

**Iron Valley Project
Flora and Vegetation Survey**

February 2012

Report prepared for
URS Australia Pty Ltd on behalf of Iron Ore Holdings Ltd



Astron Environmental Services

129 Royal Street

East Perth WA 6004

Phone: (08) 9421 9600

Fax: (08) 9421 9699

Email: perth@astron.com.au

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Iron Ore Holdings Ltd

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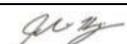
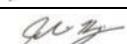
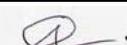
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Abbreviations and Definitions

Abbreviation	Definition
Astron	Astron Environmental Services
ANRA	Australian Natural Resources Atlas
BHPBIO	BHP Billiton Iron Ore
BIF	Banded Ironstone Formation
BOM	Bureau of Meteorology
DEC	Department of Environment and Conservation
DRF	Declared Rare Flora
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
EPA	Environmental Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FMG	Fortescue Metals Group Pty Ltd
GDA	Geocentric Datum of Australia 1994
GDE	Groundwater Dependent Ecosystem
GIS	Geographical Information System
GPS	Global Positioning System
ha	Hectare/s
IBRA	Interim Biogeographic Regionalisation of Australia
IOH	Iron Ore Holdings Ltd
km	Kilometre/s
MGA	Map Grid of Australia
Mt	Million tonnes
Newman Aero	Newman Airport Weather Station
NVIS	National Vegetation Information System
PEC	Priority Ecological Community
TEC	Threatened Ecological Community
the Project	The Iron Valley Project
URS	URS Australia Pty Ltd
WAHERB	Western Australian Herbarium
*[species name]	Indicates species is not native to Western Australia

Executive Summary

Iron Ore Holdings Ltd (IOH) proposes to develop an iron ore mine on its Iron Valley tenement, located in the Eastern Pilbara Region, approximately 85 km north-west of Newman. In 2010, URS Australia Pty Ltd commissioned Astron Environmental Services on behalf of IOH to undertake a Level 2 Flora and Vegetation Survey of the Iron Valley Mining tenement (M47/1439), in accordance with the Environmental Protection Authority (EPA) *Guidance Statement No 51* and EPA *Position Statement No 3*. The survey objective was to record and assess the flora and vegetation across 1,102 hectares including the entire Iron Valley Mining tenement (M47/1439) and 17 hectares of Exploration Lease (E47/1385) to the west (the Survey Area). The proposed scope of works included a full identification of the flora and description of vegetation present within the Survey Area, including any species or communities of conservation significance. This report presents the findings of these surveys and the associated desktop research.

Qualified botanists completed two field survey trips between 8–19 April 2011, (during the summer wet season) and 25 July – 4 August 2011 (during the winter dry season); high rainfall preceded both surveys providing conditions conducive to high floristic diversity. The Survey Area was traversed by four-wheel drive vehicle and on foot. Colour aerial photography (1:10,000) was utilised to map vegetation boundaries. A total of 75 field sites were established comprising of 69 quadrats (50 m by 50 m or equivalent delineating a total area of 2,500 m²) and six relevés (unbounded sampling sites of a homogenous vegetation unit) in representative vegetation types across both topographical sequences and landforms, providing the basis for the vegetation classification.

A total of 238 vascular plant taxa, representing 40 families and 105 genera were recorded in the Survey Area. The dominant families were Fabaceae (51 species), Poaceae (43 species) and Malvaceae (31 species). No Declared Rare Flora or priority taxa were recorded during the survey. *Aristida hygrometrica* and *Senna curvistyla* are native to Western Australia but recordings as single occurrences in this survey indicate significant range extensions from the north and east respectively. Neither species is currently threatened or of conservation significance. Five introduced plant taxa, representing three families were identified. The most abundant and widespread of the introduced taxa recorded was **Cenchrus ciliaris* of the Poaceae family, commonly known as Buffel Grass.

The cover and density of dominant species were recorded and utilised in a non-parametric statistical analysis to describe typical vegetation associations for the Survey Area. Vegetation associations explicitly describe the dominant species and their cover within the ground, mid and upper strata of vegetation. Vegetation across the Survey Area was mapped to the vegetation association level in accordance with the National Vegetation Information System. Six vegetation associations were recorded across the Survey Area, with strong relationships to landform.

No Threatened Ecological Communities or Priority Ecological Communities were recorded in the Survey Area. However, the Survey Area is located 15-20 km downstream of the Priority 1 PEC Weeli Wolli Spring and west of Weeli Wolli Creek. Two key species (*Eucalyptus victrix* and *Corymbia hamersleyana*) are present in Groundwater Dependent Ecosystems (GDE) within the Survey Area. *Eucalyptus victrix* is classified as a facultative phreatophyte that will opportunistically use groundwater, whilst *C. hamersleyana* is a xerophyte and is not reliant on groundwater. The predicted depth to groundwater and drawdown cone of depression for the Survey Area indicates a potential for the phreatophytic vegetation to be affected by groundwater drawdown to some degree. Based on the sparse isolated numbers of *E. victrix* surveyed within GDE locations, it is recommended that a brief field survey focusing on GDE vegetation is undertaken to confirm the spatial diversity of *E. victrix* and determine if a GDE monitoring program is required.

The presence of **Cenchrus ciliaris* is the main concern for the biodiversity across the Survey Area, although it is sparse relative to other areas of the Pilbara. It has formed part of the lowest strata of a vegetation association on the plains areas and is highly invasive with high ecological impact. This risk will be magnified with continued disturbance of those areas. Conversely a small drainage area on the eastern margin of the Survey Area is relatively free of weed species, is dominated by native hummock grasses and *Eulalia aurea* tussock grasses, and is a tributary to the major drainage channel of Weeli Wolli Creek. A weed hygiene plan should be considered as a potential environmental management need for the Project, as the mining tenement is relatively small in area for the Pilbara Region and is in the Weeli Wolli Creek catchment.

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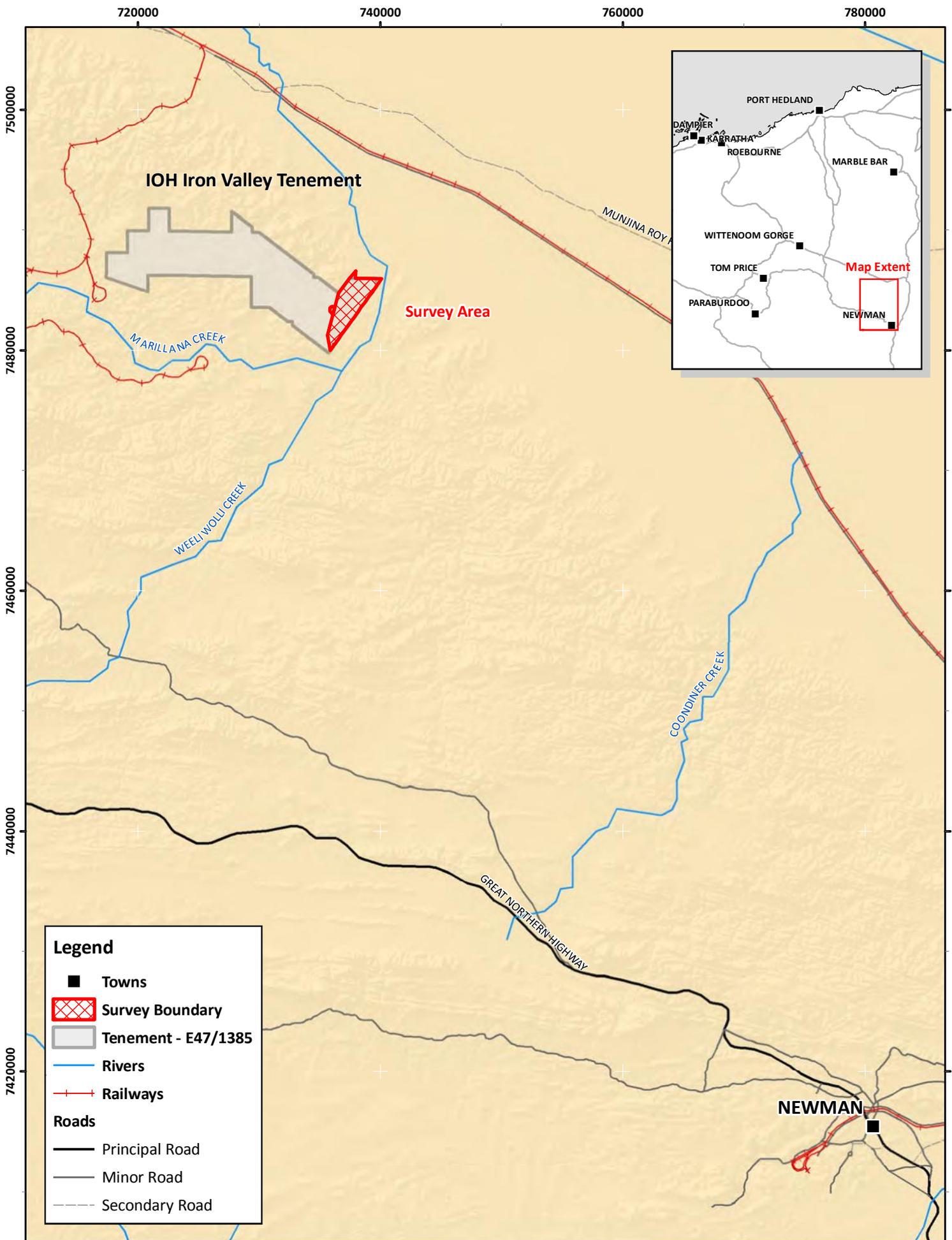
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1 Introduction

1.1 Project Background

Iron Ore Holdings Ltd (IOH) holds a number of tenements in the Central Pilbara region of Western Australia (IOH 2011). The Iron Valley Project (located on mining lease M47/1439, hereafter 'the Project') is located approximately 85 km northwest of Newman (Figure 1). The Project is located in close proximity to a number of operating iron ore mines, including Fortescue Metals Group's (FMG) Cloudbreak operation, Rio Tinto's Yandicoogina operation and BHP Billiton Iron Ore's (BHPBIO) Yandi operation. In 2010 Astron Environmental Services (Astron) was commissioned by URS Australia Pty Ltd (URS) on behalf of IOH to conduct a Level 2 Flora and Vegetation Survey in accordance with the Environmental Protection Authority (EPA) *Guidance Statement No 51* and EPA *Position Statement No 3*. This survey was conducted across an area of 1,102 ha (the Survey Area) comprising the entire Iron Valley Mining tenement (M47/1439) and 17 hectares of Exploration Lease (E47/1385).

Within the Survey Area, IOH has identified a high grade mineral resource which is part of the Brockman Iron Formation (IOH 2011). During the Survey period, IOH were undertaking Prefeasibility Phase 1 Studies at the Iron Valley tenement.



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IOH Iron Valley Flora and Vegetation Surveys

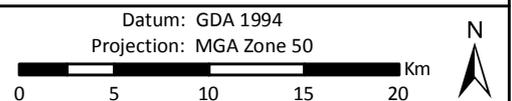


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Date: 03/09/2012

Drawn: C. Dyde

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1.2 Scope and Objectives

The scope of the Iron Valley Project, Flora and Vegetation Survey, included desktop research, field botanical surveys, data processing and reporting to be completed with the following objectives:

1.2.1 Desktop Research

A literature review and searches of environmental databases were undertaken to identify the following:

- Climate and regional context, including existing knowledge of vegetation, mapping, landforms and geology.
- Declared Rare Flora (DRF), Priority and Threatened flora recorded within a 50 km radius of the Survey Area;
- Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs) recorded within 5 km of the Survey Area;
- Any conservation areas, watercourses or Wetlands of National/International Importance within a 10 km radius of the Survey Area.

Definitions of the information researched in the databases are further described in Section 1.3.7.

1.2.2 Field Survey

A flora and vegetation survey was conducted within the Survey Area that incorporates the following:

- Installation of 69 permanent 50 m x 50 m quadrats (or of dimensions enclosing 2,500 m²) at predetermined survey sites. Where establishment of a permanent quadrat was not practical, relevé surveys were conducted with the GPS locations of the start and finish recorded;
- Within each quadrat and relevé, all vascular plant species, their height, cover and structural classes were recorded in accordance with Level 5 (species association) in the information hierarchy of the National Vegetation Information System (NVIS 2011). An 'association' is a vegetation specific term of the NVIS analogous to an ecological community. An ecological community is occurrence of populations of two or more different species within the same geographical area. In this report an association refers to an ecological community of two or more vascular plant species that also satisfies the Level 5 classification of the NVIS.
- Recording GPS locations of any DRF, Priority and other significant flora located within quadrats or recorded opportunistically;
- Recording GPS locations and abundance of any declared and noxious weeds identified within quadrats or recorded opportunistically;
- Recording vegetation condition and evidence of disturbance (including fire history and grazing) using the Vegetation Condition Scale of Keighery (1994);
- Collection and identification of vascular plant specimens in the field (where possible); and
- Vegetation mapping within the Survey Area consistent with Level 5 (species association) in the information hierarchy of the NVIS. Further information and discussion of the NVIS is given in Section 2.2.

1.2.3 Data Processing

After the field survey was completed, data and vascular plant specimens were collated in order to:

- Identify vascular plant material collected during the field survey to the lowest taxonomic level possible (where required, specialist botanists were utilised) to establish species richness and diversity of the Survey Area;
- Undertake vegetation mapping of the Survey Area and prepare maps utilising available spatial data of land systems, pre-European vegetation, vegetation associations, vegetation condition and locations of conservation significant flora and introduced taxa; and
- Conduct a pattern analysis to statistically analyse vascular plant data to define and delineate vegetation associations of the survey sites.

1.2.4 Report Preparation

A final report was prepared to communicate the following:

- Regional and contextual information (i.e. climate, land systems, pre-European vegetation);
- Methodology of the desktop research and field flora and vegetation surveys;
- Results of Department of Conservation and Environment (DEC) and Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) database searches;
- Descriptions of vegetation associations recorded in the Survey Area;
- A list of all vascular plant species recorded in the Survey Area;
- Location, distribution and abundance of any significant flora or introduced vascular plant species recorded;
- A discussion of the main results of the field survey;
- An assessment of the local and regional conservation value of the flora and vegetation recorded within the Survey Area;
- Addressing of any limitations of the flora and vegetation survey, seasonal or otherwise; and
- Identification of potential impacts on flora and vegetation and recommendations to minimise these.

1.3 Environmental Context

1.3.1 Climate

The Survey Area is located in the south eastern portion of the Pilbara Bioregion, dominated by a transitional arid to tropical climate with hot wet summers (October – April) and mild dry winters (May – September). Rainfall events are highly sporadic throughout the year and between years (Bureau of Meteorology (BOM) 2011) and high rainfall events are largely dependent on cyclonic activity (Payne and Tille 1992; ANRA 2009). The closest BOM weather station to the Survey Area is 92 km southeast at Newman Airport. Based on BOM (2011) records from 1971 to 2011 mean annual rainfall recorded by Newman Airport is 310.7 mm, approximately 68% of which fell during the summer months (Figure 2).

Temperature data has been recorded by BOM at the Newman Airport since 1996. The mean annual maximum temperature is 32.0°C and mean annual minimum is 16.1°C. The warmest months are November to March during which mean maximum temperatures exceed 35.0°C. The lowest daily minimum temperatures occur between June and August, where mean minimum temperatures are below 10.0°C.

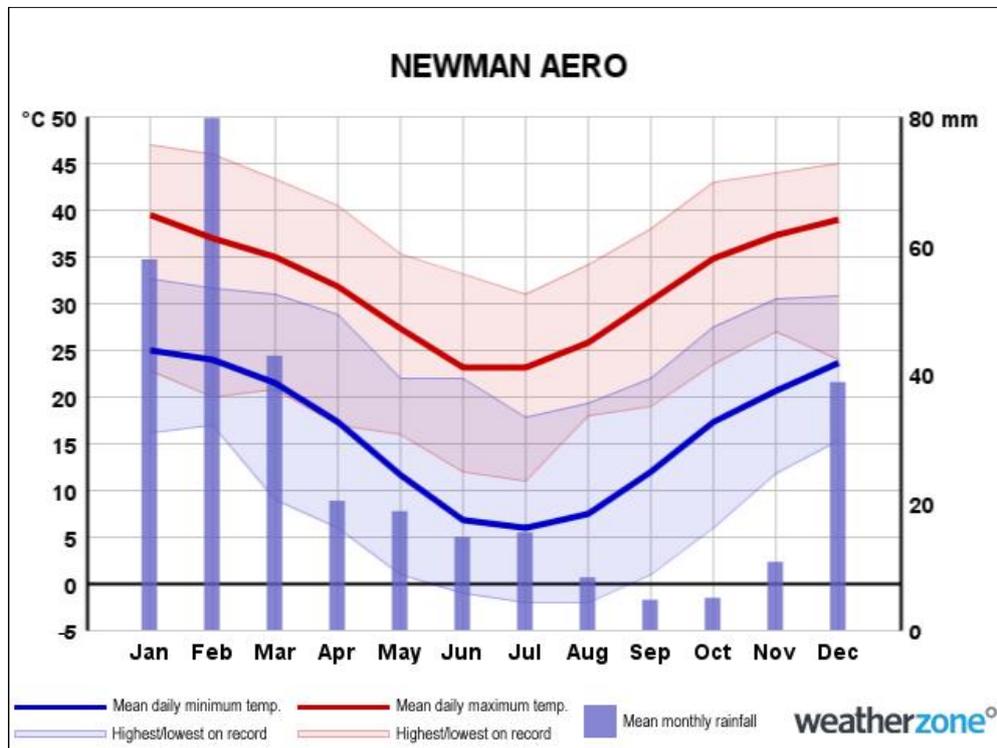


Figure 2: Climate averages and extremes for Newman Airport based on BOM records for rainfall 1971-2011 and temperature 1996-2011 (Weatherzone 2011).

1.3.2 Geology and Soils

The Survey Area is part of the Archaean Pilbara Craton, a geologically distinct region within the Pre-Cambrian Western Shield that has been stable for the past 2,400 million years (Trendall 1990). Iron Valley has been mapped and described on the Roy Hill 1:250,000 geological sheet (Thorne and Tyler 1997). The Survey Area is characterised by Banded Iron Formations (BIF) of the Brockman Iron Formation and the Weeli Wolli Formation of the Hamersley Group, bounded primarily by colluvium deposition and plains. Eolian deposition and alluvial drainage channels are also present in the Survey Area, but in comparatively minor proportions (<10%). The geology of the Survey Area is summarised in Table 1.

Table 1: Geology of the Survey Area (Thorne and Tyler 1997).

Description of Formation	Area (Ha) within Survey Area
Colluvium: partly consolidated quartz and rock fragments in silt and sand matrix; old valley-fill deposits	556.6
Brockman Iron Formation: banded iron-formation, chert and pelite	279.8
Weeli Wollie Formation: banded iron-formation (commonly jaspilitic), pelite, and numerous metadolerite sills	176.6
Alluvium: unconsolidated silt, sand, and gravel; in drainage channels and on adjacent floodplains	46.9
Eolian deposit: sand; in sheets and longitudinal dunes	41.6

The soils of the Survey Area are characteristic of the Hamersley Plateau physiographic unit, described by Beard (1975) as stony and shallow with occurrences of ferruginous duricrust where soil cover is extensively absent. Hilltops are typically characterised by shallow brown loams and sands with hard red soils occupying the lower slopes, while within valleys the alluvial plains are characterised by deep soils of earthy loams, cracking clays and earthy clays (Beard 1975).

More recently a single soil landscape zone has been mapped within the Survey Area by Tille (2006): the Hamersley Plateaux (Table 2). This soil landscape is characterised by stony soils on the uplands and red-brown non-cracking clays, red shallow loams and loamy earths on the footslopes and colluvial plains (Tille 2006).

Table 2: Soil landscape of the Survey Area (Tille 2006).

Soil Landscape Province	Soil Landscape Zone Code	Soil Landscape Zone Description
Fortescue	285 Hamersley Plateaux	Hills and dissected plateaux (with some stony plains and hardpan wash plains) on sedimentary and volcanic rocks of the Hamersley Basin (Ophthalmia Fold Belt). Stony soils with red shallow loams and some red-brown non-cracking clays and red loamy earths. Located in the Pilbara between Pannawonica, Newman and Paraburdoo.

1.3.3 Land Systems Mapping

Surveys of the rangelands within the Pilbara Region (van Vreeswyk *et al.* 2004) were undertaken on behalf of the (now) Department of Agriculture and Food, Western Australia. The land system mapping and survey provided a description of biophysical properties and resources within the region, as well as an evaluation of the soil and vegetation condition.

The Survey Area is equally composed of the Boolgeeda and Newman Land Systems (Table 3), the mapping of which is presented in Appendix A. Both land systems are widely represented in the Pilbara, constituting 7,748 km² (4.3%) and 14,580 km² (8.0 %) respectively of the entire Pilbara Region. The Boolgeeda Land System is associated with colluvial deposits of footslopes and pediments, typically supporting *Acacia aneura*, allied taxa (mulga) shrublands and *Triodia* spp. grasslands (van Vreeswyk *et al.* 2004). The Newman Land System is typical of upland formations with *Triodia* spp. grasslands, including plateaux, ridges and mountains (van Vreeswyk *et al.* 2004).

Table 3: Summary of Pilbara Land Systems located within the Survey Area (van Vreeswyk *et al.* 2004).

Land System	Landforms	Soils	Vegetation
Boolgeeda (Stony lower slopes and plains below hills)	Low hills and rises	Stony soils, red shallow loams	Hummock grassland of <i>Triodia</i> spp. with very scattered <i>Acacia</i> shrubs
	Stony slopes and upper plains	Stony soils, red shallow loams or red loamy earths	Hummock grassland of hard <i>Triodia</i> spp. or scattered shrubs of <i>Acacia aneura</i> , <i>A. ancistrocarpa</i> and other <i>Acacia</i> spp. with hard and soft <i>Triodia</i> ground layer
	Stony lower plains	Red loamy earths	Hummock grassland of hard <i>Triodia</i> spp. Also scattered / moderately closed tall shrubland of <i>Acacia aneura</i> with hard and soft <i>Triodia</i> ground layer
	Groves	Red loamy earths	Moderately closed woodland or tall shrubland of <i>Acacia aneura</i> with sparse low shrubs and tussock grasses
	Narrow drainage floors and channels	Red loamy earths and minor self-mulching cracking clays; channels with river bed soils	Scattered to closed tall shrublands / woodlands of <i>A. aneura</i> , <i>A. atkinsiana</i> and <i>Corymbia hamersleyana</i> with sparse low shrubs and hummock / tussock grassland
Newman (Rugged jaspilite plateau, ridges and mountains)	Plateaux, ridges, mountains and hills	Stony soils and red shallow loams with some red shallow sands	Hummock grassland of mixed hard <i>Triodia</i> with very scattered / scattered shrubs and trees including <i>Acacia</i> and <i>Senna</i> spp., <i>Grevillea wickhamii</i> , and mixed <i>Eucalyptus</i> . Occasionally soft hummock grassland
	Lower slopes	Stony soils on upper margins with red loamy earths on lower margins	Hummock grassland of mixed hard <i>Triodia</i> with very scattered / scattered shrubs and trees including <i>Acacia</i> and <i>Senna</i> spp., <i>Grevillea wickhamii</i> , and mixed <i>Eucalyptus</i>
	Stony plains	Stony soils with red shallow loams and some red loamy earths	Hummock grassland of hard <i>Triodia</i> with isolated / very scattered shrubs of <i>Acacia</i> and <i>Senna</i> spp., and occasional <i>Eucalyptus</i> trees. Occasionally soft <i>Triodia</i> hummock grassland

1.3.4 Interim Biogeographic Regionalisation for Australia

The Interim Biogeographic Regionalisation for Australia (IBRA, version 6.1) divides the Australian continent into 85 bioregions and 403 sub-regions (Thackway and Cresswell 1995). IBRA regions represent a landscape-based approach to classifying the land surface, including attributes of climate, geomorphology, landform, lithology, and characteristic flora and fauna. Specialist ecological knowledge, combined with appropriate regional and continental scale biophysical datasets, have been interpreted to define and describe these regions and subregions (Thackway and Cresswell 1995). According to the IBRA, the Survey Area is located within the Pilbara Bioregion and the Fortescue and Hamersley subregions (Table 4).

In 2003, the Pilbara Bioregion was identified by the Commonwealth Government as one of 15 regions in Australia worthy of priority conservation funding because of its high biodiversity values and high levels of threat to those values. The designation of this region as an Australian Biodiversity Hotspot gives recognition to the high level of species diversity, the presence of endemic taxa, the number of threatened taxa and the presence of fire-sensitive species and communities. In addition to bushfire, pressures from over-grazing, introduced taxa, and general land degradation were identified as significant threats to native biota in this region (DSEWPC 2010b). Approximately 5-10 % of the Pilbara Bioregion is represented in the national reserve system (DSEWPC 2010c).

The biodiversity of Western Australia's 53 subregions and their representation in the conservation estate was assessed as part of a national audit to provide priorities for reservation (DSEWPC 2010c). The two IBRA subregions within the Survey Area were described in these audits as follows:

- **PIL 2** – The Fortescue subregion is characterised by alluvial plains and river frontage. The alluvial plains of the east are dominated by an extensive salt marsh system, typically supporting grassland communities. The western (lower) drainage area is defined by deeply incised gorges. The subregion is recognised as the northern limit of *Acacia aneura* and related taxa (mulga). A significant calcrete aquifer supports the numerous permanent springs in the central Fortescue, characterised by large permanent wetlands with extensive stands of *Eucalyptus camaldulensis* (river gum) and *Melaleuca argentea* woodlands (Kendrick 2001a).
- **PIL 3** – The Hamersley subregion is characterised by dissected bold plateaux and ranges of flat lying or moderately folded sandstone and quartzite. Vegetation is described as *Acacia aneura* and allied taxa (mulga) low woodland over tussock grasses occurring on fine textured soils in valley floors, with scattered *Eucalyptus leucophloia* (snappy gum) over *Triodia brizoides* on skeletal soils of the ranges.

Table 4: IBRA subregions of the Pilbara Bioregion associated with the Survey Area.

IBRA sub region (Code)	Total in Survey Area (ha)
Fortescue (PIL 2)	945.7
Hamersley (PIL 3)	155.9

1.3.5 Flora and Vegetation

Beard (1975) mapped vegetation across the region at a scale of 1:1,000,000. Botanically the Survey Area is located in the Fortescue Botanical District of the Eremaean Botanical Province, which is further divisible into the Fortescue Valley and Hamersley Plateau physiographic units of Beard (1975). Both geographical units have a portion in the Survey Area. Beard's mapping of pre-European disturbed vegetation through the Survey Area is presented in Appendix A and summarised in Table 5.

The vegetation of the Fortescue Valley is described as *Acacia aneura* and allied species (mulga) low woodland. Most of the mulga is patchy in distribution and areas without trees are not uncommon. Additional species frequently found in the Fortescue Valley include *Acacia victoriae* and *A. tetragonophylla*.

The vegetation of the Hamersley Plateau is a tree steppe *Eucalyptus leucophloia* – *Triodia wiseana* association, representing a hummock grass cover interspersed with scattered low trees. There are few large shrubs, but a rich flora of small shrubs and herbs.

Table 5: Beard (1975) Vegetation Associations for the Survey Area.

Botanical unit	Beard Vegetation Association	Total Area within Survey Area (ha)	Vegetation Description
Fortescue Valley	29	952.4	Sparse low woodland, mulga (<i>Acacia aneura</i> and allies), discontinuous in scattered groups
Hamersley Plateau	82	149.3	Hummock grasslands, low tree steppe; snappy gum (<i>Eucalyptus leucophloia</i>) over <i>Triodia wiseana</i>

1.3.6 Flora and Vegetation Conservation Categories

Commonwealth and Western Australian regulatory agencies maintain databases of the locations and conservation status of significant ecological communities and flora species in Western Australia.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage matters of national environmental significance including listed ecological communities and flora species. Listed ecological communities and flora species are allocated conservation categories which are outlined in Appendices B and C.

Under the Western Australian *Wildlife Conservation Act 1950*, a TEC is an ecological community that has been identified as being subject to processes that threaten to destroy or significantly modify it across much of its range. TECs are ranked under one of four categories as outlined in Appendix B.

DEC also maintains a list of PECs, to allow listing of communities that are possibly threatened or are not adequately defined and therefore do not meet the survey criteria for consideration as TECs. PECs are assigned one of four priority rankings according to the criteria outlined in Appendix B and require regular monitoring.

Under Western Australian legislation, all native flora are protected and it is an offense to 'take' native flora without a DEC license. To 'take' includes the removal of seeds or injuring plants. The *Wildlife Conservation Act 1950* also provides for native plant species to be specially protected

because they are under identifiable threat of extinction, are rare, or otherwise in need of special protection. These protected flora are considered under this Act to be threatened and are referred to as DRF.

Due to the diversity of Western Australia's flora, many species are known from only a few collections or locations, but have not been adequately surveyed. Such flora may be rare or threatened, but cannot be considered for declaration as threatened flora until adequate surveys have been undertaken. These flora are included on a supplementary conservation list called the Priority Flora list. Three categories of Priority Flora cover these poorly known species. A fourth category of Priority Flora includes species that have been adequately surveyed and are considered to be rare but not currently threatened. Western Australian flora conservation categories are detailed in Appendix C.

1.3.7 Weed Categories

The Australian Weed Strategy (NRMMC 2007) identifies 'Weeds of National Significance'. Weeds of National Significance are invasive with the potential to impact primary industry and/or environmental and social values.

The management of weeds in Western Australia is primarily regulated through the provisions of the *Agriculture and Related Resources Protection Act 1976*, and the *Biosecurity and Agriculture Management Act 2007*. A list of declared weed species has been gazetted under the *Agriculture and Related Resources Protection Act 1976*. Listed species are allocated one of five priority ratings which define the required level of management (Appendix D).

The Invasive Plant Prioritisation Process (DEC 2009) was developed to supersede the Environmental Weed Strategy for Western Australia (CALM 1999). The prioritisation process considers both a "species-led" and a "site-led" approach to priority setting for weed management on DEC managed lands. The prioritisation results for individual weeds within a DEC region should be utilised as a guide only and does not diminish any other requirements (statutory or otherwise) of land managers or developers.

1.3.8 Surface Water

The Project lies within the Weeli Wolli Catchment which drains into the Fortescue River Basin (known as the Fortescue Marsh) from Weeli Wolli Creek and Marillana Creek. The Project is located 15-20 km downstream of Weeli Wolli Spring and to the west of Weeli Wolli Creek. Weeli Wolli Spring (which feeds into Weeli Wolli Creek) has been highlighted as a significant arid wetland area, currently designated a Priority 1 PEC (see Appendix B and van Leeuwen 2009). Weeli Wolli Creek is characterised by unique phreatophytic flora and fauna communities, including taxa that are endemic to the area.

1.3.9 Land Tenure and Use

Pastoralism is the current land use for the Survey Area, which is located within the Marillana Pastoral Station. The Survey Area has a total area of 1,102 ha including all of Mining Lease M47/1439 (1,085 ha) and 17 ha of Exploration Licence E47/1385, which include the proposed sites for the accommodation village and village access road.

Marillana Creek is located south of the Iron Valley tenement and Weeli Wolli Creek is located to the east. Both these creeks are separated from the Iron Valley tenement by hills that run along the boundaries of the mining tenement.

2 Methodology

2.1 Desktop Research

2.1.1 Database Searches

Database searches were conducted to identify ecological communities and flora species categorised as being of conservation significance (see Appendices B and C) and possibly located within or within close proximity to the Survey Area. Search details are summarised in Table 6 with the results provided in Section 4.1.1.

Table 6: Database Searches conducted prior to field surveys.

Database Name	Date Search Results Received	Search Focus	Search Area
Protected Matters Search Tool (DSEWPC 2010a)	18 March 2011	Matters of National Environmental Significance including both listed ecological communities and flora species	10 km radius of coordinate -22°43' 55" S 119° 18' 42" E
DEC TECs and PECs Database (DEC 2011a)	8 March 2011	Listed Threatened and Priority Ecological Communities	5 km radius of coordinate -22°43' 55" S 119° 18' 42" E
DEC DRF and Priority Flora Database (DEC 2011b)	9 March 2011	Declared Rare and Priority Flora species	50 km radius of coordinate -22°43' 55" S 119° 18' 42" E
FloraBase (WAHERB 2011)			

2.1.2 Literature Review

A number of flora and vegetation surveys have previously been undertaken within 50 km of the Survey Area. Information from these reports was reviewed during the desktop research to provide an overview of the vegetation and to identify any potential species of interest.

