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BHP Billiton Iron Ore Pty Ltd

Report for Coondewanna Exploration Tenement

Level 2 Flora and Level 1 Fauna Report

August 2010

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

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Executive Summary

BHP Billiton Iron Ore Pty Ltd (BHPBIO) wish to conduct an iron ore exploration programme within a section of the Coondewanna exploration tenement (the Project Area), which is located approximately 80 km north-west of Newman, in the Pilbara region of Western Australia (WA) (Figure 8-1). To support future exploration work in the Coondewanna tenement, BHPBIO require old access tracks in the northern section of the tenement to be regraded. A Native Vegetation Clearing Permit is required before clearing for these works can be undertaken. To support this application, GHD Pty Ltd was engaged to undertake vegetation and flora survey and fauna assessment of the western section of the Coondewanna tenement and two access tracks.

During the survey three broad floristic formations were identified, which comprised *Triodia* grasslands, *Eucalyptus* woodlands and *Acacia* (mulga) woodlands. These floristic formations were further divided into seven vegetation associations. Surveys of 34 quadrats, seven relévés and opportunistic records identified the presence of 174 flora species from 29 families. Fabaceae (46 taxa), Poaceae (21 taxa), Malvaceae (18 taxa), Scrophulariaceae (9 taxa) and Myrtaceae (9 taxa) were the most common families. The species diversity was consistent with previous surveys undertaken on nearby BHPBIO tenements to the north-west of the Project Area, however lower diversity of annual species was evident. This was attributed to the lack of sufficient rain prior to the survey that failed to encourage adequate growth of annual species.

The site investigation identified the following:

- Seven Priority flora taxa listed by the Department of Environment and Conservation (DEC).
- No Declared Rare Flora, EPBC listed species, or threatened communities were recorded.
- An additional eight Priority annual taxa may occur based on the habitats present within the Project Area.

The Project Area was rated as *Pristine* to *Excellent* condition using the Keighery (1994) vegetation condition rating scale. Only one weed species, **Bidens bipinnata*, was identified within the Project Area. The main disturbance evident was caused by fire, which is not uncommon in the Pilbara bioregion. Generally, in quadrats with recent fire impacts there was a reduction in species present in the upper and mid-stratum and a reduction in cover from ground-layer species, particularly *Triodia* species.

The fauna survey identified the following:

- Six broad habitat types, which were broadly consistent with the vegetation associations.
- 64 species of vertebrate fauna were recorded, using a combination of opportunistic sightings, targeted searches and signs. This consisted of:
  - 39 bird species;

- six native mammals and four introduced mammals and
- 15 reptile species.

- Two conservation significant fauna were recorded, the Western Pebble-mound Mouse (*Pseudomys chapmani*) and the Australian Bustard (*Ardeotis australis*).

An assessment against the 10 Clearing Principles indicates the project is unlikely to be at variance with any of the principles.

1. Introduction

1.1 Background and Purpose

BHP Billiton Iron Ore Pty Ltd (BHPBIO) wish to conduct an iron ore exploration programme within a section of the Coondewanna exploration tenement, which is located approximately 80 km north-west of Newman, in the Pilbara region of Western Australia (WA) (Figure 8-1). To support future exploration work in the Coondewanna tenement, BHPBIO require old access tracks in the northern section of the tenement to be regraded. A Native Vegetation Clearing Permit (NVCP) is required before clearing for these works can be undertaken.

GHD Pty Ltd (GHD) was engaged to undertake flora and vegetation survey and fauna assessment. The purpose of the study is to provide necessary biological survey information to support a NVCP application for proposed exploration activities within the tenement area.

1.2 Scope of Works

GHD was engaged by BHPBIO to undertake an ecological assessment of the Coondewanna Exploration Lease (the Project Area) (Figure 8-1). The ecological assessment consisted of a one season Level 2 vegetation and flora survey and a Level 1 fauna survey. This survey was undertaken with regards to EPA Guidance Statements 51 and 56 (EPA 2004a, EPA 2004b).

The objectives of the ecological assessment were to:

- Review existing data (databases and literature) to assess the potential flora and fauna potentially present in the Project Area, in particular conservation significant species and communities, which are those listed under:
  - The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
  - The Western Australian *Wildlife Conservation Act 1950*, which includes:
  - *Wildlife Conservation (Rare Flora) Notice*; and
  - *Wildlife Conservation (Specially Protected Fauna) Notice.*
  - Department of Environment and Conservation (DEC) Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs), Priority Flora, Priority Fauna and Environmentally Sensitive Areas (ESAs).
- Conduct a Level 2 vegetation and flora survey that:
  - Identifies and maps the presence of Commonwealth and State listed conservation significant flora taxa and communities;
  - Identifies and maps the presence of other conservation significant flora and communities;

- Identifies and maps the presence of Declared Plants listed under the *Agriculture and Related Resources Protection Act 1976* and other environmental weed species;
- Describes and maps the main vegetation associations present, in accordance with BHPBIO guidelines. Provide a vegetation condition rating for each vegetation association;
- Describes the representation in a regional context of each vegetation association; and
- Provide a list of flora species present within the Project Area.

- Conduct a Level 1 fauna assessment that:
  - Assesses the presence and/or potential presence of conservation significant fauna species;
  - Assesses and maps the fauna habitats present within the Project Area; and
  - Lists the vertebrate fauna recorded during the field survey (note: this excludes Short-range endemic invertebrates).
- Prepare a report that details the results of the desktop review, methodology, results and discussion, including appendices that provide a glossary, species lists and data sheets.

2. Methodology

The approach to ecological assessment has been undertaken with regards to the following resources:

- Environmental Protection Authority (EPA) Guidance Statement No. 51, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004a).
- EPA Position Statement No. 3, Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002).
- EPA Guidance Statement No. 56, Terrestrial Fauna Surveys form Environmental Impact Assessment in Western Australia (EPA, 2004b).
- Department of Environment and Conservation (DEC) Clearing Guidance, A Guide to Clearing Permits (DEC, 2005).
- Department of Mines and Petroleum (DMP) Fact Sheet, Information Required to Assess Your Clearing Permit Application (DMP, 2010).
- BHPBIO (2009) Guidance for Vegetation and Flora Surveys in the Pilbara Region.

2.1 Database and Literature Review

Prior to the field survey, a desktop review was conducted to document the existing environment within the Project Area and identify and conservation significant flora and fauna species that have historically been recorded or have potential to occur.

The desktop assessment included searches and reviews of:

- The DEC's *Threatened (Declared Rare) Flora* database, the *Western Australian Herbarium Specimen* database, the DEC's *Declared Rare and Priority Flora List* within an area bounded by 23^0 12' – 23^0 34' S and 119^0 26' – 119^0 49' E.
- The Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) Protected Matters Search Tool to identify species and communities protected under the Environment *Protection and Biodiversity Conservation Act 1999* (EPBC Act). It should be noted that these records are based on bioclimatic modelling, not actual observations of species within the area.
- *NatureMap* flora and fauna listings, using a 20 km buffer from a point located in the centre of the Project area (23^0 15' 42" S and 118^0 51' 42" E.
- Birds Australia data (Birdata database search 5/06/2010).
- Previous reports, including:
  - Area C West Fauna Assessment (ENV Australia, 2007);
  - Alligator Jaws Flora and Vegetation Assessment (ENV Australia, 2008a);
  - Boundary Ridge Flora and Vegetation Assessment (ENV Australia, 2008c); and

- Fork South and Parallel Ridge Exploration Lease Flora and Vegetation Assessment (ENV Australia, 2008d).

A preliminary appraisal of the Project Area was conducted using aerial photography, topographic maps, vegetation mapping and geology/soils mapping. This assisted in broadly identifying vegetation types and their extent, as well as enabling identification of areas to be targeted during the field investigations.

2.2 Vegetation and Flora

Two GHD botanists, Georgina Nielssen and Meranda Toner, completed the field survey from the 28 May to 3 June 2010. Flora sampling techniques included:

- Quadrat sampling – 50 x 50 m quadrats within the Coondewanna tenement;
- Relévés – along the two proposed access tracks;
- Site species lists;
- Random meander techniques; and
- Vegetation association mapping.

The distribution of these sites is shown in Figure 8-2.

Information recorded at each site included:

- Personnel/recorder.
- Date.
- GPS location.
- Quadrat orientation.
- Topography/aspect.
- Soil type and colour.
- Condition of vegetation (in accordance with the Government of WA (2000) *Bush Forever Volume 2 Directory of Bush Forever Sites.*
- Disturbances (including fire).
- List of vascular plant species, with details of:
  - Height.
  - Exact percentage cover.
  - Presence of flowers.
  - Form.
- Broad floristic formation.
- Vegetation Association.
- Vegetation sub-association.
- Photograph of the quadrat.

A vascular flora list was generated for the Project Area, this involved collation of flora taxa within each quadrat and wandering transect surveys throughout the site. Each taxon was collected and assigned a collection number.

Targeted surveys were undertaken within habitats deemed suitable for conservation significant species identified during the desktop assessment. For each population of conservation significant flora, the following was recorded:

- Location (GPS coordinates).
- Description of the vegetation associated.
- Estimation of population size.
- Photograph.

2.2.1 Flora Identification

All flora taxa were collected during the field programme and dried and fumigated in accordance with the requirements of the BHPBIO guidelines. Flora taxa were identified by the use of local and regional flora keys and by comparison with the named taxa held at the Western Australian Herbarium. Plant taxonomists who are considered to be an authority on a particular plant group were consulted, where required.

Confirmations of priority taxa were made by Steve Dillon, from the Western Australian Herbarium.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (DEC, 2010) and the EPBC Threatened species database provided by the Department of Environment, Water, Heritage and the Arts (DEWHA, 2010).

2.3 Fauna

The Level 1 fauna assessment was conducted with regards with EPA Guidance Statement No. 56 *Assessment of Environmental Factors for Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* and as that required by BHPBIO. The assessment included a desktop investigation, an opportunistic fauna field survey (vertebrate only), and a fauna habitat assessment, undertaken in conjunction with the vegetation and flora survey.

The field survey was undertaken by GHD zoologist Glen Gaikhorst on 27-31 May 2010. The site was visited in the morning to record active and feeding bird species and ran into the day to record reptiles and other opportunistic species.

The field assessment involved visual and aural surveys for any fauna species utilising the Project Area in addition to searches of the study area for any fauna signs, such as tracks, scats, bones, diggings and feeding signs. The fauna assessment did not involve any fauna trapping.

In addition, habitat types of the Project Area were identified and mapped. The habitat types present in the study area reflect both the landforms present and vegetation

associations. The vegetation types of the Project Area were classified according to structural similarities and used to describe the habitat types.

2.4 Likelihood of Occurrence Assessment

A risk assessment examining the likelihood of conservation significant taxa occurring in the Project Area was undertaken. Conservation significant taxa were those species listed under the WC Act, by the DEC, or listed in the Commonwealth EPBC Act, identified through desktop investigations. This assessment involved reviewing known species information such as distribution, habitat requirements, and previous records against site conditions to determine whether the species is likely to occur.

2.5 Survey Limitations

2.5.1 Fauna

The fauna assessment undertaken was a reconnaissance survey only and thus only sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Many cryptic and nocturnal species would not have been identified during a reconnaissance survey. Extensive detailed fauna surveys, involving trapping surveys, are required to obtain a more comprehensive list of fauna species that may utilise the Project Area.

The fauna assessment was aimed at identifying habitat types within the Project Area. In addition, terrestrial vertebrate fauna utilising the Project Area were identified; no sampling for invertebrates or aquatic species occurred.

2.5.2 Timing, Weather, Seasonality

This survey was carried out during only one season, and in one year. Complete faunal and vegetation and flora surveys often require multiple surveys, at different times of year, and over a period of a number of years, to enhance the likelihood of the record of species present.

Some flora species, such as annuals, are only available for collection at certain times of the year, and others are only identifiable at certain times (such as when they are flowering). Additionally, climatic and stochastic events (such as fire) may affect the presence of plant species. Species that have a very low abundance in the Project Area may be more difficult to locate, due to above factors.

Flora composition can also change over time, with flora species having specific growing periods, especially annuals and ephemerals (some plants lasting for a markedly brief time, some only a day or two). Therefore the results of future botanical surveys in this location may differ from the results of this survey.

In the twelve months prior to the survey event the Newman Airport recorded lower than average rainfall and lower rainfall than the 2006-2007 season (when the Projects listed in Table 4 were conducted):

- 197 mm in 2009 – 2010;

- 305 mm mean yearly rainfall; and
- 312 mm 2006 – 2007.

Is is expected that the lower rainfall in the previous months, contributed to lower species diversity on site.

2.5.3 Flora – survey scale

Sampling was conducted using quadrats, relevès and targeted searches by intensively traversing areas likely to contain conservation significant species. The majority of species are considered to have been identified using these techniques, however, it is likely that species with a low abundance, or with a very restricted local range, were not observed.

2.5.4 Access

Access was limited across the Project Area, with older drilling tracks almost completely overgrown. Due to safety concerns in remote areas surveys on foot were limited to 2 km from the vehicle. As such, certain areas of the site were unable to be surveyed and vegetation and habitat mapping in these areas has been based on an extrapolation of recorded site conditions and the interpretation of aerial photography.

2.5.5 Fire

Substantial areas across the site had been subject to fire in recent years. Within some of the vegetation associations the impact of fire is more notable if there was a hot burn and there are no resprouter species. This will result in a change in the structural representation of key indicator species. A lack of seasonal rain prior to the survey in areas that had been recently burnt and contained dead stands of *Acacia anerua* with very limited understorey resulted in patchy and denuded areas on the plains that were not surveyed.

2.6 Nomenclature

For the purposes of consistency, scientific and common names for flora and fauna follow those used in the following sources:

- Checklist of the vertebrates of Western Australia (Western Australian Museum, 2008).
- Descriptions by the Western Australian Herbarium, Department of Environment and Conservation – *FloraBase* website (http://florabase.dec.wa.gov.au).

3. Environmental Context

3.1 Climate

The Project area is located in the Pilbara region of Western Australia. The nearest climate data to the Project area is available from the Newman Airport Bureau of Meteorology weather station.

The Newman area has an arid-tropical climate with two distinct seasons, a hot summer from October to April and a mild winter from May to September. The area experiences a wide range of temperature, as indicated by the mean annual maximum and minimum temperature range (Table 1).

Table 1 Newman Climate Data

Mean Annual Maximum Temperature Range:	39.0 ^{0}C (January) and 22.3 ^{0}C (July)
Mean Annual Minimum Temperature Range:	25.3 ^{0}C (January) and 8.1 ^{0}C (July)
Mean Annual Summer Rainfall:	158.5 mm (December to February)
Mean Annual Winter Rainfall:	48.1 mm (June to August)
Mean Annual Rainfall:	310.2 mm
Mean Annual Rain days per year:	29.5

(Bureau of Meteorology , 2010)

Rainfall in the Pilbara is often sporadic, and can occur in summer and winter. The Newman area has an average rainfall of 310.2 mm per annum (Table 1).

During the two weeks prior to the field investigation 4.8 mm of rainfall was received in Newman, with 70.6 received in the three previous months, of which 61.2 mm were received in April. The average long term rainfall for the corresponding 3 month period is 70 mm however it is usually evenly spread out over the three months. The average monthly rainfall and temperature and monthly rainfall for the twelve months prior to the survey for Newman Airport is shown in Figure 3-1.

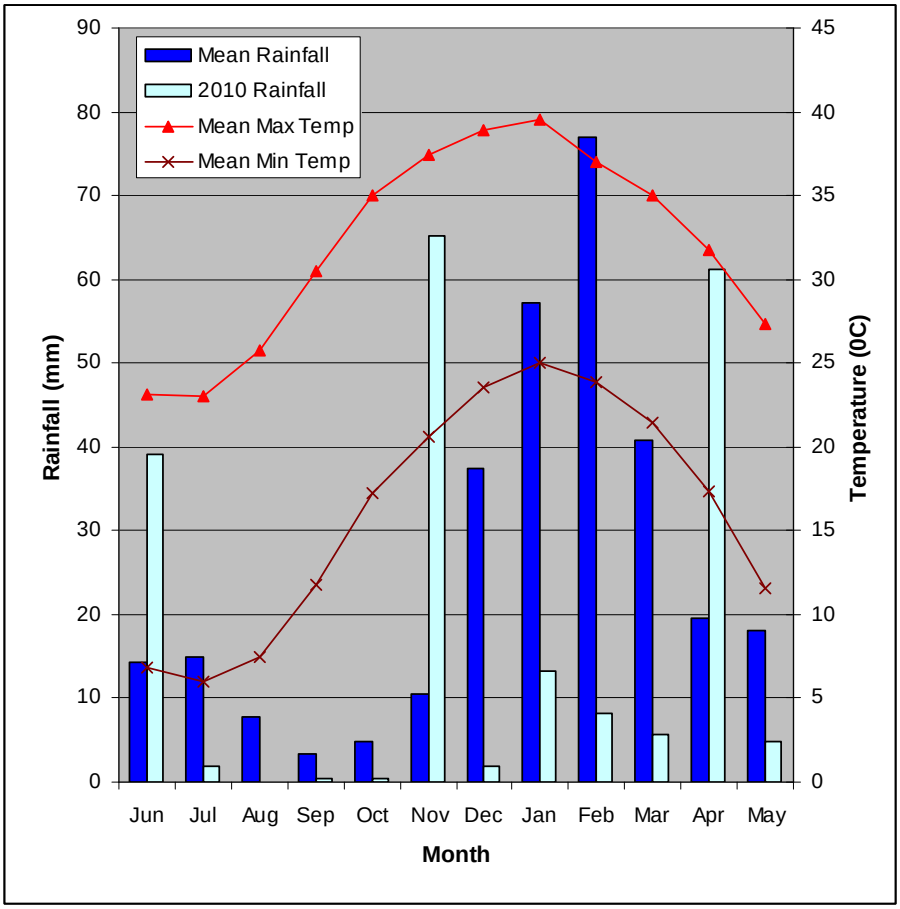

Figure 3-1 Average monthly rainfall and maximum and minimum temperatures at Newman Airport (1971 – 2010) and monthly rainfall for the 12 months prior to the field survey.

3.2 Geology and Soils

The Project Area contains multiple landforms such as ridges, gully, drainage lines and floodplains. The Geological Survey of Western Australia (Tyler et al 1991) indicates that the geology of the Project Area comprises five geological units as described below in Table 2.

Table 2 Geology of the Coondewanna Study Area

Geological Unit	Unit Description
Czc	Colluvium: Partly consolidated quartz and rock fragments in silt and sand matrix; old valley-fill deposits.
Hb	Brockman Iron Formation: Banded iron-formation, chert and minor shale.
Hs	Mount McRae Shale and Mount Sylvia Formation: interbedded

	shale, chert and banded iron-formation.
Qa	Alluvium: Unconsolidated silt, sand, and gravel.
Qw	Alluvium and colluvium: Red brown sandy and clayey soil.

3.3 Land Systems

Land Systems are grouped according to a combination of landform, soils, vegetation and drainage patterns. Based on mapping by van Vreeswyk *et al.* (2004) the Project Area contains six Land Systems:

- Newman: Rugged jaspilite plateaux, ridges and mountains; supporting hard spinifex grasslands; forms 8 % of the Pilbara bioregion;
- Boolgeeda: Stony lower slopes and plains below hill slopes; supporting hard and soft spinifex grasslands and mulga scrublands; forms 4.3% of the Pilbara bioregion;
- Wannamunna: Hardpan plains and internal drainage tracts; supporting mulga shrublands and woodlands; forms 0.3% of the Pilbara bioregion;
- Spearhole: gently undulating hardpan plains supporting groved mulga shrublands and hard spinifex; forms 0.7% of the Pilbara bioregion;
- Rocklea: basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands; forms 12.7% of the Pilbara bioregion; and
- Platform: dissected slopes and raised plains supporting hard spinifex grasslands; forms 0.9% of the Pilbara bioregion.

3.4 Bioregions and Subregions

The Project Area is located in the Pilbara bioregion, based on the climate, geology, landform, vegetation and animal communities. The Pilbara bioregion is further refined into four subregions, with the Project Area located in the Hamersley subregion.

The Hamersley subregion is characterised by mountainous areas of Proterozoic sedimentary ranges and plateaux, intersected by gorges. Mulga low woodland over bunch grass on fine textured souls in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of ranges (Kenwick, 2001). The dominant landuse in the subregion is grazing, and data suggests that approximately 65% of the Pilbara bioregion is grazed (DEWHA, 2010).

3.5 Vegetation Communities

Vegetation mapping of the Pilbara region was completed on a broad scale (1:1,000,000) by Beard (1975). The Project is in the Hamersley Plateau, which forms part of the Fortescue Botanical District in the Eremaean Botanical Province of Western Australia (Beard, 1975).

Native vegetation types represented in the survey area; their regional extent and reservation status are drawn from Shepherd, *et al*. (2002), and Shepherd (pers. comm.) and are shown in Table 3.

Table 3 Vegetation Extent and Status in the Hamersley IBRA region

Vegetation Association Number	Association Description	Pre-European Extent (ha) in Hamersley IBRA region	Current Extent (ha) in Hamersley IBRA region	% Remaining	% Pre-European Extent in IUCN Class I-IV Reserves
18	Low woodland; mulga (*Acacia aneura*)	19892437	19890348	100.0	5.7
29	Sparse low woodland; mulga, discontinuous in scattered groups	7904064	7904064	100.0	5.2
82	Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*	2565930	2565930	100.0	10.5

The extent of the vegetation in the Project Area is considered of *Least Concern*, i.e. intact, with 100% of the pre-European extent remaining.

4. Vegetation and Flora Results

4.1 Vegetation Association

A vegetation community is an association or subassociation that has similar structure and floristics and occurs within the same land zone. Vegetation association mapping was undertaken using a combination of field data, landform, topography and aerial photography interpretation.

Due to limitations with site access, particularly with the two northern access tracks, vegetation association delineation was unable to be confirmed by the field survey in some areas within the Project Area. In these areas, vegetation associations were extrapolated from the typical patterns noted during the field programme for the landform type and aerial photography interpretation.

During the assessment, seven vegetation associations were identified with in the Project Area (Figure 3-1 and Figure 3-2). A summary of the vegetation associations is provided in Sections 4.1.1 to 4.1.7. Further details on the association description including flora lists, structure and condition notes are provided in 0. Copies of the quadrat data sheets are also provided in 0.

4.1.1 Broad Floristic Formation: *Triodia* Hummock Grasslands

Vegetation Association: Hummock Grassland of *Triodia pungens* with Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia*, *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* over Low Scattered Shrubs of *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis* and *Keraudrenia velutina* subsp. *elliptica* on skeletal clay loam on ridgelines.

Quadrats Sampled: This vegetation association was recorded in Quadrats 25 and 26.

Area: 65.43ha

Association Location: This association was recorded along the ridgeline.

Geology: Banded Ironstone Formation.

Soil: Red skeletal clay loam with very hight percentage of rocks covering the soil.

Average Bare Ground: 45%

Average Litter Cover: 2.5% Logs, 1.5% Twigs, 1% Leaves

Average Fire Age: <2yrs

Disturbances: Fire

Condition Rating: Pristine (1)

Indicator/Diagnostic Species: *Eucalyptus leucophloia* subsp. *leucophloia*, *Eucalyptus kingsmillii* subsp. *kingsmillii*, *Triodia pungens* and *Mirbelia viminalis.*

Vegetation Sub-Association

Stratum Description	Example Growth Forms
Canopy Layer (1.5-4m)	Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia*, *Eucalyptus kingsmillii* subsp. *kingsmillii*, *Eucalyptus gamophylla* and *Corymbia hamersleyana*.
Mid-Storey - Shrubs (1.5 m)	Open Shrubland of *Hakea lorea* subsp. *lorea* with scattered *Acacia pyrifolia* and *Acacia maitlandii.*
Mid-Storey - Shrubs (0.2-0.5m)	Low Scattered Shrubs of *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis*, *Keraudrenia velutina* subsp. *elliptica*, *Mirbelia viminalis* and *Cryptandra monticola*.
Hummock Grasses (0.3m)	Hummock grassland of *Triodia pungens*.
Tussock Grasses (0.15-0.3m)	Open Tussock Grassland of *Eriachne ? obtusa* and *Cymbopogon ambiguus*.

4.1.2 Broad Floristic Formation: *Acacia* Closed Woodland

Vegetation Association: Low Closed Woodland of *Acacia adsurgens* or *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia* sp mulga short phyllodes (B.R. Maslin et al. BRM 9201), *Acacia aneura* var ? *pilbarana* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies.

Quadrats Sampled: This vegetation association was recorded in Quadrats 5 and 28.

Area: 85.78ha

Association Location: This association was recorded in the deeply incised gullies and gorges.

Soil: Red skeletal clay loam.

Average Bare Ground: 45%

Average Litter Cover: 2.5% Logs, 6% Twigs, 23% Leaves

Average Fire Age: 5 to 20 yrs

Disturbances: Fire

Condition Rating: Pristine to Excellent (1 to 2)

Indicator/Diagnostic Species: *Acacia adsurgens* or *Acacia catenulata* subsp. *occidentalis*

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4-8m)	Low Closed Woodland of *Acacia adsurgens* or *Acacia catenulata* subsp. *occidentalis*.
Overstorey – Trees (4m)	Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia ferriticola.*
Mid Storey – Shrubs (3)	Scattered Tall Shrubs of *Capparis mitchellii*.
Mid Storey – Shrubs (1- 2m)	Open Shrubland of *Acacia* sp mulga short phyllodes (B.R. Maslin et al. BRM 9201), *Acacia aneura* var ? *pilbarana*, *Acacia tenuissima* and *Psydrax latifolia*.
Mid Storety – Shrubs (0.2 – 0.4m)	Low Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa*, *Solanum ferocissimum* and *Ptilotus obovatus*.
Groundlayer – Hummock (0.4m)	Very Open Hummock Grassland of *Triodia pungens* or *Triodia* sp. Mt Ella (M.E. Trudgen 12739).
Groundlayer – Tussock (0.4m)	Very Open Tussock Grassland of *Eriachne ? obtusa*, *Cymbopogon ambiguus* and *Themeda* ? sp Mt Barricode (M.E. Trudgen 2471).
Groundlayer Herbs/Other (0.15m)	Scattered *Cheilanthes sieberi* subsp. *sieberi.*

4.1.3 Broad Floristic Formation: *Eucalyptus* Low Open Woodland

Vegetation Association: Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock Grassland of *Triodia* sp.Mt Ella (M.E.Trudgen 12739) and *Triodia pungens* on red skeletal clay loam on steep slopes.

Quadrats Sampled: This vegetation association was recorded in Quadrats 1, 4, 24, 27 and R5.

Area: 478.06ha

Association Location: This vegetation association was recorded on steep slopes.

Soil: Red skeletal clay loam

Average Bare Ground: 60%

Average Litter Cover: <2% Logs, 3% Twigs, 1.5% Leaves

Average Fire Age: From <2 to 20 yrs

Disturbances: Fire

Condition Rating: Pristine (1)

Indicator/Diagnostic Species: *Eucalyptus leucophloia* subsp. *leucophloia, Eriachne ? obtusa, Triodia pungens, Triodia* sp. Mt Ella (M.E.Trudgen 12739)

Vegetation Sub Assocation

Stratum Description	Species
Overstorey – trees (2 - 6m)	Low Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Eucalyptus gamophylla*.
Overstorey – trees (4m)	Scattered Low Trees of *Callitris columellaris*.
Overstorey – Shrubs (3-4m)	Scattered Tall Shrubs of *Hakea lorea* subsp. *lorea*.
Mid Storey – shrubs (1-2m)	Open Shrubland of *Acacia pyrifolia*, *Eremophila forrestii subsp. forrestii*, *Rulingia luteiflora*, *Gossypium robinsonii, Grevillea berryana*.
Midstorey – shrubs (0.2-0.4 m)	Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola*, *Keraudrenia velutina* subsp. *elliptica* and *Acacia bivenosa*.

Groundlayer – Hummock (0.2-0.4)	Hummock Grassland of *Triodia* sp. Mt Ella (M.E.Trudgen 12739) and *Triodia pungens*.
Groundlayer – Tussock (0.2-0.6)	Very Open Tussock Grassland of *Themeda* ? sp Mt Barricode (M.E. Trudgen 2471), *Eriachne* ? *obtusa* and *Cymbopogon ambiguus*.
Groundlayer Herbs (0.4m)	Scattered Herbs of *Olearia stuartii*.

4.1.4 Broad Floristic Formation: *Eucalyptus* Open Woodland

Vegetation Association: Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa*, *Gossypium robinsonii, Acacia tenuissima* over a Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on skeletal red clay loam on lower slopes.

Quadrats Sampled: This vegetation association was recorded in Quadrats 2, 3, 6, 20, 21, 23 R1, R2, R3, and R4.

Area: 463.14ha

Association Location: This association occurs on the lower slopes leading onto the plains.

Soil: Red skeletal clay loam

Average Bare Ground: 65%

Average Litter Cover: 1% Logs, 2% Twigs, 1% Leaves

Average Fire Age: From <2 to 20 yrs

Disturbances: Fire

Condition Rating: Pristine (1)

Indicator/Diagnostic Species: *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Hakea lorea* subsp. *lorea, Triodia pungens.*

Vegetation Sub-Association

Stratum Description	Species
Overstorey – trees (6-12 m)	Low Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Eucalyptus gamophylla*.
Sub-Canopy (2-3 m)	Scattered Low Trees of *Eucalyptus gamophylla*, *Eucalyptus*

	leucophloia subsp. *leucophloia* and *Corymbia hamersleyana*.
Mid Storey – shrubs (3m)	Scattered Tall Shrubs of *Hakea lorea* subsp. *lorea*.
Mid Storey – shrubs (1-2m)	Open Shrubland of *Acacia bivenosa*, *Gossypium robinsonii Acacia tenuissima, Acacia adsurgens* and *Acacia pyrifolia*.
Midstorey – shrubs (0.2-0.8 m)	Low Open Shrubland of *Ptilotus obovatus*, *Acacia hamersleyensis, Senna ? ferraria*, *Halgania gustafsenii* var. ? Mid West (G. Perry 370) and *Keraudrenia velutina* subsp. *elliptica* .
Groundlayer – Hummock (0.2-0.4m)	Hummock Grassland of *Triodia pungens* and *Triodia melvillei*.
Grounlayer – Tussock (0.2-0.4m)	Very Open Tussock Grassland of *Eriachne ? obtusa* and *Themeda* ? sp Mt Barricode (M.E. Trudgen 2471).
Groundlayer – Herbs (0.4m)	Scattered Herbs of *Olearia stuartii.*

4.1.5 Broad Floristic Formation: *Eucalyptus* Low Open woodland

Vegetation Association: Low Open Woodland of *Eucalyptus gamophylla*, *Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia aneura* var. ? *pilbarana*, *Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* on red sandy clay loam plains.

Quadrats Sampled: This vegetation association was recorded in Quadrats 7, 8, 18, 19, 33 R6 and R7.

