri* subsp. *galeata* (ms), *Eremophila ?miniata* and *Eremophila clarkei* over *Cymbopogon ambiguus* in rocky riverbank sands in association with the river crossings.

Community 1x
Low Open Woodland of *Eucalyptus species* over *Acacia* species, *Callitris glaucophylla, Thryptomene decussata* and *Dianella revoluta* over *Monachather paradoxus* in pale red sandy soils.

Community 4r
Tall Open Shrubland of *Acacia acradenia* and *Hakea preissii* over *Acacia synchronicia* and *Eremophila cuneifolia* over *Cenchrus* sp., *Ptilotus polakii* and *Solanum lasiophyllum* in sandy soils.

Community 4s
Low Open Shrubland of *Acacia heteroneura* var. *prolixa, Thryptomene decussata* and *Acacia aneura* var. *aneura* over *Mirbelia rhagodioides, Senna artemisioides* subsp. *helmsii* and *Rhagodia baccata* subsp. *dioica* over *Eriachne* sp. in red sandy loam.

Community 4t
Open Scrub of *Acacia wanyu, Acacia blakelyi* and *Acacia coolgardiensis* subsp. *coolgardiensis* over *Eremophila clarkei, Senna glutinosa* subsp. *chatelainiana* over *Sida cardiophylla* and *Eriachne* sp. in red sands.

Community 7p
Open Heath of *Grevillea* sp., *Senna artemisioides* subsp. *artemisioides*, *Acacia ?tenuissima*, *Acacia coriacea* subsp. *coriacea, Acacia wanyu* and *Acacia kempeana* over *Senna artemisioides* subsp. *helmsii* and *Ptilotus obovatus* var. *obovatus* in sandy soils with quartz pebbles.

5.9.5 Wetlands and River Crossings

Wooramel River

The Wooramel River sits within an incised valley. At the pipeline crossing point it would only have one channel when in flood. The banks are lined with a Woodland of *Eucalyptus camaldulensis* var. *obtusa* and *Eucalyptus victrix* over scattered shrubs and small trees (*Acacia tetragonophylla*, *Acacia cyperophylla* var. *cyperophylla, Pimelea microcephala, Acacia grasbyi, Thryptomene decussata, Acacia anastema*). The terraces supported a variety of herbs and grasses (*Mukia maderaspatana, Setaria dielsii, *Asphodelus fistulosus, Cymbopogon ambiguus, Amaranthus clementii, *Cenchrus ciliaris, Cyperus vaginatus*). On the north side of the river, immediately to the west of the existing pipeline, the valley walls have recently crumbled away in large stony blocks. Cliffs extend westwards from the pipeline crossing point on both the northern and southern sides of the valley. The presence of scats and tracks indicated that the cliffs and associated overhangs provide shelter for animals. Pipeline construction to the west of the existing line could destroy sections of the cliffs, causing a localised loss of animal habitat.

5.9.6 Condition of Vegetation

The land adjacent to the pipeline between the Gascoyne River and Compressor Station 5 is quite remote and had few physical disturbances. All of the vegetation was rated as being Pristine (1). There were sightings of bird life, frogs, dragons and lizards scurrying around in the vegetative litter as well as sign of animal diggings.

5.9.7 Key Findings

Table 10: Key Findings on Loop 4 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	Two Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Scaevola chrysopogon* (P2) and *Grevillea stenostachya* (P3).	Avoid priority species wherever possible
Habitat Trees –Creeklines	The proposed alignment crosses several smaller creeklines. No significant habitat trees were present.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) – Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Three introduced or weed species were found, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Asphodelus fistulosus*, **Cenchrus ciliaris* and **Malvastrum americanum,*.	Follow hygiene measures as defined previously in EMP.

5.9.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some larger trees on the creek and river crossings. However no significant habitat trees were present in the proposed alignment.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.10 Stage 5 – Loop 5

5.10.1 Flora

During the survey, a total of 85 taxa were found within Loop 5 of Stage 5, comprising 79 species, from 52 genera and 31 families. These totals included one introduced species, and three Priority species (Appendix B).

5.10.2 Rare and Priority Flora

No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area. No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a), were located during the survey.

Three Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey, namely *Grevillea stenostachya* (P3), *Dicrastylis linearifolia* (P3) and *Eremophila physocalyx* (ms) (P3).

- *Dicrastylis linearifolia* (P3) Family: Lamiaceae

Dicrastylis linearifolia is a many-branched shrub that may grow from 1 to 3 metres in height. The leaves of this species have a hairy upper surface. From November to December a scale-like indumentum of white flowers is produced. This species prefers red sand on sandplains in association with tall open shrublands. The Western Australian Herbarium currently holds 24 records of this species. *Dicrastylis linearifolia* – P3 was recorded at one location on Stage 5 – Loop 5 (320418:6983551) and at one location on Stage 5 – Loop 6 (318977:6927187), and at one location on Stage 4 - Loop 6 (321951:7098129).

- *Eremophila physocalyx* (ms) (P3) Family: Myoporaceae

Eremophila physocalyx is an erect shrub, growing from 1 to 3 metres in height. It prefers a substrate of either red or brown sand, and is most likely found on sandplains. It has been found in thick scrub in association with various *Acacia* species. The Western Australian Herbarium currently holds eight records of this species. *Eremophila physocalyx* (ms) – P3 was recorded at one location on Stage 5 – Loop 5 (320658: 7058475) and at one location on Stage 4 – Loop 5 (321951:7098129).

- *Grevillea stenostachya* (P3) Family: Proteaceae

Grevillea stenostachya is a dense shrub, with a pungent odour, growing from 0.6 to 1.5 metres in height. Cream, yellow and green flowers may be produced from July to September. This species prefers a red sand or sandy loam substrate and is often found in open, tall shrublands. The Western Australian Herbarium has 25 records of this species. *Grevillea stenostachya* – P3 was recorded at 320374:6990168; 320263:7037342; 321348:7078253; 321067:7068364 on Stage 5 - Loop 5 and at one location on Stage 5 –Loop 6 (320529:6962737).

In addition, the *Grevillea stenostachya* (P3) was recorded at the following locations within the Stage 5 pipeline Loop 4 – 320552:6955442; 320501:6971364; 322943:7123197; 320418:6983551;

320492:7045768; 320364:6952577; 320501:6962578; 322475:7114263. This species was also recorded on Stage 4 – Loop 6 at the following locations (320497: 6973361; 320503:6969096; 320521:6964978).

These species are not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.10.3 Introduced Flora

One introduced or weed species were found on Loop 5 of Stage 5. This was **Pentaschistis airoides* subsp. *airoides,* which is not a Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.10.4 Vegetation

Loop 5 is located within the Eremaean Province in the Carnarvon Botanical District. The communities mapped by Beard (1976) as occurring in this area are listed below.

- Scattered groups of *Eucalyptus* and *Callitris columellaris* over *Acacia ramulosa o*pen scrub
- Scattered groups *Callitris columellaris* over *Acacia ramulosa* open scrub
- *Acacia ramulosa* open scrub on red sandplain
- *Acacia ramulosa* open scrub and *Acacia sclerosperma* open scrub over sandridges and small claypans

The following community was defined and mapped for the Stage 5 – Loop 5 area.

Community 1x
Low Open Woodland of *Eucalyptus* species over *Acacia* species, *Callitris glaucophylla, Thryptomene decussata* and *Dianella revoluta* over *Monachather paradoxus* in pale red sandy soils.

5.10.5 Wetlands and River Crossings

In the vicinity of 321631mE:7087292mN immediately east of the pipeline there was a water hole, approximately 120m in diameter which was still holding water at the time of the survey. The surrounding vegetation consisted of an Open Scrub of *Acacia murrayana, Acacia tetragonophylla, Acacia aneura* var. *tenuis, Acacia ramulosa* var. *ramulosa* and *Acacia sclerosperma* subsp. *sclerosperma* over scattered smaller shrubs (*Senna artemisioides* subsp. *filifolia, Pimelea microcephala*). The understorey was quite sparse, probably due to trampling and grazing by goats. Approximately 5km south of the water hole (321480mE:7082550mN) the pipeline passes through a sheet wash area, though this was not holding water at the time of the survey. The vegetation consisted of a Scrub of *Acacia tetragonophylla, Acacia aneura* var. *tenuis, Spartothamnella teucriiflora* and *Acacia sclerosperma* subsp. *sclerosperma* over a variety of smaller shrubs (*Mirbelia spinosa, Ptilotus obovatus, Rhagodia drummondii, Eremophila flaccida* subsp. *flaccida, Eremophila tietkensii, Eremophila forrestii* subsp. *forrestii*). This area was frequented by goats, and there were very few herbs and grasses.

There were no creek crossings along this part of the pipeline route and therefore no significant habitat trees.

5.10.6 Condition of Vegetation

The vegetation was almost entirely weed free, and free from disturbance other than light browsing by goats. Most of the vegetation was therefore classified as Pristine (1). Two soak areas had been impacted by congregations of goats and were assessed as Very Good (3) and Excellent (2) due to understorey damage.

5.10.7 Key Findings

Table 11: Key Findings on Loop 5 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	Three Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Grevillea stenostachya* (P3), *Dicrastylis linearifolia* (P3) and *Eremophila physocalyx* (ms) (P3).	Avoid Priority species wherever possible.
Habitat Trees – Creeklines and Wetlands	The proposed alignment crosses several smaller creeklines. No significant habitat trees were present.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) – Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	One introduced or weed species was found, which is not a Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Pentaschistis airoides* subsp. *airoides.*	Follow hygiene measures as defined previously in EMP.

5.10.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some larger trees on the creek and river crossings. However no significant habitat trees were present in the proposed alignment.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.11 Stage 5 – Loop 6

5.11.1 Flora

During the survey, a total of 134 taxa were found within Loop 6 of Stage 5, comprising 130 species, from 80 genera and 42 families. These totals included three introduced species, and six Priority species (Appendix B).

5.11.2 Rare and Priority Flora

No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area. No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a), were located during the survey.

Six Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Acanthocarpus parviflorus* (P3), *Dicrastylis incana* (P3), *Dicrastylis linearifolia* (P3), *Grevillea stenostachya* (P3), *Microcorys tenuifolia* (P3) and *Philotheca kalbarriensis* (P2).

- *Acanthocarpus parviflorus* (P3) Family: Dasypogonaceae

Acanthocarpus parviflorus is a tufted and rhizomatous, perennial herb reaching 15 to 40 centimetres in height. White flowers are produced from May to June. This species prefers a substrate of sand over either limestone or sandstone. There are currently 21 records of this species at the Western Australian Herbarium. These records extend south from Shark Bay, to Geraldton. *Acanthocarpus parviflorus* was recorded at one location on Stage 5 – Loop 6 (320529: 6962737) and at one location on Stage 4 – Loop 6 (320521:6964978).

- *Dicrastylis incana* (P2) Family: Lamiaceae

Dicrastylis incana is a shrub from 30 t0 150 centimetres in height, with sessile leaves. This species has dentritic stem hairs from 2 to 3.5mm long with hair branches terminated by glands. White flowers are produced from September to November. This species prefers yellow sand and is most commonly found in open, low woodlands. There are currently thirteen collections of this species lodged at the Western Australian Herbarium, all of which were found less than 100 kilometres east of Geraldton. *Dicrastylis incana* was recorded at one location on Stage 5 – Loop 6 (318977:6927187).

- *Dicrastylis linearifolia* (P3) Family: Lamiaceae

Dicrastylis linearifolia is a many-branched shrub that may grow from 1 to 3 metres in height. The leaves of this species have a hairy upper surface. From November to December a scale-like indumentum of white flowers is produced. This species prefers red sand on sandplains in association with tall open shrublands.

The Western Australian Herbarium currently holds 24 records of this species. *Dicrastylis linearfolia* was recorded at one location on Stage 5 – Loop 6 (318977:6927187), at one location on Stage 5 – Loop 5 (320418:6983551) and at one location on Stage 4 - Loop 6 (321951:7098129).

- *Grevillea stenostachya* (P3) Family: Proteaceae

Grevillea stenostachya is a dense shrub, with a pungent odour, growing from 0.6 to 1.5 metres in height. Cream, yellow and green flowers may be produced from July to September. This species prefers a red sand or sandy loam substrate and is often found in open, tall shrublands. The Western Australian Herbarium has 25 records of this species. *Grevillea stenostachya* was recorded at 320374:6990168; 320263:7037342; 321348:7078253; 321067:7068364 on Stage 5 - Loop 5 and at one location on Stage 5 –Loop 6 (320529:6962737). In addition, the *Grevillea stenostachya* (P3) was recorded at the following locations within the Stage 5 pipeline Loop 4 – 320552:6955442; 320501:6971364; 322943:7123197; 320418:6983551; 320492:7045768; 320364:6952577; 320501:6962578; 322475:7114263. This species was also recorded on Stage 4 – Loop 6 at the following locations (320497: 6973361; 320503:6969096; 320521:6964978).

- *Philotheca kalbarriensis* (P2) Family: Rutaceae

Philotheca kalbarriensis is a shrub growing up to 1 metre in height, with narrowly fusiform leaves approximately 4 millimetres in length. This species produces solitary white axillary flowers in August. This species prefers a yellow sandy clay substrate and is found in *Acacia acuminata* scrub. Currently, the Western Australian Herbarium holds six collections of this species. *Philotheca kalbarriensis* was recorded at one location on Stage 5 – Loop 6 (318444:6923919).

- *Microcorys tenuifolia* (P3) Family: Lamiaceae

The shrub, *Microcorys tenuifolia,* may grow from 50 to 180 centimetres in height. White, blue and purple flowers are produced from October to December, as well as from March to April. This species prefers red or brown sands, or lateritic gravelly soils. It is most often found on undulating plains. There are currently eleven records of this species held at the Western Australian Herbarium. *Microcorys tenuifolia* was recorded at 317962:6916112.

These species are not restricted to the proposed pipeline area and therefore the proposed actions along the pipeline should not threaten the conservation status of this species.

5.11.3 Introduced Flora

Three introduced or weed species were found on Loop 6 of Stage 5. These were **Cucumis myriocarpa, *Oxalis corniculata* and **Pentaschistis airoides* subsp. *airoides,* none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.11.4 Vegetation

Loop 6 starts in the Irwin District of the South West Botanical Province but finishes in the Eremaean Province in the Carnarvon Botanical District. The communities mapped by Beard (1976) as occurring in this area are listed below.

- Mixed scrub heath with shrubs that a 1m or greater and dwarf shrubs (<1m), with patches of *Acacia* and *Casuarina* (Probably *Allocasuarina*) shrubs.
- Mixed scrub heath with shrubs that a 1m or greater and dwarf shrubs (<1m) on sandplain.
- *Acacia victoriae, Acacia xiphophylla* and *Acacia eremaea* open scrub
- Scattered groups of *Eucalyptus* and *Callitris columellaris* over *Acacia ramulosa* open scrub
- *Acacia* and *Casuarina* closed tall shrubland
- *Eucalyptus loxophleba* woodland
- Sparse *Eucalyptus loxophleba* and *Eucalyptus oleosa* woodland over *Acacia ramulosa* open scrub

The northern section of Stage 5-6 travels through a large stretch of intact native vegetation before encountering the wheatbelt, approximately 70km south of Compressor Station 6. North of the Murchison River this vegetation mostly consisted of a Low Woodland of Acacias (*Acacia ramulosa* var. *ramulosa, Acacia aneura* var. *intermedia, Acacia sclerosperma* subsp. *sclerosperma, Acacia murrayana* etc.) with occasional stands of Eucalypts (*Eucalyptus eudesmoides, E. leptopoda, E. mannensis* subsp. *vespertina*). South of the Murchison River Eucalypts became increasingly prevalent, and the plain was interrupted by a series of sandy ridges supporting Low Woodland (*Eucalyptus obtusiflora, Eucalyptus mannensis* subsp. *vespertina, Callitris canescens* etc.) over Scrub or Thickets of kwangon species (e.g. *Grevillea stenostachya*, *Grevillea gordoniana, Grevillea pterosperma, Hakea bucculenta*, *Dicrastylis linearifolia* (P3), *Eremaea dendroidea, Comesperma scoparium*).

South of 6899200mN the pipeline route entered the wheatbelt. While most of the route past this point and Compressor Station 7 lay within pasture, it did pass through over thirty patches of remnant bushland. These could be sorted into three broad community types. Firstly were the woodland remnants, often on rocky ground unsuitable for farming. These usually included one or more of the following tree species - *Eucalyptus horistes, E. leptopoda, E. mannensis* subsp. *vespertina, E. oldfieldii*, *E. jucunda, E. subangusta* subsp. *subangusta* or *E. eudesmioides*. Some patches also included smaller trees such as *Bursaria occidentalis, Acacia acuminata, A. burkittii* or *Allocasuarina acutivalvis* subsp. *acutivalvis.*

The following communities were defined and mapped for the Stage 5 – Loop 6 area.

Community 1w
Woodland of *Eucalyptus camaldulensis* and *Eucalyptus eudesmioides* over *Acacia rhodophloia, Acacia longispinea, Eremophila clarkei* and *Rhagodia drummondii* over *Monachather paradoxus* in pale red sandy soils.

Community 1x
Low Open Woodland of *Eucalyptus* species over *Acacia* species, *Callitris glaucophylla, Thryptomene decussata* and *Dianella revoluta* over *Monachather paradoxus* in pale red sandy soils.

Community 1y
Low Open Woodland of *Eucalyptus ewartiana* and *Eucalyptus camaldulensis* over *Acacia aneura* var. *intermedia, Hakea invaginata* and *Eremophila clarkei* over *Ecdeiocolea monostachya* in pale red sandy soils.

Community 1z
Low Open Woodland of *Eucalyptus ewartiana* and *Eucalyptus camaldulensis* over *Acacia rhodophloia, Callitris glaucophylla, Thryptomene decussata* and *Dianella revoluta* over *Monachather paradoxus* and *Lawrencella davenportii* in pale red sandy soils.

Community 1aa
Low Open Woodland of emergent *Eucalyptus camaldulensis* over *Acacia tetragonophylla, Melaleuca uncinata* and *Acacia acuminata* subsp. *acuminata* (ms) over *Senna artemisioides* subsp. *petiolaris, Hakea preissii* and *Eremophila platycalyx* subsp. *platycalyx* (ms) over sparse ephemerals in clay loam riverbank soils in association with the Murchison River.

Community 1ab
Low Open Woodland of *Eucalyptus eudesmioides* and *Eucalyptus oldfieldii* over *Verticordia interioris, Acacia acuaria* and *Lamarchea hakeifolia* var. *brevifolia* over very occasional *Ptilotus schwartzii* var. *schwartzii* in pale red sandy soils.

Community 1ac
Low Woodland of *Eucalyptus foecunda* and *Eucalyptus eudesmioides* with *Banksia prionotes* over dense understorey of *Calothamnus gilesii, Allocasuarina huegeliana, Phebalium tuberculosum, Baeckea crispiflora* and *Acacia acuaria* over *Jacksonia ?restioides* in pale orange sandy soils.

Community 1ad
Low Woodland of *Eucalyptus oldfieldii* and *Eucalyptus petraea* over dense understorey of *Acacia rhodophloia, Acacia aneura* var. *aneura, Acacia longispinea, Hakea lissocarpha, Hakea recurva* subsp. *arida, Phebalium tuberculosum* and *Aluta maisonneuvei* subsp. *maisonneuvei* over occasional *Ecdeiocolea monostachya* and *Meeboldina scariosa* in yellow sands.

Community 1ae
Low Woodland of *Eucalyptus ?eudesmioides* and *Eucalyptus petraea* over *Acacia tetragonophylla, Acacia ramulosa* var. *ramulosa, Melaleuca eleuterostachya* and *Eremophila gilesii* subsp. *variabilis* (ms) over *Ptilotus obovatus* var. *obovatus* and *Rhagodia* sp. in red sands.

Community 1af
Low Open Woodland of *Eucalyptus subangusta* subsp. *subangusta* and *Eucalyptus oldfieldii* over *Melaleuca eleuterostachya* and *Monotaxis luteiflora* over *Dianella revoluta, Conostylis prolifera* and Asteraceae spp. in yellow sands over laterite.

Community 1ag
Highly disturbed Woodland of *Eucalyptus camaldulensis* over scattered *Rhagodia baccata* subsp. *dioica* over pastoral weeds in red-brown loam soils in association with the Greenough River.

Community 6d
Low disturbed remnant Shrubland of *Melaleuca uncinata* and *Acacia aestivalis* over *Baeckea* aff. *cryptandroides* over *Lepidosperma leptostachyum* and pastoral weeds in pale sands with sub-surface sandstone in association with watercourses.

Community 7q
Open Heath of *Calothamnus sanguineus* and *Conospermum stoechadis* over *Scholtzia involucrata, Lachnostachys eriobotrya, Lechenaultia floribunda, Petrophile brevifolia* and *Jacksonia calcicola* (ms) in pale yellow undulating sands.

Community 7r
Open Heath of *Comesperma scoparium* and *Monachather paradoxus* in pale yellow undulating and unstable sands.

Community 7s
Remnant Open Heath of *Actinostrobus pyramidalis* and *Grevillea* sp. over *Grevillea annulifera* (P3), *Acacia cochlearis, Acacia blakelyi* and *?Baeckea* sp. over *Lepidobolus preissianus* with assorted annual Asteraceae spp. in yellow sands over laterite.

5.11.5 Wetlands and River Crossings

Murchison River
At the pipeline crossing point the Murchison River channel lies along the southern margin of the valley. To the north of the main channel is a 1.8km wide floodplain interspersed with billabongs. The river banks were lined with a Woodland of *Eucalyptus victrix* and *E. camaldulensis* var. *obtusa* over scattered shrubs and small trees (*Callistemon phoeniceus, Acacia sclerosperma* subsp. *sclerosperma* etc.). The floodplain supported a Low Woodland/Scrub of *Acacia ramulosa* var. *ramulosa*, *Senna* sp. Austin, *Acacia tetragonophylla* and *Acacia burkittii* over smaller shrubs and grasses (e.g. *Solanum orbiculatum*, *Solanum lasiophyllum, Aristida contorta, Thyridolepis multiculmis, Eragrostis dielsii*). The billabongs were lined with smaller trees (*Casuarina obesa*, *Acacia burkittii, Melaleuca stereophloia*) and a range of smaller shrubs, herbs and grasses (*Hakea recurva* subsp. *arida, Grevillea deflexa, Comesperma integerrimum, Erodium cygnorum, Alternanthera nodiflora, Tripogon loliiformis*).

At the time of sampling (April 2006) the river and floodplain had just experienced a major flood which had killed or damaged much of the riparian vegetation. The south side of the channel near the crossing point was not greatly changed by the flooding, but the north bank showed slippage and scouring in several places.

Greenough River
At the crossing point he Greenough River flowed within a fenced off, moderately incised valley surrounded by farmland. The banks were lined with a Woodland of *Eucalyptus camaldulensis* var. *obtusa* over scattered smaller trees (*Acacia ligulata, Casuarina obesa*). The ground stratum was dominated by weeds (**Cenchrus ciliatus, *Raphanus raphanistrum, *Mesembryanthemum nodiflorum*) and chenopods (*Atriplex semilunaris, Halosarcia bidens* subsp. *bidens, Atriplex amnicola, Maireana brevifolia, Sclerolaena diacantha, Sarcocornia blackiana*) with a few sedge like plants (*Samolus repens* var. *floribundus*, *Cyperus gymnocaulos*). No habitat trees were noted within the pipeline corridor.

5.11.6 Condition of Vegetation

The portion of the pipeline route between Stage 4 Loop 6 and the wheatbelt runs through very remote country in which the only obvious disturbance has been that associated with the maintenance track, or with the original clearing for pipeline construction. Nearly all of the vegetation was therefore rated Pristine (1). The vegetation around the Murchison River and its floodplain was rated as Excellent (2) rather than Pristine (1) as there was evidence of goats congregating around some of the billabongs.

In the wheatbelt section of the loop, the condition of most of the remnants was rated as Very Good (3) to Excellent (2), but saline areas were rated as Degraded (5) or Completely Degraded (6). While no remnants were infested with serious invasive weeds, all had been impacted to some extent by maintenance clearing along the pipeline corridor, and in some cases by grazing, and so could not be rated as Pristine (1).

5.11.7 Key Findings

Table 12: Key Findings on Loop 6 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	Six Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey; *Acanthocarpus parviflorus* (P3), *Dicrastylis incana* (P3), *Dicrastylis linearifolia* (P3), *Grevillea stenostachya* (P3), *Microcorys tenuifolia* (P3) and *Philotheca kalbarriensis* (P2).	Avoid Priority species wherever possible.
Habitat Trees –Creeklines	The proposed alignment crosses several smaller creeklines. No significant habitat trees were present.	Avoid all larger trees wherever possible. No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) - Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Three introduced or weed species were found, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Cucumis myriocarpa,* **Oxalis corniculata* and **Pentaschistis airoides* subsp. *airoides.*	Follow hygiene measures as defined previously in EMP.

5.11.8 Management Issues

In the creek crossings, all larger trees should be avoided wherever possible during operational activities. There were some larger trees of *Eucalyptus camadulensis* and *Eucalyptus victrix* on the creek and river crossings. However no significant habitat trees were present in the proposed alignment.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

5.12 Stage 5 – Loop 7

5.12.1 Flora

During the survey, a total of 61 taxa were found within Loop 7 of Stage 5, comprising 57 species, from 42 genera and 23 families. These totals included three introduced species and no Priority species.

5.12.2 Rare and Priority Flora

No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area. No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.

No Priority Flora species, as defined by the Department of Environment and Conservation (2006a), was located during the survey.

5.12.3 Introduced Flora

Three introduced or weed species were found on Loop 7 of Stage 5. These were **Avena barbata*, **Bromus* sp. and **Mesembryanthemum nodiflorum*, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006).

5.12.4 Vegetation

Loop 7 is located in the South West Botanical Province in the Irwin District (Beard 1990). Beard's mapping indicates that there are two communities (Beard 1976). These two types of communities are listed below.

- Mixed scrub heath with shrubs that a 1m or greater and dwarf shrubs (<1m).
- Mixed scrub heath with shrubs that a 1m or greater and dwarf shrubs (<1m), with patches of *Acacia* and *Casuarina* (Probably *Allocasuarina*) shrubs.

The vegetation occurred on a series of elevated sandy remnants roughly mid way between northern limit of the cleared land and Compressor Station 7. Although this vegetation was restricted to localised patches, these remnants were rich in species.

The following communities were defined and mapped for the Stage 5 – Loop 7 area.

Community 3b
Remnant Woodland of *Allocasuarina campestris* with occasional *Eucalyptus eudesmioides* and *Acacia spathulifolia* over *Calothamnus asper* and *Grevillea preissii* subsp. *glabrilimba* over *Mesomelaena pseudostygia* and *Ecdeiocolea monostachya* in pale yellow sands.

Community 3c
Tall Shrubland of *Allocasuarina campestris* and *Allocasuarina humilis* with *Grevillea candelabroides* over *Mesomelaena pseudostygia, Baeckea ochropetala* and *Ecdeiocolea monostachya* in grey sands.

Community 3d
Tall Open Shrubland of *Allocasuarina campestris* with *Banksia attenuata* and *Calothamnus blepharospermus* over *?Daviesia divaricata, Lyginia barbata, Ecdeiocolea monostachya* and *Jacksonia nutans* (ms) with pastoral grasses in sands.

Community 3e
Tall Open Shrubland of *Allocasuarina campestris* with *Xylomelum angustifolium* and *Grevillea eriostachya* over *Banksia sphaerocarpa, Cassytha* sp. and *Eremaea beaufortioides* in sands.

Community 6d
Low disturbed remnant Shrubland of *Melaleuca uncinata* and *Acacia aestivalis* over *Baeckea* aff. *cryptandroides* over *Lepidosperma leptostachyum* and pastoral weeds in pale sands with sub-surface sandstone in association with watercourses.

5.12.5 Wetlands and River Crossings

No significant wetlands or creeklines were recorded in this section.

5.12.6 Condition of Vegetation

In this section, the condition of most of the remnants was rated as Very Good (3) to Excellent (2), but saline areas were rated as Degraded (5) or Completely Degraded (6). This southern section has largely been cleared for agricultural activities.

5.12.7 Key Findings

Table 13: Key Findings on Loop 7 – Stage 5

Key Biological Values	Findings	Recommendations
Flora – Threatened – EPBC Act (1999)	No threatened plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.	No action required.
Flora – Rare – Wildlife Conservation Act (1950)	No Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a) were located during the survey.	No action required.
Priority Flora – DEC (2006a)	No Priority Flora species as defined by the Department of Environment and Conservation (2006a) was located during the survey.	No action required.
Habitat Trees –Creeklines	No significant creeklines were recorded.	No action required.
Environmentally Sensitive Areas (ESA's)	There are no listed ESA's within the proposed loop.	No action required.
Threatened Ecological Communities (TEC's) - Federal	No Threatened Ecological Communities listed by the Department of the Environment and Heritage (2006b) were recorded.	No action required.
Threatened Ecological Communities (TEC's) – State	No Threatened Ecological Communities listed by the Department of Environment and Conservation (2006d) were recorded.	No further action required.
Weeds and Introduced species.	Three introduced or weed species were found, none of which are Declared Plants as defined by the Western Australian Department of Agriculture and Food (Department of Agriculture and Food 2006); **Avena barbata*, **Bromus* sp. and **Mesembryanthemum nodiflorum*.	Follow hygiene measures as defined previously in EMP.

5.12.8 Management Issues

The key issues in this southern section supporting remnant pockets of vegetation in agricultural holdings, there is a need to maintain vehicle hygiene to minimise the spread of diseases and weeds. Therefore vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

6. DISCUSSION

Mattiske Consulting Pty Ltd was commissioned by Alinta to conduct a flora and vegetation survey for the proposed northern section of the Stage 5 gas pipeline from Bunbury to Perth. This report summarizes the key findings on the Stage 5 route north of Geraldton. Reference is made to the work on the Stage 4 loops in order to place the work on Stage 5 into context and tom earlier work undertaken on the previous studies (Mattiske Consulting Pty Ltd since 2000, namely:

- Muchea, Red Gully Road, Minyulo, Badgingarra and Eneabba Deviation Inspection (Mattiske Consulting 2000)
- Red Gully Road (Mattiske Consulting 2001a)
- Minyulo Reserve (Mattiske Consulting 2001b)
- Badgingarra Deviation (Mattiske Consulting 2001c)
- Twyata Reserve and Hill River (Mattiske Consulting 2001d)
- Neaves Road Area, Bullsbrook (Mattiske Consulting 2001e)
- Dampier to East Bullsbrook (Mattiske Consulting Pty Ltd 2002)
- Kwinana to Australind (Mattiske Consulting Pty Ltd 2003)

The specific work was undertaken over a six month period following above average annual rainfalls in the survey area. These higher rainfall recordings during the survey period were so extensive that the rainfall events led to local and regional flooding that restricted access to some of the route for several weeks. These latter areas were revisited in the month following these rainfall events and consequently the survey effort could be considered to be more than adequate.

A total of 614 taxa (including subspecies and varieties) from 223 genera and 68 families were recorded at the regular recording sites along the proposed pipeline route from Geraldton to Dampier, Appendix A. This number is comparable with the previous studies undertaken from Dampier to East Bullsbrook by Mattiske Consulting Pty Ltd (2002). The key biological values occurred on the less disturbed sites and in the native vegetation areas north of Geraldton. In recognition of the current standards as applied by the Environmental Protection Authority the communities supporting the range of Priority flora species or habitat trees (largely on river and creek crossings) could be considered to be locally significant.

During the recent studies, no Declared Rare Flora species, pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as listed by the Department of Environment and Conservation (2006a and 2006b) were located during the survey. No plant taxa pursuant to section 179 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the survey area.

During the recent studies undertaken by Mattiske Consulting Pty Ltd and as reported in this document, no Rare, no Priority 1, four Priority 2, eight Priority 3 and no Priority 4 taxa were recorded on the Stage 4 and Stage 5 sections of the pipeline route. As indicated in the following text, none of these Priority flora species are restricted to the pipeline route or the associated facilities.

In the previous studies from Dampier to Bunbury a total of 98 and 42 vegetation communities were defined and mapped for the gas pipeline corridor for the areas north of East Bullsbrook and from Kwinana to Australind respectively (Mattiske Consulting Pty Ltd 2002, 2003).

No threatened ecological communities as defined by the EPBC Act (1999) (Department of Environment and Heritage 2006b) or by the Department of Environment and Conservation (2006c) were recorded on the Stage 5 area north of Geraldton. A range of threatened ecological communities has been recorded south of Geraldton near the pipeline. The occurrence of threatened ecological communities is restricted largely to the remnant pockets of native vegetation south of Perth and south of Geraldton. These areas have either been dealt with in Woodman Environmental Consulting 2006) for Loops 8 and 9 or in Mattiske Consulting Pty Ltd (2002 and 2003) for the areas south of Geraldton. An updated list of the threatened ecological communities near the gas pipeline from Dampier to Australind (or Bunbury) is also supplied in the attachments of this report.

The condition of the vegetation along the pipeline route was largely reflecting the land use activities in the respective areas. The northern sections of the pipeline route have been subjected to extensive pastoral activities and as the route tends to occur on the less undulating landscapes, these areas area subject to the grazing pressures of largely introduced stock (cattle and sheep) and to feral animals such as goats and camels. The condition of the vegetation in the southern sections of Stage 5 nearer Geraldton was influenced by the extent of past clearing activities for agriculture. Many of the southern sections were therefore degraded or completely degraded. The native species were generally restricted to either river crossings in the southern section of the pipeline corridor or to remnant areas of native vegetation.

Vehicle hygiene measures should be maintained at all times to minimize the spread of weeds. The main weeds are *Cenchrus ciliaris* and *Amaranthus mitchelii.* Providing that current vehicle hygiene measures are maintained these weed populations should not spread beyond current infestations in the damper lower slopes and creeklines.

7. LIST OF PARTICIPANTS

The following personnel of Mattiske Consulting Pty Ltd have been involved with this project:

Principal Ecologist:	Dr E. M. Mattiske
Experienced Botanists:	Dr C Hancock Dr S Chalwell Mr D. Marsh Mr B Sadlo Ms S Thomson Mrs L Cobb Ms F. Smith Ms L Dalgliesh Ms S Robinson

8. ACKNOWLEDGEMENTS

The authors would like to thank the environmental team at Alinta for assistance during this project, and in particular Mr Shane O'Connell.

9. REFERENCES

Barrett, R.L. and Dixon, K.W (2001). *A revision of the genus Calectasia (Calectasiaceae) with eight new species described from south-west Western Australia*. In: Nuytsia 13(3), pp 411- 448. Department of Conservation and Land Management, Perth.

Beard, J.S. (1975)
Vegetation Survey of Western Australia. Pilbara. Map and Explanatory Notes, Sheet 5, 1:1,000,000 Series, University of Western Australia Press, Perth.

Beard, J.S. (1976)
Vegetation Survey of Western Australia. Murchison. Map and Explanatory Notes, Sheet 6, 1:1,000,000 Series, University of Western Australia Press, Perth.

Beard, J.S. (1979)
The vegetation of the Pinjarra Area, Western Australia. Map and Explanatory Memoir, 1:250,000 Series, Vegmap Publications, Perth.

Beard, J.S. (1980)
A New Phytogeographic Map of Western Australia. Western Australian Herbarium Notes Number **3**: 37-58.

Beard, J.S. (1981)
Vegetation Survey of Western Australia. Swan. Map and Explanatory Notes, Sheet 7, 1:1,000,000 Series, University of Western Australia Press, Perth.

Beard, J.S. (1990)
Plant Life of Western Australia. Kangaroo Press Pty Ltd, Kenthurst, N.S.W.

Churchward, H.M. and McArthur, W.M. (1980)
Landforms and Soils of the Darling System. In*: Atlas of Natural Resources, Darling System, Western Australia*. Department of Conservation and Environment, Western Australia.

Churchill, D.M. (1961)
The Tertiary and Quaternary vegetation and climate in relation to the living flora in South Western Australia. Ph.D. thesis, University of Western Australia.

Churchill, D.M. (1968)
The distribution of and prehistory of Eucalyptus diversicolor F.Muell., E. marginata Donn ex Sm., and E. calophylla R.Br. in relation to rainfall. Aust. J. Bot. **16**: 125-151.

Churchward, H.M and W.M. McArthur (1980)
Landforms and Soils of the Darling System, Western Australia. In: Department of Conservation and Environment (1980) *Atlas of Natural Resources Darling System, Western Australia*. Published by the Department of Conservation and Environment, Perth, 1980.

Commonwealth of Australia (2001)
National Targets and Objectives for Biodiversity Conservation 2001-2005. AGPS, Canberra.

Dames and Moore Pty Ltd (2000). *Dampier to Bunbury Natural Gas Pipeline – Section 16(e) Strategic Environmental Review for Gas Pipeline Sale Steering Committee.* Dames & Moore, East Perth.

Dell, B., Havel, J.J., Malajcsuk, N. (editors) (1989)
The Jarrah Forest: a complex Mediterranean ecosystem.
Kluwer Academic Publishers, Netherlands.

Department of Agriculture (2006)
Declared Plants List.
http://agspsrv34.agric.wa.gov.au/programs/app/dec_pl/declaredplants.htm

Department of Conservation and Environment (1980)
Atlas of Natural Resources Darling System, Western Australia. Published by the Department of Conservation and Environment, Perth, 1980.

Department of Environment and Conservation (2006a)
Florabase. Department of Conservation and Land Management.
http://www.calm.wa.gov.au/science/florabase.html

Department of Environment and Conservation (2006b)
Max Version 2.1.1.129. Department of Conservation and Land Management.