- Biota Environmental Sciences (Biota) 2002, *'Hope Downs Rail Corridor, Port Hedland to Weeli Wolli Creek – Vegetation and Flora Survey. Baseline Survey'*, unpublished report for Hope Downs Management Services.
- Biota 2004a. *'Vegetation and Flora survey of the Proposed FMG Stage A Rail Corridor'*, unpublished report for FMG.
- Biota 2004b. *'Fortescue Metals Group Stage B Rail Corridor, Christmas Creek, Mt Lewin, Mt Nicholas, and Mindy Mindy Mine Areas'*, unpublished report for FMG.
- ENV Australia Pty Ltd 2007. *'Upper Marillana Exploration Lease: Flora and Vegetation Assessment'*, unpublished report for BHPBIO.
- Mattiske Consulting Pty. Ltd. (Mattiske), 2008a. *'Flora and Vegetation on the Hope Downs 4 Infrastructure Corridor'*, unpublished report for FMG.
- Mattiske 2008b. *'Flora and Vegetation Survey of Exploration Tenement E47/1237: Phil's Creek Project Area'*, unpublished report prepared for URS on behalf of IOH.

2.1.3 Seasonal Conditions

Plant species are dependent on adequate hydration for germination and survival. Rainfall was monitored prior to undertaking both surveys to gauge the appropriateness of undertaking a flora and vegetation assessment. The seasonal conditions experienced during the survey are described in Section 4.1.3.

2.2 Field Surveys

Two field survey trips to the Survey Area were conducted in accordance with the requirements for a Level 2 assessment outlined in the Environmental Protection Authority's (EPA) *Position Statement 3: Terrestrial Biological Surveys as an Element of Biodiversity Protection* (2002) and EPA *Guidance Statement 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (2004). In essence a Level 2 biological survey requires one field survey in the main flowering season for the survey area and another in a different season.

The first field survey took place from the 8 to 19 April 2011, during the summer wet season. The team was led by Dr. Wendy Thompson (Senior Botanist), who is qualified and experienced in conducting Level 2 surveys. Natalie Cadd (Senior Environmental Scientist), Natalie Krawczyk (Graduate Botanist) and Clemency Wilson (Graduate Botanist) assisted in the field survey. During the first field survey 69 quadrats (50 x 50 m or 100 x 25 m) and six relevés (100-200 m in length) were established outside indigenous heritage areas, the distribution of all 75 survey sites is presented in Figure 3. Two quadrats (coded IOH30 and IOH32) were placed westward of the original delineated Survey Area to include an additional proposed infrastructure area (Figure 3), increasing the total Survey Area by 17 ha to 1,102 ha. The survey sites were selected with aerial photography to represent topographical, geomorphological and geological variation across the Survey Area. The sites capture the variation in flora and vegetation associated with the predominantly BIF uplands and associated colluvial slopes, pediments and alluvial drainage, encompassing a broad topological sequence.

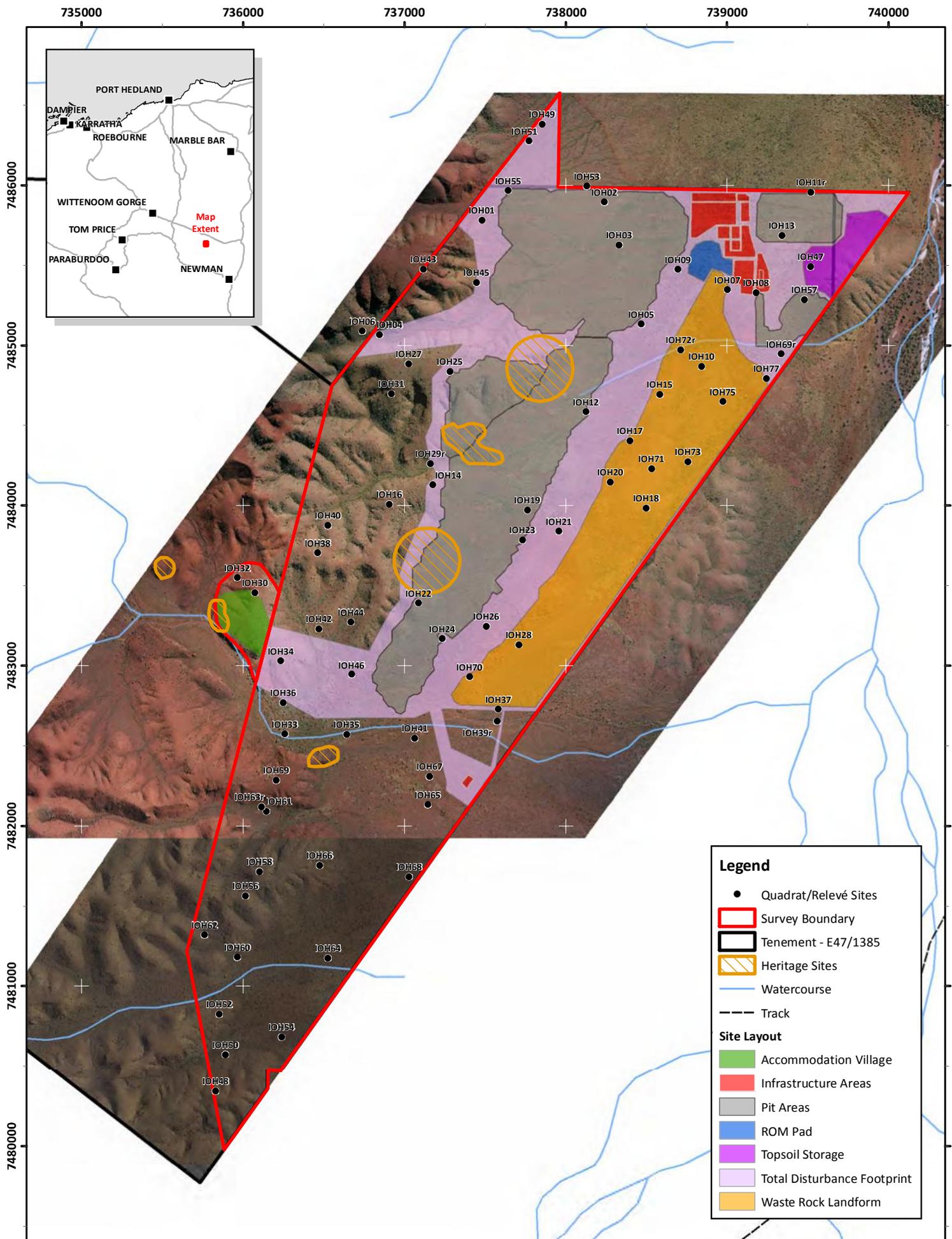
Vegetation associations were selected to represent minimal disturbance, however the Survey Area has experienced various levels of pastoral activities and also fire, which is a regular feature in the Pilbara Region. The most recent fire recorded in the Survey Area occurred in January 2009, which impacted the southern part of the Survey Area. Furthermore, exploration drilling activities have been undertaken across the Survey Area and drill pads and drill lines have been cleared throughout on both the valley floor and upslope areas.

A second field survey took place from 25 July - 4 August 2011, during the winter dry season. This survey was led by Dr. Wendy Thompson with Travis Doehring (Graduate Botanist) assisting. This second survey involved resurveying the quadrats and relevés established in the first field survey, in order to capture potential seasonal variation in floristic composition and cover.

The north-west, south-west, north-east and south-east corners of each quadrat were aligned with the aid of an optical square and the location of each corner was recorded with a handheld GPS and marked with a galvanized steel fence dropper. The coordinates of the start and finish of the relevés were recorded with a handheld GPS. Photographs of the vegetation profile of quadrats were taken for both field surveys from the north-west corner and likewise for relevés at both the start and finish.

The survey sites were coded and numbered on datasheets and in subsequent analyses as 'IOHXX' for a quadrat and 'IOHXXr' for a relevé. The following information was collected at each quadrat and relevé:

- **Location** – coordinates were measured using a handheld Garmin GPS (MGA50, GDA94). One set of coordinates were taken at a central location of each end of the relevé and one set of coordinates taken from each corner of every quadrat;
- **Recorder and Date** – a list of the personnel involved in sampling that location and the survey date;
- **Species** – all vascular plant species present including introduced species were recorded. Representative material was collected for verification and vouchering at the Western Australian Herbarium (WAHERB), with nomenclature recorded as defined in FloraBase (2011). Additional specimens were collected opportunistically, often adjacent to the quadrat, contributing to the overall species list for the Survey Area;
- **Weeds** – the species name, coordinates and density of any introduced flora was recorded;
- **Percent Foliar Cover** – the percentage cover was estimated for each species. Where foliar cover was less than 1%, a '+' was recorded on datasheets and in raw data (Appendix K);
- **Height** – the maximum height of each taxa was recorded;
- **Vegetation Description** – vegetation was described according to Aplin's (1979) modification of the vegetation classification system of Specht (1970) and the NVIS, Level 5 (Appendix E). At this level vegetation is described to 'association' where up to three dominant genera for each of the upper, mid and ground strata are categorised based on dominant growth form, cover and height (Cofinas and Creighton, 2001);
- **Vegetation Condition** – assessed according to the Vegetation Condition Classification of Keighery (1994, outlined in Appendix E);
- **Habitat** – a broad description of the surrounding landscape based on landform, topography and soil;
- **Disturbances** – records of any obvious disturbances such as fire, tracks or grazing; and
- **Photographs** – photographs of the vegetation profile were taken at the north-west corner of the quadrat and of the start and finish of each relevé.



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Figure 3A: Survey Area indicating quadrat and relevé locations

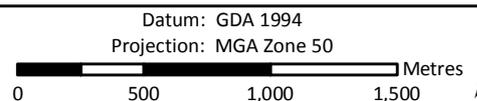


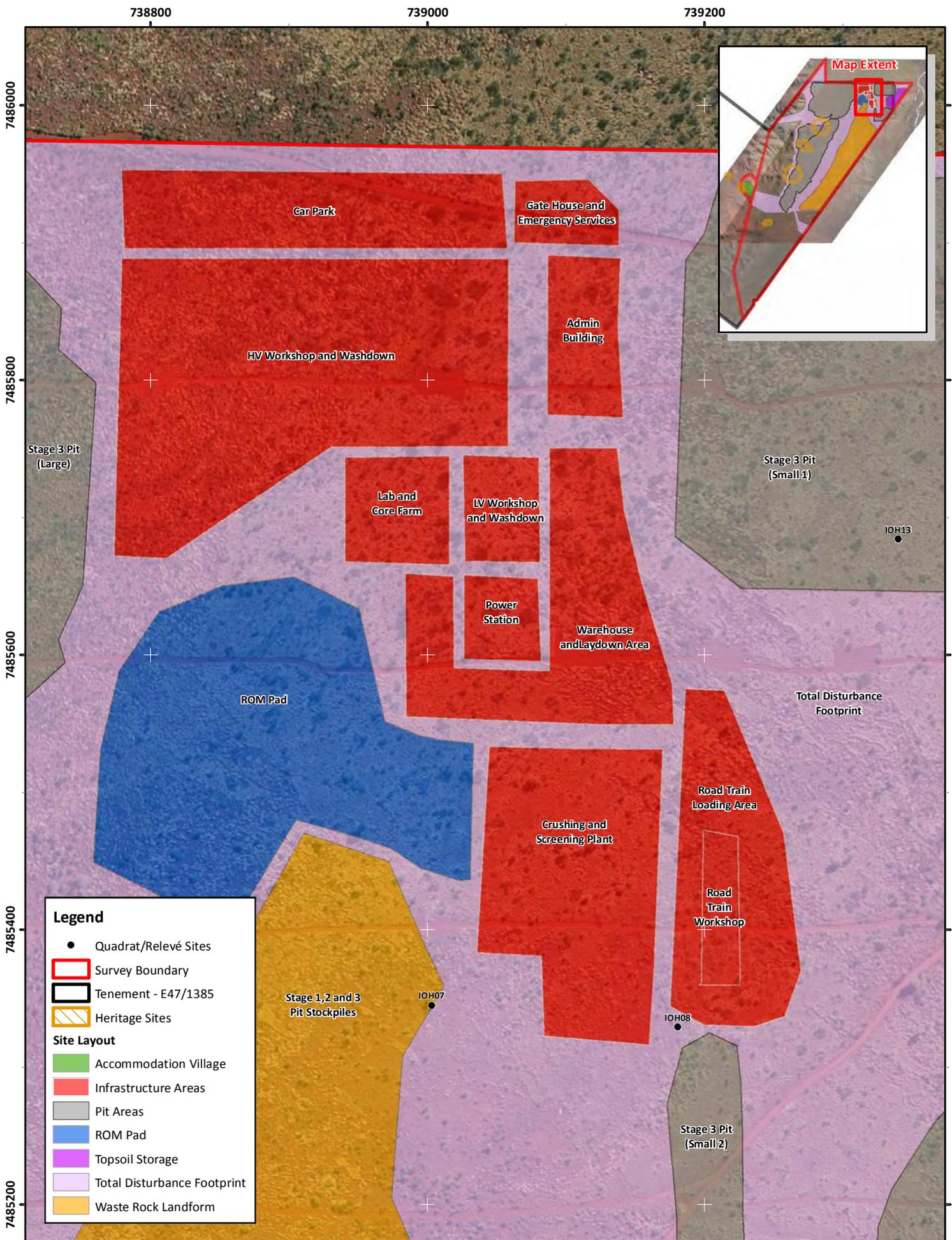
Author: W. Thompson

Date: 03-09-2012

Drawn: C. Dyde

Figure Ref: 3923-11FMV1RevB_20120903_Fig3A





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 IOH Iron Valley Flora and Vegetation Surveys



Figure 3B: Survey Area indicating quadrat and relevé locations

Author: W. Thompson	Date: 03-09-2012	Datum: GDA 1994 Projection: MGA Zone 50
Drawn: C. Dyde	Figure Ref: 3923-11FMV1RevB_20120903_Fig3B	

2.3 Specimen Identification and Data Management

Vascular plant material was collected in the field for positive identification. Specimens were pressed, dried and identified by Astron botanists Dr. Wendy Thompson, Julie Fielder, Brian Vincent, Andrew Mitchell and Raimond Orifici, who are all highly knowledgeable of the Pilbara flora. Where required, specialist botanists were engaged for confirmation. In particular, Malcolm Trudgen assisted with specimens from the Malvaceae family, Ryonen Butcher (WAHERB) confirmed the *Tephrosia* (Fabaceae) material and Rob Davis (WAHERB) assisted with specimens of *Ptilotus* (Amaranthaceae). All specimens were identified to the lowest level of taxonomic classification possible and nomenclature followed WAHERB (2011). Data from the field assessment were entered into a customised Access database, developed by Ted Griffin.

2.4 Data Analysis

Classification of survey sites was determined utilising the hierarchical agglomerative technique, a pattern analysis which produces a dendrogram diagram displaying similarity between survey sites (Clarke and Warwick 2001). Cluster analysis of a species similarity matrix is a recognised method for describing species assemblages such as flora species associations, analogous to vegetation communities (Clarke and Warwick 2001).

The analysis was undertaken on a presence/absence data matrix of all confirmed species, sub-species and variants which occur at more than a single site (total of 75 survey sites). Annuals, singletons (taxa occurring at a single survey site) and indeterminate collections (unidentifiable specimens) were excluded from the analysis. The dissimilarity between sites was determined using the Bray-Curtis measure and the Resemblance routine in PRIMER v6 (Clarke and Gorley 2006). The Bray-Curtis measure is a widely-used assessment of ecological distance, which reflects compositional change (Legendre and Legendre 1998, Anderson and Robinson 2003), providing quantitative output for similarity between samples (Faith *et al.* 1987). The resulting dendrogram provided the framework for the vegetation associations and assigning survey sites to the particular groups (Appendix F). The clustering of the survey sites in the dendrogram was allied with particular landforms (i.e. hills, creeklines and plains) and within landforms (i.e. multiple plains, Vegetation associations); and aligned with field observations of vegetation patterns. Vegetation associations based on the clustering and field mapping were used to create the vegetation mapping imposed on 1: 10,000 colour aerial photographs of the Survey Area.

Vegetation associations were described based on Level 5 NVIS, where dominant taxa of three vegetation strata are presented. Delineation of vegetation associations were derived from clustering on the dendrogram and field knowledge of vegetation patterns. A single outlier occurred during the analyses, which was attributed to poor placement of the quadrat in a disturbed area and related depauperate (limited biodiversity) species richness. It was then assigned to the appropriate landform group.

Taxa within each vegetation association were determined utilising the similarity percentages (SIMPER) routine in PRIMER. The SIMPER analyses provided information on those species typically found within each vegetation association. The SIMPER routine determines those taxa contributing the greatest similarity within a vegetation association and dissimilarity amongst groups (Clarke and Warwick 2001). SIMPER reports both individual taxon contributions to the group as well as cumulative similarity within each group. Taxa contributing the greatest similarity within each vegetation association were reported up to 50% of the cumulative similarity. When several taxa had an equal similarity calculated at the 50% level, all taxa of that similarity level were reported. The taxa were then assigned to the appropriate strata in the vegetation structure.

3 Limitations

Limitations were identified during the survey and subsequent analysis and reporting, they are discussed in Table 7 as required by the EPA *Guidance Statement No 51* (EPA 2004).

Table 7: Survey Limitations.

Potential Limitation	Statement Regarding Potential Limitations
<p>(i) Sources of information and availability of contextual information prior to the survey. Is the region well documented?</p>	<p>Broad contextual information is provided by IBRA (Kendrick 2001a and 2001b); Beard (1975) mapping; and land system classification and mapping (van Vreeswyk <i>et al.</i> 1994). Current condition and use of the landscape is documented primarily in grey literature, which has not been critiqued or assessed for accuracy.</p>
<p>(ii) Scope. The level of survey and detail required to undertake the survey. Was there adequate time to complete the survey to the desired standard of the EPA and DEC?</p>	<p>The time allocated to undertake the flora and vegetation surveys was sufficient.</p>
<p>(iii) Proportion of flora collected and identified. Was survey sampling, timing and intensity considered adequate? Was the survey conducted at what was considered an appropriate time of the year for plant identification? Were any taxonomic groups considered to be under-represented?</p>	<p>The surveys were conducted during April and July-August 2011. Field trips were scheduled to follow peak rainfall times in summer and winter. During months prior to and of the survey, rainfall was average or above average. Consequently in areas with low disturbance a very high number of specimens were collected.</p> <p>In particular, specimens collected during April 2011 were vigorous, healthy and mostly with flowers and/or fruit, aiding confident identification. This can be attributed to above average summer rains. Specimens collected during the July/August survey were also adequate to identify most to the species level. Very few collections within the <i>Triodia</i> group (Poaceae) were not identified to species level, as flowering heads were present on most specimens.</p> <p>Cattle grazing possibly reduced the floristic diversity and vegetation health of some areas of the Survey Area. In particular, in the portion of the Survey Area that had been burnt in 2009, the regeneration of the vegetation is likely to have been impacted by grazing pressure.</p>
<p>(iv) Completeness. Is there further work which may be required; i.e. was the relevant area fully surveyed?</p>	<p>A total of 73 sites were surveyed within Iron Valley Mining tenement (M47/1439) and 2 sites within the proposed infrastructure area of Exploration Lease (E47/1385). For the delineated Survey Area of 1,102 ha, it was surveyed at a rate of 1 quadrat/15 ha which is likely to have comprehensively represented all discrete units of vegetation, topography and soil type present.</p>
<p>(v) Mapping reliability. Were the aerial photographs, satellite images and site maps available considered adequate to fully understand the area surveyed? Was the mapping generated considered to have a high degree of reliability?</p>	<p>Colour aerial photography at 1:10,000 scale did not adequately represent current ground conditions, as a comprehensive drilling program was undertaken after the images were made; many quadrats had to be shifted from the original planned locations, particularly in the northern half of the Survey Area. As such the vegetation mapping represents the broad scale association that dominates the undisturbed areas of the northern Study Area but not the fine scale disturbed areas of drill pads and tracks.</p>

Potential Limitation	Statement Regarding Potential Limitations
<p>(vi) Disturbance. Had the Survey Area been impacted by any disturbance which may have limited the survey; i.e. fire, flood, accidental human intervention, etc?</p>	<p>The Survey Area has been impacted by livestock grazing, fire and exploration drilling that may have limited the plant species collected during the survey. As the Survey Area is part of a pastoral station, livestock are present at variable times and density. Old and fresh cattle dung was observed in the Survey Area during both trips. In the most recently burnt areas (at the southern end of the Survey Area in January 2009) post-fire grazing may have restricted vegetation regeneration. While above average rainfall prior to the survey meant that the sampling conditions were adequate, the post-fire succession may have variable species richness and diversity than what typically may be found in that area of the Survey Area.</p> <p>IOH has undertaken exploration drilling across the Project and have cleared drill line tracks and drill pads throughout the Survey Area. In the northern section of the Survey Area some west-east drill tracks, pads and associated clearing are less than 100 m apart, resulting in a less randomised distribution of 50 m x 50 m quadrats in those densely disturbed areas relative to other areas of the Survey Area. The presence of the drill lines and pads (and prior clearing) may have reduced the species richness and diversity present in adjacent survey sites.</p>
<p>(vii) Intensity. In retrospect, was the intensity considered to be adequate?</p>	<p>The survey intensity was appropriate for the topographical variation and size of the Survey Area.</p>
<p>(viii) Resources. Were the appropriate tools and materials available to complete the task effectively?</p>	<p>Adequate tools, materials and resources were available to complete the surveys, plant identification, data analyses and subsequent report writing.</p>
<p>(ix) Access. Were there any factors limiting access to the Survey Area?</p>	<p>No, the Survey Area was able to be traversed via vehicle, with the survey sites accessed by foot.</p>
<p>(x) Experience. Were personnel undertaking the field survey and plant identification trained and/or experienced in undertaking the required tasks?</p>	<p>The botanists responsible for undertaking the field surveys have considerable experience in conducting flora and vegetation surveys in the Pilbara. Similarly, the identification of specimens was conducted by personnel trained and experienced with identification of flora in the Pilbara region. Specialist taxonomists were used where required.</p>

4 Results

4.1 Desktop Research

4.1.1 Database Search Results

A March 2011 search of the DEC Threatened Ecological Communities and Priority Ecological Communities database found no TECs or PECs to have been recorded within the Survey Area. Outside the Survey Area but within 5km of the search coordinate (22°43' 55" S, 119° 18' 42" E) the search identified two occurrences of the Priority 3 PEC 'Fortescue Valley Sand Dunes'. One occurrence is approximately 4 km north-northwest of the search coordinate at 22°43' 55.95" S, 119° 18' 11.61" E, and the second is at 22° 39' 25.67" S, 119° 18' 35.11" E, which is approximately 8.3 km north of the search coordinate. The buffer zone of 4.5 km around the PEC coordinate resulted in it being included in the search results. Three other occurrences of PECs occur within 30 km of the search coordinate: another of the Priority 3 'Fortescue Valley Sand Dunes', the Priority 1 'Fortescue Marsh (Marsh Land System)' and the Priority 1 'Weeli Wolli Spring Community' (Mia Podesta pers. comm.).

DPSEWPC and DEC database searches indicated that one species, *Lepidium catapycnon*, listed as DRF, and 41 Priority Flora species have been recorded within a 50 km radius of the Survey Area (DSEWPC 2010a and DEC 2011b). Based on habitat preferences, some of these species have the potential to occur within the Survey Area (WAHERB 2011). The Priority flora species with recorded occurrences within 50km of the Survey Area are presented in Table 8.

Table 8: Summary of DRF and Priority Flora listed in DEC Threatened Flora Database within 50 km of the Survey Area (DEC 2011b).

Species	Conservation Status	Life Form	Known Habitat Details	Likelihood of Occurrence
<i>Acacia aphanoclada</i>	Priority 1	Shrub	Rocky hills, ridges and rises.	Potential
<i>Acacia bromilowiana</i>	Priority 4	Tree or shrub	Red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone, basalt. Rocky hills, breakaway, scree slopes, gorges, creek beds.	Potential
<i>Acacia cyperophylla</i> var. <i>omearana</i>	Priority 1	Tree or shrub	Stony and gritty alluvium, along drainage lines.	Potential
<i>Acacia effusa</i>	Priority 3	Shrub	Stony red loam, scree slopes of low ranges.	Potential
<i>Acacia fecunda</i>	Priority 3	Shrub	Quartzite gibbers over grey-red skeletal soil. Along shallow creeks and drainage lines, hills, road verges.	Potential
<i>Acacia</i> sp. Nullagine (B.R. Maslin 4955)	Priority 1	Shrub	Rocky clay. Low lying areas between rocky hills.	Potential
<i>Acacia subtiliformis</i>	Priority 3	Shrub	On rocky calcrete plateau.	Potential
<i>Amaranthus centralis</i>	Priority 3	Herb	Alluvial plains.	Potential

Species	Conservation Status	Life Form	Known Habitat Details	Likelihood of Occurrence
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	Priority 1	Grass (tufted perennial)	Hardpan plains with deep soil.	Unlikely
<i>Aristida lazaridis</i>	Priority 2	Grass (tufted perennial)	Sand or loam.	Potential
<i>Atriplex flabelliformis</i>	Priority 3	Herb (perennial)	Clay loam, loam. Saline flats or marshes.	Unlikely
<i>Atriplex spinulosa</i>	Priority 1	Herb (annual)	No data.	Potential
<i>Brachyscome</i> sp. Wanna Munna Flats (S. van Leeuwen 4662)	Priority 1	Herb (annual)	Low in landscape, plains. Depressions in cracking red brown clay or clay loam.	Unlikely
<i>Brunonia</i> sp. Long hairs (D.E. Symon 2440)	Priority 1	Herb	Along creeklines.	Potential
<i>Dampiera metallorum</i>	Priority 3	Herb	Skeletal red-brown gravelly soil over banded ironstone. Steep slopes, summits of hills.	Potential
<i>Eremophila magnifica</i> subsp. <i>velutina</i>	Priority 3	Shrub	Skeletal soils over ironstone. Summits.	Potential
<i>Eremophila spongiocarpa</i>	Priority 1	Shrub	Weakly saline alluvial plain on margins of marsh.	Unlikely
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	Priority 4	Shrub	Stony red sandy loam. Flats and plains, floodplains, sometimes semi-saline, clay flats.	Unlikely
<i>Fimbristylis sieberiana</i>	Priority 3	Tufted sedge (perennial)	Mud, skeletal soil pockets. Pool edges, sandstone cliffs.	Unlikely
<i>Glycine falcata</i>	Priority 3	Herb (perennial)	Black clayey sand. Along drainage depressions in crabhole plains on river floodplains.	Unlikely
<i>Goodenia lyrata</i>	Priority 1	Herb	Red sandy loam. Near claypan.	Unlikely
<i>Goodenia nuda</i>	Priority 4	Herb (annual/ephemeral)	Creeklines, mulga (<i>Acacia aneura</i> and related taxa) areas and clayey plains, flood plains, drainage lines.	Unlikely
<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727)	Priority 3	Herb (annual/biennial)	Red-brown clay soil, calcrete pebbles. Low undulating plain, swampy plains.	Potential
<i>Indigofera gilesii</i> subsp. <i>gilesii</i>	Priority 3	Shrub	Pebbly loam amongst boulders and outcrops.	Potential
<i>Indigofera ixocarpa</i>	Priority 2	Shrub	Skeletal red soils over massive ironstone.	Potential

Species	Conservation Status	Life Form	Known Habitat Details	Likelihood of Occurrence
<i>Iotasperma sessilifolium</i>	Priority 3	Herb	Cracking clay, black loam. Edges of waterholes, plains.	Potential
<i>Lepidium catapycnon</i>	Threatened (DRF)	Herb or Shrub (woody perennial)	Skeletal soils. Hillsides.	Potential
<i>Myriocephalus scalpellus</i>	Priority 1	Herb	Clay. Depression on flood plain.	Unlikely
<i>Nicotiana heterantha</i>	Priority 1	Herb (annual/short lived perennial)	Black clay. Seasonally wet flats.	Unlikely
<i>Nicotiana umbratica</i>	Priority 3	Herb (annual/short lived perennial)	Shallow soils. Rocky outcrops.	Potential
<i>Oxalis</i> sp. Pilbara (M.E. Trudgen 12725)	Priority 2	Herb (annual)	Gullies and canyons. Brown-red loam, cobbles and pebbles.	Potential
<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)	Priority 3	Shrub (perennial)	Red clay loam, mulga (<i>Acacia aneura</i> and related taxa), woodland, clay plains, flood plains.	Unlikely
<i>Rhynchosia bungarensis</i>	Priority 4	Shrub (prostrate)	Pebbly, shingly coarse sand amongst boulders. Banks of flow line in the mouth of a gully in a valley wall.	Potential
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	Priority 3	Herb or Shrub	Ironstone soils. Near creeks, rocky hills.	Potential
<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	Priority 3	Shrub	Skeletal red soils pockets. Steep slope.	Potential
<i>Stylidium weeliwolli</i>	Priority 2	Herb (annual)	Gritty sand soil, sandy clay. Edge of watercourses.	Potential
<i>Tecticornia globulifera</i>	Priority 1	Shrub	Flat floodplain, red clayey sand. Edge of salt lakes.	Unlikely
<i>Tecticornia medusa</i>	Priority 3	Shrub	Red clayey sand. Flat floodways, lake beds, saline alluvial plains, drainage sumps.	Unlikely
<i>Tephrosia bidwillii</i>	Priority 3	Shrub	Red sand gravel, red brown loam, silty sands. Valley, very gently inclined slope, alluvial plain or distal sheet flood fan.	Unlikely
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	Priority 3	Grass (perennial)	Red clay. Clay pan, grass plain.	Unlikely
<i>Tribulus minutus</i>	Priority 1	Herb	Red sand.	Unlikely

Species	Conservation Status	Life Form	Known Habitat Details	Likelihood of Occurrence
<i>Triodia triticoides</i>	Priority 1	Grass	Rocky sandstone and limestone hillslopes.	Unlikely

4.1.2 Literature Review

Six flora and vegetation surveys have previously been conducted within 50 km of the Survey Area. A summary of the findings from these surveys is presented in Table 9. The survey location is an approximate distance between the closest survey site of the previous report to the current Survey Area as measured by the Australian Mines Atlas (Geoscience Australia 2011). Terminology of vegetation types is consistent with that used in the consultants’ reports.

Table 9: Summary of results from previous surveys within 50 km of the Survey Area.

Consultant Report	Survey Location	Number of Sample Sites	Vegetation Recorded	Flora Recorded	Priority Flora Species Recorded	Introduced Species Recorded
Biota 2002. Hope Downs Rail Corridor, Port Hedland to Weeli Wolli Creek – Vegetation and Flora Survey. Baseline Survey. Unpublished report for Hope Downs Management Services.	30 km southwest of the Survey Area	286 quadrats	130 vegetation types	760 species, 70 families, 233 genera	Five P2: <i>Euphorbia clementii</i> , <i>Gonocarpus ephemerus</i> , <i>Indigofera ixocarpa</i> ms., <i>Ischaemum albobillosum</i> and <i>Olearia fluvialis</i> .	18 species : <i>Aerva javanica</i> , <i>Argemone ochroleuca</i> , <i>Bidens bipinnata</i> , <i>Cenchrus ciliaris</i> , <i>Cenchrus setiger</i> , <i>Citrullus colocynthis</i> , <i>Cucumis melo</i> subsp. <i>agrestis</i> , <i>Echinochloa colona</i> , <i>Eragrostis minor</i> , <i>Euphorbia hirta</i> , <i>Malvastrum americanum</i> , <i>Opuntia stricta</i> , <i>Setaria verticillata</i> , <i>Sigesbeckia orientalis</i> , <i>Solanum nigrum</i> , <i>Sonchus oleraceus</i> , <i>Stylosanthes hamata</i> and <i>Tridax procumbens</i> .