Area: 601.63 ha

Association Location: This association occurs on the plains leading away from the hills.

Soil: Red sandy clay loam

Average Bare Ground: 35%

Average Litter Cover: 1% Logs, 3% Twigs, 1% Leaves

Average Fire Age: From <2 to 20 yrs

Disturbances: Fire

Condition Rating: Pristine (1)

Indicator/Diagnostic Species: *Eucalyptus gamophylla* or *Eucalyptus trivlava*, *Acacia aneura* var. ? *pilbarana*, *Keraudrenia velutina* subsp. *elliptica* and *Triodia pungens*.

Vegetation Sub-Association

Stratum Description	Species
Overstorey – trees (3-8m)	Low Open Woodland of *Eucalyptus gamophylla*, *Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii.*
Sub-Canopy (3-4 m)	Scattered Low Trees of *Corymbia hamersleyana*, *Corymbia deserticola* subsp *destercola* and *Acacia prunocarpa.*
Mid Storey – shrubs (3m)	Scattered Tall Shrubs of *Hakea lorea* subsp. *lorea*.
Mid Storey – shrubs (1-2m)	Open Shrubland of *Acacia anerua* var. ? *pilbarana*, *Acacia adsurgens* and *Acacia bivenosa.*
Midstorey – shrubs (0.2-0.8 m)	Low Open Shrubland of *Keraudrenia velutina* subsp. *elliptica*, *Rulingia luteiflora* and *Eremophila phyllopoda*.
Groundlayer – Hummock (0.2-0.4m)	Hummock Grassland of *Triodia pungens*.
Groundlayer – Tussock (0.2-0.4m)	Very Open Tussock Grassland of *Themeda* ? sp Mt Barricode Barricode (M.E. Trudgen 2471).

4.1.6 Broad Floristic Formation: *Acacia* Low Woodland

Vegetation Association: Low Woodland of *Acacia ayersiana*, *Acacia aneura* var. ? *microcarpa* and *Eucalyptus tephrodes* over Open Shrubland of *Acacia adsurgens*, *Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains.

Quadrats Sampled: This vegetation association was recorded in Quadrats 9, 11, 12, 13, 14, 15, 16, 17, 22, 30, 31, 32 and 34.

Area: 2,270.21ha

Association Location: This association occurs on the plains.

Soil: Red clay loam

Average Bare Ground: 60%

Average Litter Cover: 5% Logs, 5% Twigs, 7% Leaves

Average Fire Age: From <5

Disturbances: Fire

Condition Rating: Pristine (1)

Indicator/Diagnostic Species: *Acacia ayersiana, Acacia anerua* var.? *microcarpa*, *Keraudrenia velutina* subsp *elliptica* and *Triodia pungens.*

Vegetation Sub-Association

Stratum Description	Species
Overstorey – trees (4-6m)	Low Woodland of *Acacia ayersiana, Acacia aneura* var. ? *microcarpa* and *Eucalyptus tephrodes.*
Sub-Canopy (3-4 m)	Low Open Woodland of *Acacia aneura* var. ? *pilbarana* with Scattered Low Trees of *Acacia pachyacra* and *Eucalyptus gamophylla.*
Mid Storey – shrubs (1-2m)	Open Shrubland of *Acacia adsurgens, Acacia ancistrocarpa* and *Acacia catenulata* subsp *occidentalis*.
Mid Storey – shrubs (<1m)	Low Scattered Shrubs of *Keraudrenia velutina* subsp *elliptica, Ptilotus ? schwartzii* and *Eremophila forrestii* subsp *forrestii.*
Midstorey – shrubs (0.2-0.8 m)	Low Open Shrubland of *Keraudrenia velutina* subsp. *elliptica*, *Rulingia luteiflora* and *Eremophila phyllopoda*.
Groundlayer – Hummock (0.2-0.4m)	Hummock Grassland of *Triodia pungens* and *Triodia melvillei.*
Groundlayer – Tussock (0.2-0.4m)	Open Tussock Grassland of *Aristida obscura, Themeda triandra and Aristida inaequiglumis.*

4.1.7 Broad Floristic Formation: *Aristida* Tussock Grassland

Vegetation Association: Open Tussock Grassland of *Aristida jerichoensis* var. *subpinulifera* and *Enneapogon lindleyanus* with occurrences of High Open Shrubland of *Acacia ? ayersiana* and *Acacia sibirica.*

Quadrats Sampled: This vegetation association was recorded in Quadrats 10 and 29.

Area: 142.83ha

Association Location: This association occurs on the open plains.

Soil: Red sandy clay loam.

Average Bare Ground: 80%

Average Litter Cover: 0% Logs, 1% Twigs, 1% Leaves

Average Fire Age: 5 to 20 yrs

Disturbances: Fire

Condition Rating: Pristine to Excellent (1-2)

Indicator/Diagnostic Species: Tussock grasses – many not identifiable due to lack of features.

Vegetation Sub-Association

Stratum Description	Species
Overstorey – Shrubs (4m)	High Open Shrubland of *Acacia? ayersiana* and *Acacia sibirica*
Sub-Canopy – Shrubs (<1 m)	Scattered Shrubs of *Eremophila lanceolata, Grevillea berryana, Senna glutinosa* subsp. *glutinosa, Acacia aneura* var. ? *pilbarana* and *Rhagodia* sp. Hamersley (M. Trudgen 17794).
Groundlayer – Hummock (0.2 m)	Very Open Hummock Grassland of *Triodia pungens.*
Groundlayer – Tussock (0.2-0.4m)	Open Tussock Grassland of *Aristida jerichoensis* var. *subpinulifera* and *Enneapogon lindleyanus.*

4.2 Vegetation Condition

The Project Area was generally in *Excellent* to *Pristine* condition (Keighery, 2000), with minimal impact from weed invasion, erosion, previous clearing or extensive grazing.

Historical vegetation clearing associated with access tracks for exploration drilling activities undertaken in the 1980s was evident in the Project Area. However, these areas have undergone extensive natural regeneration with little remaining evidence of the previous disturbance.

The main disturbance recorded within the Project Area was caused by fire. This has produced a mosaic of vegetation with different structures as a result of time elapsed since the fire impact. An example from the Project Area is illustrated by Plate 1 and Plate 2.

Mapping showing the extent of recent burns is provided in Figure 8-4.

Plate 1: *Eucalyptus leucophloia* subsp. *leucophloia* open woodland on plains recently burnt.

Plate 2: *Eucalyptus leucophloia* subsp. *leucophloia* open woodland on plains with no recent fire evident.

4.3 Flora Species

During the field survey 174 taxa from 29 families were recorded. The dominant families consisted of:

- Fabaceae; 7 genera; 46 taxa
- Poaceae; 8 genera; 22 taxa
- Malvaceae; 11 genera; 18 taxa
- Scrophulariaceae; 2 genera; 9 taxa
- Myrtaceae; 2 genera; 9 taxa

Of the 174 taxa, 15 could not be positively identified to species level due to lack of key features for identification, such as the presence of flowers or seeds. The lack of fertile plant parts (flowers, seeds) was noted across most taxa observed within the Project Area. This is likely due to a lack of sufficient rainfall to promote development of fertile components at the Project Area occurring prior to the survey, despite the survey occurring in the period where flora taxa within the Project Area typically flower or seed.

A summary of the results of the desktop and site surveys is provided in Table 4. A copy of the database searches is provided in 0.

Table 4 Summary of Species Recorded from the Coondewanna Survey and nearby BHP sites.

Project	Study Area Size km^2	Number of Quadrats	Number of Vegetation Associations	Number Families	Number Genera	Number Taxa	Conservation Significant	Weeds
Alligator Jaws	28	46	10	48	109	264	4	5
Boundary Ridge	16	40	9	46	122	294	3	4
Fork South	22	39	18	50	131	326	4	6
Parallel Ridge	13	21	12	47	121	282	3	6
NatureMap						488	14	8
Coondewanna Survey	39	41	7	29	72	174	7	1

The Coondewanna Project Area survey recorded lower species diversity than previous surveys undertaken in the surrounding area (ENV, 2009a; 2009b; 2009c). It is expected that this is largely due to a lack of sufficient rainfall at the Coondewanna Project Area to facilitate germination of annual species. In addition to the poor rainfall the lower species diversity at the site may also be attributed to the limited number of vegetation associations/ flora habitats identifed as being present in the Coondewanna survey area.

Figure 3-1 shows above average rainfall in March at Newman airport however it appears as though the rain did not extend to Coondewanna approximdateyl 60km ot the north of Newman.

GHD considers that it is difficult to make a direct comparison between the number of families between this survey and previous surveys in the area, as there has recently been a taxonomic revision of the grouping of plant families and genera by the Western Australian Herbarium. For example, *Acacia* (formerly in Mimosaceae) and *Senna* (formerly in Caesalpiniaceae) have now been grouped with other legumes in the Fabaceae family and *Hibiscus, Corchorus, Sida* and *Triumfetta* are now all grouped in the Malvaceae family.

4.4 Conservation Significant Species and Communities

Conservation significant flora taxa and ecological communities within Western Australia are protected under the provisions of the Commonwealth (EPBC Act) and State *Wildlife Conservation Act 1950* WC Act). Conservation significant flora taxa are also listed by the DEC as Priority flora. Priority Ecological Communities (PECs) are also listed by the DEC as potentially conservation significant communities. The desktop investigation identified the presence or potential presence of 32 conservation

significant species and one Priority Ecological Community (PEC) within the Project Area and its surrounds.

During the field survey six DEC Priority listed conservation significant flora taxa were identified, a summary of the Priority species recorded is provided in Table 5 and species details are provided in Sections 4.4.1 to **Error! Reference source not found.**. The locations are shown on Figure 8-5.

A risk assessment examining the likelihood of the occurrence of conservation significant flora taxa and ecological communities was undertaken (see Table 6). These assessed attributes such as habitat and range combined with the habitats identified during the field surveys. This assessment also identified an additional 8 conservation significant species that are predominantly annual species and may potentially occur in the Project Area.

Table 5 Summary of Conservation Significant Flora Species Observed

Species	Priority	Number of Locations	Number of Individuals	Broad Floristic Association
Aristida jerichoensis var. *subspinulifera*	P1	1		*Aristida* Tussock Grassland
Spartothamnella puberula	P2	1	1	*Acacia* Closed Woodland
Dampiera metallorum	P3	2	10	*Acacia* Closed Woodland
Indigofera gilesii subsp. *gilesii*	P3	1	6	*Eucalyptus* Low Open Woodland
Rhagodia sp. Hamersley	P3	9	Too numerous to estimate	*Acacia* Low Woodland
Triodia sp. Mt Ella	P3	1	Too numerous to estimate	*Eucalyptus* Low Open Woodland
Eremophila magnifica subsp. *magnifica*	P4	1	10	*Eucalyptus* Low Open Woodland

4.4.1 *Aristida jerichoensis* var. *subspinulifera*

Aristida jerichoensis var. *subspinulifera* is a P1 listed grass. This species is a compactly tufted perennial, 0.3 to 0.8 m high, and has a distinctive muricate lemma groove. It is known to occur in hardpan plains.

This species was recorded from a single quadrat, located in the *Aristida* Tussock Grassland. This species may occur in other areas within the Project Area, but was not recorded.

Plate 3 Habitat of *A. jerichoensis* var. *subspinulifera*.

Plate 4 *Aristida jerichoensis* var. *subspinulifera*

4.4.2 Spartothamnella puberula

Spartothamnella puberula is a Priority 2 listed taxon. It is a spindly shrub that grows up to 1.5 m with small blue or white flowers. During this survey no flowering parts were observed. It was recorded from one location in the Project Area. This species was collected from a steep south-facing rocky gully.

Plate 5 Habitat of *Spartothamnella puberula*

4.4.3 Dampiera metallorum

Dampiera metallorum is a Priority 3 listed taxon. It is a rounded multi-stemmed perennial herb to 0.5m with blue flowers. During this survey no individuals with flowering parts were observed. Within the Project Area, this taxon was recorded from two locations. This species was collected from a steep south-facing rocky gully.

Plate 6 *Dampiera metallorum*

4.4.4 *Indigofera gilesii* subsp. *gilesii*

Indigofera gilesii subsp. *gilesii* is a P3 listed herb. It is a spindly shrub up to 1.5m with pink or purple flowers usually found amongst boulders and outcrops. During this survey no individuals with flowering parts were observed. Six scattered individuals of this species were recorded in one location on the south-facing scree slope of the Coondewanna Ridgeline.

Plate 7 *Indigofera gilesii* subsp. *gilesii* – form

Plate 8 *lindigofera gilesii* subsp. *gilesii* – leaves

4.4.5 *Rhagodia* sp. Hamersley

Rhagodia sp. Hamersley (M. Trudgen 17794) is a P3 listed plant. This plant belongs to the Chenopodiaceae family, which contain a number of xerophytic taxa adapted to variable climatic conditions. This plant occurred in large numbers on site (in the 1000's), as a shrub-layer component of the *Acacia* Low Woodlands. Individual numbers were not counted, however it was approximately a 2% component of the shrub-layer.

Plate 9 *Rhagodia* sp. Hamersley (M. Trudgen 17794)

4.4.6 *Triodia* sp Mt Ella (M.E. Trudgen)

Triodia sp Mt Ella (M.E. Trudgen 12739) is a Priority 3 (P3) listed hummock grass. According to information published on *FloraBase* this perennial grass grows to 0.4m. It occurs in orange-brown, pebblyloam amongst rocks and outcrops.

During this survey the *Triodia* sp. Mt Ella (M.E. Trudgen 12739) was collected from the first quadrat surveyed. This species was not identified as a priority species until the specimen had been checked by the BHPIO sponsored botanist at the WA herbarium. Additonal records for this species are based on field records identified by comparing specimens in the field with a collection in a field herbarium.

Plate 10 Habitat of *Triodia* sp. Mt Ella (M.E. Trudgen 12739)

4.4.7 *Eremophila magnifica* subsp. *magnifica*

Eremophila magnifica subsp. *magnifica* is a Priority 4 (P4) listed shrub. According to information published on *FloraBase* this shrub grows between 0.5 to 1.5 m in height, and occurs on skeletal soils over ironstone on rocky screes. This taxon may produce blue flowers from August to November. The specimens were not observed in flower during the survey.

During this survey individuals of the *E. magnifica* subsp. *magnifica* were observed along the scree slopes of the range. This taxon was collected opportunistically and was not present in any of the quadrats.

Plate 11 ***Eremophila magnifica*** **subsp.** ***magnifica***

Table 6 Likelihood of Occurrence - Conservation Significant Flora Species

Species/Community	Status	Habitat Requirements	Likelihood of Occurrence	Source
Acacia bromilowiana	P4	Previously identified on hill crests and scree slopes containing a mixture of vegetation types including: low eucalypt open woodlands, acacia woodlands and spinifex grasslands.	Similar habitat and associated species were recorded at Coondewanna during this survey, however given this species is often common where it has been recorded it is considered unlikely to occur in the Project Area.	*NatureMap* DEC WA Herbarium
Acacia effusa	P3	Previously recorded in stony red loams on scree slopes and low ranges containing a mixture of vegetation types including: eucalypt woodlands, acacia woodlands and spinifex grasslands.	Similar habitat and associated species were recorded at Coondewanna during this survey, however known locations of this species are further to the west. Additionally as this species is common (or abundant) where it occurs it is considered unlikely to occur in this location.	*NatureMap* WA Herbarium
Acacia subtiliformis	P3	Previously recorded in rocky calcrete soils on rolling or undulating hills containing a mixture of vegetation types including: eucalypts or acacia scrub or shrubland over spinifex grasslands.	No rocky calcrete soils were recorded at Coondewanna. It is considered unlikely that this species is present.	DEC WA Herbarium
Amaranthus centralis	P3	Previously recorded in low lying sandy or alluvial soils containing a mixture of vegetation types including: eucalypts and acacia woodlands and low grasses.	This annual species has been recorded from alluvial soils, none of which occur at Coondewanna.	DEC WA Herbarium
Aristida jerichoensis var. *subspinulifera*	P1	Previously recorded in hardpan plains or loamy clays often with acacia woodlands.	This species was recorded as being present at Coondewanna at the airfield site in the south western corner.	DEC WA Herbarium

Species/Community	Status	Habitat Requirements	Likelihood of Occurrence	Source
Brachyscome sp. Wanna Munna Flats (S. van Leeuwen 4662)	P1	Previously recorded in low lying clay-loam soils with gravels often with acacia woodlands, mixed shrubs and grasses.	Similar habitat and associated species were recorded at Coondewanna. There is the potential for this species to occur on the site.	DEC WA Herbarium
Brunonia sp. Long hairs (D.E. Symon 2440)	P1	Previously recorded in flood plain clay with acacia, mixed shrubs and grasses.	No suitable habitat for this species is present on the site. This species is unlikely to occur.	DEC *NatureMap* WA Herbarium
Dampiera metallorum	P3	Previously recorded in gritty red skeletal soils on banded ironstone hilltops or steep slopes containing a mixture of vegetation types including: eucalypts, acacia, mixed shrubs, Triodia and grasses	This species was recorded as being present from two locations in rocky gullies on the southern side of the range. Collected specimens were poor and there was no flowering material.	*NatureMap* WA Herbarium
Eragrostis sp. Mt Robinson (S. van Leeuwen 4109)	P1	Previously recorded in gritty red skeletal soils on banded ironstone hilltops or steep slopes containing a mixture of vegetation types including: eucalypts, acacia, mixed shrubs and Triodia grasslands. Endemic to query area.	Similar habitat and associated species were recorded at Coondewanna. There is the potential for this species to occur on the site.	*NatureMap* WA Herbarium
Eremophila magnifica subsp. *magnifica*	P4	Previously recorded in rocky soils on banded ironstone ridges containing a mixture of vegetation types including: eucalypts, acacias and Triodia grasslands.	This species was recorded as being present on the scree slopes on the north western side the Coondewanna Project Area.	WA Herbarium Alligator Jaw Boundary Ridge Fork South Parallel Ridge

Species/Community	Status	Habitat Requirements	Likelihood of Occurrence	Source
Eremophila magnifica subsp. *velutina*	P3	Previously recorded in rocky skeletal soils over banded ironstone on ridges, steep slopes and low gullies with eucalypt scrub or shrubland over Triodia grasslands.	This species occurs in a similar habitat type to *Eremophila magnifica* subsp. *magnifica.* Both species were identified as being present in similar habitat at Boundary Ridge to the north of the site. This species potentially occurs.	DEC WA Herbarium *NatureMap* Boundary Ridge
Euphorbia clementii	P2	Previously recorded in rocky gravel slopes and low slopes or plains containing a mixture of vegetation types including: eucalypts, mixed shrubs and Triodia grasslands.	Similar habitat and associated species were recorded at Coondewanna. However this species has only ever been collected west of the Project Area. This species is unlikely to occur on the Project Area.	NatureMap WA Herbarium
Goodenia lyrata	P1	Previously recorded in sandy or clay soils on low lying areas with mulga woodland.	Similar habitat and associated species were recorded at Coondewanna. There is the potential for this species to occur on the Project Area.	DEC WA Herbarium
Goodenia sp. East Pilbara (AA Mitchell PRP 727)	P3	Previously recorded on rolling hills and calcrete plains and swamps containing a mixture of vegetation types including: eucalypts, mixed shrubs and Triodia grasslands.	No calcretes or swamps have been recorded at Coondewanna. It is unlikely this would occur	DEC WA Herbarium
Indigofera gilesii subsp. *gilesii*	P3	Previously recorded in sandy, loamy or skeletal soils on low lying areas or on slopes containing a mixture of vegetation types including: eucalypt woodland, mixed shrubs and Triodia grasslands.	This species was recorded as being present within the rocky south facing slopes.	*NatureMap* WA Herbarium

Species/Community	Status	Habitat Requirements	Likelihood of Occurrence	Source
Josephinia sp. Marandoo (M.E. Trudgen 1554)	P1	Previously recorded in alluvial or sandy or clay loam soils on low lying channels or floodplains with acacias, mixed shrubs and mixed grasslands.	Collections of this species generally describe the associated vegetation as being creek or broad flow line neither of which occur within the Project Area.	*NatureMap* WA Herbarium
Lepidium catapycnon (Hamersley Lepidium)	R V - EPBC	Previously recorded in loamy or skeletal soils on scree slopes or hill tops with acacias, mixed shrubs and Triodia grasslands.	Suitable habitat and associated species occur within the Project Area.	EPBC Search DEC WA Herbarium
Nicotiana umbratica	P3	Previously recorded in sandy or loam soils often beside large protective boulders or under rock overhangs with acacias, mixed shrubs and Triodia.	No suitable habitat occurs on the site additionally the know distribution for this species is a considerable distance to the north of Coondewanna.	DEC WA Herbarium
Oldenlandia sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	Previously recorded in clay or loam soils on low lying plains or drainage lines with shrubs, herbs and mixed grasses.	No suitable habitat occurs on the site additionally the know distribution for this species is a considerable distance to the north of Coondewanna.	*NatureMap* WA Herbarium
Oxalis sp. Pilbara (M.E. Trudgen 12725)	P2	Previously recorded in rocky loam soils in gullies containing a mixture of vegetation types including: eucalypts, mixed shrubs and triodia grasslands.	Previous collections of this species include Mt Ella which is immediately to the west of the study area. Given the proximity and similar habitat present in the study area this species may occur within the study area	*NatureMap* WA Herbarium
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	Previously recorded in clay loam or sandy loam soils on low slopes and flat plains with acacias, mixed shrubs and mixed grasslands.	This species was recorded as being present at Coondewanna. It was common throughout the entire Mulga association.	*NatureMap* WA Herbarium

Species/Community	Status	Habitat Requirements	Likelihood of Occurrence	Source
Spartothamnella puberula	P2	Previously recorded in rocky skeletal or loamy soils in gullies containing a mixture of vegetation types including: eucalypts, mixed shrubs, Triodia and mixed grasses.	This species was recorded as being present at Coondewanna in a deep south facing rocky gully.	*NatureMap* WA Herbarium Alligator Jaws
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	Previously recorded in sandy loam or clay soils on low lying clay plains, cracking clays or drainage lines containing a mixture of vegetation types including: eucalypts, acacia, mixed shrubs and mixed grasses.	This a perennial species up to 1m that often grows in dense patches. No cracking clays were identified in the study area. It is unlikely this species is present.	*NatureMap* WA Herbarium
Thryptomene wittweri (Mountain Thryptomene)	V – EPBC, R	Previously recorded in very rocky skeletal soils on steep slopes and cliff edges or containing a mixture of vegetation types including: eucalypts, mixed shrubs and grasses.	This species is generally common where it occurs. The deep gullies and cliff edges at Coondewanna were surveyed and no small Myrtaceous species were identified within the Project Area. It is unlikely this species is present.	EPBC Search WA Herbarium
Triodia sp. Mt. Ella (M.E. Trudgen 12739)	P3	Previously recorded in skeletal soils or sandy loam on steep slopes and gully containing a mixture of vegetation types including: eucalypts, mixed shrubs, Triodia and mixed grasses.	Mt Ella occurs immediately to the west of the study area. The WA Herbarium notes that it is not very common and occurs mixed with other *Triodia* species. Given the proximity of Mt Ella and similar habitat it is likely this species occurs within the Project Area	Fork South WA Herbarium
Triodia sp. Shovelanna Hill (S. van Leeuwen 3835)	P3	Previously recorded in rocky, sandy, loamy or clay soils on slopes and gullies containing a mixture of vegetation types including: eucalypts, mixed shrubs, Triodia and mixed grasses.	This species has been recorded from a range of locations from Newman to Karijini. The study area and similar habitat occurs within the Project Area. It is likely this species may occur within the Project Area.	*NatureMap*

Species/Community	Status	Habitat Requirements	Likelihood of Occurrence	Source
Triodia triticoides	P1	Previously recorded in sandstone hills or stony-gravelly sandy loam slopes with eucalypts and acacia.	*FloraBase* records indicate this species only occurs in the far northern coast of the Kimberly.	DEC
Sida sp. Barlee Range (S. van Leeuwen 1642)	P3	Previously recorded in rocky skeletal soils in steep gullies or cliff bases containing a mixture of vegetation types including: eucalypts, mixed shrubs, Triodia and mixed grasses.	Suitable habitat and associated species occur in the Project Area. No previous collections have been made within the vicinity of the Project Area. This species is unlikely to occur in the Project Area.	Fork South
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	P1	Previously recorded in sandy clay loam soils on low plains containing a mixture of vegetation types including: acacias, mixed shrubs and mixed grasses.	Suitable habitat and similar associated species are present in the Project Area. This annual species could occur in the Project Area	*NatureMap* WA Herbarium
Coolibah Lignum Flats community	Level 1 – PEC	Coolibah-lignum flats: *Eucalyptus victrix* over *Muehlenbeckia* community	Does not occur, during the survey no *E. victrix* or *Muehlenbeckia* species were recorded.	Boundary Ridge

Note: Habitat descriptions are extracted from information published on *FloraBase*.

Note: The literature review also identified the following species that at were previously Priority listed, but have since been removed from the priority species listings:

- *Abutilon trudgenii* - P3 - Alligator Jaw and Boundary Ridge
- *Triumfetta leptacantha* - P3 – Alligator and Fork South

4.5 Weeds

During the field surveys one weed species was recorded within the Project Area. **Bidens bipinnata* (Bipinnate Beggartick) was recorded in Quadrat 10. This taxon was recorded as an extremely small seedling and comprised less than 2% of the cover within the Quadrat. This species was located in a small damp area assocated with a hardpan and airfield next to the track located on the south west corner of the site.

Plate 12 **Bidens bipinnata*.

Previous surveys from nearby areas and desktop assessments identified the following weed species: Ulcardo Melon (**Cucumis melo* subsp. *agrestis*); Speedy Weed (**Flaveria trinervia*); Yellow Wood Sorrel (**Oxalis corniculata*); Indian Weed (**Sigesbeckia orientalis*); and Caltrop (**Tribulus terrestris*). There is the potential for these species to occur within the Project Area. A paucity of rain in the 2010 season may have resulted in the weed species being under represented during this survey. There was no evidence of senescent or dead weed species along old drill tracks or the main track that traverses the Project Area.

No declared weeds have been identified on site.

5. Fauna Results

5.1 Fauna Habitats

Fauna habitat types are defined by the structural complexity and flora species present, presence of habitat features such as logs, hollows, leaf litter, rocks/crevices/caves and presence of water (either permanent and/or ephemeral). Six major fauna habitat types were identified during field assessment:

- Hill crest;
- Gorge/gullies;
- Breakaways;
- Plains; and
- Minor drainage lines.

The habitat types and their value to fauna within the Project Area are discussed in Table 7 and shown on Figure 8-6.

Table 7 Fauna Habitat Types

General Description	Vegetation description	Habitat significance	Photo
Hill Crest			
The hill crest includes the saddle of the range/hills which comprises rocky substrate but little outcropping.	Corresponds to Vegetation Association 1 Hummock Grassland of Triodia pungens with Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia*, *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* over Low Scattered Shrubs of *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis* and *Keraudrenia velutina* subsp. *elliptica* on skeletal clay loam on ridgelines.	Habitat significance- Low. This habitat is quite sparse as the *Triodia* species present tends to be small with scattered Eucalypts. Species may use this area opportunistically as they move between areas.	
Gorge/Gullies			
Gorges/gullies occur between the hills. These occur as a mix of rocky cliffs and breakaways from errosion. Some areas encompass different riparian vegetation. Most gorges/gullies are associated with temporary drainage lines from flash flooding.	Corresponds to Vegetation Association 2 and 3 Low Closed Woodland of *Acacia adsurgens* or *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia* sp mulga short phyllodes (B.R. Maslin et al. BRM 9201), *Acacia aneura* var ? *pilbarana* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies. And Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock	Habitat significance- High. Gorges/gullies provide excellent habitat for fauna species, the areas surveyed contained habitat features such as caves, crevices, rocky outcroping, tempory water and riparian vegetation. This habitat would be suitable for Northern Quoll, Pilbara Olive Python and potentially Ghost Bats and Pilbara Leaf-nosed Bat.	

General Description	Vegetation description	Habitat significance	Photo
	Grassland of *Triodia melvillei* and *Triodia pungens* on red skeletal clay loam on steep slopes.		
Breakaways and Slopes			
The slopes are made up of mixed sized rocks on the side of the rocky crests. They may include small rocky breakaways.	Corresponds to the following Vegetation Associations Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock Grassland of *Triodia melvillei* and *Triodia pungens* on red skeletal clay loam on steep slopes. And Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa*, *Gossypium robinsonii, Acacia tenuissima* over a Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on skeletal red clay loam on lower slopes.	Habitat significance- Moderate Breakawaus provide habitat for significant species, as they contain caves, crevices and rocky outcroping. This habitat would be suitable for Northern Quoll, Pilbara Olive Python and potentially Ghost Bats and potentially Pilbara Leaf-nosed Bat. Western Pebble-mound Mouse mounds were observed on the lower slopes.	

General Description	Vegetation description	Habitat significance	Photo
Plains			
Flat plains that are a mix of sand, clays and gibber.	Corresponds to the following Vegetation Associations Low Open Woodland of *Eucalyptus gamophylla*, *Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia aneura* var. ? *pilbarana*, *Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* on red sandy clay loam plains. Low Woodland of *Acacia ayersiana*, *Acacia aneura* var. ? *microcarpa* and *Eucalyptus tephrodes* over Open Shrubland of *Acacia adsurgens*, *Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains. And Open Tussock Grassland of *Aristida jerichoensis* var. *subpinulifera* and *Enneapogon lindleyanus* with occurrences of High Open Shrubland of *Acacia ? ayersiana* and *Acacia sibirica.*	Habitat significance- Moderate Plains provide habitat for significant species as they provide features such as sandy soils for digging, tree hollows and vegetation cover. This habitat is potentially suitable for Northern Quoll, Short-tail Mouse and Pilbara Leaf-nose Bats and Ghost Bats during feeding events. An Australian Bustard was observed in this habitat type.	

General Description	Vegetation description	Habitat significance	Photo
Minor Drainage lines			
Riparian vegetation is associated with temporary drainage lines cut into the environment. Minor drainage lines only flow during large rain events.	Located within Vegetation Assoications 5, 6 and 7. These drainage lines typically contained denser stands of vegetation represented in the adjacent plain. Low Open Woodland of *Eucalyptus gamophylla*, *Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia aneura* var. ? *pilbarana*, *Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* on red sandy clay loam plains. Low Woodland of *Acacia ayersiana*, *Acacia aneura* var. ? *microcarpa* and *Eucalyptus tephrodes* over Open Shrubland of *Acacia adsurgens*, *Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains. Open Tussock Grassland of *Aristida jerichoensis* var. *subpinulifera* and *Enneapogon lindleyanus* with occurrences of High Open Shrubland of *Acacia ? ayersiana* and *Acacia sibirica.*	Habitat significance- Moderate Minor drainage lines provide habitat for significant species as they provide habitat features such as embankments for digging/dening, tree hollows, vegetation cover and tempory water. This habitat is potentially suitable for Night Parrot, Northern Quoll, Pilbara Olive Python, Short-tail Mouse and Pilbara Leaf-nose Bats and Ghost Bats during feeding events.	