Department of Environment and Conservation (2006c)
List of Threatened Ecological Communities on the (TEC) Database endorsed by the Minister for the Environment.
http://www.naturebase.net/plants_animals/watscu/pdf/tec/endorsed_tec_list_jan04.pdf

Department of the Environment and Heritage (2006a)
EPBC Act List of Threatened Flora
http://www.deh.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora

Department of the Environment and Heritage (2006b)
EPBC Act List of Threatened Ecological Communities.
http://www.deh.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl

Department of Environment and Heritage (2006c)
www.deh.gov.au/water/wetlands/database/index.html.

Diels, L. (1906)
Die Pflanzenwelt von Western-Australien sudlich des Wendekreises. Vegn. Erde 7, Leipzig.

English, V. and Blyth, J. (1997)
Identifying and Conserving Threatened Ecological Communities (TECs) in the South West Botanical Province. Published jointly by Environment Australia, Canberra and the Department of Conservation and Land Management, Perth.

Environmental Protection Authority (2001). *Dampier to Bunbury Natural Gas Pipeline Land Corridor Expansion Project*. Advice to the Minister for the Environment and Heritage from the Environmental Protection Authority (EPA) under Section 16(e) of the *Environmental Protection Act* 1986. Environmental Protection Authority, Perth.

Environmental Protection Authority (1999a). *Environmental Protection of Native Vegetation in Western Australia.* Position Statement No. 2. Environmental Protection Authority, Perth.

Environmental Protection Authority (1999b). *Clearing of Native Vegetation – environmental advice on the issues arising from use of Section 38 to assess clearing proposals in the agricultural area, and implications for the other areas of Western Australia.* Advice to the Minister for the Environment from the Environmental Protection Authority (EPA) under Section 16(j) of the *Environmental Protection Act* 1986. Environmental Protection Authority, Perth.

Environmental Protection Authority (1998). *Geraldton Region Plan*. Bulletin 891. Environmental Protection Authority, 1998.

Environmental Protection Authority (1993). *Strategy for the protection of lakes and wetlands of the Swan Coastal Plain*. Report of the Environmental Protection Authority. Bulletin 685. Environmental Protection Authority, Perth.

Environmental Protection Authority (2004)
Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986) – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia. No. 51. June 2004.

Gardner, C.A. (1942)
The vegetation of Western Australia with special reference to climate and soils. J. Proc. R. Soc. West. Aust. **28**:11-87.

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 (2000)
Bush Forever Volume 2. Directory of Bush Forever Sites. Department of Environmental Protection, Perth.

Havel, J.J. (1968)
The potential of the northern Swan Coastal Plain for Pinus pinaster Ait *plantations.* Bull. For. Dep. W. Aust. **76.**

Havel, J.J (1975a)
Site-vegetation mapping in the northern jarrah forest (Darling Range). I. Definition of site-vegetation types. Bull. For. Dep. W. Aust. **86**.

Havel, J.J (1975b)
Site-vegetation mapping in the northern jarrah forest (Darling Range). II. Location and mapping of site-vegetation types. Bull. For. Dep. W. Aust. 87.

Heddle, E.M., J.J. Havel, and O.W. Loneragan (1980a)
Vegetation Complexes of the Darling System, Western Australia. In: Department of Conservation and Environment (1980) *Atlas of Natural Resources Darling System, Western Australia.* Department of Conservation and Environment, Perth, 1980.

Heddle, E.M., J.J. Havel, and O.W. Loneragan (1980b)
Focus on Northern Jarrah Forest Conservation and Recreation Areas. Forest Focus Number **22.**

Hoffman, N. and Brown, A. (1992)
Orchids of South-west Australia. Second edition. University of Western Australia Press.

Hopper, S.D., van Leeuwen, S., Brown, A.P. and S.J. Patrick (1990).
Western Australia's Endangered Flora. Department of Conservation and Land Management, Wanneroo, Western Australia.

Keighery, B.J. (1994)
Bushland Plant Survey. A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc.), Western Australia.

Lamont, B.B, Hopkins, A.J.M and Hnatuik, R.J. (1984). *The Flora-Composition, Diversity and Origins*. In: Kwongan, Plant Life of the Sandplain, Chapter 2. Eds: Pate, J.S and Beard, J.S. University of Western Australia Press, Nedlands.

Lange, R.T. (1960)
Rainfall and soil control of tree species distribution around Narrogin, Western Australia. J. Roy. Soc. W. Aust. **43**:104-110.

Mattiske Consulting Pty Ltd (2000). *Flora and Vegetation Survey for the Expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor: Muchea, Red Gully Road, Minyulo, Badgingarra and Eneabba Deviation Inspections*. Unpublished report prepared for Bowman Bishaw Gorham and Department of Resources Development.

Mattiske Consulting Pty Ltd (2001a). *Flora and Vegetation Survey for the Expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor: Red Gully Road Deviation Inspection*. Unpublished report prepared for Bowman Bishaw Gorham and Department of Resources Development.

Mattiske Consulting Pty Ltd (2001b). *Flora and Vegetation Survey for the Expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor: Minyulo Reserve*. Unpublished report prepared for Bowman Bishaw Gorham and Department of Resources Development.

Mattiske Consulting Pty Ltd (2001c). *Flora and Vegetation Survey for the Expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor: Twyata Reserve and Hill River*. Unpublished report prepared for Bowman Bishaw Gorham and Department of Resources Development.

Mattiske Consulting Pty Ltd (2001d). *Flora and Vegetation Survey for the Expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor: Badgingarra Deviation*. Unpublished report prepared for Bowman Bishaw Gorham and Department of Resources Development.

Mattiske Consulting Pty Ltd (2001e)
Flora and Vegetation Survey for the Expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor: Neaves Road Area, Bullsbrook. Unpublished report prepared for Bowman Bishaw Gorham and Department of Resources Development.

Mattiske Consulting Pty Ltd (2002)
Flora and Vegetation Survey for the expanded Dampier to Bunbury Natural Gas Pipeline Land Corridor. Dampier to East Bullsbrook. Unpublihse dreport prepared for Department of Resources Development, May 2002.

Mattiske Consulting Pty Ltd (2003)
Flora and Vegetation Survey of the proposed Kwinana to Australind Gas Pipeline Infrastructure Corridor. Unpublihse dreport prepared for Department of Resources Development, November 2003.

Podger, F.D., James, S.H. and Mulcahy, M. (1996). *Review of Dieback in Western Australia.* Report to the Western Australian Minister for the Environment. Volume 1 – Report and Recommendations.

Pringle, H.J.R., Van Vreeswyk, A.M.E. and Gilligan, S.A. (1994)
An Inventory and condition survey of rangelands in the northeastern Goldfields, Western Australia. Technical Bulletin No. 87, Department of Agriculture, Western Australia.

Rogers, L.G. (1996). *Geraldton Region Land Resources Study*. Agriculture Western Australia, Perth.

Shearer, B.L. (1990). *Dieback of Native Plant Communities Caused by Phytophthora Species – A Major Factor Affecting Land Use in South-Western Australia*. In: *Land and Water Research News* **5,** pp. 15-26.

Shearer, B.L. and Dillon, M. (1996). *Impact and Disease Centre Characteristics of Phytophthora cinnamomi Infestations of Banksia Woodlands on the Swan Coastal Plain, Western Australia.* In: *Australian Journal of Botany* **44**, pp. 79-90.

Shearer, B.L. and Dillon, M. (1995). *Susceptibility of Plant Species in Eucalyptus marginata Forest to Infection by Phytophthora cinnamomi.* In: *Australian Journal of Botany* **43**, pp. 113-134.

Shearer, B.L. and Hill, T.C. (1989). *Diseases of Banksia Woodlands on the Bassendean and Spearwood Dune Systems. Journal of the Royal Society of Western Australia* **71**, pp. 113-114.

Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2002)
Native Vegetation in Western Australia – extent, type and status. Resource Management Technical Report 249, Department of Agriculture, Western Australia.

Specht, R.L, Roe, E.M. and Boughton, V.H. (1974) *Conservation of Major Plant Communities in Australia and Papua New Guinea*. Supplement No. 7. Eds: R.L Spect, E.M. Roe and V.H. Boughton. Australian Journal of Botany Supplementary Series. CSIRO, Melbourne.

Speck, N.H. (1958)
The vegetation of the Darling-Irwin botanical districts and an investigation of the distribution of the family Proteaceae in south-western Western Australia. Ph.D. thesis, University of Western Australia.

Seddon, G. (1972)
Sense of Place. A Response to an Environment, the Swan Coastal Plain, Western Australia. University of Western Australia Press, Nedlands.

Smith, F.G. (1974)
Vegetation Survey of Western Australia. Vegetation Map of the Collie Sheet. 1:250 000. Department of Agriculture, Western Australia.

Speck, N.H. (1958)
The vegetation of the Darling-Irwin botanical districts and an investigation of the distribution of the family Proteaceae in south-western Western Australia. Ph.D. thesis, University of Western Australia.

Thackway, R. and Cresswell, I.D. (1995)
An Interim Biogeographic Regionalisation for Australia: a framework for setting priorities in the national reserves system cooperative program. Australian Nature Conservation Agency Canberra.

Wildlife Conservation Act (1950-1980)
Wildlife Conservation Act and Regulations. Western Australian Government Publication.

Williams, R.F. (1932)
An ecological analysis of the plant communities of the jarrah region on a small area near Darlington. J. Roy. Soc. W. Aust. **18**: 105-124.

Williams, R.F. (1942)
An ecological study near Beraking forest station. J. Roy. Soc. W. Aust. **31**: 19-31.

Woodman Environmental Consulting (2006)
DBGNP Northern Looping Project. Loops 8 and 9. Flora and Vegetation and Phytophthora cinnamomi Assessment. Volume I. Unpublished report prepared for Ecos Conulsting (Aust) Pty Ltd on behalf of Alinta , January 2006.

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210L100.dgn ~ Rev: A

N

0 50km

Scale 1:2 500 000

Notes: MGA94(Zone 50)

BARROW IS.

DAMPIER

KARRATHA

EXMOUTH

TOM PRICE

ASHBURTON

PARABURDOO

DBNGP STAGE 4

RIVER

GASCOYNE RV.

CARNARVON

SHARK BAY

DBNGP STAGE 5

DENHAM

MURCHISON RV.

MEEKATHARRA

GERALDTON

Alinta

MATTISKE

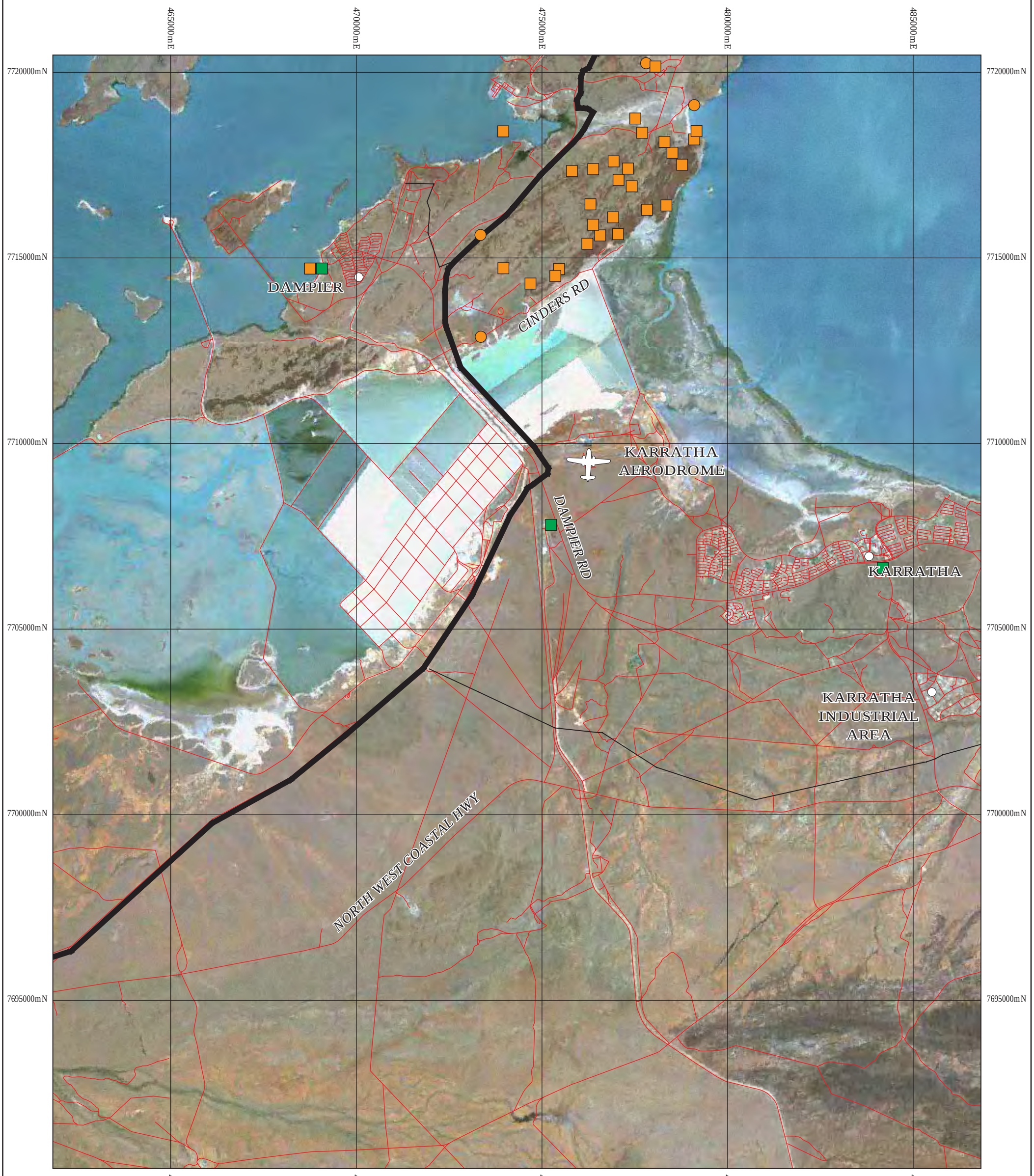
DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 1.01

PROJECT LOCATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P201.dgn ~ Rev: A



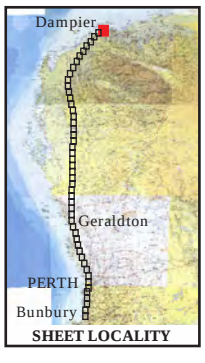
LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.01

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P202.dgn ~ Rev: A

440000mE 445000mE 450000mE 455000mE 460000mE

7710000mN
7705000mN
7700000mN
7695000mN
7690000mN
7685000mN

Regnard Bay

NORTH WEST COASTAL HWY

FORTY MILE BEACH RD

Yanyare River

Mt WILKIE

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

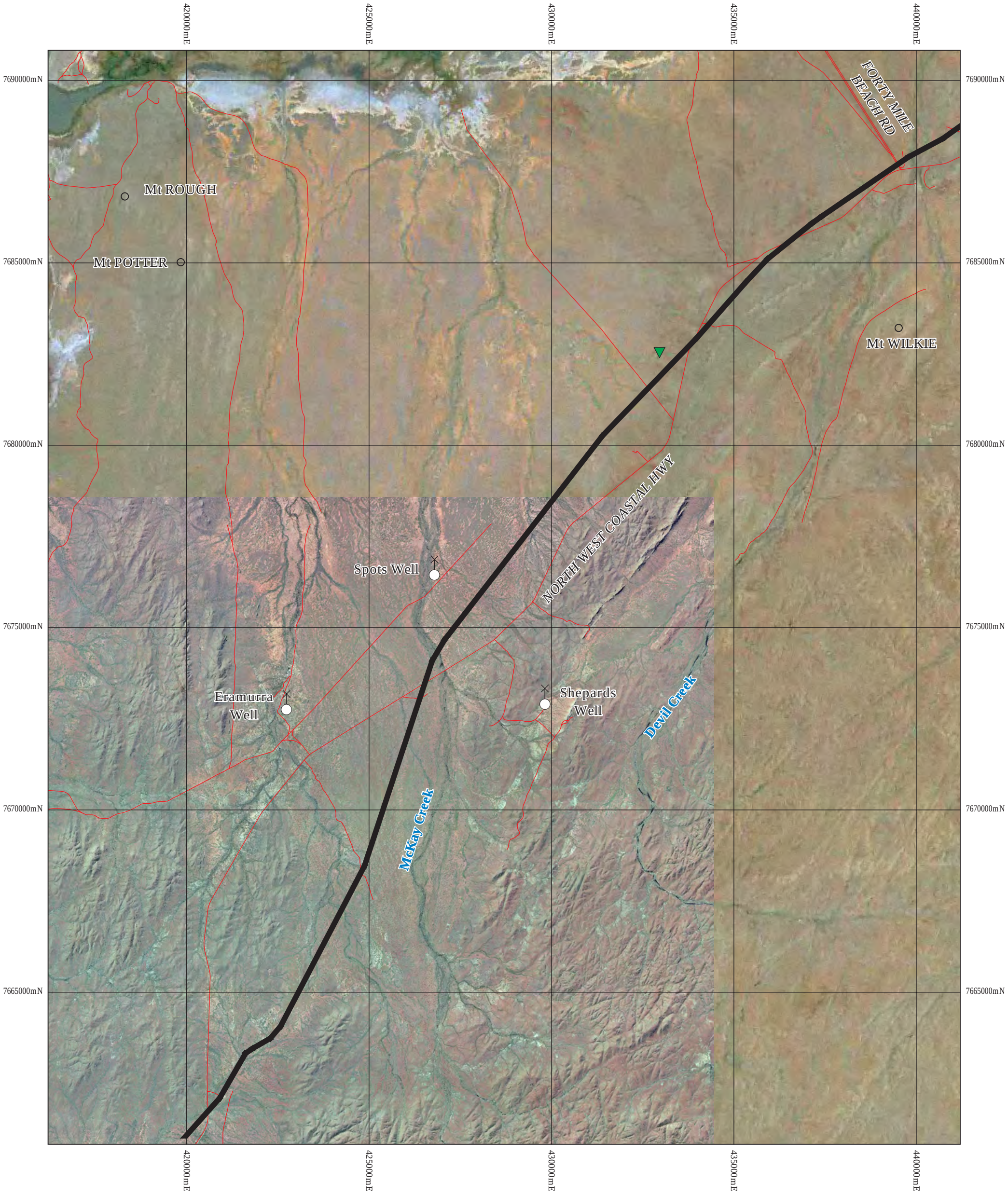
STAGE 5

Figure 2.02

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P203.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.03

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P204.dgn ~ Rev: A

400000mE 405000mE 410000mE 415000mE 420000mE

7665000mN
7660000mN
7655000mN
7650000mN
7645000mN
7640000mN

Boulay Creek
Tarquin Well
Balmoral
Jilan Jilan Well
BALMORAL RD
NORTH WEST COASTAL HWY
Fortescue River
MARDIE RD
Fortescue Roadhouse

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

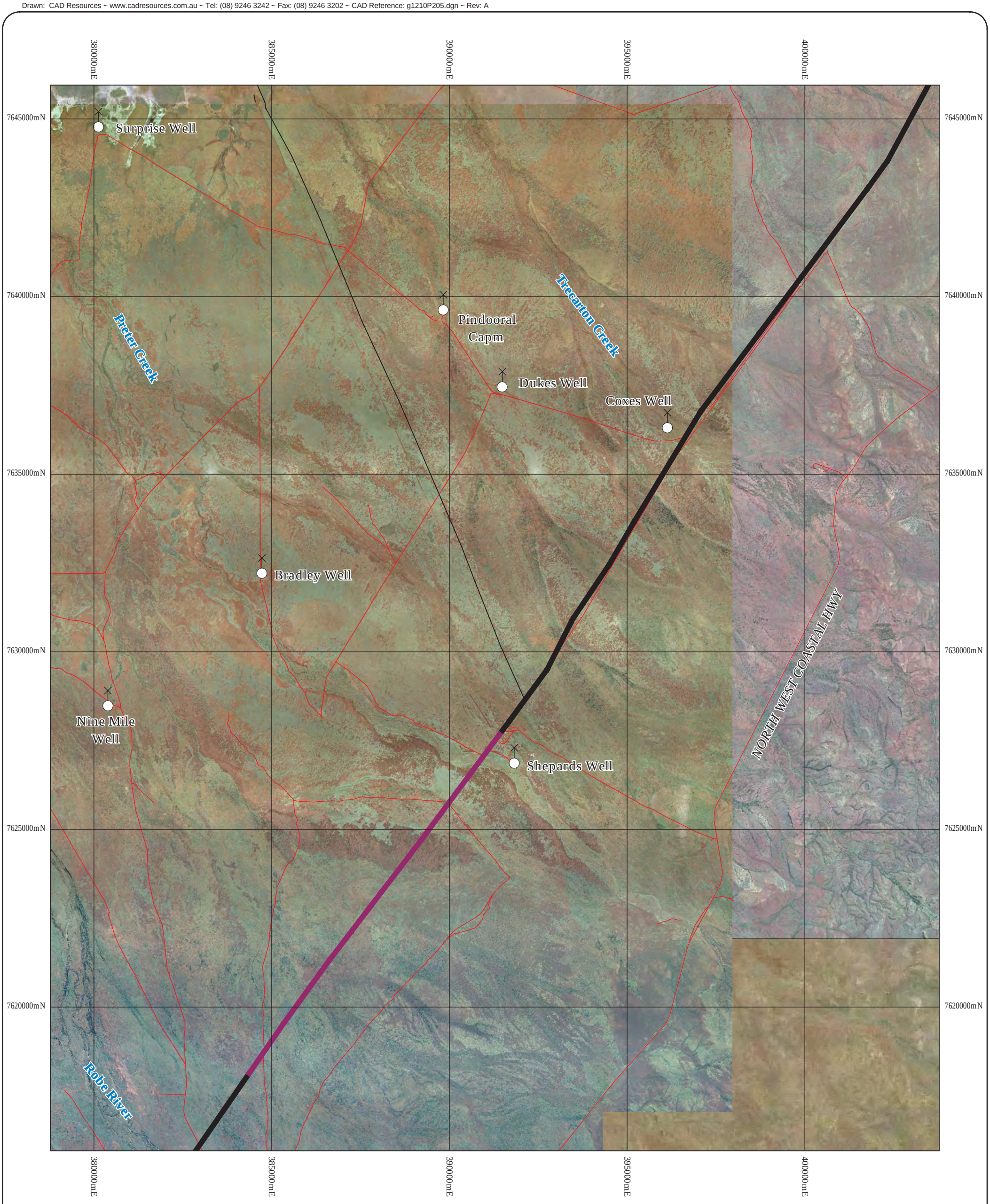
DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.04

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P205.dgn ~ Rev: A



LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.05

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P206.dgn ~ Rev: A

365000mE 370000mE 375000mE 380000mE 385000mE

7615000mN
7610000mN
7605000mN
7600000mN
7595000mN
7590000mN

Jungle Bore
Any Well
King Well
Jennys Bore
Yarraloola
Robe River
YARRALOOLA RD
PEEDAN HILL
Warramboo Creek
WARRAMBOO OUTSTATION
NORTH WEST COASTAL HWY
Hubert Well
Dinner Camp Bore
PEEDAMULLA HILL

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.06

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P207.dgn ~ Rev: A

345000mE 350000mE 355000mE 360000mE 365000mE

7595000mN 7590000mN 7585000mN 7580000mN 7575000mN 7570000mN

Peedamulla Creek
PEEDAMULLA HILL
Yanget Bore
Peedamulla Outstation
Hancocks Bore
ONSLOW-PEEDAMULLA RD
Peedamulla
NORTH WEST COASTAL HWY
RED HILL RD
Cane River
TOOLUNGA FLAT
Surprise Bore

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.07

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P208.dgn ~ Rev: A

335000mE 340000mE 345000mE 350000mE 355000mE

7565000mN
7560000mN
7555000mN
7550000mN
7545000mN

Mt Minnie (abandoned)
Surprise Bore
ONSLOW RD
Mount Minne Well
NORTH WEST COASTAL HWY
Claypan Well
Ironstone Well
Quartz Well
MOUNT STUART RD

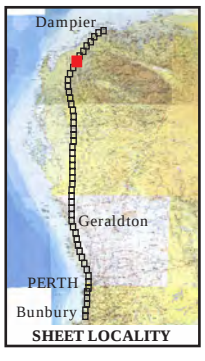
335000mE 340000mE 345000mE 350000mE 355000mE

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.08

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P209.dgn ~ Rev: A

315000mE 320000mE 325000mE 330000mE 335000mE

7535000mN
7530000mN
7525000mN
7520000mN
7515000mN

Johnston Well
Two Mile Well
The Range
Table Top Well
Grass Flat Well
Aerodrome Well
Four Mile Bore
Peepingee Creek
Ashburton River

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.09

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P210.dgn ~ Rev: A

300000mE 305000mE 310000mE 315000mE 320000mE

7505000mN
7500000mN
7495000mN
7490000mN
7485000mN

Cheetara No 2 Well
Four Mile Well
Myallis Well
Shallow Well
Tinkers Well

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.10

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P211.dgn ~ Rev: A

290000mE 295000mE 300000mE 305000mE 310000mE

7475000mN
7470000mN
7465000mN
7460000mN
7455000mN

TWITCHIN RD
NORTH WEST COASTAL HWY
Barradale Roadhouse
NYANG RD
Yanarie River
TOWERA RD
Nyang
Five Mile Bore
Diorite Well

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.11

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P212.dgn ~ Rev: A

290000mE 295000mE 300000mE 305000mE 310000mE

7445000mN
7440000mN
7435000mN
7430000mN
7425000mN

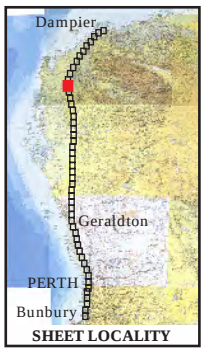
TOWERA RD
Kooline Well
Two Mile Well
Five Mile Well
Yanarie River
Towera
Three Mile Well
Strip Well
Coonde Well
Seven Mile Well
LYNDON-TOWERA RD
Walter Well
Lockwood Well

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.12

PRIORITY SPECIES

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P213.dgn ~ Rev: A

295000mE 300000mE 305000mE 310000mE 315000mE

7415000mN
7410000mN
7405000mN
7400000mN
7395000mN

LYNDON-TOWERA RD

Clark Well

Baldock Well

Marghboo Well

Duffy Bore

Carley Well

Sunday Bore

Lyndon River

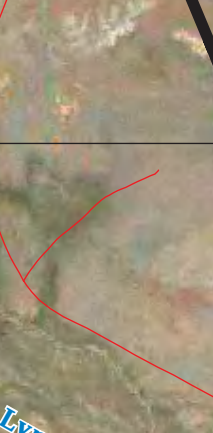
LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.13

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P214.dgn ~ Rev: A

300000mE 305000mE 310000mE 315000mE 320000mE

7385000mN
7380000mN
7375000mN
7370000mN
7365000mN

Lyndon

Bloodwood Well

LYNDON RD

LYNDON RD

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

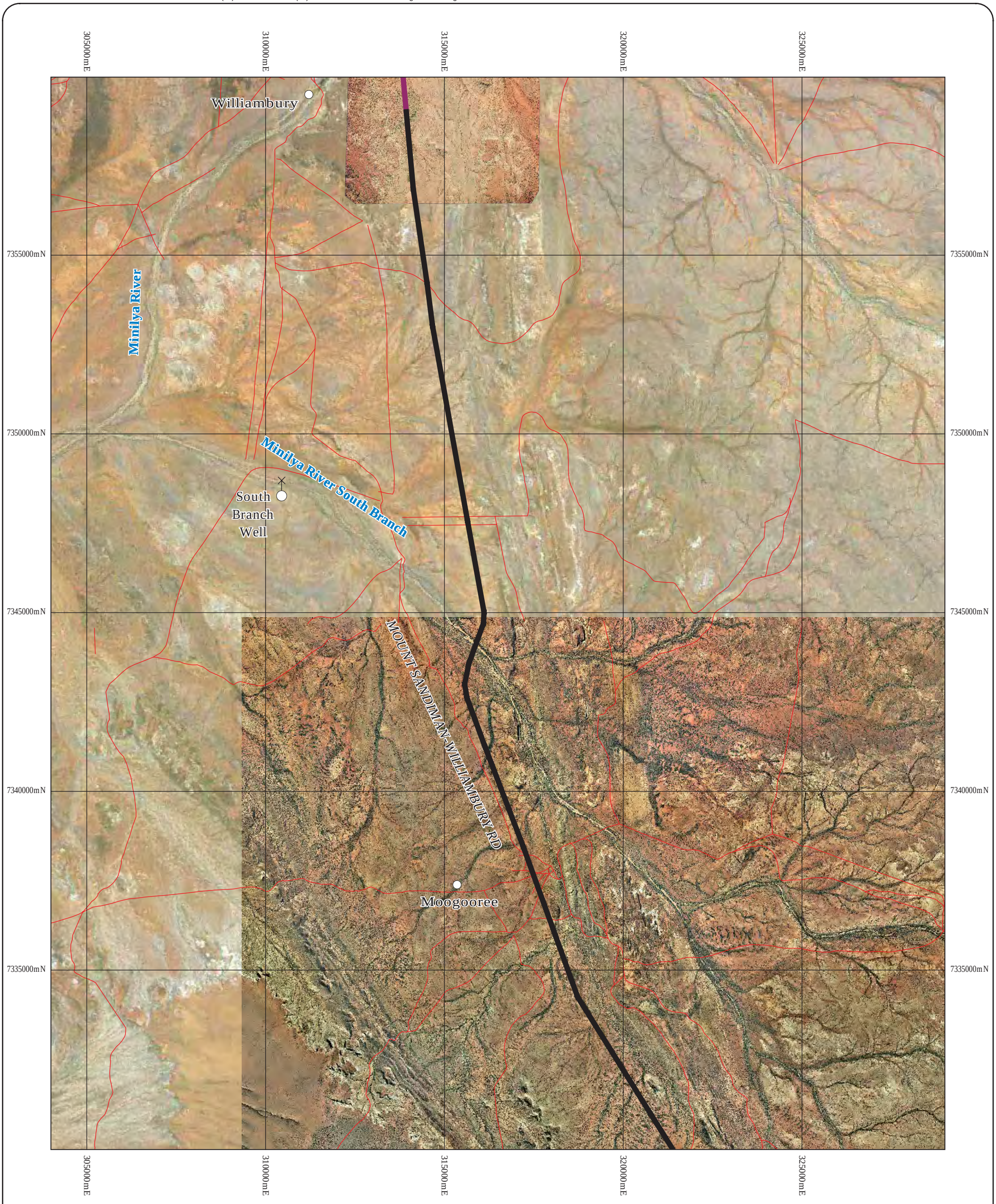
STAGE 5

Figure 2.14

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P215.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.15

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P216.dgn ~ Rev: A

315000mE 320000mE 325000mE 330000mE 335000mE

7325000mN
7320000mN
7315000mN
7310000mN
7305000mN

Longreach Well
Howell Bore
Yabaroo Bore
Wellumba Bore
MOUNT SANDIMAN-WILLIAMBURY RD

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.16

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P217.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7295000mN
7290000mN
7285000mN
7280000mN
7275000mN

Mount Sandiman
ULLAWARRA RD
Lyons River
Lyons River
Gauging Station
LYONS RIVER RD

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.17

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P218.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7265000mN
7260000mN
7255000mN
7250000mN
7245000mN

Lyons River
ULLAWARRA RD
Davis Creek

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.18

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P219.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7235000mN
7230000mN
7225000mN
7220000mN
7215000mN

Lyons River
ULLAWARRA RD
Bidgemia
Gascoyne River
Gascoyne Junction
CARNARVON-MULLEWA RD
PIMBEE RD

320000mE 325000mE 330000mE 335000mE 340000mE

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.19

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P220.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7205000mN
7200000mN
7195000mN
7190000mN
7185000mN

PIMBEE RD

CAREY DOWNS RD

Towrana

320000mE 325000mE 330000mE 335000mE 340000mE

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.20

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P221.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7175000mN
7170000mN
7165000mN
7160000mN
7155000mN

CAREY DOWNS RD

CALLYTHARRA RD

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

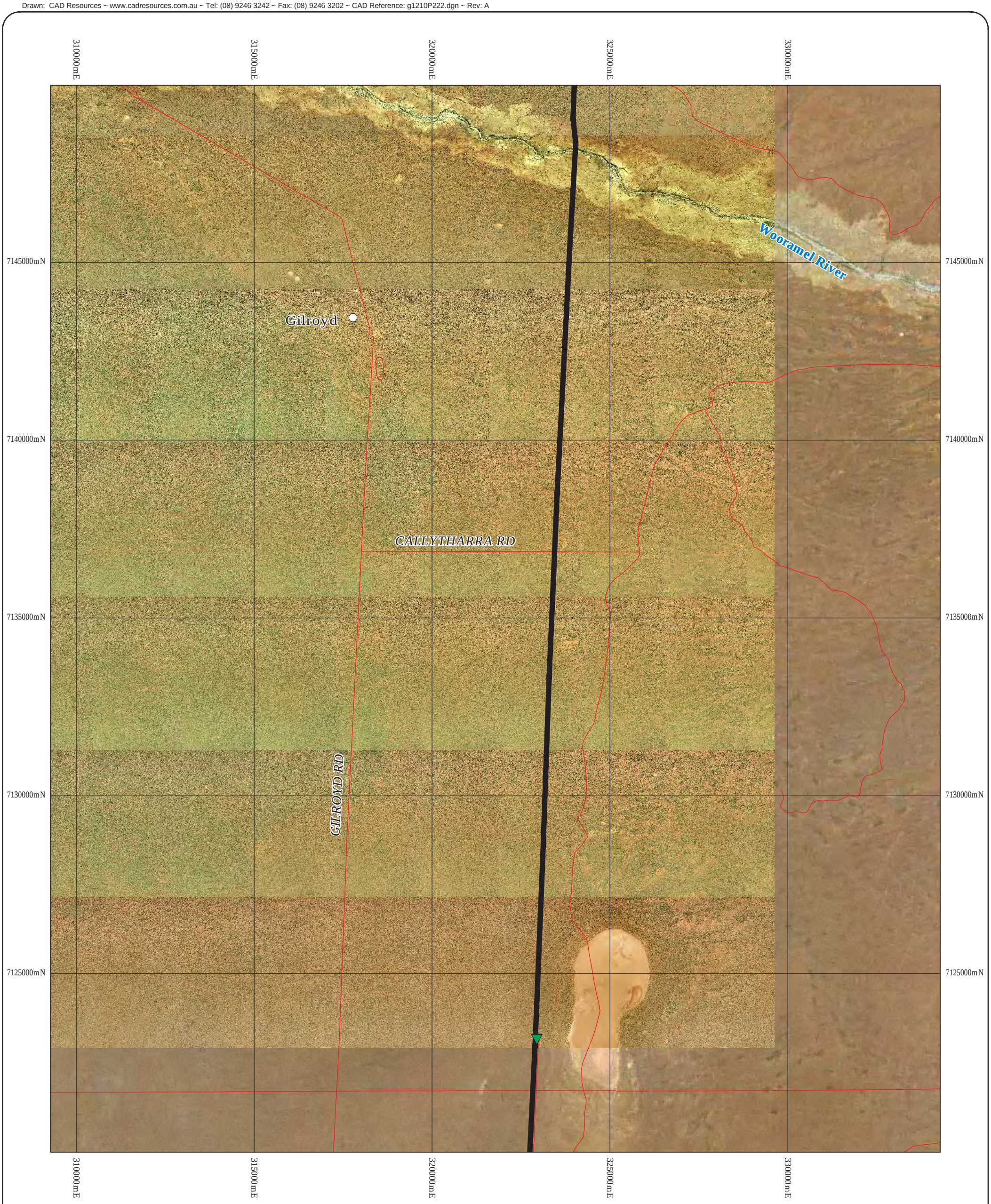
STAGE 5

Figure 2.21

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P222.dgn ~ Rev: A



LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

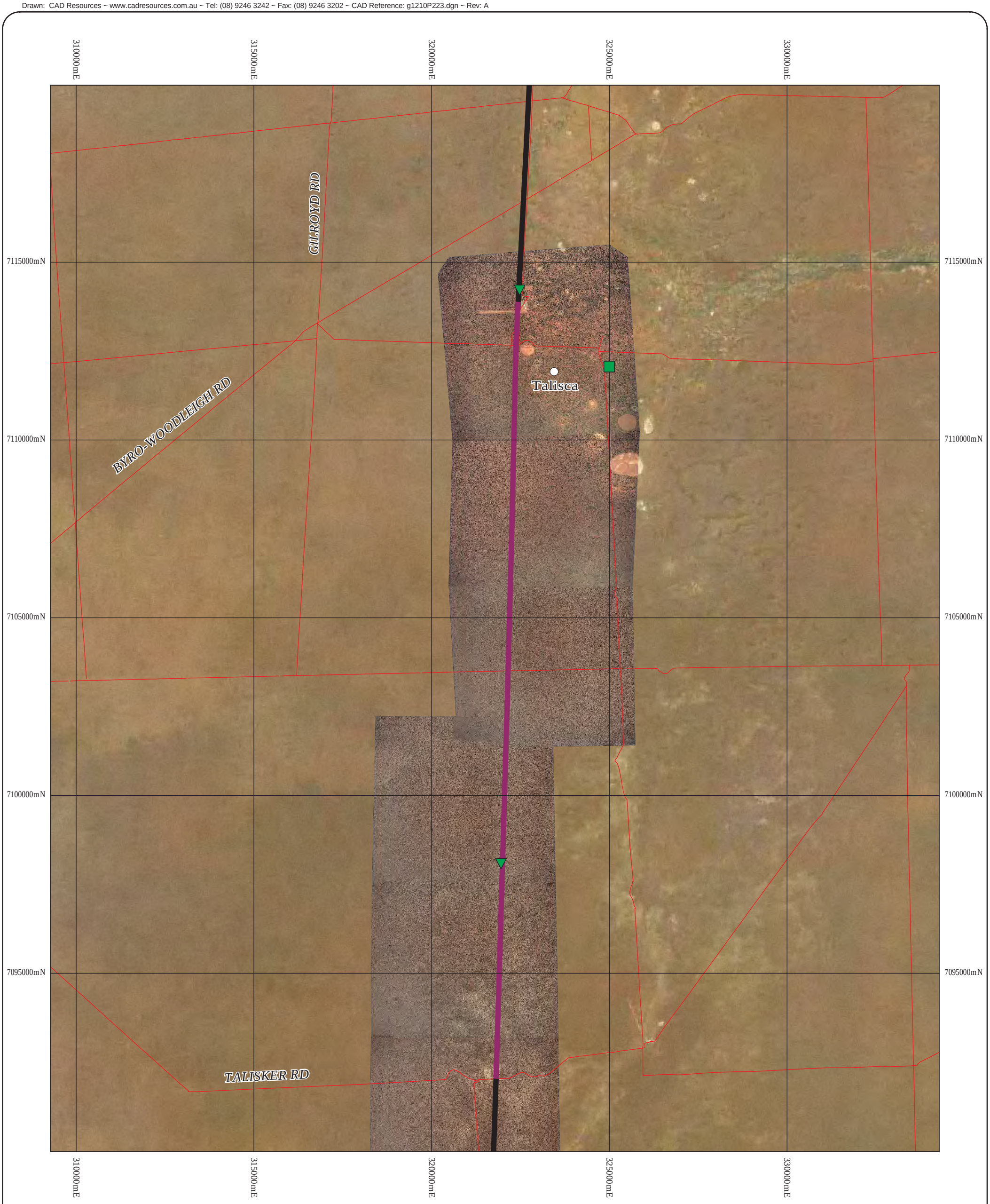
STAGE 5

Figure 2.22

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P223.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