Consultant Report	Survey Location	Number of Sample Sites	Vegetation Recorded	Flora Recorded	Priority Flora Species Recorded	Introduced Species Recorded
<p>Biota 2004a. Vegetation and Flora survey of the Proposed FMG Stage A Rail Corridor. Unpublished report for Fortescue Metals Group</p>	<p>30 km southeast of Survey Area</p>	<p>97 quadrats</p>	<p>122 vegetation types. No TECs or PECs</p>	<p>762 species 69 families 218 genera</p>	<p>Three P1: <i>Eremophila spongiocarpa</i>, <i>Goodenia omearana</i>, <i>Josephinia</i> ?sp. Marandoo (ME Trudgen 1554); Seven P2: <i>Euphorbia clementii</i>, <i>Gonocarpus ephemerus</i>, <i>Indigofera ixocarpa</i> ms., <i>Ischaemum albobillosum</i>, <i>Olearia fluvialis</i>, <i>Paspalidium retiglume</i>, and <i>Stylidium weeliwolli</i>; Ten P3: <i>Abutilon trudgenii</i> ms., <i>Bulbostylis burbidgeae</i>, <i>Eriachne tenuiculmis</i>, <i>Goodenia nuda</i>, <i>Gymnanthera cunninghamii</i>, <i>Hibiscus brachysiphonius</i>, <i>Phyllanthus aridus</i>, <i>Polymeria</i> sp. Hamersley (ME Trudgen 11353), <i>Sida</i> sp. Wittenoom (WR Barker 1962), <i>Themeda</i> sp. Hamersley Station (ME Trudgen 11,431); One P4: <i>Goodenia stellata</i>.</p>	<p>11 species: <i>Aerva javanica</i>, <i>Bidens bipinnata</i>, <i>Cenchrus ciliaris</i>, <i>Cenchrus setiger</i>, <i>Chloris virgata</i>, <i>Citrullus colocynthis</i>, <i>Datura leichhardtii</i>, <i>Malvastrum americanum</i>, <i>Setaria verticillata</i>, <i>Solanum nigrum</i>, and <i>Stylosanthes hamata</i>.</p>

Consultant Report	Survey Location	Number of Sample Sites	Vegetation Recorded	Flora Recorded	Priority Flora Species Recorded	Introduced Species Recorded
Biota 2004b. <i>Fortescue Metals Group Stage B Rail Corridor, Christmas Creek, Mt Lewin, Mt Nicholas, and Mindy Mindy Mine Areas.</i> Unpublished report for Fortescue Metals Group	45 km north-northeast of Survey Area	206 quadrats	81 vegetation associations. No TECs or PECs.	599 species 54 families 181 genera	One P1: <i>Eremophila pilosa</i> ; Five P3: <i>Abutilon trudgenii</i> ms., <i>Goodenia nuda</i> , <i>Hibiscus brachysiphonius</i> , <i>Sida</i> sp. Wittenoom (WR Barker 1962), and <i>Themeda</i> sp. Hamersley Station (ME Trudgen 11,431).	13 species: <i>Acetosa vesicaria</i> , <i>Aerva javanica</i> , <i>Argemone ochroleuca</i> ssp. <i>ochroleuca</i> , <i>Bidens bipinnata</i> , <i>Cenchrus ciliaris</i> , <i>C. setiger</i> , <i>Chloris virgata</i> , <i>Citrullus colocynthis</i> , <i>Echinochloa colona</i> , <i>Malvastrum americanum</i> , <i>Setaria verticillata</i> , <i>Sigesbeckia orientalis</i> , and <i>Sonchus oleraceus</i> .
ENV 2007. <i>Upper Marillana Exploration Leases Flora and Vegetation Assessment.</i> Unpublished report for BHP Billiton Iron Ore.	25 km west of Survey Area	40 quadrats, 43 relevés (total of 83 sites)	No associations recorded.	296 species 46 families 135 genera	One P2: <i>Olearia fluvialis</i> ; Three P3: <i>Polymeria</i> sp. Hamersley (M.E. Trudgen 11353), <i>Rostellularia adscendens</i> ssp. <i>adscendens</i> var. <i>latifolia</i> and <i>Goodenia pascua</i> .	4 species: <i>Cenchrus ciliaris</i> , <i>Malvastrum americanum</i> , <i>Bidens bipinnata</i> and <i>Cucumis melo</i> ssp. <i>agrestis</i> .
Mattiske 2008a. <i>Flora and Vegetation Survey of Exploration Tenement E47/1237: Phil's Creek Project Area.</i> Unpublished report prepared for URS Australia Pty Ltd on behalf of Iron Ore Holdings Ltd.	10 km west of the Survey Area	53 quadrats	10 vegetation associations. No TECs or PECs.	185 species 33 families 64 genera	One P3: <i>Euphorbia inappendiculata</i> .	1 species: <i>Cenchrus ciliaris</i> .

Consultant Report	Survey Location	Number of Sample Sites	Vegetation Recorded	Flora Recorded	Priority Flora Species Recorded	Introduced Species Recorded
Mattiske 2008b. <i>Flora and Vegetation on the Hope Downs 4 Infrastructure Corridor</i> . Unpublished report for Fortescue Metals Group	30km south-southeast of Survey Area	139 quadrats 87 relevés (total of 226 sites)	25 Vegetation associations. No TECs. One community with similarities to PEC: Weeli Wolli Springs Community (Priority 1).	392 species 54 families 155 genera	One DRF: <i>Lepidium catapycnon</i> ; One P1: <i>Rhagodia</i> sp. Hamersley (M.E. Trudgen 17794); Two P2: <i>Olearia fluvialis</i> , and <i>Stylidium weeliwollii</i> ; One P3: <i>Eremophila forrestii</i> ssp. <i>viridis</i> ; One P4: <i>Eremophila youngii</i> ssp. <i>lepidota</i> .	10 species: <i>Argemone ochroleuca</i> , <i>Bidens bipinnata</i> , <i>Cenchrus ciliaris</i> , <i>Chloris virgata</i> , <i>Portulaca oleracea</i> , <i>Setaria verticillat</i> , <i>Sonchus oleraceus</i> , and <i>Tribulus terrestris</i> (full list not given).

4.1.3 Survey Seasonal Conditions

The closest weather station to the Survey Area, Newman Airport, experienced 390.4 mm of rainfall in the 12 months preceding the initial field survey. In the 12 months preceding the second field survey the station recorded 427.6 mm of rain. Throughout this period there were a number of tropical lows and two cyclones with Tropical Cyclone Bianca in January 2011 and Tropical Cyclone Carlos in February 2011 generating high rainfall within the region. This resulted in the rainfall for February recorded at Newman Airport in to be approximately 64 mm above average (Figure 4), which provided good seasonal conditions for floristic diversity and plant health for the following two months during which the first field survey was conducted. Rainfall at Newman Airport in July 2011, preceding the second field survey in August, was recorded to be approximately 16 mm above average.

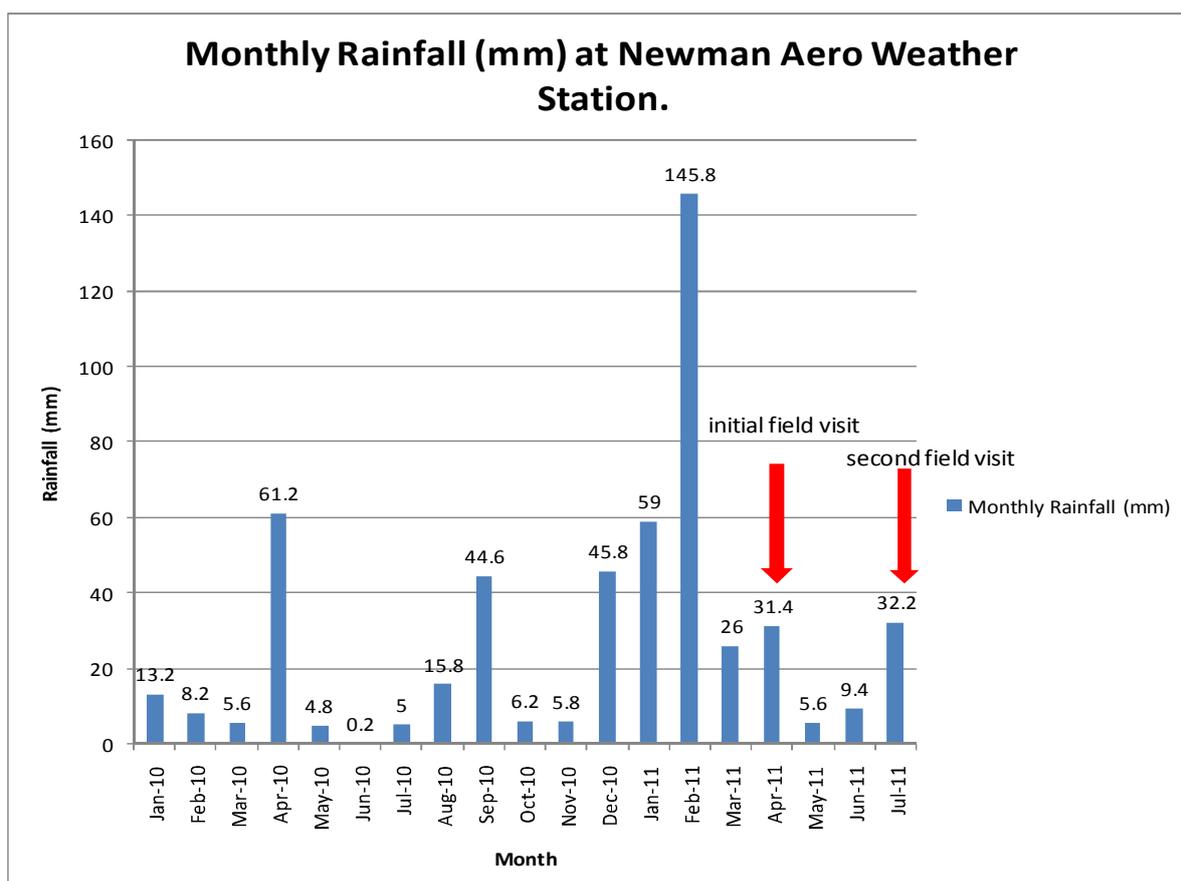


Figure 4: Monthly rainfall (mm) at Newman Aero Weather Station (Newman Airport) in the year preceding the field surveys (BOM 2011).

4.1.4 Field Survey

4.1.4.1 Flora Species Richness

A total of 238 vascular plant species from 40 families and 105 genera were identified, the species list is presented in Appendix G. The dominant families were Fabaceae (51 species), Poaceae (43 species) and Malvaceae (31 species). The genera with the highest species richness were *Acacia* (22 species), *Ptilotus* (12 species) and *Sida* (9 species). *Triodia* was a well-represented genus with seven distinct species and potentially three additional species groups, but which had insufficient material to provide definitive identification. Other well represented genera included *Senna*, with six different

species and six recognised subspecies and hybrids; and *Tephrosia*, with five distinct species, one recognised variant within the *T. rosea* group and a single affinity (*T. aff. supina*).

Species richness within the quadrats varied from 14 to 72 taxa, with an average richness of 41.6 ± 12.8 standard deviations per site. Species richness within the relevés varied from 28 to 42 taxa, with an average richness of 31.7 ± 5.3 standard deviations per site. Twenty-five taxa were amalgamated into 12 species complexes for analyses. There were a relatively low number of singleton taxa (i.e. occurring at just one survey site) with 35 taxa, including 10 annuals recorded. Fifty-one annuals were identified during the survey. The resulting matrix utilised in the classification analyses had 143 species by 75 sites. All annuals, singletons and indeterminate specimens were excluded prior to analyses to allow well defined grouping of vegetation associations for the purpose of vegetation mapping.

4.1.5 Conservation Significant Flora

Although DEC database searches identified 42 conservation listed plant taxa with the potential to occur in the Survey Area, the field survey did not identify any conservation significant taxa.

4.1.6 Groundwater Dependent Ecosystems

Two key species (*Eucalyptus victrix* and *Corymbia hamersleyana*) were surveyed within Groundwater Dependent Ecosystems (GDEs) or the Creek Line / Drainage Vegetation Descriptions as described in section 4.1.9.2. A brief desktop analysis of the predicted groundwater drawdown contours and the depths to groundwater (1 – 25 m) within the Survey Area suggest that *E. victrix* will have access to existing groundwater resources. The predicted groundwater drawdown (predicted over 7 years) ranges from 1 – 8 m and overlays creek and drainage lines that sustains *E. victrix* (Figure 5). However, the field survey identified isolated *E. victrix* in only one quadrat (IOH33) throughout the entire Survey Area.

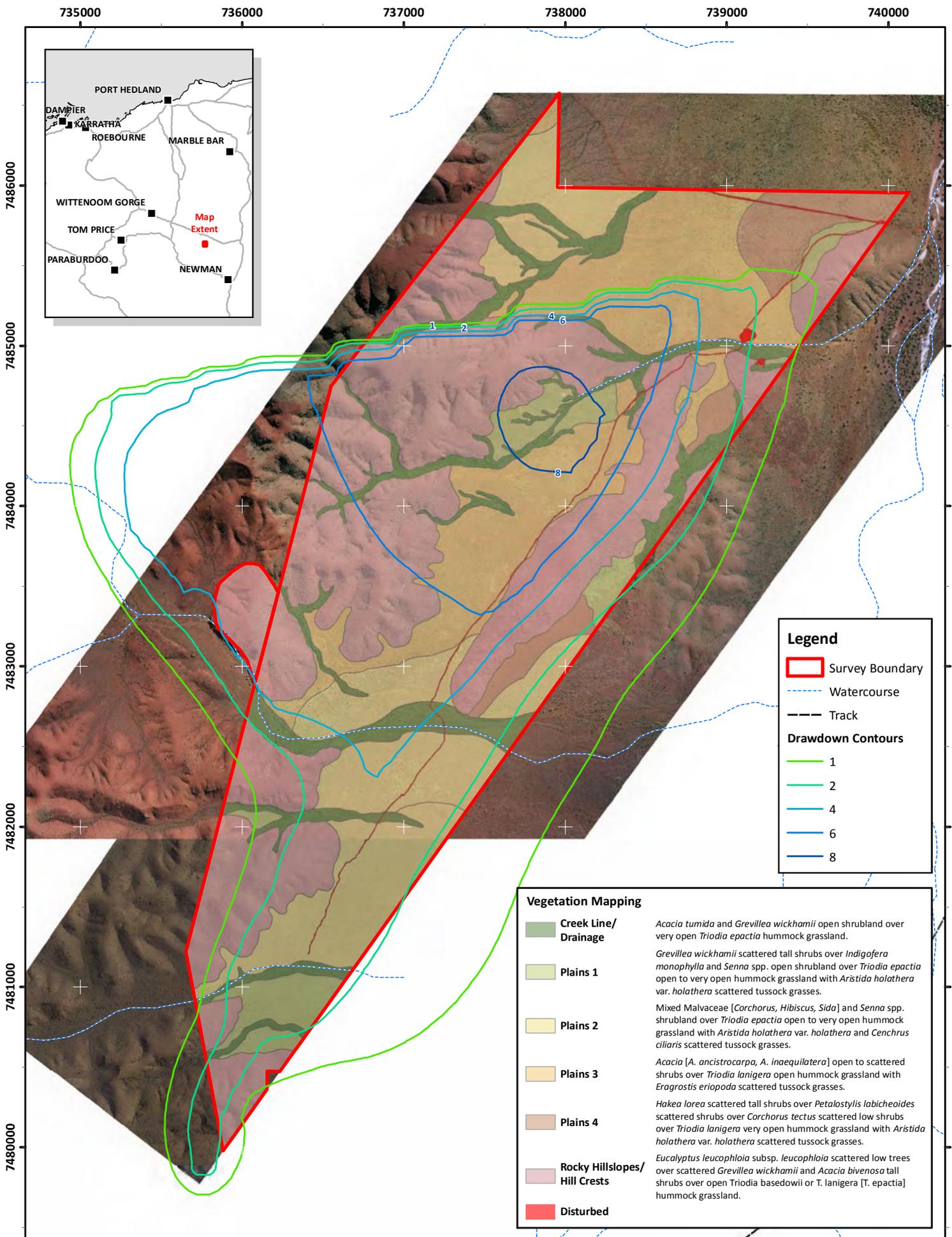
4.1.7 Range Extensions

Two range extensions were recorded during the survey (Appendix H). The collection of *Aristida hygrometrica* (Poaceae) from a single site (IOH09) is a significant range extension as the current distribution of this species is predominantly within the Kimberley Bioregion, with records extending to the Pilbara coastal area near Port Hedland (WAHERB 2011). The collection from this survey represents a range extension of approximately 275 km southwards. A single collection of *Senna curvistyla* (IOH23) represents a range extension of approximately 100 km westwards of its other known locations. These two species are further discussed in Section 5.

4.1.8 Introduced Flora

Introduced vascular flora species are recognised as occurring across the Pilbara region and are not uncommon. Five introduced plant species were identified (and WAHERB denotes introduced species with '*' as a prefix), including: **Bidens bipinnata* (Asteraceae), **Cenchrus ciliaris* (Poaceae), **C. setiger*, **Portulaca oleracea* (Portulacaceae) and **Sonchus oleraceus* (Asteraceae).

Locations and abundance of introduced flora are outlined in Table 10. Information regarding the perceived level of threat in the Pilbara of each introduced flora species recorded in the Survey Area and a description of each species is presented in Appendix I. Of the recorded introduced species, **Cenchrus ciliaris* and **C. setiger* have the highest ecological impact and most rapid invasiveness (DEC 2009).



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Figure 5: Groundwater drawdown contours at Survey Area



Author: B. Powell

Date: 06-09-2012

Drawn: C. Dyde

Figure Ref: 3923-11FMV1RevB_20120906_Fig5

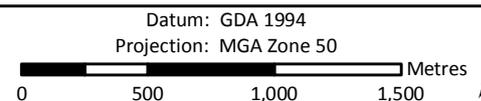


Table 10: Locations of Introduced Flora recorded in the Survey Area.

Species	Common Name	Family	Number of sites	Sites Recorded	Habitat Recorded
<i>*Bidens bipinnata</i>	Bipinnate beggartick	Asteraceae	1	IOH73	Narrow plain between low hills, possible floodplain in wet season
<i>*Cenchrus ciliaris</i>	Buffel Grass	Poaceae	22	IOH05, IOH08, IOH09, IOH24, IOH33, IOH35, IOH36, IOH37, IOH39r, IOH41, IOH42, IOH46, IOH47, IOH54, IOH60, IOH64, IOH65, IOH67, IOH69r, IOH72r, IOH73, IOH75	Open flat plain adjacent to shallow creek line between hills to the north and west
<i>*Cenchrus setiger</i>	Birdwood grass	Poaceae	7	IOH33, IOH35, IOH37, IOH65, IOH69r, IOH72r, IOH73	Shallow creek line and flat plains between hills to the north and west, possible floodplains in wet season
<i>*Portulaca oleracea</i>	Purslane	Portulacaceae	15	IOH04, IOH05, IOH09, IOH12, IOH17, IOH20, IOH21, IOH23, IOH24, IOH35, IOH41, IOH51, IOH53, IOH65, IOH67	Drainage valley running into generally open flat plain adjacent to shallow creek line, hills to the north and west
<i>*Sonchus oleraceus</i>	Common sowthistle	Asteraceae	1	IOH13	Open flat plain

4.1.9 Vegetation

4.1.9.1 Vegetation Classification

The vegetation of the Survey Area was classified with the NVIS information hierarchy (NVIS 2011) into three sub-formations (NVIS Level 4):

1. *Eucalyptus* scattered low trees over *Acacia* scattered shrubs over *Triodia* hummock grasslands on rocky hillcrests and slopes.
2. *Acacia* shrublands over *Triodia* hummocks and scattered tussock grasses in creeklines/drainage.
3. Mixed open shrublands (*Acacia*, *Corchorus*, *Grevillea*, *Senna*) over *Triodia* hummock grasslands and scattered tussock grasses on plains.

From the three sub-formations, six dominant vegetation associations (NVIS Level 5) were determined and used in the vegetation mapping of the Survey Area. The vegetation mapping reflects both vegetation classification and field mapping. The vegetation mapping is presented in Appendix J, with the field survey data presented in Appendix K. Representative survey quadrat and relevé photos are included in Appendix L. The site by species matrix used in the analysis is presented in

Appendix M. The vegetation associations are described below, organised by broad landform categories.

During the analyses, a single site (IOH77) occurred as an outlier on the cluster dendrogram. Upon review of the data, the site was determined to have been poorly placed, having been located on pre-existing disturbance and characterised by low species richness and cover. Based on field knowledge the position of the survey site was determined to fit in the ‘Hills’ vegetation classification and is treated on the vegetation mapping as such.

4.1.9.2 Vegetation associations

Rocky hillslopes / hill crest vegetation association:

<u>Hills</u>	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over scattered <i>Grevillea wickhamii</i> and <i>Acacia bivenosa</i> tall shrubs over open <i>Triodia basedowii</i> or <i>T. lanigera</i> (<i>T. epactia</i>) hummock grassland.
Associated Species:	<i>Acacia adoxa</i> var. <i>adoxo</i> , <i>Aristida holathera</i> var. <i>holathera</i> , <i>Corchorus lasiocarpus</i> , <i>Goodenia stobbsiana</i> and <i>Ptilotus calostachyus</i> .
Quadrats:	IOH01, IOH10, IOH14, IOH15, IOH16, IOH18, IOH21, IOH22, IOH25, IOH26, IOH27, IOH30, IOH31, IOH32, IOH34, IOH38, IOH40, IOH43, IOH44, IOH45, IOH48, IOH50, IOH52, IOH56, IOH57, IOH58, IOH59, IOH62, IOH66, IOH70, IOH71, IOH77.
Total Area:	468.28 ha (42.49% of Survey Area).

Creeklines / drainage vegetation association:

<u>Creeks</u>	<i>Acacia tumida</i> and <i>Grevillea wickhamii</i> open shrubland over very open <i>Triodia epactia</i> hummock grassland.
Associated Species:	<i>Gossypium robinsonii</i> , <i>Polycarphaea longiflora</i> , <i>Themeda triandra</i> , and <i>Trichodesma zeylanicum</i> .
Quadrats/relevés:	IOH03, IOH04, IOH29r, IOH33, IOH35, IOH39r, IOH63r, IOH69r, IOH72r.
Total Area:	114.02 ha (10.35 % of Survey Area)

Plains vegetation associations:

Plains 1 *Grevillea wickhamii* scattered tall shrubs over *Indigofera monophylla* and *Senna* spp. open shrubland over *Triodia epactia* open to very open hummock grassland with *Aristida holathera* var. *holathera* scattered tussock grasses.

Associated Species: *Senna artemisioides* subsp. *helmsii*, *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *oligophylla* x *helmsii*.

Quadrats: IOH02, IOH06, IOH12, IOH47, IOH51, IOH53, IOH55.

Total Area: 57.44 ha (5.21 % of Survey Area).

Plains 2 Mixed Malvaceae (*Corchorus*, *Hibiscus*, *Sida* spp.) and *Senna* spp. shrubland over *Triodia epactia* open to very open hummock grassland with *Aristida holathera* var. *holathera* and **Cenchrus ciliaris* scattered tussock grasses.

Associated Species: *Acacia inaequilatera*, *Bonamia erecta*, *Corchorus tectus*, *Eragrostis eriopoda*, *Euphorbia australis*, *Grevillea wickhamii*, *Hibiscus sturtii* var. *platyklamys*, *Hybanthus aurantiacus*, *Indigofera monophylla*, *Senna artemisioides* subsp. *helmsii*, *S. artemisioides* subsp. *oligophylla* x *helmsii*, *S. notabilis* and *Trichodesma zeylanicum*.

Quadrats: IOH24, IOH36, IOH37, IOH41, IOH42, IOH46, IOH54, IOH60, IOH61, IOH64, IOH65, IOH67, IOH73.

Total Area: 194.03 ha (17.61 % of Survey Area).

Plains 3 *Acacia ancistrocarpa*, *A. inaequilatera* open to scattered shrubs over *Triodia lanigera* open hummock grassland with *Eragrostis eriopoda* scattered tussock grasses.

Associated Species: *Acacia adoxa* var. *adoxo*, *Bonamia erecta*, *Dicrastylis cordifolia*, *Euphorbia australis*, *Indigofera monophylla*, *Ptilotus calostachyus* and *Senna notabilis*.

Quadrats: IOH05, IOH07, IOH08, IOH09, IOH17, IOH19, IOH20, IOH23, IOH49, IOH68.

Total Area: 213.57 ha (19.38 % of Survey Area)

Plains 4 *Hakea lorea* scattered tall shrubs over *Petalostylis labicheoides* scattered shrubs over *Corchorus tectus* scattered low shrubs over *Triodia lanigera* very open hummock grassland with *Aristida holathera* var. *holathera* scattered tussock grasses.

Associated Species: *Bonamia erecta*, *Euphorbia australis* and *Senna notabilis*.

Quadrat/relevés: IOH11r, IOH13, IOH28, IOH75.

Total Area: 50.11 ha (4.55 % of Survey Area).

Disturbed Land: Additional areas of disturbed land with no definable vegetation association occupied a further 4.06 ha within the Survey Area (0.37%). These areas included the main access track, the exploration village, the lay-down yard, drill pads and drill lines and associated clearing within the Survey Area.

4.1.10 Vegetation Condition

Vegetation condition in the Survey Area varied from Good to Excellent, with one site being described as Fair and one as Poor/Partially Degraded in the vegetation condition scale of Keighery (1994). Sites classified as being in 'Excellent' condition contained predominantly native plant taxa, had few introduced taxa, were structurally intact and had not undergone significant disturbance. Survey sites considered in 'Fair' condition had very obvious signs of disturbance, reduced proportion of native plant taxa and up to 50% cover of introduced species.

Disturbance present in the Survey Area included livestock grazing, fire, presence of infrastructure (i.e. tracks and the exploration village), drill pads and spread of weed taxa such as **Cenchrus ciliaris* and **Cenchrus setiger*. However because much of the drilling disturbance occurred after the aerial photography provided was taken, it could not be included at an accurate scale in the vegetation mapping presented in Appendix J.

A wildfire occurred within the Project Area in January 2009, impacting the southern portion of the Survey Area. Evidence of the fire was obvious at the time of the survey, with some of the post-fire Vegetation associations on the flats varying in structure and composition from adjacent unburnt areas.

4.1.11 Conservation Significant Vegetation

No TECs or PECs or similar vegetation and landscape position combinations were recorded within the Survey Area.

5 Discussion

The six vegetation associations recorded in this survey correspond to the landscape features within the Survey Area. The output of the hierarchical agglomerative technique indicates a high similarity between sites within habitats (Appendix F) and coincided with the vegetation mapping undertaken in the field (Appendix J). Both the statistical analysis and vegetation mapping indicate distinct changes in species compositions across the 1,102 ha of the Survey Area and ecotones (transitional spatial boundaries between two different ecological communities) between the vegetation associations were minimal. Overall, the vegetation associations correspond with the topography and geology of the Survey Area.

Upslope and hilltop areas were relatively homogenous in species and representative of common slope compositions of the Pilbara, with scattered *Eucalyptus leucophloia* subsp. *leucophloia* trees over *Triodia* grasses dominant (Beard 1975; Hill and Johnson 2000). Lower in the landscape, the plains areas of the Survey Area were moderately disturbed and therefore the differing associations within the plains areas correspond to differing levels of soil degradation, fire and weed disturbance.

Only the 'Plains 2' association of the north-west corner and south-east of the Survey Area seemed affected by weed invasion, with scattered **Cenchrus ciliaris* forming the lowest strata with scattered *Aristida holathera* var. *Holathera* and *Triodia epactia* open hummock grassland. At the time of the field surveys **Cenchrus ciliaris* invasion of the 'Plains 2' association was relatively sparse and did not significantly affect the 'Plains 3' association, nevertheless weed dispersal may have been exacerbated in the north-west corner of the Survey Area by drill pad and drill line clearing. Such clearing was much less evident than fire disturbance in the south-east of the Survey Area, but similarly destructive physical disturbance to taller shrub and tree species seems to have allowed smaller to medium sized Malvaceae shrubs and **Cenchrus* spp. tussock grasses to form dominant strata.

In the long-term, invasion of **Cenchrus ciliaris* has the potential to reduce herbaceous species richness in arid and semi-arid environments of Australia with a greater effect than that resulting from insufficient rainfall (Jackson 2005; Clarke *et al* 2005). Also present is a risk of **Cenchrus ciliaris* seed dispersal from the 'Plains 2' communities of the south-east of the Survey Area into adjacent tributaries to Weeli Wolli Creek, transporting the highly invasive weed downstream. All major ephemeral water courses are classified as 'at risk' and Vulnerable in the Hamersley subregion (Kendrick 2001b). Of the five introduced weed species, **Cenchrus ciliaris* was recorded at the most sites (22) and has the highest impact rating and highest invasiveness rating according to DEC (2009; Appendix I), with similar ratings for **C. setiger*, the third most abundant weed species by site (7 sites). The other three weed species recorded are either low or negligible in their ecological impact (**Sonchus oleraceus* and **Portulaca oleracea* respectively) or very low in abundance (**Bidens bipinnata* was recorded at one site). Though occurrences are sparse relative to other areas of the Pilbara, a weed hygiene plan for the Project may restrict any further **Cenchrus* spp. or **Bidens bipinnata* invasion during further exploration and development activities.

On the eastern portion of the Survey Area, an area of drainage vegetated by the 'Creeks' association had quadrats dominated by *Triodia* spp. (IOH18 and IOH71) and one dominated by a native tussock grassland of *Eulalia aurea* (IOH73), with little presence of **Cenchrus ciliaris* or **C. setiger* (see Appendices J, K and Figure 3). Avoiding disturbance to such a relatively healthy, intact drainage area would be beneficial for the flora diversity of the area and also because of its close proximity to Weeli Wolli Creek.

Due to the importance of the Priority 1 PEC of Weeli Wolli Spring and the location of the Survey Area 15-20 km downstream of this PEC, a closer examination of GDEs and the presence of phreatophytic

vegetation was conducted. The field survey identified two key species in the GDE; *Eucalyptus victrix* and *Corymbia hamersleyana*. *Eucalyptus victrix* was identified at one quadrat location (IOH33) within the Survey Area and is classified as a facultative phreatophyte that will preferentially utilise stored soil water and then opportunistically use groundwater during times of limited rainfall or drought-like conditions (O’Grady *et al* 2002; Maunsell 2006; Astron 2008; Astron 2010). The other key species, *C. hamersleyana*, was present at a greater density within the GDE Survey Area, however its groundwater dependence is low and is therefore classified as a non-phreatophyte (xerophyte) (Astron 2010).

Based on the predicted groundwater depth, drawdown and likely associated impacts to the phreatophytic vegetation further analysis on the GDE and the phreatophytic vegetation is recommended. Due to the isolated numbers of *E. victrix* it is recommended that a brief field visit that focuses on GDE vegetation is undertaken to confirm the spatial diversity of *E. victrix* and determine if a GDE monitoring program is required.

Within the ‘Plains 3’ association, the most extensive of the Survey Area, two species were recorded significantly outside their previously recorded ranges. The current distribution of *Aristida hygrometrica* is mostly north of latitude 20°S (WAHERB 2011, AusGrass 2011) and the occurrence in the Survey Area represents a range extension of approximately 275 km south from the closest confirmed recording (WAHERB 2011). The single collection of *Senna curvistyla* (quadrat IOH23) represents a range extension of approximately 100 km west, although the current distribution of *S. curvistyla* is disjunct, with specimens primarily recorded from Gibson Desert, northern and far south-eastern Pilbara and Little Sandy Desert (WAHERB 2011). *Senna curvistyla* has previously been recorded in red soils and has been observed to regenerate quickly after fire (Randall 1989). Similar soil conditions are present and a recent fire age (2-5 years) was observed where it was recorded in the Survey Area. Neither species are considered threatened, yet these range extensions do suggest stronger dispersal capabilities of *Aristida hygrometrica* and *Senna curvistyla* than previously understood.

No Declared Rare Flora or Priority Flora species or assemblages of formal conservation significance were recorded, although *Acacia aptaneura* (a variety of Mulga, conservation status is not threatened) was recorded at one site within the ‘Plains 2’ vegetation association (IOH65). Mulga is both the common name given to a number of tall, woody, perennial arid zone species, and the name used for the vegetation types dominated by these species. The taxonomy of Mulga in Western Australia has recently undergone a revision and as a result fifteen species of Mulga have been described (Maslin and Reid 2009). The ecological requirements of individual Mulga species is relatively unknown, yet it is recognised that Mulga communities are often species rich and important areas for capturing, retaining and cycling sediments, nutrients and water (Maslin and Reid 2009). However, the occurrence of *Acacia aptaneura* in this survey represented <1% cover in a single quadrat and therefore is most likely an intrusive occurrence into the Malvaceae association of that site.