5.2 Fauna Species

Field surveys of the Project Area recorded a total of 64 species of vertebrate fauna, composing of 39 birds, 15 reptile, six native mammals and four introduced mammals. A species list for the Project Area is provided at 0. Of the observed species seven birds, five reptiles, three native mammals and three non native mammals were not identified during desktop assessment. This is possibly due to limited surveys in the area. Species that are cryptic such as the Pebble Dragon (*Tympanocryptus cephalus*) or nomadic/large distribution species like the Black Kite (*Milvus migrans*) may also only be observed periodically.

A breakdown of the fauna species previously recorded in the surrounding area and during the survey events for Coondewanna is provided in Table 8.

Table 8 Summary of Fauna Diversity

Project	Number native mammals	Number reptiles	Number Amphibians	Number Birds	Number introduced Species
Area C	17	34	1	72	2
EPBC search	2	1	0	6	0
NatureMap	20	50	1	4	1
Birdata	0	0	0	75	0
Coondewanna Survey	6	15	0	39	4

5.3 Conservation Significant Fauna

Conservation significant fauna species are awarded a level of protection under either the Commonwealth EPBC Act (including threatened and migratory species) and/or the State WC Act. Conservation significant fauna species may also be listed by the DEC in a Priority list.

Desktop assessments identified the presence and/or potential presence of 13 conservation significant fauna species within the Project Area and its surrounds. During the fauna survey two conservation significant fauna species were observed:

- The Western Pebble-mound Mouse (*Pseudomys chapmani*) Priority 4; and
- The Australian Bustard (*Ardeotis australis*) Priority 4.

A brief description of the habitat preference and the likelihood of occurrence of conservation significant fauna taxa occurring in the Project Area are examined in

Table 9. Some of these species however once may have ranged throughout the area but may now be extinct or locally extinct. Other species maybe nomadic or have large home ranges and only opportunistically or infrequently use some areas.

5.3.1 Western Pebble-mound Mouse, Priority 4

The Western Pebble-mound Mouse (*Pseudomys chapmani*) was recognised during the desktop assessment as potentially occurring in the Project Area. Although animals of this species were not observed their large pebble-mounds were located on the gentle slopes of rocky hills (**Plate 13** and Plate 14) and are shown on Figure 8-5. Fewer mounds were located on the flats. Active mounds are recognised by presence of access holes with a chimney effect.

Plate 13 Western Pebble-mound Mouse mound

Plate 14 Western Pebble-mound Mouse mound entrance holes.

5.3.2 Australian Bustard

The Australian Bustard (*Ardeotis australis*) is listed by the DEC as a Priority 4 species. This taxon is a species that is not considered Threatened under the Western Australian WC Act but for which the DEC feels there is a cause for concern. A single Bustard was recorded in Spinifex grassland on the south-eastern side of the Project Area. The Australian Bustard can be found throughout Australia and is considered a common species.

Table 9 Conservation Significant Fauna identified via desktop assessment.

Species	Status	Habitat Requirements	Likelihood of Occurrence	Source
Night Parrot *(Pezoporus occidentalis)*	Endangered, Migratory terrestrial	Little information exists on the Night Parrot. Specimens have been collected in arid and semi arid regions of spinifex grasslands in stony or sandy areas of samphire and chenopod associations on floodplains, salt lakes and clay pans. Only one possible record in Western Australia in the last 100 years.	**Unlikely** Habitat present; Spinifex plains of scree slope	EPBC search
Northern Quoll *(Dasyurus hallucatus)*	Endangered	The Northern Quoll once ranged over much of northern Australia from the Pilbara, Kimberley through to southern Queensland which now has contracted into several disjunct populations. In the Pilbara the species is restricted to rocky escarpments, *Eucalyptus* woodlands and human dwellings. The species is terrestrial and arboreal using den sites that include hollows, logs, rocky crevices, termite mounds, goanna burrows and human areas.	**May Occur** Habitat present; Is possible to find the species in all habitat types however prefers gorges/ gullies and scree slopes with outcropping. Uncommon in areas > 200 km from the coast. No prior records in database searches.	EPBC search
Pilbara Leaf-nose Bat *(Rhinonicteris aurantia)*	Vulnerable	The distribution of the species is scattered populations in the east Pilbara and in the Barlee Range National Park in the Gascoyne region (Duncan, *et al.,* 1999). Roosting habitat consists of warm humid caves, fissures and old mine sites with warm humid areas (Hall, *et al*., 1997). During hunting this species flies slowly through rocky and well vegetated areas. In gorges and open hummock grasslands, sparse tree and shrub savanna (Duncan, *et al.,* 1999).	**May Occur** Habitat present; Gorges/ gullies with warm humid caves.	EPBC search

Species	Status	Habitat Requirements	Likelihood of Occurrence	Source
Pilbara Olive Python *(Liasis olivaceus barroni)*	Vulnerable Threatened	The Pilbara Olive Python is known to utilize a range of habitat types from escarpments, gorges, waterholes, granophyre rockpiles, spinifex grasslands and caves (Pearson, 1993; 2003). The species will also utilise manmade areas such as road overburdens, railway bunds, sewerage treatment ponds and recreational lakes (Pearson, 2003).	**Likely** Habitat present; May occur in all habitat types, but prefers gorges and areas of permanent water.	EPBC search *NatureMap*
Short-tailed Mouse *(Leggadina lakedownensis)*	Priority 4	The Short-tailed Mouse has a large range over most of northern Australia inhabiting monsoon tropical coast to semiarid environments including spinifex and tussock grasslands, samphire, sedgeland, *Acacia* shrubland, tropical *Eucalyptus* and *Melaleuca* woodlands and stony ridges (Strahan and Van Dyke, 2008).	**Possible** Habitat present; may occur in slopes, plains and along minor drainage lines	*NatureMap*
Ghost Bat *(Macroderma gigus)*	Priority 4	The Ghost bat utilizes a wide range of environments from rainforest, monsoon and vine scrub in the tropics to open woodlands and arid areas including desert (Toop 1985, Schulz 1986). Its survival is critically dependent on finding natural roosts in caves, crevices, deep overhangs, and artifical roosts such as abandoned mines (Hall *et al.* 1997). Each population appears to have a regionally centralised maternity site (Worthington-Wilmer *et al*. 1994) and populations are known to disperse in the non-breeding (dry) season (Toop 1979, 1985).	**Possible** Habitat present; In gorges/gullies in suitable caves, however there are no confirmed natural roosts in the Hamersley Ranges.	*NatureMap*
Western Pebble-mound Mouse *(Pseudomys chapmani)*	Priority 4	The Western Pebble-mound Mouse is known to occur in patchy populations within the central and southern Pilbara extending into the Little Sandy Desert. Once widespread into the Gascoyne and Murchison regions. The species lives in colonies that occur on gentle slopes of rocky ranges covered with stony pebbles, vegetated with Spinifex, Eucalypts and scattered shrubs (Strahan and Van Dyke, 2008).	**Present** Habitat present; Recorded	*NatureMap*

Species	Status	Habitat Requirements	Likelihood of Occurrence	Source
Australian Bustard (*Ardeotis australis*)	Priority 4	The Bustard ranges over much of Australia and utilises habitats such as grasslands, Spinifex and arid scrub with bluebush and saltbush. Also open woodland of mulga, mallee and heath (Morcombe, 2004).	**Present** Habitat present; Recorded	Birdata
Rainbow Bee-eater *(Merops ornatus)*	Migratory terrestrial	The Rainbow bee-eater ranges over much of Australia with southern populations migrating to northern regions. The bee-eater prefers woodlands, open forest, semi-arid scrub, grasslands, farmland and clearings in dense forest areas (Morcombe, 2004).	**Likely** Habitat present; Most suitable on plains.	EPBC search
Great Egret *(Ardea alba)*	Migratory wetlands	The Great Egret is found over most of Australia except it is excluded from the central deserts of Western Australia. The preferred habitat is wetlands, flooded plains of crops, pasture, dams and roadside ditches, estuarine mudflats, mangrove and reef (Morcombe, 2004).	**Unlikely** Habitat present; Along minor drainage lines but is limited due to seasonality and availability to the species.	EPBC search
Cattle Egret *(Ardea ibis)*	Migratory wetlands	The Cattle Egret is found over most of Australia except it is excluded from the central deserts and much of the semi arid areas of Western Australia. The preferred habitat is shallow open wetlands and margins, moist pastures of tall grass and mudflats (Morcombe, 2004).	**Unlikely** Habitat present; Along minor drainage lines but is limited due to seasonality and time available for the species.	EPBC search
Oriental Plover *(Charadrius veredus)*	Migratory wetland	The Oriental Plover is an annual migrant that can be found over most of Australia excluding the southern central deserts. This species prefers semi arid areas congregating on open grasslands, claypans and gibber plains. The species has also been recorded on mudflats, dense vegetation of Spinifex, heath and burnt areas (Morcombe, 2004).	**Unlikely** Habitat present; Most suitable on plains however the species has not previously been recorded in the area.	EPBC search

Species	Status	Habitat Requirements	Likelihood of Occurrence	Source
Fork-tailed Swift *(Apus pacificus)*	Migratory	The Fork-tailed Swift is a summer migrant that can be found over most of Australia. This species prefers high airspace over most habitat types and rarely utilizes land surface. (Morcombe, 2004).	**Likely** This species is an aerial spp. therefore habitat is not nessessary for the species to be present.	EPBC search

Note: EPBC listed marine species have been excluded, as the Project is exclusively terrestrial.

5.4 Introduced Species

Four introduced mammal species were observed in the Project Area. These were camel (*Camelus dromedarius*), cattle (*Bos taurus*), donkey (*Equus asinus*) and feral cat (*Felis catus*). The cattle are likely to be associated with pastoral activities while the camel, donkey and cat and are feral species.

6. Assessment Against Clearing Principles

Any clearing of native vegetation will require a permit under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act), except where an exemption applies under Schedule 6 of the Act or is prescribed by regulation in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*, and it is not in an Environmentally Sensitive Area (ESA).

To assist with the consideration of potential vegetation clearing an assessment against the “10 Clearing Principles” has been undertaken and is provided at Table 10.

The Project is not considered to be at variance with any of the 10 Clearing Principles.

Table 10 Assessment for the Clearing of Native Vegetation against the 10 Clearing Principles

Principle number	Principle	Assessment	Outcome
(a)	Native vegetation should not be cleared if it comprises a high level of biological diversity.	The project area is not considered to comprise a high level of biodiversity. 174 flora species and 31 vertebrate fauna species were recorded in the Project area a comparison with surveys from nearby areas shows that a lower level of species diversity is present on the site than is present in other similar areas in the Pilbara.	The proposal is unlikely to be at variance with the principle.
(b)	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	Two P4 fauna species (Western Pebble Mound Mouse [*Pseudomys chap]* and the Australian Bustard [*Ardeotis australis]*) were identified as being present in the Project area. However no specific habitat was noted within the Study site that was not present in the local and regional area.	The proposal is unlikely to be at variance with the principle.
(c)	Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No Declared Rare Flora was recorded in the project area during the survey. One Priority 1, one Priority 2, two Priority 3 and one Priority 4 plant species were identified within the Project area.	The proposal is unlikely to be at variance with the principle.
(d)	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a TEC.	No TECs or PECs or landforms or vegetation types that support TEC's and PEC's in the region were identified as being present within the Project area.	The proposal is unlikely to be at variance with the principle.

Principle number	Principle	Assessment	Outcome
(e)	Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	Clearing native vegetation within the Project area of will not significantly reduce the known pre-European extent of any of the vegetation associations. Pre-European extents for all vegetation associations of the Project area are approximately 100%.	The proposal is unlikely to be at variance with the principle.
(f)	Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	There are no wetlands or watercourses within the Project area. There are a number of vegetated ephemeral drainage lines that may be impacted by the clearing of native vegetation in the Project area.	The proposal is unlikely to be at variance with the principle.
(g)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Short-term soil erosion may be associated with clearing. Soil erosion can be mitigated by employing appropriate management measures during construction and maintenance.	The proposal is not considered to be at variance with the clearing principle.
(h)	Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	There are no conservation reserves in the vicinity of the Project Area.	The proposal is not at variance with the principle.
(i)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	The clearing of native vegetation is not considered likely to alter the quality of surface or ground waters within the Project Area. Localised erosion may increase following vegetation clearing. However, this can be mitigated using appropriate management and rehabilitation techniques. Localised erosion will not impact any water bodies.	The proposal is unlikely to be at variance with the principle.

Principle number	Principle	Assessment	Outcome
(j)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	The clearing of native vegetation is not considered likely to cause, or exacerbate, the incidence or intensity of local or regional flooding.	The proposal is unlikely to be at variance with the principle.

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8. Glossary/Definitions

Community: A natural aggregate of different species of organisms existing in the same environment. A vegetation community is described as an assemblage of plant species which are structurally and floristically similar and form a repeating 'unit' across the landscape.

Table 11 Conservation Categories and Definitions for *EPBC Act* Listed Flora and Fauna Species

Conservation Category	Definition
Extinct	Taxa not definitely located in the wild during the past 50 years
Extinct in the Wild	Taxa known to survive only in captivity
Critically Endangered	Taxa facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Taxa facing a very high risk of extinction in the wild in the near future
Vulnerable	Taxa facing a high risk of extinction in the wild in the medium-term
Near Threatened	Taxa that risk becoming Vulnerable in the wild
Conservation Dependent	Taxa whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classified as Vulnerable or more severely threatened.
Data Deficient (Insufficiently Known)	Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information.
Least Concern	Taxa that are not considered Threatened

Table 12 Conservation Codes and Descriptions for DEC Declared Rare and Priority Flora Species

Conservation Code	Description
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, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals etc. May include taxa with threatened populations on protected lands. 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 (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of 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 (i.e. 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 are in need of further survey.
P4: Priority Four – Taxa in need of monitoring	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.

Table 13 Bush Forever (Government of WA, 2000) Vegetation Condition Rating Scale

Vegetation Condition Rating	Vegetation Condition	Description
1	*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.
4	*Good*	Vegetation structure significantly altered by very obvious signs of multiple disturbances retains basic vegetation structure or ability to regenerate it.
5	*Degraded*	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not in a state approaching good condition without intensive management.
6	*Completely Degraded*	The structure of the vegetation is no longer intact and the area is completely or almost without native species.

EPBC Act Fauna Conservation Categories

Listed threatened species and ecological communities

An action will require approval from the Environment Minister if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:

- extinct in the wild,
- critically endangered,
- endangered, or
- vulnerable.

Critically endangered and endangered species

An action has, will have, or is likely to have a significant impact on a critically endangered or endangered species if it does, will, or is likely to:

- lead to a long-term decrease in the size of a population, or
- reduce the area of occupancy of the species, or
- fragment an existing population into two or more populations, or
- adversely affect habitat critical to the survival of a species, or
- disrupt the breeding cycle of a population, or

- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*, or
- interfere with the recovery of the species.

**Introducing an invasive species into the habitat may result in that species becoming established. An invasive species may harm a critically endangered or endangered species by direct competition, modification of habitat, or predation.*

Vulnerable species

An action has, will have, or is likely to have a significant impact on a vulnerable species if it does, will, or is likely to:

- lead to a long-term decrease in the size of an important population of a species, or
- reduce the area of occupancy of an important population, or
- fragment an existing important population into two or more populations, or
- adversely affect habitat critical to the survival of a species, or
- disrupt the breeding cycle of an important population, or
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or
- result in invasive species that are harmful a vulnerable species becoming established in the vulnerable species' habitat*, or
- interferes substantially with the recovery of the species.

An important population is one that is necessary for a species' long-term survival and recovery. This may include populations that are:

- key source populations either for breeding or dispersal,
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

*Introducing an invasive species into the habitat may result in that species becoming established. An invasive species may harm a vulnerable species by direct competition, modification of habitat, or predation.

Listed migratory species

An action will require approval from the Environment Minister if the action has, will have, or is likely to have a significant impact on a listed migratory species. Note that some migratory species are also listed as threatened species. The criteria below are relevant to migratory species that are not threatened.

An action has, will have, or is likely to have a significant impact on a migratory species if it does, will, or is likely to:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, or

- result in invasive species that is harmful to the migratory species becoming established* in an area of important habitat of the migratory species, or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species.

An area of important habitat is:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, or
- habitat utilised by a migratory species which is at the limit of the species range, or
- habitat within an area where the species is declining.

Listed migratory species cover a broad range of species with different life cycles and population sizes. Therefore, what is an ecologically significant proportion of the population varies with the species (each circumstance will need to be evaluated).

*Introducing an invasive species into the habitat may result in that species becoming established. An invasive species may harm a migratory species by direct competition, modification of habitat, or predation.

The Commonwealth marine environment

An action will require approval from the Environment Minister if:

- the action is taken in a Commonwealth marine area and the action has, will have, or is likely to have a significant effect on the environment, or
- the action is taken outside a Commonwealth marine area and the action has, will have, or is likely to have a significant effect on the environment in a Commonwealth marine area.

An action has, will have or is likely to have a significant impact on the environment in a Commonwealth marine area if it does, will, or is likely to:

- result in a known or potential pest species becoming established in the Commonwealth marine area*, or
- modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in a Commonwealth marine area results, or
- have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (eg breeding, feeding, migration behaviour, and life expectancy) and spatial distribution, or
- result in a substantial change in air quality** or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity, social amenity or human health, or
- result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected.

*Translocating or introducing a pest species may result in that species becoming established.

**The Commonwealth marine area includes any airspace over Commonwealth waters.

Table 14 Western Australian Threatened Fauna Categories

Category	Code	Description
Schedule 1	S1	Fauna which is rare or likely to become extinct.
Schedule 2	S2	Fauna which is presumed extinct.
Schedule 3	S3	Birds which are subject to an agreement between the governments of Australia and Japan (JAMBA) relating to the protection of migratory birds and birds in danger of extinction.
Schedule 4	S4	Fauna that is otherwise in need of special protection.

(Species not listed under the *Wildlife Conservation Act 1950*, but for which there is some concern).

Table 15 DEC Priority Fauna Codes

Conservation Code	Description
Priority 1	Taxa with few, poorly known populations on threatened lands.
Priority 2	Taxa with few, poorly known populations on conservation lands. Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown Land, water reserves, etc.
Priority 3	Taxa which are known from few specimens or sight records, some of which are on lands not under immediate threat of habitat destruction or degradation.
Priority 4	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.
Priority 5	Taxa in need of monitoring. Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Appendix A

Figures

1:600,000 (at A3)
0 3 6 12 18 24 30
Kilometers

Geographic Coordinate System
Horizontal Datum: Geocentric Datum of Australia 1994

N

LEGEND

- Access Tracks Boundary
- Coondewanna Tenement Boundary
- BHPB Live Tenements

CLIENTS | PEOPLE | PERFORMANCE

BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	24 AUG 2010

Location Map

Figure 8 - 1

G:\61\25438\GIS\Maps\MXD\61_25438_G001_Rev0_Fig8-1.mxd

GHD House, 239 Adelaide Terrace Perth WA 6004 **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

Data Source: BHPB: Tenement Section Survey Area - 20100408, Tracks Survey Area - 20100408; MRWA: Roads - 20090409; Landgate: BHP Live Tenements - 20100630. Created by: KDIRALU, tgoad, slee2

685,000 688,000 691,000 694,000

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Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q29 Q30 Q31 Q32 Q33 Q34

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Survey Location
- Tracks
- Hydrology
- Tenement Boundary

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Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	25 AUG 2010

Survey Locations Coondewanna

Figure 8 - 2a

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Tenement Section Survey Area - 20100408; Landgate: Governor - 2007, Hydrology - 20100701; GHD: Survey Locations - 20100630. Created by: KDIRALU, tgoad, slee2

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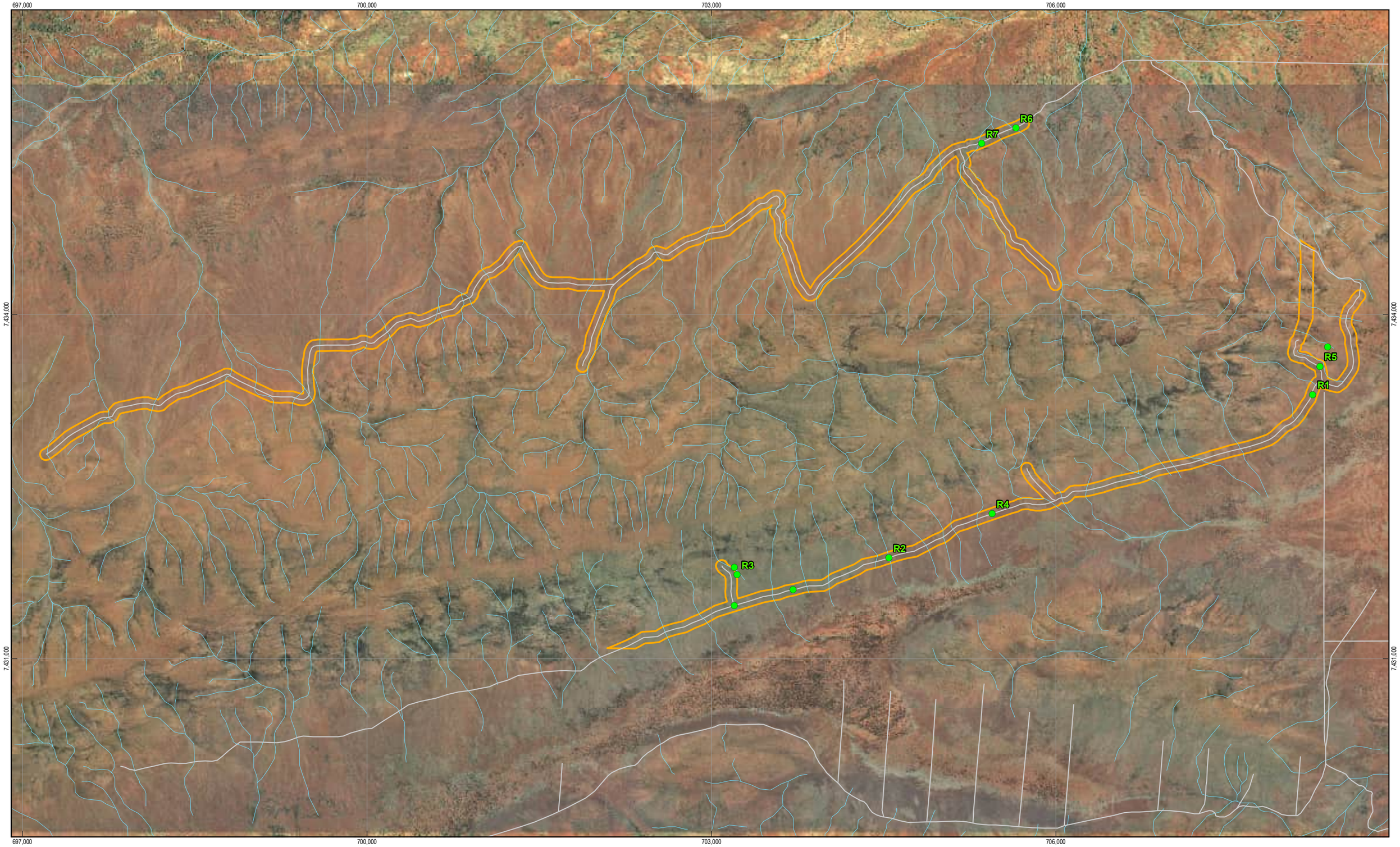

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0 0.15 0.3 0.6 0.9 1.2 1.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Survey Location
- Tracks
- Hydrology
- Access Tracks Boundary

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Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	24 SEP 2010

Survey Locations Access Tracks

Figure 8 - 2b

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Tenement Section Survey Area - 20100408; Landgate: Governor, Ophthalmia - 2007, Hydrology - 20100701; GHD: Survey Locations - 20100630. Created by: KDIRALU, tgoad, slee2, jhchen

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Vegetation Association Descriptions

1 - Hummock Grassland of *Triodia pungens* with Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia*, *E. kingsmillii* subsp. *kingsmillii* and *E. gamophylla* over Low Scattered Shrubs of *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis* and *Keraudrenia velutina* subsp. *elliptica* on skeletal clay loam on ridgelines.

2 - Low Closed Woodland of Acacia *adsurgens* or *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia* sp.mulga short phyllodes, *Acacia aneura* var? *pilbarana* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies.

3 - Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock Grassland of *Triodia melvillei* and *Triodia pungens* on red skeletal clay loam on steep slopes.

4 - Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana*, *Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa*, *Gossypium robinsonii Acacia tenuissima* over an Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on skeletal red clay loam on lower slopes.

5 - Low Open Woodland of *Eucalyptus gamophylla*, *Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia anerua* var? *pilbarana*, *Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* with scattered Tussock Grasses on red sandy clay loam plains.

6 - A mixed Low Woodland of *Acacia ayersiana, Acacia anerua* var? *microcarpa* and *Eucalyptus teprodes* over Open Shrubland of *Acacia adsurgens, Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a mixed Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains.

7 - Open Tussock Grassland of *Aristida jerichoensis* var *subpinulifera* and *Enneapogon lindleyanus* with occurrences of High Open Shrubland of *Acacia? ayersiana* and *Acacia siberica*.

1:30,000 (at A3)

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Tracks
- Tenement Boundary
- Vegetation Associations

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Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	24 SEP 2010

Vegetation Associations Coondewanna

Figure8 - 3a-1

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tenement Section Survey Area - 20100408, Tracks - 20100408; Landgate: Governor - 2007; GHD: Vegetation Communities - 20100712. Created by: KDIRALU, tgoad, slee2, jhchen

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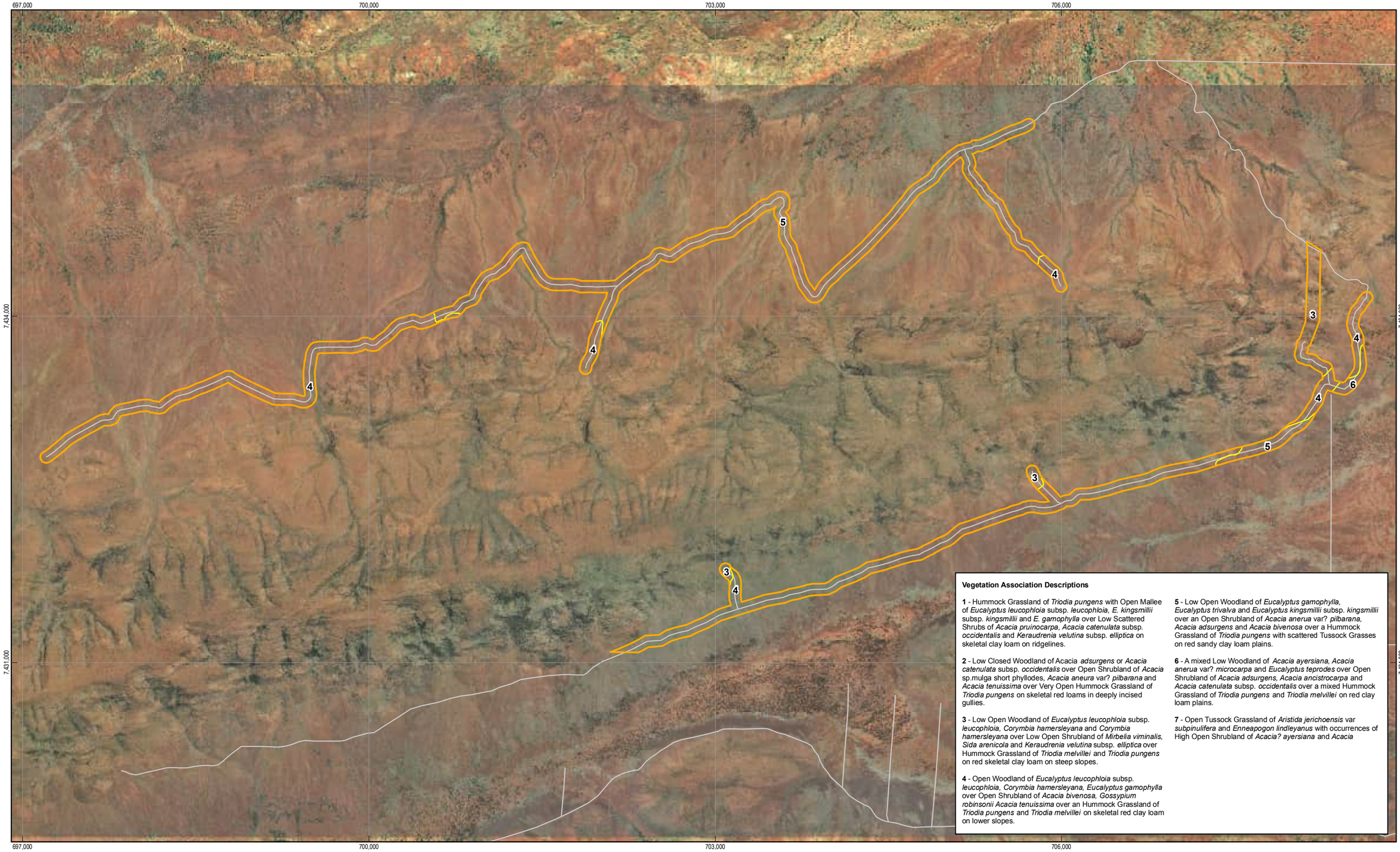

Vegetation Association Descriptions

1 - Hummock Grassland of *Triodia pungens* with Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia, E. kingsmillii* subsp. *kingsmillii* and *E. gamophylla* over Low Scattered Shrubs of *Acacia pruinocarpa, Acacia catenulata* subsp. *occidentalis* and *Keraudrenia velutina* subsp. *elliptica* on skeletal clay loam on ridgelines.

2 - Low Closed Woodland of Acacia *adsurgens* or *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia* sp.mulga short phyllodes, *Acacia aneura* var? *pilbarana* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies.

3 - Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis, Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock Grassland of *Triodia melvillei* and *Triodia pungens* on red skeletal clay loam on steep slopes.

4 - Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa, Gossypium robinsonii Acacia tenuissima* over an Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on skeletal red clay loam on lower slopes.

5 - Low Open Woodland of *Eucalyptus gamophylla, Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia anerua* var? *pilbarana, Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* with scattered Tussock Grasses on red sandy clay loam plains.

6 - A mixed Low Woodland of *Acacia ayersiana, Acacia anerua* var? *microcarpa* and *Eucalyptus teprodes* over Open Shrubland of *Acacia adsurgens, Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a mixed Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains.