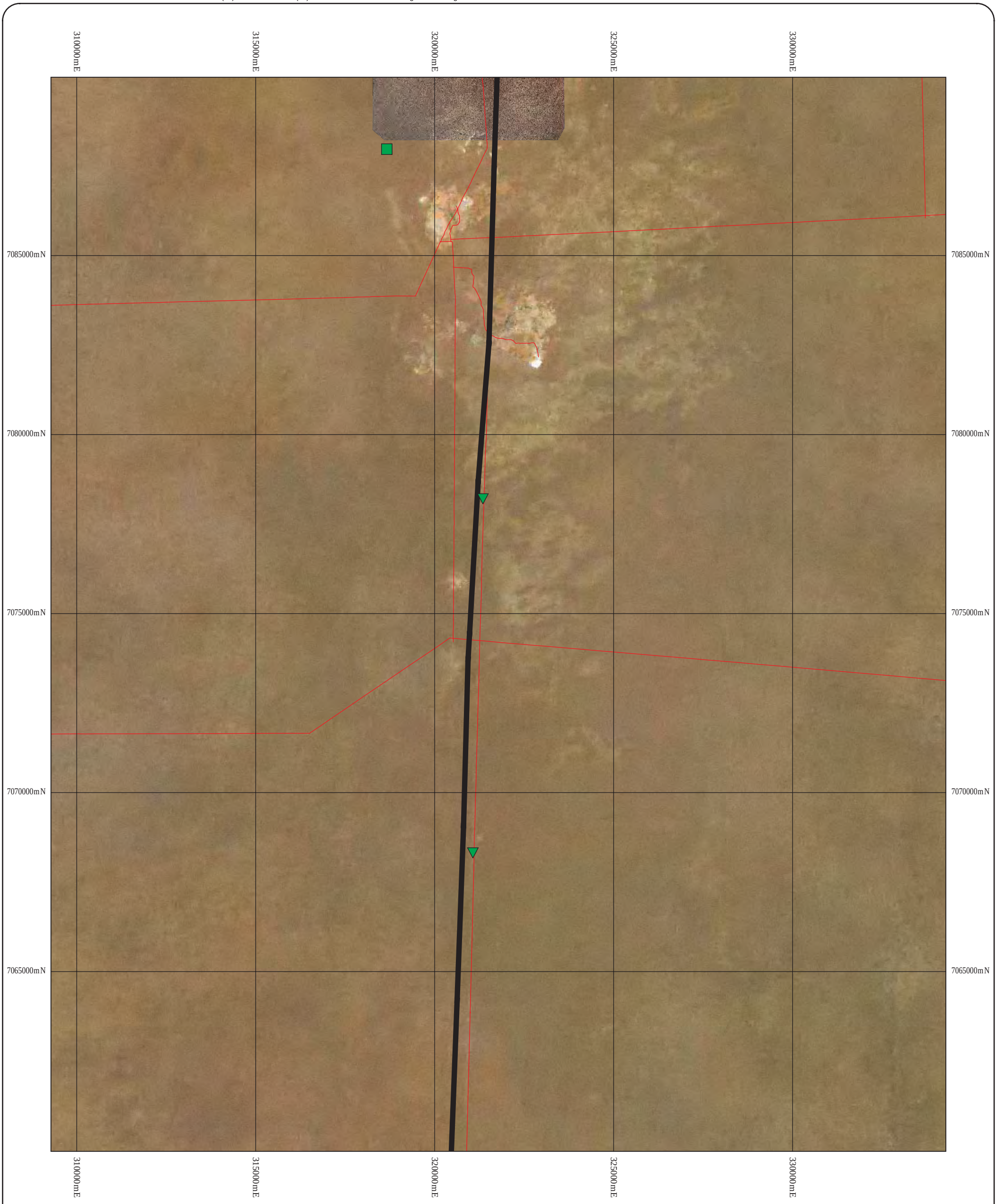
DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.23

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P224.dgn ~ Rev: A



LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.24

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P225.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

7055000mN
7050000mN
7045000mN
7040000mN
7035000mN

BUTCHERS TRK

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.25

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P226.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

7025000mN
7020000mN
7015000mN
7010000mN
7005000mN

310000mE 315000mE 320000mE 325000mE 330000mE

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.26

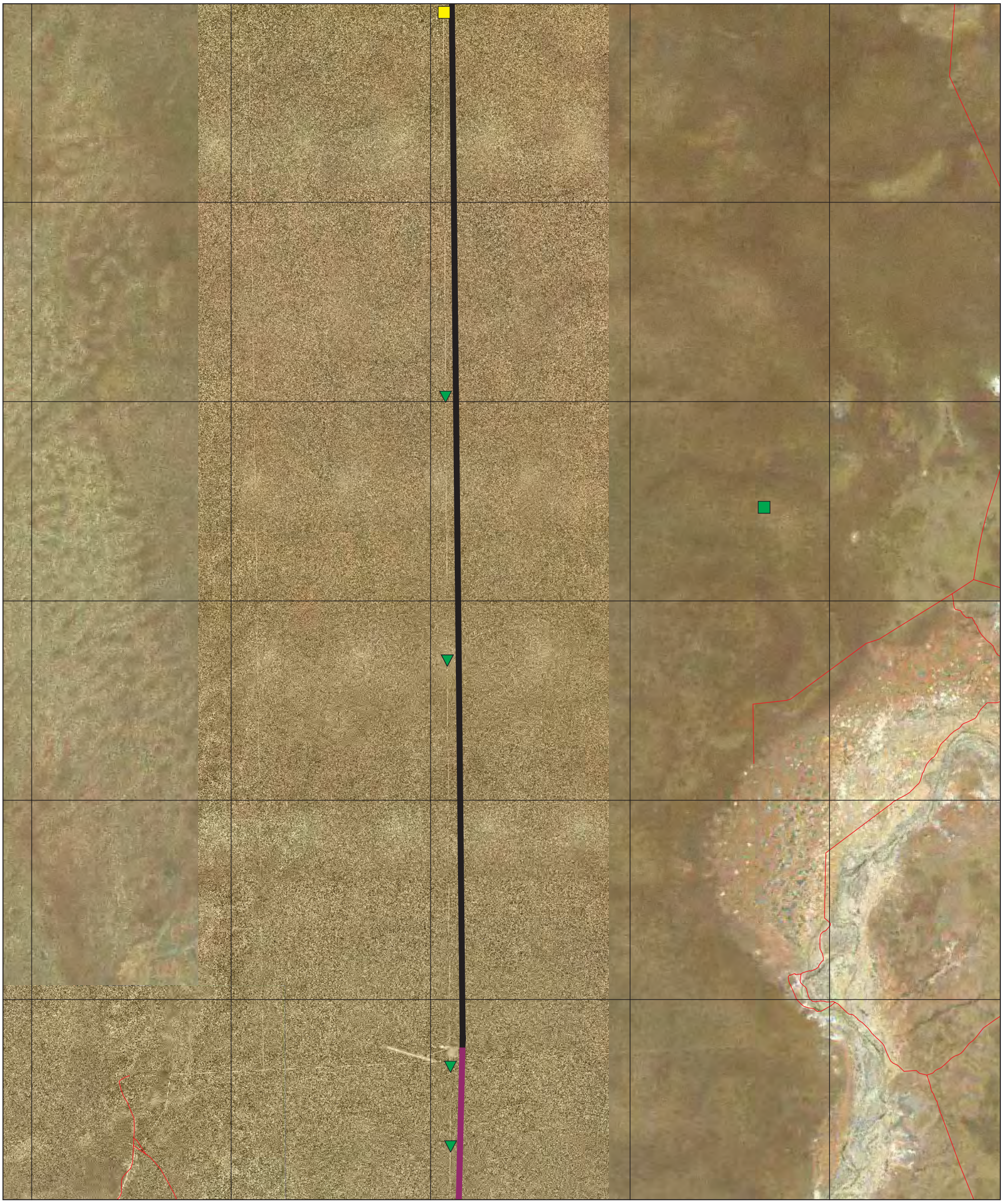
PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P227.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6995000mN
6990000mN
6985000mN
6980000mN
6975000mN



310000mE 315000mE 320000mE 325000mE 330000mE

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.27

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P228.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6965000mN
6960000mN
6955000mN
6950000mN
6945000mN

Murchison River

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.28

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P229.dgn ~ Rev: A

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.29

PRIORITY SPECIES

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P230.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6905000mN
6900000mN
6895000mN
6890000mN
6885000mN

DARTMOOR-LAKE NERRAMYNE RD
BINNU RD
DARTMOOR RD
DARTMOOR RD
BROOKS RD

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

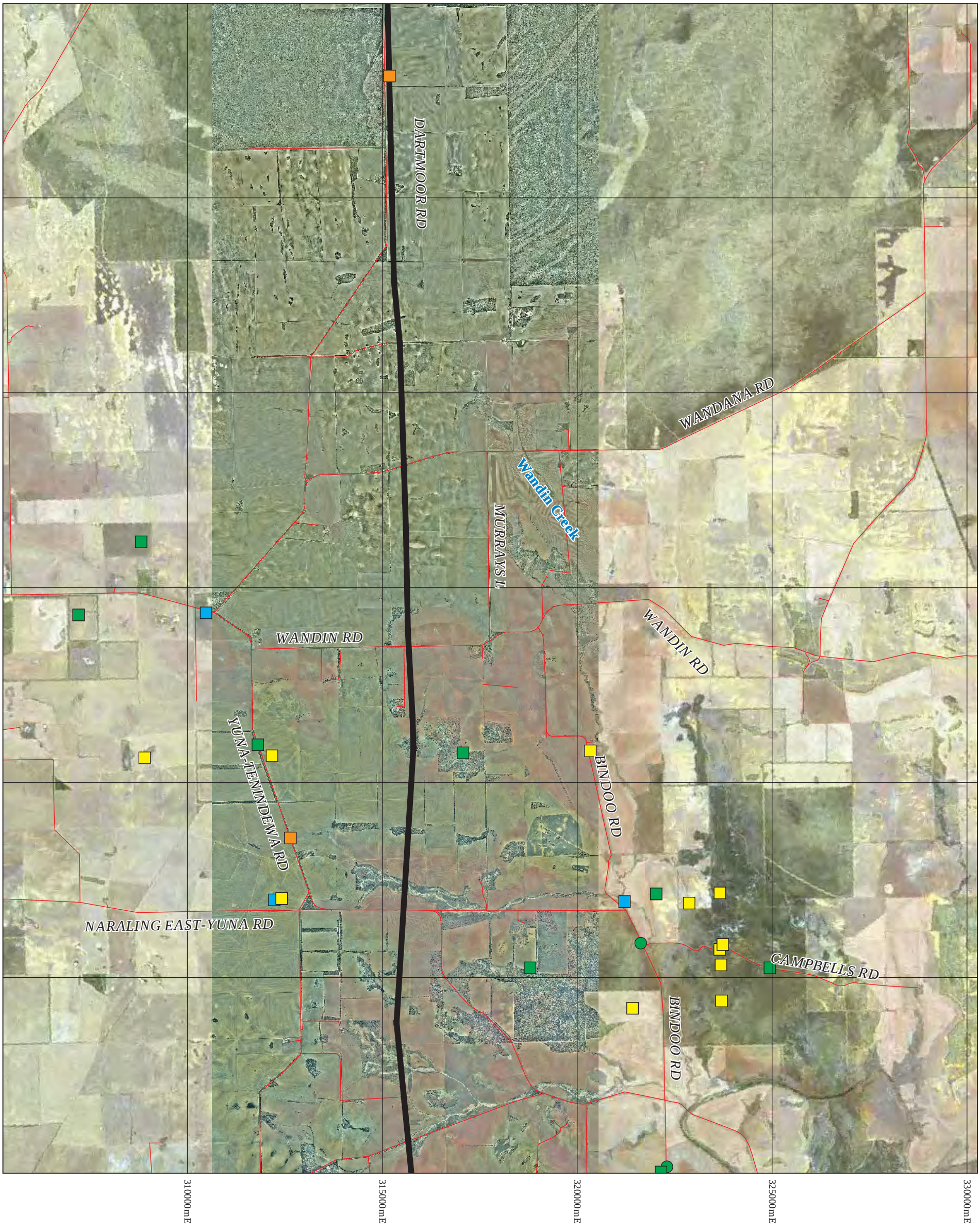
STAGE 5

Figure 2.30

PRIORITY SPECIES

Author: L. Mattiske Spetember 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P231.dgn ~ Rev: A



LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 2.31

PRIORITY SPECIES

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210P232.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6845000mN
6840000mN
6835000mN
6830000mN
6825000mN

VALENTINE RD
BURTON RD
STATION VALENTINE RD
PETER RD
VALENTINE RD
Greenough River
ERADU NORTH RD
CREAM RD
GERALDTON-MOUNT MAGNET RD
Eradu

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	Previous Surveys	TEC
Rare	●	■	▼	★
1	●	■	▼	
2	●	■	▼	
3	●	■	▼	
4	●	■	▼	

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 2.32

PRIORITY SPECIES

Author: L. Mattiske September 2006

Eucalyptus Woodlands

Community 1t
Low Open Woodland of *Eucalyptus* sp. over *Acacia coriacea* subsp. *sericophylla, Acacia trachycarpa* and *Wahlenbergia sp. in sandy soils.*

Community 1u
Low Open Woodland of *Corymbia zygophylla* over *Triodia pungens, Eriachne aristidea* and *Acacia ancistrocarpa with Eremophila ramiflora over mixed shrub species in red silty soils with quartz pebbles.*

Community 1v
Low Open Woodland of *Eucalyptus camaldulensis, Acacia aneura* var. *aneura and Acacia distans* along creek edges over *Eremophila fraseri* subsp. *galeata (ms), Eremophila ?miniata* and *Eremophila clarkei* over *Cymbopogon ambiguus on rocky riverbank sands in association with the Wooramel River.*

Community 1w
Woodland of *Eucalyptus camaldulensis* and *Eucalyptus eudesmioides* over *Acacia beauverdiana, Acacia longispinea, Eremophila clarkei, Grevillea paradoxa* and *Rhagodia drummondii* over *Monachather paradoxus on pale red sandy soils.*

Community 1x
Low Open Woodland of *Eucalyptus* species over *Acacia* species, *Callitris glaucophylla, Thryptomene decussata, Grevillea paradoxa* and *Dianella revoluta* over *Monachather paradoxus* on pale red sandy soils.

Community 1y
Low Open Woodland of *Eucalyptus ewartiana* and *Eucalyptus camaldulensis* over *Acacia aneura* var. *intermedia, Hakea invaginata, Grevillea paradoxa* and *Eremophila clarkei* over *Ecdeiocolea monostachya* on pale red sandy soils.

Community 1z
Low Open Woodland of *Eucalyptus ewartiana* and *Eucalyptus camaldulensis* over *Acacia beauverdiana, Callitris glaucophylla, Thryptomene decussata, Grevillea paradoxa* and *Dianella revoluta* over *Monachather paradoxus and Lawrencella davenportii on pale red sandy soils.*

Community 1aa
Low Open Woodland of emergent *Eucalyptus camaldulensis* over *Acacia tetragonophylla, Melaleuca uncinata and Acacia acuminata subsp. acuminata (ms) over Senna artemisioides* subsp. *petiolaris, Hakea preissii and Eremophila platycalyx* subsp. *platycalyx* (ms) over sparse ephemerals on clay loam riverbank soils in association with the Murchison River.

Community 1ab
Low Open Woodland of *Eucalyptus eudesmioides* and *Eucalyptus oldfieldii* over *Verticordia interioris, Acacia acuaria* and *Lamarchea hakeifolia* var. *brevifolia* over very occasional *Ptilotus schwartzii* var. *schwartzii on pale red sandy soils.*

Community 1ac
Low Woodland of *Eucalyptus foecunda, Eucalyptus eudesmioides* and *Banksia prionotes* over dense understorey of *Calothamnus gilesii, Allocasuarina huegeliana, Phebalium tuberculosum, Baeckea crispiflora and Acacia acuaria over Jacksonia ?restioides on pale orange sandy soils.*

Community 1ad
Low Woodland of *Eucalyptus oldfieldii* and *Eucalyptus petraea* over dense understorey of *Acacia rhodophloia, Acacia aneura* var. *aneura, Acacia longispinea, Hakea preissii, Hakea kippistiana, Phebalium tuberculosum* and *Aluta maisonneuvei* subsp. *maisonneuvei* over occasional *Ecdeiocolea monostachya and Meeboldina scariosa on yellow sands.*

Community 1ae
Low Woodland of *Eucalyptus ?eudesmioides* and *Eucalyptus petraea* over *Acacia tetragonophylla, Acacia ramulosa var. ramulosa, Melaleuca eleuterostachya* and *Eremophila granitica* over *Ptilotus obovatus* var. *obovatus and Rhagodia sp. on red sands.*

Community 1af
Low Open Woodland of *Eucalyptus ?subangusta* subsp. *subangusta, Eucalyptus oldfieldii* and *Eucalyptus salmonophloia over Melaleuca eleuterostachya* and *Monotaxis luteiflora* over *Dianella revoluta, Conostylis prolifera and Asteraceae spp. on yellow sands over laterite.*

Community 1ag
Highly disturbed Woodland of *Eucalyptus camaldulensis* over scattered *Rhagodia baccata* subsp. *dioica over pastoral weeds on red-brown loam soils in association with the Greenough River.*

Community 1ah
Low Open Woodland of *Eucalyptus eudesmioides* over *Ecdeiocolea monostachya, Mesomelaena pseudostygia and Hibbertia glomerosa in sands.*

Community 1ai
Disturbed Low Woodland of *Eucalyptus sp. over pastoral grasses in sands.*

Community 1aj
Disturbed Low Woodland of *Eucalyptus todtiana* over *Mesomelaena pseudostygia* with pastoral grasses in sands.

Community 1ak
Low Woodland of *Eucalyptus todtiana* over *Leptospermum erubescens, Conospermum triplinervium, Dianella revoluta, Allocasuarina humilis and Banksia hookeriana in sands.*

Banksia Woodlands

Community 2k
Open Woodland of *Banksia attenuata* over *Melaleuca systena, Allocasuarina humilis, Hibbertia glomerosa, ?Daviesia divaricata and Eremaea beaufortioides in sands.*

Community 2l
Low Open Woodland of *Banksia menziesii* over *Banksia hookeriana, Calothamnus quadrifidus, Ecdeiocolea monostachya, Eremaea beaufortioides* and *Grevillea obliquistigma* subsp. *obliquistigma in* sands.

Community 2m
Low Open Woodland of *Banksia hookeriana* with scattered *Melaleuca huegelii* subsp. *huegelii over Banksia sphaerocarpa, Calothamnus sanguineus, Conospermum stoechadis and Cassytha sp. in sands.*

Casuarina Woodlands and Shrublands

Community 3b
Remnant Woodland of *Allocasuarina campestris* with occasional *Eucalyptus eudesmioides* and *Acacia spathulifolia over Calothamnus sanguineus* and *Grevillea preissii* subsp. *glabrilimba over Mesomelaena pseudostygia and Ecdeiocolea monostachya on pale yellow sand.*

Community 3c
Tall Shrubland of *Allocasuarina campestris* and *Allocasuarina humilis* with *Grevillea obliquistigma* subsp. *obliquistigma* over *Mesomelaena pseudostygia, Baeckea ochropetala* and *Ecdeiocolea monostachya* in grey sands.

Community 3d
Tall Open Shrubland of *Allocasuarina campestris* with *Banksia attenuata* and *Calothamnus blepharospermus* over *?Daviesia divaricata, Lyginia barbata, Ecdeiocolea monostachya* and *Jacksonia furcellata with pastoral grasses in sands.*

Community 3e
Tall Open Shrubland of *Allocasuarina campestris* with *Xylomelum angustifolium* and *Grevillea eriostachya* over *Banksia sphaerocarpa, Cassytha sp . and Eremaea beaufortioides in sands.*

Community 3f
Disturbed Tall Open Shrubland of *Allocasuarina huegeliana* and *Eucalyptus* sp. over *Acacia murrayana*, *Dryandra sessilis and pastoral grasses in sands.*

Community 3g
Low Shrubland of *Allocasuarina humilis* with *Acacia coolgardiensis* subsp. *effusa* over *Dryandra carlinoides, Leptospermum erubescens, Nemcia pauciflora and Caladenia flava in sands.*

Acacia Shrublands

Community 4g
Low Open Shrubland of *Acacia acradenia, Acacia ancistrocarpa, Acacia bivenosa* and *Acacia inaequilatera* over *Triodia pungens, * Cenchrus ciliaris*, *Salsola tragus*, *Corchorus carnarvonensis* (ms), *Senna notabilis* and **Aerva javanica* with occasionally emergent *Corymbia lenziana* and *Eucalyptus* sp. in sandy loam soils.

Community 4h
Open Scrub of *Acacia synchronicia* over *Aristida ?latifolia, Acacia trachycarpa, Senna artemisioides* subsp. *oligophylla* and *Cullen leucanthum* over *Eriachne ?flaccida* and **Cenchrus ciliaris* in degraded silty soils.

Community 4i
Tall Open Shrubland of *Acacia ?validinervia* and *Acacia coriacea* subsp. *sericophylla, Acacia ancistrocarpa, Acacia translucens* over *Triodia pungens*, *Senna notabilis* and *Pterocaulon sphacelatum* in red sandy clay soils.

Community 4j
Low Shrubland of *Acacia ancistrocarpa* with *Corchorus lasiocarpus* subsp. *lasiocarpus* (ms), *Pterocaulon sphacelatum, Cullen martinii* over *Triodia pungens* with occasionally emergent *Corymbia deserticola* subsp. *deserticola and Acacia acradenia in red sandy clay soils.*

Community 4k
Tall Open Shrubland of *Acacia acradenia* over *Acacia synchronicia, Eremophila cuneifolia* and *Senna artemisioides subsp . oligophylla over dead Poaceae spp. in red sandy clay soils.*

Community 4l
Tall Open Shrubland of *Acacia synchronicia*, *Acacia acradenia* and *Hakea preissii* over *Eremophila cuneifolia, Senna artemisioides subsp. oligophylla and Streptoglossa decurrens in red sandy clay soils .*

Community 4m
Tall Open Shrubland of *Acacia cuspidifolia* over *Scaevola spinescens* over dead Poaceae spp. in sandy soils with mixed pebbles.

Community 4n
Tall Open Shrubland of *Acacia acradenia* over *Acacia ancistrocarpa*, *Senna artemisioides* subsp. *oligophylla* and *Eremophila cuneifolia* over *Streptoglossa decurrens* and *Cenchrus* sp. in sandy soils with quartz pebbles.

Community 4o
Tall Open Shrubland of *Acacia acradenia* and *Acacia synchronicia* over *Eremophila cuneifolia*, *Acacia ?sessilis, Senna artemisioides* subsp. *oligophylla* over *Sclerolaena cuneata* and *Cenchrus* sp. in red sandy clay soils with quartz pebbles.

Community 4p
Tall Open Shrubland of *Acacia acradenia and Hakea preissii over Ptilotus polakii, Frankenia cordata, Solanum lasiophyllum and Acacia ?sessilis in sandy soils with quartz pebbles.*

Community 4q
Tall Open Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and *Hakea preissii* over *Ptilotus obovatus var. obovatus and Cenchrus sp. with occasionally emergent Eucalyptus sp. in sandy soils.*

Community 4r
Tall Open Shrubland of *Acacia acradenia* and *Hakea preissii* over *Acacia synchronicia* and *Eremophila cuneifolia over Cenchrus sp., Ptilotus polakii and Solanum lasiophyllum in sandy soils.*

Community 4s
Low Open Shrubland of *Acacia heteroneura* var. *prolixa, Thryptomene decussata* and *Acacia aneura* var. *aneura* over *Mirbelia rhagodioides, Senna artemisioides* subsp. *helmsii and Rhagodia baccata* subsp. *dioica over ? Eriachne sp. on red sandy loam.*

Community 4t
Open Scrub of *Acacia wanyu, Acacia blakelyi* and *Acacia coolgardiensis* subsp. *coolgardiensis* over *Eremophila clarkei, Senna cardiosperma, Grevillea paradoxa* over *Sida cardiophylla* and *Eriachne* sp. on red sand.

Community 4u
Highly grazed Open Scrub of *Acacia acuminata* subsp. *acuminata (ms)*, *Acacia grasbyi* and *Acacia beauverdiana over infrequent scattered annuals on pale red sand.*

Community 4v
Low Open Shrubland of *Acacia saligna* with *Hakea corymbosa* over *Melaleuca seriata, Eremaea beaufortioides and Allocasuarina humilis with pastoral grasses in sands.*

Melaleuca Woodlands and Shrublands

Community 6c
Tall Open Shrubland of *Melaleuca glomerata* with occasionally emergent *Eucalyptus* sp. and *Acacia ancistrocarpa over Gomphrena canescens subsp. canescens in association with the Fortescue River.*

Community 6d
Low disturbed remnant Shrubland of *Melaleuca uncinata* and *Acacia aestivalis* over *Baeckea aff. cryptandroides over Lepidosperma leptostachyum* and pastoral weeds on pale sands with sub-surface sandstone in association with watercourses.

Heathlands

Community 7p
Open Heath of *Grevillea sp., Senna artemisioides* subsp. *artemisioides, Acacia ?tenuissima*, *Acacia coriacea* subsp. *coriacea, Acacia wanyu* and *Acacia kempeana* over *Senna artemisioides* subsp. *helmsii* and *Ptilotus obovatus var. obovatus in sandy soils with quartz pebbles.*

Community 7q
Open Heath of *Calothamnus sanguineus* and *Conospermum stoechadis* over *Scholtzia involucrata, Lachnostachys eriobotrya, Lechenaultia floribunda, Petrophile brevifolia* and *Jacksonia calcicola* (ms) *on* pale yellow undulating sands.

Community 7r
Open Heath of *Comesperma scoparium* and *Monachather paradoxus* on pale yellow undulating and unstable sands.

Community 7s
Remnant Open Heath of *Actinostrobus pyramidalis* and *Grevillea* sp. over *Grevillea annulifera* (P3), *Acacia cochlearis, Acacia blakelyi* and *?Baeckea* sp. over *Lepidobolus preissianus* with assorted annual Asteraceae spp. on yellow sand over laterite.

Community 7t
Open Heath of *Grevillea obliquistigma* subsp. *obliquistigma* over *Calothamnus sanguineus, Cassytha glabella, Calytrix brevifolia and Hibbertia glomerosa in sands.*

Community 7u
Open Heath of *Hakea preissii, Eremaea beaufortioides, Grevillea obliquistigma* subsp. *obliquistigma* and *Borya sphaerocephala in sands.*

Community 7v
Open Heath of *Conospermum stoechadis, Hibbertia glomerosa, Acacia blakelyi, Grevillea eriostachya* and *Dryandra sessilis over Mesomelaena pseudostygia in sands.*

Community 7w
Closed Heath of *Banksia candolleana* over *Hibbertia glomerosa, Ecdeiocolea monostachya, Calothamnus blepharospermus, Melaleuca systena, Dryandra kippistiana and Conospermum stoechadis in sands.*

Community 7x
Open Heath of *Conospermum triplinervium, Dryandra carlinoides and Leptospermum erubescens in sands.*

Hummock Grasslands

Community 8a
Hummock Grassland of *Triodia pungens* with *Acacia ancistrocarpa, Acacia bivenosa* and *Acacia wanyu* over *Pluchea tetranthera with occasionally emergent Eucalyptus sp. in silty soils.*

Community 8b
Hummock Grassland of *Triodia pungens* with *Acacia ?sessilis, Acacia synchronicia* and *Rhagodia latifolia* subsp. *latifolia over Salsola tragus and Trianthema turgidifolia in silty clay soils.*

Cleared CL

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

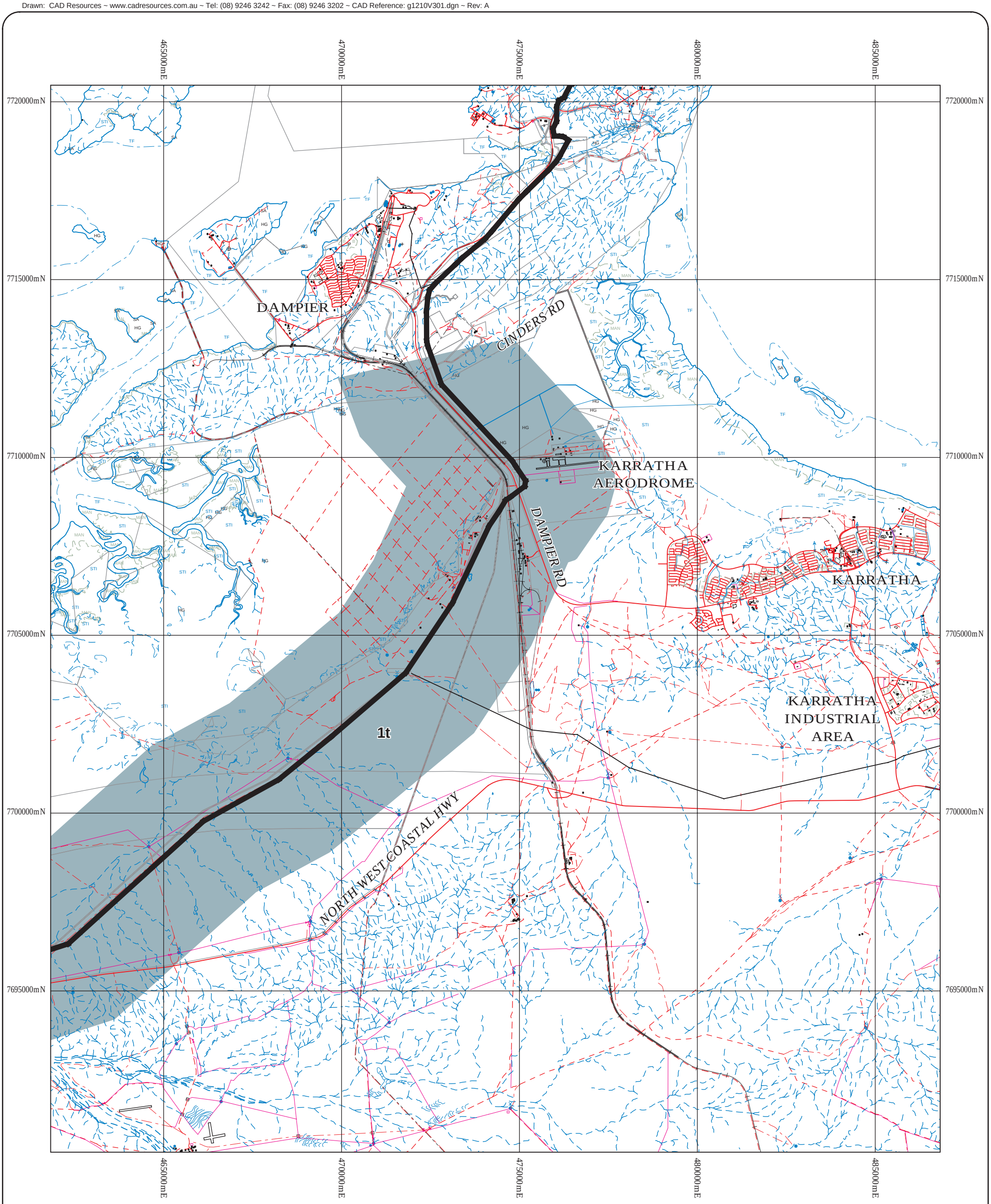
STAGE 5

Figure 3.00

Vegetation Legend

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V301.dgn ~ Rev: A

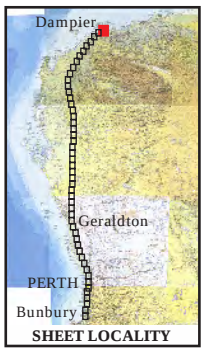


LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.01

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V302.dgn ~ Rev: A

440000mE 445000mE 450000mE 455000mE 460000mE

7710000mN 7705000mN 7700000mN 7695000mN 7690000mN 7685000mN

Regnard Bay

1t

1t

NORTH WEST COASTAL HWY

FORTY MILE BEACH RD

Yanyare River

Mt WILKIE

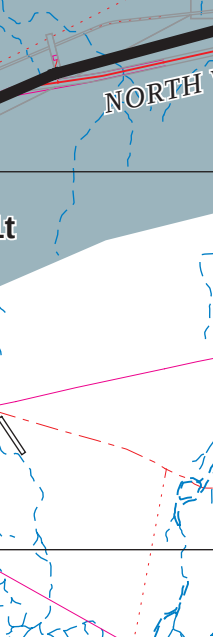
LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