6 Conclusions

This flora and vegetation survey involved two field surveys, one in the summer wet season and another approximately four months later in the winter dry season of the Pilbara region, and rainfall was average to above average preceding both. Environmental conditions were conducive to high species richness and a total of 238 vascular plant species from 40 families and 105 genera were identified. The dominant families were Fabaceae (51 species), Poaceae (43 species) and Malvaceae (31 species). Though one DRF and 41 Priority species had been previously recorded within 50 km of the Survey Area, none were recorded in this survey.

The adjacent Weeli Wolli Priority 1 PEC resulted in a closer examination of the diversity and distribution of phreatophytic vegetation within the Survey Area. *Eucalyptus victrix* was sparsely located at one quadrat within the Survey Area. Based on the predicted groundwater depth, drawdown and likely associated impacts to the phreatophytic vegetation, a brief field visit that focuses on GDE vegetation is recommended to confirm the spatial diversity of *E. victrix* and determine if a GDE monitoring program is required.

Two species recorded indicate significant range extensions from approximately 275 km north and 100 km east, those being *Aristida hygrometrica* and *Senna curvistyla* respectively. A single occurrence of *Acacia aptaneura*, a species of Mulga, was recorded in this survey but is most likely an intrusive recruitment within the Malvaceae dominated association of that site.

Six vegetation associations were determined to occur in different hillslope, plains and riparian zones of the survey area with minimal transitional compositions between them. No TECs or PECs or similar community-landform combinations were recorded. An association recorded on the north-west and south-east plains of the Survey Area has scattered **Cenchrus ciliaris* tussock grasses as the dominant ground stratum. **Cenchrus ciliaris* is the only one of the five recorded weed species to have a high ecological impact in the Pilbara and significant abundance in the Survey Area. A drainage area on the eastern side of the Survey Area has dominant native hummock and tussock grasslands that are relatively free of **Cenchrus* spp. invasion. Therefore to maintain floristic diversity of the Survey Area and downstream areas of Weeli Wolli Creek, this report recommends avoiding disturbance to these eastern drainage areas in conjunction with implementing a weed hygiene plan for the Project.

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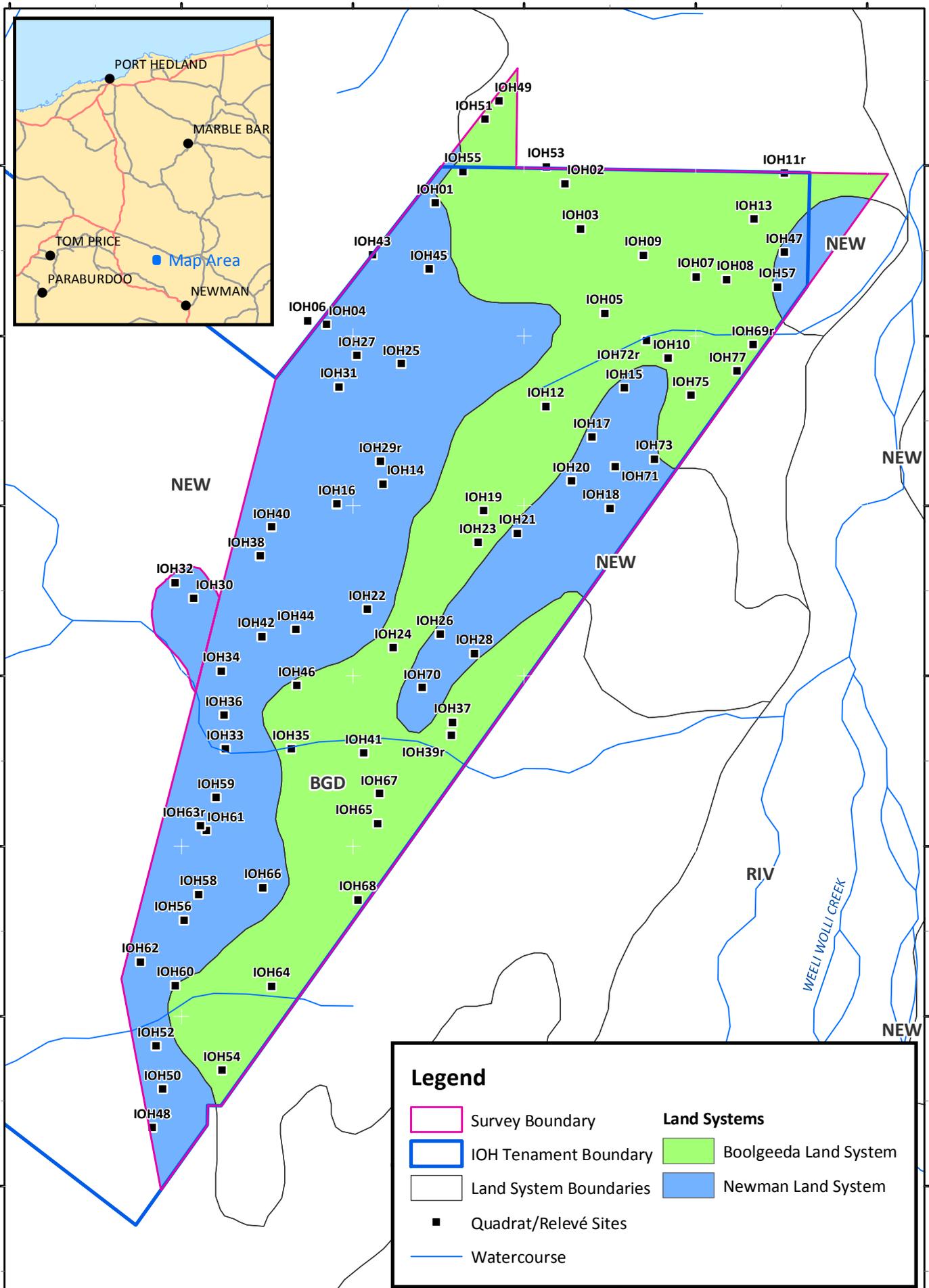
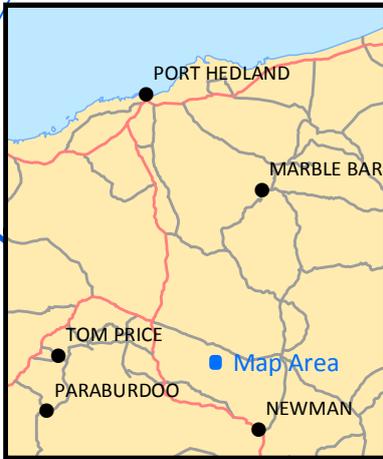
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Appendix A: Pre-European Vegetation and Land Systems Mapping

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735000 736000 737000 738000 739000 740000

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7484000
7483000
7482000
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7480000



Legend

Survey Boundary	Land Systems
IOH Tenament Boundary	Boolgeeda Land System
Land System Boundaries	Newman Land System
Quadrat/Relevé Sites	
Watercourse	

URS Australia Pty Ltd
IOH Iron Valley Flora and Vegetation Surveys



Figure A.1: Lands Systems in the IOH Iron Valley Survey Area.

Author: W. Thompson

Date: 16-12-2011

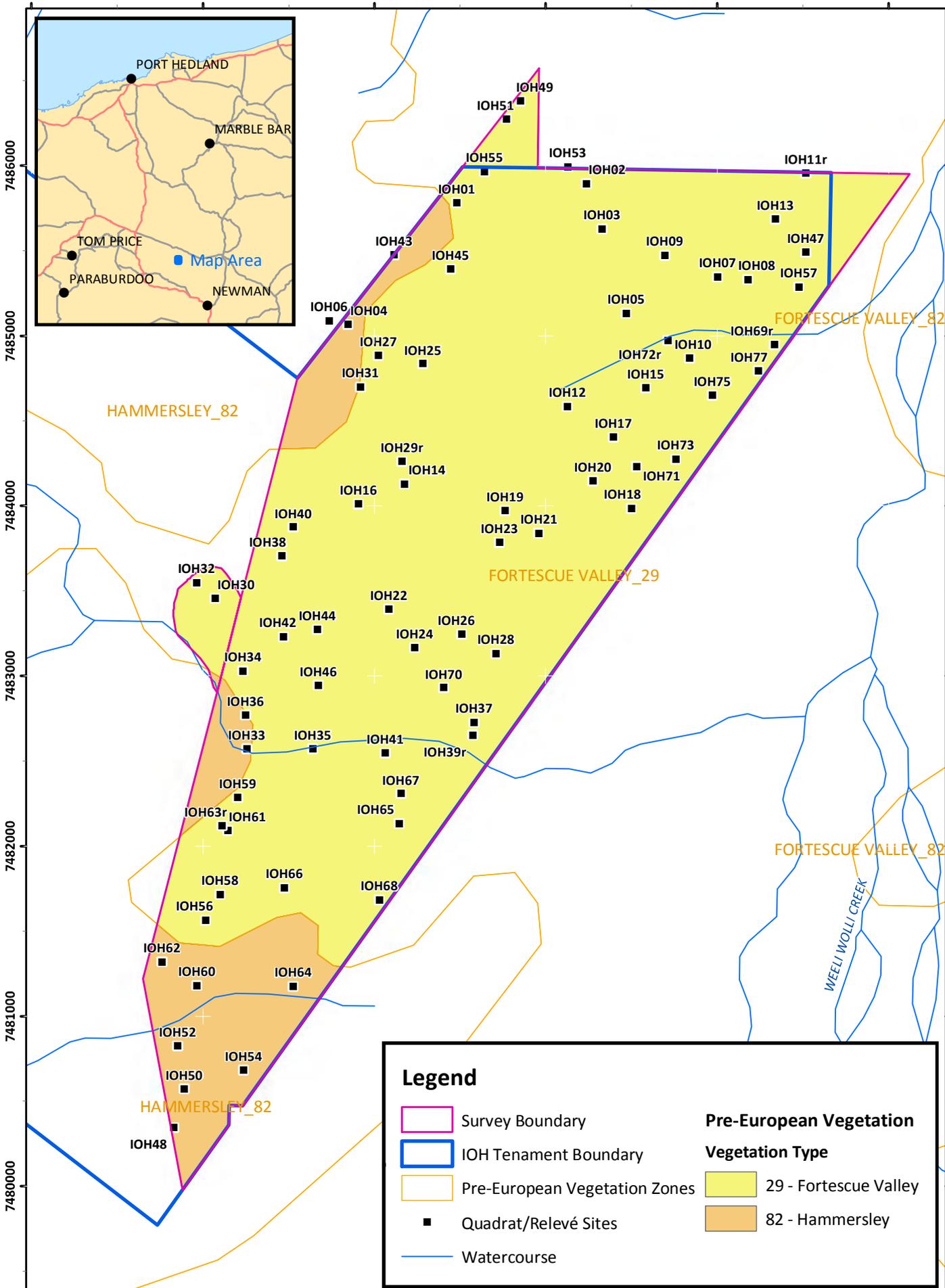
Drawn: R. Wathugala

3923-11WMFV1RevB_20111216_Figure_A.1

Datum: GDA 1994
Projection: MGA Zone 50

Metres

735000 736000 737000 738000 739000 740000



Legend

- Survey Boundary
- IOH Tenament Boundary
- Pre-European Vegetation Zones
- Quadrat/Relevé Sites
- Watercourse

Pre-European Vegetation Vegetation Type

- 29 - Fortescue Valley
- 82 - Hammersley

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IOH Iron Valley Flora and Vegetation Surveys



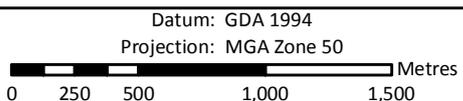
Figure A.2: Pre-European Vegetation in the IOH Iron Valley Survey Area.

Author: W. Thompson

Date: 16-12-2011

Drawn: R. Wathugala

3923-11WMFV1RevB_20111216_A.2



Appendix B: Definitions, Categories and Criteria for Threatened and Priority Ecological Communities

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Table B.1: Categories of Threatened Ecological Communities (DEC 2007)

PD: Presumed Destroyed
<p>An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.</p> <p>An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B):</p> <p>A) Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or</p> <p>B) All occurrences recorded within the last 50 years have since been destroyed.</p>
CR : Critically Endangered
<p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.</p> <p>An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):</p> <p>A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii):</p> <p>i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years);</p> <p>ii) modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated.</p> <p>B) Current distribution is limited, and one or more of the following apply (i, ii or iii):</p> <p>i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 10 years);</p> <p>ii) there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes;</p> <p>iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes.</p> <p>C) The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately 10 years).</p>

En: Endangered

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

An ecological community will be listed as **Endangered** when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information by it meeting **any one or more** of the following criteria (A, B, or C):

A) The geographic range, and/or total area occupied, and/or number of discrete occurrences have been reduced by at least 70% since European settlement **and either or both** of the following apply (i or ii):

i) the estimated geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term future (within approximately 20 years);

ii) modification throughout its range is continuing such that in the short term future (within approximately 20 years) the community is unlikely to be capable of being substantially restored or rehabilitated.

B) Current distribution is limited, **and one or more** of the following apply (i, ii or iii):

i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 20 years);

ii) there are few occurrences, each of which is small and/or isolated and all or most occurrences are very vulnerable to known threatening processes;

iii) there may be many occurrences but total area is small and all or most occurrences are small and/or isolated and very vulnerable to known threatening processes.

C) The ecological community exists only as very modified occurrences that may be capable of being substantially restored or rehabilitated if such work begins in the short-term future (within approximately 20 years).

VU: Vulnerable

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

An ecological community will be listed as **Vulnerable** when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future. This will be determined on the basis of the best available information by it meeting **any one or more** of the following criteria (A, B or C):

A) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated.

B) The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations.

C) The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long term future because of existing or impending threatening processes.

Table B.2: Definitions and Criteria for Priority Ecological Communities: Priority Ecological communities (DEC 2009).

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

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

P5: Priority Five – Conservation dependent ecological communities

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Table B.3: Definitions and Criteria for Threatened Ecological communities (DSEWPC 2010).

Three categories exist for listing threatened ecological communities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). An ecological community may be categorised:

Categories of Ecological Communities	
Critically Endangered	If, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	If, at that time, it is not critically endangered and is facing a very high risk of extinction in the wild in the near future.
Vulnerable	If, at that time, it is not critically endangered or endangered, and is facing a high risk of extinction in the wild in the medium-term future.

Appendix C: Categories of Conservation Significant Flora Species

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Table C.1: Categories of Conservation Significant Flora Species (Wildlife Conservation Act 1950).

<p>T: Threatened Flora – (Declared Rare Flora - Extant)</p> <p>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 (Schedule 1 under the Wildlife Conservation Act 1950).</p> <p>Threatened Flora (Schedule 1) are further ranked by the Department according to their level of threat using IUCN Red List criteria:</p> <ul style="list-style-type: none"> • CR: Critically Endangered – considered to be facing an extremely high risk of extinction in the wild • EN: Endangered – considered to be facing a very high risk of extinction in the wild • VU: Vulnerable – considered to be facing a high risk of extinction in the wild.
<p>X: Presumed Extinct Flora (Declared Rare Flora – Extinct)</p> <p>Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such (Schedule 2 under the Wildlife Conservation Act 1950).</p> <p>Species that have not yet been adequately surveyed to be listed under Schedule 1 or 2 are added to the Priority Flora List under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna. Species that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Conservation Dependent species are placed in Priority 5.</p>
<p>P1: Priority One - Poorly Known</p> <p>Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.</p>
<p>P2: Priority Two - Poorly Known</p> <p>Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.</p>
<p>P3: Priority Three - Poorly Known</p> <p>Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.</p>
<p>P4: Priority Four - Rare, Near Threatened and other species in need of monitoring</p> <p>a. Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>b. Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.</p> <p>c. Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

P5: Priority Five: Conservation Dependent Species

Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Table C.2: Categories of Threatened Species (DSEWPC 2010).

Threatened flora may be listed in any one of the following categories as defined in Section 179 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act):

Section 179 Categories of Threatened Species	
(1) A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.	
(2) A native species is eligible to be included in the extinct in the wild* category at a particular time if, at that time:	
	(a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
	(b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
(3) A native species is eligible to be included in the critically endangered* category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.	
(4) A native species is eligible to be included in the endangered category* at a particular time if, at that time:	
	(a) it is not critically endangered; and
	(b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
(5) A native species is eligible to be included in the vulnerable category* at a particular time if, at that time:	
	(a) it is not critically endangered or endangered; and
	(b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
(6) A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:	
	(a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
	(b) the following subparagraphs are satisfied:
(i) the species is a species of fish;	
(ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;	
(iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory;	
(iv) cessation of the plan of management would adversely affect the conservation status of the species.	
(7) In subsection (6):	
fish includes all species of bony fish, sharks, rays, crustaceans, molluscs and other marine organisms, but does not include marine mammals or marine reptiles.	

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Appendix D: Categories of Introduced Flora Species

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Table D.1: Declared Plants Management Ratings as Gazetted under the Agriculture and Related Resources Protection Act 1976.

Listed species have a priority rating which defines their required level of management.	
Priority 1	Introduction of the plant into, or movement of the plant within, an area is prohibited;
Priority 2	Plant to be eradicated in the area.
Priority 3	Plant to be controlled by reduction in number or distribution of the plant or both.
Priority 4	Spread of plant beyond where it currently occurs to be prevented.
Priority 5	Particular action to be taken on public land or land under the control of a local government.

Table D.2: Invasive Plant Prioritisation Process Rating System (DEC 2011b).

Field	Description	Code	Code Description
Potential Distribution	Area of potential habitat in the Region that could be occupied of the area at risk of invasion by the weed.	L	Limited (localised)
		M	Moderate
		H	High
		E	Extensive (widespread)
		U	Unknown
Current Distribution	Area of habitat in the Region currently occupied by the weed.	L	Limited (localised)
		M	Moderate
		H	High
		E	Extensive (widespread)
		U	Unknown
Survey Effort	Survey effort of IBRA.	Nil	0%
		Some	0 - 25%
		Patchy	25 – 50%
		Extensive	50 – 75%
		Complete	75 – 100%
Abundance	Density class across one or more IBRA regions in the DEC region.	Occasional	Light – scattered individual plants (< 10 populations or 1 – 10% of IBRA region)
		Common	Medium to scattered patches with isolated plants interspersed (>10 populations or 11 – 50% of IBRA region)
		Abundant	Heavy to large infestations (>100 populations or 51 – 100% of IBRA region)
Ecological Impact	Impact of species with the Region, from low impact (causes minimal disruption to ecological processes or loss of	L	Low impact species
		M	Medium impact species
		H	High impact species

Field	Description	Code	Code Description
	biodiversity) to high (causes acute disruptions of ecological processes, dominates and/or significantly alters the vegetation structure, composition and function of ecosystems).	U	Unknown
Impact attributes	List of known ecological impact attribute, based on Platt et al (2005).	1	Changed fire regime
		2	Changed nutrient conditions
		3	Changed hydrological patterns
		4	Changed soil erosion patterns
		5	Changed geomorphological processes
		6	Changed biomass distribution
		7	Changed light distribution
		8	Loss of biodiversity
		9	Substantially reduces regeneration opportunities of native plants
		10	Allelopathic effects
Invasiveness	Rate of spread of a weed in native vegetation, encompassing factors of establishment, reproductions (time to seeding, seed production, vegetative reproductions) and dispersal (wind, water, flying animals, ground animals, deliberate human spread, vehicles, produce contaminant).	S	Slow
		M	Moderate
		R	Rapid
		U	Unknown
Feasibility of Control	The longer a coordinated control program takes to achieve its desired goal, the more expensive and less feasible it becomes. Key factors to consider include how widespread a weed is, ease of finding infestations, difficulty of limiting the weeds dispersal, willingness of landholders and governments to control the weed, and commercial use of the plant.	L	Low feasibility infestation
		M	Moderate feasibility infestation
		H	High feasibility infestation
		U	Unknown
General Trend	General trend in distribution and abundance across the region.	Decreasing	
		Increasing	
		Stable	
		Unknown	

Field	Description	Code	Code Description
Status	Define whether the species is outside the region, considered emerging (density class of occasional), established (density class of common or abundant) or unknown.	Outside	Occurs outside the region but known from WA
		Emerging	Density class of occasional
		Established	Density class of common or abundant
		Unknown	Current status in doubt or unknown

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Appendix E: Vegetation Classification and Condition Scales

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Table E.1: Vegetation Classification System Specht (1970) as modified by Aplin (1979).

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

Table E.2: Summary of adapted Vegetation Condition Scale as developed by Keighery (1994).

Rating	Condition	Descriptive Features
1	Excellent	>80% native flora composition Vegetation structure (nearly) intact Minor signs of disturbance Weeds are non-aggressive species (cover <5%)
2	Good	60-80% native flora composition Vegetation structure altered in places Obvious signs of disturbance Weed abundance / cover 5-20%
3	Fair	40-60% native flora composition Vegetation structure significantly altered yet retains basic structure or ability to regenerate to it Very obvious signs of multiple disturbance Weed cover / abundance 50-80%
4	Poor/ Partially Degraded	20-40% native flora composition Vegetation structure severely impacted by disturbance Scope for regeneration but not to a level approaching “Good” condition without intensive management Weed cover / abundance 50-80%
5	Completely Degraded	<20% native flora composition Vegetation structure impacted beyond regeneration Extensive modification and disturbance present Weeds are highly invasive (cover / abundance >80%)

Appendix F: Data Analysis

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IOH Level 2 Flora and Vegetation Survey

Group average

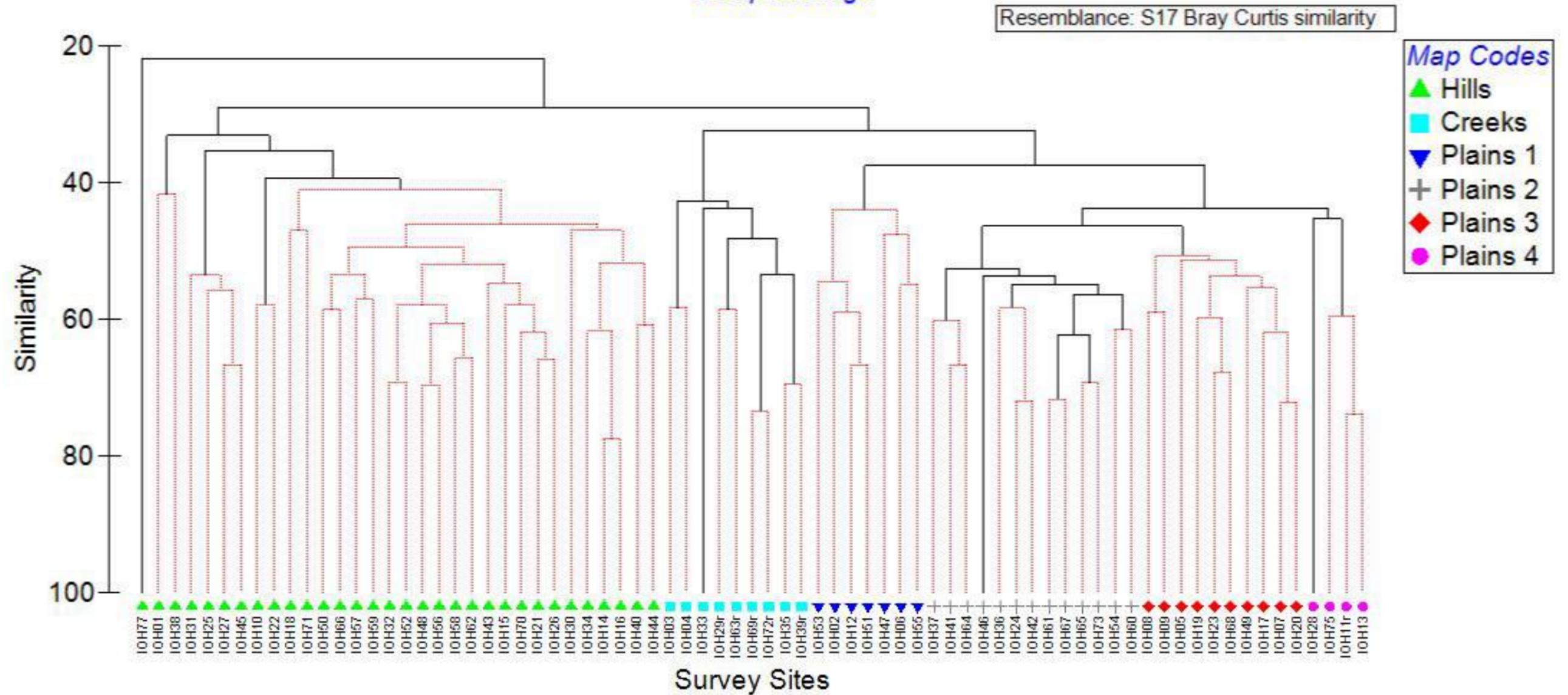


Figure F.1: Dendrogram of survey sites derived from the Primer CLUSTER analyses of the 143 perennial taxa from the 75 survey sites. The symbols above the survey site names correspond to the vegetation classification.

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Appendix G: Species List

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Table G.1. Flora species list, all species had the conservation status of 'not threatened' at the time of survey.

Family	Species	Weed (*)
Aizoaceae	<i>Trianthema glossostigma</i>	
Aizoaceae	<i>Trianthema pilosa</i>	
Amaranthaceae	<i>Amaranthus cuspidifolius</i>	
Amaranthaceae	<i>Amaranthus mitchellii</i>	
Amaranthaceae	<i>Amaranthus undulatus</i>	
Amaranthaceae	<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	
Amaranthaceae	<i>Gomphrena cunninghamii</i>	
Amaranthaceae	<i>Gomphrena kanisii</i>	
Amaranthaceae	<i>Ptilotus aervoides</i>	
Amaranthaceae	<i>Ptilotus astrolasius</i>	
Amaranthaceae	<i>Ptilotus auriculifolius</i>	
Amaranthaceae	<i>Ptilotus calostachyus</i>	
Amaranthaceae	<i>Ptilotus clementii</i>	
Amaranthaceae	<i>Ptilotus exaltatus</i>	
Amaranthaceae	<i>Ptilotus fusiformis</i>	
Amaranthaceae	<i>Ptilotus gaudichaudii</i>	
Amaranthaceae	<i>Ptilotus helipteroides</i>	
Amaranthaceae	<i>Ptilotus obovatus</i>	
Amaranthaceae	<i>Ptilotus polystachyus</i>	
Amaranthaceae	<i>Ptilotus rotundifolius</i>	
Apocynaceae	<i>Marsdenia australis</i>	
Apocynaceae	<i>Rhyncharrhena linearis</i>	
Araliaceae	<i>Trachymene oleracea</i>	
Asteraceae	<i>Bidens bipinnata</i>	*
Asteraceae	<i>Peripleura arida</i>	
Asteraceae	<i>Pterocaulon sphaeranthoides</i>	
Asteraceae	<i>Sonchus oleraceus</i>	*
Asteraceae	<i>Streptoglossa bubakii</i>	
Boraginaceae	<i>Heliotropium chrysocarpum</i>	
Boraginaceae	<i>Heliotropium cunninghamii</i>	
Boraginaceae	<i>Trichodesma zeylanicum</i>	
Caryophyllaceae	<i>Polycarpaea corymbosa</i>	
Caryophyllaceae	<i>Polycarpaea holtzei</i>	
Caryophyllaceae	<i>Polycarpaea longiflora</i>	
Chenopodiaceae	<i>Dysphania kalpari</i>	
Chenopodiaceae	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	
Chenopodiaceae	<i>Enchylaena tomentosa</i>	
Chenopodiaceae	<i>Rhagodia eremaea</i>	

Family	Species	Weed (*)
Chenopodiaceae	<i>Salsola tragus</i>	
Chenopodiaceae	<i>Sclerolaena cornishiana</i>	
Cleomaceae	<i>Cleome viscosa</i>	
Convolvulaceae	<i>Bonamia erecta</i>	
Convolvulaceae	<i>Bonamia media</i> var. <i>villosa</i>	
Convolvulaceae	<i>Bonamia rosea</i>	
Convolvulaceae	<i>Duperreya commixta</i>	
Convolvulaceae	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	
Convolvulaceae	<i>Ipomoea polymorpha</i>	
Convolvulaceae	<i>Polymeria ambigua</i>	
Cucurbitaceae	<i>Cucumis maderaspatanus</i>	
Cyperaceae	<i>Bulbostylis barbata</i>	
Cyperaceae	<i>Fimbristylis microcarya</i>	
Cyperaceae	<i>Fimbristylis simulans</i>	
Euphorbiaceae	<i>Euphorbia australis</i>	
Euphorbiaceae	<i>Euphorbia biconvexa</i>	
Euphorbiaceae	<i>Euphorbia boophthona</i>	
Euphorbiaceae	<i>Euphorbia tannensis</i>	
Euphorbiaceae	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	
Fabaceae	<i>Acacia adoxa</i> var. <i>adoxo</i>	
Fabaceae	<i>Acacia adsurgens</i>	
Fabaceae	<i>Acacia ancistrocarpa</i>	
Fabaceae	<i>Acacia aptaneura</i>	
Fabaceae	<i>Acacia arida</i>	
Fabaceae	<i>Acacia bivenosa</i>	
Fabaceae	<i>Acacia citrinoviridis</i>	
Fabaceae	<i>Acacia dictyophleba</i>	
Fabaceae	<i>Acacia hamersleyensis</i>	
Fabaceae	<i>Acacia hilliana</i>	
Fabaceae	<i>Acacia holosericea</i>	
Fabaceae	<i>Acacia inaequilatera</i>	
Fabaceae	<i>Acacia maitlandii</i>	
Fabaceae	<i>Acacia melleodora</i>	
Fabaceae	<i>Acacia monticola</i>	
Fabaceae	<i>Acacia pachyacra</i>	
Fabaceae	<i>Acacia pruinocarpa</i>	
Fabaceae	<i>Acacia pyrifolia</i>	
Fabaceae	<i>Acacia spondylophylla</i>	
Fabaceae	<i>Acacia synchronicia</i>	
Fabaceae	<i>Acacia tenuissima</i>	

Family	Species	Weed (*)
Fabaceae	<i>Acacia tumida</i>	
Fabaceae	<i>Acacia tumida</i> var. <i>pilbarensis</i>	
Fabaceae	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	
Fabaceae	<i>Crotalaria novae-hollandiae</i> subsp. <i>novae-hollandiae</i>	
Fabaceae	<i>Cullen lachnostachys</i>	
Fabaceae	<i>Gompholobium polyzygum</i>	
Fabaceae	<i>Indigofera georgei</i>	
Fabaceae	<i>Indigofera monophylla</i>	
Fabaceae	<i>Isotropis atropurpurea</i>	
Fabaceae	<i>Mirbelia viminalis</i>	
Fabaceae	<i>Petalostylis cassioides</i>	
Fabaceae	<i>Petalostylis labicheoides</i>	
Fabaceae	<i>Rhynchosia minima</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>helmsii</i> x <i>oligophylla</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	
Fabaceae	<i>Senna curvistyla</i>	
Fabaceae	<i>Senna ferraria</i>	
Fabaceae	<i>Senna glaucifolia</i>	
Fabaceae	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	
Fabaceae	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	
Fabaceae	<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	
Fabaceae	<i>Senna notabilis</i>	
Fabaceae	<i>Tephrosia</i> aff. <i>supina</i>	
Fabaceae	<i>Tephrosia densa</i>	
Fabaceae	<i>Tephrosia rosea</i>	
Fabaceae	<i>Tephrosia rosea</i> var. <i>glabrior</i>	
Fabaceae	<i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601)	
Fabaceae	<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	
Fabaceae	<i>Tephrosia supina</i>	
Goodeniaceae	<i>Dampiera candidans</i>	
Goodeniaceae	<i>Goodenia microptera</i>	
Goodeniaceae	<i>Goodenia muelleriana</i>	
Goodeniaceae	<i>Goodenia prostrata</i>	
Goodeniaceae	<i>Goodenia stobbsiana</i>	
Goodeniaceae	<i>Goodenia triodiophila</i>	
Goodeniaceae	<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	
Goodeniaceae	<i>Scaevola spinescens</i>	
Goodeniaceae	<i>Velleia connata</i>	
Haloragaceae	<i>Haloragis gossei</i>	