7 - Open Tussock Grassland of *Aristida jerichoensis* var *subpinulifera* and *Enneapogon lindleyanus* with occurrences of High Open Shrubland of *Acacia? ayersiana* and *Acacia*

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Tracks
- Vegetation Associations
- Access Tracks Boundary

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BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	24 SEP 2010

Vegetation Associations Access Tracks

Figure 8 - 3a-2

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Access Tracks Survey Area - 20100408; Landgate: Governor, Ophthalmia - 2007; GHD: Vegetation Communities - 20100712. Created by: KDIRALU, tgoad, slee2, jhchen

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Vegetation Association Descriptions

1 - Hummock Grassland of *Triodia pungens* with Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia*, *E. kingsmillii* subsp. *kingsmillii* and *E. gamophylla* over Low Scattered Shrubs of *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis* and *Keraudrenia velutina* subsp. *elliptica* on skeletal clay loam on ridgelines.

2 - Low Closed Woodland of Acacia *adsurgens* or *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia* sp.mulga short phyllodes, *Acacia aneura* var? *pilbarana* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies.

3 - Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock Grassland of *Triodia melvillei* and *Triodia pungens* on red skeletal clay loam on steep slopes.

4 - Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana*, *Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa*, *Gossypium robinsonii Acacia tenuissima* over an Hummock Grassland of *Triodia pungens* and *Triodia* sp. Mt Ella (M.E. Trudgen 12739) on skeletal red clay loam on lower slopes.

5 - Low Open Woodland of *Eucalyptus gamophylla*, *Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia anerua* var? *pilbarana*, *Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* with scattered Tussock Grasses on red sandy clay loam plains.

6 - A mixed Low Woodland of *Acacia ayersiana*, *Acacia anerua* var? *microcarpa* and *Eucalyptus teprodes* over Open Shrubland of *Acacia adsurgens*, *Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a mixed Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains.

7 - Open Tussock Grassland of *Aristida jerichoensis* var *subpinulifera* and *Enneapogon lindleyanus* with occurrences of

1:30,000 (at A3)

0 0.15 0.3 0.6 0.9 1.2 1.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

Tracks *Tracks*

Tenement Boundary

Vegetation Associations

CLIENTS | PEOPLE | PERFORMANCE

BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number 61-25438
Revision 1
Date 26 AUG 2010

Vegetation Associations Coondewanna

Figure 8 - 3b-1

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tenement Section Survey Area - 20100408, Tracks - 20100408; Landgate: Governor - 2007; GHD: Vegetation Communities - 20100712. Created by: KDIRALU, tgoad, slee2

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Vegetation Association Descriptions

1 - Hummock Grassland of *Triodia pungens* with Open Mallee of *Eucalyptus leucophloia* subsp. *leucophloia, E. kingsmillii* subsp. *kingsmillii* and *E. gamophylla* over Low Scattered Shrubs of *Acacia pruinocarpa, Acacia catenulata* subsp. *occidentalis* and *Keraudrenia velutina* subsp. *elliptica* on skeletal clay loam on ridgelines.

2 - Low Closed Woodland of Acacia *adsurgens* or *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia* sp.mulga short phyllodes, *Acacia aneura* var? *pilbarana* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies.

3 - Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis, Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* over Hummock Grassland of *Triodia melvillei* and *Triodia pungens* on red skeletal clay loam on steep slopes.

4 - Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa, Gossypium robinsonii Acacia tenuissima* over an Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on skeletal red clay loam on lower slopes.

5 - Low Open Woodland of *Eucalyptus gamophylla, Eucalyptus trivalva* and *Eucalyptus kingsmillii* subsp. *kingsmillii* over an Open Shrubland of *Acacia anerua* var? *pilbarana, Acacia adsurgens* and *Acacia bivenosa* over a Hummock Grassland of *Triodia pungens* with scattered Tussock Grasses on red sandy clay loam plains.

6 - A mixed Low Woodland of *Acacia ayersiana, Acacia anerua* var? *microcarpa* and *Eucalyptus teprodes* over Open Shrubland of *Acacia adsurgens, Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a mixed Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains.

7 - Open Tussock Grassland of *Aristida jerichoensis* var *subpinulifera* and *Enneapogon lindleyanus* with occurrences of High Open Shrubland of *Acacia? ayersiana* and *Acacia*

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Tracks
- Access Tracks Boundary
- Vegetation Associations

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Revision	0
Date	24 SEP 2010

Vegetation Associations Access Tracks

Figure 8 - 3b-2

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Access Tracks Survey Area - 20100408; Landgate: Governor, Ophthalmia - 2007; GHD: Vegetation Communities - 20100712. Created by: KDIRALU, tgoad, slee2, jhchen

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- *Bidens bipinnata*
- Tracks
- Hydrology
- Fire Distribution
- Tenement Boundary

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BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	1
Date	13 JAN 2011

Fire and Weed Distribution Coondewanna

Figure 8 - 4

G:\61\25438\GIS\Maps\MXD\61_25438_G012_Rev1_Fig8-4.mxd

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Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Tenement Section Survey Area - 20100408; Landgate: Governor - 2007, Hydrology - 20100701; GHD: Survey Locations - 20100630, Fire and Weed Distribution, 20100924. Created by: KDIRALU, tgoad, slee2, jhchen

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Eremophila magnifica subsp magnifica

Indigofera gileseii subsp gileseii

Dampiera metallorum (x2)

Spartothamnella puberula

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Aristida jerichoensis var. subspinulifera (x2)

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Rhagodia sp Hamersley

Vegetation Association Descriptions

4 - Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla* over Open Shrubland of *Acacia bivenosa, Gossypium robinsonii Acacia tenuissima* over an Hummock Grassland of *Triodia pungens* and *Triodia* sp. Mt Ella (M.E. Trudgen 12739) on skeletal red clay loam on lower slopes.

6 - A mixed Low Woodland of *Acacia ayersiana, Acacia anerua* var? *microcarpa* and *Eucalyptus teprodes* over Open Shrubland of *Acacia adsurgens, Acacia ancistrocarpa* and *Acacia catenulata* subsp. *occidentalis* over a mixed Hummock Grassland of *Triodia pungens* and *Triodia melvillei* on red clay loam plains.

1:30,000 (at A3)

0 0.15 0.3 0.6 0.9 1.2 1.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Pebble Mouse Mound
- Tracks
- Survey Area

Priority Flora Located (GHD Survey)

- Priority 1 - Poorly Known Taxa
- Priority 2 - Poorly Known Taxa
- Priority 3 - Poorly Known Taxa
- Priority 4 - Rare Taxa

Declared Rare & Priority Species

- Priority 1 - Poorly Known Taxa
- Priority 2 - Poorly Known Taxa
- Priority 3 - Poorly Known Taxa
- Priority 4 - Rare Taxa

CLIENTS | PEOPLE | PERFORMANCE

BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	1
Date	13 JAN 2011

Priority Flora and Fauna Locations Coondewanna

Figure 8 - 5a

G:\61\25438\GIS\Maps\MXD\61_25438_G008_Rev1_Fig8-5a.mxd

Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Tenement Section Survey Area - 20100408; Landgate: Governor - 2007; GHD: Flora - 20100712, Pebble Mouse Mound - 20100712. Created by: KDIRALU, tgoad, slee2, jhchen

GHD House, 239 Adelaide Terrace Perth WA 6004 **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

1:30,000 (at A3)

0 0.15 0.3 0.6 0.9 1.2 1.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

- Pebble Mouse Mound
- Tracks
- Access Track Boundary
- Vegetation Associations
- * See Insert for Description

Priority Flora Located (GHD Survey)

- Priority 1 - Poorly Known Taxa
- Priority 2 - Poorly Known Taxa
- Priority 3 - Poorly Known Taxa
- Priority 4 - Rare Taxa

Declared Rare & Priority Species

- Priority 1 - Poorly Known Taxa
- Priority 2 - Poorly Known Taxa
- Priority 3 - Poorly Known Taxa
- Priority 4 - Rare Taxa

GHD CLIENTS | PEOPLE | PERFORMANCE

bhpbilliton

BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	26 AUG 2010

Priority Flora and Fauna Locations Access Tracks

Figure 8 - 5b

G:\61\25438\GIS\Maps\MXD\61_25438_G009_Rev0_Fig8-5b.mxd

Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Tracks Survey Area - 20100408; Landgate: Governor, Ophthalmia - 2007; GHD: Pebble Mouse Mound - 20100712. Created by: KDIRALU, tgoad, slee2

GHD House, 239 Adelaide Terrace Perth WA 6004 **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

685,000 688,000 691,000 694,000

7,428,000

7,425,000

1:30,000 (at A3)

0 0.15 0.3 0.6 0.9 1.2 1.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

Fauna Habitat

- Hill Crest
- Gorge / Gullies
- Scree Slopes
- Plains

- Tracks
- Hydrology
- Tenement Boundary

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BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	24 SEP 2010

Fauna Habitats Coondewanna

Figure 8 - 6a

G:\61\25438\GIS\Maps\MXD\61_25438_G010_Rev0_Fig8-6a.mxd

Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tenement Section Survey Area - 20100408, Tracks - 20100408; Landgate: Governor - 2007, Hydrology - 20100701; GHD: Fauna Habitat - 20100712. Created by: KDIRALU, tgoad, slee2, jhchen

GHD House, 239 Adelaide Terrace Perth WA 6004 **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

697,000 700,000 703,000 706,000

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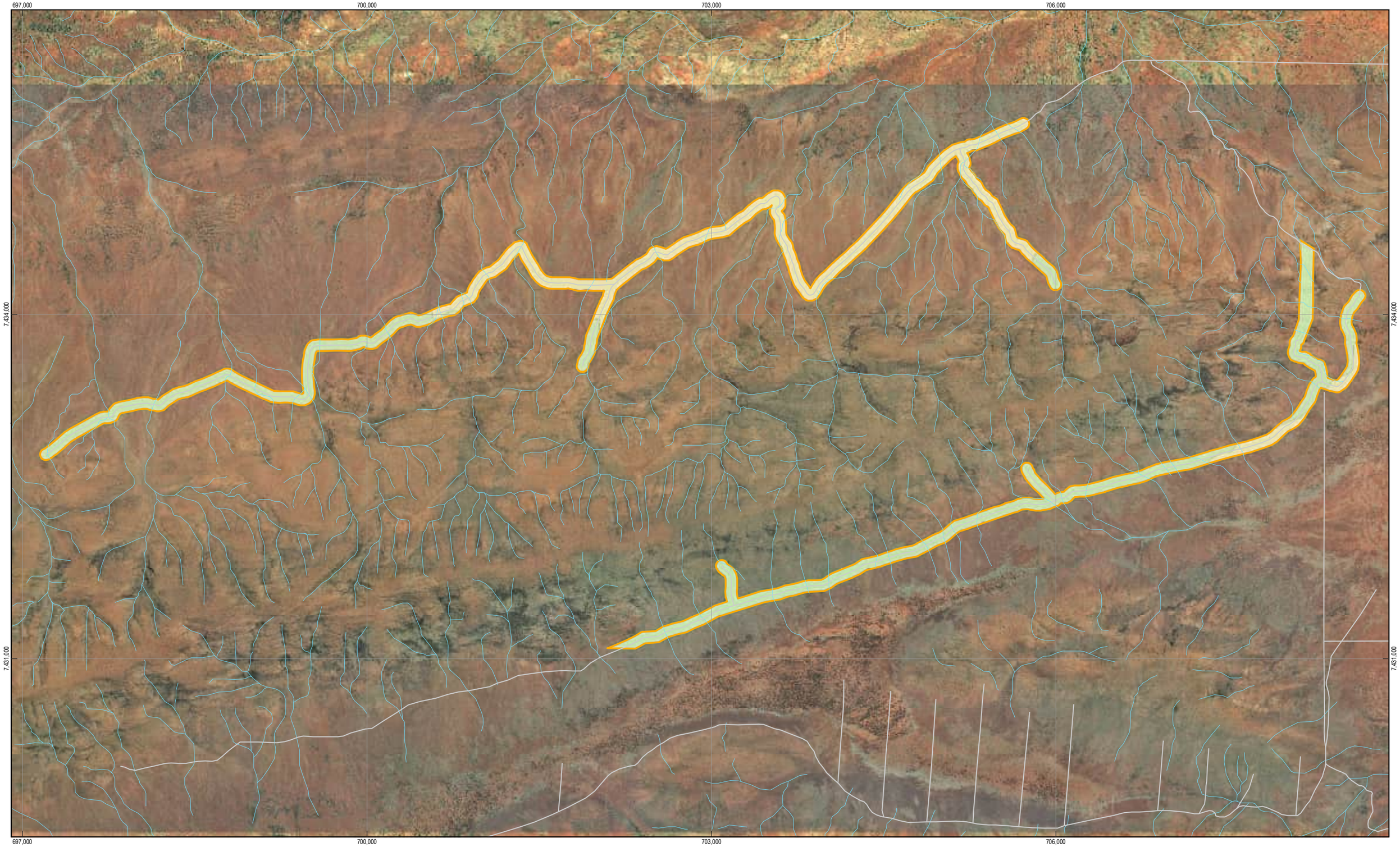

1:30,000 (at A3)

0 0.15 0.3 0.6 0.9 1.2 1.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 50

N

LEGEND

Fauna Habitat
- Hill Crest
- Gorge / Gullies
- Scree Slopes
- Plains

- Tracks
- Hydrology
- Access Tracks Boundary

CLIENTS | PEOPLE | PERFORMANCE

BHPB Shared Business Services
Coondewanna NVCP
Flora and Fauna Assessment

Job Number	61-25438
Revision	0
Date	24 SEP 2010

Fauna Habitats Access Tracks

Figure 8 - 6b

G:\61\25438\GIS\Maps\MXD\61_25438_G011_Rev0_Fig8-6b.mxd

GHD House, 239 Adelaide Terrace Perth WA 6004 **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

Data Source: BHPB: 16836A Coondewanna ML244SA Secs 9-10 & Sec 22 - , Tracks - 20100408, Access Tracks Survey Area - 20100408; Landgate: Governor, Ophthalmia - 2007, Hydrology - 20100701; GHD: Fauna Habitat - 20100712. Created by: KDIRALU, tgoad, slee2, jhchen

Appendix B

Vegetation and Flora

Flora Species List

Quadrat Data

Table 16 Flora Species List

Family	Species	Status	No. of Sites
Pteridaceae			
	Cheilanthes lasiophylla		3
	Cheilanthes sieberi subsp. *sieberi*		5
	Paraceterach reynoldsii		2
Cupressaceae			
	Callitris columellaris		3
Poaceae			
	Aristida inaequiglumis		2
	Aristida jerichoensis var. *subspinulifera*	P1	4
	Aristida obscura		2
	Chrysopogon fallax		3
	Cymbopogon ambiguus		15
	Enneapogon lindleyanus		3
	Enneapogon polyphyllus		2
	Enneapogon robustissimus		4
	Eragrostis eriopoda		1
	Eriachne ?obtusa		14
	Eriachne aff. *festucacea*		2
	Eriachne flaccida		1
	Eriachne lanata		3
	Eriachne mucronata		1
	Eriachne obtusa		3
	Eriachne sp.		2
	*Themeda ?*sp. Mt Barricade (ME Trudgen 2471)		17
	Themeda triandra		5
	Paraneurachne muelleri		2
	Triodia melvillei		11

Family	Species	Status	No. of Sites
	Triodia pungens		37
	Triodia sp.		3
	Triodia wiseana		2
Moraceae			
	Ficus brachypoda		2
Proteaceae			
	Grevillea berryana		9
	Grevillea wickhamii		1
	Grevillea wickhamii subsp *?*		4
	Hakea lorea subsp. lorea		21
Santalaceae			
	Anthobolus leptomerioides		9
	Santalum lanceolatum		9
	Santalum sp.		2
Loranthaceae			
	Diplatia grandibractea		2
Chenopodiaceae			
	Maireana planifolia		2
	Maireana villosa		1
	Rhagodia sp. Hamersley	P3	12
	Salicornia australis		1
	Salsola australis		2
	Sclerolaena cornishiana		2
Amaranthaceae			
	Alternanthera nana		1
	Ptilotus ?schwartzii		10
	Ptilotus calostachyus		6
	Ptilotus obovatus		27
	Ptilotus rotundifolius		10

Family	Species	Status	No. of Sites
Gyrostemonaceae			
	Codonocarpus cotinifolius		6
Capparaceae			
	Capparis lasiantha		5
	Capparis mitchellii		5
	Cleome sp.		2
Fabaceae			
	Acacia ? ayersiana		7
	Acacia ? minyura		3
	Acacia adoxa var. *adoxa*		9
	Acacia adsurgens		14
	Acacia ancistrocarpa		2
	Acacia aneura		2
	Acacia aneura var *? microcarpa*		4
	Acacia aneura var *? pilbarana*		18
	Acacia ayersiana		2
	Acacia bivenosa		18
	Acacia catenulata subsp. occidentalis		15
	Acacia colei		8
	Acacia dictyophleba		2
	Acacia dictyophleba + melleodora (intermediate)		2
	Acacia hamersleyensis		8
	Acacia kempeana		1
	Acacia ligulata		7
	Acacia maitlandii		13
	Acacia marramamba		3
	Acacia monticola		6
	Acacia pachyacra		6
	Acacia pruinocarpa		20

Family	Species	Status	No. of Sites
	Acacia pyrifolia		11
	Acacia pyrifolia var. *morrisonii*		3
	Acacia rhodophloia		8
	Acacia sibirica		9
	Acacia sp. mulga short phyllodes (BR Maslin et al BRM 9276)		4
	Acacia tenuissima		17
	Acacia tetragonophylla		6
	Gompholobium sp. Pilbara (NE Norris 908)		8
	Indigofera georgei		1
	Indigofera gilesii subsp. *gilesii*	P3	2
	Indigofera monophylla		2
	Mirbelia viminalis		8
	Petalostylis labicheoides		5
	Senna ? ferraria		19
	Senna artemisioides subsp. *artemisioides*		5
	Senna artemisioides subsp. *helmsii*		13
	Senna glaucifolia		2
	Senna glutinosa subsp *? glutinosa*		2
	Senna glutinosa subsp. *glutinosa*		18
	Senna glutinosa subsp. *luerssenii*		3
	Senna glutinosa subsp. *pruinosa*		2
	Senna sericea		2
	Senna stricta		2
	Tephrosia rosea var. *glabrior*		5
Zygophyllaceae			
	Tribulus suberosus		3
Euphorbiaceae			
	Euphorbia drummondii subsp. *drummondii*		2

Family	Species	Status	No. of Sites
Sapindaceae			
	Dodonaea coriacea		2
	Dodonaea lanceolata		5
	Dodonaea pachyneura		2
	Dodonaea viscosa subsp. *mucronata*		5
Rhamnaceae			
	Cryptandra monticola		9
	Ventilago viminalis		2
Malvaceae			
	? Hibiscus sturtii var. *truncatus*		2
	Abutilon ? dioicum		2
	Brachychiton gregorii		1
	Corchorus crozophorifolius		8
	Corchorus lasiocarpus subsp. *parvus*		13
	Gossypium robinsonii		8
	Gossypium sturtianum		2
	Hibiscus coatesii		5
	Keraudrenia velutina subsp. *elliptica*		15
	Malvaceae sp. (insufficient material)		8
	Rulingia luteiflora		17
	Sida ? arenicola (A.A. Mitchell PRP360)		12
	Sida arenicola		9
	Sida platycalyx		2
	*Sida ?*sp. spiciform panicles (E Leyland)		2
	Sida sp. *pilbara* (AA Mitchell PRP 1543)		6
	Sida sp. verrucose glands (F.H. Mollemans 2423)		1
	Triumfetta maconochieana		2
Myrtaceae			
	Corymbia deserticola subsp. *deserticola*		9

Family	Species	Status	No. of Sites
	Corymbia ferriticola		4
	Corymbia hamersleyana		18
	Eucalyptus ewartiana		2
	Eucalyptus gamophylla		21
	Eucalyptus kingsmillii subsp. *kingsmillii*		7
	Eucalyptus leucophloia subsp. *leucophloia*		27
	Eucalyptus pilbarensis		2
	Eucalyptus tephrodes		2
	Eucalyptus trivalva		9
Oleaceae			
	Jasminum didymum subsp. *lineare*		12
Apocynaceae			
	Cynanchum floribundum		2
	Marsdenia australis		3
Convolvulaceae			
	? Bonamia media var. *villosa*		1
	Duperreya commixta		12
Boraginaceae			
	Halgania gustafsenii var. ?Mid West (G Perry 370)		4
	Halgania gustafsenii var. Mid West (G. Perry 370)		6
	Heliotropium tanythrix		1
Lamiaceae			
	Clerodendrum floribundum var. *angustifolium*		3
	Clerodendrum sp.		4
	Spartothamnella puberula	P2	2
	Spartothamnella teucriiflora		3
	Prostanthera albiflora		2

Family	Species	Status	No. of Sites
Solanaceae			
	Solanum ellipticum		6
	Solanum ferocissimum		4
	Solanum lasiophyllum		19
Bignoniaceae			
	Pandorea pandorana		4
Scrophulariaceae			
	Eremophila caespitosa ms		3
	Eremophila forrestii subsp. *forrestii*		6
	Eremophila jucunda subsp. *pulcherrima*		3
	Eremophila lanceolata		1
	Eremophila latrobei subsp. *latrobei*		12
	Eremophila longifolia		7
	Eremophila magnifica subsp. *magnifica*	P4	2
	Eremophila phyllopoda		2
	Stemodia grossa		1
Rubiaceae			
	Psydrax latifolia		14
	Psydrax suaveolens		9
Cucurbitaceae			
	Cucumis maderaspatanus		3
Goodeniaceae			
	Dampiera candicans		1
	Dampiera metallorum	P3	2
	Goodenia stobbsiana		4
	Scaevola cf. *browniana*		2
	Scaevola parvifolia		1
Asteraceae			
	Asteraceae sp. (insufficient material)		6

Family	Species	Status	No. of Sites
	Bidens bipinnata	intro	1
	Olearia stuartii		11
	Pterocaulon ? sphaeranthoides		2
	Pterocaulon sp. (insufficient material)		2
	Pterocaulon sphaeranthoides		3

Coondewanna **Site** Q01

Described by GN **Date** 28/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 691684 **mE** 7429053 **mN**
Broad Floristic Formation Eucalyptus Low Open Woodland
Soil Red fine skeletal
Rock Type Exposed Banded ironstone formation 10%, pebbles 15-20%, boulders 2%

Vegetation Association: Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Corymbia hamersleyana over Low Open Shrubland of Mirbelia viminalis, Sida arenicola and Keraudrenia velutina subsp. elliptica over Hummock Grassland of Triodia melvillei and Triodia pungens on red skeletal clay loam on steep slopes.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (2-8 m)	Low Open Woodland of Eucalyptus leucophloia subsp. Leucophloia and Eucalyptus kingsmillii subsp. kingsmillii.
Mid Storey – shrubs (-2m)	Low Open Shrubland of Sida ? arenicola, Acacia hamersleyensis, Eremophila jucunda subsp. pulcherrima, Psydrax latifolia and Solanum ellipticum.
Groundlayer – Hummock (0.4)	Hummock Grassland of Triodia melvillei
Groundlayer – Tussock (0.4)	Very Open Tussock Grassland of Cymbopogon ambiguus and Eriachne ? obtusa
Groundlayer – Herbs (0.2)	Scattered Herbs of Olearia stuartii

Veg Condition 1-2
Fire Age <2yrs
Notes BOG: 5% Logs: - Twigs: - Lvs: -
Topography/aspect is North West
Spur from main ridge - gully on west margin.

Quadrat Photo

Species

Quad	Name	Cover (%)	Height	Specimen
	Acacia hamersleyensis	<2	0.4	CW19
	Cryptandra monticola	<2	0.2	CW26

Cymbopogon ambiguus	2	0.4	CW27
Eremophila jucunda subsp. pulcherrima	<2	0.3	CW06
Eriachne ? obtusa	5	0.1	CW12
Eucalyptus kingsmillii subsp. kingsmillii	<2	2-3	CW15a
Eucalyptus leucophloia subsp. leucophloia	2	5-8	CW14
Olearia stuartii	<2	0.3	CW17
Psydrax latifolia	<2	0.4	CW15b
Sida ? arenicola (A.A. Mitchell PRP360)	2	0.5	CW16a
Solanum ellipticum	<2	0.2	CW25
Triodia sp. Mt Ella (M.E. Trudgen 12739)	70	0.3	CW23

Coondewanna **Site** Q02

Described by GN **Date** 28/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 691768 **mE** 7428560 **mN**
Broad Floristic Formation Triodia closed hummock grassland
Soil Red skeletal clay loam
Rock Type Granites, pebbles

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (10 m)	Low Woodland of Eucalyptus leucophloia subsp. leucophloia
Mid Storey – shrubs (1-2m)	Open Shrubland of Acacia bivenosa, Acacia adsurgens, Hakea lorea subsp. lorea, Acacia maitlandii and Acacia pruinocarpa.
Midstorey – shrubs (<1 m)	Low Open Shrubland of Ptilotus obovatus, Senna ? ferraria, Senna glutinosa subsp. glutinosa, and Spartothamnella teucriiflora.
Groundlayer – Hummock (0.4m)	Closed Hummock Grassland of Triodia pungens
Groundlayer – Herbs (0.4m)	Scattered Herbs of Olearia stuartii

Veg Condition 1
Fire Age >20yrs
Notes BOG: 5% Logs: - Twigs: <2 Lvs: -
Topography/aspect is South
Lower slope before plain.

Quadrat Photo

Species

Quad	Name	Cover	Height	Specimen
	Acacia adsurgens	<2	1.5	CW35

Acacia bivenosa	<2	1.5	CW30
Acacia maitlandii	<2	1	CW28
Acacia pruinocarpa	<2	1	CW33
Acacia tenuissima	<2	1	CW36
Eucalyptus leucophloia subsp. leucophloia	10	5-10	CW14
Hakea lorea subsp. lorea	<2	2	CW31
Olearia stuartii	<2	0.4	CW17
Ptilotus obovatus	<2	0.4	CW34
Senna ? ferraria	<2	0.05	CW38
Senna glutinosa subsp. glutinosa	<2	1	CW37
Spartothamnella teucriiflora	<2	0.2	CW32
Triodia pungens	90	0.3	CW05

Coondewanna **Site** Q03

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 689364 **mE** 7430287 **mN**
Broad Floristic Formation Eucalyptus woodland
Soil Red skeletal clay loam
Rock Type Granite/iron ore 40%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (6 - 10 m)	Low Woodland of Eucalyptus leucophloia subsp. leucophloia and Corymbia hamersleyana.
Sub-Canopy (2 m)	Scattered Low Trees of Eucalyptus gamophylla.
Mid Storey – shrubs (1-2m)	Shrubland of Gossypium robinsonii, Grevillea wickhamii, Senna glutinosa subsp. glutinosa, Hakea lorea subsp. lorea and Ptilotus calostachyus.
Midstorey – shrubs (<1 m)	Low Open Shrubland of Halgania gustafsenii var. ? Mid West (G Perry 370), Keraudrenia velutina subsp. elliptica and Senna ? ferraria.
Groundlayer – Hummock (0.4m)	Very Open Hummock Grassland of Triodia pungens.
Groundlayer – Tussock (0.4m)	Open Tussock Grassland of Themeda ? sp Mt Barricode and Cymbopogon ambiguus.
Groundlayer – Herbs (0.4m)	Scattered Herbs of Olearia stuartii.

Veg Condition 2-3.
Fire Age <2yrs
Notes BOG: 20-30% Logs: 2% Twigs: <2% Lvs: <2%
Topography/aspect is South East
Drainage line. Grazing, dead shrubs.

Quadrat Photo

Species

Quad	Name	Cover	Height	Specimen
	Abutilon ? dioicum	<2	0.2	CW73
	Acacia adoxa var. adoxa	2	0.5	CW66
	Acacia bivenosa	<2	1.5	CW67
	Acacia monticola	<2	1	CW57
	Acacia rhodophloia	<2	1	CW64
	Corchorus crozophorifolius	<2	1	CW63
	Corchorus lasiocarpus subsp. parvus	<2	1	CW62
	Corymbia hamersleyana	5	6-10	CW03
	Cymbopogon ambiguus	<2	1	CW27
	Dodonaea lanceolata	<2	1	CW70
	Duperreya commixta	<2	-	CW48
	Eremophila latrobei subsp. latrobei	<2	1	CW61
	Eucalyptus gamophylla	<2	2	CW69
	Eucalyptus leucophloia subsp. leucophloia	5	6-10	CW14
	Gossypium robinsonii	2	2	CW45
	Grevillea wickhamii subsp ?	2	2	CW56
	Hakea lorea subsp. lorea	<2	2	CW31
	Halgania gustafsenii var. ? Mid West (G Perry 370)	<2	0.4	CW72
	Keraudrenia velutina subsp. elliptica	<2	0.6	CW59
	Olearia stuartii	<2	0.4	CW17
	Ptilotus calostachyus	<2	1.5	CW68
	Rulingia luteiflora	<2	1.5	CW58
	Santalum lanceolatum	<2	2	CW76b
	Senna ? ferraria	<2	0.3	CW38
	Senna glutinosa subsp. glutinosa	2	1	CW71
	Tephrosia rosea var. glabrior	<2	1	CW60
	Themeda ? sp Mt Barricode (ME Trudgen 2471)	20	0.4	CW65
	Triodia pungens	10	0.2	CW05

Coondewanna **Site** Q04

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 689234 **mE** 7430244 **mN**
Broad Floristic Formation Eucalyptus open low woodland.
Soil Red skeletal clay loam
Rock Type Granites, 40-50%

Vegetation Association: Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Corymbia hamersleyana over Low Open Shrubland of Mirbelia viminalis, Sida arenicola and Keraudrenia velutina subsp. elliptica over Hummock Grassland of Triodia sp. Mt Ella (M.E. Trudgen 12739) and Triodia pungens on red skeletal clay loam on steep slopes.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (2 - 8 m)	Low Woodland of Eucalyptus leucophloia subsp. leucophloia and Corymbia hamersleyana.
Mid Storey – shrubs (1-2m)	Open Shrubland of Acacia pyrifolia, Gossypium robinsonii, Grevillea berryana and Acacia hamersleyensis.
Midstorey – shrubs (<1 m)	Low Open Heath of Keraudrenia velutina subsp. elliptica, Acacia adoxa var. adoxa, Corchorus crozophorifolius, Corchorus lasiocarpus subsp. parvus and Eremophila latrobei subsp. latrobei.
Groundlayer - Hummock	Open Hummock Grassland of Triodia pungens.
Groundlayer - Tussock	Scattered Tussock Grass of Eriachne ? obtusa.

Veg Condition 1
Fire Age <2yrs
Notes BOG: 40-50% Logs: <2% Twigs: 2% Lvs: 2%
Topography/aspect is South East
Fire has reduced the % cover of the spinifex in the ground layer.