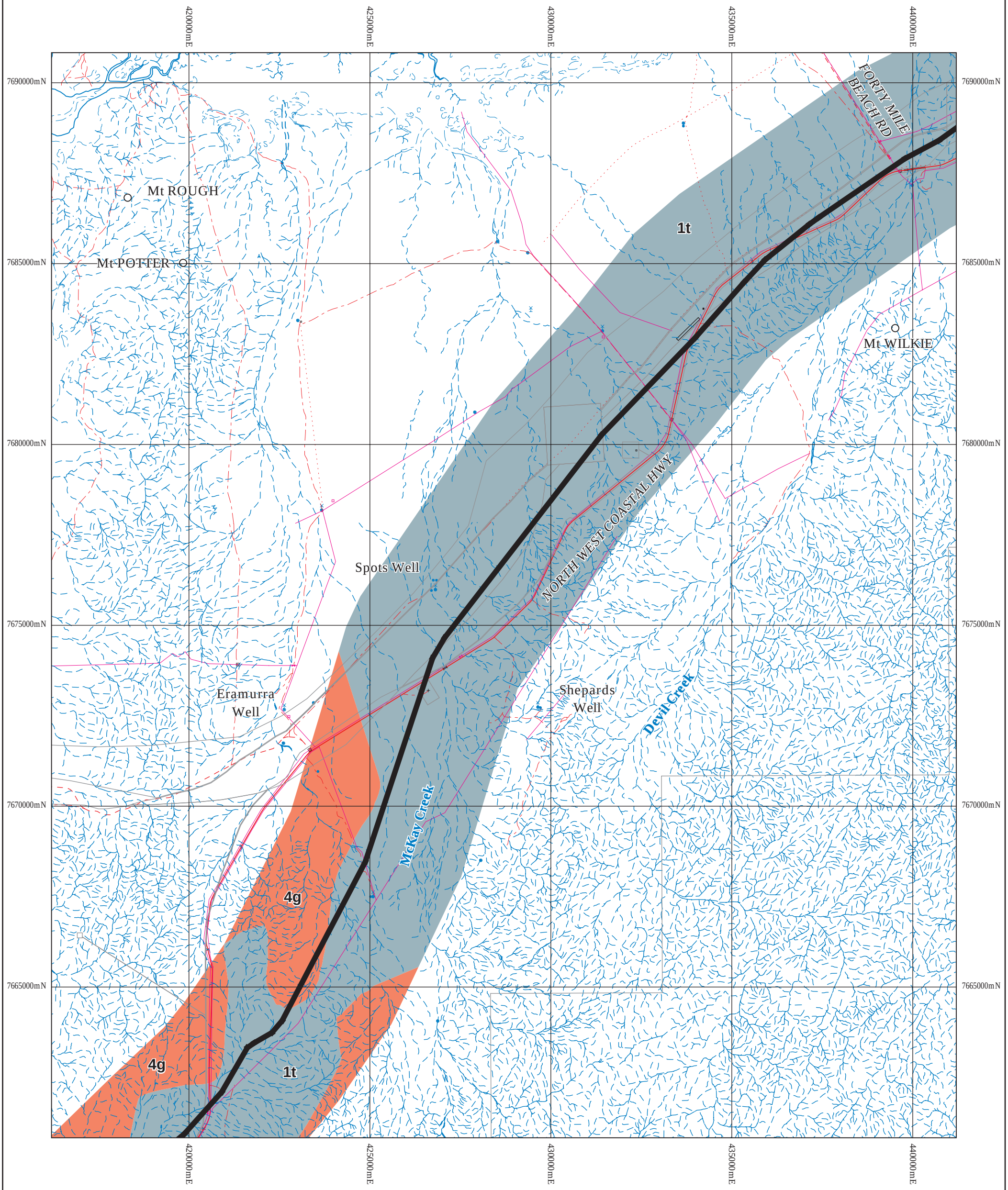
STAGE 5

Figure 3.02

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V303.dgn ~ Rev: A

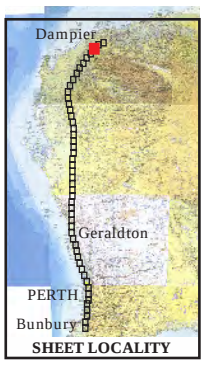


LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

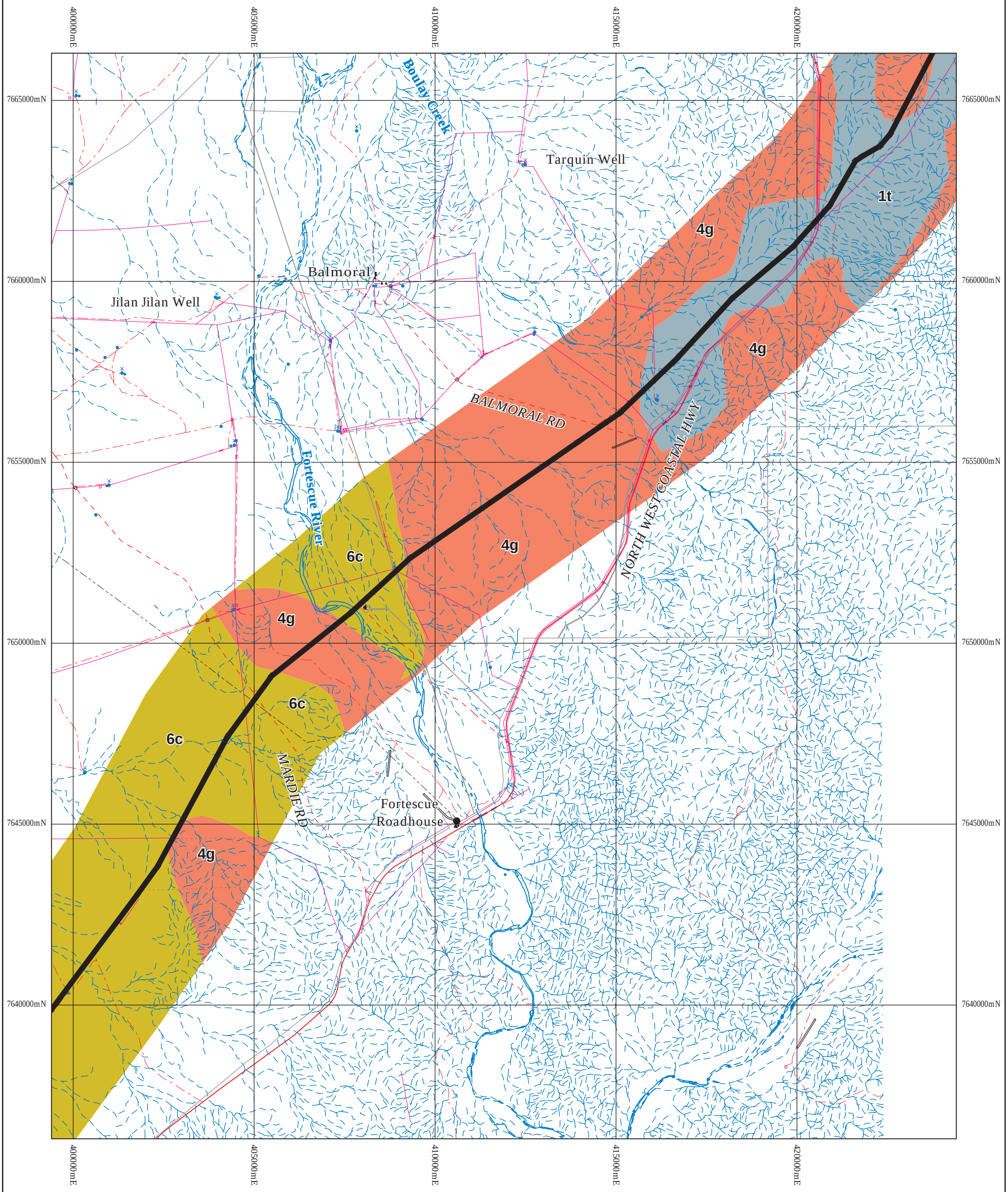
Figure 3.03

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V304.dgn ~ Rev: A

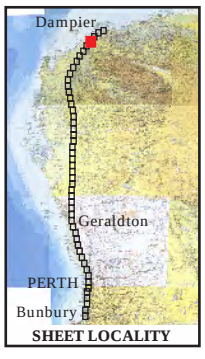


LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.04

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V305.dgn ~ Rev: A

380000mE 385000mE 390000mE 395000mE 400000mE

7645000mN
7640000mN
7635000mN
7630000mN
7625000mN
7620000mN

Surprise Well
Peter Creek
Pindooral Capm
Trecarton Creek
Dukes Well
Coxes Well
6c
Bradley Well
NORTH WEST COASTAL HWY
Nine Mile Well
Shepards Well
6c
Robe River

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.05

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V306.dgn ~ Rev: A

365000mE 370000mE 375000mE 380000mE 385000mE

7615000mN 7610000mN 7605000mN 7600000mN 7595000mN 7590000mN

Jungle Bore
Any Well
Jennys Bore
Yarraloola
YARRALOOLA RD
Robe River
6c
King Well
PEEDAN HILL
Warramboo Creek
WARRAMBOO OUTSTATION
NORTH WEST COASTAL HWY
Hubert Well
Dinner Camp Bore
PEEDAMULLA HILL
1u

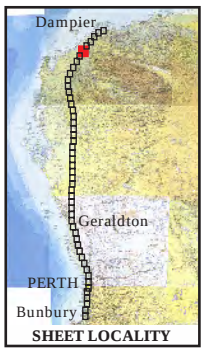
LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.06

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V307.dgn ~ Rev: A

345000mE 350000mE 355000mE 360000mE 365000mE

7595000mN 7590000mN 7585000mN 7580000mN 7575000mN 7570000mN

PEEDAMULLA HILL

Peedamulla Creek

1u

Yanget Bore

Peedamulla Outstation

Hancocks Bore

ONSLOW-PEEDAMULLA RD

Peedamulla

NORTH WEST COASTAL HWY

REID HILL RD

Cane River

TOOLUNGA FLAT

Surprise Bore

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.07

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V308.dgn ~ Rev: A

335000mE 340000mE 345000mE 350000mE 355000mE

7565000mN
7560000mN
7555000mN
7550000mN
7545000mN

Mt Minnie (abandoned)
Surprise Bore
1u
ONSLOW RD
Mount Minne Well
Claypan Well
1u
Ironstone Well
Quartz Well

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 3.08

VEGETATION

Author: L. Mattiske

September 2006

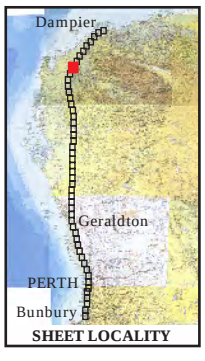
Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V309.dgn ~ Rev: A

315000mE 320000mE 325000mE 330000mE 335000mE

7535000mN 7530000mN 7525000mN 7520000mN 7515000mN

Johnston Well
Two Mile Well
The Range
Table Top Well
Grass Flat Well
Aerodrome Well
Four Mile Bore
Peepingee Creek
Ashburton River

1u
8b
8a
4h



LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.09

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V310.dgn ~ Rev: A

300000mE 305000mE 310000mE 315000mE 320000mE

7505000mN
7500000mN
7495000mN
7490000mN
7485000mN

Cheetara No 2 Well
Four Mile Well
Myallis Well
Shallow Well
Tinkers Well
4h
4h
1u

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 3.10

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V311.dgn ~ Rev: A

290000mE 295000mE 300000mE 305000mE 310000mE

7475000mN
7470000mN
7465000mN
7460000mN
7455000mN

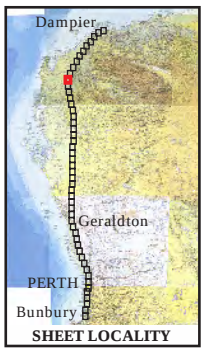
TWITCHIN RD
NORTH WEST COASTAL HWY
Barradale Roadhouse
1u
NYANG RD
Yanarie River
1u
TOWERA RD
4i
Nyang
Five Mile Bore
Diorite Well

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 3.11

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V312.dgn ~ Rev: A

290000mE 295000mE 300000mE 305000mE 310000mE

7445000mN 7440000mN 7435000mN 7430000mN 7425000mN

4i

4j

TOWERA RD

Kooline Well

Five Mile Well

Two Mile Well

Yanarie River

Towera

Three Mile Well

Strip Well

Coonde Well

Seven Mile Well

LYNDON-TOWERA RD

Walter Well

Lockwood Well

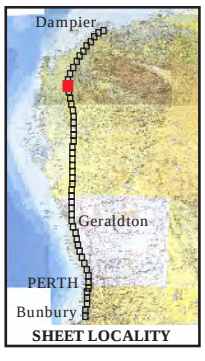
LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

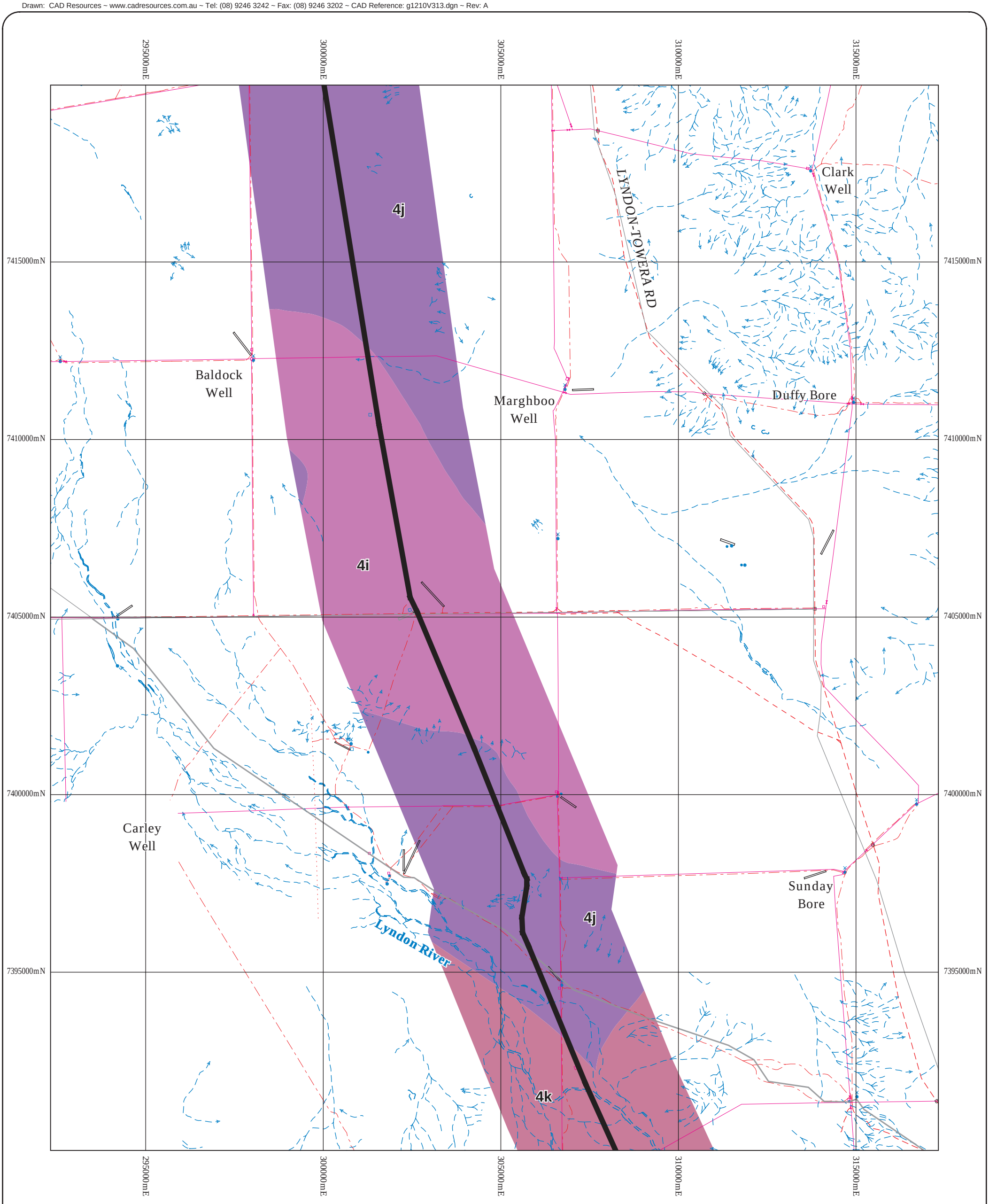
Figure 3.12

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V313.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

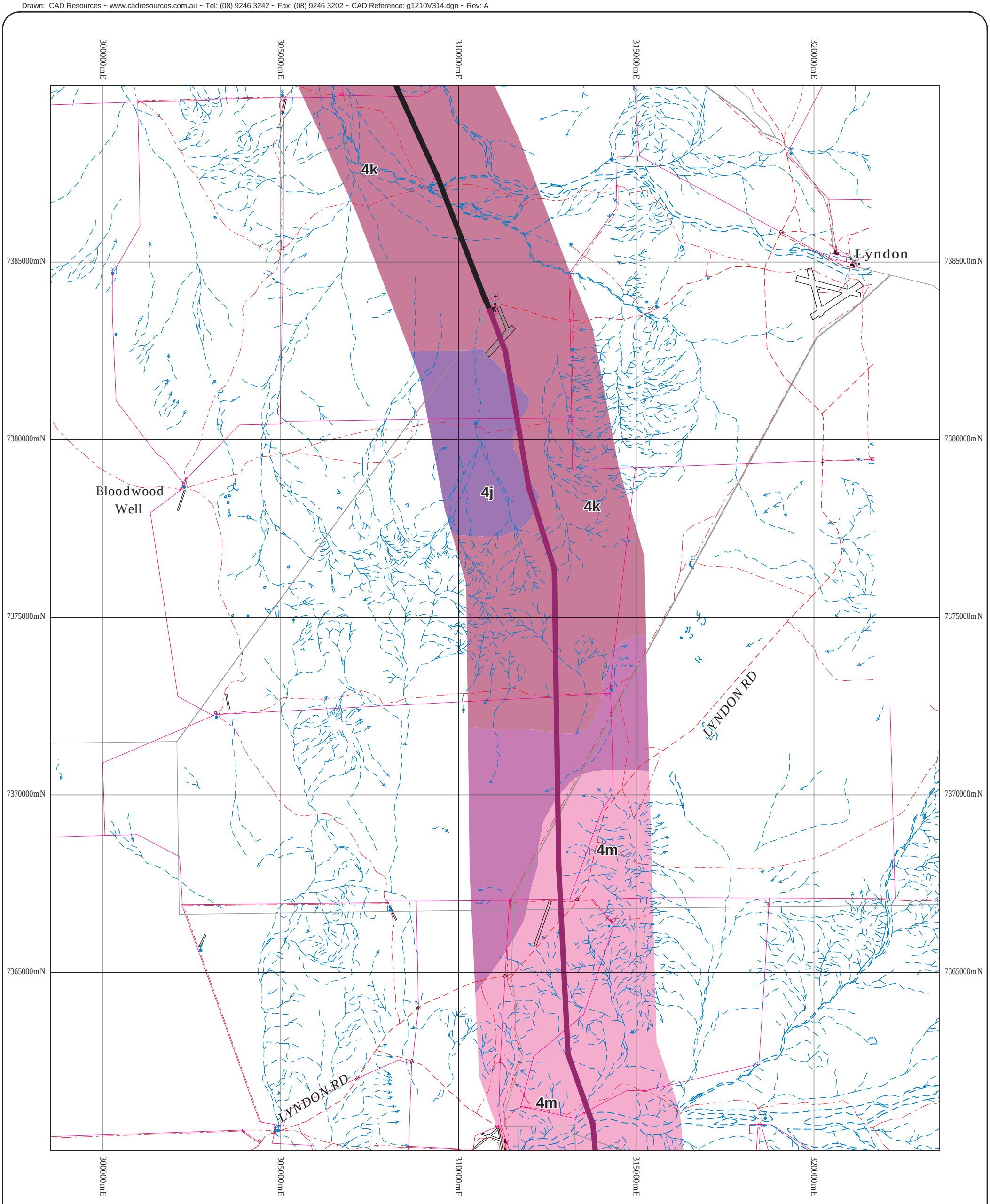
STAGE 5

Figure 3.13

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V314.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.14

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V315.dgn ~ Rev: A

305000mE 310000mE 315000mE 320000mE 325000mE

7355000mN
7350000mN
7345000mN
7340000mN
7335000mN

Williambury

Minilya River

Minilya River South Branch

South Branch Well

4m

4n

4m

4o

MOUNT SANDIMAN-WILLIAMBURY RD

Moogooree

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.15

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V316.dgn ~ Rev: A

315000mE 320000mE 325000mE 330000mE 335000mE

7325000mN
7320000mN
7315000mN
7310000mN
7305000mN

Longreach Well
Howell Bore
Yabaroo Bore
Wellumba Bore
4o
MOUNT SANDIMAN-WILLIAMBURY RD

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.16

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V317.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7295000mN
7290000mN
7285000mN
7280000mN
7275000mN

Mount Sandiman

4n

4o

4p

ULLAWARRA RD

Lyons River

Lyons River

LYONS RIVER RD

Gauging Station

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.17

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V318.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7265000mN
7260000mN
7255000mN
7250000mN
7245000mN

4o
4o
4o
4o
4p
4n
4o

Lyons River
ULLAWARRA RD
Davis Creek

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.18

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V319.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7235000mN
7230000mN
7225000mN
7220000mN
7215000mN

Lyons River
ULLAWARRA RD
4p
4o
4p
Bidgemia
4q
Gascoyne River
Gascoyne Junction
4r
CARNARVON-MULLEWA RD
PIMBEE RD
4r

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.19

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V320.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7205000mN
7200000mN
7195000mN
7190000mN
7185000mN

4r
7p
4r
4s

PIMBEE RD
CAREY DOWNS RD
Towrana

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.20

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V321.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7175000mN
7170000mN
7165000mN
7160000mN
7155000mN

CAREY DOWNS RD

4s

1v

CALLYTHARRA RD

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

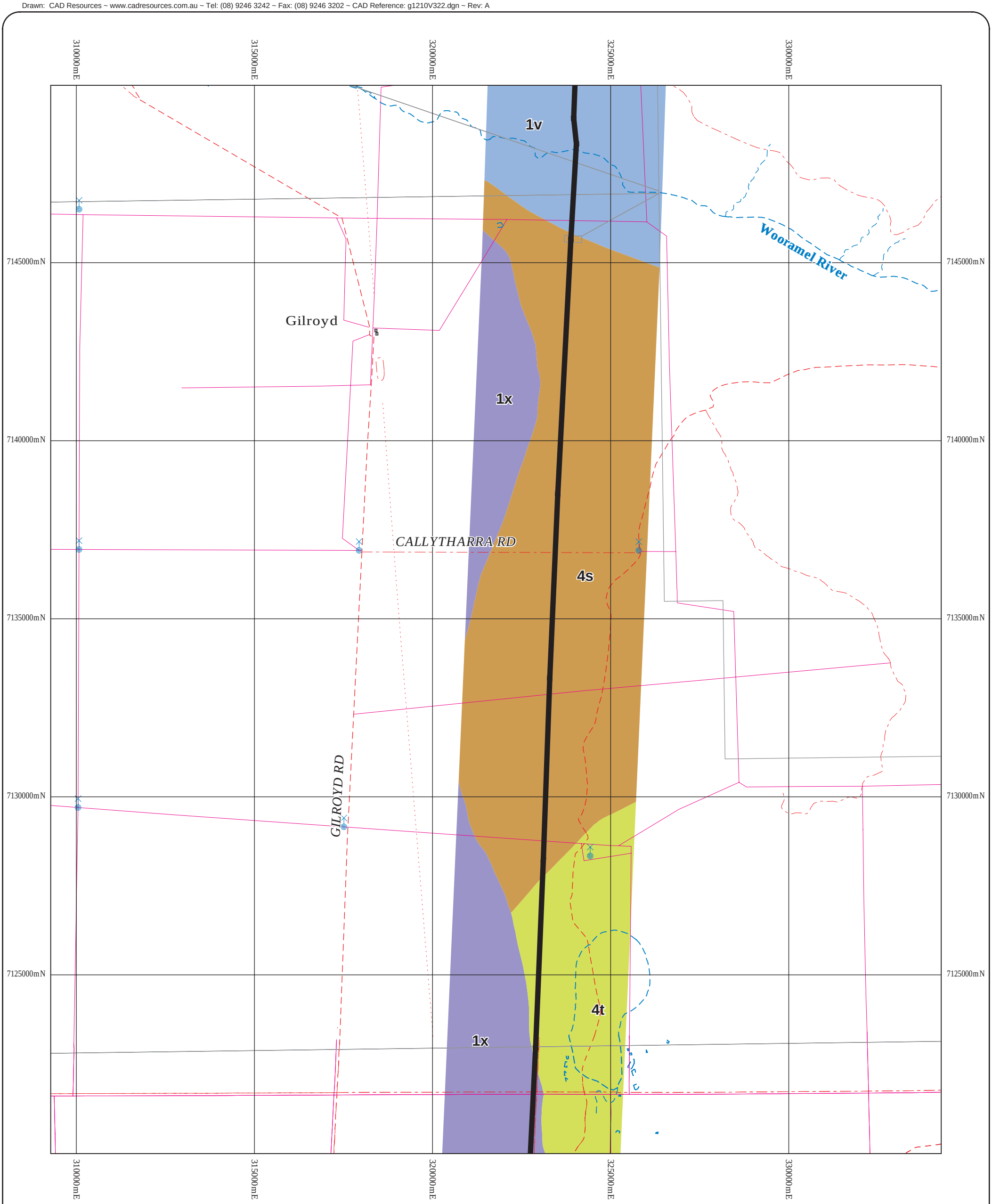
Figure 3.21

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V322.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

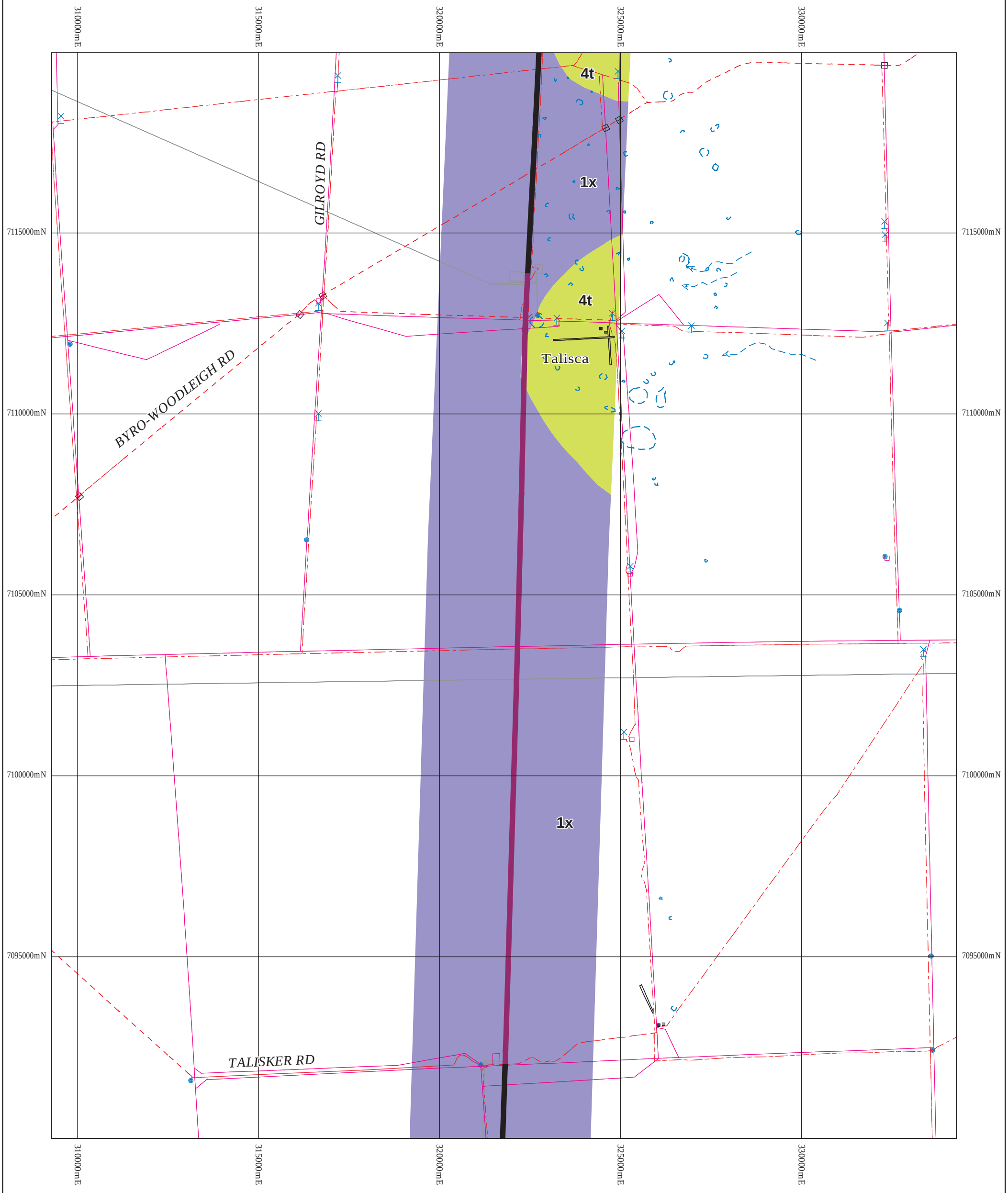
Figure 3.22

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V323.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

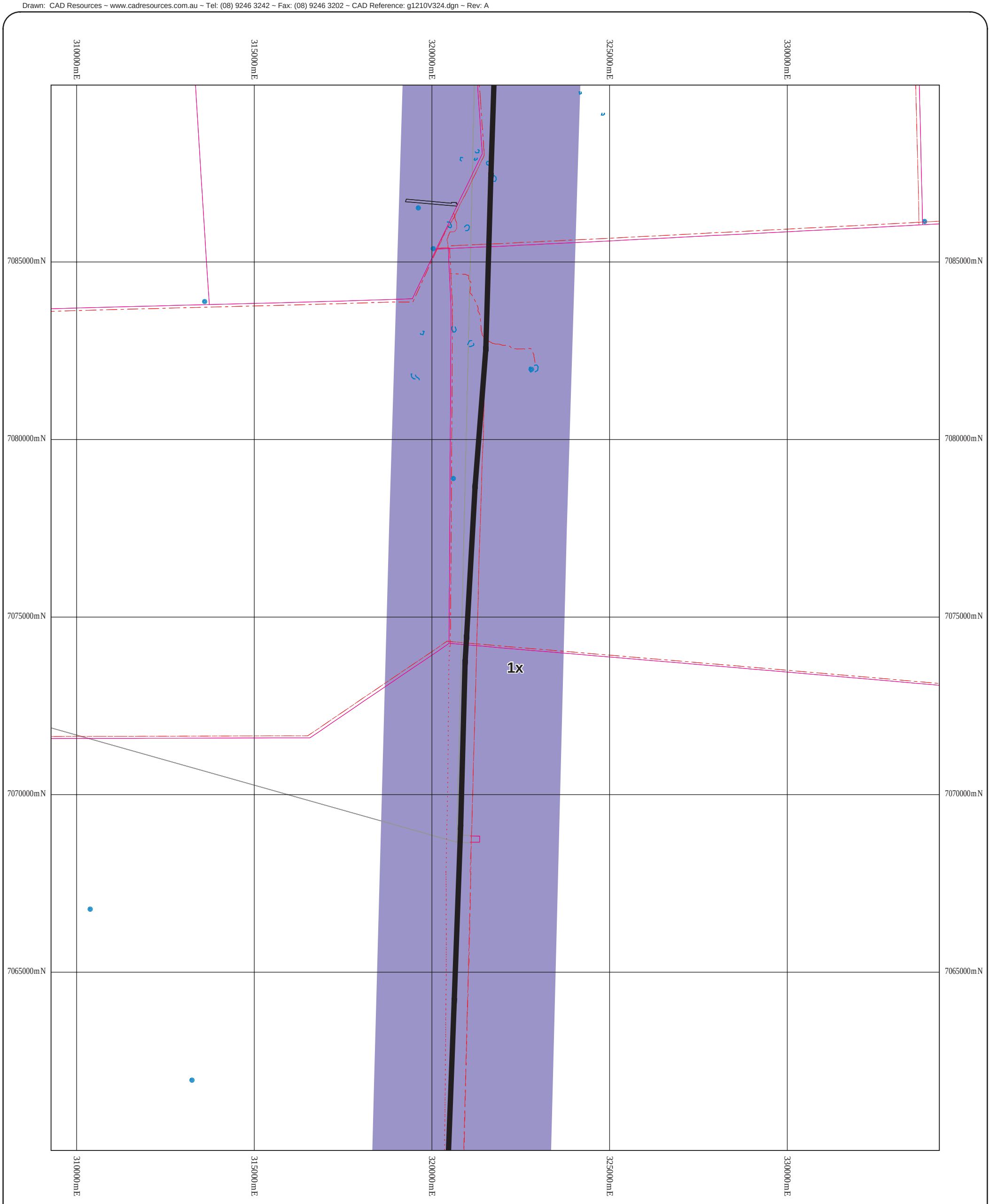
Figure 3.23

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V324.dgn ~ Rev: A



LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.24

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V325.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

7055000mN
7050000mN
7045000mN
7040000mN
7035000mN

1x

BUTCHERS TRK

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

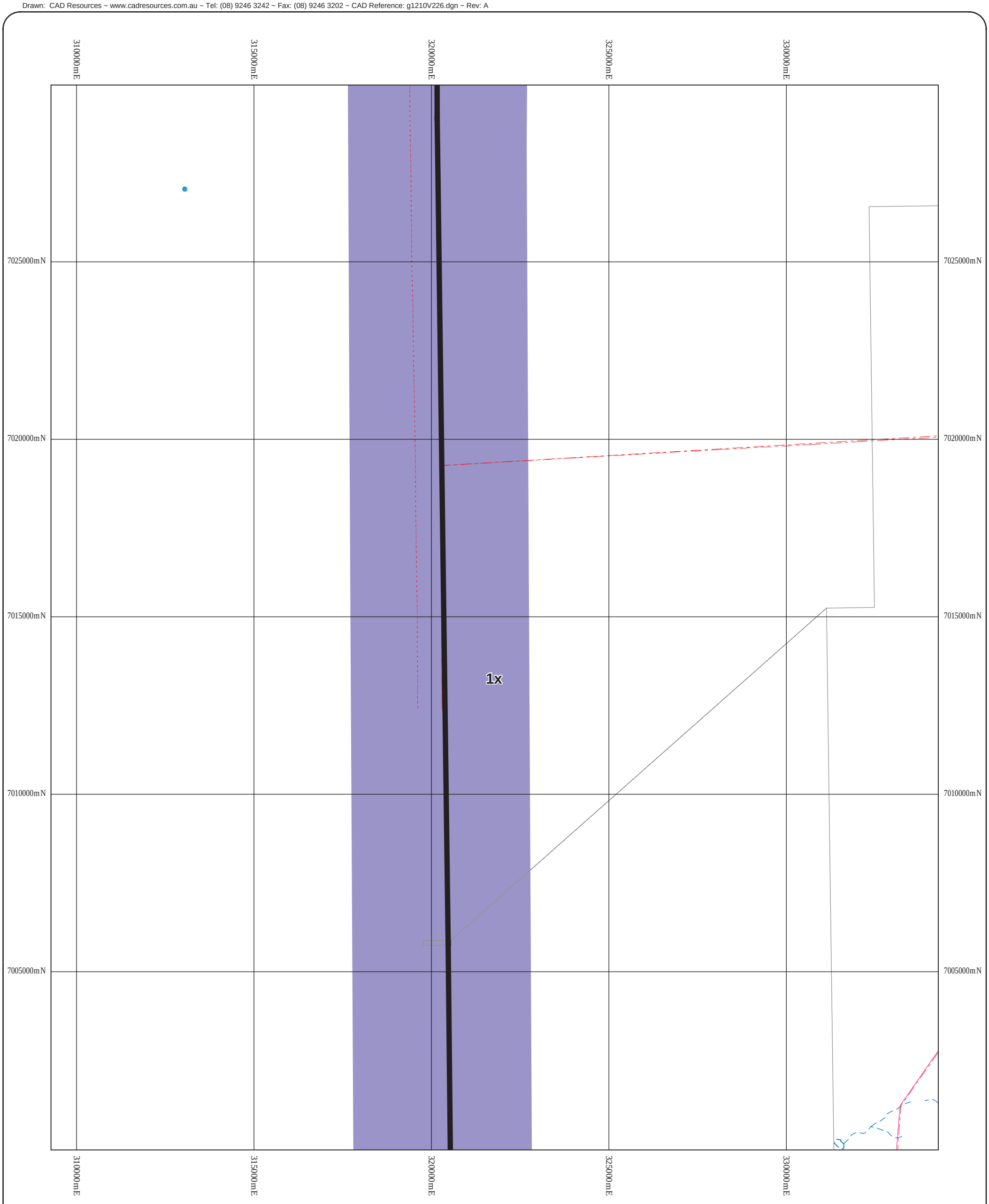
STAGE 5

Figure 3.25

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V226.dgn ~ Rev: A

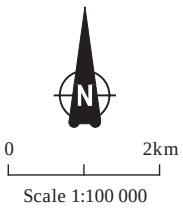


LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

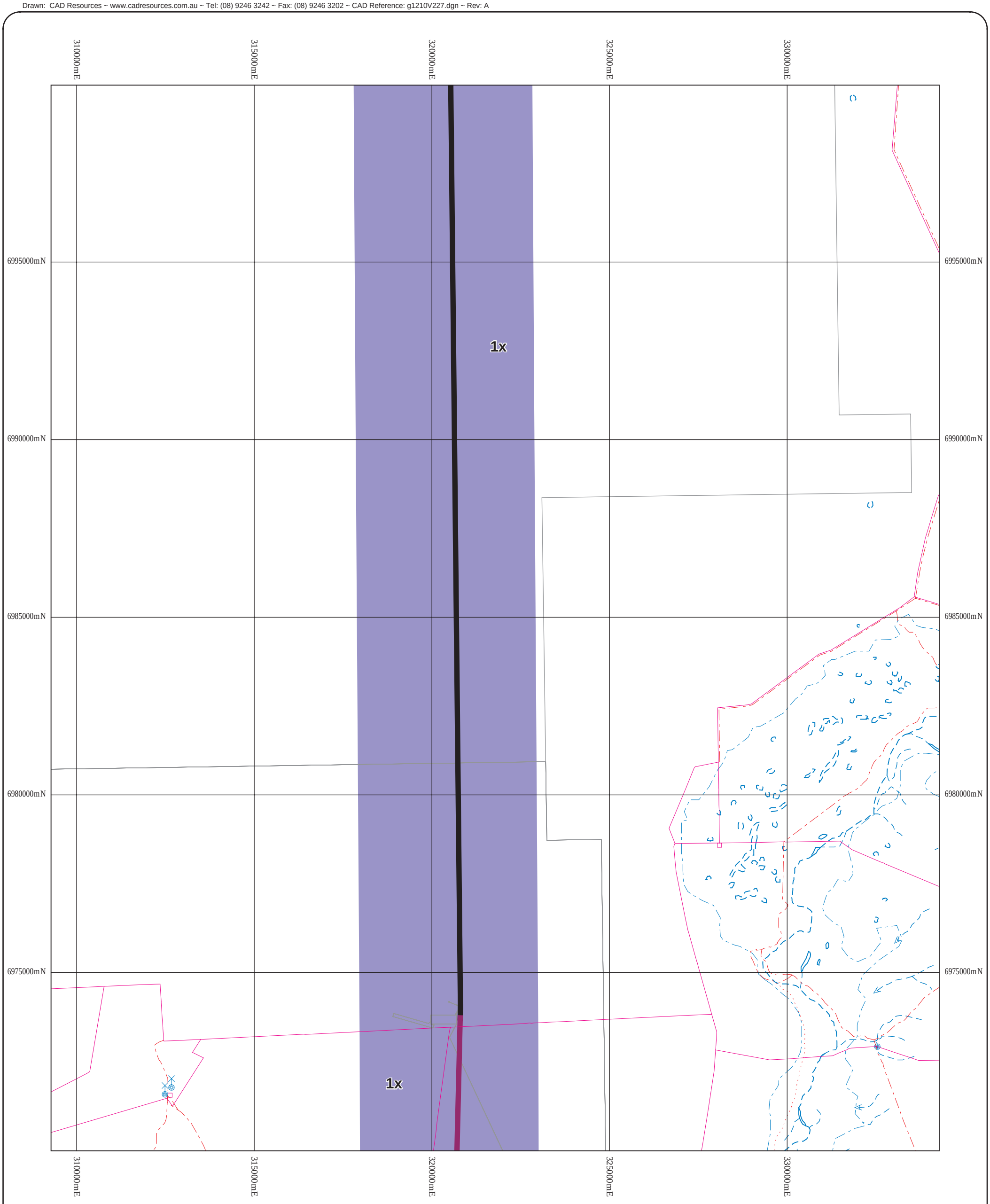
Figure 3.26

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V227.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.27