Family	Species	Weed (*)
Haloragaceae	<i>Haloragis gossei</i> var. <i>gossei</i>	
Lamiaceae	<i>Clerodendrum floribundum</i>	
Lamiaceae	<i>Clerodendrum floribundum</i> var. <i>angustifolium</i>	
Lamiaceae	<i>Clerodendrum floribundum</i> var. <i>floribundum</i>	
Lamiaceae	<i>Dicrastylis cordifolia</i>	
Lauraceae	<i>Cassytha capillaris</i>	
Loranthaceae	<i>Amyema gibberula</i> var. <i>gibberula</i>	
Loranthaceae	<i>Amyema miquelii</i>	
Malvaceae	<i>Abutilon dioicum</i>	
Malvaceae	<i>Abutilon lepidum</i>	
Malvaceae	<i>Abutilon leucopetalum</i>	
Malvaceae	<i>Abutilon otocarpum</i>	
Malvaceae	<i>Abutilon trudgenii</i>	
Malvaceae	<i>Corchorus crozophorifolius</i>	
Malvaceae	<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	
Malvaceae	<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	
Malvaceae	<i>Corchorus tectus</i>	
Malvaceae	<i>Corchorus tridens</i>	
Malvaceae	<i>Gossypium australe</i>	
Malvaceae	<i>Gossypium robinsonii</i>	
Malvaceae	<i>Hibiscus</i> aff. <i>coatesii</i>	
Malvaceae	<i>Hibiscus coatesii</i>	
Malvaceae	<i>Hibiscus leptocladus</i>	
Malvaceae	<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	
Malvaceae	<i>Hibiscus sturtii</i> var. <i>platyochlamys</i>	
Malvaceae	<i>Keraudrenia nephrosperma</i>	
Malvaceae	<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	
Malvaceae	<i>Rulingia luteiflora</i>	
Malvaceae	<i>Sida</i> aff. <i>fibulifera</i> (oblong; MET 15 220)	
Malvaceae	<i>Sida arenicola</i>	
Malvaceae	<i>Sida cardiophylla</i>	
Malvaceae	<i>Sida fibulifera</i>	
Malvaceae	<i>Sida</i> sp. Articulation below (A.A. Mitchell PRP 1605)	
Malvaceae	<i>Sida</i> sp. Excedentifolia (J.L. Egan 1925)	
Malvaceae	<i>Sida</i> sp. Pilbara (A.A. Mitchell PRP 1543)	
Malvaceae	<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	
Malvaceae	<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	
Malvaceae	<i>Triumfetta maconochieana</i>	
Malvaceae	<i>Waltheria indica</i>	
Molluginaceae	<i>Mollugo molluginea</i>	

Family	Species	Weed (*)
Moraceae	<i>Ficus brachypoda</i>	
Myrtaceae	<i>Calytrix carinata</i>	
Myrtaceae	<i>Corymbia deserticola</i>	
Myrtaceae	<i>Corymbia hamersleyana</i>	
Myrtaceae	<i>Corymbia opaca</i>	
Myrtaceae	<i>Eucalyptus gamophylla</i>	
Myrtaceae	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	
Myrtaceae	<i>Eucalyptus victrix</i>	
Nyctaginaceae	<i>Boerhavia coccinea</i>	
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i>	
Phyllanthaceae	<i>Notoleptopus decaisnei</i>	
Phyllanthaceae	<i>Phyllanthus maderaspatensis</i>	
Plantaginaceae	<i>Stemodia grossa</i>	
Poaceae	<i>Amphipogon sericeus</i>	
Poaceae	<i>Aristida contorta</i>	
Poaceae	<i>Aristida holathera</i> var. <i>holathera</i>	
Poaceae	<i>Aristida hygrometrica</i>	
Poaceae	<i>Aristida inaequiglumis</i>	
Poaceae	<i>Cenchrus ciliaris</i>	*
Poaceae	<i>Cenchrus setiger</i>	*
Poaceae	<i>Chrysopogon fallax</i>	
Poaceae	<i>Cymbopogon ambiguus</i>	
Poaceae	<i>Cymbopogon obtectus</i>	
Poaceae	<i>Digitaria ctenantha</i>	
Poaceae	<i>Enneapogon lindleyanus</i>	
Poaceae	<i>Enneapogon polyphyllus</i>	
Poaceae	<i>Enneapogon robustissimus</i>	
Poaceae	<i>Eragrostis cumingii</i>	
Poaceae	<i>Eragrostis eriopoda</i>	
Poaceae	<i>Eragrostis tenellula</i>	
Poaceae	<i>Eriachne aristidea</i>	
Poaceae	<i>Eriachne lanata</i>	
Poaceae	<i>Eriachne mucronata</i>	
Poaceae	<i>Eriachne pulchella</i>	
Poaceae	<i>Eriachne tenuiculmis</i>	
Poaceae	<i>Eulalia aurea</i>	
Poaceae	<i>Paraneurachne muelleri</i>	
Poaceae	<i>Paspalidium basicladum</i>	
Poaceae	<i>Paspalidium clementii</i>	
Poaceae	<i>Perotis rara</i>	

Family	Species	Weed (*)
Poaceae	<i>Schizachyrium fragile</i>	
Poaceae	<i>Setaria dielsii</i>	
Poaceae	<i>Sporobolus australasicus</i>	
Poaceae	<i>Themeda triandra</i>	
Poaceae	<i>Tragus australianus</i>	
Poaceae	<i>Triodia ? brizoides</i>	
Poaceae	<i>Triodia ? wiseana</i>	
Poaceae	<i>Triodia basedowii</i>	
Poaceae	<i>Triodia brizoides</i>	
Poaceae	<i>Triodia epactia</i>	
Poaceae	<i>Triodia lanigera</i>	
Poaceae	<i>Triodia schinzii</i>	
Poaceae	<i>Triodia</i> sp. (epactia/pungens)	
Poaceae	<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	
Poaceae	<i>Triodia wiseana</i>	
Poaceae	<i>Yakirra australiensis</i> var. <i>australiensis</i>	
Polygalaceae	<i>Polygala isingii</i>	
Portulacaceae	<i>Portulaca oleracea</i>	*
Proteaceae	<i>Grevillea wickhamii</i>	
Proteaceae	<i>Grevillea wickhamii</i> subsp. <i>hispidula</i>	
Proteaceae	<i>Hakea chordophylla</i>	
Proteaceae	<i>Hakea lorea</i>	
Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	
Rubiaceae	<i>Oldenlandia crouchiana</i>	
Santalaceae	<i>Anthobolus leptomerioides</i>	
Santalaceae	<i>Santalum lanceolatum</i>	
Sapindaceae	<i>Atalaya hemiglauca</i>	
Sapindaceae	<i>Dodonaea coriacea</i>	
Scrophulariaceae	<i>Eremophila longifolia</i>	
Solanaceae	<i>Solanum ellipticum</i>	
Solanaceae	<i>Solanum horridum</i>	
Solanaceae	<i>Solanum lasiophyllum</i>	
Solanaceae	<i>Solanum phlomoides</i>	
Solanaceae	<i>Solanum sturtianum</i>	
Surianaceae	<i>Stylobasium spathulatum</i>	
Violaceae	<i>Hybanthus aurantiacus</i>	
Zygophyllaceae	<i>Tribulopsis angustifolia</i>	
Zygophyllaceae	<i>Tribulus hirsutus</i>	
Zygophyllaceae	<i>Tribulus macrocarpus</i>	
Zygophyllaceae	<i>Tribulus suberosus</i>	

Appendix H: Descriptions of Species with Range Extensions

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Table H.1: Locations of Range Extension Species Recorded in the Survey Area.

Species	Site	Vegetation Association	GPS coordinate (GDA 94)
<i>Senna curvistyla</i> (J.M. Black) Randell	IOH23	<i>Petalostylis labicheoides</i> scattered shrubs over <i>Sida</i> sp. Pilbara scattered shrubs over <i>Bonamia rosea</i> low open shrubland over <i>Triodia lanigera</i> very open hummock grassland.	737732 E, 7483784 N
<i>Aristida hygrometrica</i> R. Br.	IOH09	<i>Acacia inaequilatera</i> scattered tall shrubs and <i>Eucalyptus gamophylla</i> low open woodland over <i>Petalostylis labicheoides</i> scattered shrubs over <i>Triodia basedowii</i> open hummock grassland.	738696 E, 7485474 N

Table H.2: Description of Range Extension Species Recorded in the Survey Area (WAHERB 2011).

Species	Description	Habitat
<p><i>Senna curvistyla</i> (J.M. Black) Randell</p>  <p><i>Senna curvistyla</i> Photos: C.P. Campbell</p>	<p>A small shrub 0.1 to 0.3 m tall. It produces yellow flowers from May to August.</p>	<p><i>S. curvistyla</i> has been recorded in deep red desert sand, sand dunes and gravelly plains.</p>
<p><i>Aristida hygrometrica</i> R.Br.</p>  <p><i>Aristida hygrometrica</i> Photos: L. Wallis</p>	<p>A loosely tufted annual, grass-like herb 0.29 to 0.84 m high. It produces brown flowers from March to May.</p>	<p><i>A. hygrometrica</i> has been recorded in red sand, red clay and alluvium, and often dominates extensive grass levees. It is often found in <i>Eucalyptus</i> and <i>Melaleuca</i> woodland.</p>

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Appendix I: Introduced Flora Descriptions

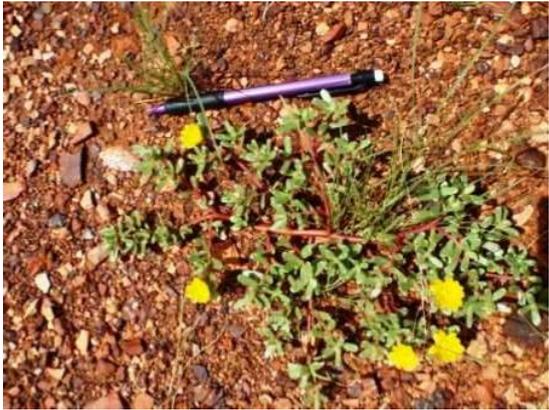
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Table I.1: Summary assessment of introduced flora recorded in the Survey Area (DEC 2011)

Species	Ecological Impact (Low, Moderate, High, Unknown)	Current Distribution (Low, Moderate, High, Unknown)	Potential Distribution (Low, Moderate, High, Unknown)	Invasiveness (Rapid, Moderate, Slow)	General Trend (Increasing, Stable, Decreasing, Unknown)	Status (Outside, Emerging, Established, Unknown)	Feasibility for Control (Low, Moderate, High, Unknown)
<i>*Bidens bipinnata</i>	Unknown	High	High	Rapid	n/a	n/a	Low
<i>*Cenchrus ciliaris</i>	High	High	High	Rapid	Increasing	Established	Low
<i>*Cenchrus setiger</i>	High	High	High	Rapid	Increasing	Established	Low
<i>*Portulaca oleracea</i>	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<i>*Sonchus oleraceus</i>	Low	High	Low	Rapid	n/a	n/a	Low

Table 1.2: Description of Introduced Flora recorded in the Survey Area

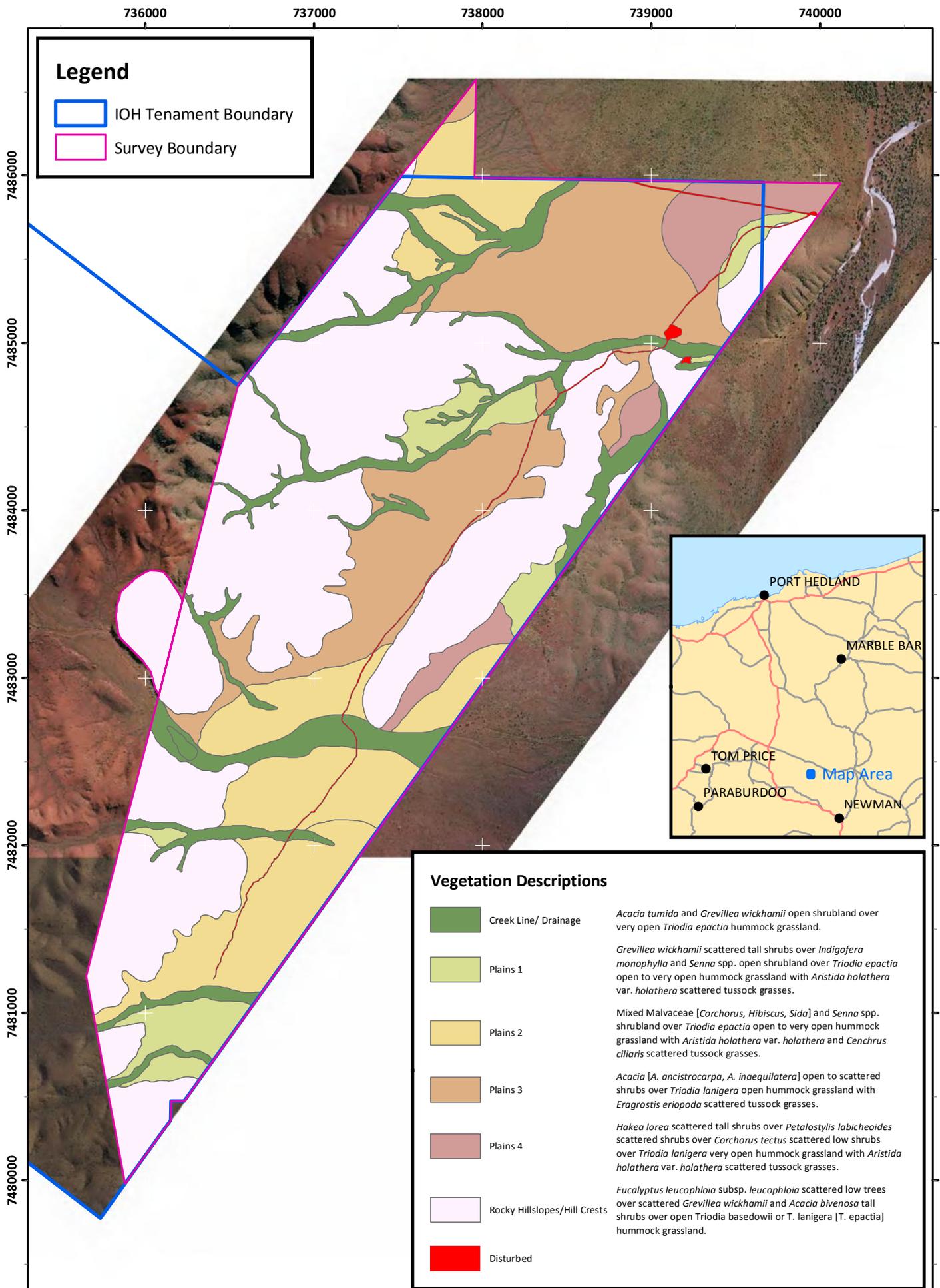
Name	Description	Habitat
<p><i>*Bidens bipinnata</i> (Bipinnate beggartick)</p>  <p><i>Bidens bipinnata</i> Photos: G. Byrne</p>	<p>An erect annual herb, between 0.1 and 0.9 m (sometimes to 1.5 m) high with yellow flowers that bloom from March to September.</p>	<p><i>Bidens bipinnata</i> favors alluvium, clay, loam over sandstone and limestone. It is usually found along rivers & creeks, coastal areas and on rocky hillsides.</p>
<p><i>Cenchrus ciliaris</i> (Buffel Grass)</p> 	<p>A tufted or sometimes stoloniferous perennial grass between 0.2 and 1.5 m in height with purple, ciliate flowers between February and October.</p> <p><i>C. ciliaris</i> was originally planted as a pastoral grass in the region, but it has been shown to suppress the growth of surrounding plants due to allelopathic compounds (Halsall <i>et al.</i> 1995) and therefore has the ability to alter the composition vegetation communities.</p>	<p><i>C. ciliaris</i> favours sand but may also establish in loamy and clayey soils, particularly disturbed soils in coastal and drainage areas.</p>
<p><i>*Cenchrus setiger</i> (Birdwood Grass)</p>  <p><i>Cenchrus setiger</i> Photos: G. Byrne</p>	<p>A tussocky or sometimes stoloniferous perennial grass to 0.5 m in height with dark, hardening flowers. Flowering between April and May.</p>	<p>Favours sands, red loam, dunes, plains, rangelands, stony hills, and floodplains.</p>

Name	Description	Habitat
<p><i>Portulaca oleracea</i> (Purslane)</p> 	<p>A succulent, prostrate to decumbent annual herb to 0.2 m in height. Flowers are yellow from April to May.</p>	<p><i>P. oleracea</i> favors clayey, loam areas but appears widespread in most low lying habitats.</p>
<p>*<i>Sonchus oleraceus</i> (Common sowthistle)</p>  <p><i>Sonchus oleraceus</i> Photos: S.M. Armstrong & L. Fontanini</p>	<p>An erect annual or possibly biennial herb to 1.5 m high. Its yellow flowers bloom all year round. Known to hybridize with <i>S. asper</i>.</p>	<p><i>S. oleraceus</i> is a weed of waste places and disturbed ground. Seed is dispersed by the wind. Seed is able to germinate all year round and is favoured by light, with emergence highest when seed is present on the soil surface.</p>

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Appendix J: Vegetation Mapping

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URS Australia Pty Ltd
IOH Iron Valley Flora and Vegetation Surveys

Figure J.1: Vegetation Mapping in IOH Iron Valley Survey Area.



Author: W. Thompson

Date: 16-12-2011

Drawn: R. Wathugala

3923-11WMFV1RevB_20111216_Figure_J.1

Datum: GDA 1994
Projection: MGA Zone 50

0 250 500 1,000 1,500 Metres



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Appendix K: Quadrat and Relevé Data

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URS/IOH Iron Valley

Site

IOH01

Location: Iron Valley
m

Type: Q

50 x 50

1st Observation: Date: 9/04/2011 Described by: WNNC Seasonal Conditions: E

2nd Observation: Date: 2/08/2011 Described by: WTTDO Seasonal Conditions: E

MGA Zone: 50 Easting: 737482 mE Northing: 7485780 mN

Habitat: Lower slope of hill on BIF seam (exposed bedrock <1%).

Soil: Red brown skeletal sandy loam

Rock Type: BIF

Vegetation: *Acacia bivenosa* low open woodland over *Grevillea wickhamii* scattered shrubs over *Triodia lanigera* and *T. epactia* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: excellent

Fire Age: 5-10 years

Notes:

Species List

Name	% Cover	Height
	+	4.00
<i>Acacia bivenosa</i>	+	4.00
<i>Boerhavia coccinea</i>	+	0.10
<i>Cleome viscosa</i>	+	0.06
<i>Dysphania kalpari</i>	+	0.05
<i>Eriachne aristidea</i>	+	0.30
<i>Eriachne lanata</i>	+	0.30
<i>Eriachne pulchella</i>	+	0.10
<i>Fimbristylis simulans</i>	+	0.25
<i>Gomphrena cunninghamii</i>	+	0.08
<i>Gomphrena kanisii</i>	+	0.20
<i>Goodenia stobbsiana</i>	+	0.08
<i>Grevillea wickhamii</i> subsp. <i>hispidula</i>	+	1.80
<i>Paspalidium clementii</i>	+	0.12
<i>Polygala isingii</i>	+	0.06
<i>Ptilotus auriculifolius</i>	+	0.25
<i>Ptilotus calostachyus</i>	+	0.70
<i>Ptilotus exaltatus</i>	+	0.60
<i>Ptilotus rotundifolius</i>	+	0.30
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.70
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.20
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.20
<i>Trianthema glossostigma</i>	+	0.04
<i>Trichodesma zeylanicum</i>	+	0.40
<i>Triodia basedowii</i>	55	0.35
<i>Triodia epactia</i>	+	0.9
<i>Triodia wiseana</i>	+	0.25

URS/IOH Iron Valley

Site IOH02

Location: Iron Valley **Type:** Q 50 x 50 m

1st Observation: **Date:** 9/04/2011 **Described by:** WNNC **Seasonal Conditions:** E

2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738239 mE **Northing:** 7485893 mN

Habitat: Flat - pediment

Soil: Red brown, shallow

Rock Type: BIF, coarse fragments

Vegetation: *Grevillea wickhamii* scattered tall shrubs over *Acacia adoxa* var. *adoxo* scattered low shrubs over *Triodia basedowii*, *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: good

Fire Age: no fire evident

Notes: Quadrat adjacent to drill pads

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	1	0.80
<i>Acacia bivenosa</i>	+	3.00
<i>Acacia inaequilatera</i>	+	1.60
<i>Aristida contorta</i>	+	0.30
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.30
<i>Bonamia rosea</i>	+	0.30
<i>Cleome viscosa</i>	+	0.40
<i>Corymbia hamersleyana</i>	+	1.00
<i>Dicrastylis cordifolia</i>	+	0.40
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.07
<i>Eriachne mucronata</i>	+	0.30
<i>Eriachne pulchella</i>	+	0.12
<i>Fimbristylis simulans</i>	+	0.20
<i>Goodenia microptera</i>	+	0.15
<i>Grevillea wickhamii</i>	1	2.20
<i>Hakea chordophylla</i>	+	0.60
<i>Haloragis gossei</i>	+	0.12
<i>Heliotropium chrysocarpum</i>	+	0.06
<i>Heliotropium cunninghamii</i>	+	0.12
<i>Indigofera monophylla</i>	+	0.20
<i>Mollugo molluginea</i>	+	0.04
<i>Polycarpaea corymbosa</i>	+	0.12
<i>Polycarpaea holtzei</i>	+	0.20
<i>Ptilotus calostachyus</i>	+	0.5
<i>Ptilotus exaltatus</i>	+	0.10
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.20
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.80
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	0.90
<i>Trianthema glossostigma</i>	+	0.05
<i>Tribulus hirsutus</i>	+	0.15
<i>Trichodesma zeylanicum</i>	+	0.25
<i>Triodia basedowii</i>	15	0.40
<i>Triodia epactia</i>	8	0.65

URS/IOH Iron Valley

Site IOH03

Location: Iron Valley **Type:** Q 50 x 50 m

1st Observation: **Date:** 9/04/2011 **Described by:** WNNC **Seasonal Conditions:** E

2nd Observation: **Date:** 3/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738331 mE **Northing:** 7485626 mN

Habitat: Flat overflow drainage area

Soil: Red/brown sandy loam

Rock Type: Ironstone

Vegetation: *Grevillea wickhamii* scattered tall shrubs over *Senna artemisioides* subsp. *oligophylla* scattered low shrubs over *Triodia lanigera*, *T. epactia* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
	+	1.00
<i>Abutilon dioicum</i>	+	1.00
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.80
<i>Acacia ancistrocarpa</i>	+	2.00
<i>Acacia arida</i>	+	1.70
<i>Acacia pyrifolia</i>	+	3.50
<i>Acacia spondylophylla</i>	+	1.00
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	2.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Boerhavia coccinea</i>	+	
<i>Bulbostylis barbata</i>	+	0.08
<i>Cleome viscosa</i>	+	0.50
<i>Corchorus tectus</i>	+	0.40
<i>Corymbia hamersleyana</i>	+	4.00
<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	+	0.25
<i>Cucumis maderaspatanus</i>	+	climber
<i>Digitaria ctenantha</i>	+	0.40
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eragrostis eriopoda</i>	+	0.20
<i>Eriachne aristidea</i>	+	0.15
<i>Eriachne pulchella</i>	+	0.08
<i>Euphorbia australis</i>	+	0.10
<i>Euphorbia biconvexa</i>	+	0.40
<i>Fimbristylis simulans</i>	+	0.10
<i>Gomphrena cunninghamii</i>	+	0.08
<i>Goodenia microptera</i>	+	0.45
<i>Gossypium australe</i>	+	0.60
<i>Gossypium robinsonii</i>	+	1.50
<i>Grevillea wickhamii</i>	1	2.50
<i>Hakea chordophylla</i>	+	1.80
<i>Hakea lorea</i>	+	2.20
<i>Hybanthus aurantiacus</i>	+	0.20
<i>Indigofera monophylla</i>	+	0.45
<i>Mollugo molluginea</i>	+	
<i>Polycarpaea longiflora</i>	+	0.45
<i>Polymeria ambigua</i>	+	

<i>Ptilotus astrolasius</i>	+	1.00
<i>Ptilotus calostachyus</i>	+	0.70
<i>Rhynchosia minima</i>	+	0.10
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.35
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	1	0.70
<i>Themeda triandra</i>	+	0.30
<i>Trianthema pilosa</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.30
<i>Triodia epactia</i>	40	0.70
<i>Triodia lanigera</i>	10	0.40
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.05

URS/IOH Iron Valley

Site

IOH04

Location: Iron Valley
m

Type: Q

50 x 50

1st Observation: Date: 10/04/2011 Described by: WT/NK

Seasonal Conditions: E

2nd Observation: Date: 3/08/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 736847 mE

Northing: 7485064 mN

Habitat: Drainage valley, base of ridge

Soil: Red brown sandy loam

Rock Type: BIF

Vegetation: *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera*, *Grevillea wickhamii* tall open shrubland over *Gossypium australe* scattered shrubs over *A. arida*, *Stylobasium spathulatum* low open shrubland over *Triodia epactia* hummock grassland and *Eriachne tenuiculmis* scattered tussock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Abutilon dioicum</i>	+	1.00
<i>Acacia arida</i>	+	0.70
<i>Acacia dictyophleba</i>	+	1.50
<i>Acacia inaequilatera</i>	1	4.00
<i>Acacia pachyacra</i>	+	2.50
<i>Acacia pruinocarpa</i>	+	1.20
<i>Acacia pyrifolia</i>	+	1.60
<i>Acacia spondylophylla</i>	+	1.10
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	2.50
<i>Amaranthus cuspidifolius</i>	+	0.08
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.40
<i>Atalaya hemiglauca</i>	+	0.20
<i>Boerhavia coccinea</i>	+	0.10
<i>Bulbostylis barbata</i>	+	0.10
<i>Cleome viscosa</i>	+	0.50
<i>Clerodendrum floribundum</i>	+	1.00
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.40
<i>Corchorus tridens</i>	+	0.35
<i>Corymbia hamersleyana</i>	1	5.50
<i>Cymbopogon obtectus</i>	+	0.60
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.06
<i>Enneapogon robustissimus</i>	+	0.45

<i>Eragrostis tenellula</i>	+	0.30
<i>Eriachne pulchella</i>	+	0.12
<i>Eriachne tenuiculmis</i>	1	0.50
<i>Euphorbia australis</i>	+	0.05
<i>Euphorbia biconvexa</i>	+	0.30
<i>Euphorbia boophthona</i>	+	0.25
<i>Gomphrena cunninghamii</i>	+	0.20
<i>Gossypium australe</i>	+	1.80
<i>Gossypium robinsonii</i>	+	2.20
<i>Grevillea wickhamii</i>	1	3.00
<i>Hakea lorea</i>	+	2.20
<i>Indigofera monophylla</i>	+	0.40
<i>Notoleptopus decaisnei</i>	+	0.30
<i>Paspalidium clementii</i>	+	0.15
<i>Perotis rara</i>	+	0.18
<i>Petalostylis labicheoides</i>	+	2.20
<i>Polycarpaea longiflora</i>	+	0.30
<i>Polymeria ambigua</i>	+	0.05
<i>Portulaca oleracea</i>	+	0.05
<i>Pterocaulon sphaeranthoides</i>	+	0.04
<i>Ptilotus auriculifolius</i>	+	0.40
<i>Rhynchosia minima</i>	+	0.55
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.30
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.0
<i>Sporobolus australasicus</i>	+	0.08
<i>Stylobasium spathulatum</i>	1	0.60
<i>Themeda triandra</i>	+	0.30
<i>Trichodesma zeylanicum</i>	+	0.60
<i>Triodia epactia</i>	45	1.00

URS/IOH Iron Valley

Site

IOH05

Location: Iron Valley
m

Type: Q

50 x 50

1st Observation: Date: 10/04/2011 Described by: NC/CW

Seasonal Conditions: E

2nd Observation: Date: Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 738470 mE

Northing: 7485133 mN

Habitat: Open flat plain to east of tall hills

Soil: Red brown fine sandy loam

Rock Type: Ironstone

Vegetation: *Hakea chordophylla* scattered low trees over *Acacia inaequilatera* tall open shrubland over *Triodia lanigera* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: excellent

Fire Age: No fire evident

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.50
<i>Acacia bivenosa</i>	+	2.50
<i>Acacia inaequilatera</i>	2	2.50
<i>Acacia pachyacra</i>	+	2.50
<i>Aristida contorta</i>	+	0.60
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.55
<i>Bonamia erecta</i>	+	0.50
<i>Cenchrus ciliaris</i>	+	0.60
<i>Cleome viscosa</i>	+	0.70
<i>Corymbia hamersleyana</i>	+	4.00
<i>Cucumis maderaspatanus</i>	+	
<i>Cymbopogon obtectus</i>	+	0.70
<i>Dicrastylis cordifolia</i>	+	0.40
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.30
<i>Enneapogon polyphyllus</i>	+	0.60
<i>Eragrostis eriopoda</i>	+	0.60
<i>Eragrostis</i> sp.	+	0.50
<i>Eriachne aristidea</i>	+	0.20
<i>Eriachne pulchella</i>	+	0.20
<i>Eulalia aurea</i>	+	0.60
<i>Euphorbia australis</i>	+	0.20
<i>Goodenia microptera</i>	+	0.22
<i>Hakea chordophylla</i>	1	3.00
<i>Heliotropium chrysocarpum</i>	+	0.30
<i>Hibiscus leptocladus</i>	+	0.50
<i>Indigofera monophylla</i>	+	1.10m
<i>Marsdenia australis</i>	+	
<i>Mollugo molluginea</i>	+	0.10
<i>Paraneurachne muelleri</i>	+	0.70
<i>Petalostylis labicheoides</i>	+	2.00
<i>Polycarpaea longiflora</i>	+	0.50
<i>Portulaca oleracea</i>	+	prostrate
<i>Ptilotus astrolasius</i>	+	0.60
<i>Ptilotus calostachyus</i>	+	0.70
<i>Ptilotus exaltatus</i>	+	0.30

<i>Ptilotus helipteroides</i>	+	0.05
<i>Scaevola spinescens</i>	+	1.10
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.40
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.00
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.60
<i>Sida arenicola</i>	+	0.40
<i>Solanum lasiophyllum</i>	+	0.60
<i>Trianthema glossostigma</i>	+	
<i>Trianthema pilosa</i>	+	0.15
<i>Triodia epactia</i>	+	1.00
<i>Triodia lanigera</i>	45	0.70
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.15

URS/IOH Iron Valley

Site IOH06

Location: Iron Valley **Type:** Q 50 x 50 m

1st Observation: **Date:** 10/04/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 3/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736738 mE **Northing:** 7485088 mN

Habitat: Lower slope - hill slope

Soil: Red brown shallow sandy loam

Rock Type: BIF

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia brizoides*, *T. epactia* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: excellent

Fire Age: 2 - 5 years

Notes:

Species List

Name	% Cover	Height
<i>Acacia inaequilatera</i>	+	2.50
<i>Acacia maitlandii</i>	+	1.50
<i>Acacia tenuissima</i>	+	1.10
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.25
<i>Bulbostylis barbata</i>	+	0.15
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	+	0.03
<i>Cleome viscosa</i>	+	0.30
<i>Corymbia hamersleyana</i>	+	4.00
<i>Crotalaria novae-hollandiae</i> subsp. <i>novae-hollandiae</i>	+	0.20
<i>Cymbopogon obtectus</i>	+	0.55
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.06
<i>Enneapogon lindleyanus</i>	+	0.40
<i>Enneapogon polyphyllus</i>	+	0.20
<i>Eriachne aristidea</i>	+	0.20
<i>Eriachne mucronata</i>	+	0.35
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	5.00
<i>Eulalia aurea</i>	+	0.50
<i>Fimbristylis microcarya</i>	+	0.30
<i>Gomphrena cunninghamii</i>	+	0.12
<i>Goodenia muelleriana</i>	+	0.05
<i>Gossypium australe</i>	+	1.20
<i>Grevillea wickhamii</i>	+	2.00
<i>Indigofera monophylla</i>	+	0.20
<i>Paspalidium clementii</i>	+	0.10
<i>Peripleura arida</i>	+	0.08
<i>Phyllanthus maderaspatensis</i>	+	0.03
<i>Polycarpha longiflora</i>	+	0.25
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.35
<i>Ptilotus exaltatus</i>	+	0.15
<i>Ptilotus obovatus</i>	+	0.60
<i>Rhynchosia minima</i>	+	0.30
<i>Schizachyrium fragile</i>	+	0.30
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.80
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.20