Quadrat Photo

Species

Quad	Name	Cover	Height	Specimen
	Acacia adoxa var. adoxa	2	0.3	CW66

Acacia hamersleyensis	<2	1	CW19
Acacia maitlandii	<2	0.4	CW28
Acacia pyrifolia	2	1.5	CW33
Corchorus crozophorifolius	2	0.4	CW63
Corchorus lasiocarpus subsp. parvus	2	0.4	CW62
Corymbia hamersleyana	5	2-4	CW03
Eremophila latrobei subsp. latrobei	2	0.3	CW61
Eriachne ? obtusa	<2	0.2	CW79
Eucalyptus leucophloia subsp. leucophloia	5	6-8	CW14
Gossypium robinsonii	<2	1.5	CW45
Grevillea berryana	2	1.5	CW148
Halgania gustafsenii var. Mid West (G. Perry 370)	2	0.2	CW72
Keraudrenia velutina subsp. elliptica	20	0.5	CW59
Ptilotus obovatus	2	0.4	CW34
Ptilotus rotundifolius	<2	0.5	CW80
Rulingia luteiflora	2	0.5	CW58
Santalum sp.	<2	0.5	CW81
Senna ? ferraria	<2	0.5	CW38
Senna glutinosa subsp. glutinosa	<2	0.4	CW37
Sida ? arenicola (A.A. Mitchell PRP360)	<2	0.2	CW16a
Triodia pungens	30	0.2	CW05

Coondewanna **Site** Q05

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 690253 **mE** 7429777 **mN**
Broad Floristic Formation Acacia Low Closed Woodland
Soil Red skeletal clay loam
Rock Type Granite 98%

Vegetation Association: Low Closed Woodland of Acacia adsurgens or Acacia catenulata subsp. occidentalis over Open Shrubland of Acacia sp mulga short phyllodes (B.R. Maslin et al. BRM 9201), Acacia aneura var ? pilbarana and Acacia tenuissima over Very Open Hummock Grassland of Triodia pungens on skeletal red loams in deeply incised gullies.

Vegetation SubAssociation

Stratum Description	Species
Overstorey - trees (4-6 m)	Low Closed Woodland of Acacia catenulata subsp. occidentalis.
Sub-Canopy (4m)	Scattered Low Trees of Eucalyptus leucophloia subsp. leucophloia.
Mid Storey – shrubs (2 – 3 m)	Scattered Tall Shrubs of Capparis mitchellii and Psydrax latifolia.
Midstorey – shrubs (<1 m)	Low Scattered Shrubs of Ptilotus obovatus.
Groundlayer – Tussock (0.2 m)	Very Open Tussock Grassland of Eriachne obtusa.
Groundlayer – Hummock (0.2 m)	Scattered Hummock Grass of Triodia sp. Mt Ella (M.E.Trudgen 12739).
Other Ground Species (0.05 m)	Very Open Herbland Cheilanthes lasiophylla.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG:90% Logs: <2% Twigs: 2% Lvs: 5-10%
Topography Aspect is West
Steep gully/ravine, dense stand of Acacias on steep slopes. Very little ground or lower strata cover.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia catenulata subsp. occidentalis	80		4-6	CW93

Capparis mitchellii	<2	2-3	CW09
Cheilanthes lasiophylla	5	0.05	CW95
Eriachne obtusa	5-10	0.2	CW94
Eucalyptus leucophloia subsp. leucophloia	<2	4	CW14
Psydrax latifolia	<2	2	CW15b
Ptilotus obovatus	<2	0.2	CW34
Triodia sp. Mt Ella (M.E Trudgen 12739)	<2	0.2	CW23

Coondewanna **Site** Q06

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 690247 **mE** 7429892 **mN**
Broad Floristic Formation Open Triodia hummock grassland
Soil Red skeletal clay loam
Rock Type Granite 100%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (3 m)	Scattered Low Trees of Eucalyptus leucophloia subsp. leucophloia and Corymbia hamersleyana.
Mid Storey – shrubs (3 m)	Scattered Tall Shrubs of Hakea lorea subsp. lorea.
Groundlayer – Hummock (0.2 m)	Open Hummock Grassland of Triodia melvillei.
Groundlayer – Tussock (0.05 m)	Very Open Tussock Grassland of Eriachne ? obtusa.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 70% Logs: - Twigs: - Lvs: -
Topography/aspect is North West.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Corymbia hamersleyana	<2		3	CW03
	Eriachne ? obtusa	5		0.05	CW12
	Eucalyptus leucophloia subsp. leucophloia	<2		3	CW14
	Hakea lorea subsp. lorea	<2		3	CW31
	Triodia sp.Mt Ella (M.E.Trudgen 12739)	30		0.2	CW23

Coondewanna **Site** Q07

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 690590 **mE** 7430234 **mN**
Broad Floristic Formation Themeda tussock grassland
Soil Red silty sand
Rock Type Granite 10%

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (3 -6 m)	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Eucalyptus gamophylla.
Mid Storey – shrubs (1-1.5 m)	Open Heath of Gossypium robinsonii, Eremophila longifolia, Acacia pyrifolia, Senna glutinosa subsp. glutinosa and Acacia bivenosa.
Mid Storey – shrubs (0.2 – 0.5m)	Low Shrubland of Keraudrenia velutina subsp. elliptica, Rulingia luteiflora, Tephrosia rosea var. glabrior and Ptilotus obovatus.
Groundlayer – Hummock (0.2 m)	Very Open Hummock Grassland of Triodia pungens.
Groundlayer – Tussock (0.05 m)	Tussock Grassland of Themeda ? sp Mt Barricode, Eriachne lanata and Cymbopogon ambiguus.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 10% Logs: - Twigs: 2% Lvs: 2%
Topography/aspect is East
Drainage line.

Quadrat Photo

Species

Quad	Name	Cover	Height	Specimen

Acacia adoxa var. adoxa	<2	0.3	CW78a
Acacia bivenosa	<2	1	CW67
Acacia pyrifolia	5	1	CW74
Capparis lasiantha	<2	1	CW88
Corchorus crozophorifolius	<2	0.3	CW63
Corchorus lasiocarpus subsp. parvus	<2	0.2	CW62
Corymbia hamersleyana	2	3-6	CW03
Cymbopogon ambiguus	<2	0.4	CW27
Eremophila longifolia	10	1.5	CW101
Eriachne lanata	2	0.15	CW89
Eucalyptus gamophylla	<2	3	CW69
Eucalyptus leucophloia subsp. leucophloia	2	6	CW14
Gossypium robinsonii	10	1.5	CW45
Hakea lorea subsp. lorea	<2	1	CW31
Jasminum didymum subsp. lineare	<2	1	CW77
Keraudrenia velutina subsp. elliptica	5	0.4	CW59
Ptilotus obovatus	2	0.4	CW34
Rulingia luteiflora	5	0.3	CW58
Senna ? ferraria	<2	0.4	CW38
Senna glutinosa subsp. glutinosa	2	1	CW37
Tephrosia rosea var. glabrior	5	0.5	CW60
Themeda ? sp Mt Barricode (ME Trudgen 2471)	40	0.4	CW65
Triodia pungens	2	0.2	CW05
Unknown	10	0.5	CW98

Coondewanna **Site** Q08

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 688495 **mE** 7428999 **mN**
Broad Floristic Formation Eucalyptus low woodland
Soil Red fine sand
Rock Type Granite (iron) 90% Pebbles 2- 10cm.

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (3 -4 m)	Low Woodland of Eucalyptus gamophylla and Corymbia hamersleyana.
Mid Storey – shrubs (2-3 m)	Scattered Tall Shrubs of Acacia ligulata.
Mid Storey – shrubs (1-1.5m)	Shrubland of Acacia bivenosa, Acacia colei and Acacia tenuissima.
Mid-Storey – shruns (0.3 – 1 m)	Low Shrubland of Gompholobium sp Pilbara and Rulingia luteiflora.
Groundlayer – Hummock (0.3 m)	Hummock Grassland of Triodia pungens.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 30% Logs: - Twigs: 5% Lvs: -
Topography/aspect is slight slope to South East.
Fairy consistent habitat type across area, floodplain, little change in elevetaion. Flat.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia adoxa var. adoxa	<2	0.3	CW78a
	Acacia bivenosa	5	1.5	CW67
	Acacia colei	2	1-1.5	CW97
	Acacia ligulata	2	2-3	CW102
	Acacia tenuissima	2	1.5	CW49
	Corymbia hamersleyana	2	4	CW03

Eucalyptus gamophylla	20	3-4	CW69
Gompholobium sp Pilbara (NE Norris 908)	10	0.5	CW42
Jasminum didymum subsp. lineare	<2	0.5	CW77
Ptilotus obovatus	<2	0.3	CW34
Rulingia luteiflora	5	0.3	CW58
Senna artemisioides subsp. helmsii	<2	1	CW87
Sida arenicola	<2	1	CW103
Triodia pungens	60	0.3	CW05

Coondewanna **Site** Q09

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 688891 **mE** 7427801 **mN**

Broad Floristic Formation Acacia Low Open Forest

Soil Red silty sand

Rock Type Granite 50%

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (6 m)	Low Open Forest of Acacia ? ayersiana, Acacia aneura var ? pilbarana and Acacia pruinocarpa.
Sub-Canopy (4m)	Scattered Low Trees of Corymbia deserticola subsp. deserticola and Eucalyptus leucophloia subsp. leucophloia.
Mid Storey – shrubs (1-2m)	Open Shrubland of Acacia marramamba
Groundlayer – Hummock (0.2 m)	Very Open Hummock Grassland of Triodia pungens

Veg Condition 1

Fire Age 5-20yrs

Notes BOG: 40% Logs: 15% Twigs: 10% Lvs: 30%
Topography/aspect is N/A.
Flat.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ? ayersiana	20		6	CW107
	Acacia aneura var ? pilbarana	5		6	CW10
	Acacia marramamba	2		1.5	CW104
	Acacia pruinocarpa	5		6	CW33
	Anthobolus leptomerioides	<2		0.05	CW105
	Corymbia deserticola subsp. deserticola	<2		4	CW04
	Eucalyptus leucophloia subsp. leucophloia	<2		4	CW14

Pandorea pandorana	<2	2	CW39
Rhagodia sp. Hamersley	<2	1	CW108
Triodia pungens	2	0.2	CW05

Coondewanna **Site** Q10

Described by GN **Date** 29/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 688070 **mE** 7426445 **mN**
Broad Floristic Formation Aristida Open Tussock Grassland
Soil Red silty sand
Rock Type Pebbles to 2cm deep. 5%

Vegetation Association: Open Tussock Grassland of Aristida jerichoensis var subpinulifera and Enneapogon lindleyanus with occurrences of High Open Shrubland of Acacia? ayersiana and Acacia siberica.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (4 m)	Open Shrubland of Acacia sibirica
Mid Storey – shrubs (0.4m)	Low Open Shrubland of Eremophila lanceolata
Groundlayer – Tussock (0.2 m)	Open Tussock Grassland of Aristida jerichoensis var. subspinulifera
Herbs (0.2m)	Very Open Herbs of Pterocaulon sphaeranthoides

Veg Condition 1-2
Fire Age 5-20 yrs
Notes BOG: 70% Logs: - Twigs: - Lvs: -
Topography/aspect is N/A.
Grazing.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
?	Bonamia media var villosa	<2		0.03	CW118
	Acacia sibirica	2		4	CW117
	Alternanthera nana	<2		0.05	CW112
	Aristida jerichoensis var. subspinulifera	20		0.2	CW111
	Bidens bipinnata	<2		0.05	CW116
	Eremophila lanceolata	2		0.4	CW114
	Euphorbia drummondii subsp. drummondii	<2		0.2	CW121
	Maireana villosa	<2		0.05	CW122
	Pterocaulon sphaeranthoides	2		0.2	CW115

Salicornia australis	<2	0.03	CW119
Senna artemisioides subsp. helmsii	<2	0.4	CW87
Sida arenicola	<2	0.2	CW16a
Sida sp. verrucose glands (F.H. Mollemans 2423)	<2	0.05	CW113
Solanum lasiophyllum	<2	0.4	CW109a

Coondewanna **Site** Q11

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 693692 **mE** 7427044 **mN**

Broad Floristic Formation Eucalyptus Open Mallee

Soil Red clay loam

Rock Type Banded ironstone formation gibber 80%

Vegetation Association: Open mallee of Eucalyptus trivalva, Eucalyptus gamophylla and Corymbia deserticola subsp. deserticola over a mixed Open Heath of Acacia ancistrocarpa, Acacia catenulata subsp. Occidentalis and Acacia aneura var ? pilbarana over a Hummock Grassland of Triodia pungens on plains.

Vegetation SubAssociation

Stratum Description	Species
Overstorey – trees (4 m)	Open Mallee of Eucalyptus trivalva, Eucalyptus gamophylla and Corymbia deserticola subsp. deserticola
Mid Storey – shrubs (1-2m)	Open Heath of Acacia ancistrocarpa, Acacia catenulata subsp. occidentalis, Acacia aneura var ? pilbarana, Acacia sibirica and Acacia marramamba.
Mid Storey – shrubs (0.2-0.6m)	Low Scattered Shrubs of Gompholobium sp Pilbara and Halgania gustafsenii var. Mid West
Groundlayer – Hummock (0.4 m)	Hummock Grassland of Triodia pungens

Veg Condition 1

Fire Age <5yrs

Notes BOG: 40% Logs: 2% Twigs: 1% Lvs: 1%
Topography/aspect is N/A.
Plain.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ancistrocarpa	10		2	CW144
	Acacia aneura var ? pilbarana	2		2	CW10
	Acacia bivenosa	4		1.5	CW30
	Acacia catenulata subsp. occidentalis	10		2	CW93
	Acacia maitlandii	<2		0.5	CW28
	Acacia marramamba	5		1.5	CW104

Acacia pruinocarpa	2	1.5	CW33
Acacia sibirica	10	1.5-2	CW43a
Acacia tetragonophylla	<2	1	CW142
Corymbia deserticola subsp. deserticola	<2	3	CW04
Eucalyptus gamophylla	5	3	CW69
Eucalyptus trivalva	10	2-3	CW141
Gompholobium sp Pilbara (NE Norris 908)	<2	0.6	CW42
Hakea lorea subsp. lorea	<2	1.5	CW31
Halgania gustafsenii var. Mid West (G. Perry 370)	<2	0.2	CW72
Ptilotus rotundifolius	<2	1	CW80
Rulingia luteiflora	<2	0.1	CW58
Senna glutinosa subsp ? glutinosa	2	1.5	CW143
Triodia pungens	50	0.4	CWO5

Coondewanna **Site** Q12

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 686968 **mE** 7425346 **mN**

Broad Floristic Formation High Acacia Shrubland

Soil Red clay loam

Rock Type Banded ironstone formation very fine pebbles 5-10%

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – trees (4 - 6 m)	High Shrubland of Acacia ? ayersiana
Mid Storey – shrubs (1-2m)	Shrubland of Acacia aneura var ? pilbarana, Acacia pruinocarpa, Rhagodia sp. Hamersley and Acacia pachyacra.
Mid Storey – shrubs (0.2-0.5m)	Low Scattered Shrubs of Halgania gustafsenii var. Mid West (G. Perry 370), Psydrax latifolia and Ptilotus rotundifolius.
Groundlayer – Hummock (0.5 m)	Hummock Grassland of Triodia melville
Groundlayer – Tussock (0.4)	Scattered Tussock Grass of Cymbopogon ambiguus

Veg Condition

Fire Age

Notes BOG: 60-80% Logs: - Twigs: 5% Lvs: 2%
Topography/aspect is very slight East.
Plain.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ? ayersiana	20		4-6	CW107
	Acacia aneura var ? pilbarana	10		1	CW10
	Acacia pachyacra	<2		1	CW147
	Acacia pruinocarpa	5		2	CW33

Cymbopogon ambiguus	<2	0.4	CW27
Hakea lorea subsp. lorea	<2	3	CW31
Halgania gustafsenii var. Mid West (G. Perry 370)	<2	0.2	CW72
Psydrax latifolia	<2	0.4	CW15b
Ptilotus rotundifolius	<2	0.5	CW80
Rhagodia sp. Hamersley	<2	1.5	CW108
Triodia melvillei	40	0.5	CW146

Coondewanna **Site** Q13

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 686928 **mE** 7425487 **mN**

Broad Floristic Formation Mulga Low Open Forest

Soil Red clay loam

Rock Type

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – trees (10 m)	Low Open Forest of Acacia aneura var ? pilbarana
Mid Storey – shrubs (2.5m)	Scattered Tall Shrubs of Psydrax latifolia
Mid Storey – shrubs (0.2-1.5m)	Low Scattered Shrubs of Eremophila forrestii subsp. Forrestii, Eremophila caespitosa, Ptilotus obovatus and Rhagodia sp. Hamersley.
Groundlayer – Tussock (0.6)	Tussock Grassland of Aristida obscura

Veg Condition 1

Fire Age 5-20yrs

Notes BOG: 5-10% Logs: 1% Twigs: 5% Lvs: 5%
Topography/aspect N/A.
Scattered Eucalyptus.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia aneura var ? pilbarana	50	10	CW10
	Aristida obscura	50	0.6	CW157b
	Asteraceae sp.	<1	0.2	
	Eremophila caespitosa MS	<1	0.4	CW152
	Eremophila forrestii subsp. forrestii	1	0.4	CW150
	Psydrax latifolia	1	2.5	CW15b
	Ptilotus obovatus	<1	0.3	CW34
	Rhagodia sp. Hamersley	<1	1.5	CW108

Santalum lanceolatum	<1	8	CW149

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2	G.Nielssen	A. Napier	C. C. Napier	A.Napier	C. C Napier	13/01/11

Coondewanna **Site** Q14

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Location** Coondewanna

MGA Zone 50 692384 **mE** 7423020 **mN**
Broad Floristic Formation Acacia Open Heath
Soil Red clay loam
Rock Type Banded ironstone, pebbles 5%
Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Shrubs (1-12m)	Open Heath of Acacia aneura var ? pilbarana, Acacia pruinocarpa and Grevillea berryana.
Mid Storey – shrubs (0.2-0.45m)	Low Open Shrubland of Enneapogon robustissimus, Ptilotus obovatus and Sida arenicola.
Groundlayer – Tussock (0.5)	Very Open Tussock Grassland of Themeda triandra and Chrysopogon fallax.

Veg Condition 1
Fire Age <5yrs
Notes BOG: 80% Logs: 10% Twigs: 10% Lvs: 2%
Topography/aspect N/A. Its flat.
Large dead trees. Grasses present but dead. Would dominate ground layer after wet.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia aneura var ? pilbarana	20		1-2	CW10
	Acacia pruinocarpa	20		1-2	CW33
	Chrysopogon fallax	<2		0.5	CW156a
	Cleome sp.	<2		0.4	
	Enneapogon robustissimus	2		0.2	CW155
	Grevillea berryana	4		2	CW153a
	Psydrax suaveolens	<2		1.5	CW145
	Ptilotus obovatus	2		0.3	CW34
	Rhagodia sp. Hamersley	<2		1.5	CW108
	Senna artemisioides subsp. helmsii	<2		1	CW87

Sida arenicola	2	0.4	CW103
Solanum lasiophyllum	<2	0.2	CW109a
Themeda triandra	2	0.4	CW154

Coondewanna **Site** Q15

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 692417 **mE** 7425657 **mN**
Broad Floristic Formation Triodia Very Open Hummock Grassland
Soil Red skeletal clay loam
Rock Type Gibber banded ironstone formation 50%
Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4m)	Scattered Low Trees of Corymbia hamersleyana
Overstorey – Shrubs (2-6m)	High Shrubland of Acacia aneura var ? pilbarana
Mid Storey – Shrubs (1.3 – 1.5)	Scattered Shrubs of Acacia sibirica, Acacia tetragonophylla, Eremophila caespitosa, Eremophila latrobei subsp. Latrobei and Senna artemisioides subsp. Helmsii.
Mid Storey– Shrubs (0.2 – 0.5)	Low Scattered Shrubs of Psydrax latifolia and Solanum lasiophyllum
Groundlayer – Hummock (0.4)	Open Hummock Grassland Triodia pungens
Groundlayer Herbs/Other	Scattered Herbs of Asteraceae sp. and Cheilanthes sieberi subsp. sieberi.

Veg Condition 1
Fire Age <5yrs
Notes BOG: 60% Logs: 5% Twigs: 2% Lvs: -
Topography/aspect N/A. Its flat.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ? minyura	<2		1.5	CW160
	Acacia aneura var ? pilbarana	12		2-6	CW33
	Acacia sibirica	<2		1.5	CW43a
	Acacia tetragonophylla	<2		1.5	CW142
	Anthobolus leptomerioides	<2		0.5	CW106

Asteraceae sp.	<2	0.2	CW161
Cheilanthes sieberi subsp. sieberi	<2	0.05	CW186
Corymbia hamersleyana	<2	4	CW03
Duperreya commixta	<2	creeper	CW48
Eremophila caespitosa MS	<2	1.3	CW152
Eremophila latrobei subsp. latrobei	<2	2	CW61
Psydrax latifolia	<2	0.5	CW15b
Psydrax suaveolens	<2	1.5	CW145
Senna artemisioides subsp. helmsii	<2	1.5	CW87
Solanum lasiophyllum	<2	0.2	CW109a
Triodia pungens	30	0.4	CW05

Coondewanna **Site** Q16

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 692415 **mE** 7426222 **mN**
Broad Floristic Formation Acacia Low Closed Woodland
Soil Red clay loam
Rock Type Banded ironstone formation very fine pebbles 20%
Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (8-10m)	Low Closed Woodland of Acacia adsurgens
Mid Storey – Shrubs (1- 1.5m)	Open Shrubland of Rulingia luteiflora, Santalum lanceolatum and Psydrax latifolia.
Mid Storey– Shrubs (0.2 – 0.5)	Low Scattered Shrubs of Sida ? arenicola, Ptilotus ? schwartzii and Ptilotus obovatus.
Groundlayer – Hummock (0.4)	Very Open Hummock Grassland of Triodia melvillei.
Grounlayer – Tussock (0.4m)	Scattered Tussock Grass of Themeda triandra.
Groundlayer Herbs/Other (0.03m)	Scattered Herbs of Cheilanthes sieberi subsp. sieberi and Asteraceae sp.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 20% Logs: 1% Twigs: 2% Lvs: 60%
Topography/aspect N/A. Its flat.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia adsurgens	70-80	8-10	CW35
	Asteraceae sp.	-	-	
	Cheilanthes sieberi subsp. sieberi	<2	0.03	CW186
	Psydrax latifolia	<2	1	CW15b
	Ptilotus ? schwartzii	<2	0.5	CW85

Ptilotus obovatus	<2	0.4	CW34
Rhagodia sp. Hamersley	-	-	CW108
Rulingia luteiflora	5	1.5	CW58
Santalum lanceolatum	<2	1.5	CW76b
Sida ? arenicola (A.A. Mitchell PRP360)	<2	0.2	CW16a
Themeda triandra	<2	0.4	CW154
Triodia melvillei	2	0.4	CW146

Coondewanna **Site** Q17

Described by GN **Date** 31/05/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 692425 **mE** 7427110 **mN**
Broad Floristic Formation Eucalyptus Low Woodland
Soil Red clay loam
Rock Type Banded ironstone formation, gibbler 40%
Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4-6m)	Low Woodland of Eucalyptus tephrodes and Eucalyptus gamophylla
Overstorey – Shrubs (2-6m)	High Shrubland of Acacia adsurgens, Acacia pachyacra and Senna artemisioides subsp. artemisioides.
Mid Storey – Shrubs (1- 1.5m)	Scattered Shrubs of Senna ? ferraria.
Mid Storey– Shrubs (0.2 – 0.5m)	Low Open Shrubland of Keraudrenia velutina subsp. elliptica, Sida platycalyx, Solanum lasiophyllum and Ptilotus obovatus.
Groundlayer – Hummock (0.4m)	Very Open Hummock Grassland of Triodia pungen.
Grounlayer – Tussock (0.4m)	Tussock Grassland of Themeda ? sp Mt Barricode and Themeda triandra.
Groundlayer – Herbs (0.4m)	Scattered Herbs of Olearia stuartii

Veg Condition 1
Fire Age <2yrs
Notes BOG: 30-40% Logs: 2% Twigs: 2% Lvs: -
Topography/aspect N/A. Its flat.
Recent burn has reduced the cover of mulga species, with regenerating shrubs present. It is expected that quadrat would have resembled a low open forest of mulga prior to the burn.

Quadart Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia adsurgens	10		2	CW35
	Acacia pachyacra	5		2	CW147

Codonocarpus cotinifolius	<2	2.5	CW163
Eucalyptus gamophylla	<2	4	CW69
Eucalyptus tephrodes.	20	4-6	CW149
Keraudrenia velutina subsp. elliptica	2	0.5	CW59
Olearia stuartii	<2	0.4	CW17
Ptilotus obovatus	<2	0.3	CW34
Senna ? ferraria	<2	1	CW38
Senna artemisioides subsp. artemisioides	2	2	CW162
Sida platycalyx	<2	0.2	CW164b
Solanum lasiophyllum	<2	0.3	CW109a
Themeda ? sp Mt Barricode (ME Trudgen 2471)	30	0.4	CW65
Themeda triandra	10	0.4	CW154
Triodia pungens	5	0.4	CW05

Coondewanna **Site** Q18

Described by GN **Date** 1/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 693256 **mE** 7427517 **mN**
Broad Floristic Formation Eucalyptus Low Woodland
Soil Red clay loam
Rock Type

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

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Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (5-10m)	Low Woodland of Eucalyptus trivalva, Eucalyptus gamophylla and Eucalyptus kingsmillii subsp. kingsmillii.
Mid Storey – Shrubs (1- 2m)	Open Shrubland of Acacia aneura var ? pilbarana, Acacia adsurgens, Acacia catenulata subsp. occidentalis, Acacia rhodophloia and Acacia tenuissima.
Mid Storey– Shrubs (0.2 – 0.5m)	Low Scattered Shrubs of Halgania gustafsenii var. ? Mid West, Keraudrenia velutina subsp. elliptica, Sida ? arenicola, Solanum lasiophyllum and Ptilotus rotundifolius.
Groundlayer – Hummock (0.2m)	Hummock Grassland of Triodia pungens.

Veg Condition 1
Fire Age <5yrs
Notes BOG: Logs: 1% Twigs: 3% Lvs: 2%
Topography/aspect is South West. Very slight.
Plain ~600m from slope of range.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia adsurgens	<2		1.5	CW35
	Acacia aneura var ? pilbarana	5		1.5	CW10

Acacia catenulata subsp. occidentalis	<2	1.5	CW93
Acacia pruinocarpa	<2	2	CW33
Acacia rhodophloia	<2	1.5	CW64
Acacia tenuissima	<2	1	CW49
Duperreya commixta	<2	creeper	CW48
Eucalyptus gamophylla	5	3-4	CW69
Eucalyptus kingsmillii subsp. kingsmillii	5	3-4	CW15a
Eucalyptus trivalva	10	3-4	CW180
Halgania gustafsenii var. ? Mid West (G Perry 370)	<2	0.3	CW72
Keraudrenia velutina subsp. elliptica	<2	0.4	CW59
Psydrax suaveolens	<2	1	CW145
Ptilotus rotundifolius	<2	0.5	CW80
Senna artemisioides subsp. helmsii	<2	1.5	CW87
Senna glutinosa subsp. glutinosa	<2	1.5	CW71
Sida ? arenicola (A.A. Mitchell PRP360)	<2	0.2	CW16a
Solanum lasiophyllum	<2	0.3	CW109a
Triodia pungens	50-60	0.2	CW05

Coondewanna **Site** Q19

Described by GN **Date** 1/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 693265 **mE** 7427842 **mN**
Broad Floristic Formation Closed Triodia Hummock Grassland
Soil Red skeletal clay loam
Rock Type Banded ironstone formation, gibbler 90%

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2-5m)	Scattered Low Trees of Eucalyptus gamophylla and Corymbia deserticola subsp. deserticola.
Overstorey – Shrubs (3m)	High Open Shrubland of Hakea lorea subsp. lorea.
Mid Storey – Shrubs (1- 2m)	Shrubland of Acacia adsurgens, Acacia tenuissima, Acacia aneura var ? pilbarana, Acacia bivenosa and Acacia rhodophloia.
Mid Storey– Shrubs (0.2 – 0.5)	Low Open Shrubland of Keraudrenia velutina subsp. elliptica and Gompholobium sp Pilbara.
Groundlayer – Hummock (0.4)	Closed Hummock Grassland of Triodia pungens.

Veg Condition 1
Fire Age 5-20 yrs
Notes BOG: 20% Logs: - Twigs: 1% Lvs: 1%
Topography/aspect is South. Slight to plain.
Denser stands of same veg type in gullies but also have E. leucophloia.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia adsurgens	5		1.5	CW35
	Acacia aneura var ? pilbarana	<2		2	CW10
	Acacia bivenosa	<2		1	CW67

Acacia rhodophloia	<2	1.5	CW64
Acacia tenuissima	5	1	CW49
Corymbia deserticola subsp. deserticola	<2	5	CW04
Eucalyptus gamophylla	<2	2-3	CW69
Gompholobium sp Pilbara (NE Norris 908)	<2	0.2	CW42
Hakea lorea subsp. lorea	2	3	CW31
Keraudrenia velutina subsp. elliptica	5-10	0.4	CW59
Triodia pungens	80	0.4	CW05

Coondewanna **Site** Q20

Described by GN **Date** 1/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 693041 **mE** 7428083 **mN**
Broad Floristic Formation Triodia Closed Hummock Grassland
Soil Red clay loam
Rock Type Banded ironstone formation, gibbler 95%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2-8m)	Low Woodland of Corymbia hamersleyana, Eucalyptus leucophloia subsp. leucophloia and Eucalyptus gamophylla.
Mid Storey – Shrubs (1- 1.5m)	Open Shrubland of Acacia tenuissima, Acacia colei, Acacia pruinocarpa, Acacia pyrifolia and Senna ? ferraria.
Mid Storey– Shrubs (0.4)	Low Scattered Shrubs of Gompholobium sp Pilbara.
Groundlayer – Hummock (0.2)	Closed Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.2m)	Scattered Tussock Grassland of Themeda ? sp Mt Barricode

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 5% Logs: - Twigs: 2% Lvs: 2%
Topography/aspect is South overall. Gully.
Cory. hamersleyana and CW14 but C. ham more dominate in creek.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia colei	<2		1	CW97
	Acacia pruinocarpa	<2		1	CW33
	Acacia pyrifolia	<2		1	CW74
	Acacia tenuissima	5		1	CW49

Corymbia hamersleyana	10	2-8	CW03
Dodonaea lanceolata	<2	1	CW70
Eucalyptus gamophylla	2	2	CW69
Eucalyptus leucophloia subsp. leucophloia	7	6-8	CW14
Gompholobium sp Pilbara (NE Norris 908)	<2	0.4	CW42
Rulingia luteiflora	<2	1.5	CW58
Senna ? ferraria	<2	1	CW38
Themeda ? sp Mt Barricode (ME Trudgen 2471)	<2	0.2	CW65
Triodia pungens	80	0.2	CW05

Coondewanna **Site** Q21

Described by GN **Date** 1/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone **mE** **mN**
Broad Floristic Formation Eucalyptus Open Forest
Soil Red clay loam
Rock Type Banded ironstone formation, gibblet and silica 80%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (10- 12m)	Open Forest of Eucalyptus leucophloia subsp. leucophloia
Mid Storey– Shrubs (0.3)	Low Scattered Shrubs of Ptilotus obovatus.
Groundlayer – Hummock (0.2)	Closed Hummock Grassland of Triodia pungens
Grounlayer – Tussock (0.4m)	Scattered Tussock Gras of Themeda ? sp Mt Barricode

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 5-10% Logs: - Twigs: 2% Lvs: 2%
Topography/aspect is South East.
Main watercourse at base of ridge.