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V228.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6965000mN
6960000mN
6955000mN
6950000mN
6945000mN

1x
1w
1y
1z
1aa
4u

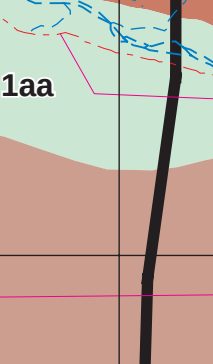
Murchison River

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.28

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V229.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6935000mN
6930000mN
6925000mN
6920000mN
6915000mN

4u

1ab

1ac

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

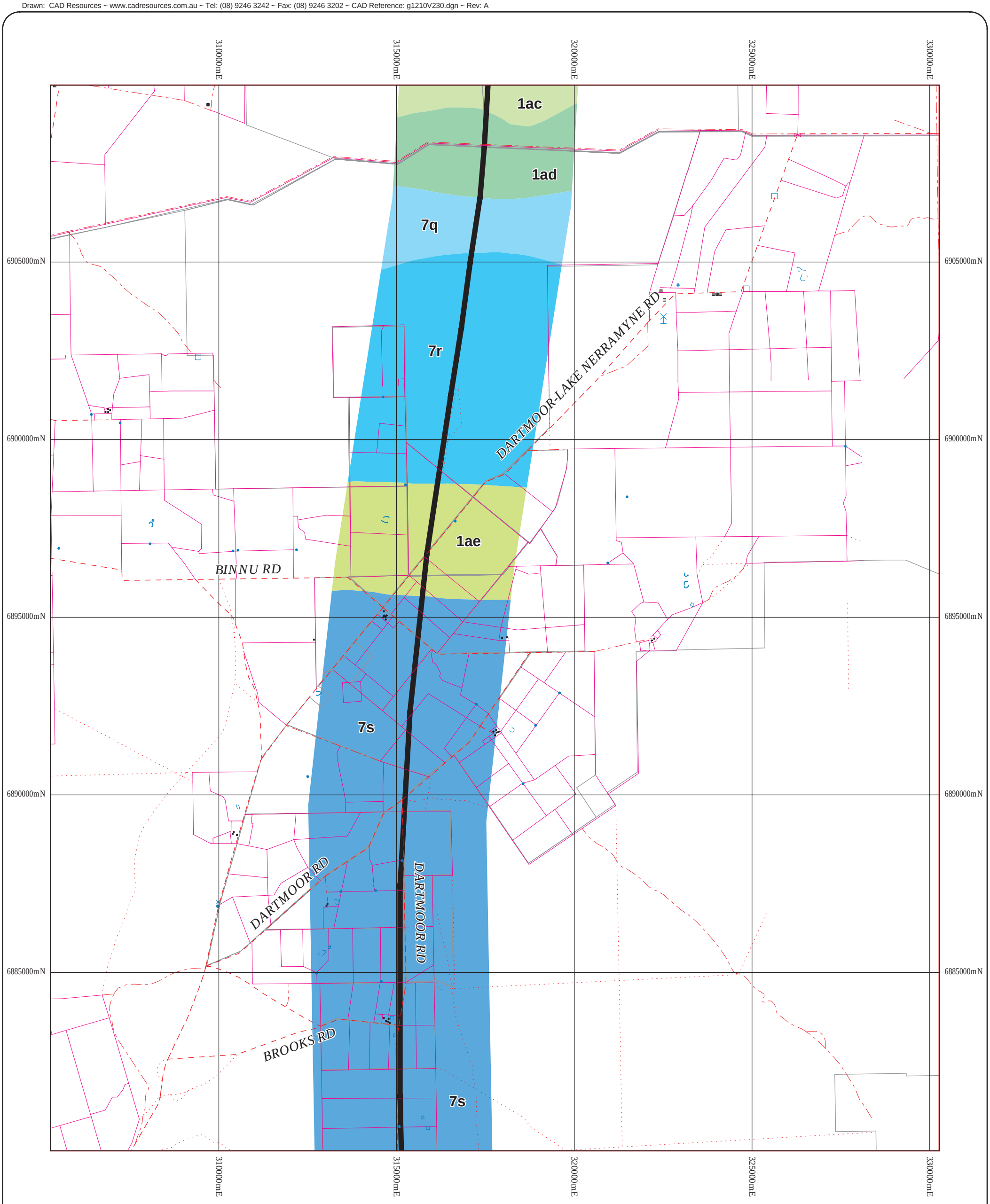
Figure 3.29

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V230.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

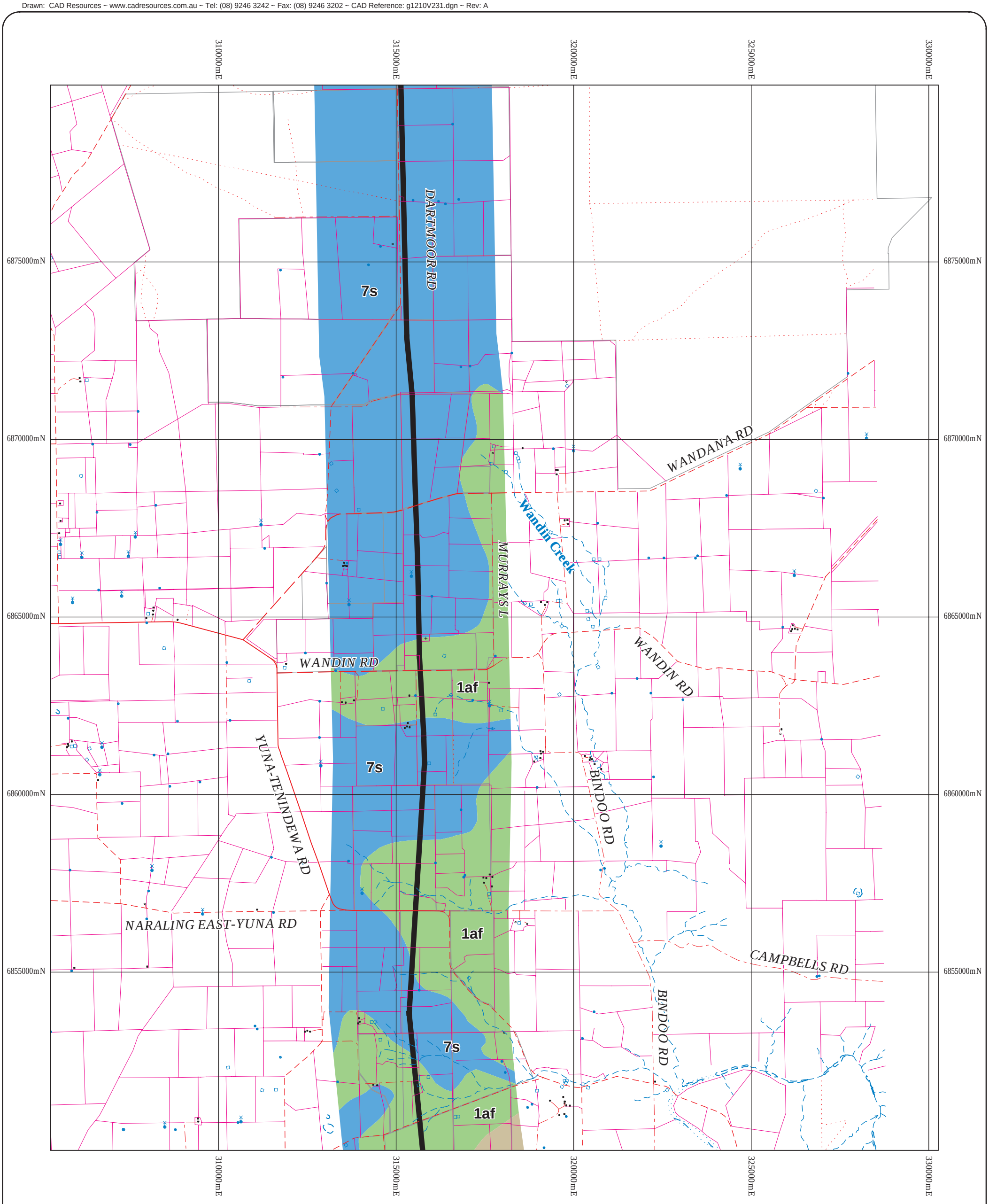
STAGE 5

Figure 3.30

VEGETATION

Author: L. Mattiske Spetember 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V231.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

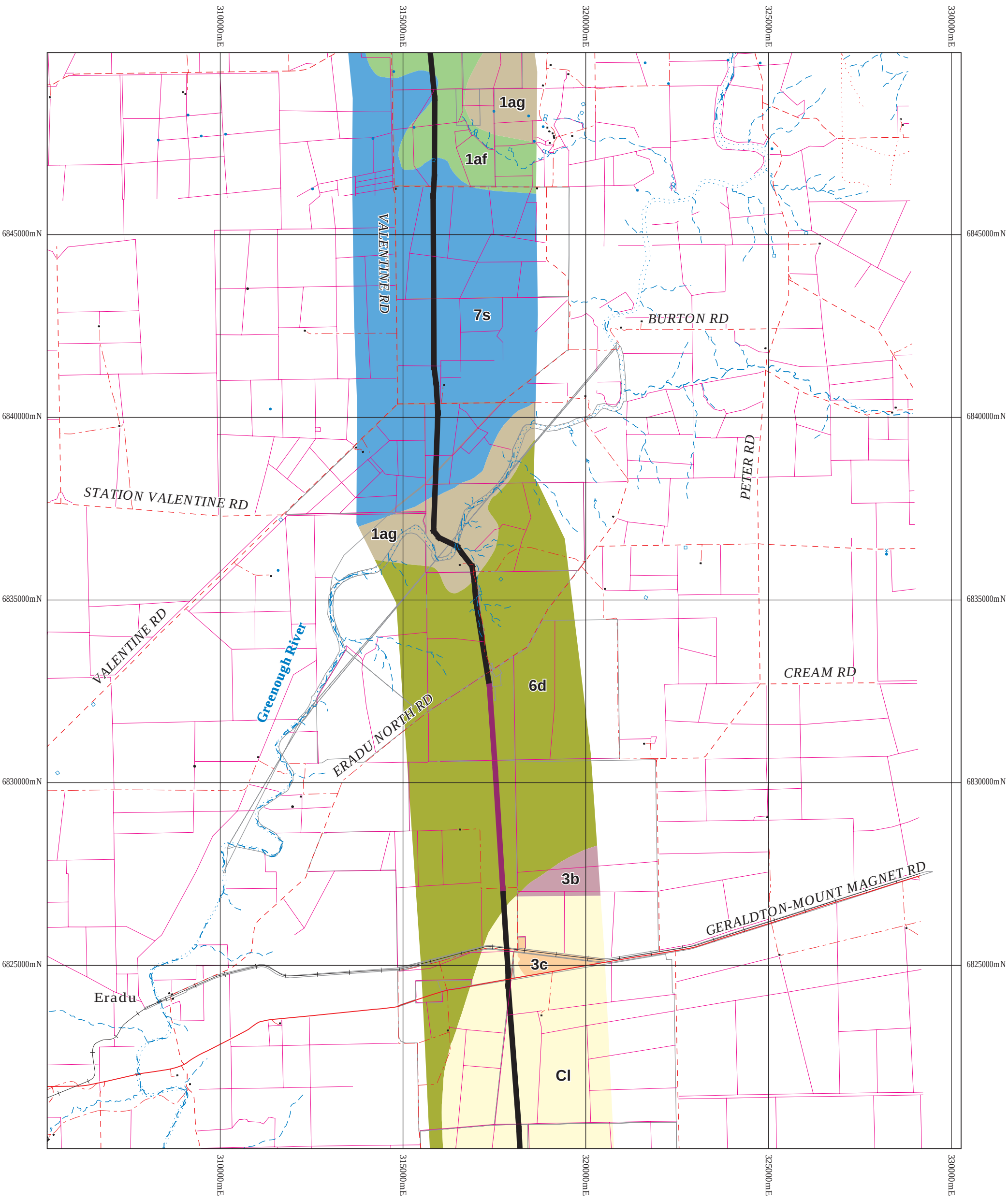
Figure 3.31

VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210V232.dgn ~ Rev: A

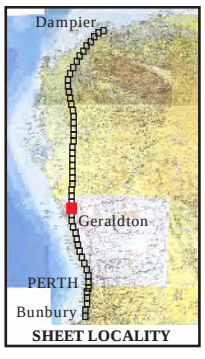


LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

NOTE

For Full Vegetation Legend
Refer to Figure 3.00



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 3.32

VEGETATION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C401.dgn ~ Rev: A

465000mE 470000mE 475000mE 480000mE 485000mE

7720000mN
7715000mN
7710000mN
7705000mN
7700000mN
7695000mN

DAMPIER
CINDERS RD
KARRATHA AERODROME
DAMPIER RD
KARRATHA
KARRATHA INDUSTRIAL AREA
2
NORTHWEST COASTAL HWY

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

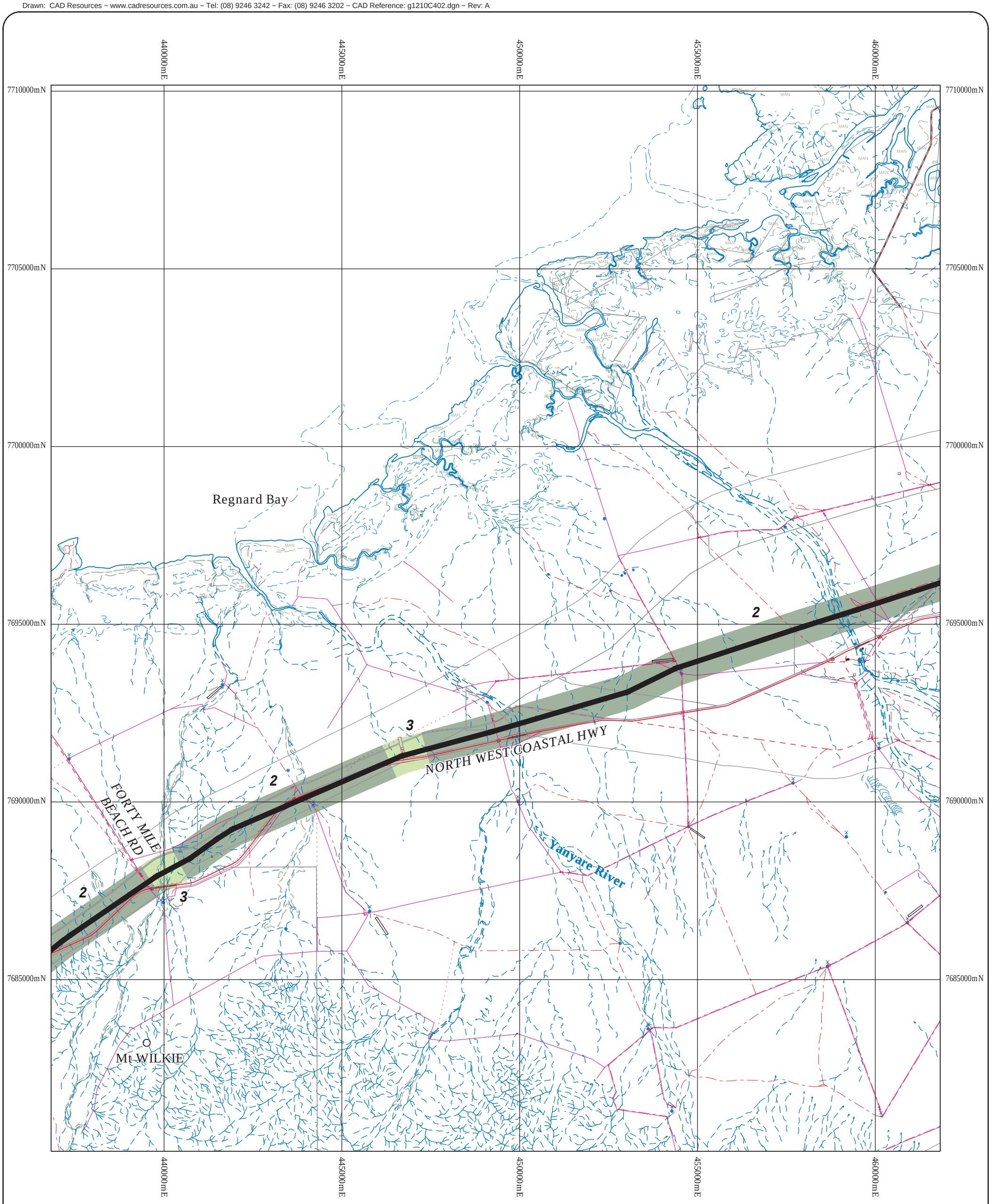
STAGE 5

Figure 4.01

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C402.dgn ~ Rev: A



LEGEND

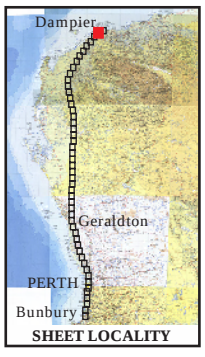
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



0 2km

Scale 1:100 000

Notes:

Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

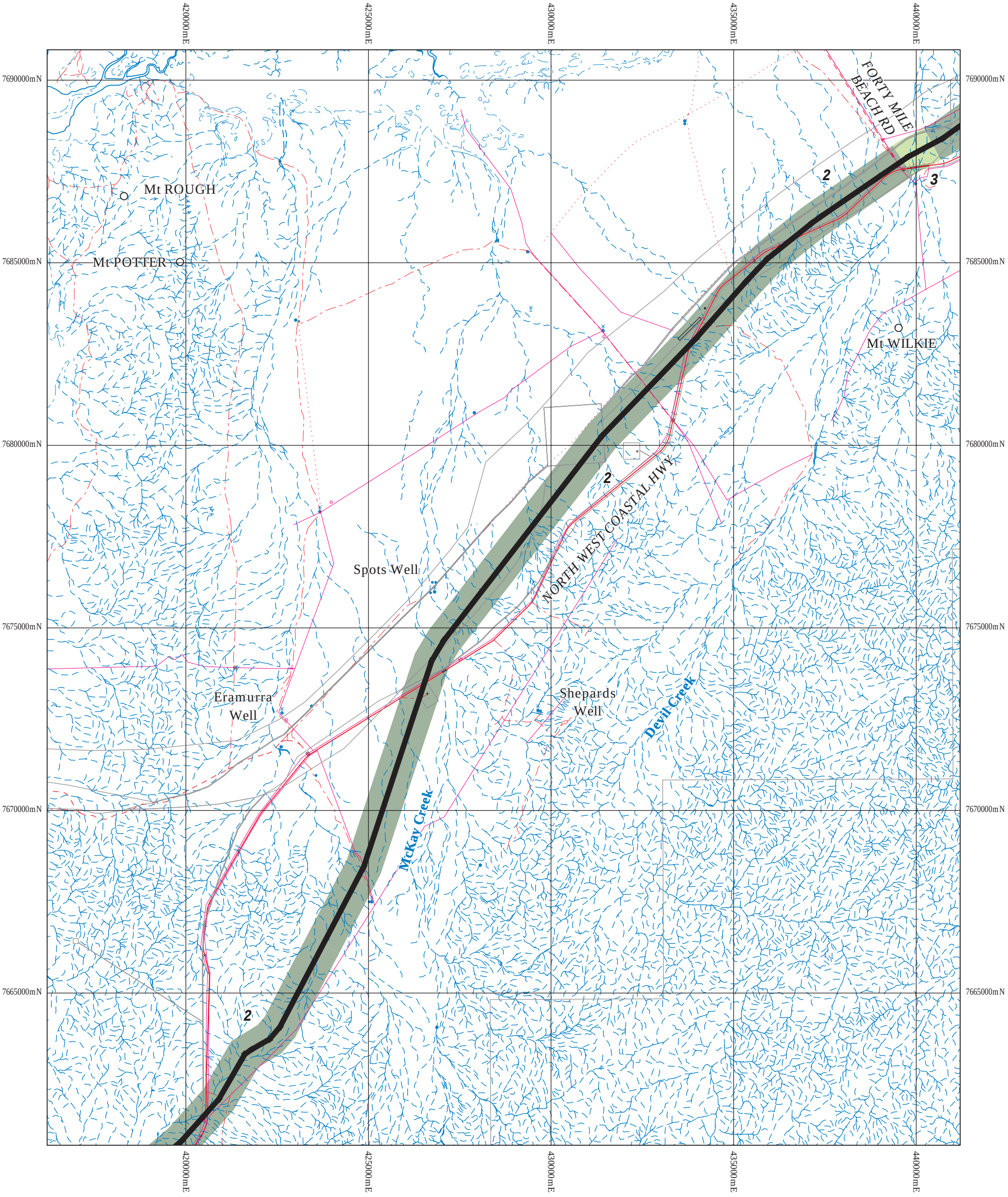
STAGE 5

Figure 4.02

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C403.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.03

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C404.dgn ~ Rev: A

400000mE 405000mE 410000mE 415000mE 420000mE

7665000mN
7660000mN
7655000mN
7650000mN
7645000mN
7640000mN

Boulay Creek
Tarquin Well
Balmoral
Jilan Jilan Well
BALMORAL RD
Fortescue River
NORTH WEST COASTAL HWY
MARDIE RD
Fortescue Roadhouse

1
2

400000mE 405000mE 410000mE 415000mE 420000mE

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

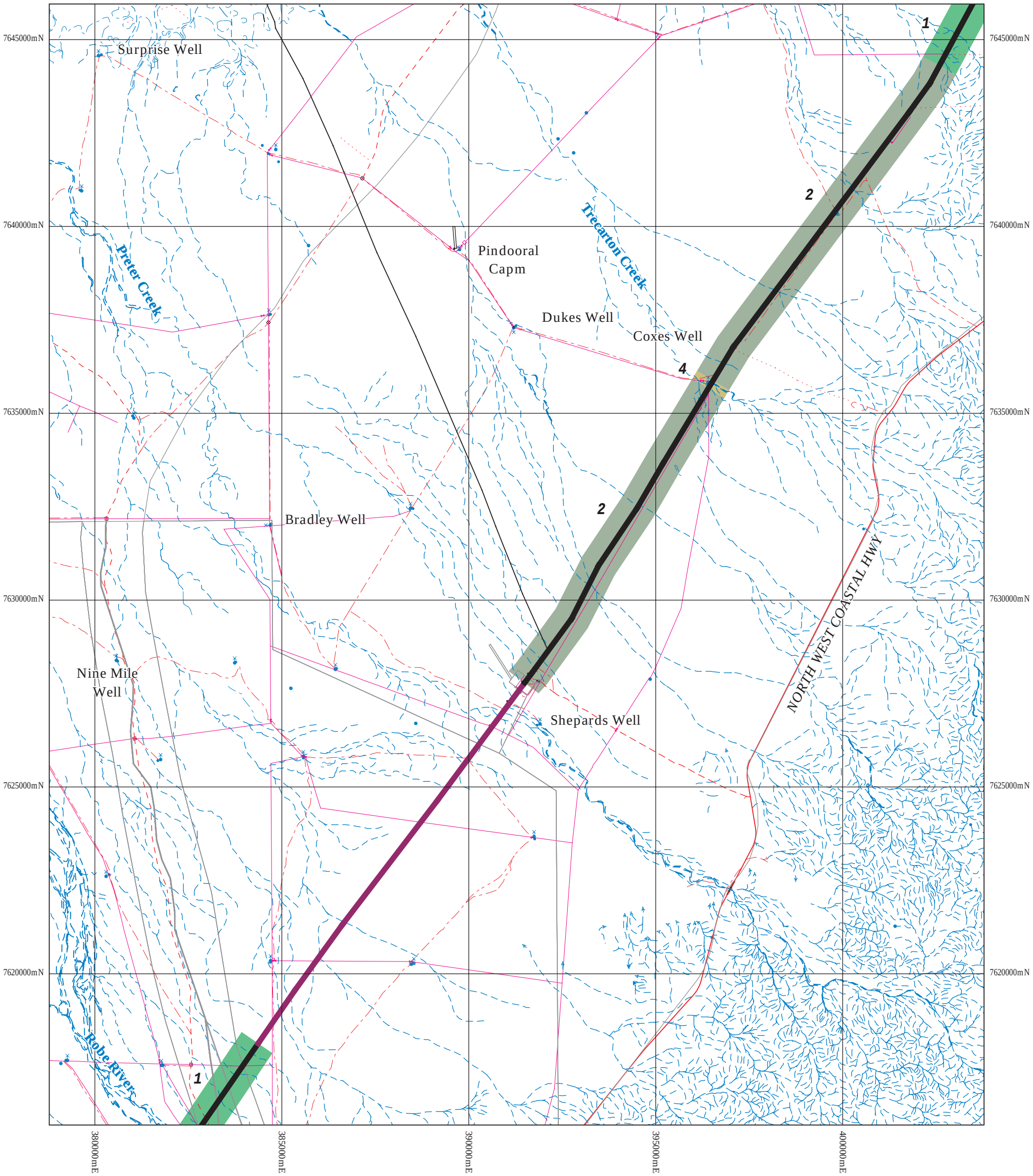
STAGE 5

Figure 4.04

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C405.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.05

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C406.dgn ~ Rev: A

365000mE 370000mE 375000mE 380000mE 385000mE

7615000mN 7610000mN 7605000mN 7600000mN 7595000mN 7590000mN

Jungle Bore
Any Well
Jennys Bore
Yarraloola
YARRALOOLA RD
King Well
PEEDAN HILL
Robe River
Warramboo Creek
WARRAMBOO OUTSTATION
NORTH WEST COASTAL HWY
Hubert Well
Dinner Camp Bore
PEEDAMULLA HILL

1 2 1 2 1 3

LEGEND

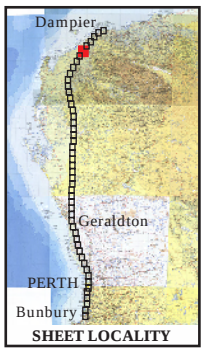
Stage 5 Route Alignment
Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.06

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C407.dgn ~ Rev: A

345000mE 350000mE 355000mE 360000mE 365000mE

7595000mN 7590000mN 7585000mN 7580000mN 7575000mN 7570000mN

PEEDAMULLA HILL

Peedamulla Creek

Yanget Bore

Peedamulla Outstation

Hancocks Bore

ONSLOW-PEEDAMULLA RD

Peedamulla

NORTH WEST COASTAL HWY

REID HILL RD

Cane River

TOOLUNGA FLAT

Surprise Bore

1 2 3

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:

Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.07

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C408.dgn ~ Rev: A

335000mE 340000mE 345000mE 350000mE 355000mE

7565000mN
7560000mN
7555000mN
7550000mN
7545000mN

Mt Minnie (abandoned)
Surprise Bore
ONSLOW RD
Mount Minne Well
Claypan Well
Ironstone Well
Quartz Well
1
2

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR
STAGE 5
Figure 4.08

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C409.dgn ~ Rev: A

315000mE 320000mE 325000mE 330000mE 335000mE

7535000mN 7530000mN 7525000mN 7520000mN 7515000mN

Johnston Well
Two Mile Well
The Range
Table Top Well
Grass Flat Well
Aerodrome Well
Four Mile Bore
1
Peepingee Creek
Ashburton River
4h

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

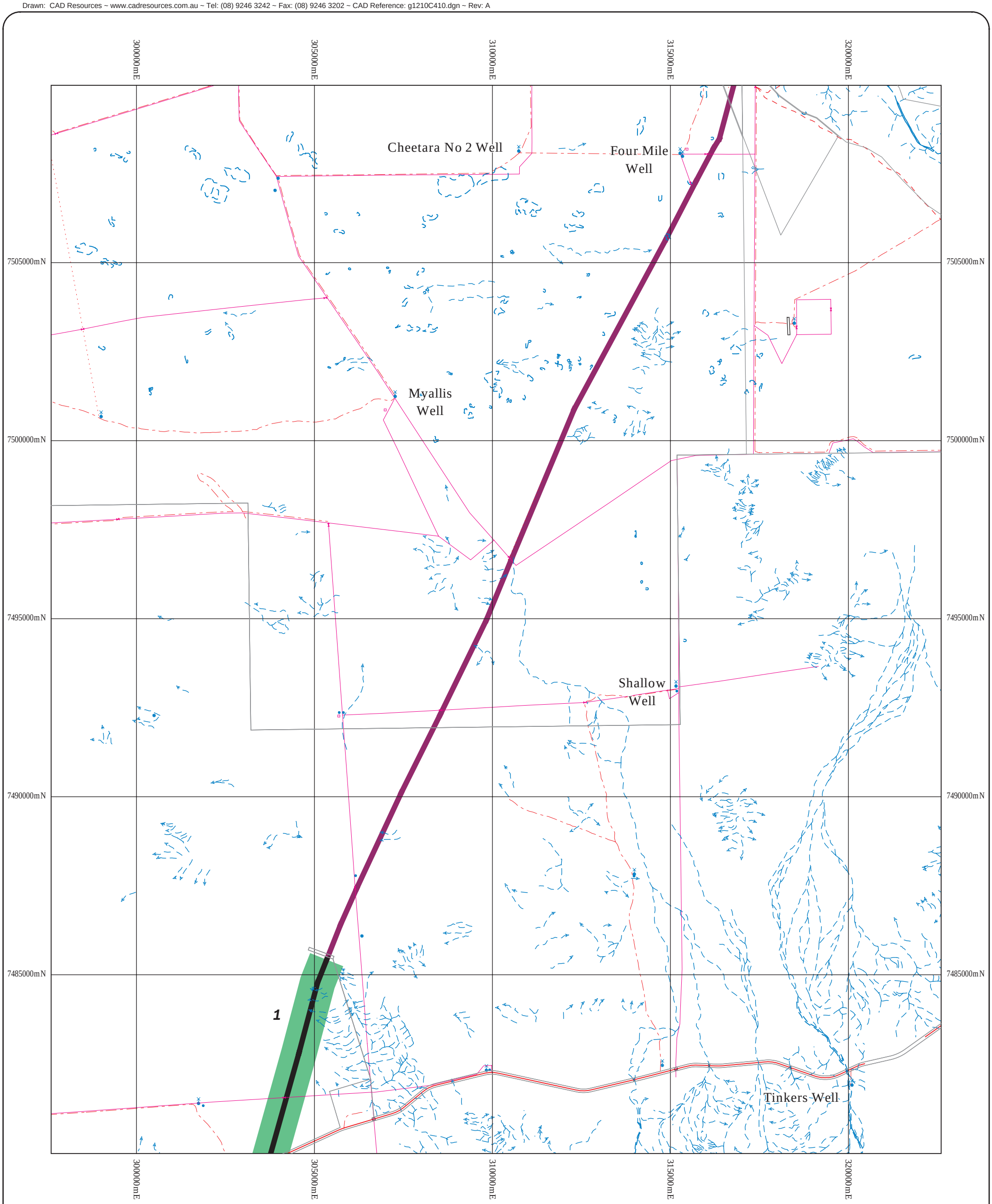
Figure 4.09

CONDITION VEGETATION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C410.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.10

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C411.dgn ~ Rev: A

290000mE 295000mE 300000mE 305000mE 310000mE

7475000mN
7470000mN
7465000mN
7460000mN
7455000mN

TWITCHIN RD
NORTH WEST COASTAL HWY
Barradale Roadhouse
NYANG RD
Yanarie River
TOWERA RD
1
2
Nyang
Five Mile Bore
Diorite Well

SHEET LOCALITY

LEGEND

Stage 5 Route Alignment
Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:

Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 4.11

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C412.dgn ~ Rev: A

290000mE 295000mE 300000mE 305000mE 310000mE

7445000mN 7440000mN 7435000mN 7430000mN 7425000mN

TOWERA RD

1

Kooline Well

Five Mile Well

Two Mile Well

Yanarie River

Towera

Three Mile Well

Strip Well

Coonde Well

Seven Mile Well

LYNDON-TOWERA RD

Walter Well

Lockwood Well

LEGEND

Stage 5 Route Alignment

Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 4.12

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C413.dgn ~ Rev: A

295000mE 300000mE 305000mE 310000mE 315000mE

7415000mN
7410000mN
7405000mN
7400000mN
7395000mN

Baldock Well
Marghboo Well
Clark Well
Duffy Bore
Carley Well
Sunday Bore
LYNDON-TOWERA RD
Lyndon River
1
2

LEGEND

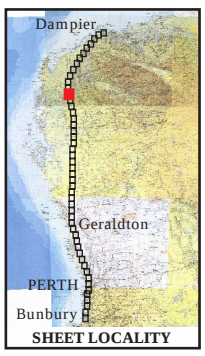
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.13

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C414.dgn ~ Rev: A

300000mE 305000mE 310000mE 315000mE 320000mE

7385000mN
7380000mN
7375000mN
7370000mN
7365000mN

1
3
1

Lyndon

Bloodwood Well

LYNDON RD

LYNDON RD

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 4.14

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C415.dgn ~ Rev: A

305000mE 310000mE 315000mE 320000mE 325000mE

7355000mN
7350000mN
7345000mN
7340000mN
7335000mN

Williambury

Minilya River

Minilya River South Branch

South Branch Well

MOUNT SANDIMAN-WILLIAMBURY RD

Moogooree

1
2

LEGEND

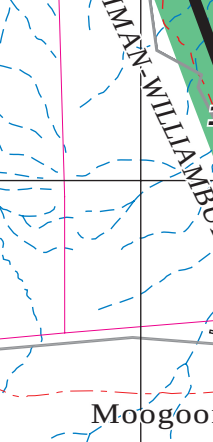
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.15

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C416.dgn ~ Rev: A

315000mE 320000mE 325000mE 330000mE 335000mE

7325000mN 7320000mN 7315000mN 7310000mN 7305000mN

Longreach Well

Howell Bore

Yabaroo Bore

Wellumba Bore

MOUNT SANDIMAN-WILLIAMBURY RD

1 1 3

LEGEND

Stage 5 Route Alignment

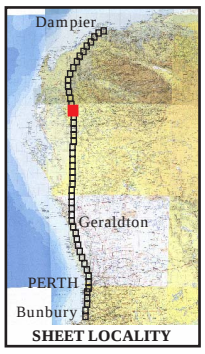
Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.16

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C417.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7295000mN
7290000mN
7285000mN
7280000mN
7275000mN

Mount Sandiman
1
3
ULLAWARRA RD
Lyons River
Lyons River
Gauging Station
LYONS RIVER RD

LEGEND

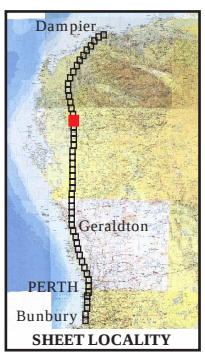
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.17

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C418.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7265000mN 7260000mN 7255000mN 7250000mN 7245000mN

1 2 1

Lyons River

ULLAWARRA RD

Davis Creek

LEGEND

Stage 5 Route Alignment

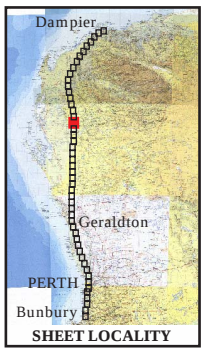
Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:

Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.18

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C419.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7235000mN

7230000mN

7225000mN

7220000mN

7215000mN

Lyons River

ULLAWARRA RD

Bidgemia

Gascoyne River

Gascoyne Junction

CARNARVON-MULLEWA RD

PIMBEE RD

1

LEGEND

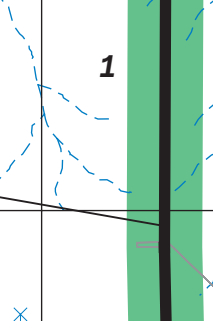
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.19

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C420.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

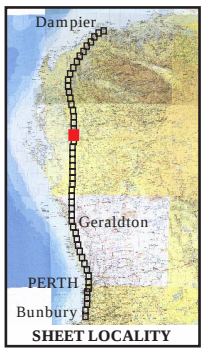
7205000mN
7200000mN
7195000mN
7190000mN
7185000mN

1

PIMBEE RD

CAREY DOWNS RD

Towrana



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:

Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.20

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C421.dgn ~ Rev: A

320000mE 325000mE 330000mE 335000mE 340000mE

7175000mN
7170000mN
7165000mN
7160000mN
7155000mN

CAREY DOWNS RD

CALLYTHARRA RD

1

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

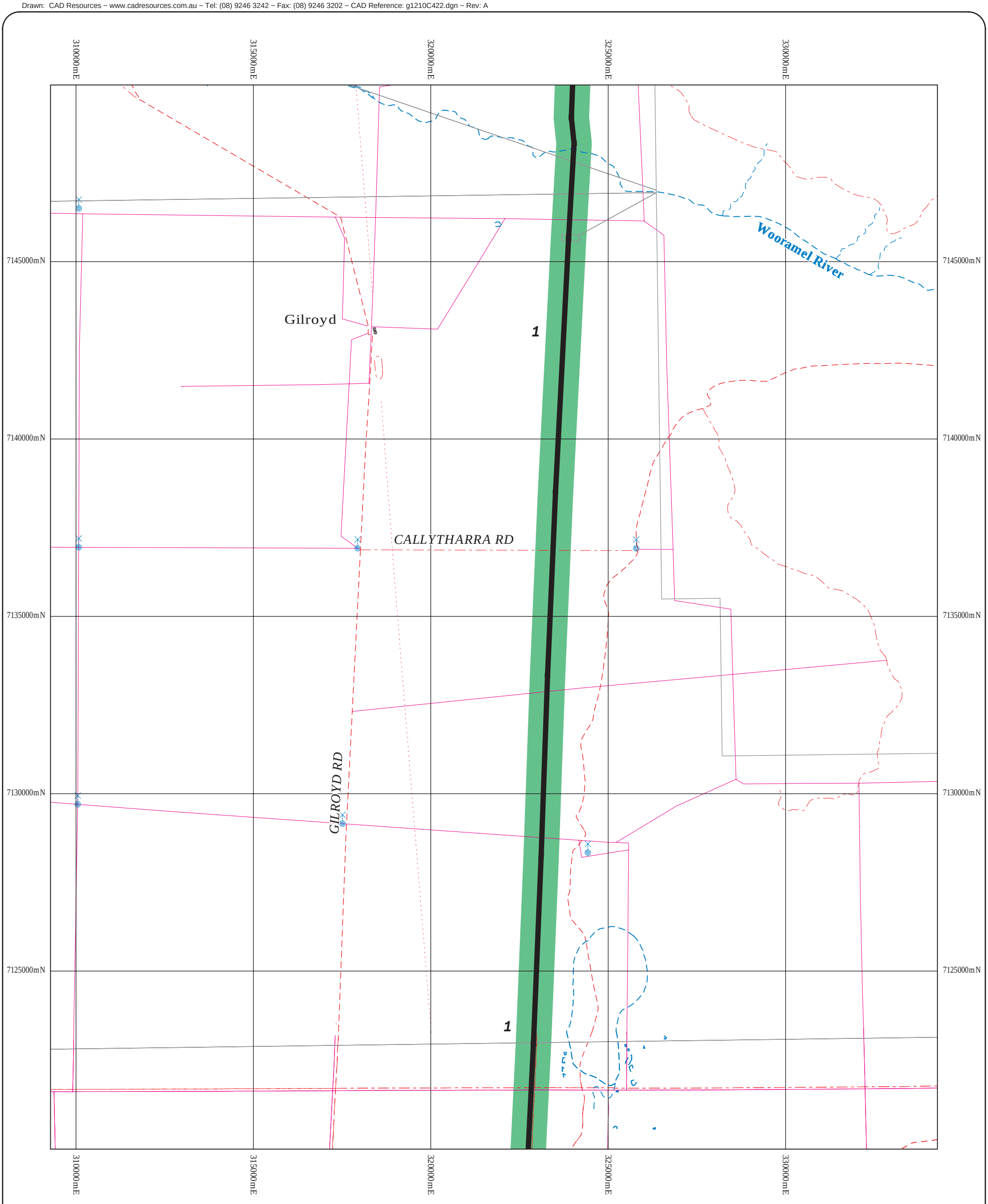
Figure 4.21

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C422.dgn ~ Rev: A



LEGEND

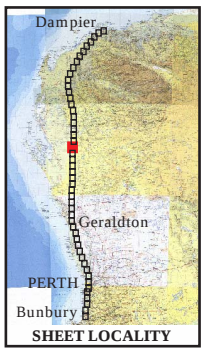
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.22

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C423.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

7115000mN
7110000mN
7105000mN
7100000mN
7095000mN

GILROYD RD
BYRO-WOODLEIGH RD
TALISKER RD
Talisca
1

LEGEND

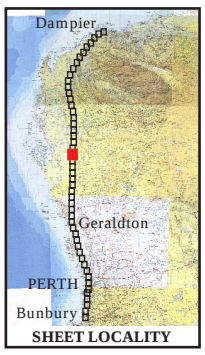
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

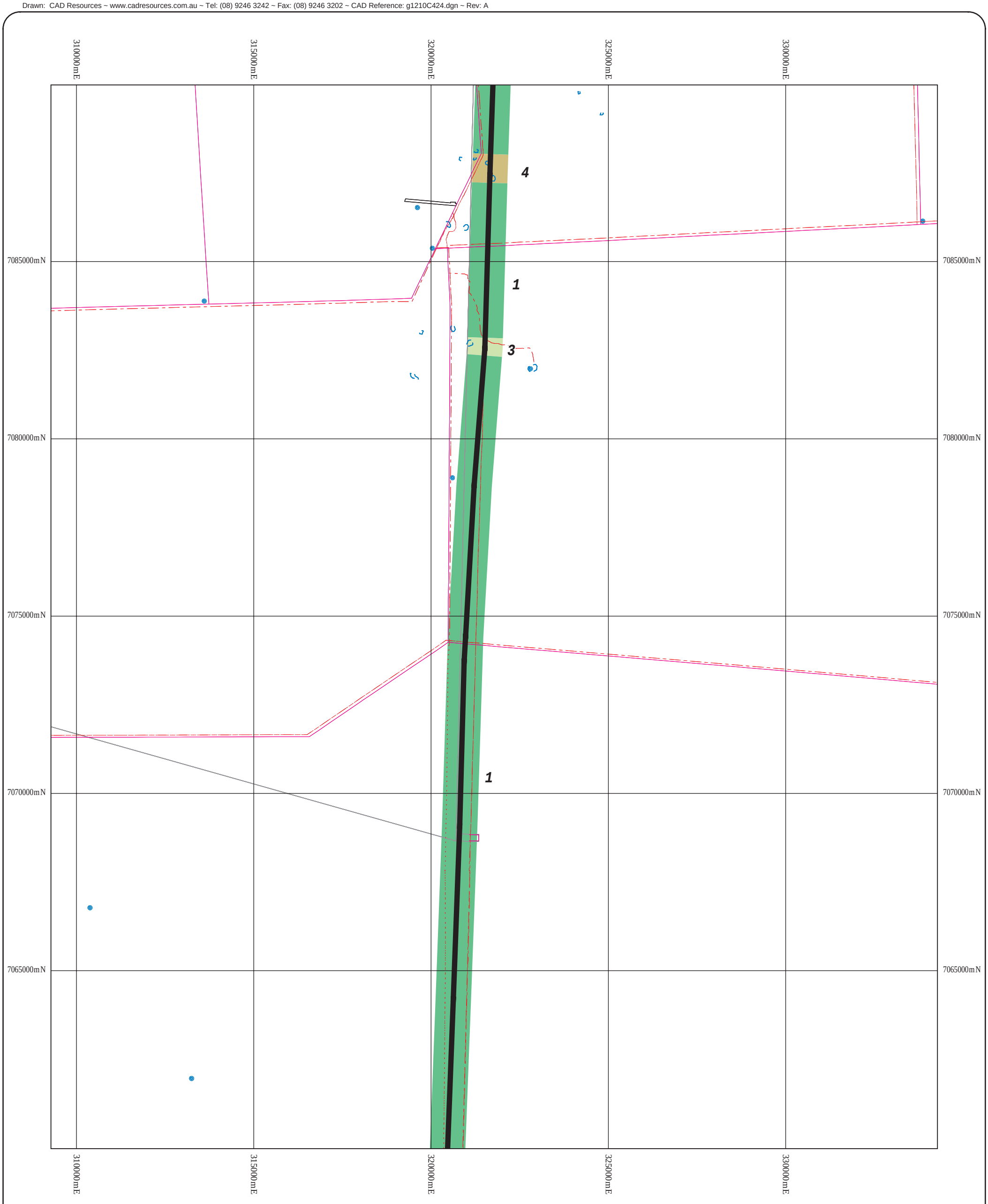
Figure 4.23

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C424.dgn ~ Rev: A



LEGEND

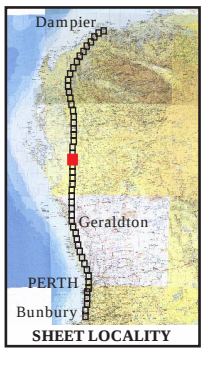
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.24

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C425.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

7055000mN
7050000mN
7045000mN
7040000mN
7035000mN

1

BUTCHERS TRK

1

310000mE 315000mE 320000mE 325000mE 330000mE

LEGEND

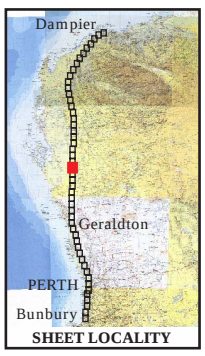
- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale



SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

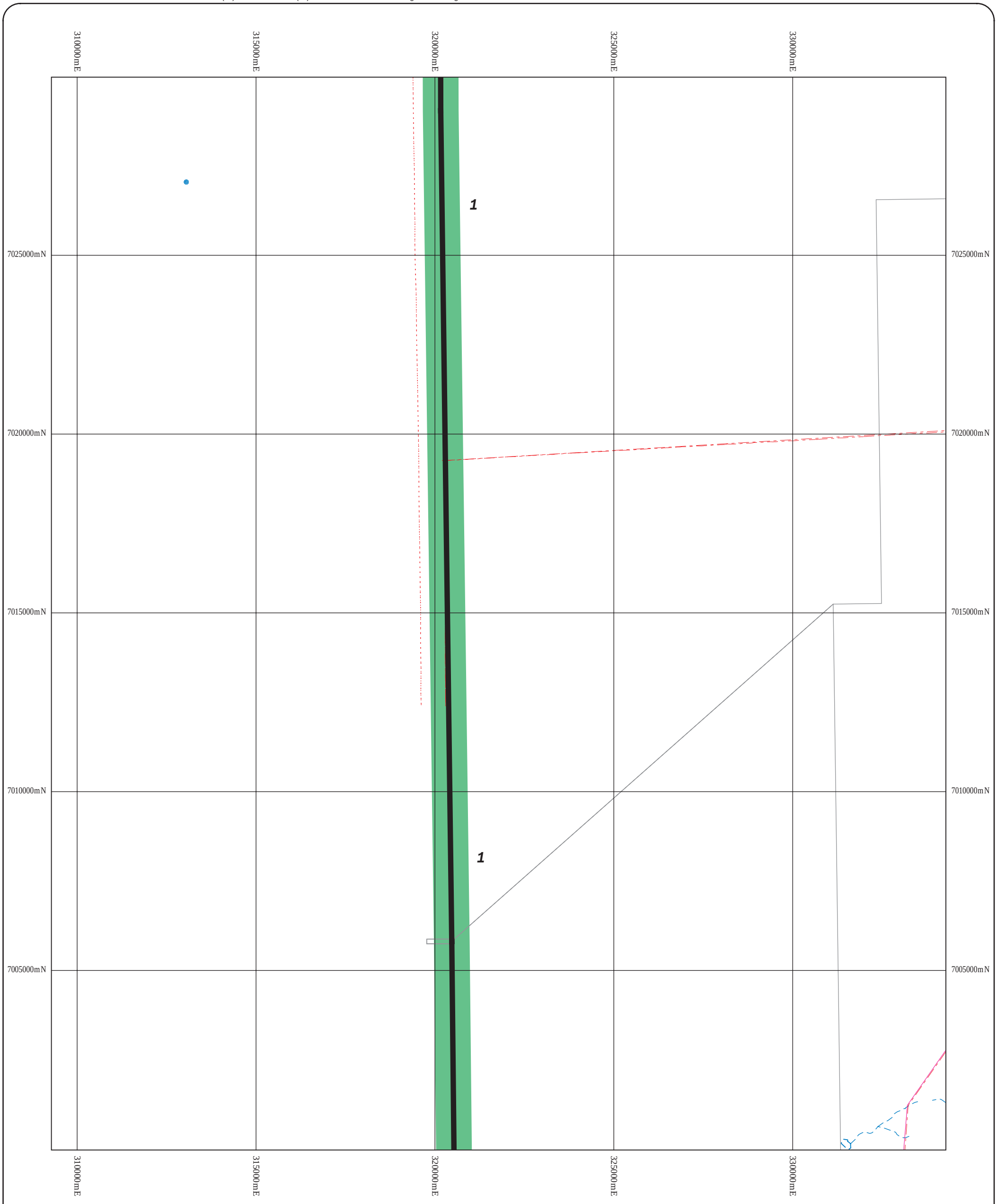
STAGE 5

Figure 4.25

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C226.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

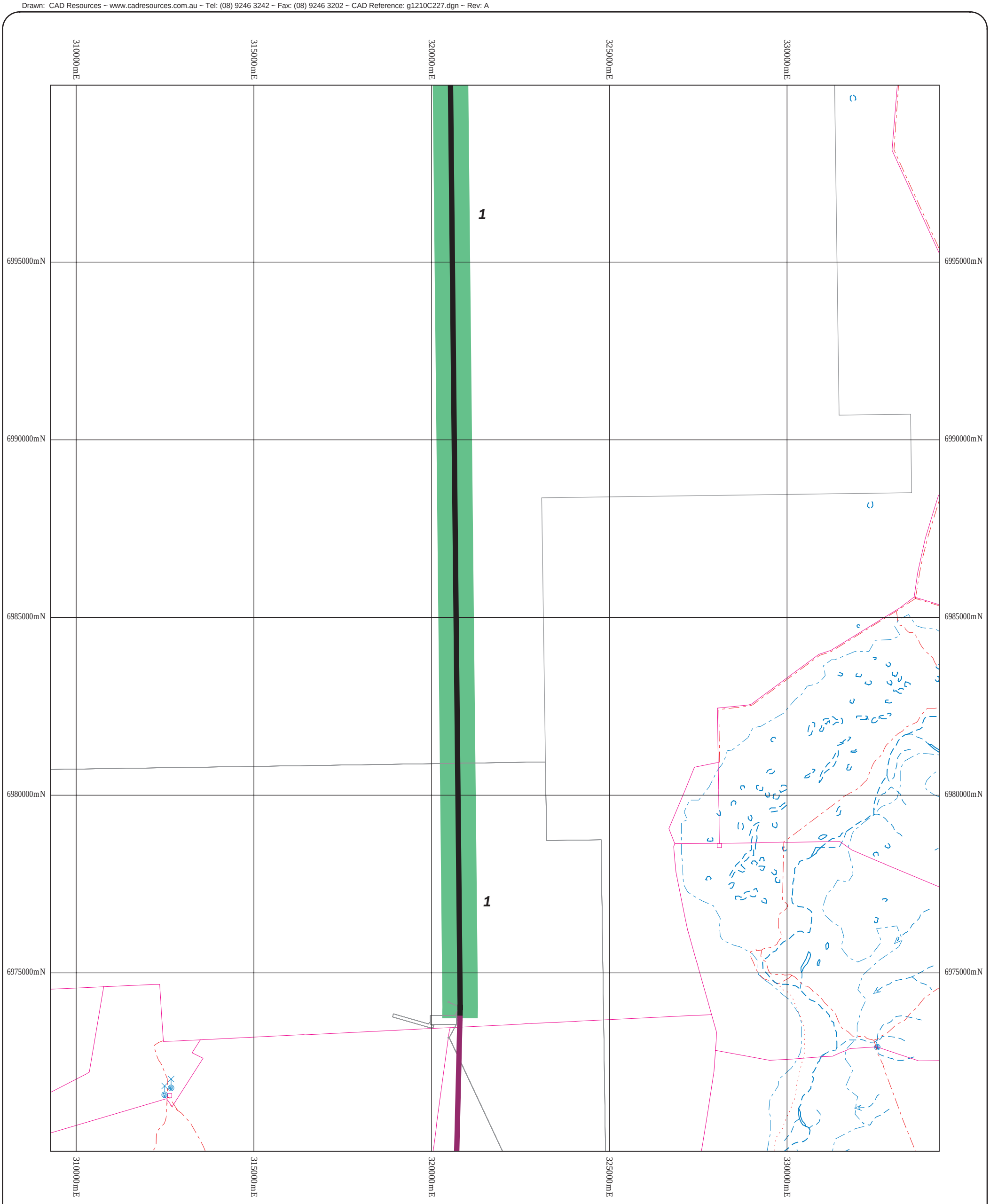
DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 4.26

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C227.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

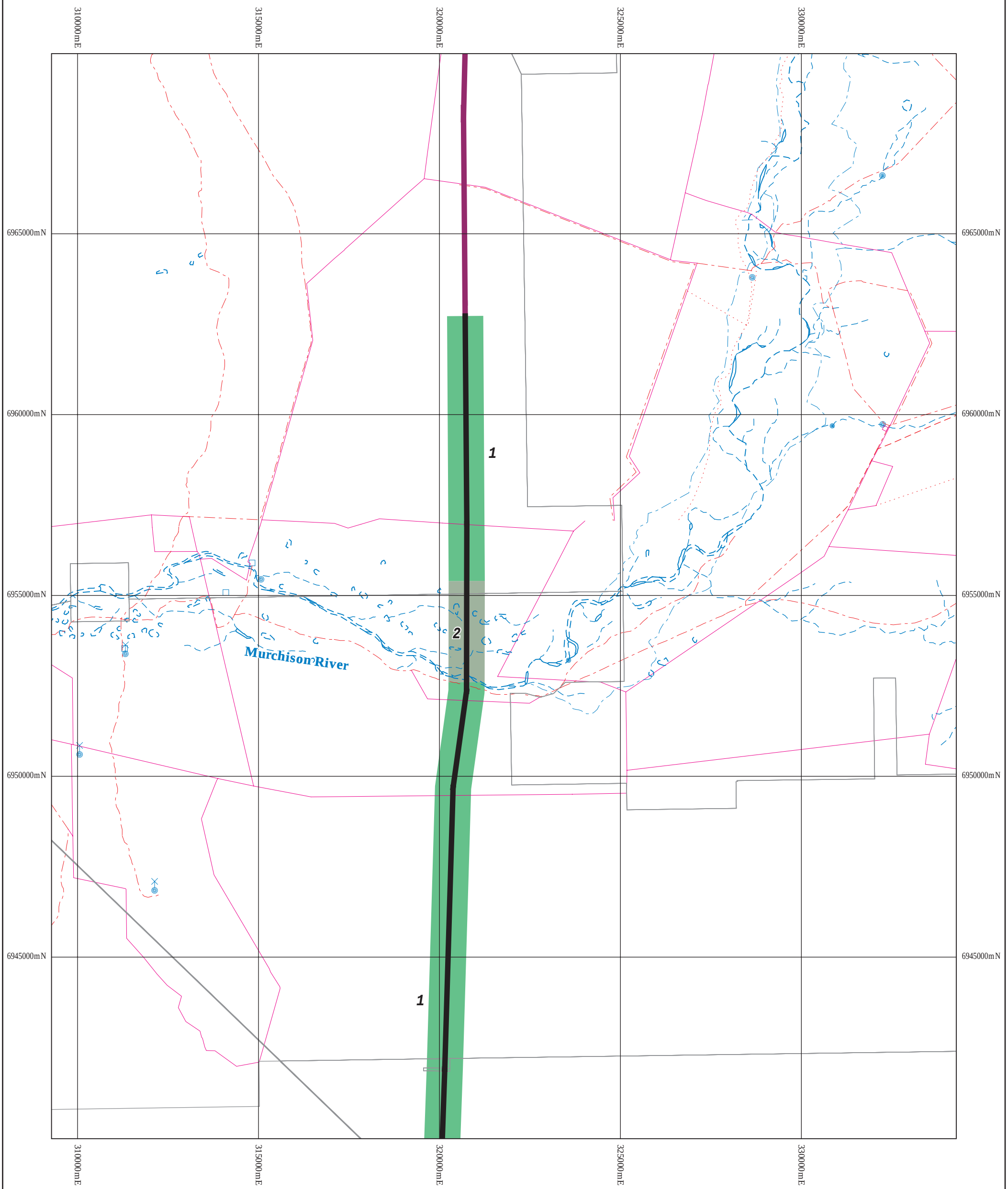
Figure 4.27

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C228.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

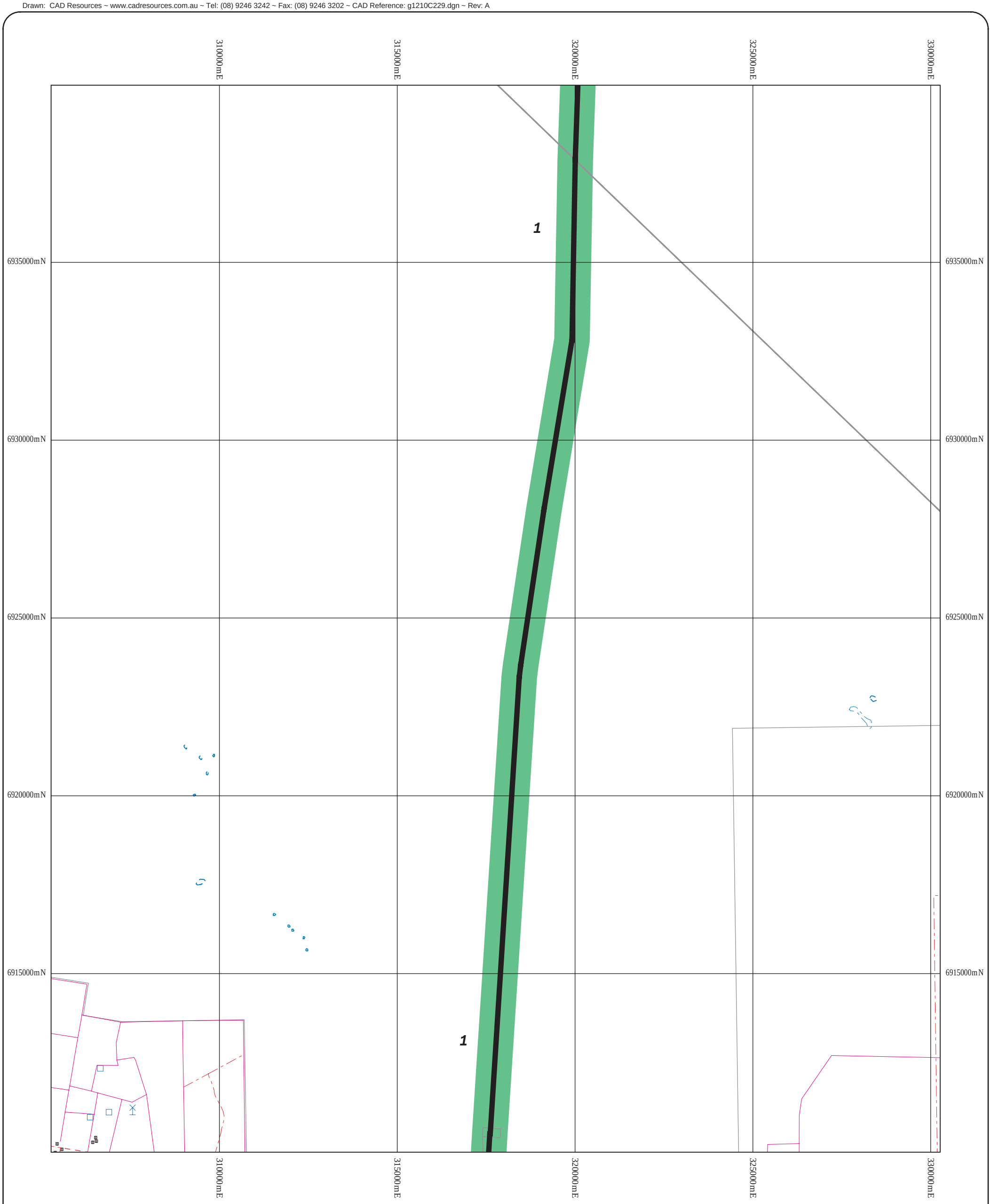
DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 4.28

VEGETATION CONDITION

Author: L. Mattiske September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C229.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

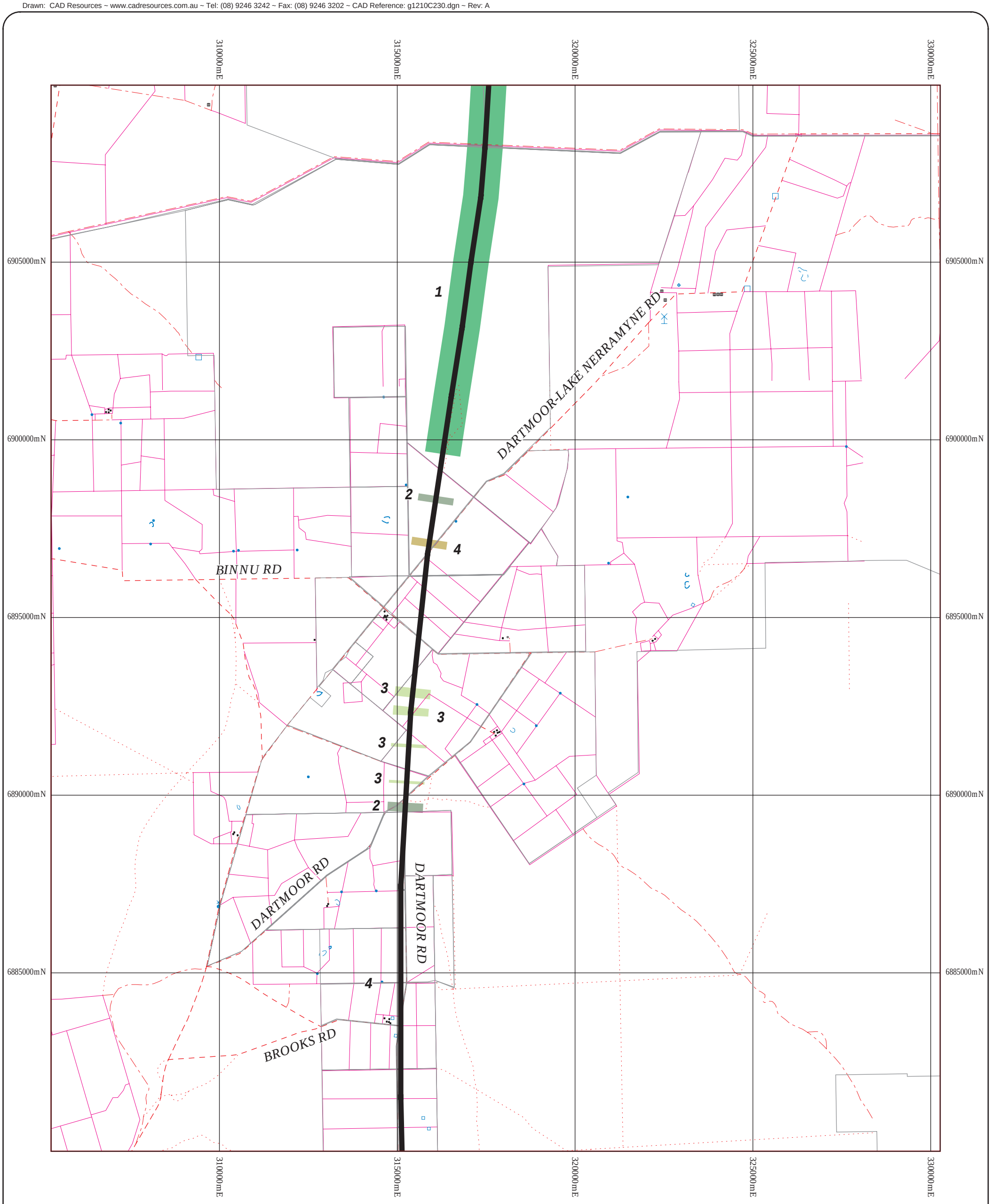
Figure 4.29

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C230.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

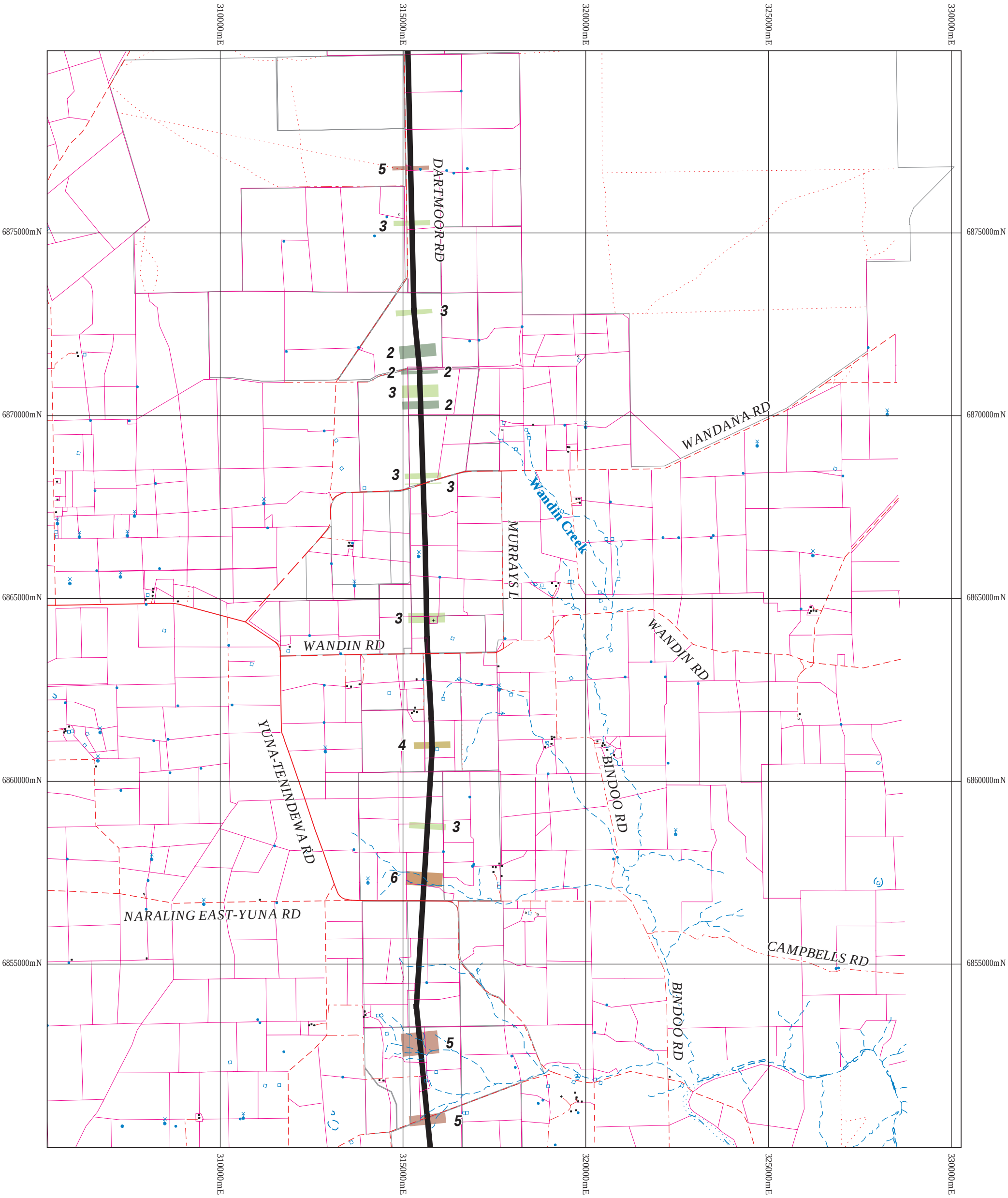
Figure 4.30

VEGETATION CONDITION

Author: L. Mattiske

Spetember 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C231.dgn ~ Rev: A



LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

1) Pristine
2) Excellent
3) Very Good
4) Good
5) Degraded
6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR

STAGE 5

Figure 4.31

VEGETATION CONDITION

Author: L. Mattiske

September 2006

Drawn: CAD Resources ~ www.cadresources.com.au ~ Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202 ~ CAD Reference: g1210C232.dgn ~ Rev: A

310000mE 315000mE 320000mE 325000mE 330000mE

6845000mN 6840000mN 6835000mN 6830000mN 6825000mN

VALENTINE RD
BURTON RD
STATION VALENTINE RD
PETER RD
VALENTINE RD
Greenough River
ERADU NORTH RD
CREAM RD
GERALDTON-MOUNT MAGNET RD
Eradu

3 2 3 2 3 3 5 2 6

LEGEND

- Stage 5 Route Alignment
- Stage 4 Route Alignment

VEGETATION CONDITION

- 1) Pristine
- 2) Excellent
- 3) Very Good
- 4) Good
- 5) Degraded
- 6) Completely Degraded

NOTE

Width of condition mapping shown diagrammatically due to scale

SHEET LOCALITY

N

0 2km

Scale 1:100 000

Notes:
Horizontal Datum: MGA94(Zone 50)

Alinta

MATTISKE

DAMPIER TO BUNBURY NATURAL GAS PIPELINE CORRIDOR STAGE 5

Figure 4.32

VEGETATION CONDITION

Author: L. Mattiske

September 2006

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
ADIANTACEAE	*Cheilanthes sieberi* subsp. *sieberi*
MARSILEACEAE	*Marsilea exarata*
	Marsilea hirsuta
	Marsilea mutica
CUPRESSACEAE	*Actinostrobus arenarius*
	Callitris canescens
POACEAE	*Amphipogon caricinus* var. *caricinus*
	Aristida contorta
	Aristida holathera
	Aristida holathera var. *holathera*
	Aristida latifolia
	Austrostipa elegantissima
	Austrostipa nitida
	Austrostipa scabra subsp. *scabra*
	Austrostipa trichophylla
*	*Avena barbata*
	Brachyachne convergens
	Brachyachne prostrata
*	*Bromus* sp.
*	*Cenchrus ciliaris*
*	*Cenchrus setigerus*
	Chloris pectinata
	Chloris pumilio
	Chloris virgata
	Chrysopogon fallax
	Cymbopogon ambiguus
	Cymbopogon ?procerus
*	*Cynodon dactylon*
	Dactyloctenium radulans
	Dichanthium sericeum subsp. *humilius*
	Elytrophorus spicatus
	Enneapogon caerulescens
	Enneapogon lindleyanus
	Enneapogon polyphyllus
	Enneapogon robustissimus
	Enteropogon ramosus
	Eragrostis cumingii
	Eragrostis dielsii
	Eragrostis eriopoda
	Eragrostis leptocarpa
	Eragrostis setifolia
	Eragrostis tenellula

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
	Eragrostis xerophila

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
POACEAE (Cont)	*Eriachne aristidea*
	Eriachne ?flaccida
	Eriachne glauca var. *barbinodis*
	Eriachne helmsii
	Eriachne mucronata
	Eriachne pulchella subsp. *dominii*
	Eriachne pulchella subsp. *pulchella*
	Eriachne tenuiculmis
	Eriochloa pseudoacrotricha
	Eulalia aurea
	Iseilema macratherum
	Iseilema membranaceum
	Leptochloa fusca subsp. *muelleri*
	Monachather paradoxus
	Panicum effusum
	Panicum laevinode
	Paspalidium basicladum
	Paspalidium constrictum
	* *Pentaschistis airoides* subsp. *airoides*
	Perotis rara
	Setaria dielsii
	Sorghum plumosum
	Sporobolus actinocladus
	Sporobolus australasicus
	Themeda triandra
	Thyridolepis multiculmis
	Tragus australianus
	Triodia danthonioides
	Triodia lanigera
	Triodia pungens
	Triodia schinzii
	Tripogon loliiformis
	Triraphis mollis
	Urochloa holosericea subsp. *holosericea*
	Urochloa occidentalis
	Yakirra australiensis
	Poaceae sp.
CYPERACEAE	*Bulbostylis barbata*
	Cyperus betchei subsp. *commiscens*
	Cyperus bifax
	Cyperus bulbosus
	Cyperus centralis
	Cyperus difformis
	Cyperus gymnocaulos

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family		Species
CYPERACEAE (Cont)		*Cyperus hesperius*
	*	*Cyperus involucratus*
		Cyperus iria
		Cyperus squarrosus
		Cyperus vaginatus
		Eleocharis atropurpurea
		Fimbristylis dichotoma
		Fimbristylis elegans
		Fimbristylis littoralis
		Schoenoplectus laevis
		Schoenus subaphyllus
RESTIONACEAE		*Lepidobolus preissianus*
ECDEIOCOLEACEAE		*Ecdeiocolea monostachya*
CENTROLEPIDACEAE		*Centrolepis pilosa*
DASYPOGONACEAE		*Acanthocarpus parviflorus* P3
		Acanthocarpus sp. Cooloomia (S.D. Hopper 3301)
PHORMIACEAE		*Dianella revoluta*
ANTHERICACEAE		*Corynotheca micrantha* var. *micrantha*
		Corynotheca pungens
ASPHODELACEAE	*	*Asphodelus fistulosus*
CASUARINACEAE		*Allocasuarina acutivalvis* subsp. *acutivalvis*
PROTEACEAE		*Dryandra fraseri* var. *fraseri*
		Grevillea berryana
		Grevillea deflexa
		Grevillea eriostachya
		Grevillea excelsior
		Grevillea pterosperma
		Grevillea pyramidalis subsp. *leucadendron*
		Grevillea stenobotrya
		Grevillea stenostachya P3
		Grevillea wickhamii
		Hakea bucculenta
		Hakea chordophylla
		Hakea circumalata
		Hakea invaginata
		Hakea lorea

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
PROTEACEAE (Cont)	*Hakea preissii*
	Hakea recurva subsp. *arida*
	Hakea rhombales
	Hakea stenocarpa
	Petrophile pilostyla
SANTALACEAE	*Anthobolus foveolatus*
	Anthobolus leptomerioides
	Exocarpos aphyllus
	Leptomeria preissiana
	Santalum lanceolatum
LORANTHACEAE	*Amyema fitzgeraldii*
	Amyema gibberula var. *gibberula*
	Amyema hilliana
	Amyema preissii
	Lysiana casuarinae
CHENOPODIACEAE	*Atriplex amnicola*
	Atriplex bunburyana
	Atriplex holocarpa
	Atriplex nummularia subsp. *spathulata*
	Atriplex semilunaris
	Atriplex spongiosa
	Chenopodium cristatum
	Chenopodium curvispicatum
	Chenopodium gaudichaudianum
	Chenopodium melanocarpum forma *leucocarpum*
	Dysphania glandulosa
	Dysphania kalpari
	Dysphania rhadinostachya
	Enchylaena lanata
	Enchylaena tomentosa
	Enchylaena tomentosa var. *tomentosa*
	Enchylaena x Maireana tomentosa x georgei (hybrid)
	Halosarcia halocnemoides subsp. *halocnemoides*
	Halosarcia indica subsp. *bidens*
	Halosarcia indica subsp. *leiostachya*
	Halosarcia peltata
	Halosarcia pergranulata subsp. *pergranulata*
	Maireana appressa
	Maireana brevifolia
	Maireana marginata (range ext.)
	Maireana planifolia
	Maireana polypterygia