<i>Tribulus hirsutus</i>	+	0.40
<i>Trichodesma zeylanicum</i>	+	0.30
<i>Triodia brizoides</i>	37	0.75
<i>Triodia epactia</i>	3	0.80

URS/IOH Iron Valley

Site IOH07

Location: Iron Valley
m

Type: Q 50 x 50

1st Observation: **Date:** 10/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 31/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738999 mE **Northing:** 7485346 mN

Habitat: Open flat plain between hills to east and west

Soil: Red brown sandy loam

Rock Type: Ironstone

Vegetation: *Senna artemisioides* subsp. *helmsii*, *S. artemisioides* subsp. *oligophylla* low open shrubland over *Corchorus lasiocarpus* subsp. *parvus*, *Dicrastylis cordifolia*, *Trianthema pilosa* very open herbland over *Triodia lanigera* hummock grassland and *Paraneurachne muelleri* scattered

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 years

Notes: Occasional *Corymbia hamersleyana* and *Petalostylis labicheoides* adjacent to quadrat

Species List

Name	% Cover	Height
<i>Acacia ancistrocarpa</i>	+	0.90
<i>Acacia bivenosa</i>	+	2.0
<i>Acacia inaequilatera</i>	+	2.0
<i>Amphipogon sericeus</i>	+	0.25
<i>Aristida contorta</i>	+	0.50
<i>Bonamia erecta</i>	+	0.35
<i>Cleome viscosa</i>	+	0.50
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	1	0.40
<i>Dicrastylis cordifolia</i>	1	0.60
<i>Dodonaea coriacea</i>	+	1.20
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eragrostis eriopoda</i>	+	0.40
<i>Eriachne aristidea</i>	+	0.25
<i>Eriachne mucronata</i>	+	0.50
<i>Eriachne pulchella</i>	+	0.15
<i>Euphorbia australis</i>	+	1.10
<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	+	0.25
<i>Goodenia microptera</i>	+	0.50
<i>Goodenia stobbsiana</i>	+	0.45
<i>Hakea chordophylla</i>	+	2.50
<i>Haloragis gossei</i>	+	0.15
<i>Heliotropium chrysocarpum</i>	+	0.20
<i>Heliotropium cunninghamii</i>	+	0.20
<i>Hybanthus aurantiacus</i>	+	0.10
<i>Indigofera monophylla</i>	tussock grasses.	+ 0.20
<i>Mollugo molluginea</i>	+	0.15
<i>Paraneurachne muelleri</i>	2	0.60
<i>Ptilotus astrolasius</i>	+	0.45
<i>Ptilotus calostachyus</i>	+	0.70
<i>Ptilotus obovatus</i>	+	0.40
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	10	1.00
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	10	1.00
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.50
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.70

<i>Senna notabilis</i>	+	0.25
<i>Sida arenicola</i>	+	0.50
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.30
<i>Trianthema glossostigma</i>	+	prostrate
<i>Trianthema pilosa</i>	1	0.10
<i>Tribulus macrocarpus</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.25
<i>Triodia lanigera</i>	30	0.40
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.15

URS/IOH Iron Valley

Site

IOH08

Location: Iron Valley
m

Type: Q

50 x 50

1st Observation: Date: 11/04/2011 Described by: WT/NK

Seasonal Conditions: E

2nd Observation: Date: 31/07/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 739181 mE

Northing: 7485329 mN

Habitat: Flat - pediments/plain

Soil: Red brown shallo

Rock Type: BIF, weathered coarse fragments, no exposed bedrock

Vegetation: *Corymbia opaca* scattered low trees over *Acacia bivenosa* scattered tall shrubs over *A. ancistrocarpa* open shrubland over *Triodia basedowii* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 years

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.60
<i>Acacia adsurgens</i>	2	1.60
<i>Acacia ancistrocarpa</i>	+	1.50
<i>Acacia bivenosa</i>	1	4.0
<i>Acacia citrinoviridis</i>	+	2.20
<i>Acacia hilliania</i>	+	0.65
<i>Acacia inaequilatera</i>	+	1.60
<i>Acacia pruinocarpa</i>	+	2.00
<i>Acacia spondylophylla</i>	+	0.20
<i>Aristida contorta</i>	+	0.35
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.60
<i>Bonamia erecta</i>	+	0.30
<i>Cenchrus ciliaris</i>	+	0.30
<i>Cleome viscosa</i>	+	0.40
<i>Corymbia deserticola</i>	+	4.50
<i>Corymbia opaca</i>	1	5.00
<i>Cucumis maderaspatanus</i>	+	1.00
<i>Dicrastylis cordifolia</i>	+	0.30
<i>Dodonaea coriacea</i>	+	1.00
<i>Dysphania kalpari</i>	+	0.06
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.70
<i>Eriachne aristidea</i>	+	0.40
<i>Eriachne pulchella</i>	+	0.25
<i>Eucalyptus gamophylla</i>	+	2.10
<i>Euphorbia australis</i>	+	0.06
<i>Goodenia microptera</i>	+	0.18

<i>Grevillea wickhamii</i>	+	0.10
<i>Hakea chordophylla</i>	+	3.50
<i>Hybanthus aurantiacus</i>	+	0.50
<i>Indigofera monophylla</i>	+	0.20
<i>Mollugo molluginea</i>	+	0.06
<i>Paspalidium basicladum</i>	+	0.35
<i>Petalostylis labicheoides</i>	+	1.30
<i>Phyllanthus maderaspatensis</i>	+	0.10
<i>Ptilotus astrolasius</i>	+	0.20
<i>Ptilotus calostachyus</i>	+	0.40
<i>Rhyncharrhena linearis</i>	+	1.00
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.45
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.60
<i>Senna notabilis</i>	+	0.30
<i>Sida arenicola</i>	+	0.10
<i>Sida cardiophylla</i>	+	0.10
<i>Trianthema glossostigma</i>	+	0.05
<i>Trianthema pilosa</i>	+	0.10
<i>Tribulus hirsutus</i>	+	0.06
<i>Trichodesma zeylanicum</i>	+	0.18
<i>Triodia basedowii</i>	40	1.00
<i>Triodia epactia</i>	+	0.60

URS/IOH Iron Valley

Site

IOH09

Location: Iron Valley
m

Type: Q

50 x 50

1st Observation: Date: 10/04/2011 Described by: NC/CW

Seasonal Conditions: E

2nd Observation: Date: 3/08/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 738696 mE

Northing: 7485474 mN

Habitat: Open flat plain

Soil: Red brown sandy loam

Rock Type: Ironstone

Vegetation: *Acacia inaequilatera* scattered tall shrubs and *Eucalyptus gamophylla* low open woodland over *Petalostylis labicheoides* scattered shrubs over *Triodia basedowii* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 -10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.60
<i>Acacia adsurgens</i>	+	1.30
<i>Acacia ancistrocarpa</i>	+	2.00
<i>Acacia bivenosa</i>	+	3.5
<i>Acacia citrinoviridis</i>	+	2.00
<i>Acacia dictyophleba</i>	+	0.60
<i>Acacia inaequilatera</i>	1	3.50
<i>Anthobolus leptomerioides</i>	+	2.2
<i>Aristida contorta</i>	+	0.2
<i>Aristida hygrometrica</i>	+	0.50
<i>Aristida inaequiglumis</i>	+	0.5
<i>Boerhavia coccinea</i>	+	prostrate
<i>Bonamia erecta</i>	+	0.50
<i>Cenchrus ciliaris</i>	+	1.00
<i>Chrysopogon fallax</i>	+	1.40
<i>Cleome viscosa</i>	+	0.50
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.30
<i>Corchorus tectus</i>	+	0.30
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dicrasyllis cordifolia</i>	+	0.20
<i>Enneapogon polyphyllus</i>	+	0.50
<i>Eragrostis eriopoda</i>	+	0.50
<i>Eriachne aristidea</i>	+	0.4
<i>Eucalyptus gamophylla</i>	2	3.0
<i>Euphorbia australis</i>	+	0.05

<i>Euphorbia biconvexa</i>	+	0.3
<i>Goodenia microptera</i>	+	0.06
<i>Grevillea wickhamii</i>	+	.1
<i>Hakea lorea</i>	+	3.5
<i>Haloragis gossei</i>	+	0.15
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.5
<i>Hybanthus aurantiacus</i>	+	0.3
<i>Marsdenia australis</i>	+	climber
<i>Mollugo molluginea</i>	+	0.2
<i>Petalostylis labicheoides</i>	1	1.5
<i>Portulaca oleracea</i>	+	0.15
<i>Ptilotus auriculifolius</i>	+	0.4
<i>Ptilotus exaltatus</i>	+	0.4
<i>Ptilotus polystachyus</i>	+	0.55
<i>Rhynchosia minima</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.6
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.3
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.5
<i>Senna notabilis</i>	+	0.15
<i>Setaria dielsii</i>	+	0.5
<i>Sida arenicola</i>	+	0.1
<i>Solanum sturtianum</i>	+	0.6
<i>Trianthema pilosa</i>	+	prostrate
<i>Tribulus macrocarpus</i>	+	0.05
<i>Trichodesma zeylanicum</i>	+	0.15
<i>Triodia basedowii</i>	30	0.4
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.15

URS/IOH Iron Valley

Site

IOH10

Location: Iron Valley
m

Type: Q

50 x 50

1st Observation: Date: 11/04/2011 Described by: WNNC

Seasonal Conditions: E

2nd Observation: Date: 1/08/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 738841 mE

Northing: 7484867 mN

Habitat: Crest of rock outcrop

Soil: Red brown, skeletal and shallow

Rock Type: BIF seam, exposed bedrock

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Senna glutinosa* subsp. *pruinosa* scattered shrubs over *Triodia lanigera*, *T. wiseana* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 years

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.5
<i>Acacia bivenosa</i>	+	2.5
<i>Acacia dictyophleba</i>	+	1.6
<i>Acacia inaequilatera</i>	+	3.0
<i>Acacia pachyacra</i>	+	1.6
<i>Aristida holathera</i> var. <i>holathera</i>	0.5	+
<i>Cleome viscosa</i>	+	0.3
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Corymbia hamersleyana</i>	+	5
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.6
<i>Eriachne mucronata</i>	+	0.2
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	2	5
<i>Fimbristylis simulans</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.25
<i>Goodenia microptera</i>	+	0.2
<i>Hakea chordophylla</i>	+	1.8
<i>Mollugo molluginea</i>	+	0.6
<i>Paraneurachne muelleri</i>	+	0.3
<i>Polycarpaea corymbosa</i>	+	0.06
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus exaltatus</i>	+	0.2
<i>Rhyncharrhena linearis</i>	+	1.5
<i>Santalum lanceolatum</i>	+	1.8
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.15
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.5
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	1	1.4
<i>Sporobolus australasicus</i>	+	0.1
<i>Trianthema glossostigma</i>	+	0.02
<i>Tribulus hirsutus</i>	+	0.08
<i>Triodia lanigera</i>	12	0.4
<i>Triodia wiseana</i>	10	0.5

URS/IOH Iron Valley

Site IOH11r

Location: Iron Valley **Type:** R
1st Observation: **Date:** 11/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E
2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E
MGA Zone: **Easting:** mE **Northing:** mN
Habitat: Open flat plain
Soil: Orange brown sandy loam
Rock Type: N/A
Vegetation: *Acacia ancistrocarpa* tall open shrubland over *Petalostylis labicheoides* scattered shrubs over *Triodia lanigera* hummock grassland.
Vegetation Code:
Vegetation Desc:
Veg Condition: Excellent
Fire Age: > 10 yrs
Notes:

Species List

Name	% Cover	Height
<i>Acacia adsurgens</i>	+	1.2
<i>Acacia ancistrocarpa</i>	2	2.5
<i>Acacia dictyophleba</i>	+	1.4
<i>Acacia pachyacra</i>	+	2.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Bonamia erecta</i>	+	0.25
<i>Cleome viscosa</i>	+	0.3
<i>Corchorus tectus</i>	+	0.3
<i>Cucumis maderaspatanus</i>	+	climber
<i>Cullen lachnostachys</i>	+	0.1
<i>Dicrastylis cordifolia</i>	+	0.4
<i>Dysphania kalpari</i>	+	0.2
<i>Eriachne aristidea</i>	+	0.22
<i>Euphorbia australis</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Grevillea wickhamii</i>	+	2.5
<i>Hakea chordophylla</i>	+	2.0
<i>Hakea lorea</i>	+	2.0
<i>Indigofera monophylla</i>	+	0.6
<i>Petalostylis labicheoides</i>	1	2.0
<i>Phyllanthus maderaspatensis</i>	+	0.1
<i>Senna notabilis</i>	+	0.15
<i>Sida arenicola</i>	+	0.15
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.07
<i>Trianthema pilosa</i>	+	0.05
<i>Triodia lanigera</i>	60	0.45
<i>Velleia connata</i>	+	0.25
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.15

URS/IOH Iron Valley

Site IOH12

Location: Iron Valley **Type:** Q 50 x 50
 m

1st Observation: **Date:** 11/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 31/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738127 mE **Northing:** 7484583 mN

Habitat: Flat colluvial plain

Soil: Red brown

Rock Type: Ironstone gravel, coarse fragments of cobble size

Vegetation: *Eucalyptus gamophylla* scattered low trees over *Triodia basedowii*, *T. wiseana*, *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 -2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.6
<i>Acacia ancistrocarpa</i>	+	1
<i>Acacia bivenosa</i>	+	7.5
<i>Acacia inaequilatera</i>	+	3.5
<i>Acacia pruinocarpa</i>	+	1.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Cleome viscosa</i>	+	0.3
<i>Dicrastylis cordifolia</i>	+	0.5
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.06
<i>Eriachne mucronata</i>	+	0.2
<i>Eriachne pulchella</i>	+	0.08
<i>Eucalyptus gamophylla</i>	1	3.5
<i>Euphorbia australis</i>	+	0.25
<i>Fimbristylis simulans</i>	+	0.2
<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.15
<i>Grevillea wickhamii</i>	+	2.5
<i>Hakea chordophylla</i>	+	4
<i>Hakea lorea</i>	+	2.0
<i>Heliotropium chrysocarpum</i>	+	0.8
<i>Hybanthus aurantiacus</i>	+	0.35
<i>Indigofera monophylla</i>	+	0.2
<i>Mollugo molluginea</i>	+	0.08
<i>Paraneurachne muelleri</i>	+	0.5
<i>Paspalidium basicladum</i>	+	0.4

<i>Polycarpaea corymbosa</i>	+	0.08
<i>Polycarpaea holtzei</i>	+	0.04
<i>Portulaca oleracea</i>	+	0.04
<i>Ptilotus auriculifolius</i>	+	0.2
<i>Ptilotus calostachyus</i>	+	0.35
<i>Ptilotus exaltatus</i>	+	0.35
<i>Ptilotus obovatus</i>	+	0.35
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.75
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.8
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.4
<i>Senna notabilis</i>	+	0.08
<i>Sida arenicola</i>	+	0.8
<i>Trianthema glossostigma</i>	+	0.03
<i>Trichodesma zeylanicum</i>	+	0.45
<i>Triodia basedowii</i>	25	0.45
<i>Triodia epactia</i>	1	0.6
<i>Triodia wiseana</i>	2	0.5

URS/IOH Iron Valley

Site IOH13

Location: Northern end of survey area
m

Type: Q 50 x 50

1st Observation: **Date:** 11/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 3/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 739340 mE **Northing:** 7485682 mN

Habitat: Open flat plain

Soil: Orange brown sandy loam/fine sand

Rock Type:

Vegetation: *Acacia ancistrocarpa* tall open shrubland over *Triodia lanigera* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: *Petalostylis labicheoides* almost constitutes 1%

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.55
<i>Acacia ancistrocarpa</i>	2	2.2
<i>Acacia citrinoviridis</i>	+	0.2
<i>Acacia dictyophleba</i>	+	3
<i>Acacia inaequilatera</i>	+	2.5
<i>Acacia pachyacra</i>	+	0.7
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Bonamia erecta</i>	+	0.4
<i>Cleome viscosa</i>	+	0.5
<i>Corchorus tectus</i>	+	0.15
<i>Cucumis maderaspatanus</i>	+	0.08
<i>Dicrastylis cordifolia</i>	+	0.4
<i>Dodonaea coriacea</i>	+	0.2
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.12
<i>Eriachne aristidea</i>	+	0.3
<i>Euphorbia australis</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.08
<i>Goodenia microptera</i>	+	0.3
<i>Grevillea wickhamii</i>	+	2
<i>Hakea chordophylla</i>	+	3.5
<i>Hakea lorea</i>	+	2
<i>Hybanthus aurantiacus</i>	+	0.3
<i>Petalostylis labicheoides</i>	+	1.4
<i>Phyllanthus maderaspatensis</i>	+	0.4
<i>Ptilotus helipteroides</i>	+	0.12
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.3
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.7
<i>Senna notabilis</i>	+	0.2
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.15
<i>Sonchus oleraceus</i>	+	0.1
<i>Triodia lanigera</i>	60	0.5
<i>Velleia connata</i>	+	0.3
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.05

URS/IOH Iron Valley

Site IOH14

Location: South of central heritage site
 m **Type:** Q 50 x 50

1st Observation: **Date:** 12/04/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737177 mE **Northing:** 7484129 mN

Habitat: Lower slope of ridge

Soil: Red brown skeletal sandy loam

Rock Type: BIF, weathered with some metamorphic rock

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Hakea lorea* scattered tall shrubs over *Acacia hilliana* scattered low shrubs over *Triodia lanigera*, *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.7
<i>Acacia bivenosa</i>	+	2
<i>Acacia hilliana</i>	1	0.4
<i>Acacia inaequilatera</i>	+	1
<i>Acacia pruinocarpa</i>	+	1.6
<i>Acacia pyrifolia</i>	+	0.7
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.2
<i>Bulbostylis barbata</i>	+	0.12
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.04
<i>Enneapogon polyphyllus</i>	+	0.15
<i>Eriachne lanata</i>	+	0.1
<i>Eriachne mucronata</i>	+	0.45
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	3	4
<i>Fimbristylis simulans</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.08
<i>Goodenia triodiophila</i>	+	0.4
<i>Grevillea wickhamii</i>	+	0.7
<i>Hakea chordophylla</i>	1	4
<i>Paspalidium clementii</i>	+	0.5
<i>Polycarpaea holtzei</i>	+	0.06
<i>Polycarpaea longiflora</i>	+	0.12
<i>Polygala isingii</i>	+	0.03
<i>Polymeria ambigua</i>	+	0.08
<i>Ptilotus calostachyus</i>	+	0.25
<i>Ptilotus exaltatus</i>	+	0.1
<i>Schizachyrium fragile</i>	+	0.45
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.65
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.3
<i>Solanum ellipticum</i>	+	0.3
<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.08
<i>Trianthema glossostigma</i>	+	0.01

<i>Trichodesma zeylanicum</i>	+	0.2
<i>Triodia epactia</i>	5	0.45
<i>Triodia lanigera</i>	18	0.3

URS/IOH Iron Valley

Site IOH15

Location: One kilometre south of camp m **Type:** Q 50 x 50

1st Observation: **Date:** 11/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738583 mE **Northing:** 7484694 mN

Habitat: Crest and upper slopes (east and west) of low hill

Soil: Orange brown sandy loam

Rock Type: Ironstone rocks and some outcropping / shales

Vegetation: *Eucalyptus leucophloia* scattered low trees over *Triodia* sp. Shovelanna Hill hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: excellent

Fire Age: 5 - 10 yrs

Notes: Potential Pebble-Mound Mouse (*Pseudomys chapmani*) mound in quadrat, both likely active, Photos 341 and 342 camera 9 respectively.

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	
<i>Acacia bivenosa</i>	+	3.0
<i>Acacia dictyophleba</i>	+	0.9
<i>Acacia inaequilatera</i>	+	3.0
<i>Amphipogon sericeus</i>	+	0.25
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.25
<i>Bonamia media</i> var. <i>villosa</i>	+	creeper
<i>Calytrix carinata</i>	+	0.7
<i>Cleome viscosa</i>	+	0.15
<i>Eriachne mucronata</i>	+	0.3
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	4.0
<i>Fimbristylis simulans</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.2
<i>Goodenia triodiophila</i>	+	0.3
<i>Grevillea wickhamii</i> subsp. <i>hispidula</i>	+	2.2
<i>Hakea chordophylla</i>	+	2.0
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.15
<i>Indigofera monophylla</i>	+	0.45
<i>Mollugo molluginea</i>	+	0.08
<i>Paraneurachne muelleri</i>	+	0.4
<i>Petalostylis labicheoides</i>	+	1.8
<i>Polycarpaea holtzei</i>	+	0.05
<i>Ptilotus calostachyus</i>	+	0.7
<i>Ptilotus exaltatus</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.9
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	0.8
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.0
<i>Trianthema pilosa</i>	+	0.03
<i>Tribulus suberosus</i>	+	0.7
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	55	0.25
<i>Triodia wiseana</i>	+	0.15

URS/IOH Iron Valley

Site

IOH16

Location: Between heritage areas
m **Type:** Q 50 x 50

1st Observation: **Date:** 12/04/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736907 mE **Northing:** 7484008 mN

Habitat: Mid slope of hill/ridge

Soil: Red brown skeletal loamy sand/sandy loam

Rock Type: BIF outcrop

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Acacia pruinocarpa* scattered tall shrubs over *A. hilliana* low open shrubland over *Triodia lanigera*, *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.65
<i>Acacia bivenosa</i>	+	3
<i>Acacia hilliana</i>	2	0.5
<i>Acacia inaequilatera</i>	+	1
<i>Acacia pruinocarpa</i>	1	2.5
<i>Acacia pyrifolia</i>	+	1.6
<i>Bulbostylis barbata</i>	+	0.06
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.5
<i>Dodonaea coriacea</i>	+	1
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.08
<i>Eriachne lanata</i>	+	0.4
<i>Eriachne mucronata</i>	+	0.15
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	4	4
<i>Fimbristylis simulans</i>	+	0.12
<i>Gomphrena cunninghamii</i>	+	0.08
<i>Goodenia stobbsiana</i>	+	0.06
<i>Goodenia triodiophila</i>	+	0.25
<i>Grevillea wickhamii</i>	+	1.8
<i>Hakea lorea</i>	+	2
<i>Mirbelia viminalis</i>	+	0.7
<i>Paspalidium clementii</i>	+	0.06
<i>Polycarpaea holtzei</i>	+	0.04
<i>Ptilotus calostachyus</i>	+	0.35
<i>Schizachyrium fragile</i>	+	0.25
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.3
<i>Solanum ellipticum</i>	+	0.07
<i>Trichodesma zeylanicum</i>	+	0.18
<i>Triodia epactia</i>	4	0.4
<i>Triodia lanigera</i>	13	0.4

URS/IOH Iron Valley

Site IOH17

Location: 150 metres east of track
 m

Type: Q 50 x 50

1st Observation: **Date:** 11/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738397 mE **Northing:** 7484409 mN

Habitat: Open flat outwash plain

Soil: Red brown sandy loam

Rock Type:

Vegetation: *Triodia lanigera* open hummock grassland and *Paraneurachne muelleri* scattered tussock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes: *Corymbia hamersleyana* and *Acacia ancistrocarpa* adjacent to quadrat

Species List

Name	% Cover	Height
	+	0.4
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.4
<i>Acacia ancistrocarpa</i>	+	1.4
<i>Acacia bivenosa</i>	+	2.1
<i>Acacia dictyophleba</i>	+	0.8
<i>Acacia hilliana</i>	+	0.55
<i>Acacia inaequilatera</i>	+	1.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.2
<i>Aristida inaequiglumis</i>	+	1
<i>Bonamia erecta</i>	+	0.5
<i>Cleome viscosa</i>	+	0.45
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Dicrastylis cordifolia</i>	+	0.7
<i>Dodonaea coriacea</i>	+	0.65
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.04
<i>Enneapogon polyphyllus</i>	+	0.5
<i>Eragrostis eriopoda</i>	+	0.6
<i>Euphorbia australis</i>	+	0.1
<i>Goodenia microptera</i>	+	0.05
<i>Goodenia stobbsiana</i>	+	0.12
<i>Grevillea wickhamii</i>	+	1.3
<i>Haloragis gossei</i>	+	0.15
<i>Heliotropium chrysocarpum</i>	+	0.2
<i>Hybanthus aurantiacus</i>	+	0.45
<i>Mollugo molluginea</i>	+	0.07
<i>Paraneurachne muelleri</i>	1	0.6
<i>Petalostylis labicheoides</i>	+	1.1

<i>Polycarpaea holtzei</i>	+	0.05
<i>Portulaca oleracea</i>	+	0.2
<i>Ptilotus astrolasius</i>	+	0.2
<i>Ptilotus calostachyus</i>	+	0.35
<i>Ptilotus exaltatus</i>	+	0.2
<i>Ptilotus polystachyus</i>	+	0.17
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.1
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	1.1
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1
<i>Senna notabilis</i>	+	0.15
<i>Sida cardiophylla</i>	+	1.2
<i>Solanum sturtianum</i>	+	0.6
<i>Trianthema pilosa</i>	+	0.3
<i>Triodia lanigera</i>	30	0.6
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.04

URS/IOH Iron Valley

Site IOH18

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 12/04/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738500 mE **Northing:** 7483983 mN

Habitat: Mid-lower slope of undulating hills, edge of outcrop with larged boulders on east side of

Soil: Red brown shallow sandy loam

Rock Type: Weathered ironstone

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered tall shrubs over *Triodia epactia*, *T. wiseana* and *T. lanigera* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age:

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.45
<i>Acacia bivenosa</i>	1	4
<i>Acacia hilliana</i>	+	0.45
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.25
<i>Bonamia erecta</i>	+	0.12
<i>Bulbostylis barbata</i>	+	0.1
<i>Corymbia hamersleyana</i>	extern	3.5
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	4.5
<i>Euphorbia australis</i>	+	0.1
<i>Fimbristylis simulans</i>	+	0.12
<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	+	0.12
<i>Goodenia triodiophila</i>	+	0.3
<i>Grevillea wickhamii</i>	+	0.1
<i>Hybanthus aurantiacus</i>	+	0.1
<i>Indigofera monophylla</i>	+	0.16
<i>Polycarpaea corymbosa</i>	+	0.1
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polygala isingii</i>	+	0.04
<i>Ptilotus calostachyus</i>	+	0.18
<i>Ptilotus exaltatus</i>	+	0.08
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.2
<i>Senna notabilis</i>	+	0.1
<i>Trianthema glossostigma</i>	+	0.02
<i>Triodia epactia</i>	16	0.7
<i>Triodia lanigera</i>	1	0.45
<i>Triodia wiseana</i>	16	0.55

URS/IOH Iron Valley

Site IOH19

Location: Southeast of non circular aboriginal heritage area **Type:** Q 50 x 50 m

1st Observation: **Date:** 12/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737762 mE **Northing:** 7483970 mN

Habitat: Open plat plain in between hills to east and west

Soil: Orange brown clayey sand

Rock Type: Ironstone cobbles and rocks

Vegetation: *Bonamia rosea*, *Keraudrenia nephrosperma* low open shrubland over *Triodia epactia*, *T. lanigera* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes: Vegetation adjacent to quadrat disturbed by fire and drilling

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	
<i>Acacia ancistrocarpa</i>	+	0.5
<i>Acacia citrinoviridis</i>	+	0.75
<i>Acacia inaequilatera</i>	+	0.8
<i>Acacia pachyacra</i>	+	0.15
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.5
<i>Amphipogon sericeus</i>	+	0.25
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.2
<i>Bonamia erecta</i>	2	0.5
<i>Bulbostylis barbata</i>	+	0.07
<i>Cleome viscosa</i>	+	0.7
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	1.2
<i>Corymbia hamersleyana</i>	+	4.5
<i>Dicrastylis cordifolia</i>	+	0.8
<i>Dodonaea coriacea</i>	+	0.5
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eragrostis eriopoda</i>	+	0.3
<i>Eriachne aristidea</i>	+	0.25
<i>Eriachne pulchella</i>	+	0.2
<i>Eucalyptus gamophylla</i>	+	1.5
<i>Euphorbia australis</i>	+	0.05
<i>Fimbristylis simulans</i>	+	0.08
<i>Goodenia microptera</i>	+	0.07

<i>Gossypium australe</i>	+	0.5
<i>Grevillea wickhamii</i>	+	1
<i>Hakea chordophylla</i>	+	2.0
<i>Hakea lorea</i>	+	0.75
<i>Heliotropium chrysocarpum</i>	+	0.15
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.3
<i>Hibiscus sturtii</i> var. <i>platychlamys</i>	+	0.25
<i>Hybanthus aurantiacus</i>	+	0.3
<i>Indigofera monophylla</i>	+	0.4
<i>Keraudrenia nephrosperma</i>	1	0.5
<i>Mollugo molluginea</i>	+	0.1
<i>Paraneurachne muelleri</i>	+	0.4
<i>Petalostylis labicheoides</i>	+	1.3
<i>Phyllanthus maderaspatensis</i>		
<i>Polycarpaea corymbosa</i>	+	0.1
<i>Polycarpaea holtzei</i>	+	0.1
<i>Ptilotus calostachyus</i>	+	0.4
<i>Ptilotus exaltatus</i>	+	0.5
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.25
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.5
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	0.1
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.2
<i>Senna notabilis</i>	+	0.07
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.35
<i>Solanum phlomoides</i>	+	0.2
<i>Themeda triandra</i>	+	0.8
<i>Trianthema glossostigma</i>	+	prostrate
<i>Trianthema pilosa</i>	+	0.1
<i>Tribulopsis angustifolia</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.3
<i>Triodia brizoides</i>	2	0.3
<i>Triodia epactia</i>	8	0.4
<i>Triodia lanigera</i>	+	0.3
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.08

URS/IOH Iron Valley

Site

IOH20

Location:

m

Type: Q

50 x 50

1st Observation: Date: 12/08/2011 Described by: WT/NK

Seasonal Conditions: E

2nd Observation: Date: 1/08/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 738277 mE

Northing: 7484145 mN

Habitat: Pediment - depression

Soil: Red brown shallow sandy loam

Rock Type: Weathered ironstone or basalt

Vegetation: *Grevillea wickhamii* scattered tall shrubs over *Acacia ancistrocarpa* scattered shrubs over *Triodia wiseana*, *T. lanigera* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.75
<i>Acacia ancistrocarpa</i>	1	2
<i>Acacia bivenosa</i>	+	4
<i>Acacia citrinoviridis</i>	+	4.2
<i>Acacia hilliana</i>	+	0.75
<i>Acacia inaequilatera</i>	+	2.2
<i>Acacia pyrifolia</i>	+	1.2
<i>Amphipogon sericeus</i>	+	0.18
<i>Aristida contorta</i>	+	0.35
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Bonamia erecta</i>	+	0.2
<i>Bonamia rosea</i>	+	1.2
<i>Bulbostylis barbata</i>	+	0.08
<i>Cleome viscosa</i>	+	0.2
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	1.1
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.12
<i>Eragrostis eriopoda</i>	+	0.5
<i>Eriachne mucronata</i>	+	0.45
<i>Eriachne pulchella</i>	+	0.15
<i>Euphorbia australis</i>	+	0.15
<i>Goodenia microptera</i>	+	0.3
<i>Goodenia muelleriana</i>	+	0.3
<i>Goodenia stobbsiana</i>	+	0.5
<i>Grevillea wickhamii</i>	1	4

<i>Hakea chordophylla</i>	+	2.5
<i>Hakea lorea</i>	+	1.4
<i>Heliotropium chrysocarpum</i>	+	0.15
<i>Hybanthus aurantiacus</i>	+	0.4
<i>Indigofera monophylla</i>	+	0.35
<i>Mollugo molluginea</i>	+	0.1
<i>Paraneurachne muelleri</i>	+	0.4
<i>Petalostylis labicheoides</i>	+	1.5
<i>Polycarpaea corymbosa</i>	+	0.1
<i>Polycarpaea holtzei</i>	+	0.05
<i>Polygala isingii</i>	+	0.04
<i>Portulaca oleracea</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.3
<i>Ptilotus calostachyus</i>	+	0.1
<i>Ptilotus exaltatus</i>	+	0.42
<i>Ptilotus obovatus</i>	+	0.18
<i>Schizachyrium fragile</i>	+	0.4
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.5
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.6
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.6
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	0.8
<i>Senna notabilis</i>	+	0.12
<i>Sida arenicola</i>	+	0.2
<i>Solanum lasiophyllum</i>	+	0.5
<i>Trianthema glossostigma</i>	+	0.04
<i>Tribulus hirsutus</i>	+	0.1
<i>Trichodesma zeylanicum</i>	+	0.15
<i>Triodia lanigera</i>	1	0.3
<i>Triodia schinzii</i>	+	0.4
<i>Triodia wiseana</i>	8	0.6
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.08

URS/IOH Iron Valley

Site IOH21

Location: East of track south from camp
m
Type: Q 50 x 50

1st Observation: **Date:** 12/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E
2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737959 mE **Northing:** 7483841 mN

Habitat: Lower and middle slope of northwest facing simple slope
Soil: Orange brown clayey sand
Rock Type: Ironstone rocks and outcrops
Vegetation: *Acacia hilliona* shrubland over *Triodia* sp. Shovelanna Hill and *T. wiseana* open hummock grassland.