Quardat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Eucalyptus leucophloia subsp. leucophloia	40	10-12	CW14
	Ptilotus obovatus	<2	0.3	CW34
	Themeda ? sp Mt Barricode (ME Trudgen 2471)	<2	0.2	CW65
	Triodia pungens	80-90	0.4	CW05

Coondewanna **Site** Q22

Described by GN **Date** 1/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 693237 **mE** 7426785 **mN**

Broad Floristic Formation Acacia Low Open Forest

Soil Red clay loam

Rock Type Banded ironstone formation, gibbler 70%

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (6-8m)	Low Open Forest of Acacia ? ayersiana.
Overstorey – Shrubs (2-4m)	High Shrubland of Acacia catenulata subsp. occidentalis, Acacia pachyacra and Acacia sibirica.
Mid Storey – Shrubs (1m)	Low Scattered Shrubs of Codonocarpus cotinifolius, Psydrax suaveolens and Rhagodia sp. Hamersley.
Groundlayer – Hummock (0.4)	Very Open Hummock Grassland of Triodia pungens.

Veg Condition 1

Fire Age <2yrs

Notes BOG: 40% Logs: 5% Twigs: 5% Lvs: 20%
Topography/aspect is South East.
Main watercourse at base of ridge. Expect more perrenials after rainfall.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ? ayersiana	50		6-8	CW107
	Acacia catenulata subsp. occidentalis	10		4	CW93
	Acacia pachyacra	2		3	CW147
	Acacia sibirica	<2		2	CW43a
	Codonocarpus cotinifolius	<2		1	CW163
	Psydrax suaveolens	<2		1	CW145
	Rhagodia sp. Hamersley	<2		1	CW108

Triodia pungens	5	0.4	CW05

Coondewanna **Site** Q23

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna West Side

MGA Zone 50 689313 **mE** 7429728 **mN**
Broad Floristic Formation Eucalyptus Low Woodland
Soil Red skeletal clay loam
Rock Type Banded ironstone formation, gibbler with some boulders 95%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4-6m)	Low Woodland of Corymbia hamersleyana and Eucalyptus leucophloia subsp. leucophloia.
Overstorey – Shrubs (3m)	Scattered Tall Shrubs of Hakea lorea subsp. lorea.
Mid Storey – Shrubs (1- 1.5m)	Open Shrubland of Acacia pyrifolia, Gossypium robinsonii, Acacia bivenosa, Senna glutinosa subsp. glutinosa and Rulingia luteiflora.
Mid Storey– Shrubs (0.2 – 0.5)	Low Open Shrubland of Acacia hamersleyensis, Keraudrenia velutina subsp. elliptica, Cryptandra monticola, Corchorus lasiocarpus subsp. parvus and Senna artemisioides subsp. helmsii.
Groundlayer – Hummock (0.2)	Open Hummock Grassland of Triodia pungens.

Veg Condition 1
Fire Age <2yrs
Notes BOG: 60-70% Logs: - Twigs: 2% Lvs: 2%
Topography/aspect is West.
Lower hill slope.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia bivenosa	<2		1.5	CW30

Acacia hamersleyensis	5	0.5	CW19
Acacia monticola	<2	0.2	CW57
Acacia pyrifolia	2	1	CW74
Corchorus lasiocarpus subsp. parvus	<2	0.3	CW62
Corymbia hamersleyana	10	4-6	CW03
Cryptandra monticola	<2	0.4	CW172
Eucalyptus leucophloia subsp. leucophloia	5	4-6	CW01
Gossypium robinsonii	<2	1	CW45
Hakea lorea subsp. lorea	<2	3	CW31
Halgania gustafsenii var. Mid West (G. Perry 370)	<2	0.2	CW72
Indigofera monophylla	<2	0.2	CW173
Jasminum didymum subsp. lineare	<2	1	CW77
Keraudrenia velutina subsp. elliptica	<2	0.4	CW59
Ptilotus ? schwartzii	<2	-	CW85
Ptilotus rotundifolius	<2	0.5	CW80
Rulingia luteiflora	<2	1.5	CW58
Senna ? ferraria	<2	0.5	CW38
Senna artemisioides subsp. helmsii	<2	0.4	CW87
Senna glutinosa subsp. glutinosa	<2	1	CW37
Sida ? arenicola (A.A. Mitchell PRP360)	<2	0.2	CW16a
Triodia pungens	20	0.2	CW05

Coondewanna **Site** Q24

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna Western Range

MGA Zone 50 689913 **mE** 7429520 **mN**
Broad Floristic Formation: Eucalyptus Low Open Woodland
Soil Red skeletal clay loam
Rock Type

Vegetation Association: Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Corymbia hamersleyana over Low Open Shrubland of Mirbelia viminalis, Sida arenicola and Keraudrenia velutina subsp. elliptica over Hummock Grassland of Triodia sp. Mt Ella (M.E. Trudgen 12739) and Triodia pungens on red skeletal clay loam on steep slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2m)	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Eucalyptus gamophylla.
Mid Storey – Shrubs (1- 2m)	Open Shrubland of Eremophila forrestii subsp. forrestii, Hakea lorea subsp. lorea, Acacia maitlandii, Acacia pyrifolia and Acacia tenuissima.
Mid Storey– Shrubs (0.2 – 0.4)	Low Open Shrubland of Mirbelia viminalis, Sida sp Pilbara, Solanum lasiophyllum and Corchorus lasiocarpus subsp. parvus.
Groundlayer – Hummock (0.2m)	Hummock Grassland of Triodia melvillei and Triodia pungens.
Grounlayer – Tussock (0.2m)	Scattered Tussock Grass of Eriachne ? obtusa.

Veg Condition 1
Fire Age <2 yrs
Notes BOG: 50% Logs: - Twigs: 1% Lvs: -
Topography/aspect is West.
Rock cover: none.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia maitlandii	<2	1	CW28
	Acacia pyrifolia	<2	1	CW74

Acacia tenuissima	<2+	1	CW49
Corchorus lasiocarpus subsp. parvus	<2	0.4	CW62
Corymbia hamersleyana	2	2	CW03
Eremophila forrestii subsp. forrestii	2	2	CW150
Eriachne ? obtusa	<2	0.2	CW12
Eucalyptus gamophylla	<2+	1	CW69
Eucalyptus leucophloia subsp. leucophloia	2	2.0	CW14
Goodenia stobbsiana	<2	0.2	CW176
Hakea lorea subsp. lorea	<2	1	CW31
Mirbelia viminalis	5	0.4	CW44
Sida sp pilbara (AA Mitchell PRP 1543)	<2	0.2	CW96
Solanum lasiophyllum	<2	0.4	CW109a
Triodia sp. Mt Ella (M.E. Trudgen 12739)	30	0.2	CW23
Triodia pungens	<2	0.2	CW05

Coondewanna **Site** Q25

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna Western Ridgeline

MGA Zone 50 690519 **mE** 7429399 **mN**
Broad Floristic Formation Open Hummock Grassland of Triodia pungens
Soil Red skeletal clay loam
Rock Type Banded ironstone formation with some bedrock. Gibber Plain, 40%

Vegetation Association: Hummock Grassland of Triodia pungens with Open Mallee of Eucalyptus leucophloia subsp. leucophloia, Eucalyptus kingsmillii subsp. kingsmillii and Eucalyptus gamophylla over Low Scattered Shrubs of Acacia pruinocarpa, Acacia catenulata subsp. occidentalis and Keraudrenia velutina subsp. elliptica on skeletal clay loam on ridgelines.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (1.5-4m)	Open Mallee of Eucalyptus kingsmillii subsp. kingsmillii, Eucalyptus leucophloia subsp. leucophloia, Eucalyptus gamophylla and Corymbia hamersleyana.
Mid Storey – Shrubs (1.5m)	Open Shrubland of Hakea lorea subsp. lorea, Acacia maitlandii and Acacia pyrifolia.
Mid Storey– Shrubs (0.2 – 0.3)	Low Scattered Shrubs of Keraudrenia velutina subsp. elliptica, Mirbelia viminalis, Cryptandra monticola and Dodonaea viscosa subsp. mucronata.
Groundlayer – Hummock (0.3)	Open Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.15m)	Scattered Tussock Grass of Eriachne ? obtusa.

Veg Condition 1
Fire Age <2 yrs
Notes BOG: 50% Logs: - Twigs: 1% Lvs: -
Topography/aspect is East.
Hill Crest, Fire.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia maitlandii	<2		1.5	CW28

Acacia pyrifolia	<2	1.5	CW74
Corymbia hamersleyana	<2	1.5	CW03
Cryptandra monticola	<2	0.2	CW172
Dodonaea viscosa subsp. mucronata	<2	0.2	CW20
Eriachne ? obtusa	<2	0.15	CW12
Eucalyptus gamophylla	2	1.5	CW69
Eucalyptus kingsmillii subsp. kingsmillii	5	1.5	CW15a
Eucalyptus leucophloia subsp. leucophloia	5	2-4	CW14
Hakea lorea subsp. lorea	2	1.5	CW31
Keraudrenia velutina subsp. elliptica	<2	0.2	CW59
Mirbelia viminalis	<2	0.3	CW44
Triodia pungens	30	0.3	CW05

Coondewanna **Site** Q26

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna Ridgeline

MGA Zone 50 691257 **mE** 7429343 **mN**
Broad Floristic Formation Triodia Hummock Grassland
Soil Red skeletal clay loam
Rock Type Banded ironstone formation with some bed rock, 100%

Vegetation Association: Hummock Grassland of Triodia pungens with Open Mallee of Eucalyptus leucophloia subsp. leucophloia, Eucalyptus kingsmillii subsp. kingsmillii and Eucalyptus gamophylla over Low Scattered Shrubs of Acacia pruinocarpa, Acacia catenulata subsp. occidentalis and Keraudrenia velutina subsp. elliptica on skeletal clay loam on ridgelines.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (3m)	Very Open Mallee of Eucalyptus leucophloia subsp. leucophloia.
Mid Storey– Shrubs (0.2 – 0.5)	Low Scattered Shrubs of Acacia pruinocarpa, Acacia catenulata subsp. occidentalis, Cryptandra monticola, Solanum lasiophyllum and Rulingia luteiflora.
Groundlayer – Hummock (0.3)	Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.2 -0.3m)	Open Tussock Grassland of Eriachne ? obtusa and Cymbopogon ambiguus.

Veg Condition 1
Fire Age <2 yrs
Notes BOG: 40% Logs: 5% Twigs: 2% Lvs: 1%
Topography/aspect is North East.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia catenulata subsp. occidentalis	<2+	0.5	CW93
	Acacia pruinocarpa	<2+	0.5	CW33
	Codonocarpus cotinifolius	<2+	5.0	CW163
	Cryptandra monticola	<2+	0.4	CW172
	Cymbopogon ambiguus	<2	0.3	CW27
	Eriachne ? obtusa	10	0.2	CW12

Eucalyptus leucophloia subsp. leucophloia	2	3.0	CW14
Grevillea wickhamii subsp ?	<2+	0.4	CW56
Mirbelia viminalis	<2+	0.4	CW44
Rulingia luteiflora	<2+	0.3	CW169
Solanum ellipticum	<2+	0.15	CW25
Solanum lasiophyllum	<2+	0.3	CW109a
Triodia pungens	40	0.3	CW05

Coondewanna **Site** Q27

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna Ridge

MGA Zone 50 690731 **mE** 7429209 **mN**
Broad Floristic Formation Eucalyptus Open Mallee
Soil Red skeletal clay loam
Rock Type Banded ironstone formation exposed bedrock, 100%

Vegetation Association: Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Corymbia hamersleyana over Low Open Shrubland of Mirbelia viminalis, Sida arenicola and Keraudrenia velutina subsp. elliptica over Hummock Grassland of Triodia melvillei and Triodia pungens on red skeletal clay loam on steep slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4m)	Scattered Low Trees of Callitris columellaris
Overstorey – Trees (1-3m)	Mallee of Eucalyptus trivalva, Corymbia hamersleyana, Eucalyptus leucophloia subsp. leucophloia, Eucalyptus kingsmillii subsp. kingsmillii and Eucalyptus gamophylla.
Mid Storey – Shrubs (0.2 – 0.5)	Low Open Shrubland of Senna ? ferraria, Dodonaea viscosa subsp. mucronata and Eremophila jucunda subsp. pulcherrima.
Groundlayer – Hummock (0.4)	Hummock Grassland of Triodia pungens
Grounlayer – Tussock (0.2m)	Scattered Tussock Grass of Eriachne ? obtusa
Grounlayer – Herbs (0.4m)	Very Open Herbs of Olearia stuartii

Veg Condition 1
Fire Age 5-20 yrs
Notes BOG: 30% Logs: - Twigs: 1% Lvs: 1%
Topography/aspect is very steep hillslope South.
Disturbance: Fire.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Callitris columellaris	<2+		4	CW08
	Corymbia hamersleyana	5		2-3	CW03

Dodonaea viscosa subsp. mucronata	<2+	0.4	CW20
Eremophila jucunda subsp. pulcherrima	<2+	0.2	CW06
Eriachne ? obtusa	<2	0.2	CW12
Eucalyptus gamophylla	<2+	1.5	CW69
Eucalyptus kingsmillii subsp. kingsmillii	5	2	CW15a
Eucalyptus leucophloia subsp. leucophloia	5	1	CW02
Eucalyptus trivalva	15	2	CW180
Olearia stuartii	2	0.4	CW17
Senna ? ferraria	<2+	0.5	CW38
Sida ? arenicola (A.A. Mitchell PRP360)	?	?	CW16a
Triodia pungens	60-70	0.4	CW05

Coondewanna **Site** Q28

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna Gully

MGA Zone 50 689858 **mE** 7429258 **mN**
Broad Floristic Formation Acacia Low Closed Woodland
Soil Red skeletal
Rock Type Banded ironstone formation exposed bedrock

Vegetation Association: Low Closed Woodland of Acacia adsurgens or Acacia catenulata subsp. occidentalis over Open Shrubland of Acacia sp mulga short phyllodes (B.R. Maslin et al. BRM 9201), Acacia aneura var ? pilbarana and Acacia tenuissima over Very Open Hummock Grassland of Triodia pungens on skeletal red loams in deeply incised gullies.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (6-8m)	Low Closed Woodland of Acacia adsurgens, Corymbia ferriticola, Eucalyptus leucophloia subsp. leucophloia.
Overstorey – Shrubs (3m)	Scattered Tall Shrubs of Capparis mitchellii.
Mid Storey – Shrubs (1- 2m)	Open Shrubland of Acacia sp mulga short phyllodes, Acacia aneura var ? pilbarana, Acacia tenuissima and Psydrax latifolia.
Mid Storey– Shrubs (0.2 – 0.4m)	Low Scattered Shrubs of Senna glutinosa subsp. glutinosa, Solanum ferocissimum and Ptilotus obovatus.
Groundlayer – Hummock (0.4m)	Very Open Humock Grassland of Triodia pungens
Grounlayer – Tussock (0.4m)	Very Open Tussock Grassland of Eriachne ? obtusa, Cymbopogon ambiguus and Themeda ? sp Mt Barricode.
Groundlayer Herbs/Other (0.15m)	Scattered Cheilanthes sieberi subsp. sieberi

Veg Condition 2
Fire Age Old (5-20 yrs)
Notes BOG: 40% Logs: 5% Twigs: 10% Lvs: 30%
Topography/aspect is South West.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen

Acacia adsurgens	70-80	6-8	CW35
Acacia aneura var ? pilbarana	2	1.5	CW10
Acacia sp mulga short phyllodes (BR Maslin et al BRM 9276)	3	2	CW184
Acacia tenuissima	<2	1.5	CW49
Capparis mitchellii	<2+	3	CW09
Cheilanthes sieberi subsp. sieberi	<2	0.15	CW186
Corymbia ferriticola	2	6	CW182
Cymbopogon ambiguus	2	0.4	CW27
Duperreya commixta	<2	climbing	CW48
Eriachne ? obtusa	5	0.2	CW12
Eucalyptus leucophloia subsp. leucophloia	2	6	CW14
Hibiscus coatesii	<2+		CW137
Petalostylis labicheoides	<2+	2	CW166
Psydrax latifolia	<2	2	CW15b
Ptilotus obovatus	<2	0.4	CW34
Santalum lanceolatum	<2+	2	CW183
Senna glutinosa subsp. glutinosa	<2	0.4	CW71
Solanum ferocissimum	<2+	0.2	CW185
Themeda ? sp Mt Barricode (ME Trudgen 2471)	<2	0.3	CW65
Triodia pungens	10	0.4	CW05

Coondewanna **Site** Q29

Described by GN **Date** 2/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 690510 **mE** 7426931 **mN**
Broad Floristic Formation Acacia High Open Shruland
Soil Red clay loam
Rock Type Banded ironstone formation pebbles, 5%

Vegetation Association: Open Tussock Grassland of Aristida jerichoensis var subpinulifera and Enneapogon lindleyanus with occurrences of High Open Shrubland of Acacia? ayersiana and Acacia siberica.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (8-10m)	High Open Shrubland of Acacia ? ayersiana
Mid Storey – Shrubs (1m)	Scattered Shrubs of Acacia aneura var ? pilbarana, Senna glutinosa subsp. glutinosa, Grevillea berryana and Anthobolus leptomerioides.
Mid Storey– Shrubs (0.2 – 0.5m)	Low Scattered Shrubs of Solanum lasiophyllum, Psydrax latifolia, Ptilotus calostachyus, Ptilotus obovatus and Rhagodia sp. Hamersley.
Groundlayer – Hummock (0.2m)	Very Open Hummock Grassland of Triodia pungens
Grounlayer – Tussock (0.2m)	Very Open Tussock Grassland of Enneapogon lindleyanus

Veg Condition 1
Fire Age 5-20 yrs
Notes BOG: 95% Logs: - Twigs: 2% Lvs: -
Topography/aspect is N/A, Flat.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ? ayersiana	5		4	CW107
	Acacia aneura var ? pilbarana	<2		1	CW10
	Anthobolus leptomerioides	<2		1	CW106
	Enneapogon lindleyanus	2		0.2	CW47
	Grevillea berryana	<2		1	CW148
	Psydrax latifolia	<2		0.2	CW15b

Ptilotus calostachyus	<2	0.4	CW68
Ptilotus obovatus	<2	0.4	CW34
Rhagodia sp. Hamersley	<2	0.5	CW108
Senna glutinosa subsp. glutinosa	<2	1	CW71
Solanum lasiophyllum	<2	0.5	CW109a
Triodia pungens	2	0.2	CW05

Coondewanna **Site** Q30

Described by GN **Date** 3/03/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 688906 **mE** 7427250 **mN**

Broad Floristic Formation Acacia Low Open Forest

Soil Red clay loam

Rock Type Banded ironstone formation gibber, 60%

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (5-6m)	Low Open Forest of Acacia ayersiana, Acacia aneura var ? microcarpa, Acacia catenulata subsp. occidentalis and Acacia pruinocarpa.
Overstorey – Shrubs (2-6m)	Scattered Tall Shrubs of Acacia ? minyura.
Groundlayer – Hummock (0.4)	Open Hummock Grassland of Triodia pungens.

Veg Condition 1

Fire Age 5-20 yrs

Notes BOG: 30% Logs: - Twigs: 5% Lvs: 40%
Topography/aspect is South West.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia ? minyura	<2+	2.5	CW188
	Acacia aneura var ? microcarpa	10	6	CW190
	Acacia ayersiana	30	6	CW189
	Acacia catenulata subsp. occidentalis	10	5-6	CW191
	Acacia pruinocarpa	5	5	CW33
	Triodia pungens	25	0.3	CW05

Coondewanna **Site** Q31

Described by GN **Date** 3/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 691467 **mE** 7424902 **mN**

Broad Floristic Formation Acacia Low Woodland

Soil Red clay loam

Rock Type n/a

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (3m)	High Shrubland of Acacia catenulata subsp. occidentalis and Acacia pruinocarpa.
Mid Storey – Shrubs (1- 2m)	Shrubland of Acacia aneura var ? microcarpa, Grevillea berryana and Eremophila latrobei subsp. latrobei.
Mid Storey– Shrubs (0.3 – 0.5)	Low Open Shrubland Ptilotus ? schwartzii, Ptilotus obovatus and Sida arenicola.
Groundlayer – Hummock (0.4)	Very Open Hummock Grassland of Triodia pungens
Grounlayer – Tussock (0.4m)	Very Open Tussock Grassland of Enneapogon robustissimus.

Veg Condition 1

Fire Age <5 yrs

Notes BOG: 60% Logs: 10% Twigs: 10% Lvs: 2%
Topography/aspect is slight South West.
Disturbance: Fire.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia aneura var ? microcarpa	10		1.5	CW190
	Acacia bivenosa	<2+		2.0	CW67
	Acacia catenulata subsp. occidentalis	5		3.0	CW191
	Acacia pruinocarpa	5		3.0	CW33
	Anthobolus leptomerioides	<2+		1.5	CW106

Codonocarpus cotinifolius	<2+	1.0	CW163
Enneapogon robustissimus	2	0.3	CW155
Eremophila latrobei subsp. latrobei	<2	1.5	CW61
Grevillea berryana	5	1.5-3.0	CW148
Psydrax latifolia	<2+	1.5	CW15b
Psydrax suaveolens	<2+	1.0	CW145
Ptilotus ? schwartzii	2	0.4	CW85
Ptilotus obovatus	2	0.5	CW34
Rhagodia sp. Hamersley	<2+	1.0	CW108
Senna artemisioides subsp. helmsii	-	-	CW87
Senna glaucifolia	<2+	1.0	CW194
Sida arenicola	<2	0.3	CW103
Sida sp ? spiciform panicles (E Leyland)	<2+	1.0	CW193
Tribulus suberosus	<2+	1.0	CW92
Triodia pungens	5	0.4	CW05

Coondewanna **Site** Q32

Described by GN **Date** 3/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 691182 **mE** 7424372 **mN**

Broad Floristic Formation Acacia Open Heath

Soil Red clay loam

Rock Type Banded ironstone formation, gibber plain, 50-60%

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (6-8m)	Low Open Woodland of Acacia catenulata subsp. occidentalis
Mid Storey – Shrubs (1-2m)	Open Heath of Acacia aneura var ? pilbarana, Senna artemisioides subsp. helmsii, Grevillea berryana, Eremophila forrestii subsp. forrestii and Acacia aneura var ? microcarpa.
Mid Storey– Shrubs (0.2 – 0.5)	Low Scattered Shrubs of Malvaceae sp, Sida ? arenicola, Sida sp, Solanum lasiophyllum and Ptilotus obovatus.
Groundlayer – Hummock (0.4)	Very Open Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.4-0.5m)	Open Tussock Grassland of Aristida jerichoensis var. subspinulifera and Themeda ? sp Mt Barricode

Veg Condition 1

Fire Age <2 yrs

Notes BOG: 60% Logs: 5% Twigs: 5% Lvs: -
Topography/aspect is N/A.
Disturbance: Fire.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia aneura var ? microcarpa	2	1-2	CW190
	Acacia aneura var ? pilbarana	10	1-2	CW195

Acacia bivenosa	2	1-2	CW67
Acacia catenulata subsp. occidentalis	5	6-8	CW191
Acacia pruinocarpa	<2	1.5	CW33
Acacia rhodophloia	2	1	CW64
Acacia tetragonophylla	<2+	1-2	CW142
Aristida jerichoensis var. subspinulifera	5	0.4	CW111
Eremophila forrestii subsp. forrestii	5	1-1.5	CW150
Grevillea berryana	5	1-2	CW148
Malvaceae sp	<2	0.15	CW128
Ptilotus obovatus	<2+	0.4	CW34
Senna artemisioides subsp. helmsii	5	1.0	CW87
Sida ? arenicola (A.A. Mitchell PRP360)	<2+	0.2	CW16a
Sida sp pilbara (AA Mitchell PRP 1543)	<2	0.2	CW96
Solanum lasiophyllum	<2+	0.4	CW109a
Themeda ? sp Mt Barricode (ME Trudgen 2471)	5	0.5	CW65
Triodia pungens	5	0.4	CW05

Coondewanna **Site** Q33

Described by GN **Date** 3/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 691680 **mE** 7427550 **mN**
Broad Floristic Formation Eucalyptus Low Woodland
Soil Red clay loam
Rock Type Banded ironstone formation, gibber, 95%

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (8-10m)	Low Woodland of Eucalyptus gamophylla and Corymbia deserticola subsp. deserticola.
Mid Storey – Shrubs (1- 2m)	Open Shrubland of Acacia bivenosa, Acacia tenuissima, Eremophila latrobei subsp. latrobei and Eremophila longifolia.
Mid Storey– Shrubs (0.5 – 1)	Low Shrubland of Acacia adsurgens
Groundlayer – Hummock (0.4)	Hummock Grassland of Triodia pungen
Grounlayer – Tussock (0.3m)	Very Open Tussock Grassland of Themeda ? sp Mt Barricode

Veg Condition 1
Fire Age <5 yrs
Notes BOG: 50% Logs: - Twigs: 2% Lvs: -
Topography/aspect is South West.
Disturbance: Fire.

Quadrat Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia adsurgens	10	0.5-1.0	CW35
	Acacia aneura var ? pilbarana	<2+	1.5	CW10
	Acacia bivenosa	5	1.5	CW67
	Acacia catenulata subsp. occidentalis	<2	1.5	CW191
	Acacia colei	<2+	1.5	CW97

Acacia pruinocarpa	<2+	1.5	CW33
Acacia tenuissima	<2	1.5	CW49
Corymbia deserticola subsp. deserticola	<2	5	CW04
Duperreya commixta	<2+	climbing	CW48
Eremophila latrobei subsp. latrobei	<2	1	CW61
Eremophila longifolia	<2	2	CW101
Eremophila phyllopoda	<2+	0.8	CW199
Eucalyptus gamophylla	15	2-8	CW69
Gompholobium sp Pilbara (NE Norris 908)	<2	0.4	CW42
Hakea lorea subsp. lorea	<2+	3.0	CW31
Senna glutinosa subsp. glutinosa	<2+	1.5	CW37
Themeda ? sp Mt Barricode (ME Trudgen 2471)	5	0.3	CW65
Triodia pungens	50	0.4	CW05

Coondewanna **Site** Q34

Described by GN **Date** 3/06/2010 **Type:** Q 50m x 50m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 691653 **mE** 7427233 **mN**

Broad Floristic Formation Acacia Shrubland

Soil Red clay loam

Rock Type Banded ironstone formation, gibber, 40%

Vegetaion AssociationA mixed Low Woodland of Acacia ayersiana, Acacia aneura var? microcarpa and Eucalyptus teprodes over Open Shrubland of Acacia adsurgens, Acacia ancistrocarpa and Acacia catenulata subsp occidentalis over a mixed Hummock Grassland of Triodia pungens and Triodia melvillei on red clay loam plains

Vegetation Sub Association

Stratum Description	Species
Overstorey – Shrubs (1.5-3m)	High Shrubland of Acacia aneura var ? pilbarana
Mid Storey – Shrubs (1- 1.5m)	Scattered Shrubs of Sida ? arenicola, Rhagodia sp. Hamersley, Psydrax suaveolens, Acacia pruinocarpa and Acacia tenuissima
Mid Storey– Shrubs (0.2 – 0.5)	Low Open Shrubland of Solanum lasiophyllum, ? Hibiscus sturtii var truncatus Pterocaulon sphaeranthoides, Ptilotus obovatus.
Grounlayer – Tussock (0.2-0.3m)	Tussock Grassland of Themeda triandra and Aristida inaequiglumis

Veg Condition 1

Fire Age <5 yrs

Notes BOG: 60% Logs: 2% Twigs: 5% Lvs: -
Topography/aspect is N/A.
Plain.

Quadrat Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	? Hibiscus sturtii var truncatus	<2		0.3	CW202
	Acacia aneura var ? pilbarana	15		1.5-3.0	CW10
	Acacia pruinocarpa	<2+		1.5	CW33
	Acacia tenuissima	<2+		1.5	CW49
	Aristida inaequiglumis	5		0.2	
	Maireana planifolia	<2+		0.6	CW200
	Psydrax suaveolens	<2		1.0	CW145

Pterocaulon sphaeranthoides	<2	0.4	CW115
Ptilotus obovatus	<2	0.4	CW34
Rhagodia sp. Hamersley	<2	1.5	CW108
Sclerolaena cornishiana	<2+	0.3	CW201
Sida ? arenicola (A.A. Mitchell PRP360)	<2	1.0	CW16a
Solanum lasiophyllum	2	0.8	CW109a
Themeda triandra	30	0.3	CW154

Coondewanna **Site** R1

Described by GN **Date** 30/05/2010 **Type:** Q 100m x 10m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 708235 **mE** 7433306 **mN**
Broad Floristic Formation Eucalyptus Low Open Woodland
Soil Red clay loam
Rock Type Banded ironstone formation, deposits, 90%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4-6m)	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia and Corymbia hamersleyana.
Overstorey – Shrubs (3-4m)	High Open Shrubland of Hakea lorea subsp. lorea.
Mid Storey – Shrubs (1- 1.5m)	Shrubland of Rulingia luteiflora, Acacia tenuissima, Acacia colei, Senna glutinosa subsp. luerssenii and Senna sericea.
Mid Storey– Shrubs (0.2 – 0.5m)	Low Shrubland of Acacia bivenosa, Corchorus crozophorifolius, Corchorus lasiocarpus subsp. parvus, Keraudrenia velutina subsp. elliptica and Acacia adoxa var. adoxa.
Groundlayer – Hummock (0.3m)	Open Hummock Grassland of Triodia pungens
Grounlayer – Tussock (0.4-0.6m)	Very Open Tussock Grassland of Themeda ? sp Mt Barricode and Cymbopogon ambiguus.

Veg Condition 2
Fire Age <2 yrs
Notes BOG: 40-60% Logs: - Twigs: 5% Lvs: -
Topography/aspect is South West.
Drainage line.