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
CHENOPODIACEAE (Cont)	*Maireana thesioides*
	Maireana villosa
	Rhagodia aff. *latifolia* (leaves hastate)
	Rhagodia drummondii
	Rhagodia eremaea
	Rhagodia latifolia subsp. *latifolia*
	Rhagodia latifolia subsp. *recta*
	Rhagodia preissii subsp. *obovata*
	Rhagodia preissii subsp. *preissii*
	Salsola tragus
	Sarcocornia blackiana
	Sclerolaena bicornis var. *bicornis*
	Sclerolaena cornishiana
	Sclerolaena costata
	Sclerolaena cuneata
	Sclerolaena deserticola
	Sclerolaena diacantha
	Sclerolaena forrestiana
	Sclerolaena glabra
	Sclerolaena patenticuspis
	Sclerolaena recurvicuspis
	Sclerolaena tridens
	Sclerolaena uniflora
AMARANTHACEAE	*Achyranthes aspera*
	* *Aerva javanica*
	Alternanthera angustifolia
	Alternanthera nana
	Alternanthera nodiflora
	Amaranthus clementii
	Amaranthus mitchellii
	Amaranthus pallidiflorus
	Gomphrena canescens subsp. *canescens*
	Gomphrena cunninghamii
	Gomphrena kanisii
	Ptilotus aervoides
	Ptilotus appendiculatus var *appendiculatus*
	Ptilotus astrolasius var. *astrolasius*
	Ptilotus auriculifolius
	Ptilotus axillaris
	Ptilotus carinatus
	Ptilotus clementii
	Ptilotus exaltatus
	Ptilotus exaltatus var. *exaltatus*
	Ptilotus fusiformis

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
AMARANTHACEAE (Cont)	*Ptilotus gomphrenoides*
	Ptilotus gomphrenoides var. *gomphrenoides*
	Ptilotus gomphrenoides var. *roseo-albus*
	Ptilotus grandiflorus var. *grandiflorus*
	Ptilotus helipteroides
	Ptilotus helipteroides var. *helipteroides*
	Ptilotus latifolius
	Ptilotus latifolius var. ?*latifolius*
	Ptilotus macrocephalus
	Ptilotus murrayi var. *murrayi*
	Ptilotus obovatus
	Ptilotus obovatus var. *obovatus*
	Ptilotus polakii
	Ptilotus polystachyus
	Ptilotus polystachyus var. *polystachyus*
	Ptilotus roei
	Ptilotus schwartzii
	Ptilotus schwartzii var. *schwartzii*
	Ptilotus spathulatus forma *spathulatus*
NYCTAGINACEAE	*Boerhavia burbidgeana*
	Boerhavia coccinea
	Boerhavia paludosa
	Boerhavia repleta
	Boerhavia schomburgkiana
GYROSTEMONACEAE	*Codonocarpus cotinifolius*
	Gyrostemon racemiger
	Gyrostemon ramulosus
AIZOACEAE	*Carpobrotus rossii*
	* *Mesembryanthemum nodiflorum*
	Trianthema oxycalyptra var. *oxycalyptra*
	Trianthema pilosa
	Trianthema triquetra
MOLLUGINACEAE	*Mollugo molluginis*
PORTULACACEAE	*Calandrinia polyandra*
	Calandrinia schistorhiza
	Portulaca oleracea
CARYOPHYLLACEAE	*Polycarpaea corymbosa*
	Polycarpaea longiflora

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family		Species
LAURACEAE		*Cassytha capillaris*
CAPPARACEAE		*Cleome uncifera* subsp. *uncifera*
BRASSICACEAE	*	*Brassica tournefortii*
	*	*Carrichtera annua*
		Lepidium phlebopetalum
PITTOSPORACEAE		*Bursaria occidentalis*
MIMOSACEAE		*Acacia acradenia*
		Acacia acuaria
		Acacia acuminata
		Acacia ampliceps
		Acacia anastema
		Acacia ancistrocarpa
		Acacia aneura var. *aneura*
		Acacia aneura var. *fuliginea*
		Acacia aneura var. *intermedia*
		Acacia aneura var. *macrocarpa*
		Acacia aneura var. *pilbarana*
		Acacia aneura var. *tenuis*
		Acacia bivenosa
		Acacia burkittii
		Acacia citrinoviridis
		Acacia colletioides
		Acacia comans
		Acacia coriacea subsp. *pendens*
		Acacia cuspidifolia
		Acacia cuthbertsonii subsp. *cuthbertsonii*
		Acacia cuthbertsonii subsp. *linearis*
		Acacia cyperophylla var. *cyperophylla*
		Acacia ?distans
		Acacia farnesiana
		Acacia grasbyi
		Acacia inaequilatera
		Acacia jamesiana
		Acacia jennerae
		Acacia kempeana
		Acacia ligulata
		Acacia longispinea
		Acacia marramamba
		Acacia microbotrya
		Acacia murrayana

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
MIMOSACEAE (Cont)	*Acacia neurophylla* subsp. *erugata*
	Acacia nigripilosa subsp. *nigripilosa*
	Acacia pachycarpa
	Acacia paraneura
	Acacia prainii
	Acacia pruinocarpa
	Acacia pyrifolia
	Acacia pyrifolia var. *pyrifolia*
	Acacia ramulosa var. *linophylla*
	Acacia ramulosa var. *ramulosa*
	Acacia rostellifera
	Acacia roycei
	Acacia sclerosperma subsp. *sclerosperma*
	Acacia sclerosperma subsp. *sclerosperma x Acacia ligulata*
	Acacia sericocarpa
	Acacia sibilans
	Acacia stellaticeps
	Acacia subtessarogona
	Acacia synchronicia
	Acacia tetragonophylla
	Acacia tumida
	Acacia victoriae
	Acacia wanyu
	Acacia wiseana
	Acacia xiphophylla
	Neptunia dimorphantha
CAESALPINIACEAE	*Petalostylis cassioides*
	Petalostylis labicheoides
	Senna aff. *charlesiana*
	Senna artemisioides subsp. ?*artemisioides*
	Senna artemisioides subsp. *filifolia*
	Senna artemisioides subsp. *helmsii*
	Senna artemisioides subsp. *oligophylla*
	Senna artemisioides subsp. *oligophylla* forma *sericea*
	Senna artemisioides subsp. *oligophylla x helmsii*
	Senna artemisioides subsp. x *sturtii*
	Senna charlesiana
	Senna glutinosa subsp. *chatelainiana*
	Senna glutinosa subsp. ?*glutinosa*
	Senna glutinosa subsp. *pruinosa*
	Senna glutinosa subsp. x *luerssenii*
	Senna notabilis
	Senna ?*sericea*
	Senna symonii

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family		Species
CAESALPINIACEAE (Cont)		*Senna* sp. Austin (A. Strid 20210)
		Senna ?sp. Meekatharra (E. Bailey 1-26)
PAPILIONACEAE		*Aeschynomene indica*
		Alysicarpus muelleri
		Crotalaria cunninghamii
		Crotalaria dissitiflora subsp. *benthamiana*
		Crotalaria medicaginea
		Cullen cinereum
		Cullen lachnostachys
		Cullen leucanthum
		Cullen stipulaceum
		Erythrina verspertilio
		Indigofera brevidens
		Indigofera colutea
		Indigofera decipiens (ms)
		Indigofera eriophylla (ms)
		Indigofera ?fractiflexa (ms)
		Indigofera ?georgei
		Indigofera linifolia
		Indigofera linnaei
		Indigofera monophylla
		Isotropis atropurpurea
		Lotus australis
		Mirbelia ramulosa
		Mirbelia rhagodioides
		Mirbelia spinosa
		Mirbelia trichocalyx
		Rhynchosia minima
		Sesbania cannabina
		Tephrosia gardneri (ms)
		Tephrosia rosea
		Tephrosia rosea var. *glabrior* (ms)
		Tephrosia supina
		Tephrosia uniovulata
		Vigna lanceolata var. *lanceolata*
OXALIDACEAE	*	*Oxalis corniculata*
ZYGOPHYLLACEAE		*Tribulus astrocarpus*
		Tribulus hirsutus
		Tribulus macrocarpus
		Tribulus occidentalis
		Zygophyllum aurantiacum
		Zygophyllum kochii

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
RUTACEAE	*Philotheca kalbarriensis* P2
POLYGALACEAE	*Comesperma integerrimum*
	Polygala isingii
EUPHORBIACEAE	*Euphorbia australis*
	Euphorbia ?biconvexa
	Euphorbia boophthona
	Euphorbia coghlanii
	Euphorbia drummondii subsp. *drummondii*
	Euphorbia schultzii
	Euphorbia sharkoensis
	Euphorbia tannensis subsp. *eremophila*
	Euphorbia wheeleri
	Phyllanthus erwinii
	Phyllanthus maderaspatensis
SAPINDACEAE	*Alectryon oleifolius* subsp. *oleifolius*
	Dodonaea inaequifolia
	Dodonaea viscosa subsp. *angustissima*
	Dodonaea viscosa subsp. *spatulata*
TILIACEAE	*Corchorus carnarvonensis*
	Corchorus crozophorifolius
	Corchorus laniflorus
	Corchorus parviflorus
	Corchorus walcottii
	Triumfetta appendiculata
	Triumfetta clementii
	Triumfetta deserticola
	Triumfetta johnstonii
	Triumfetta ramosa
MALVACEAE	*Abutilon amplum*
	Abutilon cryptopetalum
	Abutilon cunninghamii
	Abutilon geranioides
	Abutilon lepidum
	Abutilon macrum
	Abutilon oxycarpum
	Abutilon oxycarpum subsp. *prostratum* (ms)
	Gossypium australe
	Gossypium robinsonii
	Hibiscus austrinus var. *austrinus*

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
MALVACEAE (Cont)	*Hibiscus brachychlaenus*
	Hibiscus brachysiphonius P3
	Hibiscus burtonii
	Hibiscus sturtii var. *campylochlamys*
	Hibiscus ?*sturtii*
	Lawrencia sp.
	* *Malvastrum americanum*
	Sida atrovirens (ms)
	Sida ?*calyxhymenia*
	Sida clementii
	Sida echinocarpa
	Sida excedentifolia (ms)
	Sida fibulifera
	Sida kingii
	Sida platycalyx
	Sida rohlenae
	Sida rohlenae subsp. *rohlenae*
	Sida tescorum (ms)
	Sida sp. Carnarvon (P.S. Short 2492)
	Sida sp. verrucose glands (F.H. Mollemans 2423)
STERCULIACEAE	*Brachychiton gregorii*
	Hannafordia quadrivalvis subsp. *quadrivalvis*
	Keraudrenia velutina subsp. *elliptica* (ms)
	Rulingia luteiflora
	Waltheria indica
DILLENIACEAE	*Hibbertia conspicua*
FRANKENIACEAE	*Frankenia glomerata* P3
	Frankenia setosa
VIOLACEAE	*Hybanthus aurantiacus*
THYMELAEACEAE	*Pimelea microcephala*
LYTHRACEAE	*Ammannia multiflora*
	Rotala occultiflora
MYRTACEAE	*Aluta aspera* subsp. *hesperia*
	Baeckea pentagonantha
	Callistemon phoeniceus
	Calothamnus oldfieldii
	Calytrix strigosa

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
MYRTACEAE (Cont)	*Calytrix truncatifolia*
	Corymbia candida subsp. *candida*
	Corymbia ferriticola
	Corymbia hamersleyana
	Corymbia lenziana
	Corymbia zygophylla
	Eremaea dendroidea
	Eucalyptus camaldulensis
	Eucalyptus camaldulensis var. *obtusa*
	Eucalyptus ?*dolichocera*
	Eucalyptus eudesmioides
	Eucalyptus horistes
	Eucalyptus jucunda
	Eucalyptus leptopoda
	Eucalyptus mannensis subsp. *vespertina*
	Eucalyptus oldfieldii
	Eucalyptus pruinosa
	Eucalyptus subangusta subsp. *subangusta*
	Eucalyptus victrix
	Malleostemon peltiger
	Melaleuca argentea
	Melaleuca campanae
	Melaleuca cordata
	Melaleuca glomerata
	Melaleuca stereophloia
	Pileanthus peduncularis subsp. *pilifer*
	Pileanthus vernicosus
	Scholtzia leptantha
	?*Thryptomene baeckeacea*
	Thryptomene decussata
	Verticordia forrestii
HALORAGACEAE	*Glischrocaryon aureum* var. *aureum*
APIACEAE	*Platysace effusa*
	Platysace trachymenioides
PRIMULACEAE	*Samolus repens* var. *floribundus*
OLEACEAE	*Jasminum didymum* subsp. *lineare*
APOCYNACEAE	*Carissa lanceolata*

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
ASCLEPIADACEAE	*Marsdenia australis*
	Rhyncharrhena linearis
	Sarcostemma viminale subsp. *australe*
CONVOLVULACEAE	*Bonamia media* var. *villosa*
	Bonamia pannosa
	Bonamia rosea
	Evolvulus alsinoides
	Evolvulus alsinoides var. *villosicalyx*
	Ipomoea coptica
	Ipomoea costata
	Ipomoea muelleri
	Ipomoea pes-caprae
	Ipomoea pes-caprae subsp. *brasiliensis*
	Porana sericea
BORAGINACEAE	*Heliotropium ammophilum*
	Heliotropium crispatum
	Heliotropium heteranthum
	Heliotropium inexplicitum
	Heliotropium sp.
	Trichodesma zeylanicum
LAMIACEAE	*Basilicum polystachyon*
	Cleome viscosa
	Clerodendrum floribundum var. *angustifolium*
	Dicrastylis incana P2
	Dicrastylis linearifolia P3
	Microcorys tenuifolia P3
	* *Ocimum basilicum*
	Pityrodia hemigenioides
	Pityrodia loxocarpa
	Pityrodia oldfieldii
	Pityrodia paniculata
	Prostanthera althoferi subsp. *althoferi*
	Prostanthera campbellii
	Spartothamnella teucriiflora
SOLANACEAE	*Anthotroche pannosa*
	* *Datura leichhardtii*
	Nicotiana cavicola
	Nicotiana rotundifolia
	Nicotiana sp.
	Solanum diversiflorum

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
SOLANACEAE (Cont)	*Solanum ellipticum*
	Solanum esuriale
	Solanum lasiophyllum
	Solanum orbiculatum subsp. *orbiculatum*
SCROPHULARIACEAE	*Mimulus gracilis*
	Stemodia grossa
	Stemodia kingii
	Stemodia ?*viscosa*
ACANTHACEAE	*Dipteracanthus australasicus* subsp. *australasicus*
	Rostellularia adscendens var. *clementii*
MYOPORACEAE	*Eremophila* aff. *fraseri*
	Eremophila clarkei
	Eremophila cuneifolia
	Eremophila ?*deserti*
	Eremophila exilifolia
	Eremophila flaccida subsp. *flaccida*
	Eremophila forrestii
	Eremophila forrestii subsp. *forrestii* (ms)
	Eremophila galeata (ms)
	Eremophila glabra
	Eremophila latrobei subsp. *filiformis* (ms)
	Eremophila latrobei subsp. *latrobei* (ms)
	Eremophila latrobei subsp. ?*latrobei* (ms)
	Eremophila longifolia
	Eremophila maitlandii
	Eremophila phyllopoda subsp. *phyllopoda* (ms)
	Eremophila physocalyx (ms) P3
	Eremophila platycalyx subsp. *platycalyx* (ms)
	Eremophila setacea (ms)
	Eremophila tietkensii
	Eremophila youngii subsp. *youngii* (ms)
	Myoporum montanum
PLANTAGINACEAE	*Plantago drummondii*
RUBIACEAE	*Psydrax latifolia* (ms)
	Psydrax rigidula
CUCURBITACEAE	* *Citrullus colocynthis*
	* *Cucumis melo* subsp. *agrestis*
	* *Cucumis myriocarpus*
	Mukia maderaspatana

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
CAMPANULACEAE	*Wahlenbergia preissii*
	Wahlenbergia tumidifructa
LOBELIACEAE	*Lobelia heterophylla*
GOODENIACEAE	*Goodenia forrestii*
	Goodenia lamprosperma
	Goodenia microptera
	Goodenia muelleriana
	Goodenia occidentalis
	Goodenia pascua P3
	Goodenia ?prostrata
	Goodenia tenuiloba
	Goodenia ?triodiophila
	Lechenaultia floribunda
	Lechenaultia linarioides
	Scaevola chrysopogon P2
	Scaevola sericophylla
	Scaevola spinescens
	Goodeniaceae sp.
STYLIDIACEAE	*Stylobasium spathulatum*
ASTERACEAE	*Actinobole drummondianum*
	* *Bidens bipinnata*
	Blumea tenella
	?*Brachyscome* sp.
	Brachyscome cheilocarpa
	Brachyscome iberidifolia
	Calocephalus ?francisii
	Calocephalus multiflorus
	Calotis plumulifera
	* *Centaurea melitensis*
	Chthonocephalus viscosus
	Cratystylis subspinescens
	Flaveria australasica
	Gnephosis angianthoides
	Gnephosis tenuissima
	Hyalosperma cotula
	Olearia axillaris
	Olearia fluvialis P2
	Olearia pimeleoides
	Olearia revoluta
	Podolepis capillaris
	Podotheca gnaphalioides

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
	Pterocaulon sphaeranthoides

APPENDIX A : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN STAGES 4 AND 5

NB: * denotes introduced (weed) taxa

Family	Species
ASTERACEAE (Cont)	*Rhodanthe ?chlorocephala* subsp. *splendida*
	Rhodanthe citrina
	* *Sonchus oleraceus*
	Streptoglossa adscendens
	Streptoglossa decurrens
	Streptoglossa liatroides
	Streptoglossa tenuiflora
	Vittadinia gracilis
	Waitzia acuminata
	Waitzia acuminata var. *acuminata*

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
ADIANTACEAE	*Cheilanthes sieberi* subsp. *sieberi*														1	
MARSILEACEAE	*Marsilea exarata*			1							1					
	Marsilea hirsuta					1										
	Marsilea mutica		1			1			1			1	1		1	
CUPRESSACEAE	*Actinostrobus arenarius*							1						1	1	
	Callitris canescens							1						1	1	
POACEAE	*Amphipogon caricinus* var. *caricinus*							1						1	1	
	Aristida contorta			1	1				1	1	1	1	1		1	
	Aristida holathera					1							1			
	Aristida holathera var. *holathera*			1			1		1	1	1					
	Aristida latifolia								1							
	Austrostipa elegantissima							1								
	Austrostipa nitida					1						1				
	Austrostipa scabra subsp. *scabra*						1							1		
	Austrostipa trichophylla														1	
	* *Avena barbata*															1
	Brachyachne convergens					1										
	Brachyachne prostrata				1						1	1				
	* *Bromus* sp.															1
	* *Cenchrus ciliaris*	1	1	1	1	1			1	1	1	1	1			
	* *Cenchrus setigerus*	1						1		1	1					
	Chloris pectinata		1	1							1					
	Chloris pumilio		1			1				1	1					
	Chloris virgata					1						1				
	Chrysopogon fallax		1	1					1	1		1				
	Cymbopogon ambiguus									1	1		1			
	Cymbopogon ?procerus		1													
	* *Cynodon dactylon*		1	1	1						1					
	Dactyloctenium radulans		1	1	1	1			1		1	1	1			
	Dichanthium sericeum subsp. *humilius*			1	1											

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
POACEAE (Cont)		*Elytrophorus spicatus*		1													
		Enneapogon caerulescens			1	1	1				1	1	1	1			
		Enneapogon lindleyanus	1	1	1	1				1		1					
		Enneapogon polyphyllus		1		1	1					1	1				
		Enneapogon robustissimus										1					
		Enteropogon ramosus			1	1	1						1				
		Eragrostis cumingii		1			1			1	1		1	1			
		Eragrostis dielsii			1	1	1				1	1	1		1	1	
		Eragrostis eriopoda			1		1				1	1	1				
		Eragrostis leptocarpa								1		1					
		Eragrostis setifolia			1	1						1	1	1			
		Eragrostis tenellula		1	1	1	1			1	1	1	1				
		Eragrostis xerophila					1										
		Eriachne aristidea		1	1	1	1	1			1	1	1	1			
		Eriachne ?flaccida			1												
		Eriachne glauca var. *barbinodis*		1	1							1					
		Eriachne helmsii		1	1												
		Eriachne mucronata	1						1					1	1	1	
		Eriachne pulchella subsp. *dominii*			1		1					1					
		Eriachne pulchella subsp. *pulchella*		1	1	1	1	1		1	1	1	1				
		Eriachne tenuiculmis		1													
		Eriochloa pseudoacrotricha			1												
		Eulalia aurea		1	1		1			1	1						
		Iseilema macratherum		1	1					1	1						
		Iseilema membranaceum			1							1					
		Leptochloa fusca subsp. *muelleri*			1		1										
		Monachather paradoxus							1					1	1	1	
		Panicum effusum			1												
		Panicum laevinode		1	1												
		Paspalidium basicladum		1	1	1				1		1				1	
		Paspalidium constrictum					1						1	1			
	*	*Pentaschistis airoides* subsp. *airoides*						1	1						1	1	
		Perotis rara			1							1					

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
POACEAE (Cont)	*Poaceae* sp.		1							1						
	Setaria dielsii											1	1			
	Sorghum plumosum								1							
	Sporobolus actinocladus				1											
	Sporobolus australasicus			1	1						1	1				
	Themeda triandra								1			1				
	Thyridolepis multiculmis			1									1		1	
	Tragus australianus				1	1					1	1	1		1	
	Triodia danthonioides														1	
	Triodia lanigera			1	1				1	1	1					
	Triodia pungens		1						1	1	1					
	Triodia schinzii			1												
	Tripogon loliiformis														1	
	Triraphis mollis					1					1	1				
	Urochloa holosericea subsp. *holosericea*				1											
	Urochloa occidentalis		1	1												
	Yakirra australiensis											1				
CYPERACEAE	*Bulbostylis barbata*			1		1			1		1		1	1	1	
	Cyperus betchei subsp. *commiscens*					1						1				
	Cyperus bifax								1			1				
	Cyperus bulbosus					1										
	Cyperus centralis					1										
	Cyperus difformis		1							1						
	Cyperus gymnocaulos				1	1					1	1				
	Cyperus hesperius								1	1						
	* *Cyperus involucratus*										1					
	Cyperus iria		1	1		1			1	1	1					
	Cyperus squarrosus		1	1					1	1				1		
	Cyperus vaginatus					1							1		1	
	Eleocharis atropurpurea		1													
	Fimbristylis dichotoma								1							

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
CYPERACEAE (Cont)		*Fimbristylis elegans*		1							1						
		Fimbristylis littoralis		1													
		Schoenoplectus laevis		1													
		Schoenus subaphyllus														1	
RESTIONACEAE		*Lepidobolus preissianus*														1	
ECDEIOCOLEACEAE		*Ecdeiocolea monostachya*							1							1	
CENTROLEPIDACEAE		*Centrolepis pilosa*													1		
DASYPOGONACEAE		*Acanthocarpus parviflorus* P3							1							1	
		Acanthocarpus sp. Cooloomia (S.D. Hopper 3301)														1	
PHORMIACEAE		*Dianella revoluta*							1						1	1	
ANTHERICACEAE		*Corynotheca micrantha* var. *micrantha*														1	
		Corynotheca pungens			1												
ASPHODELACEAE	*	*Asphodelus fistulosus*												1			
CASUARINACEAE		*Allocasuarina acutivalvis* subsp. *acutivalvis*							1						1	1	
PROTEACEAE		*Dryandra fraseri* var. *fraseri*															1
		Grevillea berryana										1					
		Grevillea deflexa														1	
		Grevillea eriostachya			1			1				1			1	1	
		Grevillea excelsior												1	1		
		Grevillea pterosperma														1	
		Grevillea pyramidalis subsp. *leucadendron*								1							
		Grevillea stenobotrya												1			
		Grevillea stenostachya P3							1					1	1	1	
		Grevillea wickhamii		1							1						

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
PROTEACEAE (Cont)	*Hakea bucculenta*														1	1
	Hakea chordophylla		1						1	1						
	Hakea circumalata															1
	Hakea invaginata													1	1	
	Hakea lorea			1							1					
	Hakea preissii				1	1						1	1			1
	Hakea recurva subsp. *arida*							1						1	1	
	Hakea rhombales												1			
	Hakea stenocarpa														1	
	Petrophile pilostyla															1
SANTALACEAE	*Anthobolus foveolatus*													1		
	Anthobolus leptomerioides													1		
	Exocarpos aphyllus					1							1			
	Leptomeria preissiana														1	1
	Santalum lanceolatum							1						1	1	
LORANTHACEAE	*Amyema fitzgeraldii*														1	
	Amyema gibberula var. *gibberula*						1									
	Amyema hilliana												1			
	Amyema preissii													1	1	
	Lysiana casuarinae					1										
CHENOPODIACEAE	*Atriplex amnicola*					1										1
	Atriplex bunburyana					1										1
	Atriplex holocarpa			1	1	1					1	1				1
	Atriplex nummularia subsp. *spathulata*												1			
	Atriplex semilunaris				1	1		1				1	1			1
	Atriplex spongiosa					1										
	Chenopodium cristatum			1												
	Chenopodium curvispicatum															1
	Chenopodium gaudichaudianum			1		1		1				1			1	

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
CHENOPODIACEAE (Cont)	*Chenopodium melanocarpum* forma *leucocarpum*							1					1		1	
	Dysphania glandulosa													1		
	Dysphania kalpari		1							1						
	Dysphania rhadinostachya					1						1				
	Enchylaena lanata										1					
	Enchylaena tomentosa			1	1						1	1		1		
	Enchylaena tomentosa var. *tomentosa*					1							1			1
	Enchylaena x Maireana tomentosa x georgei (hybrid)															1
	Halosarcia halocnemoides subsp. *halocnemoides*															1
	Halosarcia indica subsp. *bidens*															1
	Halosarcia indica subsp. *leiostachya*					1										1
	Halosarcia peltata					1										1
	Halosarcia pergranulata subsp. *pergranulata*															1
	Maireana appressa					1										
	Maireana brevifolia					1										1
	Maireana marginata (range ext.)															1
	Maireana planifolia			1												
	Maireana polypterygia												1			
	Maireana thesioides					1										
	Maireana villosa												1			
	Rhagodia aff. *latifolia* (leaves hastate)							1					1	1	1	1
	Rhagodia drummondii															1
	Rhagodia eremaea		1		1	1			1			1	1			1
	Rhagodia latifolia subsp. *latifolia*						1	1						1		
	Rhagodia latifolia subsp. *recta*															1
	Rhagodia preissii subsp. *obovata*															1
	Rhagodia preissii subsp. *preissii*															1
	Salsola tragus	1	1	1	1	1			1		1	1	1			1
	Sarcocornia blackiana															1
	Sclerolaena bicornis var. *bicornis*								1							
	Sclerolaena cornishiana			1	1	1						1				
	Sclerolaena costata			1					1				1			
	Sclerolaena cuneata				1							1				

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
CHENOPODIACEAE (Cont)		*Sclerolaena deserticola*				1							1				
		Sclerolaena diacantha							1								1
		Sclerolaena forrestiana											1				
		Sclerolaena glabra								1							
		Sclerolaena patenticuspis					1										
		Sclerolaena recurvicuspis					1							1			
		Sclerolaena tridens					1										
		Sclerolaena uniflora					1										
AMARANTHACEAE		*Achyranthes aspera*		1													
	*	*Aerva javanica*				1				1		1					
		Alternanthera angustifolia												1			
		Alternanthera nana		1	1					1		1					
		Alternanthera nodiflora		1	1	1	1			1	1	1	1			1	
		Amaranthus clementii		1								1		1			
		Amaranthus mitchellii		1	1	1	1				1		1				
		Amaranthus pallidiflorus		1						1	1						
		Gomphrena canescens subsp. *canescens*		1	1		1			1							
		Gomphrena cunninghamii		1	1						1						
		Gomphrena kanisii				1					1	1	1				
		Ptilotus aervoides			1					1	1	1	1			1	
		Ptilotus appendiculatus var *appendiculatus*		1	1							1					
		Ptilotus astrolasius var. *astrolasius*			1						1	1					
		Ptilotus auriculifolius					1							1			
		Ptilotus axillaris			1							1					
		Ptilotus carinatus			1												
		Ptilotus clementii									1						
		Ptilotus exaltatus		1													
		Ptilotus exaltatus var. *exaltatus*			1	1				1		1	1				
		Ptilotus fusiformis									1						
		Ptilotus gomphrenoides					1										
		Ptilotus gomphrenoides var. *gomphrenoides*			1												
		Ptilotus gomphrenoides var. *roseo-albus*		1						1	1						

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
AMARANTHACEAE (Cont)	*Ptilotus grandiflorus* var. *grandiflorus*					1										
	Ptilotus helipteroides				1						1	1				
	Ptilotus helipteroides var. *helipteroides*								1							
	Ptilotus latifolius												1			
	Ptilotus latifolius var. ?*latifolius*			1												
	Ptilotus macrocephalus						1									
	Ptilotus murrayi var. *murrayi*			1	1											
	Ptilotus obovatus			1	1	1	1	1		1		1	1	1	1	
	Ptilotus obovatus var. *obovatus*					1										
	Ptilotus polakii					1						1	1			
	Ptilotus polystachyus	1								1	1			1	1	
	Ptilotus polystachyus var. *polystachyus*						1						1	1		1
	Ptilotus roei									1						
	Ptilotus schwartzii						1						1	1	1	
	Ptilotus schwartzii var. *schwartzii*						1							1		
	Ptilotus spathulatus forma *spathulatus*														1	
NYCTAGINACEAE	*Boerhavia burbidgeana*					1							1			
	Boerhavia coccinea		1	1	1	1			1	1	1	1	1			1
	Boerhavia paludosa									1						
	Boerhavia repleta			1												
	Boerhavia schomburgkiana			1		1							1			
GYROSTEMONACEAE	*Codonocarpus cotinifolius*									1	1				1	1
	Gyrostemon racemiger															1
	Gyrostemon ramulosus			1	1		1						1			

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
AIZOACEAE		*Carpobrotus rossii*					1										
	*	*Mesembryanthemum nodiflorum*															1
		Trianthema oxycalyptra var. *oxycalyptra*			1												
		Trianthema pilosa			1												
		Trianthema triquetra		1	1	1	1			1			1	1			
MOLLUGINACEAE		*Mollugo molluginis*			1						1	1					
PORTULACACEAE		*Calandrinia polyandra*										1				1	
		Calandrinia schistorhiza										1					
		Portulaca oleracea	1	1	1	1	1			1	1	1	1		1		
CARYOPHYLLACEAE		*Polycarpaea corymbosa*		1			1						1				
		Polycarpaea longiflora		1													
LAURACEAE		*Cassytha capillaris*		1													
CAPPARACEAE		*Cleome uncifera* subsp. *uncifera*										1					
		Cleome viscosa	1	1	1	1	1			1	1	1	1	1			
BRASSICACEAE	*	*Brassica tournefortii*	1				1										
	*	*Carrichtera annua*	1														
		Lepidium phlebopetalum											1				
PITTOSPORACEAE		*Bursaria occidentalis*							1						1	1	1
MIMOSACEAE		*Acacia acradenia*				1											
		Acacia acuaria														1	
		Acacia acuminata														1	
		Acacia ampliceps								1							
		Acacia anastema												1			
		Acacia ancistrocarpa		1	1					1	1	1					
		Acacia aneura var. *aneura*		1						1			1	1			

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
MIMOSACEAE (Cont)	*Acacia aneura* var. *fuliginea*											1				
	Acacia aneura var. *intermedia*												1	1		
	Acacia aneura var. *macrocarpa*			1												
	Acacia aneura var. *pilbarana*										1	1				
	Acacia aneura var. *tenuis*													1		
	Acacia bivenosa		1	1					1	1	1		1			
	Acacia burkittii							1							1	
	Acacia citrinoviridis		1	1	1	1			1		1	1				
	Acacia colletioides							1						1		
	Acacia comans		1			1			1		1	1	1			
	Acacia coriacea subsp. *pendens*			1	1	1					1	1				
	Acacia cuspidifolia				1							1				
	Acacia cuthbertsonii subsp. *cuthbertsonii*										1	1				
	Acacia cuthbertsonii subsp. *linearis*					1							1			
	Acacia cyperophylla var. *cyperophylla*												1			
	Acacia ?distans											1				
	Acacia farnesiana				1	1										
	Acacia grasbyi												1		1	
	Acacia inaequilatera		1	1					1	1	1					
	Acacia jamesiana		1	1	1	1			1			1				
	Acacia jennerae										1	1				
	Acacia kempeana												1			
	Acacia ligulata		1			1										
	Acacia longispinea														1	
	Acacia marramamba										1					
	Acacia microbotrya												1			
	Acacia murrayana						1						1	1	1	
	Acacia neurophylla subsp. *erugata*														1	
	Acacia nigripilosa subsp. *nigripilosa*														1	
	Acacia pachycarpa					1										
	Acacia paraneura					1						1				
	Acacia prainii								1	1		1				
	Acacia pruinocarpa				1		1				1	1	1	1		

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
MIMOSACEAE (Cont)	*Acacia pyrifolia*		1		1				1	1	1	1			1	
	Acacia pyrifolia var. *pyrifolia*									1						
	Acacia ramulosa var. *linophylla*											1	1			
	Acacia ramulosa var. *ramulosa*	1					1	1					1	1	1	
	Acacia rostellifera							1						1	1	
	Acacia roycei						1	1						1	1	
	Acacia sclerosperma subsp. *sclerosperma*	1			1	1	1	1			1		1	1	1	
	Acacia sclerosperma subsp. *sclerosperma x Acacia ligulata*	1	1	1	1						1	1				
	Acacia sericocarpa									1						
	Acacia sibilans					1						1				
	Acacia stellaticeps			1					1		1					
	Acacia subtessarogona										1	1				
	Acacia synchronicia		1	1	1	1				1	1	1	1			
	Acacia tetragonophylla	1	1	1	1	1		1		1	1	1	1	1	1	
	Acacia tumida									1						
	Acacia victoriae				1	1						1	1		1	
	Acacia wanyu			1								1				
	Acacia wiseana						1						1	1	1	
	Acacia xiphophylla		1	1	1	1			1	1		1	1			
	Neptunia dimorphantha		1	1	1	1			1			1				
CAESALPINIACEAE	*Petalostylis cassioides*									1						
	Petalostylis labicheoides		1	1	1	1			1	1	1	1				1
	Senna aff. *charlesiana*														1	
	Senna artemisioides subsp. ?*artemisioides*											1				
	Senna artemisioides subsp. *filifolia*													1	1	
	Senna artemisioides subsp. *helmsii*				1	1					1	1	1	1		
	Senna artemisioides subsp. *oligophylla*			1		1					1	1	1			
	Senna artemisioides subsp. *oligophylla* forma *sericea*			1	1	1					1	1				
	Senna artemisioides subsp. *oligophylla x helmsii*												1			
	Senna artemisioides subsp. x *sturtii*				1	1			1			1	1		1	
	Senna charlesiana							1								

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
CAESALPINIACEAE (Cont)	*Senna glutinosa* subsp. *chatelainiana*					1	1	1								
	Senna glutinosa subsp. ?*glutinosa*					1										
	Senna glutinosa subsp. *pruinosa*				1						1					
	Senna glutinosa subsp. x *luerssenii*		1	1						1	1					
	Senna notabilis		1						1	1	1					
	Senna ?*sericea*		1	1	1						1	1				
	Senna symonii					1										
	Senna sp. Austin (A. Strid 20210)							1							1	
	Senna ?sp. Meekatharra (E. Bailey 1-26)														1	
PAPILIONACEAE	*Aeschynomene indica*		1													
	Alysicarpus muelleri		1						1	1						
	Crotalaria cunninghamii					1										
	Crotalaria dissitiflora subsp. *benthamiana*												1			
	Crotalaria medicaginea								1	1						
	Cullen cinereum			1		1										
	Cullen lachnostachys										1					
	Cullen leucanthum			1					1							
	Cullen stipulaceum			1						1						
	Erythrina verspertilio									1						
	Indigofera brevidens												1		1	
	Indigofera colutea			1	1	1	1			1	1	1	1	1		
	Indigofera decipiens (ms)			1	1					1	1	1				
	Indigofera eriophylla (ms)					1										
	Indigofera ?*fractiflexa* (ms)		1						1	1						
	Indigofera ?*georgei*			1												
	Indigofera linifolia			1		1				1	1	1				
	Indigofera linnaei					1										
	Indigofera monophylla		1						1	1						
	Isotropis atropurpurea									1						
	Lotus australis		1													
	Mirbelia ramulosa						1						1			
	Mirbelia rhagodioides														1	