Vegetation Code:
Vegetation Desc:
Veg Condition: Excellent
Fire Age: 2 -5 yrs
Notes: Pebble-Mound Mouse (*Pseudomys chapmani*) mound, very likely active, in southeast of

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.4
<i>Acacia ancistrocarpa</i>	extern	0.8
<i>Acacia bivenosa</i>	+	
<i>Acacia citrinoviridis</i>	+	0.45
<i>Acacia dictyophleba</i>	+	0.45
<i>Acacia hilliona</i>	20	0.5
<i>Acacia inaequilatera</i>	+	1.8
<i>Acacia pachyacra</i>	+	0.45
<i>Acacia pruinocarpa</i>	+	0.3
<i>Amphipogon sericeus</i>	+	0.25
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.25
<i>Bonamia media</i> var. <i>villosa</i>	+	0.07
<i>Bulbostylis barbata</i>	+	0.06
<i>Calytrix carinata</i>	+	0.15
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.7
<i>Corymbia hamersleyana</i>	+	0.15
<i>Dodonaea coriacea</i>	+	0.7
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eriachne lanata</i>	+	0.25
<i>Eriachne mucronata</i>	+	0.5
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	5.0
<i>Fimbristylis simulans</i>	+	0.17
<i>Gompholobium polyzygum</i>	extern	0.4
<i>Gomphrena kanisii</i>	+	0.35
<i>Goodenia stobbsiana</i>		

<i>Goodenia triodiophila</i>	+	0.2
<i>Grevillea wickhamii</i>	+	
<i>Hakea lorea</i>	+	2.2
<i>Heliotropium chrysocarpum</i>	+	0.25
<i>Indigofera monophylla</i>	+	0.15
<i>Paraneurachne muelleri</i>	+	0.4
<i>Phyllanthus maderaspatensis</i>	+	0.05
<i>Polycarpaea corymbosa</i>	+	0.15
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polycarpaea longiflora</i>	+	0.25
<i>Portulaca oleracea</i>	+	prostrate
<i>Ptilotus calostachyus</i>	+	1.1
<i>Ptilotus exaltatus</i>	+	0.25
<i>Ptilotus polystachyus</i>	+	0.25
<i>Schizachyrium fragile</i>	+	0.12
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.3
<i>Senna ferraria</i>	+	1.7
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	0.4
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.4
<i>Sida arenicola</i>	+	0.6
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	
<i>Solanum phlomoides</i>	+	0.17
<i>Sporobolus australasicus</i>	+	0.08
<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.08
<i>Tephrosia supina</i>	+	0.17
<i>Trianthema glossostigma</i>	+	prostrate
<i>Trianthema pilosa</i>	+	prostrate
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	10	0.2
<i>Triodia wiseana</i>	10	0.2

URS/IOH Iron Valley

Site

IOH22

Location: South of circular heritage area
m **Type:** Q 50 x 50

1st Observation: **Date:** 12/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737086 mE **Northing:** 7483390 mN

Habitat: Mid to lower slope with exposed bedrock

Soil: Red brown skeletal to shallow sandy loam

Rock Type: BIF

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia lanigera* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia bivenosa</i>	+	4.0
<i>Acacia inaequilatera</i>	+	2.2
<i>Acacia pachyacra</i>	+	0.7
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.12
<i>Corymbia hamersleyana</i>	+	2.5
<i>Dicrastylis cordifolia</i>	+	0.6
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.07
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	2	5.0
<i>Fimbristylis simulans</i>	+	0.15
<i>Goodenia stobbsiana</i>	+	0.3
<i>Goodenia triodiophila</i>	+	0.35
<i>Grevillea wickhamii</i>	+	0.06
<i>Hakea chordophylla</i>	+	3.5
<i>Oldenlandia crouchiana</i>	+	0.12
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.4
<i>Ptilotus fusiformis</i>	+	0.35
<i>Schizachyrium fragile</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.5
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.2
<i>Trianthema glossostigma</i>	+	0.03
<i>Triodia epactia</i>	+	0.45
<i>Triodia lanigera</i>	13	0.45
<i>Triodia wiseana</i>	+	0.2

URS/IOH Iron Valley

Site

IOH23

Location: West of main track south of camp
m **Type:** Q 50 x 50

1st Observation: **Date:** 12/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737732 mE **Northing:** 7483784 mN

Habitat: Open flat vegetated plain with hills to east and west

Soil: Red brown sandy loam

Rock Type:

Vegetation: *Petalostylis labicheoides* scattered shrubs over *Sida* sp. Pilbara scattered shrubs over *Bonamia erecta* low open shrubland over *Triodia lanigera* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.4
<i>Acacia ancistrocarpa</i>	+	0.7
<i>Acacia pachyacra</i>	+	0.5
<i>Acacia pyrifolia</i>	+	0.9
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Bonamia erecta</i>	2	0.4
<i>Chrysopogon fallax</i>	+	1.4
<i>Cleome viscosa</i>	+	0.6
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.15
<i>Corchorus tectus</i>	+	0.5
<i>Dicrastylis cordifolia</i>	+	0.6
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eragrostis cumingii</i>	+	0.1
<i>Eragrostis eriopoda</i>	+	0.5
<i>Eriachne aristidea</i>	+	0.35
<i>Euphorbia australis</i>	+	0.08
<i>Fimbristylis simulans</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia microptera</i>	+	0.05
<i>Grevillea wickhamii</i>	+	1.2
<i>Haloragis gossei</i>	+	0.25
<i>Heliotropium chrysocarpum</i>	+	0.25
<i>Hibiscus sturtii</i> var. <i>platyclamys</i>	+	0.35
<i>Hybanthus aurantiacus</i>	+	0.2

<i>Indigofera monophylla</i>	+	0.4
<i>Paraneurachne muelleri</i>	+	0.4
<i>Petalostylis labicheoides</i>	1	1.2
<i>Phyllanthus maderaspatensis</i>	+	0.1
<i>Polycarpaea corymbosa</i>	+	0.12
<i>Polycarpaea holtzei</i>	+	0.05
<i>Portulaca oleracea</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.1
<i>Ptilotus exaltatus</i>	+	0.8
<i>Ptilotus polystachyus</i>	+	0.75
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.0
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.8
<i>Senna curvistyla</i>	+	0.1
<i>Senna notabilis</i>	+	0.3
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	1	1.2
<i>Solanum sturtianum</i>	+	0.8
<i>Trianthema glossostigma</i>	+	0.04
<i>Trianthema pilosa</i>	+	0.15
<i>Tribulopsis angustifolia</i>	+	prostrate
<i>Tribulus macrocarpus</i>	+	prostrate
<i>Triodia lanigera</i>	5	0.4
<i>Velleia connata</i>	+	0.08
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

URS/IOH Iron Valley

Site IOH24

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 13/04/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737235 mE **Northing:** 7483166 mN

Habitat: Lower slope/pediments

Soil: Red brown shallow/deep colluvial flat/sandy loam

Rock Type: Ironstone gravel

Vegetation: *Eucalyptus gamophylla* scattered low trees over *Triodia lanigera*, *T. epactia* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Good

Fire Age: No fire evident

Notes: Lots of dead stumps and shrubs, possibly grazed.

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.55
<i>Acacia ancistrocarpa</i>	+	2.2
<i>Acacia bivenosa</i>	+	2.5
<i>Acacia citrinoviridis</i>	+	1.4
<i>Acacia inaequilatera</i>	+	2.5
<i>Acacia pachyacra</i>	+	2.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Atalaya hemiglauca</i>	+	2.5
<i>Boerhavia coccinea</i>	+	0.06
<i>Bulbostylis barbata</i>	+	0.08
<i>Cenchrus ciliaris</i>	+	0.4
<i>Cleome viscosa</i>	+	0.3
<i>Corchorus tectus</i>	+	0.3
<i>Cucumis maderaspatanus</i>	+	0.12
<i>Cymbopogon obtectus</i>	+	0.7
<i>Duperreya commixta</i>	+	1.0
<i>Dysphania kalpari</i>	+	0.06
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.08
<i>Enneapogon polyphyllus</i>	+	0.5
<i>Eragrostis eriopoda</i>	+	0.4
<i>Eremophila longifolia</i>	+	2.0
<i>Eriachne mucronata</i>	+	0.25
<i>Eucalyptus gamophylla</i>	1	4.0
<i>Euphorbia australis</i>	+	0.15

<i>Fimbristylis simulans</i>	+	0.12
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.25
<i>Hakea chordophylla</i>	+	4.0
<i>Haloragis gossei</i>	+	0.12
<i>Heliotropium chrysocarpum</i>	+	0.1
<i>Heliotropium cunninghamii</i>	+	0.12
<i>Hibiscus leptocladus</i>	extern	0.3
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.6
<i>Hybanthus aurantiacus</i>	+	0.4
<i>Indigofera monophylla</i>	+	0.35
<i>Mirbelia viminalis</i>	+	.5
<i>Mollugo molluginea</i>	+	0.08
<i>Paraneurachne muelleri</i>	+	0.2
<i>Perotis rara</i>	+	0.1
<i>Petalostylis labicheoides</i>	+	1.3
<i>Polycarpaea corymbosa</i>	+	0.15
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polycarpaea longiflora</i>	+	0.2
<i>Portulaca oleracea</i>	+	0.04
<i>Pterocaulon sphaeranthoides</i>	+	0.1
<i>Ptilotus calostachyus</i>	+	0.75
<i>Ptilotus exaltatus</i>	+	0.6
<i>Ptilotus obovatus</i>	+	0.3
<i>Ptilotus polystachyus</i>	+	0.5
<i>Salsola tragus</i>	+	0.25
<i>Santalum lanceolatum</i>	+	2.5
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.75
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.8
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.0
<i>Senna notabilis</i>	+	0.25
<i>Sida cardiophylla</i>	+	0.65
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.3
<i>Solanum lasiophyllum</i>	+	0.5
<i>Sporobolus australasicus</i>	+	0.1
<i>Trianthema pilosa</i>	+	0.06
<i>Tribulopsis angustifolia</i>	+	0.03
<i>Tribulus macrocarpus</i>	+	0.05
<i>Trichodesma zeylanicum</i>	+	0.1
<i>Triodia epactia</i>	2	0.7
<i>Triodia lanigera</i>	3	0.4
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.08

URS/IOH Iron Valley

Site IOH25

Location: West of main track up Lookout Hill, west of 1st m
 aboriginal heritage area

Type: Q 50 x 50

1st Observation: **Date:** 13/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 31/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737286 mE **Northing:** 7484833 mN

Habitat: Upper slope of northeast facing tall hill

Soil: Orange brown sandy loam

Rock Type: Ironstone rocks, shales and exposed bedrock

Vegetation: *Acacia hilliana* and *A. spondylophylla* low open shrubland over *Triodia* sp. Shovelanna Hill hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: *Pseudomys chapmani* (Pebble-Mound Mouse) mound in quadrat, possibly active.

Species List

Name	% Cover	Height
<i>Acacia hilliana</i>	1	0.5
<i>Acacia maitlandii</i>	+	1.3
<i>Acacia monticola</i>	+	2.1
<i>Acacia spondylophylla</i>	1	0.6
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.1
<i>Amyema gibberula</i> var. <i>gibberula</i>	+	0.2
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.1
<i>Eriachne lanata</i>	+	0.5
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus gamophylla</i>	+	2.5
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	5.0
<i>Fimbristylis simulans</i>	+	0.15
<i>Goodenia stobbsiana</i>	+	0.1
<i>Grevillea wickhamii</i>	+	2.5
<i>Hakea lorea</i>	+	2.6
<i>Haloragis gossei</i>	+	0.2
<i>Hybanthus aurantiacus</i>	+	0.3
<i>Petalostylis labicheoides</i>	+	2.5
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.18
<i>Ptilotus calostachyus</i>	+	0.45
<i>Schizachyrium fragile</i>	+	0.55
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.45
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.6
<i>Senna notabilis</i>	+	0.15
<i>Trianthema glossostigma</i>	+	0.02
<i>Triodia epactia</i>	+	0.45
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	40	0.3

URS/IOH Iron Valley

Site IOH26

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 12/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737510 mE **Northing:** 7483245 mN

Habitat: Upper slope of outcrop, bed rock exposed on eastern side

Soil: Red brown shallow loamy sand

Rock Type: Weathered ironstone, not laminar

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia hilliana* low open shrubland over *Triodia lanigera*, *T. wiseana*, *T. epactia* very open hummock grassland

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.3
<i>Acacia ancistrocarpa</i>	+	0.45
<i>Acacia bivenosa</i>	+	2.0
<i>Acacia citrinoviridis</i>	+	0.4
<i>Acacia hilliana</i>	2	0.4
<i>Acacia inaequilatera</i>	+	2.5
<i>Acacia pachyacra</i>	+	0.35
<i>Acacia pruinocarpa</i>	+	0.45
<i>Aristida contorta</i>	+	0.25
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Calytrix carinata</i>	+	0.3
<i>Cleome viscosa</i>	+	0.4
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.4
<i>Dampiera candidans</i>	+	0.25
<i>Dicrastylis cordifolia</i>	+	0.4
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Enchylaena tomentosa</i>	+	0.2
<i>Eragrostis eriopoda</i>	+	0.3
<i>Eriachne aristidea</i>	+	0.25
<i>Eriachne mucronata</i>	+	0.2
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	4.5
<i>Fimbristylis simulans</i>	+	0.12
<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	+	0.12
<i>Goodenia muelleriana</i>	+	0.25
<i>Goodenia stobbsiana</i>	+	0.25

<i>Goodenia triodiophila</i>	+	0.25
<i>Grevillea wickhamii</i>	+	2.0
<i>Hakea lorea</i>	+	3.0
<i>Heliotropium chrysocarpum</i>	+	0.18
<i>Heliotropium cunninghamii</i>	+	0.18
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.22
<i>Indigofera monophylla</i>	+	0.3
<i>Paraneurachne muelleri</i>	+	0.5
<i>Polycarpaea corymbosa</i>	+	0.1
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.25
<i>Ptilotus calostachyus</i>	+	0.6
<i>Ptilotus exaltatus</i>	+	0.65
<i>Ptilotus obovatus</i>	+	0.3
<i>Schizachyrium fragile</i>	+	0.4
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.6
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.3
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.0
<i>Sida arenicola</i>	+	0.3
<i>Sida cardiophylla</i>	+	0.25
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.35
<i>Trianthema glossostigma</i>	+	0.03
<i>Triodia lanigera</i>	3	0.25
<i>Triodia</i> sp (<i>epactia/pungens</i>)	1	0.5
<i>Triodia wiseana</i>	3	0.3

URS/IOH Iron Valley

Site IOH27

Location: West of main track, up lookout hill, west of first m
 aboriginal heritage area

Type: Q 50 x 50

1st Observation: **Date:** 13/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 31/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737026 mE **Northing:** 7484883 mN

Habitat: Crest of northeast facing tall hill

Soil: Orange brown sandy loam

Rock Type: Ironstone rock, shales of exposed bedrock

Vegetation: *Grevillea wickhamii* and *Hakea lorea* scattered tall shrubs over *Acacia maitlandii* scattered low shrubs over *Triodia* sp. Shovelanna Hill hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Olive/brown snake sighted within quadrat

Species List

Name	% Cover	Height
<i>Acacia hilliana</i>	+	0.3
<i>Acacia maitlandii</i>	+	3.0
<i>Acacia spondylophylla</i>	+	0.9
<i>Acacia synchronicia</i>	extern	2.0
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Calytrix carinata</i>	+	0.4
<i>Cleome viscosa</i>	+	0.4
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.25
<i>Eriachne mucronata</i>	+	0.45
<i>Eriachne pulchella</i>	+	0.1
<i>Fimbristylis simulans</i>	+	0.2
<i>Goodenia stobbsiana</i>	+	0.15
<i>Grevillea wickhamii</i>	+	3.0
<i>Hakea lorea</i>	+	3.5
<i>Petalostylis labicheoides</i>	+	2.5
<i>Phyllanthus maderaspatensis</i>	+	0.03
<i>Polycarpaea holtzei</i>	+	0.05
<i>Ptilotus calostachyus</i>	+	0.5
<i>Schizachyrium fragile</i>	+	0.5
<i>Trianthema glossostigma</i>	+	prostrate
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	35	0.4
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.15

URS/IOH Iron Valley

Site IOH28

Location: East side of ridge
 m **Type:** Q 50 x 50

1st Observation: **Date:** 12/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737710 mE **Northing:** 7483130 mN

Habitat: Flat outwash plain on east side of rock outcrop

Soil: Red brown shallow sandy loam

Rock Type: Mixed metamorphic sediments and weathered ironstone

Vegetation: *Petalostylis cassioides* and *Sida cardiophylla* open shrubland over *Triodia lanigera* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	extern	0.45
<i>Acacia citrinoviridis</i>	+	1.0
<i>Acacia inaequilatera</i>	+	1.5
<i>Acacia pruinocarpa</i>	+	1.0
<i>Acacia tumida</i>	+	0.55
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.6
<i>Bonamia erecta</i>	+	0.4
<i>Cleome viscosa</i>	+	0.5
<i>Corchorus tectus</i>	+	0.5
<i>Corymbia hamersleyana</i>	+	1.3
<i>Dicrastylis cordifolia</i>	+	0.6
<i>Dodonaea coriacea</i>	+	0.75
<i>Dysphania kalpari</i>	+	0.06
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eragrostis eriopoda</i>	+	0.6
<i>Eriachne mucronata</i>	+	0.25
<i>Eucalyptus gamophylla</i>	+	2.5
<i>Euphorbia australis</i>	+	0.1
<i>Euphorbia biconvexa</i>	+	0.25
<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	+	0.25
<i>Goodenia triodiophila</i>	+	0.2
<i>Grevillea wickhamii</i>	+	0.8
<i>Hakea lorea</i>	+	0.5
<i>Heliotropium cunninghamii</i>	+	0.18

<i>Indigofera georgei</i>	+	0.07
<i>Indigofera monophylla</i>	+	0.35
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	+	0.45
<i>Paraneurachne muelleri</i>	+	0.5
<i>Petalostylis labicheoides</i>	1	1.5
<i>Ptilotus auriculifolius</i>	+	0.3
<i>Ptilotus exaltatus</i>	+	0.6
<i>Ptilotus obovatus</i>	+	0.5
<i>Santalum lanceolatum</i>	+	1.8
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.12
<i>Senna notabilis</i>	+	1.5
<i>Sida cardiophylla</i>	1	1.3
<i>Trianthema pilosa</i>	+	0.05
<i>Tribulus hirsutus</i>	+	0.04
<i>Triodia epactia</i>	+	0.6
<i>Triodia lanigera</i>	22	0.6

URS/IOH Iron Valley

Site IOH29r

Location: Minor creekline west of aboriginal heritage area **Type:** R
1st Observation: **Date:** 12/08/2011 **Described by:** NC/CW **Seasonal Conditions:** E
2nd Observation: **Date:** 30/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E
MGA Zone: 50 **Easting:** 737163 mE **Northing:** 7484256 mN
Habitat: Minor creekline between tall hills, flows approximately east - west
Soil: Brown sand covered in thick layer of iron stone shales
Rock Type: Ironstone scree/shales
Vegetation: *Acacia tumida* low open forest over *Triodia epactia* very open hummock grassland.
Vegetation Code:
Vegetation Desc:
Veg Condition: Excellent
Fire Age: 5 - 10 years
Notes:

Species List

Name	% Cover	Height
<i>Abutilon dioicum</i>	+	0.9
<i>Acacia pyrifolia</i>	+	2.0
<i>Acacia tumida</i>	65	3.5
<i>Amaranthus undulatus</i>	+	0.3
<i>Atalaya hemiglauca</i>	+	1.5
<i>Boerhavia coccinea</i>	+	0.1
<i>Cleome viscosa</i>	+	0.5
<i>Clerodendrum floribundum</i> var. <i>floribundum</i>	+	2.0
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Corchorus tridens</i>	+	0.05
<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	+	0.4
<i>Cymbopogon obtectus</i>	+	0.6
<i>Duperreya commixta</i>	+	2.0
<i>Enneapogon lindleyanus</i>	+	0.5
<i>Eriachne mucronata</i>	+	0.6
<i>Euphorbia biconvexa</i>	+	0.35
<i>Fimbristylis simulans</i>	+	0.1
<i>Gomphrena cunninghamii</i>	+	0.08
<i>Gossypium robinsonii</i>	+	2.2
<i>Grevillea wickhamii</i>	+	1.7
<i>Hybanthus aurantiacus</i>	+	0.25
<i>Indigofera monophylla</i>	+	0.5
<i>Ipomoea polymorpha</i>	+	prostrate
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	climber
<i>Paraneurachne muelleri</i>	+	0.5
<i>Perotis rara</i>	+	0.1
<i>Petalostylis labicheoides</i>	+	2.1

<i>Phyllanthus maderaspatensis</i>	+	0.1
<i>Polycarpaea longiflora</i>	+	0.15
<i>Ptilotus fusiformis</i>	+	0.4
<i>Rhynchosia minima</i>	+	climber
<i>Schizachyrium fragile</i>	+	0.4
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.4
<i>Senna notabilis</i>	+	0.15
<i>Sida</i> sp. Articulation below (A.A. Mitchell PRP 1605)	+	0.4
<i>Stylobasium spathulatum</i>	+	2.2
<i>Tephrosia densa</i>	+	0.65
<i>Tephrosia rosea</i> var. <i>glabrior</i>	+	0.4
<i>Themeda triandra</i>	+	0.7
<i>Trachymene oleracea</i>	+	0.4
<i>Trichodesma zeylanicum</i>	+	0.4
<i>Triodia epactia</i>	5	0.45

URS/IOH Iron Valley

Site IOH30

Location: Proposed infrastructure site **Type:** Q 50 x 50 m

1st Observation: **Date:** 12/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736073 mE **Northing:** 7483454 mN

Habitat: Upper slope of hill on exposed seam of BIF bedrock

Soil: Red brown skeletal sandy loam

Rock Type: BIF

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia lanigera* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.35
<i>Acacia bivenosa</i>	+	2.2
<i>Acacia dictyophleba</i>	+	0.5
<i>Acacia pyrifolia</i>	+	1.4
<i>Acacia spondylophylla</i>	+	0.4
<i>Amphipogon sericeus</i>	+	0.35
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Cucumis maderaspatanus</i>	+	0.3
<i>Dampiera candidans</i>	+	0.35
<i>Dicrastylis cordifolia</i>	+	0.75
<i>Duperreya commixta</i>	+	climber
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	5.0
<i>Fimbristylis simulans</i>	+	0.12
<i>Goodenia microptera</i>	+	0.2
<i>Goodenia stobbsiana</i>	+	0.2
<i>Goodenia triodiophila</i>	+	0.3
<i>Hakea lorea</i>	+	3.5
<i>Haloragis gossei</i>	+	0.12
<i>Keraudrenia nephrosperma</i>	+	0.45
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.55
<i>Ptilotus exaltatus</i>	+	0.55
<i>Schizachyrium fragile</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.4
<i>Senna ferraria</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.0
<i>Sida cardiophylla</i>	+	0.45
<i>Solanum lasiophyllum</i>	+	0.4
<i>Tribulus suberosus</i>	+	0.6
<i>Triodia lanigera</i>	10	0.3

URS/IOH Iron Valley

Site

IOH31

Location: Western edge of survey area
m

Type: Q

50 x 50

1st Observation: **Date:** 13/04/2011 **Described by:** NC/CW**Seasonal Conditions:** E**2nd Observation:** **Date:** 31/07/2011 **Described by:** WTTDO**Seasonal Conditions:** E**MGA Zone:** 50 **Easting:** 736922 mE**Northing:** 7484698 mN**Habitat:** Crest and upper western slope of very high hill**Soil:** Red brown sandy loam**Rock Type:** Ironstone shales and exposed bedrock**Vegetation:** *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia* sp. Shovelanna Hill and *T. wiseana* hummock grassland.**Vegetation Code:****Vegetation Desc:****Veg Condition:** Excellent**Fire Age:** 5 - 10 yrs**Notes:****Species List**

Name	% Cover	Height
<i>Acacia hamersleyensis</i>	+	2.5
<i>Acacia hilliania</i>	+	0.5
<i>Acacia monticola</i>	+	1.6
<i>Acacia pruinocarpa</i>	+	1.5
<i>Acacia pyrifolia</i>	+	1.8
<i>Acacia spondylophylla</i>	+	0.9
<i>Acacia tumida</i>	+	2.5
<i>Bulbostylis barbata</i>	+	
<i>Cleome viscosa</i>	+	0.4
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.1
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	
<i>Eriachne lanata</i>	+	0.6
<i>Eriachne mucronata</i>	+	0.3
<i>Eriachne pulchella</i>	+	0.2
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	4.5
<i>Fimbristylis simulans</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia triodiophila</i>	+	0.1
<i>Gossypium robinsonii</i>	+	0.1
<i>Grevillea wickhamii</i>	+	3.0
<i>Hakea lorea</i>	+	3.5
<i>Petalostylis labicheoides</i>	+	1.2
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polycarpaea longiflora</i>	+	0.15
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	2.0
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	30	0.5
<i>Triodia wiseana</i>	25	0.5

URS/IOH Iron Valley

Site IOH32

Location: Proposed infrastructure area in northwest of survey area
m
Type: Q 50 x 50

1st Observation: **Date:** 14/04/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 735963 mE **Northing:** 7483547 mN

Habitat: Mid hillslope on large exposed bedrock seam

Soil: Red brown skeletal loamy sand

Rock Type: Weathered ironstone/BIF

Vegetation: *Grevillea wickhamii* scattered tall shrubs over *Triodia basedowii* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 years

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.2
<i>Acacia inaequilatera</i>	+	1.3
<i>Acacia pyrifolia</i>	+	0.45
<i>Amphipogon sericeus</i>	+	0.22
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Bonamia media</i> var. <i>villosa</i>	+	0.06
<i>Bulbostylis barbata</i>	+	0.2
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.5
<i>Dampiera candidans</i>	+	0.6
<i>Dicrastylis cordifolia</i>	+	0.55
<i>Dysphania kalpari</i>	+	0.06
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.18
<i>Eriachne aristidea</i>	+	0.3
<i>Eriachne mucronata</i>	+	0.25
<i>Eriachne pulchella</i>	+	0.25
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.05
<i>Fimbristylis simulans</i>	+	0.5
<i>Gomphrena cunninghamii</i>	+	0.14
<i>Goodenia stobbsiana</i>	+	0.2
<i>Goodenia triodiophila</i>	+	0.2
<i>Grevillea wickhamii</i>	1	3.0
<i>Hakea lorea</i>	+	0.35
<i>Paraneurachne muelleri</i>	+	0.55
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus aervoides</i>	+	0.06
<i>Ptilotus astrolasius</i>	+	0.2
<i>Ptilotus auriculifolius</i>	+	0.22
<i>Ptilotus calostachyus</i>	+	1.2
<i>Ptilotus clementii</i>	+	
<i>Ptilotus exaltatus</i>	+	0.35
<i>Ptilotus fusiformis</i>	+	0.2
<i>Ptilotus polystachyus</i>	+	0.3
<i>Schizachyrium fragile</i>	+	0.25

<i>Senna ferraria</i>	+	0.8
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.1
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	0.75
<i>Sida cardiophylla</i>	+	0.5
<i>Solanum horridum</i>	+	0.1
<i>Solanum phlomoides</i>	+	0.35
<i>Sporobolus australasicus</i>	+	0.1
<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.04
<i>Tribulus hirsutus</i>	+	0.08
<i>Triodia basedowii</i>	2	0.25
<i>Triodia epactia</i>	+	0.3

URS/IOH Iron Valley

Site

IOH33

Location: Creek/fluviol outflow southwest of camp and west
m of track **Type:** Q 50 x 50

1st Observation: **Date:** 14/04/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736258 mE **Northing:** 7482573 mN

Habitat: Vegetated floodplain between and creek and high hills to the north

Soil: Red brown sandy clay

Rock Type: Ironstone shales

Vegetation: *Acacia pyrifolia* scattered shrubs over **Cenchrus ciliaris* closed tussock grassland with *Triodia epactia* scattered hummock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Poor/partially degraded

Fire Age: > 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia arida</i>	+	2.0
<i>Acacia pyrifolia</i>	1	1.7
<i>Acacia tumida</i>	+	2.5
<i>Amaranthus undulatus</i>	+	0.2
<i>Atalaya hemiglauca</i>	+	1.5
<i>Boerhavia coccinea</i>	+	prostrate
<i>Cenchrus ciliaris</i>	80	1.0
<i>Cenchrus setiger</i>	30	1.0
<i>Cleome viscosa</i>	+	0.6
<i>Corchorus crozophorifolius</i>	+	1.2
<i>Corchorus tridens</i>	+	0.1
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dysphania kalpari</i>	+	0.05
<i>Eragrostis cumingii</i>	+	0.2
<i>Eremophila longifolia</i>	+	1.2
<i>Eriachne mucronata</i>	+	0.35
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus victrix</i>	+	8.5
<i>Euphorbia biconvexa</i>	+	0.5
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	+	0.25
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.25
<i>Gossypium robinsonii</i>	+	2.5
<i>Grevillea wickhamii</i>	+	3.0
<i>Hybanthus aurantiacus</i>	+	0.3

<i>Indigofera georgei</i>	+	0.2
<i>Ipomoea polymorpha</i>	+	prostrate
<i>Mollugo molluginea</i>	+	0.1
<i>Notoleptopus decaisnei</i>	+	0.6
<i>Perotis rara</i>	+	0.15
<i>Polycarpaea corymbosa</i>	+	0.25
<i>Polycarpaea longiflora</i>	+	0.35
<i>Pterocaulon sphaeranthoides</i>	+	0.1
<i>Ptilotus exaltatus</i>	+	0.05
<i>Ptilotus obovatus</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.0
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.9
<i>Senna notabilis</i>	+	0.15
<i>Solanum lasiophyllum</i>	+	0.6
<i>Solanum phlomoides</i>	+	0.5
<i>Tephrosia densa</i>	+	0.45
<i>Tephrosia rosea</i>	+	0.3
<i>Trichodesma zeylanicum</i>	+	0.3
<i>Triodia epactia</i>	2	0.45

URS/IOH Iron Valley

Site IOH34

Location: Proposed infrastructure area within tenement. **Type:** Q 50 x 50 m

1st Observation: **Date:** 16/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736235 mE **Northing:** 7483029 mN

Habitat: Midslope

Soil: Red brown shallow and skeletal loamy sand

Rock Type: Weathered ironstone

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia basedowii* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.45
<i>Acacia hilliana</i>	+	0.45
<i>Acacia pruinocarpa</i>	+	1.2
<i>Amphipogon sericeus</i>	+	0.3
<i>Amyema miquelii</i>	+	2.0
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.22
<i>Cassutha capillaris</i>	+	0.05
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.3
<i>Cucumis maderaspatanus</i>	+	0.18
<i>Dodonaea coriacea</i>	+	0.6
<i>Dysphania kalpari</i>	+	0.04
<i>Enneapogon polyphyllus</i>	+	0.3
<i>Eremophila longifolia</i>	+	1.2
<i>Eriachne mucronata</i>	+	0.35
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	2	7.0
<i>Fimbristylis simulans</i>	+	0.18
<i>Goodenia stobbsiana</i>	+	0.2
<i>Goodenia triodiophila</i>	+	0.22
<i>Hakea lorea</i>	+	4.0
<i>Mirbelia viminalis</i>	+	0.65
<i>Polycarpha holtzei</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.5
<i>Ptilotus exaltatus</i>	+	0.06
<i>Ptilotus obovatus</i>	extern	0.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.0
<i>Triodia basedowii</i>	8	0.4
<i>Triodia epactia</i>	+	0.35