Releve Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia adoxa var. adoxa	<2		0.3	CW66

Acacia bivenosa	5	0.5-1.0	CW67
Acacia colei	<2	1.0	CW97
Acacia tenuissima	<2	1.0	CW36
Corchorus crozophorifolius	2	0.4	CW63
Corchorus lasiocarpus subsp. parvus	2	0.4	CW62
Corymbia hamersleyana	<2	4.0	CW03
Cymbopogon ambiguus	<2	0.6	CW27
Eucalyptus leucophloia subsp. leucophloia	2	6.0	CW14
Hakea lorea subsp. lorea	2	3-4	CW31
Jasminum didymum subsp. lineare	<2	1.5	CW77
Keraudrenia velutina subsp. elliptica	<2	0.3	CW59
Malvaceae sp	<2	0.4	CW128
Pandorea pandorana	<2	1.0	CW39
Paraneurachne muelleri	<2	0.2	CW126
Ptilotus ? schwartzii	<2	0.5	CW85
Rulingia luteiflora	10	1.0	CW58
Senna ? ferraria	<2	0.4	CW38
Senna glutinosa subsp. glutinosa	<2	0.4	CW37
Senna glutinosa subsp. luerssenii	<2	1.0	CW129
Senna sericea	<2	1.0	CW127
Sida arenicola	<2	0.3	CW103
Themeda ? sp Mt Barricode (ME Trudgen 2471)	2	0.4	CW65
Triodia pungens	20	0.3	CW05

Coondewanna **Site** R2

Described by GN **Date** 30/05/2010 **Type:** R 100m x 10m
Season: P **Uniformity:**

Location Coondewanna Access Track

MGA Zone 50 704546 **mE** 7431881 **mN**
Broad Floristic Formation Eucalyptus Low Woodland
Soil Red clay loam
Rock Type Banded ironstone formation, pebbles

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

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Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2-6m)	Low Woodland of Eucalyptus gamophylla and Eucalyptus leucophloia subsp. leucophloia
Mid Storey – Shrubs (1- 1.5m)	Open Shrubland of Eremophila longifolia, Acacia ligulata, Acacia bivenosa, Senna artemisioides subsp. helmsii and Senna ? ferraria.
Mid Storey– Shrubs (0.2 – 0.6m)	Low Open Shrubland of Sida arenicola, Ptilotus calostachyus, Keraudrenia velutina subsp. elliptica, Ptilotus obovatus and Corchorus crozophorifolius.
Groundlayer – Hummock (0.4m)	Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.3-0.4mm)	Very Open Tussock Grassland of Themeda ? sp Mt Barricode and Cymbopogon ambiguus.

Veg Condition 1
Fire Age <2yrs
Notes BOG: 40% Logs: - Twigs: 2% Lvs: 2%
Topography/aspect is South West
Creekline.

Releve Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia bivenosa	<2		1	CW67
	Acacia ligulata	2		1.5	CW102
	Acacia tenuissima	<2		0.2	CW49
	Corchorus crozophorifolius	<2		0.4	CW63
	Cymbopogon ambiguus	1		0.4	CW27
	Eremophila longifolia	2		1.5	CW101
	Eucalyptus gamophylla	10		2-3	CW69
	Eucalyptus leucophloia subsp. leucophloia	2		4-6	CW14
	Hakea lorea subsp. lorea	<2		1.5	CW31
	Hibiscus coatesii	<2		0.5	CW137
	Jasminum didymum subsp. lineare	<2		1.5	CW77
	Keraudrenia velutina subsp. elliptica	<2		0.2	CW59
	Pterocaulon ? sphaeranthoides	<2		0.2	CW53
	Ptilotus calostachyus	1		0.6	CW68
	Ptilotus obovatus	<2		0.3	CW34
	Senna ? ferraria	<2		1.5	CW38
	Senna artemisioides subsp. helmsii	<2		1	CW87
	Sida arenicola	1		0.2	CW103
	Solanum lasiophyllum	-		-	CW109a
	Themeda ? sp Mt Barricode (ME Trudgen 2471)	5		0.3	CW65
	Triodia pungens	30		0.4	CW05

Coondewanna **Site** R3

Described by GN **Date** 30/05/2010 **Type:** R 100m x 10m
Season: P **Uniformity:**

Location Coondewanna Access Track

MGA Zone 50 703226 **mE** 7431733 **mN**
Broad Floristic Formation Triodia Closed Hummock Grassland
Soil Red clay loam
Rock Type Banded ironstone formation, pebble 80%

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (8-10m)	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia and Eucalyptus gamophylla.
Overstorey – Shrubs (3-4m)	High Open Shrubland of Hakea lorea subsp. lorea and Acacia monticola.
Mid Storey – Shrubs (1-2m)	Shrubland of Acacia bivenosa, Acacia colei, Acacia ligulata, Acacia pyrifolia and Eremophila latrobei subsp. latrobei.
Mid Storey– Shrubs (0.4m)	Low Scattered Shrubs of Ptilotus obovatus.
Groundlayer – Hummock (0.4m)	Closed Hummock Grassland of Triodia pungens.
Grounlayer – Herbs (0.4m)	Scattered Herbs of Olearia stuartii

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 10% Logs: 2% Twigs: 2% Lvs: 1%
Topography/aspect is South West
Comments: drainage line through center - on ridge face mulg/euc mix.

Releve Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia adsurgens	<2		2	CW130
	Acacia aneura	<2		2	CW131

Acacia bivenosa	2	1.5-2	CW132
Acacia colei	2	2	CW97
Acacia ligulata	2	1.5	CW102
Acacia maitlandii	<2	2	CW28
Acacia monticola	2	3	CW57
Acacia pruinocarpa	2	2	CW33
Acacia pyrifolia	2	2	CW74
Acacia tenuissima	2	1.5-2	CW133
Diplatia grandibractea	-	vine	CW134
Duperreya commixta	<2	vine	CW48
Eremophila latrobei subsp. latrobei	2	1.5	CW135
Eucalyptus gamophylla	2	4	CW69
Eucalyptus leucophloia subsp. leucophloia	5	4.8	CW14
Hakea lorea subsp. lorea	2	4	CW31
Jasminum didymum subsp. lineare	<2	2	CW77
Olearia stuartii	<2	0.4	CW17
Ptilotus obovatus	<2	0.4	CW34
Senna ? ferraria	<2	1.5	CW38
Senna glutinosa subsp. glutinosa	<2	1.5	CW37
Senna glutinosa subsp. luerssenii	<2	1.5	CW129
Triodia pungens	80	0.4	CW05

Coondewanna **Site** R4

Described by GN **Date** 30/05/2010 **Type:** R
Season: P **Uniformity:**

Location Coondewanna Access Track

MGA Zone 50 705447 **mE** 7432264 **mN**
Broad Floristic Formation Eucalyptus Low Open Woodland
Soil Red clay loam
Rock Type Banded ironstone formation, gibber

Vegetation Association: Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Eucalyptus gamophylla over Open Shrubland of Acacia bivenosa, Gossypium robinsonii Acacia tenuissima over a Hummock Grassland of Triodia pungens and Triodia melvillei on skeletal red clay loam on lower slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2-6m)	Low Open Woodland of Eucalyptus gamophylla and Corymbia deserticola subsp. deserticola.
Mid Storey – Shrubs (1-2m)	Open Shrubland of Hakea lorea subsp. lorea, Senna ? ferraria, Dodonae lanceolata, Acacia maitlandii and Acacia bivenosa.
Mid Storey– Shrubs (0.2 – 0.6m)	Low Shrubland of Ptilotus ? schwartzii and Gompholobium sp Pilbara.
Groundlayer – Hummock (0.4)	Open Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.2m)	Very Open Tussock Grassland of Themeda ? sp Mt Barricode.

Veg Condition 1
Fire Age <5yrs
Notes Topography/aspect is South West.

Releve Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia adoxa var. adoxa	<2	0.6	CW78a
	Acacia bivenosa	<2	1	CW67
	Acacia colei	<2	0.4	CW97
	Acacia ligulata	<2	1	CW102
	Acacia maitlandii	<2	2	CW28

Clerodendrum sp.	<2	0.2	CW99
Corchorus lasiocarpus subsp. parvus	<2	0.4	CW62
Corymbia deserticola subsp. deserticola	<2	6	CW04
Dodonaea lanceolata	<2	1.5	CW70
Eucalyptus gamophylla	5	2-3	CW69
Gompholobium sp Pilbara (NE Norris 908)	10	0.5	CW42
Hakea lorea subsp. lorea	2	-	CW31
Jasminum didymum subsp. lineare	<2	1.5	CW77
Ptilotus ? schwartzii	10	0.6	CW85
Senna ? ferraria	<2	1	CW38
Senna artemisioides subsp. helmsii	<2	-	CW87
Sida sp pilbara (AA Mitchell PRP 1543)	<2	-	CW96
Themeda ? sp Mt Barricode (ME Trudgen 2471)	5	0.2	CW65
Triodia pungens	15	0.2	CW05

Coondewanna **Site** R5

Described by GN **Date** 30/05/2010 **Type:** R 150m x 50m
Season: P **Uniformity:**

Location Coondewanna Access Track

MGA Zone 50 708294 **mE** 7433542 **mN**
Habitat Eucalyptus low open woodland
Soil Red clay loam
Rock Type Banded ironstone formation, some exposed seam, boulders and pebble

Vegetation Association: Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana and Corymbia hamersleyana over Low Open Shrubland of Mirbelia viminalis, Sida arenicola and Keraudrenia velutina subsp. elliptica over Hummock Grassland of Triodia melvillei and Triodia pungens on red skeletal clay loam on steep slopes.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (4-6m)	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia.
Mid Storey – Shrubs (1- 2m)	Scattered Shrubs of Senna ? ferraria, Mirbelia viminalis, Eremophila latrobei subsp. latrobei, Acacia sibirica and Ptilotus ? schwartzii.
Mid Storey– Shrubs (0.2 – 0.4)	Low Scattered Shrubs of Ptilotus obovatus, Corchorus lasiocarpus subsp. parvus and Malvaceae sp.
Groundlayer – Hummock (0.4)	Open Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.2-0.4m)	Scattered Tussock Grass of Eriachne ? obtusa and Cymbopogon ambiguus.

Veg Condition 1
Fire Age <5yrs
Notes BOG: 80-90% Logs: 5% Twigs: 2% Lvs: -
Topography/aspect is South East.

Releve Photo

Species

Quad	Name	Cover C Class	Height	Specimen
	Acacia hamersleyensis	<2	1.2	CW19
	Acacia maitlandii	<2	1.2	CW28
	Acacia sibirica	<2	1	CW43a
	Clerodendrum sp.	<2	1	CW99
	Corchorus lasiocarpus subsp. parvus	<2	0.3	CW62

Cymbopogon ambiguus	<2	0.4	CW27
Eremophila latrobei subsp. latrobei	<2	1	CW61
Eriachne ? obtusa	<2	0.2	CW12
Eucalyptus leucophloia subsp. leucophloia	5	4.6	CW14
Hakea lorea subsp. lorea	<2	2	CW31
Jasminum didymum subsp. lineare	<2	1	CW77
Malvaceae sp	<2	0.2	CW128
Mirbelia viminalis	<2	1	CW44
Ptilotus ? schwartzii	<2	1	CW85
Ptilotus obovatus	<2	0.4	CW34
Senna ? ferraria	<2	1	CW38
Senna glutinosa subsp. glutinosa	<2	1	CW37
Triodia pungens	10-20	-	CW05

Coondewanna **Site** R6

Described by GN **Date** 1/06/2010 **Type:** R 100m x 10m
Season: P **Uniformity:**

Location Coondewanna North Access Track

MGA Zone 50 705653 **mE** 7435623 **mN**
Broad Floristic Formation Acacia Shrubland
Soil Red/brown clay loam
Rock Type Banded ironstone formation, gibber 80

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var. ? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2-8m)	Scattered Low Trees of Corymbia hamersleyana and Eucalyptus trivalva.
Overstorey – Shrubs (2-4m)	Scattered Tall Shrubs of Grevillea wickhamii and Santalum lanceolatum.
Mid Storey – Shrubs (1- 2m)	Shrubland of Acacia maitlandii, Acacia pyrifolia var. morrisonii, Acacia monticola, Dodonaea viscosa subsp. mucronata and Senna artemisioides subsp. artemisioides.
Mid Storey– Shrubs (0.2 – 0.4m)	Low Open Shrubland of Ptilotus ? schwartzii, Tephrosia rosea var. glabrior, Pterocaulon sp., Ptilotus obovatus and Corchorus lasiocarpus subsp. parvus.
Groundlayer – Hummock (0.3)	Open Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.2-0.4m)	Open Tussock Grassland of Themeda ? sp Mt Barricode, Eriachne ? obtusa and Enneapogon robustissimus.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 30% Logs: - Twigs: 2% Lvs: 1%
Topography/aspect is South West
Disturbance: Fire, Access Tracks
Drainage line on flats.

Releve Photo

Species

Quad	Name	Cover	C Class	Height	Specimen

Acacia adsurgens	<2+	2	CW35
Acacia maitlandii	10	1.5-2	CW28
Acacia monticola	<2	2	CW57
Acacia pyrifolia var. morrisonii	5	1-1.5	CW168
Acacia tetragonophylla	<2+	1	CW142
Anthobolus leptomerioides	<2+	1	CW165
Corchorus lasiocarpus subsp. parvus	<2	0.4	CW62
Corymbia hamersleyana	<2	8	CW03
Dodonaea viscosa subsp. mucronata	<2	1.5	CW20
Duperreya commixta	<2	vine	CW48
Enneapogon robustissimus	<2	0.2	CW155
Eremophila longifolia	<2+	1.5	CW101
Eriachne ? obtusa	<2	0.2	CW12
Eucalyptus trivalva	<2+	2	CW170
Gossypium robinsonii	<2+	1	CW45
Grevillea wickhamii	<2	2-3	
Malvaceae sp	<2+	0.2	CW128
Petalostylis labicheoides	<2	1.5	CW166
Pterocaulon sp.	<2	0.2	CW167
Ptilotus ? schwartzii	2	0.3	CW85
Ptilotus obovatus	<2	0.2	CW34
Rulingia luteiflora	<2+	0.2	CW169
Santalum lanceolatum	<2+	2-4	CW149
Senna ? ferraria	<2	1.2	CW38
Senna artemisioides subsp. artemisioides	<2	2	CW162
Solanum lasiophyllum	<2+	0.4	CW109a
Tephrosia rosea var. glabrior	<2	0.5	CW60
Themeda ? sp Mt Barricode (ME Trudgen 2471)	20	0.4	CW65
Triodia pungens	20	0.3	CW05

Coondewanna **Site** R7

Described by **Date** 1/06/2010 **Type:** Q 100m x 10m
Season: P **Uniformity:**

Location Coondewanna

MGA Zone 50 705352 **mE** 7435490 **mN**
Broad Floristic Formation Acacia High Shrubland
Soil Red/brown clay loam
Rock Type

Vegetation Association: Low Open Woodland of Eucalyptus gamophylla, Eucalyptus trivalva and Eucalyptus kingsmillii subsp. kingsmillii over an Open Shrubland of Acacia aneura var? pilbarana, Acacia adsurgens and Acacia bivenosa over a Hummock Grassland of Triodia pungens on red sandy clay loam plains.

Vegetation Sub Association

Stratum Description	Species
Overstorey – Trees (2-3m)	Low Open Woodland of Eucalyptus gamophylla and Eucalyptus trivalva.
Overstorey – Shrubs (2-4m)	High Shrubland of Acacia aneura var ? pilbarana, Acacia catenulata subsp. occidentalis and Petalostylis labicheoides.
Mid Storey – Shrubs (1- 2m)	Shrubland of Acacia maitlandii and Acacia rhodophloia.
Mid Storey– Shrubs (0.3 – 0.8m)	Low Scattered Shrubs of Ptilotus calostachyus, Ptilotus obovatus, Capparis lasiantha, Corchorus lasiocarpus subsp. parvus and Rulingia luteiflora,
Groundlayer – Hummock (0.4)	Hummock Grassland of Triodia pungens.
Grounlayer – Tussock (0.4m)	Very Open Tussock Grassland of Themeda ? sp Mt Barricode and Eriachne obtusa.

Veg Condition 1
Fire Age 5-20yrs
Notes BOG: 10-20% Logs: 1% Twigs: 2% Lvs: -
Topography/aspect is South West.

Releve Photo

Species

Quad	Name	Cover	C Class	Height	Specimen
	Acacia ? ayersiana	<2		1-2	CW107
	Acacia aneura var ? pilbarana	5		2-3	CW10
	Acacia catenulata subsp. occidentalis	5		3-4	CW93

Acacia maitlandii	5-10	1-2	CW28
Acacia pruinocarpa	<2+	2	CW33
Acacia rhodophloia	<2	2	CW64
Acacia tetragonophylla	<2+	1	CW142
Anthobolus leptomerioides	<2+	0.6	CW106
Capparis lasiantha	<2+	0.8	CW171
Corchorus lasiocarpus subsp. parvus	<2+	0.3	CW62
Dodonaea lanceolata	<2+	2	CW70
Duperreya commixta	2	vine	CW48
Eremophila longifolia	<2+	1	CW101
Eriachne obtusa	2	0.5	CW50
Eucalyptus gamophylla	<2+	2-3	CW69
Eucalyptus trivalva	5	3	CW170
Jasminum didymum subsp. lineare	<2+	1	CW77
Petalostylis labicheoides	2	2-3	CW166
Ptilotus calostachyus	<2	0.3	CW68
Ptilotus obovatus	<2	0.3	CW34
Rulingia luteiflora	<2+	0.4	CW169
Santalum lanceolatum	<2	4	CW149
Senna ? ferraria	<2+	0.5	CW38
Senna artemisioides subsp. artemisioides	<2+	1.5	CW162
Themeda ? sp Mt Barricode (ME Trudgen 2471)	5	0.4	CW65
Triodia pungens	50	0.3	CW05

Coondewanna **Site** Vegetation Association 1

Notes Quadrats 25 and 26.

Species

Quad	Name	Cover	Height	Specimen	Notes
	Acacia catenulata subsp. occidentalis	<2+	0.5	CW93	
	Acacia dictyophleba			CW178	
	Acacia hamersleyensis			CW19	
	Acacia maitlandii	<2	1.5	CW28	
	Acacia pachyacra			CW147	
	Acacia pruinocarpa	<2+	0.5	CW33	
	Acacia pyrifolia	<2	1.5	CW74	
	Chrysopogon fallax			CW156a	
	Codonocarpus cotinifolius	<2+	5.0	CW163	
	Corymbia hamersleyana	<2	1.5	CW03	
	Cryptandra monticola	<2	0.2	CW172	
	Cymbopogon ambiguus	<2	0.3	CW27	
	Dodonaea viscosa subsp. mucronata	<2	0.2	CW20	
	Eriachne ? obtusa	10	0.2	CW12	
	Eucalyptus gamophylla	2	1.5	CW69	
	Eucalyptus kingsmillii subsp. kingsmillii	5	1.5	CW15a	
	Eucalyptus leucophloia subsp. leucophloia	5	2-4	CW14	
	Eucalyptus trivalva			CW180	
	Grevillea wickhamii subsp ?	<2+	0.4	CW56	
	Hakea lorea subsp. lorea	2	1.5	CW31	
	Keraudrenia velutina subsp. elliptica	<2	0.2	CW59	
	Marsdenia australis			CW159	
	Mirbelia viminalis	<2+	0.4	CW44	
	Olearia stuartii			CW17	
	Psydrax latifolia			CW15b	
	Rulingia luteiflora	<2+	0.3	CW169	
	Senna artemisioides subsp. artemisioides			CW163	
	Senna stricta			CW177	
	Solanum ellipticum	<2+	0.15	CW25	
	Solanum lasiophyllum	<2+	0.3	CW109a	
	Triodia pungens	30	0.3	CW05	

Coondewanna **Site** Vegetation Association 2

Notes Quadrats 5 and 28.

Species

Quad	Name	Cover	Height	Specimen	Notes
	Acacia adsurgens			CW35	
	Acacia aneura var ? pilbarana			CW10	
	Acacia catenulata subsp. occidentalis	<2+	0.5	CW93	
	Acacia maitlandii	<2	1.5	CW28	
	Acacia pruinocarpa	<2+	0.5	CW33	
	Acacia pyrifolia	<2	1.5	CW74	
	Acacia sp mulga short phyllodes (BR Maslin et al BRM 9276)			CW184	
	Acacia tenuissima			CW49	
	Callitris columellaris			CW08	
	Capparis mitchellii			CW07	
	Cheilanthes lasiophylla			CW95	
	Cheilanthes sieberi subsp. sieberi			CW186	
	Codonocarpus cotinifolius	<2+	5.0	CW163	
	Corymbia ferriticola			CW182	
	Corymbia hamersleyana	<2	1.5	CW03	
	Cryptandra monticola	<2	0.2	CW172	
	Cymbopogon ambiguus	<2	0.3	CW27	
	Dodonaea viscosa subsp. mucronata	<2	0.2	CW20	
	Duperreya commixta			CW48	
	Eriachne ? obtusa	10	0.2	CW12	
	Eucalyptus gamophylla	2	1.5	CW69	
	Eucalyptus kingsmillii subsp. kingsmillii	5	1.5	CW15a	
	Eucalyptus leucophloia subsp. leucophloia	2	3.0	CW14	
	Grevillea wickhamii subsp ?	<2+	0.4	CW56	
	Hakea lorea subsp. lorea	2	1.5	CW31	
	Hibiscus coatesii			CW137	
	Keraudrenia velutina subsp. elliptica	<2	0.2	CW59	
	Mirbelia viminalis	<2	0.3	CW44	
	Paraneurachne reynoldsii			CW13	
	Petalostylis labicheoides			CW166	
	Psydrax latifolia			CW15b	
	Ptilotus obovatus			CW34	
	Rulingia luteiflora	<2+	0.3	CW169	
	Santalum lanceolatum			CW183	
	Senna glutinosa subsp. glutinosa			CW71	
	Solanum ellipticum	<2+	0.15	CW25	
	Solanum ferocissimum			CW185	
	Solanum lasiophyllum	<2+	0.3	CW109a	
	Themeda ? sp Mt Barricode (ME Trudgen 2471)			CW65	
	Triodia sp. Mt Ella (M.E. Trudgen 12739)			CW23	
	Triodia pungens	40	0.3	CW05	

Coondewanna **Site** Vegetation Association 3

Notes Quadrats 1, 4, 24, 27 and R5.

Species

Quad	Name	Cover	Height	Specimen	Notes
	Acacia adoxa var. adoxa	2	0.3	CW66	
	Acacia hamersleyensis	<2	1	CW19	
	Acacia maitlandii	<2	1	CW28	
	Acacia pyrifolia	<2	1	CW74	
	Acacia sibirica			CW43a	
	Acacia tenuissima	<2+	1	CW49	
	Callitris columellaris	<2+	4	CW08	
	Capparis mitchellii			CW07	
	Clerodendrum floribundum var. angustifolium			C002	
	Clerodendrum sp.			CW99	
	Corchorus crozophorifolius	2	0.4	CW63	
	Corchorus lasiocarpus subsp. parvus	<2	0.4	CW62	
	Corymbia hamersleyana	5	2-4	CW03	
	Cryptandra monticola	<2	0.2	CW26	
	Cymbopogon ambiguus	2	0.4	CW27	
	Dampiera metallorum			CW24	
	Dodonaea pachyneura			CW16b	
	Dodonaea viscosa subsp. mucronata	<2+	0.4	CW20	
	Eremophila forrestii subsp. forrestii	2	2	CW150	
	Eremophila jucunda subsp. pulcherrima	<2+	0.2	CW06	
	Eremophila latrobei subsp. latrobei	2	0.3	CW61	
	Eriachne ? obtusa	5	0.1	CW12	
	Eriachne aff. festucacea			C0014	
	Eucalyptus ewartiana			CW29	
	Eucalyptus gamophylla	<2+	1.5	CW69	
	Eucalyptus kingsmillii subsp. kingsmillii	5	2	CW15a	
	Eucalyptus leucophloia subsp. leucophloia	2	5-8	CW14	
	Eucalyptus pilbarensis			CW18	
	Eucalyptus trivalva	15	2	CW180	
	Ficus brachypoda			CW22	
	Goodenia stobbsiana	<2	0.2	CW176	
	Gossypium robinsonii	<2	1.5	CW45	
	Grevillea berryana	2	1.5	CW148	
	Hakea lorea subsp. lorea	<2	1	CW31	
	Halgania gustafsenii var. Mid West (G. Perry 370)	2	0.2	CW72	
	Indigofera gilesii subsp. gilesii			CW187	
	Jasminum didymum subsp. lineare			CW77	
	Keraudrenia velutina subsp. elliptica	20	0.5	CW59	
	Malvaceae sp			CW128	
	Mirbelia viminalis	5	0.4	CW44	
	Olearia stuartii	2	0.4	CW17	
	Prostanthera albiflora			C008	
	Psydrax latifolia	<2	0.4	CW15b	
	Ptilotus ? schwartzii			CW85	
	Ptilotus obovatus	2	0.4	CW34	
	Ptilotus rotundifolius	<2	0.5	CW80	
	Rulingia luteiflora	2	0.5	CW58	

Santalum sp.	<2	0.5	CW81
Scaevola cf. browniana			C004
Senna ? ferraria	<2+	0.5	CW38
Senna glutinosa subsp. glutinosa	<2	0.4	CW37
Sida ? arenicola (A.A. Mitchell PRP360)	2	0.5	CW16a
Sida sp pilbara (AA Mitchell PRP 1543)	<2	0.2	CW96
Solanum ellipticum	<2	0.2	CW25
Solanum ferocissimum			CW21
Solanum lasiophyllum	<2	0.4	CW109a
Spartothamnella puberula			C007
Triodia melvillei	50	0.2	CW23
Triodia pungens	60	0.4	CW05
Triodia wiseana			C001

Coondewanna **Site** Vegetation Association 4

Notes Quadrats 2, 3, 6, 20, 21, 23, R1, R2, R3 and R4.

Species

Quad	Name	Cover	Height	Specimen	Notes
	Abutilon ? dioicum	<2	0.2	CW73	
	Acacia adoxa var. adoxa	2	0.5	CW66	
	Acacia adsurgens	<2	1.5	CW35	
	Acacia bivenosa	<2	1.5	CW30	
	Acacia colei	<2	1	CW97	
	Acacia dictyophleba + melleodora (intermediate)			CW136	
	Acacia hamersleyensis	5	0.5	CW19	
	Acacia ligulata			CW102	
	Acacia maitlandii	<2	1	CW28	
	Acacia monticola	<2	1	CW57	
	Acacia pruinocarpa	<2	1	CW33	
	Acacia pyrifolia	2	1	CW74	
	Acacia rhodophloia	<2	1	CW64	
	Acacia sibirica			CW43a	
	Acacia sp mulga short phyllodes (BR Maslin et al BRM 9276)			CW41	
	Acacia tenuissima	5	1	CW49	
	Asteraceae sp.			CW40	
	Capparis lasiantha			CW88	
	Clerodendrum floribundum var. angustifolium			CW138	
	Clerodendrum sp.			CW99	
	Corchorus crozophorifolius	<2	1	CW63	
	Corchorus lasiocarpus subsp. parvus	<2	1	CW62	
	Corymbia deserticola subsp. deserticola			CW04	
	Corymbia hamersleyana	5	6-10	CW03	
	Cryptandra monticola	<2	0.4	CW172	
	Cymbopogon ambiguus	<2	1	CW27	
	Dampiera candicans			CW175	
	Diplatia grandibractea			CW134	
	Dodonaea coriacea			CW100	
	Dodonaea lanceolata	<2	1	CW70	
	Duperreya commixta	<2	-	CW48	
	Enneapogon lindleyanus			CW47	
	Eremophila latrobei subsp. latrobei	<2	1	CW61	
	Eremophila longifolia			CW101	
	Eremophila magnifica subsp. magnifica			CW84	
	Eriachne ? obtusa	5	0.05	CW12	
	Eriachne lanata			CW89	
	Eriachne mucronata			CW139	
	Eriachne obtusa			CW50	
	Eucalyptus gamophylla	2	2	CW69	
	Eucalyptus leucophloia subsp. leucophloia	10	5-10	CW14	
	Gompholobium sp Pilbara (NE Norris 908)	<2	0.4	CW42	
	Goodenia stobbsiana			CW90	
	Gossypium robinsonii	2	2	CW45	
	Gossypium sturtianum			CW83	
	Grevillea wickhamii subsp ?	2	2	CW56	

Hakea lorea subsp. lorea	<2	2	CW31
Halgania gustafsenii var. Mid West (G. Perry 370)	<2	0.2	CW72
Hibiscus coatesii			CW46
Indigofera monophylla	<2	0.2	CW173
Jasminum didymum subsp. lineare	<2	1	CW77
Keraudrenia velutina subsp. elliptica	<2	0.6	CW59
Malvaceae sp			CW128
Mirbelia viminalis			CW44
Olearia stuartii	<2	0.4	CW17
Pandorea pandorana			CW39
Paraneurachne muelleri			CW126
Pterocaulon ? sphaeranthoides			CW53
Ptilotus ? schwartzii	<2	-	CW85
Ptilotus calostachyus	<2	1.5	CW68
Ptilotus obovatus	<2	0.3	CW34
Ptilotus rotundifolius	<2	0.5	CW80
Rulingia luteiflora	<2	1.5	CW58
Santalum lanceolatum	<2	2	CW76b
Senna ? ferraria	<2	0.3	CW38
Senna artemisioides subsp. helmsii	<2	0.4	CW87
Senna glutinosa subsp. glutinosa	<2	1	CW37
Senna glutinosa subsp. luerssenii			CW129
Senna glutinosa subsp. pruinosa			CW91
Senna sericea			CW127
Sida ? arenicola (A.A. Mitchell PRP360)	<2	0.2	CW16a
Sida arenicola			CW103
Sida sp pilbara (AA Mitchell PRP 1543)			CW96
Solanum ellipticum			CW86
Solanum lasiophyllum			CW109a
Spartothamnella teucriiflora	<2	0.2	CW32
Tephrosia rosea var. glabrior	<2	1	CW60
Themeda ? sp Mt Barricode (ME Trudgen 2471)	<2	0.2	CW65
Tribulus suberosus			CW92
Triodia sp. Mt Ella (M.E. Trudgen 12739)	30	0.2	CW23
Triodia pungens	80	0.2	CW05
Triodia sp.			CW55
Triumfetta maconochieana			CW82
Ventilago viminalis			CW75

Coondewanna **Site** Vegetation Association 5

Notes Quadrats 7, 8, 18, 19, 33, R6 and R7.