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
PAPILIONACEAE (Cont)		*Mirbelia spinosa*					1	1				1		1	1	1	
		Mirbelia trichocalyx												1			
		Rhynchosia minima			1							1					
		Sesbania cannabina		1			1			1	1	1					
		Tephrosia gardneri (ms)			1												
		Tephrosia rosea								1							
		Tephrosia rosea var. *glabrior* (ms)		1	1												
		Tephrosia supina				1											
		Tephrosia uniovulata			1												
		Vigna lanceolata var. *lanceolata*		1	1	1	1			1	1	1					
OXALIDACEAE	*	*Oxalis corniculata*														1	
ZYGOPHYLLACEAE		*Tribulus astrocarpus*					1				1		1				
		Tribulus hirsutus			1						1						
		Tribulus macrocarpus									1	1					
		Tribulus occidentalis					1						1	1			
		Zygophyllum aurantiacum					1						1				1
		Zygophyllum kochii											1	1			
RUTACEAE		*Philotheca kalbarriensis* P2														1	
POLYGALACEAE		*Comesperma integerrimum*														1	
		Polygala isingii									1						
EUPHORBIACEAE		*Euphorbia australis*		1	1	1	1			1	1	1	1	1			
		Euphorbia ?biconvexa													1		
		Euphorbia boophthona		1		1	1			1	1	1	1				
		Euphorbia coghlanii				1	1				1	1					
		Euphorbia drummondii subsp. *drummondii*				1	1					1	1	1			
		Euphorbia schultzii		1						1							
		Euphorbia sharkoensis					1							1		1	

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
EUPHORBIACEAE (Cont)	*Euphorbia tannensis* subsp. *eremophila*			1												
	Euphorbia wheeleri			1												
	Phyllanthus erwinii														1	
	Phyllanthus maderaspatensis		1	1					1	1						
SAPINDACEAE	*Alectryon oleifolius* subsp. *oleifolius*					1							1			
	Dodonaea inaequifolia							1								
	Dodonaea viscosa subsp. *angustissima*															1
	Dodonaea viscosa subsp. *spatulata*														1	
TILIACEAE	*Corchorus carnarvonensis*		1			1										
	Corchorus crozophorifolius				1	1					1	1				
	Corchorus laniflorus			1						1	1					
	Corchorus parviflorus									1						
	Corchorus walcottii					1							1			
	Triumfetta appendiculata		1						1							
	Triumfetta clementii			1												
	Triumfetta deserticola		1						1	1						
	Triumfetta johnstonii		1						1							
	Triumfetta ramosa			1						1	1	1				
MALVACEAE	*Abutilon amplum*										1					
	Abutilon cryptopetalum				1							1	1	1		
	Abutilon cunninghamii					1			1			1	1			
	Abutilon geranioides		1			1			1	1		1				
	Abutilon lepidum		1	1	1				1		1	1				
	Abutilon macrum					1						1				
	Abutilon oxycarpum			1								1				
	Abutilon oxycarpum subsp. *prostratum* (ms)			1									1			
	Gossypium australe			1												
	Gossypium robinsonii									1						
	Hibiscus austrinus var. *austrinus*		1													

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
MALVACEAE (Cont)		*Hibiscus brachychlaenus*			1												
		Hibiscus brachysiphonius P3			1					1							
		Hibiscus burtonii			1							1	1				
		Hibiscus sturtii var. *campylochlamys*			1								1				
		Hibiscus ?*sturtii*			1												
		Lawrencia sp.					1							1			
	*	*Malvastrum americanum*		1	1	1				1			1	1			
		Sida atrovirens (ms)							1						1	1	
		Sida ?*calyxhymenia*												1			
		Sida clementii		1													
		Sida echinocarpa								1	1	1					
		Sida excedentifolia (ms)			1		1							1			
		Sida fibulifera		1	1	1	1				1		1	1			
		Sida kingii												1			
		Sida platycalyx			1							1					
		Sida rohlenae					1					1	1				
		Sida rohlenae subsp. *rohlenae*			1	1	1			1	1	1		1			
		Sida tescorum (ms)				1							1				
		Sida sp. Carnarvon (P.S. Short 2492)					1										
		Sida sp. verrucose glands (F.H. Mollemans 2423)		1						1	1						
STERCULIACEAE		*Brachychiton gregorii*		1			1						1	1	1		
		Hannafordia quadrivalvis subsp. *quadrivalvis*															1
		Keraudrenia velutina subsp. *elliptica* (ms)									1	1					
		Rulingia luteiflora											1			1	
		Waltheria indica		1	1					1							1
DILLENIACEAE		*Hibbertia conspicua*														1	
FRANKENIACEAE		*Frankenia glomerata* P3											1				
		Frankenia setosa					1						1				

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
VIOLACEAE	*Hybanthus aurantiacus*		1	1					1							
THYMELAEACEAE	*Pimelea microcephala*					1	1	1				1	1	1		1
LYTHRACEAE	*Ammannia multiflora*		1						1	1	1					
	Rotala occultiflora		1													
MYRTACEAE	*Aluta aspera* subsp. *hesperia*														1	
	Baeckea pentagonantha												1	1		
	Callistemon phoeniceus														1	
	Calothamnus oldfieldii														1	
	Calytrix strigosa													1	1	
	Calytrix truncatifolia												1			
	Corymbia candida subsp. *candida*		1						1	1						
	Corymbia ferriticola			1							1					
	Corymbia hamersleyana			1					1	1	1					
	Corymbia lenziana						1		1				1			
	Corymbia zygophylla			1					1	1	1					
	Eremaea dendroidea														1	
	Eucalyptus camaldulensis		1	1	1	1			1	1	1	1				
	Eucalyptus camaldulensis var. *obtusa*					1										
	Eucalyptus ?dolichocera														1	
	Eucalyptus eudesmioides							1						1	1	
	Eucalyptus horistes														1	
	Eucalyptus jucunda														1	
	Eucalyptus leptopoda														1	
	Eucalyptus mannensis subsp. *vespertina*							1						1	1	
	Eucalyptus oldfieldii							1							1	
	Eucalyptus pruinosa												1			
	Eucalyptus subangusta subsp. *subangusta*															1

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
MYRTACEAE (Cont)	*Eucalyptus victrix*		1	1	1	1			1	1	1	1	1		1	
	Malleostemon peltiger														1	
	Melaleuca argentea					1										
	Melaleuca campanae														1	
	Melaleuca cordata														1	
	Melaleuca glomerata			1		1			1	1	1	1				
	Melaleuca stereophloia														1	1
	Pileanthus peduncularis subsp. *pilifer*						1						1			
	Pileanthus vernicosus														1	
	Scholtzia leptantha					1				1						
	?*Thryptomene baeckeacea*													1		
	Thryptomene decussata						1	1					1	1	1	
	Verticordia forrestii												1		1	
HALORAGACEAE	*Glischrocaryon aureum* var. *aureum*													1	1	
APIACEAE	*Platysace effusa*														1	
	Platysace trachymenioides														1	
PRIMULACEAE	*Samolus repens* var. *floribundus*					1										1
OLEACEAE	*Jasminum didymum* subsp. *lineare*											1				
APOCYNACEAE	*Carissa lanceolata*		1													
ASCLEPIADACEAE	*Marsdenia australis*				1		1	1			1	1	1	1	1	
	Rhyncharrhena linearis						1						1	1		1
	Sarcostemma viminale subsp. *australe*					1										
CONVOLVULACEAE	*Bonamia media* var. *villosa*								1		1					
	Bonamia pannosa								1							
	Bonamia rosea		1	1						1	1					

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
CONVOLVULACEAE (Cont)		*Evolvulus alsinoides*		1	1	1				1	1						
		Evolvulus alsinoides var. *villosicalyx*			1							1					
		Ipomoea coptica								1							
		Ipomoea costata										1					
		Ipomoea muelleri		1	1	1	1			1	1	1	1				
		Ipomoea pes-caprae								1							
		Ipomoea pes-caprae subsp. *brasiliensis*			1								1				
		Porana sericea		1		1							1				
BORAGINACEAE		*Heliotropium ammophilum*												1			1
		Heliotropium crispatum			1	1	1				1	1	1				1
		Heliotropium heteranthum				1				1			1				
		Heliotropium inexplicitum											1				
		Heliotropium sp.			1												
		Trichodesma zeylanicum		1	1					1				1			
LAMIACEAE		*Basilicum polystachyon*		1						1							
		Cleome viscosa		1	1	1	1			1	1	1	1	1			
		Clerodendrum floribundum var. *angustifolium*				1											
		Dicrastylis incana P2														1	
		Dicrastylis linearifolia P3						1							1	1	
		Microcorys tenuifolia P3														1	
	*	*Ocimum basilicum*			1												
		Pityrodia hemigenioides															1
		Pityrodia loxocarpa			1												
		Pityrodia oldfieldii														1	
		Pityrodia paniculata			1		1	1						1		1	
		Prostanthera althoferi subsp. *althoferi*							1								
		Prostanthera campbellii													1		
		Spartothamnella teucriiflora												1	1		

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	Stage	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
SOLANACEAE	*Anthotroche pannosa*															1
	* *Datura leichhardtii*			1		1						1				
	Nicotiana cavicola												1			
	Nicotiana rotundifolia							1								
	Nicotiana sp.														1	
	Solanum diversiflorum		1	1					1	1						
	Solanum ellipticum		1						1		1				1	
	Solanum esuriale													1		
	Solanum lasiophyllum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Solanum orbiculatum subsp. *orbiculatum*					1	1	1					1	1	1	
SCROPHULARIACEAE	*Mimulus gracilis*		1	1					1	1		1				
	Stemodia grossa					1										
	Stemodia kingii		1						1							
	Stemodia ?viscosa								1							
ACANTHACEAE	*Dipteracanthus australasicus* subsp. *australasicus*				1											
	Rostellularia adscendens var. *clementii*			1					1							
MYOPORACEAE	*Eremophila* aff. *fraseri*												1			
	Eremophila clarkei						1	1				1	1	1	1	
	Eremophila cuneifolia				1						1	1	1			
	Eremophila ?deserti							1								
	Eremophila exilifolia												1			
	Eremophila flaccida subsp. *flaccida*										1	1	1	1		
	Eremophila forrestii				1					1		1	1			
	Eremophila forrestii subsp. *forrestii* (ms)					1	1	1					1	1	1	
	Eremophila galeata (ms)			1							1	1				
	Eremophila glabra												1			
	Eremophila latrobei subsp. *filiformis* (ms)											1				
	Eremophila latrobei subsp. *latrobei* (ms)						1	1					1	1		
	Eremophila latrobei subsp. ?*latrobei* (ms)												1			
	Eremophila longifolia		1	1												

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
MYOPORACEAE (Cont)		*Eremophila maitlandii*					1						1	1			
		Eremophila phyllopoda subsp. *phyllopoda* (ms)												1			
		Eremophila physocalyx (ms) P3						1							1		
		Eremophila platycalyx subsp. *platycalyx* (ms)				1							1				
		Eremophila setacea (ms)			1			1						1	1		
		Eremophila tietkensii											1				
		Eremophila youngii subsp. *youngii* (ms)												1		1	
		Myoporum montanum					1										
PLANTAGINACEAE		*Plantago drummondii*							1					1	1	1	
RUBIACEAE		*Psydrax latifolia* (ms)										1	1	1			
		Psydrax rigidula												1			
CUCURBITACEAE	*	*Citrullus colocynthis*		1	1					1	1		1				
	*	*Cucumis melo* subsp. *agrestis*				1											
	*	*Cucumis myriocarpus*														1	
		Mukia maderaspatana		1	1	1	1			1	1	1	1	1			
CAMPANULACEAE		*Wahlenbergia preissii*															1
		Wahlenbergia tumidifructa				1											
LOBELIACEAE		*Lobelia heterophylla*												1	1		
GOODENIACEAE		*Goodenia forrestii*			1	1	1				1	1	1				
		Goodenia lamprosperma		1						1	1						
		Goodenia microptera								1							
		Goodenia muelleriana								1							
		Goodenia occidentalis						1						1		1	
		Goodenia pascua P3									1						
		Goodenia ?prostrata					1							1			
		Goodenia tenuiloba												1			
		Goodenia ?triodiophila					1						1				

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa		Stage	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Family		**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
GOODENIACEAE (Cont)		*Lechenaultia floribunda*															1
		Lechenaultia linarioides		1						1							1
		Scaevola chrysopogon P2												1			
		Scaevola sericophylla			1												
		Scaevola spinescens			1	1	1		1			1	1		1	1	
		Goodeniaceae sp.					1										
STYLIDIACEAE		*Stylobasium spathulatum*				1	1	1	1			1	1	1	1	1	
ASTERACEAE		*Actinobole drummondianum*	1														
	*	*Bidens bipinnata*				1											
		Blumea tenella									1						
		?*Brachyscome* sp.														1	
		Brachyscome cheilocarpa												1			
		Brachyscome iberidifolia					1	1	1							1	
		Calocephalus ?francisii												1			
		Calocephalus multiflorus												1			
		Calotis plumulifera			1												
	*	*Centaurea melitensis*	1														
		Chthonocephalus viscosus												1	1		1
		Cratystylis subspinescens					1										
		Flaveria australasica					1						1				
		Gnephosis angianthoides													1		1
		Gnephosis tenuissima													1		
		Hyalosperma cotula							1					1		1	
		Olearia axillaris							1								
		Olearia fluvialis P2				1						1					
		Olearia pimeleoides							1							1	
		Olearia revoluta													1	1	
		Podolepis capillaris							1								1
		Podotheca gnaphalioides															1
		Pterocaulon sphaeranthoides		1	1	1	1			1	1	1	1				
		Rhodanthe ?chlorocephala subsp. *splendida*													1		

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
	Rhodanthe citrina	1														

APPENDIX B : SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN DIFFERENT LOOPS OF STAGES 4 AND 5

NB: * denotes introduced taxa	**Stage**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Family	**Species/Loop**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
ASTERACEAE (Cont)	* *Sonchus oleraceus*			1												
	Streptoglossa adscendens			1		1										
	Streptoglossa decurrens		1	1	1				1	1		1				
	Streptoglossa liatroides								1			1				
	Streptoglossa tenuiflora			1		1						1	1			
	Vittadinia gracilis															1
	Waitzia acuminata						1	1						1	1	
	Waitzia acuminata var. *acuminata*															1

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Abutilon sp. Quobba (H. Demarz 3858)		P2		X
Abutilon uncinatum		P1		X
Acacia ampliata		P1		X
Acacia anomala	V	R	X	
Acacia aphylla	V	R	X	
Acacia atopa		P3		X
Acacia benthamii		P2	X	
Acacia cummingiana		P3	X	
Acacia drummondii subsp. *affinis*		P3	X	
Acacia epacantha		P3	X	
Acacia flabellifolia		P2	X	
Acacia flagelliformis		P4	X	
Acacia forrestiana	V	R	X	
Acacia glaucocaesia		P3		X
Acacia horridula		P3	X	
Acacia isoneura subsp. *isoneura*		P3	X	
Acacia lasiocarpa var. *bracteolata* long peduncle variant (G.J. Keighery 5026)		P1	X	
Acacia latipes subsp. *licina*		P3	X	X
Acacia leptospermoides subsp. *psammophila*		P3		X
Acacia lineolata subsp. *multilineata*		P1		X
Acacia megacephala		P2	X	X
Acacia nigripilosa subsp. *latifolia*		P1		X
Acacia oncinophylla subsp. *oncinophylla*		P3	X	
Acacia oncinophylla subsp. *patulifolia*		P2	X	
Acacia plicata		P3	X	
Acacia pulchella var. *reflexa* acuminate bracteole variant (R.J. Cumming 882)		P3	X	
Acacia retrorsa		P2	X	
Acacia ridleyana		P3	X	
Acacia ryaniana		P2		X
Acacia semitrullata		P3	X	
Acacia splendens	E	R	X	
Acacia subrigida		P2		X
Acacia telmica		P3	X	
Acacia wilsonii		R	X	
Adenanthos cygnorum subsp. *chamaephyton*		P3	X	
Allocasuarina grevilleoides		P3	X	
Allocasuarina ramosissima		P3	X	
Andersonia gracilis	E	R	X	
Angianthus drummondii		P3	X	
Anigozanthos humilis subsp. Badgingarra (S.D. Hopper 7114)		P2	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Anigozanthos humilis subsp. *chrysanthus*		P4	X	
Anigozanthos humilis subsp. *grandis*		P2	X	
Anthocercis gracilis	V	R	X	
Anthotium junciforme		P4	X	
Anthotroche myoporoides		P2		X
Aotus cordifolia		P3	X	
Apodasmia ceramophila		P2	X	
Aponogeton hexatepalus		P4	X	
Arnocrinum gracillimum		P2	X	
Asteridea gracilis		P3	X	
Asterolasia drummondii		P4	X	
Asterolasia nivea	V	R	X	
Astroloma sp. Cataby (E.A. Griffin 1022)		P4	X	
Atriplex spinulosa		P1		X
Baeckea sp. Bunney Road (S. Patrick 4059)		P2	X	
Baeckea sp. Chittering (R.J. Cranfield 1983)		P4	X	
Baeckea sp. Moora (R. Bone 1993/1)		P3	X	
Baeckea sp. Perth Region (R.J. Cranfield 444)		P3	X	
Baeckea sp. Walkaway (A.S. George 11249)		P3	X	X
Baeckea sp. Yuna (M.E. Trudgen 2224)		P2		X
Baeckea staminosa		P1		X
Balaustion microphyllum		P4		X
Banksia chamaephyton		P4	X	
Banksia elegans		P4	X	
Banksia micrantha		P3	X	
Banksia scabrella		P4	X	
Beaufortia bicolor		P3	X	
Beaufortia eriocephala		P3	X	
Bergia auriculata		P2		X
Beyeria gardneri		P1	X	
Beyeria similis		P3	X	
Blennospora doliiformis		P3	X	
Boronia capitata subsp. *gracilis*		P2	X	
Boronia humifusa		P1	X	
Boronia juncea subsp. *juncea*		P1	X	
Boronia ramosa subsp. *lesueurana*		P2	X	
Boronia scabra subsp. *condensata*		P2	X	
Boronia tenuis		P4	X	
Bossiaea modesta		P2	X	
Byblis gigantea		P2	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Caladenia arrecta		P4	X	
Caladenia huegelii	E	R	X	
Caladenia longicauda subsp. *clivicola*		P4	X	
Caladenia procera		R	X	
Caladenia speciosa		P4	X	
Caladenia wanosa	V	R	X	
Calandrinia sp. Coolcalalaya (G.J. Keighery & N. Gibson 698)		P1		X
Calectasia browneana		P2	X	
Calectasia cyanea	CE	R	X	
Calothamnus graniticus subsp. *leptophyllus*		P4	X	
Calothamnus rupestris		P4	X	
Calytrix breviseta subsp. *breviseta*	E	R	X	
Calytrix chrysantha		P3	X	
Calytrix drummondii		P3	X	
Calytrix ecalycata subsp. *brevis*		P3	X	
Calytrix eneabbensis		P3	X	
Calytrix formosa		P3		X
Calytrix harvestiana		P2		X
Calytrix simplex subsp. *simplex*		P1	X	
Calytrix superba		P3	X	
Calytrix sylvana		P4	X	
Calytrix variabilis		(not code	X	
Cardamine paucijuga		P2	X	
Carex tereticaulis		P1	X	
Catacolea enodis		P2	X	
Caustis gigas		P2	X	
Centrolepis caespitosa	E	R	X	
Chamaescilla gibsonii		P3	X	
Chamelaucium griffinii	V	R	X	
Chamelaucium lullfitzii	E	R	X	
Chamelaucium oenanthum		P1		X
Chordifex chaunocoleus		P4	X	
Chthonocephalus muellerianus		P2		X
Chthonocephalus tomentellus		P2		X
Comesperma acerosum		P3	X	
Comesperma griffinii		P2	X	
Comesperma rhadinocarpum		P2	X	
Conospermum densiflorum subsp. *unicephalatum*	E	R	X	
Conospermum scaposum		P3	X	
Conospermum undulatum	V	R	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Conostephium magnum		P4	X	
Conostylis dielsii subsp. *teres*	E	R	X	
Conostylis micrantha	E	R	X	
Craspedia argillicola		P2	X	
Cryptandra nola		P2		X
Cyanicula ixioides subsp. *ixioides*		P4	X	
Cyathochaeta teretifolia		P3	X	
Dampiera krauseana		P2	X	X
Dampiera tephrea		P2	X	
Darwinia acerosa	E	R	X	
Darwinia apiculata	E	R	X	
Darwinia carnea	E	R	X	
Darwinia foetida		R	X	
Darwinia pimelioides		P4	X	
Darwinia sanguinea		P4	X	
Daviesia chapmanii		P4	X	
Daviesia debilior subsp. *debilior*		P2	X	
Daviesia epiphyllum		P3	X	
Daviesia pteroclada		P3	X	
Desmocladus biformis		P3	X	
Desmocladus elongatus		P3	X	
Dicrastylis incana		P2		X
Dicrastylis linearifolia		P3		X
Dillwynia dillwynioides		P3	X	
Diplolaena andrewsii		P2	X	
Diuris drummondii	V	R	X	
Diuris micrantha	V	R	X	
Diuris purdiei	E	R	X	
Diuris recurva		P4	X	
Dodonaea hackettiana		P4	X	
Drakaea elastica	E	R	X	
Drakaea micrantha	V	R	X	
Drosera marchantii subsp. *prophylla*		P1	X	
Drosera occidentalis subsp. *occidentalis*		P4	X	
Dryandra catoglypta		P2	X	
Dryandra cypholoba		P3	X	
Dryandra fraseri var. *crebra*		P3	X	
Dryandra kippistiana var. *paenepeccata*		P3	X	
Dryandra lindleyana subsp. *pollosta*		P3	X	
Dryandra mimica	E	R	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Dryandra nobilis subsp. *fragrans*		P3	X	
Dryandra platycarpa		P4	X	
Dryandra polycephala		P4	X	
Dryandra pteridifolia subsp. *vernalis*		P3	X	
Dryandra sclerophylla		P4	X	
Dryandra serratuloides subsp. *perissa*	V	R	X	
Dryandra speciosa subsp. *macrocarpa*		P3	X	
Dryandra stricta		P3	X	
Dryandra subulata		P3	X	
Dryandra tortifolia		P3	X	
Eleocharis keigheryi	V	R	X	
Enekbatus roseus		P3		X
Epiblema grandiflorum var. *cyaneum*	E	R	X	
Eremaea acutifolia		P2	X	X
Eremaea asterocarpa subsp. *brachyclada*		P1	X	
Eremophila glabra subsp. *chlorella*		P1	X	
Eremophila glabra subsp. *psammophora*		P2		X
Eremophila physocalyx		P3		X
Eryngium ferox		P3	X	
Eryngium subdecumbens		P3	X	
Eucalyptus abdita		P2	X	
Eucalyptus absita	E	R	X	
Eucalyptus absita x *loxophleba*		P1	X	
Eucalyptus balanites	E	R	X	
Eucalyptus crispata	V	R	X	
Eucalyptus diminuta		P3	X	
Eucalyptus dolorosa	E	R	X	
Eucalyptus ebbanoensis subsp. *photina*		P4	X	X
Eucalyptus exilis		P4	X	
Eucalyptus impensa	E	R	X	
Eucalyptus johnsoniana	V	R	X	
Eucalyptus lateritica	V	R	X	
Eucalyptus leprophloia	E	R	X	
Eucalyptus loxophleba x *wandoo*		P4	X	
Eucalyptus macrocarpa subsp. *elachantha*		P4	X	
Eucalyptus macrocarpa x *pyriformis*		P3	X	
Eucalyptus pendens		P4	X	
Eucalyptus rudis subsp. *cratyantha*		P4	X	
Eucalyptus suberea	V	R	X	
Eucalyptus synandra	V	R	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Eucalyptus x *carnabyi*		P4	X	
Eucalyptus zopherophloia		P4	X	
Euphrasia scabra		P2	X	
Gastrolobium alternifolium		P3	X	
Gastrolobium axillare		P3	X	
Gastrolobium callistachys		P4	X	
Gastrolobium hamulosum	E	R	X	
Gastrolobium nudum		P2	X	
Geleznowia verrucosa subsp. *formosa*		P3	X	
Georgeantha hexandra		P4	X	
Gnephosis sp. Billabong (B. Nordenstam & A. Anderberg 203)		P1		X
Gompholobium gairdnerianum		P3	X	
Goodenia arthrotricha		P2	X	
Goodenia berringbinensis		P4		X
Goodenia filiformis		P3	X	
Goodenia pallida		P1		X
Goodenia pascua		P3		X
Goodenia xanthotricha		P2	X	
Grevillea althoferorum	E	R	X	
Grevillea annulifera		P3		X
Grevillea biformis subsp. *cymbiformis*		P2	X	
Grevillea bipinnatifida subsp. *pagna*		P1	X	
Grevillea calliantha	E	R	X	
Grevillea candicans		P3		X
Grevillea curviloba subsp. *curviloba*	E	R	X	
Grevillea curviloba subsp. *incurva*	E	R	X	
Grevillea drummondii		P4	X	
Grevillea erinacea		P3	X	
Grevillea evanescens		P1	X	
Grevillea florida		P3	X	
Grevillea granulosa		P3		X
Grevillea hirtella		P3	X	
Grevillea leptopoda		P3	X	
Grevillea makinsonii		P3	X	
Grevillea manglesii subsp. *dissectifolia*		P3	X	
Grevillea manglesii subsp. *ornithopoda*		P2	X	
Grevillea metamorpha		P1	X	
Grevillea olivacea		P4	X	
Grevillea pimeleoides		P4	X	
Grevillea rosieri		P2	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Grevillea rudis		P4	X	
Grevillea saccata		P4	X	
Grevillea stenostachya		P3		X
Grevillea subterlineata		P3		X
Grevillea synapheae subsp. A Flora of Australia (S.D. Hopper 6333)		P1	X	
Grevillea synapheae subsp. *minyulo*		P1	X	
Grevillea thelemanniana		P4	X	
Grevillea thyrsoides subsp. *pustulata*		P3	X	
Grevillea thyrsoides subsp. *thyrsoides*		P3	X	
Grevillea triloba		P3	X	
Grevillea uniformis		P3	X	
Guichenotia alba		P3	X	
Guichenotia tuberculata		P3	X	
Haemodorum loratum		P3	X	
Hakea longiflora		P3	X	
Hakea megalosperma	V	R	X	
Hakea neurophylla		P4	X	
Hakea polyanthema		P3	X	
Hakea tuberculata		P3	X	
Halgania corymbosa		P3	X	
Haloragis aculeolata		P2	X	
Haloragis scoparia		P1	X	
Haloragis tenuifolia		P3	X	
Helichrysum oligochaetum		P1		X
Hemiandra sp. Eneabba (H. Demarz 3687)		P1	X	
Hemigenia microphylla		P3	X	
Hemigenia saligna		P3	X	X
Hensmania stoniella		P3	X	
Hibbertia glomerata subsp. *ginginensis*		P1	X	
Hibbertia helianthemoides		P3	X	
Hibbertia miniata		P4	X	
Hibbertia montana		P4	X	
Homalocalyx chapmanii		P1	X	
Homalocalyx inerrabundus		P2		X
Hopkinsia anoectocolea		P3	X	
Hydatella dioica	E	R	X	
Hydrocotyle lemnoides		P4	X	
Hydrocotyle striata		P1	X	
Hypocalymma gardneri		P2	X	
Hypocalymma serrulatum		P3	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Hypocalymma sp. Cataby (G.J. Keighery 5151)		P1	X	
Hypocalymma tenuatum		P2	X	
Hypocalymma tetrapterum		P3	X	
Hypolaena robusta		P4	X	
Isopogon drummondii		P3	X	
Isopogon tridens		P3	X	
Isotropis cuneifolia subsp. *glabra*		P2	X	
Jacksonia anthoclada		P3	X	
Jacksonia carduacea		P3	X	
Jacksonia rubra		P2	X	
Jacksonia sericea		P4	X	
Jacksonia sp.Badgingarra (H.Demarz D6601)		P1	X	
Jacksonia sparsa		P4	X	
Jacksonia velutina		P4		X
Johnsonia pubescens subsp. *cygnorum*		P2	X	
Lasiopetalum bracteatum		P4	X	
Lasiopetalum lineare		P3	X	
Lasiopetalum membranaceum		P3	X	
Lasiopetalum miseryense		P1	X	
Lasiopetalum ogilvieanum		P1	X	
Lasiopetalum oldfieldii subsp. *oldfieldii*		P3	X	
Lechenaultia longiloba		P4	X	X
Lechenaultia magnifica		P1	X	
Lepidobolus quadratus		P3	X	
Lepidosperma rostratum	E	R	X	
Leucopogon marginatus	E	R	X	
Leucopogon obtectus	E	R	X	
Leucopogon plumuliflorus		P2	X	
Leucopogon sp. ciliate Eneabba (F. Obbens & C. Godden s.n. 3/7)		P1	X	
Loxocarya gigas		P2	X	
Macarthuria keigheryi	E	R	X	
Malleostemon sp. Cooljarloo (B. Backhouse s.n. 16/11/88)		P1	X	
Malleostemon sp. Unmade Road (E.A. Griffin 7537)		P1	X	
Melaleuca clavifolia		P1	X	
Mesomelaena stygia subsp. *deflexa*		P1	X	
Microcorys tenuifolia		P3		X
Micromyrtus uniovula		P2	X	
Microtis media subsp. *quadrata*		P4	X	
Myriocephalus appendiculatus		P3	X	
Myriocephalus suffruticosus		P1	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Myriophyllum echinatum		P3	X	
Olax scalariformis		P3	X	
Onychosepalum microcarpum		P1	X	
Paracaleana dixonii	E	R	X	
Parsonsia diaphanophleba		P4	X	
Patersonia spirafolia	E	R	X	
Persoonia filiformis		P2	X	
Persoonia kararae		P1		X
Persoonia rudis		P3	X	
Persoonia sulcata		P4	X	
Petrophile biternata		P3	X	
Petrophile clavata		P2	X	
Petrophile nivea		P1	X	
Petrophile plumosa		P3	X	
Philotheca kalbarriensis		P2		X
Phlebocarya pilosissima subsp. *pilosissima*		P3	X	
Phyllangium palustre		P2	X	
Pimelea rara		P4	X	
Pithocarpa corymbulosa		P2	X	
Pityrodia axillaris		R	X	
Pityrodia viscida		P3	X	
Platysace ramosissima		P3	X	
Pterostylis sp. Yalgorup (G. Brockman GBB463)		P2	X	
Ptychosema pusillum	V	R	X	
Pultenaea skinneri		P4	X	
Rhodanthe ascendens		P1		X
Rhodanthe pyrethrum		P3	X	
Rumex crystallinus		P2		X
Rumex drummondii		P4	X	
Scaevola eneabba		P2	X	
Scaevola oldfieldii		P3	X	
Schoenia filifolia subsp. *arenicola*		P1		X
Schoenus benthamii		P3	X	
Schoenus capillifolius		P2	X	
Schoenus griffinianus		P2	X	
Schoenus natans		P4	X	
Schoenus pennisetis		P1	X	
Schoenus sp. Bullsbrook (J.J. Alford 915)		P2	X	
Schoenus sp. Eneabba (F. Obbens & C. Godden I154)		P1	X	
Schoenus sp. Waroona (G.J. Keighery 12235)		P3	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Scholtzia sp. Bickley (W.H. Loaring s.n.)		P1	X	
Scholtzia sp. Binnu (M.E. Trudgen 2218)		P1		X
Scholtzia sp. Binnu East Road (M.E. Trudgen 12013)		P1		X
Scholtzia sp. Eradu (R.D. Royce 8016)		P2		X
Scholtzia sp. Galena (W.E. Blackall 4728)		P2		X
Scholtzia sp. Gunyidi (J.D. Briggs 1721)		P2	X	
Scholtzia sp. Valentine Road (S. Patrick 2142)		P1		X
Scholtzia sp. Whelarra (M.E. Trudgen 12018)		P1		X
Senecio gilbertii		P1	X	
Senecio leucoglossus		P4	X	
Sida sp. Wittenoom (W.R. Barker 1962)		P3		X
Spirogardnera rubescens	E	R	X	
Stachystemon axillaris		P4	X	
Stackhousia clementii		P1		X
Stawellia dimorphantha	V	R	X	
Stenanthemum bilobum		P1		X
Stenanthemum reissekii		P3	X	
Stenanthemum sp. Burma Road (G.J. Keighery & N. Gibson 2904)		P2	X	
Stenanthemum sublineare		P2	X	
Stylidium aceratum		P2	X	
Stylidium aeonioides		P2	X	
Stylidium diuroides subsp. *paucifoliatum*		P4	X	X
Stylidium drummondianum		P3	X	
Stylidium hymenocraspedum		P2	X	
Stylidium inversiflorum		P4	X	
Stylidium longitubum		P3	X	
Stylidium maritimum		P3	X	
Stylidium nonscandens		P3	X	
Stylidium pseudocaespitosum		P2	X	X
Stylidium squamellosum		P2	X	
Stylidium striatum		P4	X	
Stylidium tinkeri		P1	X	
Stylidium torticarpum		P3	X	
Stylidium trudgenii		P3	X	
Synaphea aephynsa		P3	X	
Synaphea endothrix		P2	X	
Synaphea grandis		P4	X	
Synaphea lesueurensis		P2	X	
Synaphea odocoileops		P1	X	
Synaphea oulopha		P1	X	

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Synaphea sp. Fairbridge Farm (D. Papenfus 696)		R	X	
Synaphea sp. Pinjarra (R. Davis 6578)		R	X	
Synaphea sparsiflora		P2	X	
Synaphea stenoloba		R	X	
Templetonia drummondii		P4	X	
Terminalia supranitifolia		P1		X
Tetraria australiensis	V	R	X	
Tetratheca angulata		P3	X	
Tetratheca aphylla	V	R	X	
Tetratheca nephelioides		R	X	
Tetratheca pilifera		P3	X	
Tetratheca sp. Granite (S. Patrick SP1224)		P3	X	
Thelymitra apiculata		P4	X	
Thelymitra dedmaniarum		R	X	
Thelymitra magnifica		P1	X	
Thelymitra sp.Crystal Brook Star Orchid (F.Humphreys 27/10/1963)		P1	X	
Thelymitra stellata	E	R	X	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)		P3		X
Thomasia sp. Gingin (F. & J. Hort 1511)		P3	X	
Thryptomene duplicata		P1		X
Thryptomene ninghanensis		P1		X
Thryptomene sp. East Yuna (J.W. Green 4639)		P2		X
Thryptomene sp. Mingenew (Diels & Pritzel 332)		P3	X	
Thryptomene sp. Yuna Reserve (A.C. Burns 100)		P2		X
Thysanotus anceps		P3	X	
Thysanotus glaucus		P4	X	
Thysanotus isantherus		P3	X	
Thysanotus sp. Badgingarra (E.A. Griffin 2511)		P2	X	
Thysanotus vernalis		P3	X	
Trichocline sp. Treeton (B.J. Keighery & N. Gibson 564)		P2	X	
Tricoryne sp. Eneabba (E.A. Griffin 1200)		P2	X	
Tricoryne sp. Wongan Hills (B.H. Smith 794)		P2	X	
Tripterococcus paniculatus		P1	X	
Verticordia albida	E	R	X	
Verticordia argentea		P2	X	
Verticordia attenuata		P3	X	
Verticordia aurea		P4	X	
Verticordia blepharophylla		P2	X	
Verticordia capillaris		P4		X
Verticordia chrysostachys var. *pallida*		P3		X

APPENDIX C: KNOWN POPULATIONS OF PROTECTED AND PRIORITY FLORA ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

FCC = Federal Conservation Codes, **SCC** = State Conservation Code

CE = Critically Endangered, **E** = Endangered, **V** = Vulnerable

R = Rare, **P1** = Priority 1, **P2** = Priority 2, **P3** = Priority 3, **P4** = Priority 4

S = south of Geraldton, **N** = north of Geraldton

Species	FCC	SCC	S	N
Verticordia densiflora var. *roseostella*		P3	X	
Verticordia fragrans		P3	X	
Verticordia insignis subsp. *eomagis*		P3	X	
Verticordia lindleyi subsp. *lindleyi*		P4	X	
Verticordia luteola var. *luteola*		P3	X	
Verticordia luteola var. *rosea*		P1	X	
Verticordia paludosa		P4	X	
Verticordia penicillaris		P4	X	X
Verticordia plumosa var. *ananeotes*	E	P3	X	
Verticordia plumosa var. *pleiobotrya*	E	R	X	
Verticordia rutilastra		P3	X	
Verticordia serrata var. *linearis*		P3	X	
Villarsia submersa		P4	X	
Walteranthus erectus		P2	X	
Wurmbea tubulosa	E	R	X	
Xanthosia tomentosa		P4	X	

APPENDIX D: KNOWN THREATENED ECOLOGICAL COMMUNITIES ON THE DAMPIER TO BUNBURY GAS PIPELINE, IN RELATION TO GERALDTON

* Note - that all occur south of Geraldton

TEC Code	Description	Conservation Code
Mound Springs SCP	Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)	Critically Endangered
MUCHEA LIMESTONE	Shrublands and woodlands on Muchea Limestone	Endangered
NTHIRON	Perth to Gingin Ironstone Association	Critically Endangered
SCP02	Southern wet shrublands, Swan Coastal Plain	Endangered
SCP3a	*Eucalyptus calophylla* - *Kingia australis* woodlands on heavy soils, Swan	Critically Endangered
SCP3b	*Eucalyptus calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain	Vunerable
SCP3c	*Eucalyptus calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain	Critically Endangered
SCP07	Herb rich saline shrublands in clay pans	Vunerable
SCP08	Herb rich shrublands in clay pans	Vunerable
SCP09	Dense shrublands on clay flats	Vunerable
SCP10a	Shrublands on dry clay flats	Endangered
SCP15	Forests and woodlands of deep seasonal wetlands of the Swan Coastal Plain	Vunerable
SCP19	Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Critically Endangered
SCP20a	*Banksia attenuata* woodland over species rich dense shrublands	Endangered
SCP20b	*Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain	Endangered
SCP20c	Shrublands and woodlands of the eastern side of the Swan Coastal Plain	Critically Endangered
SCP26a	*Melaleuca huegelii* - *Melaleuca acerosa* (currently *M. systena*) shrublands on limestone ridges (Gibson et al. 1994 type 26a)	Endangered