Species

Quad	Name	Cover	Height	Specimen	Notes
	Acacia adoxa var. adoxa	<2	0.3	CW78a	
	Acacia adsurgens	5	1.5	CW35	
	Acacia aneura var ? pilbarana	5	1.5	CW10	
	Acacia bivenosa	5	1.5	CW67	
	Acacia catenulata subsp. occidentalis	<2	1.5	CW93	
	Acacia colei	2	1-1.5	CW97	
	Acacia ligulata	2	2-3	CW102	
	Acacia pruinocarpa	<2	2	CW33	
	Acacia pyrifolia			CW74	
	Acacia pyrifolia var. morrisonii			CW168	
	Acacia rhodophloia	<2	1.5	CW64	
	Acacia tenuissima	2	1.5	CW49	
	Anthobolus leptomerioides			CW165	
	Capparis lasiantha			CW171	
	Corchorus crozophorifolius			CW63	
	Corchorus lasiocarpus subsp. parvus			CW62	
	Corymbia deserticola subsp. deserticola	<2	5	CW04	
	Corymbia hamersleyana	2	4	CW03	
	Cryptandra monticola			CW172	
	Cymbopogon ambiguus			CW27	
	Duperreya commixta	<2+	climbing	CW48	
	Eremophila latrobei subsp. latrobei	<2	1	CW61	
	Eremophila longifolia	<2	2	CW101	
	Eremophila phyllopoda	<2+	0.8	CW199	
	Eriachne lanata			CW89	
	Eucalyptus gamophylla	15	2-8	CW69	
	Eucalyptus kingsmillii subsp. kingsmillii	5	3-4	CW15a	
	Eucalyptus leucophloia subsp. leucophloia			CW01	
	Eucalyptus trivalva	10	3-4	CW180	
	Gompholobium sp Pilbara (NE Norris 908)	<2	0.4	CW42	
	Gossypium robinsonii			CW45	
	Hakea lorea subsp. lorea	2	3	CW31	
	Halgania gustafsenii var. ? Mid West (G Perry 370)	<2	0.3	CW72	
	Jasminum didymum subsp. lineare	<2	0.5	CW77	
	Keraudrenia velutina subsp. elliptica	5-10	0.4	CW59	
	Petalostylis labicheoides			CW166	
	Psydrax suaveolens	<2	1	CW145	
	Pterocaulon sp.			CW167	
	Ptilotus obovatus	<2	0.3	CW34	
	Ptilotus rotundifolius	<2	0.5	CW80	
	Rulingia luteiflora	5	0.3	CW58	
	Senna ? ferraria			CW38	
	Senna artemisioides subsp. helmsii	<2	1.5	CW87	
	Senna glutinosa subsp. glutinosa	<2+	1.5	CW37	
	Sida ? arenicola (A.A. Mitchell PRP360)	<2	0.2	CW16a	
	Sida arenicola	<2	1	CW103	
	Solanum lasiophyllum	<2	0.3	CW109a	

Tephrosia rosea var. glabrior			CW60
Themeda ? sp Mt Barricode (ME Trudgen 2471)	5	0.3	CW65
Triodia pungens	50	0.4	CW05

Coondewanna **Site** Vegetation Association 6

Notes Quadrats 9, 12, 13, 14, 15, 16, 17, 22, 30, 31, 32 and 34.

Species

Quad	Name	Cover	Height	Specimen	Notes
?	Hibiscus sturtii var truncatus	<2	0.3	CW202	
	Acacia ? ayersiana	20	6	CW107	
	Acacia ? minyura	<2+	2.5	CW188	
	Acacia adsurgens	10	2	CW35	
	Acacia ancistrocarpa	10	2	CW144	
	Acacia aneura var ? microcarpa	10	6	CW190	
	Acacia aneura var ? pilbarana	15	3	CW10	
	Acacia ayersiana	30	6	CW189	
	Acacia bivenosa	4	1.5	CW30	
	Acacia catenulata subsp. occidentalis	10	2	CW93	
	Acacia maitlandii	<2	0.5	CW28	
	Acacia marramamba	5	1.5	CW104	
	Acacia pachyacra	2	3	CW147	
	Acacia pruinocarpa	5	6	CW33	
	Acacia rhodophloia	2	1	CW64	
	Acacia sibirica	<2	2	CW43a	
	Acacia tenuissima	<2+	1.5	CW49	
	Acacia tetragonophylla	<2+	1-2	CW142	
	Anthobolus leptomerioides	<2+	1.5	CW106	
	Aristida inaequiglumis	5	0.2		
	Aristida jerichoensis var. subspinulifera	5	0.4	CW111	
	Aristida obscura	50	0.6	CW157b	
	Asteraceae sp.	<2	0.2	CW161	
	Brachychiton gregorii			CW151	
	Cheilanthes sieberi subsp. sieberi	<2	0.03	CW186	
	Chrysopogon fallax			CW156a	
	Cleome sp.				
	Codonocarpus cotinifolius	<2+	1.0	CW163	
	Corymbia deserticola subsp. deserticola	<2	3	CW04	
	Corymbia ferriticola			CW158	
	Corymbia hamersleyana	<2	4	CW03	
	Cucumis maderaspatanus			CW192	
	Cymbopogon ambiguus	<2	0.4	CW27	
	Duperreya commixta	<2	creeper	CW48	
	Enneapogon polyphyllus			CW197	
	Enneapogon robustissimus	2	0.3	CW155	
	Eremophila caespitosa MS	<2	1.3	CW152	
	Eremophila forrestii subsp. forrestii	1	0.4	CW150	
	Eremophila latrobei subsp. latrobei	<2	2	CW61	
	Eriachne sp.			CW157a	
	Eucalyptus gamophylla	5	3	CW69	
	Eucalyptus leucophloia subsp. leucophloia	<2	4	CW14	
	Eucalyptus tephrodes	20	4-6	CW149	
	Eucalyptus trivalva	10	2-3	CW141	
	Gompholobium sp Pilbara (NE Norris 908)	<2	0.6	CW42	
	Grevillea berryana	5	2	CW148	
	Hakea lorea subsp. lorea	<2	3	CW31	

Halgania gustafsenii var. Mid West (G. Perry 370)	<2	0.2	CW72
Keraudrenia velutina subsp. elliptica	2	0.5	CW59
Maireana planifolia	<2+	0.6	CW200
Malvaceae sp	<2	0.15	CW128
Marsdenia australis			CW159
Olearia stuartii	<2	0.4	CW17
Pandorea pandorana	<2	2	CW39
Psydrax latifolia	1	2.5	CW15b
Psydrax suaveolens	<2	1	CW145
Pterocaulon sphaeranthoides	<2	0.4	CW115
Ptilotus ? schwartzii	2	0.4	CW85
Ptilotus obovatus	2	0.5	CW34
Ptilotus rotundifolius	<2	1	CW80
Rhagodia sp. Hamersley	<2	1.5	CW108
Rulingia luteiflora	5	1.5	CW58
Santalum lanceolatum	<2	1.5	CW76b
Sclerolaena cornishiana	<2+	0.3	CW201
Senna ? ferraria	<2	1	CW38
Senna artemisioides subsp. artemisioides	2	2	CW162
Senna artemisioides subsp. helmsii	<2	1.5	CW87
Senna glaucifolia	<2+	1.0	CW194
Senna glutinosa subsp ? glutinosa	2	1.5	CW143
Sida ? arenicola (A.A. Mitchell PRP360)	<2	1.0	CW16a
Sida arenicola	<2	0.3	CW103
Sida platycalyx	<2	0.2	CW164b
Sida sp ? spiciform panicles (E Leyland)	<2+	1.0	CW193
Sida sp pilbara (AA Mitchell PRP 1543)	<2	0.2	CW96
Solanum lasiophyllum	2	0.8	CW109a
Themeda ? sp Mt Barricode (ME Trudgen 2471)	5	0.5	CW65
Themeda triandra	10	0.4	CW154
Tribulus suberosus	<2+	1.0	CW92
Triodia melvillei	30	0.5	CW146
Triodia pungens	30	0.4	CW05
Triodia sp.			CW198

Coondewanna **Site** Vegetation Association 7

Notes Quadrats 29 and 10

Species

Quad	Name	Cover	Height	Specimen	Notes
	Acacia ? ayersiana	5	4	CW107	
	Acacia aneura var ? pilbarana	<2	1	CW10	
	Acacia sibirica	2	4	CW117	
	Alternanthera nana	<2	0.05	CW112	
	Anthobolus leptomerioides	<2	1	CW106	
	Aristida jerichoensis var. subspinulifera	20	0.2	CW111	
	Bidens bipinnata	<2	0.05	CW116	
	Cucumis maderaspatanus			CW124	
	Enneapogon lindleyanus	2	0.2	CW47	
	Eremophila lanceolata	2	0.4	CW114	
	Euphorbia drummondii subsp. drummondii	<2	0.2	CW121	
	Grevillea berryana	<2	1	CW148	
	Maireana villosa	<2	0.05	CW122	
	Psydrax latifolia	<2	0.2	CW15b	
	Pterocaulon sphaeranthoides	2	0.2	CW115	
	Ptilotus calostachyus	<2	0.4	CW68	
	Ptilotus obovatus	<2	0.4	CW34	
	Rhagodia sp. Hamersley	<2	0.5	CW108	
	Salicornia australis	<2	0.03	CW119	
	Salsola australis			CW125	
	Senna artemisioides subsp. helmsii	<2	0.4	CW87	
	Senna glutinosa subsp. glutinosa	<2	1	CW71	
	Sida arenicola	<2	0.2	CW16a	
	Sida sp. verrucose glands (F.H. Mollemans 2423)	<2	0.05	CW113	
	Solanum lasiophyllum	<2	0.5	CW109a	
	Triodia pungens	2	0.2	CW05	

Appendix C

Fauna

Fauna Identified During Desktop Assessment

Fauna Observed During Field Assessment

Table 17 Fauna Identified From a Desktop Assessment of the Project Area

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Birds							
Acanthizinae	*Acanthiza*	*apicalis whitlocki*	Inland Thornbill	X		X	
Acanthizinae	*Acanthiza*	*robustirostris*	Slaty-backed Thornbill			X	
Acanthizinae	*Acanthiza*	*uropygialis*	Chestnut-rumped Thornbill			X	
Acanthizinae	*Gergone*	*fusca*	Western Gerygone			X	
Acanthizinae	*Pyrrholaemus*	*brunneus*	Redthroat			X	
Acanthizinae	*Smicrornis*	*brevirostris flavescens*	Weebill			X	
Accipitridae	*Accipiter*	*cirrocehalus*	Collared Sparrowhawk			X	Ma
Accipitridae	*Aquila*	*audax*	Wedge-tailed Eagle			X	
Accipitridae	*Circus*	*assimilis*	Spotted Harrier			X	Ma
Aegothelidae	*Aegotheles*	*cristatus*	Australian Owlet-nightjar			X	
Amytornithinae	*Amytornis*	*striatus whitei*	Striated Grasswren			X	
Apodidae	*Apus*	*pacificus*	Fork-tailed Swift		X		Mi, Ma
Ardeidae	*Ardea*	*alba*	Great Egret		X		Mi, Ma
Ardeidae	*Ardea*	*ibis*	Cattle egret		X		Mi, Ma
Artamidae	*Artamus*	*cinereus melanops*	Black-faced Woodswallow			X	
Artamidae	*Artamus*	*minor*	Little Woodswallow			X	
Artamidae	*Cracticus*	*tibicens*	Pied Butcherbird			X	

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Artamidae	*Cracticus*	*torquatus leucopterus*	Grey Butcherbird			X	
Artamidae	*Cracticus*	*tibicen tyrannica*	Australian Magpie			X	
Cacatuidae	*Cacatua*	*sanguinea*	Little Corella			X	
Cacatuidae	*Eolophus*	*roseicapilla*	Galah			X	
Campephagidae	*Coracina*	*maxima*	Ground Cuckoo-shrike			X	
Campephagidae	*Coracina*	*novaehollandiae melanops*	Black-faced Cuckoo-Shrike			X	Ma
Campephagidae	*Lalage*	*tricolor*	White-winged Triller			X	
Caprimulgidae	*Eurostopodus*	*argus*	Spotted Nightjar			X	
Charadriidae	*Charadrius*	*veredus*	Oriental Plover		X		Mi, Ma
Columbidae	*Ocyphaps*	*lophotes*	Crested Pigeon			X	
Columbidae	*Phaps*	*chalcoptera*	Common Bronzewing			X	
Columbidae	*Geophaps*	*plumifera*	Spinifex Pigeon			X	
Columbidae	*Geopelia*	*cuneata*	Diamond Dove			X	
Corvidae	*Corvus*	*bennetti*	Little Crow			X	
Corvidae	*Corvus*	*orru*	Torresian Crow			X	
Cuculidae	Chrysococcyx	*basalis*	Horsfield's Bronze-cuckoo			X	
Cuculidae	Chrysococcyx	*osculans*	Black-eared Cuckoo			X	
Cuculidae	*Cacomantis*	*pallidus*	Pallid Cuckoo			X	
Dicaeidae	*Dicaeum*	*hiruninaceum*	Mistletoebird			X	

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Dricruridae	*Grallina*	*cyanoleuca*	Magpie-lark			X	
Dricruridae	*Rhipidura*	*albiscapa*	Grey Fantail			X	
Dricruridae	*Rhipidura*	*leucophrys*	Willie Wagtail			X	
Estrildidae	*Emblema*	*pictum*	Painted Finch			X	
Estrildidae	*Taeniopygia*	*guttata*	Zebra Finch			X	
Falconidae	*Falco*	*berigora*	Brown Falcon			X	
Falconidae	*Falco*	*cenchroides*	Nankeen Kestrel			X	Ma
Halcyonidae	*Todiramphus*	*pyrrhopygius*	Red-backed Kingfisher			X	
Hirundinidae	*Hirundo*	*ariel*	Fairy Martin			X	
Hirundinidae	*Hirundo*	*nigricans*	Tree Martin			X	
Maluridae	*Malurus*	*lamberti assimilis*	Variegated Fairy-wren			X	
Maluridae	*Malurus*	*leucopterus leuconotus*	White-winged Fairy-wren			X	
Maluridae	*Malurus*	*splendens splendens*	Slendid Fairy-wren			X	
Maluridae	*Stpiturus*	*ruficeps*	Rufous-crowned Emu-wren			X	
Meliphagidae	*Manorina*	*flavigula*	Spiny-cheeked Honey-eater			X	
Meliphagidae	*Epthianura*	*tricolor*	Crimson Chat	X		X	
Meliphagidae	*Lichenostomus*	*keartlandi*	Grey-headed Honeyeater			X	
Meliphagidae	*Lichenostomus*	*penicillatus*	White-plumed Honeyeater			X	
Meliphagidae	*Lichenostomus*	*virescens*	Singing Honeyeater			X	

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Meliphagidae	*Lichmera*	*indistincta*	Brown Honeyeater			X	
Meliphagidae	*Manorina*	*flavigula wayensis*	Yellow-throated Miner			X	
Meliphagidae	*Sugomel*	*niger*	Black Honeyeater			X	
Muropidae	*Murops*	*ornatus*	Rainbow Bee-eater		X		Mi, Ma
Neosittidae	*Daphoenositta*	*chrysoptera pileata*	Varied Sittella			X	
Odontophoridae	*Coturnix*	*pectoralis*	Stubble Quail			X	
Otididae	*Ardeotis*	*australis*	Australian Bustard			X	P4
Pachycephalidae	*Colluricincla*	*harmonica rufiventris*	Grey-shrike Thrush			X	
Pachycephalidae	*Oreoica*	*gutturalis pallescens*	Crested Bellbird			X	
Pachycephalidae	*Pachycephala*	*rufiventris rufiventris*	Rufous Whistler			X	
Pardalotinae	*Pardalotus*	*rubricatus*	Red-browed Pardalote	X			
Pardalotinae	*Pardalotus*	*striatus*	Striated Pardalote			X	
Petroicidae	*Melanodryas*	*goodenovii*	Red-capped Robin			X	
Petroicidae	*Melanodryas*	*cucullata*	Hooded Robin	X		X	
Podargidae	*Podargus*	*strigoides brachypterus*	Tawny Frogmouth			X	
Pomatostomidae	*Pomatostomus*	*temporalis rubeculus*	Grey-crowned Babbler			X	
Pomatostomidae	*Pomatostomus*	*superciliosus superciliosus*	White-browed Babbler			X	
Psittacidae	*Barnardius*	*zonarius zonarius*	Port Lincoln Parrot			X	
Psittacidae	*Melopsittacus*	*undulatus*	Budgerigar			X	

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Psittacidae	*Pezoporus*	*occidentalis*	Night Parrot		X		En, Mi
Ptilonorhynchidae	*Chlamydera*	*guttata guttata*	Western Bowerbird			X	
Sylviidae	*Cincloramphus*	*mathewsi*	Rufous Songlark			X	
Sylviidae	*Eremiornis*	*carteri*	Spinifexbird			X	
Turnicidae	*Turnix*	*velox*	Little Button-quail			X	
Reptiles							
Agamidae	*Amphibolurus*	*longirostris*	Long-snouted Water Dragon	X			
Agamidae	*Caimanops*	*amphiboluroides*	Mulga Dragon	X			
Agamidae	*Ctenophorus*	*caudocinctus caudocinctus*	Ring-tailed Dragon	X			
Agamidae	*Ctenophorus*	*isolepis isolepis*	Central Military Dragon	X			
Agamidae	*Ctenophorus*	*reticulatus*	Western Netted Dragon	X			
Agamidae	*Diporiphora*	*valens*	Pilbara Spinifex Dragon	X			
Agamidae	*Pogona*	*minor minor*	Western Bearded Dragon	X			
Elapidae	*Acanthophis*	*wellsi*	Pilbara Death Adder	X			
Elapidae	*Demansia*	*psammophis cupreiceps*	Yellow-faced Whipsnake	X			
Elapidae	*Demansia*	*rufescens*	Rufous Whipsnake	X			
Elapidae	*Parasuta*	*monarchus*	Monk Snake	X			
Elapidae	*Pseudonaja*	*modesta*	Ringed Brown Snake	X			
Elapidae	*Suta*	*fasciata*	Rosen's Snake	X			

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Gekkonidae	*Diplodactylus*	*pulcher*		X			
Gekkonidae	*Gehyra*	*punctata*		X			
Gekkonidae	*Gehyra*	*variagata*	Tree Dtella	X			
Gekkonidae	*Heteronotia*	*spelea*	Desert Cave Gecko	X			
Gekkonidae	*Lucasium*	*wombeyi*		X			
Gekkonidae	*Nephrurus*	*milii*	Barking Gecko	X			
Gekkonidae	*Strophurus*	*elderi*	Jewel Gecko	X			
Gekkonidae	*Strophurus*	*wellingtonae*		X			
Gekkonidae	*Oedura*	*marmorata*	Marbled Velvet Gecko	X			
Pygopodidae	*Delma*	*elegans*		X			
Pygopodidae	*Delma*	*nasuta*		X			
Pygopodidae	*Delma*	*pax*		X			
Pygopodidae	*Delma*	*tincta*		X			
Pygopodidae	*Lialis*	*burtonis*	Burton's Legless Lizard	X			
Pygopodidae	*Pygopus*	*nigriceps*	Hooded Scaly-foot	X			
Pythonidae	*Liasis*	*olivaceus barroni*	Pilbara Olive Python	X	X		Vu
Typhlopidae	*Ramphotyphlops*	*ammodytes*		X			
Typhlopidae	*Ramphotyphlops*	*grypus*		X			
Typhlopidae	*Ramphotyphlops*	*hamatus*		X			

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Scincidae	*Carlia*	*munda*		X			
Scincidae	*Ctenotus*	*duricola*		X			
Scincidae	*Ctenotus*	*helenae*		X			
Scincidae	*Ctenotus*	*pantherinus ocellifer*		X			
Scincidae	*Ctenotus*	*rutilans*		X			
Scincidae	*Ctenotus*	*saxatilis*	Rock Ctenotus	X			
Scincidae	*Ctenotus*	*schomburgkii*		X			
Scincidae	*Cryptoblepharus*	*buchananii*	Fence Skink	X			
Scincidae	*Cyclodomorphus*	*melanops melanops*		X			
Scincidae	*Egernia*	*formosa*		X			
Scincidae	*Menetia*	*greyii*	Common Dwarf Skink	X			
Scincidae	*Menetia*	*surda surda*	Surd's Dwarf Skink	X			
Scincidae	*Morethia*	*ruficauda exquisita*	Flame-tailed Skink	X			
Scincidae	*Lerista*	*muelleri*		X			
Scincidae	*Lerista*	*neander*		X			
Varanidae	*Varanus*	*acanthurus*	Spiny-tailed Monitor	X			
Varanidae	*Varanus*	*brevicauda*	Short-tailed Pygmy Monitor	X			
Varanidae	*Varanus*	*bushi*	Pilbara Mulga Monitor	X			
Amphibians							

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Hylidae	*Cyclorana*	*maini*	Sheep Frog	X			
Mammals							
Dasyuridae	*Dasykaluta*	*rosamondae*	Little Red Kaluta	X			
Dasyuridae	*Dasyurus*	*hallucatus*	Northern Quoll		X		En
Dasyuridae	*Ningaui*	*timealeyi*	Pilbara Ningaui	X			
Dasyuridae	*Pseudantechinus*	*roryi*	Rory's Pseudantechinus	X			
Dasyuridae	*Pseudantechinus*	*woolleyae*	Woolley's Pseudantechinus	X			
Dasyuridae	*Sminthopsis*	*macroura*	Stripe-faced Dunnart	X			
Dasyuridae	*Sminthopsis*	*ooldea*	Ooldea Dunnart	X			
Emballonuridae	*Tophozous*	*hilli*	Hill's Sheathtail Bat	X			
Hipposideridae	*Rhinonicteris*	*aurantius*	Pilbara Leaf-nose Bat		X		Vu
Macropodidae	*Petrogale*	*rothschildi*	Rothchild's Rock-wallaby	X			
Megadermatidae	*Macroderma*	*gigas*	Ghost Bat	X			P4
Molossidae	*Mormopterus*	*beccarii*	Beccari's Freetail Bat	X			
Muridae	*Leggadina*	*lakedownensis*	Short-tailed Mouse	X			P4
Muridae	*Mus*	*musculus*	House Mouse	X			X
Muridae	*Notomys*	*alexis*	Spinifex Hopping-mouse	X			
Muridae	*Pseudomys*	*chapmani*	Western Pebble-mound Mouse	X			P4
Muridae	*Pseudomys*	*desertor*	Desert Mouse	X			

Family	Genus	Species	Common Name	*NatureMap*	EPBC search	Birdata	Status
Muridae	*Pseudomys*	*hermannsburgensis*	Sandy Inland Mouse	X			
Muridae	*Zyzomys*	*argurus*	Common Rock-rat	X			
Vespertilionidae	*Chalinolobus*	*gouldii*	Gould's Wattle Bat	X			
Vespertilionidae	*Nyctophilus*	*geoffroyi*	Lesser Long-eared Bat	X			
Vespertilionidae	*Scotorepens*	*greyii*	Little Broad-nosed Bat	X			
Vespertilionidae	*Vespadelus*	*finlaysoni*	Finlayson's Cave Bat	X			

Table 18 Fauna Observed During Field Assessment

Family	Genus	Species	Common Name	Status
Birds				
Acanthizidae	*Acanthiza*	*apicalis whitlocki*	Inland Thornbill	
Acanthizidae	*Aphelocephala*	*leucopsis castaneiventris*	Southern Whiteface	
Acanthizidae	*Smicrornis*	*brevirostris flavescens*	Weebill	
Accipitridae	*Aquila*	*audax*	Wedge-tailed Eagle	
Accipitridae	*Hamirostra*	*melanosternon*	Black-breasted Buzzard	
Accipitridae	*Milvus*	*migrans*	Black Kite	
Artamidae	*Artamus*	*cinereus melanops*	Black-faced Woodswallow	
Artamidae	*Artamus*	*minor*	Little Woodswallow	
Artamidae	*Artamus*	*personatus*	Masked Woodswallow	
Artamidae	*Cracticus*	*nigrogularis*	Pied Butcherbird	
Artamidae	*Cracticus*	*torquatus leucopterus*	Grey Butcherbird	
Campephagidae	*Coracina*	*novaehollandiae melanops*	Black-faced Cuckoo-Shrike	Ma
Campephagidae	*Lalage*	*tricolor*	White-winged Triller	
Columbidae	*Ocyphaps*	*lophotes*	Crested Pigeon	
Columbidae	*Phaps*	*chalcoptera*	Common Bronzewing	
Corvidae	*Corvus*	*orru*	Torresian Crow	
Dricruridae	*Grallina*	*cyanoleuca*	Magpie-lark	
Dricruridae	*Rhipidura*	*leucophrys*	Willie Wagtail	

Family	Genus	Species	Common Name	Status
Estrildidae	*Taeniopygia*	*guttata*	Zebra Finch	
Falconidae	*Falco*	*berigora*	Brown Falcon	
Falconidae	*Falco*	*cenchroides*	Nankeen Kestrel	Ma
Halcyonidae	*Todiramphus*	*sanctus*	Sacred Kingfisher	
Malurinae	*Malurus*	*lamberti assimilis*	Variegated Fairy-wren	
Meliphagidae	*Conopophila*	*whitei*	Grey Honeyeater	
Meliphagidae	*Lichenostomus*	*keartlandi*	Grey-headed Honeyeater	
Meliphagidae	*Lichenostomus*	*penicillatus*	White-plumed Honeyeater	
Meliphagidae	*Lichenostomus*	*virescens*	Singing Honeyeater	
Meliphagidae	*Lichmera*	*indistincta*	Brown Honeyeater	
Meliphagidae	*Manorina*	*flavigula wayensis*	Yellow-throated Miner	
Motacillidae	*Anthus*	*australis*	Australian Pipit	
Otididae	*Ardeotis*	*australis*	Australian Bustard	P4
Pachycephalidae	*Colluricincla*	*harmonica rufiventris*	Grey-shrike Thrush	
Pachycephalidae	*Oreoica*	*gutturalis pallescens*	Crested Bellbird	
Petroicidae	*Melanodryas*	*cucullata*	Hooded Robin	
Pomatostomidae	*Pomatostomus*	*temporalis rubeculus*	Grey-crowned Babbler	
Psittacidae	*Barnardius*	*zonarius zonarius*	Port Lincoln Parrot	
Psittacidae	*Eolophus*	*roseicapilla*	Galah	
Ptilonorhynchidae	*Chlamydera*	*guttata guttata*	Western Bowerbird	

Family	Genus	Species	Common Name	Status
Sylviidae	*Cincloramphus*	*mathewsi*	Rufous Songlark	
Reptiles				
Agamidae	*Ctenophorus*	*caudocinctus caudocinctus*	Ring-tailed Dragon	
Agamidae	*Ctenophorus*	*isolepis isolepis*	Central Military Dragon	
Agamidae	*Diporiphora*	*winneckei*	Spinifex Dragon	
Agamidae	*Tympanocryptis*	*cephalus*	Pebble Dragon	
Gekkonidae	*Gehyra*	*punctata*		
Gekkonidae	*Gehyra*	*variagata*	Tree Dtella	
Gekkonidae	*Heteronotia*	*spelea*	Desert Cave Gecko	
Gekkonidae	*Oedura*	*marmorata*	Marbled Velvet Gecko	
Pythonidae	*Antaresia*	*stimsoni stimsoni*	Stimson's Python	
Scincidae	*Ctenotus*	*saxatilis*	Rock Ctenotus	
Scincidae	*Egernia*	*depressa*	Pygmy Spiny-tailed Skink	
Scincidae	*Menetia*	*greyii*	Common Dwarf Skink	
Scincidae	*Morethia*	*ruficauda exquisita*	Flame-tailed Skink	
Scincidae	*Lerista*	*neander*		
Varanidae	*Varanus*	*panoptes rubidus*	Yellow-spotted Monitor	
Mammals				
Bovidae	*Bos*	*taurus*	Cow	X *
Canidae	*Canus*	*lupus dingo*	Dingo	

Family	Genus	Species	Common Name	Status
Camelidae	*Camelus*	*dromedarius*	Camel	X *
Dasyuridae	*Pseudantechinus*	*woolleyae or roryi*	False Antechinus	*
Equuidae	*Equus*	*asinus*	Donkey	X*
Felidae	*Felis*	*catus*	Cat	X
Macropodidae	*Macropus*	*robustus erubescens*	Euro	
Macropodidae	*Macropus*	*rufus*	Red Kangaroo	
Macropodidae	*Petrogale*	*rothschildi*	Rothchild's Rock-wallaby	
Muridae	*Pseudomys*	*chapmani*	Western Pebble-mound Mouse	P4

X, introduced species

Ma, Marine

P4, Priority species 4

* observation via droppings

Appendix D

Priority Flora and Fauna Locations

Table 19 Priority Flora and Fauna Locations

Descriptor	Status	Quadrat	X	Y
Pebble Mouse Mound (status unknown)			691709	7428045
Pebble Mouse Mound (not active)			691709	7428281
Pebble Mouse Mound (active)			691556	7428402
Pebble Mouse Mound (active)			691781	7428238
Pebble Mouse Mound (active)			689444	7430122
Pebble Mouse Mound (active)			708249	7433310
Pebble Mouse Mound (active)			693273	7427820
Pebble Mouse Mound (active)			693206	7427903
Pebble Mouse Mound (active)			693196	7427656
Pebble Mouse Mound (active)			689060	7429724
Pebble Mouse Mound (active)			690262	7429463
Pebble Mouse Mound (active)			690429	7429434
Pebble Mouse Mound (active)			690876	7429266
Aristida jerichoensis var. *subspinulifera*	P1	Q10	688070	7426445
Aristida jerichoensis var. *subspinulifera*	P1	Q32	688070	7426445
Spartothamnella puberula	P2	Incidental	692613	7428757
Indigofera gilesii subsp. *gilesii*	P3	Incidental	689648	7429114
Dampiera metallorum	P3	Incidental	692567	7428733
Dampiera metallorum	P3	Incidental	692520	7428779
Rhagodia sp. *Hamersley*	P3	Q12	686968	7425345
Rhagodia sp. *Hamersley*	P3	Q14	692383	7425020
Rhagodia sp. *Hamersley*	P3	Q29	690510	7426931
Rhagodia sp. *Hamersley*	P3	Q34	691653	7427233
Rhagodia sp. *Hamersley*	P3	Q16	692415	7426222
Rhagodia sp. *Hamersley*	P3	Q9	688891	7427801
Rhagodia sp. *Hamersley*	P3	Q13	686929	7425487
Rhagodia sp. *Hamersley*	P3	Q22	693237	7426785
Rhagodia sp. *Hamersley*	P3	Q31	691468	7424902

Descriptor	Status	Quadrat	X	Y
Eremophila magnifica subsp. *magnifica*	P4	Incidental	689228	7430242
Bidens bipinnata	*	Q10	688070	7426445

Appendix E

Priority Flora Chain of Custody Form from S. Dillon

BHPBilliton Chain of Custody

Company GHD
Date Submitted 30th September 2010
Project Code
Project Location Coondewanna & Yandi

Specimen Code	Consultant ID	Habit (including height & form)	Plant Description (including flower/fruit colour)	Habitat (including landscape form & soil)	BHP Sponsored Botanist ID	BHP Sponsored Botanist Comments
CW 146	*Triodia melvillei*				*Triodia melvillei*	
CW 23	*Triodia melvillei*				*Triodia* sp. Mt Ella (M.E. Trudgen 12739)	P3
? 13	*Brassica rapa*				*Cleome viscosa*	