URS/IOH Iron Valley

Site IOH35

Location: Creek bed northwest of camp, west of track 25 m **Type:** Q 100 x

1st Observation: **Date:** 16/08/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736641 mE **Northing:** 7482570 mN

Habitat: Wide shallow creek line

Soil: Red brown sandy clay

Rock Type: Ironstone formation, shales and pebbles

Vegetation: *Acacia tumida* scattered tall shrubs over *Tephrosia rosea* low shrubland over **Cenchrus setiger* scattered tussock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: > 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia pyrifolia</i>	+	0.7
<i>Acacia tumida</i>	1	2.5
<i>Amaranthus mitchellii</i>	+	1.0
<i>Amaranthus undulatus</i>	+	0.8
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Boerhavia coccinea</i>	+	0.2
<i>Cenchrus ciliaris</i>	+	0.6
<i>Cenchrus setiger</i>	1	0.5
<i>Cleome viscosa</i>	+	0.6
<i>Corchorus crozophorifolius</i>	+	1.4
<i>Cymbopogon ambiguus</i>	+	1.2
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.3
<i>Enneapogon polyphyllus</i>	+	0.15
<i>Eriachne mucronata</i>	+	0.7
<i>Eriachne pulchella</i>	+	0.1
<i>Euphorbia australis</i>	+	0.15
<i>Fimbristylis simulans</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia microptera</i>	+	0.35
<i>Gossypium robinsonii</i>	+	1.5
<i>Grevillea wickhamii</i>	+	3.5
<i>Petalostylis labicheoides</i>	+	1.3
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polycarpaea longiflora</i>	+	0.2

<i>Portulaca oleracea</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.2
<i>Ptilotus auriculifolius</i>	+	0.3
<i>Ptilotus calostachyus</i>	+	0.55
<i>Ptilotus clementii</i>	+	0.25
<i>Ptilotus exaltatus</i>	+	0.55
<i>Ptilotus fusiformis</i>	+	0.45
<i>Ptilotus polystachyus</i>	+	0.5
<i>Rulingia luteiflora</i>	+	1.8
<i>Salsola tragus</i>	+	0.4
<i>Sida fibulifera</i>	+	0.35
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	0.35
<i>Tephrosia rosea</i> var. <i>glabrior</i>	15	0.65
<i>Themeda triandra</i>	+	0.6
<i>Trianthema pilosa</i>	+	0.08
<i>Tribulus hirsutus</i>	+	
<i>Tribulus macrocarpus</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.25
<i>Triodia epactia</i>	+	0.65
<i>Waltheria indica</i>	+	0.4

URS/IOH Iron Valley

Site

IOH36

Location: Footslopes/pediments in infrastructure area
m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** WT/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736249 mE **Northing:** 7482769 mN

Habitat: Footslopes/outwash of hillslope

Soil: Red brown shallow colluvial sandy loam

Rock Type: BIF, weathered coarse fragments

Vegetation: *Corymbia opaca* scattered low trees over *Grevillea wickhamii* scattered tall shrubs over *Triodia lanigera*, *Triodia epactia* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Good

Fire Age: > 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia bivenosa</i>	+	2.5
<i>Acacia dictyophleba</i>	+	3.0
<i>Acacia inaequilatera</i>	+	3.0
<i>Acacia pachyacra</i>	+	
<i>Acacia pyrifolia</i>	+	1.5
<i>Acacia tumida</i>	+	1.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Boerhavia coccinea</i>	+	0.08
<i>Bonamia erecta</i>	+	0.3
<i>Cenchrus ciliaris</i>	+	0.6
<i>Cleome viscosa</i>	+	0.25
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.25
<i>Corymbia opaca</i>	2	4.0
<i>Cucumis maderaspatanus</i>	+	1.5
<i>Dicrastylis cordifolia</i>	+	0.6
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eriachne mucronata</i>	+	0.2
<i>Eucalyptus gamophylla</i>	+	3.0
<i>Euphorbia australis</i>	+	0.2
<i>Euphorbia biconvexa</i>	+	0.25
<i>Gomphrena cunninghamii</i>	+	0.07
<i>Goodenia microptera</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.15
<i>Gossypium australe</i>	+	0.3
<i>Grevillea wickhamii</i>	1	3.0
<i>Hakea lorea</i>	+	2.8

<i>Hibiscus leptocladus</i>	+	0.12
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.4
<i>Hybanthus aurantiacus</i>	+	0.25
<i>Indigofera monophylla</i>	+	0.4
<i>Isotropis atropurpurea</i>	+	0.45
<i>Petalostylis labicheoides</i>	+	1.5
<i>Polycarpha holtzei</i>	+	0.04
<i>Polycarpha longiflora</i>	+	0.25
<i>Ptilotus auriculifolius</i>	+	0.4
<i>Ptilotus calostachyus</i>	+	0.45
<i>Ptilotus exaltatus</i>	+	0.08
<i>Ptilotus obovatus</i>	+	0.18
<i>Ptilotus polystachyus</i>	+	0.3
<i>Rhyncharrhena linearis</i>	+	1.0
<i>Santalum lanceolatum</i>	+	1.8
<i>Scaevola spinescens</i>	+	0.35
<i>Schizachyrium fragile</i>	+	0.3
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.8
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.0
<i>Senna notabilis</i>	+	0.2
<i>Sida arenicola</i>	+	0.15
<i>Solanum lasiophyllum</i>	+	0.15
<i>Trianthema pilosa</i>	+	0.06
<i>Tribulus hirsutus</i>	+	0.07
<i>Trichodesma zeylanicum</i>	+	0.22
<i>Triodia epactia</i>	8	0.6
<i>Triodia lanigera</i>	30	0.5
<i>Velleia connata</i>	+	0.3
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

URS/IOH Iron Valley

Site

IOH37

Location: Behind ridge east of main track, south of camp
m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737580 mE **Northing:** 7482739 mN

Habitat: Flat with low hills to west and northwest and creekline to south

Soil: Red brown sandy loam

Rock Type:

Vegetation: *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* tall open shrubland over *Triodia epactia* open hummock grassland and **Cenchrus ciliaris* scattered tussock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 -5 years

Notes: Surveyed after good summer rains. Some cow footprints

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.5
<i>Acacia dictyophleba</i>	+	0.25
<i>Acacia holosericea</i>	+	0.3
<i>Acacia inaequilatera</i>	+	3.5
<i>Acacia pyrifolia</i>	+	1.4
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.8
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Atalaya hemiglauca</i>	+	0.8
<i>Boerhavia coccinea</i>	+	prostrate
<i>Bonamia erecta</i>	+	0.45
<i>Cenchrus ciliaris</i>	1	0.55
<i>Cenchrus setiger</i>	+	0.5
<i>Cleome viscosa</i>	+	0.6
<i>Corchorus tectus</i>	+	0.15
<i>Corchorus tridens</i>	+	prostrate
<i>Corymbia hamersleyana</i>	1	6.0
<i>Cullen lachnostachys</i>	+	0.45
<i>Eragrostis eriopoda</i>	+	0.45
<i>Euphorbia australis</i>	+	0.15
<i>Euphorbia biconvexa</i>	+	0.3
<i>Gomphrena cunninghamii</i>	+	0.25
<i>Gomphrena kanisii</i>	+	0.2
<i>Gossypium robinsonii</i>	+	1.5
<i>Grevillea wickhamii</i>	10	2.5
<i>Hakea lorea</i>	+	1.1
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.3

<i>Hybanthus aurantiacus</i>	+	0.35
<i>Indigofera monophylla</i>	+	0.5
<i>Petalostylis labicheoides</i>	+	1.2
<i>Polycarpaea longiflora</i>	+	0.2
<i>Salsola tragus</i>	+	0.55
<i>Santalum lanceolatum</i>	+	1.0
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.3
<i>Scaevola spinescens</i>	+	1.0
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.45
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.9
<i>Senna notabilis</i>	+	0.15
<i>Sida</i> aff. <i>fibulifera</i> (oblong; MET 15 220)	+	0.3
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.5
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	1.2
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.2
<i>Tephrosia densa</i>	+	0.5
<i>Themeda triandra</i>	+	1.2
<i>Tribulopsis angustifolia</i>	+	prostrate
<i>Tribulus macrocarpus</i>	+	prostrate
<i>Triodia basedowii</i>	+	0.4
<i>Triodia epactia</i>	25	0.5

URS/IOH Iron Valley

Site

IOH38

Location: Crest near circular aboriginal heritage area
m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736462 mE **Northing:** 7483703 mN

Habitat: Crest of hill/ridge

Soil: Red brown skeletal sandy loam

Rock Type: Weathered ironstone, some BIF

Vegetation: *Triodia basedowii* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.4
<i>Acacia pruinocarpa</i>	+	2.2
<i>Corymbia deserticola</i>	+	2.0
<i>Fimbristylis simulans</i>	+	0.15
<i>Goodenia stobbsiana</i>	+	0.35
<i>Hakea lorea</i>	+	0.45
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.45
<i>Ptilotus exaltatus</i>	+	0.08
<i>Schizachyrium fragile</i>	+	0.2
<i>Trianthema glossostigma</i>	+	0.03
<i>Triodia basedowii</i>	8	0.25
<i>Triodia epactia</i>	+	0.45
<i>Triodia wiseana</i>	+	0.35

URS/IOH Iron Valley

Site

IOH39r

Location: East of main track, south of camp **Type:** R

1st Observation: **Date:** 16/08/2011 **Described by:** NC **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737575 mE **Northing:** 7482655 mN

Habitat: Wide shallow creekline flowing east to west

Soil: Red brown sandy clay

Rock Type: Ironstone shales and rocks

Vegetation: Tephrosia rosea low shrubland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes: Surveyed after good summer rain

Species List

Name	% Cover	Height
<i>Acacia pyrifolia</i>	+	1.6
<i>Acacia tumida</i>	+	1.5
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.9
<i>Amaranthus mitchellii</i>	+	
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Boerhavia coccinea</i>	+	prostrate
<i>Cenchrus ciliaris</i>	+	0.5
<i>Chrysopogon fallax</i>	+	0.8
<i>Cleome viscosa</i>	+	0.4
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.3
<i>Eriachne mucronata</i>	+	0.5
<i>Eriachne pulchella</i>	+	0.2
<i>Euphorbia australis</i>	+	prostrate
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Grevillea wickhamii</i>	+	1.8
<i>Polycarpaea longiflora</i>	+	0.4
<i>Polymeria ambigua</i>	+	
<i>Ptilotus astrolasius</i>	+	0.3
<i>Ptilotus calostachyus</i>	+	0.6
<i>Ptilotus exaltatus</i>	+	0.3
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.7
<i>Tephrosia rosea</i>	20	0.5
<i>Themeda triandra</i>	+	0.5
<i>Tribulus macrocarpus</i>	+	creeper
<i>Trichodesma zeylanicum</i>	+	2.0
<i>Triodia epactia</i>	+	0.3
<i>Waltheria indica</i>	+	0.5

URS/IOH Iron Valley

Site IOH40

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736524 mE **Northing:** 7483870 mN

Habitat: Midslope - finger slopes of ridge

Soil: Red brown shallow sandy loam

Rock Type: Weathered ironstone and metamorphic rock

Vegetation: *Triodia basedowii* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 years

Notes: Within quadrat a medium sized (1.5 metre) brown/olive coloured snake. Adjacent to quadrat was a possibly active *Pseudomys chapmani* (Pebble-Mound Mouse).

Species List

Name	% Cover	Height
	+	0.4
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.12
<i>Acacia inaequilatera</i>	+	2.0
<i>Acacia pruinocarpa</i>	+	2.0
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Cucumis maderaspatanus</i>	+	0.12
<i>Dicrastylis cordifolia</i>	+	0.3
<i>Eriachne aristidea</i>	+	0.15
<i>Eriachne pulchella</i>	+	0.12
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	4.0
<i>Fimbristylis simulans</i>	+	0.18
<i>Goodenia stobbsiana</i>	+	0.2
<i>Grevillea wickhamii</i>	+	2.2
<i>Hakea lorea</i>	+	2.0
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	0.35
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polycarpaea longiflora</i>	+	0.12
<i>Polygala isingii</i>	+	0.02
<i>Ptilotus astrolasius</i>	+	0.06
<i>Ptilotus calostachyus</i>	+	0.55
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.35
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.55
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	0.6
<i>Triodia basedowii</i>	8	0.4
<i>Triodia epactia</i>	+	0.35
<i>Triodia wiseana</i>	+	0.3

URS/IOH Iron Valley

Site IOH41

Location: South of creekline northwest of camp and west of m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** NC/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737066 mE **Northing:** 7482553 mN

Habitat: Open vegetated flat adjacent to creekline.

Soil: Red brown sandy loam

Rock Type: Ironstone formation, shales and pebbles

Vegetation: *Corymbia opaca* scattered low trees over *Grevillea wickhamii* open shrubland over *Corchorus elachocarpus* herbland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.5
<i>Acacia pyrifolia</i>	+	1.3
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.4
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Atalaya hemiglauca</i>	+	1.0
<i>Boerhavia coccinea</i>	+	prostrate
<i>Bonamia erecta</i>	+	0.35
<i>Cenchrus ciliaris</i>	+	0.5
<i>Cleome viscosa</i>	+	0.7
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.75
<i>Corchorus tectus</i>	3	0.4
<i>Corchorus tridens</i>	+	prostrate
<i>Corymbia opaca</i>	+	5.5
<i>Cucumis maderaspatanus</i>	+	.0 -
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eremophila longifolia</i>	+	0.6
<i>Eriachne mucronata</i>	+	0.65
<i>Euphorbia australis</i>	+	0.1
<i>Goodenia microptera</i>	+	0.2
<i>Gossypium robinsonii</i>	+	1.5
<i>Grevillea wickhamii</i>	5	1.6
<i>Hakea lorea</i>	+	1.4
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.25
<i>Hybanthus aurantiacus</i>	+	0.45
<i>Indigofera monophylla</i>	+	0.3

<i>Phyllanthus maderaspatensis</i>	+	0.2
<i>Polycarpaea corymbosa</i>	+	0.1
<i>Portulaca oleracea</i>	+	prostrate
<i>Pterocaulon sphaeranthoides</i>	+	0.04
<i>Ptilotus astrolasius</i>	+	0.6
<i>Ptilotus calostachyus</i>	+	0.6
<i>Ptilotus exaltatus</i>	+	0.6
<i>Ptilotus obovatus</i>	+	0.5
<i>Ptilotus polystachyus</i>	+	0.6
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.35
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.6
<i>Senna notabilis</i>	+	0.3
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.4
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	0.6
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.2
<i>Solanum lasiophyllum</i>	+	0.7
<i>Solanum phlomoides</i>	+	0.5
<i>Tephrosia densa</i>	+	0.75
<i>Tribulus hirsutus</i>	+	0.15
<i>Tribulus macrocarpus</i>	+	prostrate
<i>Triodia epactia</i>	+	0.4
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

URS/IOH Iron Valley

Site IOH42

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736466 mE **Northing:** 7483230 mN

Habitat: Flats - pediments of fingerslopes

Soil: Red brown shallow sandy loam

Rock Type: Weathered ironstone coarse fragments

Vegetation: *Eucalyptus gamophylla* scattered low trees over *Triodia lanigera* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age:

Notes:

Species List

Name	% Cover	Height
<i>Acacia bivenosa</i>	+	4.0
<i>Acacia citrinoviridis</i>	+	2.5
<i>Acacia inaequilatera</i>	+	1.0
<i>Acacia pachyacra</i>	+	3.5
<i>Acacia tumida</i>	+	1.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Aristida inaequiglumis</i>	+	0.8
<i>Boerhavia coccinea</i>	+	0.04
<i>Cenchrus ciliaris</i>	+	0.3
<i>Cleome viscosa</i>	+	0.5
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.25
<i>Corchorus tectus</i>	+	0.45
<i>Cucumis maderaspatanus</i>	+	0.3
<i>Cymbopogon obtectus</i>	+	0.8
<i>Dicrastylis cordifolia</i>	+	0.35
<i>Dodonaea coriacea</i>	+	1.2
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.15
<i>Eragrostis eriopoda</i>	+	0.3
<i>Eriachne mucronata</i>	+	0.3
<i>Eriachne pulchella</i>	+	0.12
<i>Eucalyptus gamophylla</i>	1	3.0
<i>Euphorbia australis</i>	+	0.1
<i>Euphorbia biconvexa</i>	+	0.3
<i>Fimbristylis simulans</i>	+	0.1
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.25
<i>Goodenia stobbsiana</i>	+	0.12
<i>Grevillea wickhamii</i>	+	3.0
<i>Hakea chordophylla</i>	+	2.0
<i>Heliotropium chrysocarpum</i>	+	0.2
<i>Heliotropium cunninghamii</i>	+	0.1
<i>Hybanthus aurantiacus</i>	+	0.2
<i>Indigofera monophylla</i>	+	1.0
<i>Paraneurachne muelleri</i>	+	0.4
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polycarpaea longiflora</i>	+	0.12

<i>Ptilotus auriculifolius</i>	+	0.15
<i>Ptilotus calostachyus</i>	+	0.45
<i>Ptilotus obovatus</i>	+	0.3
<i>Rhyncharrhena linearis</i>	+	0.6
<i>Schizachyrium fragile</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.85
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.85
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.7
<i>Senna notabilis</i>	+	0.2
<i>Sida cardiophylla</i>	+	0.45
<i>Solanum lasiophyllum</i>	+	0.2
<i>Solanum phlomoides</i>	+	0.2
<i>Tribulopsis angustifolia</i>	+	0.04
<i>Tribulus hirsutus</i>	+	0.08
<i>Trichodesma zeylanicum</i>	+	0.4
<i>Triodia epactia</i>	1	0.7
<i>Triodia lanigera</i>	35	0.7
<i>Velleia connata</i>	+	0.25
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.08

URS/IOH Iron Valley

Site

IOH43

Location:

m

Type: Q

50 x 50

1st Observation: Date: 16/08/2011 Described by: NC/NK

Seasonal Conditions: E

2nd Observation: Date: 2/08/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 737117 mE

Northing: 7485472 mN

Habitat: Upper slope of easterly sloping tall hill

Soil: Red-brown clayey sand

Rock Type: BIF shales

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia spondylophylla* scattered low shrubs over *Triodia* sp.(sterile), *Triodia ?wiseana* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia hilliana</i>	+	0.1
<i>Acacia inaequilatera</i>	+	2.5
<i>Acacia maitlandii</i>	+	0.5
<i>Acacia spondylophylla</i>	1	0.4
<i>Amphipogon sericeus</i>	+	0.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Bonamia media</i> var. <i>villosa</i>	+	0.07
<i>Cleome viscosa</i>	+	0.05
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.25
<i>Dampiera candidans</i>	+	0.25
<i>Dodonaea coriacea</i>	+	0.3
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eriachne lanata</i>	+	0.22
<i>Eriachne mucronata</i>	+	0.3
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	6.0
<i>Fimbristylis microcarya</i>	+	0.15
<i>Fimbristylis simulans</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia microptera</i>	+	0.25
<i>Goodenia stobbsiana</i>	+	0.15
<i>Goodenia triodiophila</i>	+	0.18
<i>Grevillea wickhamii</i>	+	1.4
<i>Heliotropium chrysocarpum</i>	+	0.25
<i>Hibiscus</i> aff. <i>coatesii</i>	+	1.0
<i>Oldenlandia crouchiana</i>	+	0.07

<i>Paraneurachne muelleri</i>	+	0.45
<i>Paspalidium clementii</i>	+	0.07
<i>Petalostylis labicheoides</i>	+	1.1
<i>Phyllanthus maderaspatensis</i>	+	0.04
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polycarpaea longiflora</i>	+	0.15
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.18
<i>Ptilotus calostachyus</i>	+	0.8
<i>Ptilotus exaltatus</i>	+	0.3
<i>Ptilotus fusiformis</i>	+	0.3
<i>Schizachyrium fragile</i>	+	0.12
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.1
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.3
<i>Solanum phlomoides</i>	+	0.3
<i>Tribulus suberosus</i>	+	0.25
<i>Triodia ?wiseana</i>	3	0.1
<i>Triodia epactia</i>	+	0.25
<i>Triodia</i> sp.	12	0.15

URS/IOH Iron Valley

Site IOH44

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736668 mE **Northing:** 7483272 mN

Habitat: Foothlope of finger hillslopes

Soil: Red brown skeletal sandy loam

Rock Type: Weathered BIF and ironstone

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia basedowii*, *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.4
<i>Acacia bivenosa</i>	+	2.0
<i>Acacia citrinoviridis</i>	+	1.4
<i>Acacia dictyophleba</i>	+	1.2
<i>Acacia inaequilatera</i>	+	2.5
<i>Amphipogon sericeus</i>	+	0.4
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Cucumis maderaspatanus</i>	+	0.4
<i>Cymbopogon obtectus</i>	+	0.45
<i>Dicrastylis cordifolia</i>	+	0.45
<i>Dysphania kalpari</i>	+	0.03
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eriachne mucronata</i>	+	0.2
<i>Eriachne pulchella</i>	+	0.18
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	4.0
<i>Euphorbia tannensis</i>	+	0.3
<i>Fimbristylis simulans</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.08
<i>Grevillea wickhamii</i>	+	1.6
<i>Hakea lorea</i>	+	3.0
<i>Oldenlandia crouchiana</i>	+	0.2
<i>Polycarpha holtzei</i>	+	0.04
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.45
<i>Ptilotus fusiformis</i>	+	0.3
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.3
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	0.6
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.15
<i>Trichodesma zeylanicum</i>	+	0.4
<i>Triodia basedowii</i>	20	0.55
<i>Triodia epactia</i>	1	0.7

URS/IOH Iron Valley

Site IOH45

Location: Lower slopes of ranges in north-east of survey area **Type:** Q 50 x 50 m

1st Observation: **Date:** 16/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737426 mE **Northing:** 7485390 mN

Habitat: East facing lower slope of tall hill

Soil: Orange brown sandy loam

Rock Type: Ironstone formation with rocks and exposed bedrock

Vegetation: *Acacia spondylophylla* scattered low shrubs over *Triodia* sp. Shovelanna Hill.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Quadrat near drill lines

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.5
<i>Acacia hilliana</i>	+	0.25
<i>Acacia inaequilatera</i>	+	1.4
<i>Acacia maitlandii</i>	+	2.0
<i>Acacia melleodora</i>	+	0.8
<i>Acacia spondylophylla</i>	1	0.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Calytrix carinata</i>	+	1.0
<i>Eriachne lanata</i>	+	0.4
<i>Eriachne mucronata</i>	+	0.3
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	1.5
<i>Fimbristylis simulans</i>	+	0.1
<i>Grevillea wickhamii</i>	+	2.5
<i>Hakea lorea</i>	+	2.2
<i>Phyllanthus maderaspatensis</i>	+	0.03
<i>Polycarpaea holtzei</i>	+	0.02
<i>Ptilotus calostachyus</i>	+	0.3
<i>Schizachyrium fragile</i>	+	0.08
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	0.7
<i>Triodia epactia</i>	+	0.25
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	20	0.2
<i>Triodia wiseana</i>	+	0.25

URS/IOH Iron Valley

Site IOH46

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736670 mE **Northing:** 7482944 mN

Habitat: Pediment/outwash

Soil: Red brown, shallow

Rock Type: Ironstone gravel

Vegetation: *Corymbia hamersleyana* low open woodland over *Eucalyptus gamophylla* scattered low trees over *Cenchrus ciliaris* and *Eulalia aurea* scattered tussock grasses with *Triodia basedowii* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Good

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Abutilon leucopetalum</i>	+	1.0
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.65
<i>Acacia dictyophleba</i>	+	0.65
<i>Acacia holosericea</i>	+	2.2
<i>Acacia inaequilatera</i>	+	3.0
<i>Acacia pachyacra</i>	+	3.0
<i>Acacia pruinocarpa</i>	+	2.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Aristida inaequiglumis</i>	+	0.8
<i>Boerhavia coccinea</i>	+	0.1
<i>Bonamia erecta</i>	+	0.35
<i>Cenchrus ciliaris</i>	1	1.0
<i>Cleome viscosa</i>	+	0.2
<i>Corchorus tectus</i>	+	0.4
<i>Corymbia hamersleyana</i>	2	10.0
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dicrastylis cordifolia</i>	+	0.65
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.03
<i>Eragrostis eriopoda</i>	+	0.45
<i>Eucalyptus gamophylla</i>	1	3.5
<i>Eulalia aurea</i>	1	0.6
<i>Euphorbia australis</i>	+	0.08
<i>Euphorbia biconvexa</i>	+	0.15
<i>Euphorbia boophthona</i>	+	0.3
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.25
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.2
<i>Grevillea wickhamii</i>	+	2.5
<i>Hakea chordophylla</i>	+	2.5
<i>Hakea lorea</i>	+	3.0
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.45
<i>Indigofera georgei</i>	+	1.0
<i>Marsdenia australis</i>	+	0.2
<i>Paraneurachne muelleri</i>	+	0.4

<i>Polycarpaea corymbosa</i>	+	0.18
<i>Polycarpaea longiflora</i>	+	0.25
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus exaltatus</i>	+	1.0
<i>Ptilotus obovatus</i>	+	0.6
<i>Ptilotus polystachyus</i>	+	0.4
<i>Rhagodia eremaea</i>	+	1.5
<i>Rhyncharrhena linearis</i>	+	1.5
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.6
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.55
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	2.0
<i>Senna notabilis</i>	+	0.12
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.5
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	0.65
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.6
<i>Solanum lasiophyllum</i>	+	0.25
<i>Tephrosia densa</i>	+	0.65
<i>Themeda triandra</i>	+	0.6
<i>Trianthema pilosa</i>	+	0.05
<i>Tribulopsis angustifolia</i>	+	0.04
<i>Tribulus hirsutus</i>	+	0.06
<i>Trichodesma zeylanicum</i>	+	0.35
<i>Triodia basedowii</i>	4	0.55
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

URS/IOH Iron Valley

Site IOH47

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 16/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 3/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 739513 mE **Northing:** 7485499 mN

Habitat: Gentle northwest facing slope at base of small hill

Soil: Orange brown sandy loam

Rock Type: Ironstone rocks (scree).

Vegetation: *Triodia* sp. Shovelanna Hill open hummock grassland with *Fimbristylis simulans* scattered sedges.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia inaequilatera</i>	+	2.3
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Aristida inaequiglumis</i>	+	0.75
<i>Cenchrus ciliaris</i>	+	0.35
<i>Cleome viscosa</i>	+	0.08
<i>Dicrastylis cordifolia</i>	+	0.5
<i>Eragrostis eriopoda</i>	+	0.45
<i>Eriachne aristidea</i>	+	0.15
<i>Eriachne pulchella</i>	+	0.1
<i>Fimbristylis simulans</i>	1	0.1
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Gomphrena kanisii</i>	+	0.1
<i>Goodenia microptera</i>	+	0.2
<i>Gossypium australe</i>	+	0.9
<i>Grevillea wickhamii</i>	+	2.2
<i>Heliotropium cunninghamii</i>	+	0.08
<i>Indigofera monophylla</i>	+	0.5
<i>Mollugo molluginea</i>	+	0.15
<i>Oldenlandia crouchiana</i>	+	0.05
<i>Polycarpaea holtzei</i>	+	0.05
<i>Ptilotus astrolasius</i>	+	0.08
<i>Ptilotus calostachyus</i>	+	0.45
<i>Schizachyrium fragile</i>	+	0.45
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.1
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.7
<i>Solanum lasiophyllum</i>	+	0.35
<i>Trachymene oleracea</i>	+	0.4
<i>Trianthema glossostigma</i>	+	0.04
<i>Triodia epactia</i>	+	0.6
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	10	0.2

URS/IOH Iron Valley

Site IOH48

Location: Far southern tip of tenement m **Type:** Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 26/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 735829 mE **Northing:** 7480342 mN

Habitat: Crest of upper slope of underlating BIF hills

Soil: Red brown skeletal sandy loam

Rock Type: BIF outcrop

Vegetation: *Grevillea wickhamii*, *Senna glutinosa* subsp. *pruinosa* scattered shrubs over *Ptilotus calystachyus* herbland over *Triodia basedowii*, *Triodia wiseana* scattered hummock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Possibly active *Pseudomys chapmani* (Pebble-Mound Mouse) in quadrat

Species List

Name	% Cover	Height
<i>Acacia hilliana</i>	+	0.3
<i>Amphipogon sericeus</i>	+	0.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Bonamia media</i> var. <i>villosa</i>	+	0.04
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Dampiera candicans</i>	+	0.5
<i>Dodonaea coriacea</i>	+	0.4
<i>Dysphania kalpari</i>	+	0.03
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.08
<i>Enneapogon polyphyllus</i>	+	0.2
<i>Eriachne aristidea</i>	+	0.2
<i>Eriachne mucronata</i>	+	0.25
<i>Eriachne pulchella</i>	+	0.22
<i>Euphorbia australis</i>	+	0.05
<i>Fimbristylis microcarya</i>	+	0.35
<i>Fimbristylis simulans</i>	+	0.22
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia muelleriana</i>	+	0.2
<i>Goodenia stobbsiana</i>	+	0.35
<i>Goodenia triodiophila</i>	+	0.3
<i>Grevillea wickhamii</i>	+	1.0
<i>Heliotropium cunninghamii</i>	+	0.15
<i>Hibiscus</i> aff. <i>coatesii</i>	+	0.3
<i>Hibiscus leptocladus</i>	+	0.3
<i>Paraneurachne muelleri</i>	+	0.35

<i>Polycarpaea holtzei</i>	+	0.04
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.4
<i>Ptilotus clementii</i>	+	0.35
<i>Ptilotus exaltatus</i>	+	0.08
<i>Ptilotus fusiformis</i>	+	0.25
<i>Ptilotus obovatus</i>	+	0.2
<i>Ptilotus rotundifolius</i>	+	0.6
<i>Schizachyrium fragile</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.0
<i>Senna glaucifolia</i>	+	0.40
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.4
<i>Senna notabilis</i>	+	0.15
<i>Sida arenicola</i>	+	0.2
<i>Sida cardiophylla</i>	+	1.0
<i>Solanum lasiophyllum</i>	+	0.5
<i>Solanum phlomoides</i>	+	0.8
<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.04
<i>Tephrosia supina</i>	+	0.06
<i>Trianthema glossostigma</i>	+	prostrate
<i>Tribulus hirsutus</i>	+	0.06
<i>Tribulus suberosus</i>	+	0.3
<i>Triodia basedowii</i>	1	0.35
<i>Triodia wiseana</i>	+	0.4

URS/IOH Iron Valley

Site IOH49

Location: Northern triangle of tenement m **Type:** Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737857 mE **Northing:** 7486378 mN

Habitat: Open flat plain with minor drainage

Soil: Orange brown sandy loam

Rock Type: Ironstone rocks and shale

Vegetation: *Grevillea wickhamii* scattered tall shrubs over *Triodia epactia* (*T. Lanigera*) open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.6
<i>Acacia ancistrocarpa</i>	+	1.0
<i>Acacia bivenosa</i>	+	2.5
<i>Acacia inaequilatera</i>	+	2.5
<i>Acacia tumida</i>	+	2.6
<i>Amphipogon sericeus</i>	+	0.25
<i>Aristida contorta</i>	+	0.25
<i>Bonamia erecta</i>	+	0.25
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Cleome viscosa</i>	+	0.4
<i>Corymbia deserticola</i>	+	4.0
<i>Dicrastylis cordifolia</i>	+	0.7
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eragrostis eriopoda</i>	+	0.25
<i>Eriachne mucronata</i>	+	0.5
<i>Eriachne pulchella</i>	+	0.05
<i>Eucalyptus gamophylla</i>	+	2.2
<i>Euphorbia australis</i>	+	0.05
<i>Fimbristylis simulans</i>	+	0.2
<i>Goodenia microptera</i>	+	0.05
<i>Goodenia prostrata</i>	+	0.03
<i>Grevillea wickhamii</i>	1	3.0
<i>Haloragis gossei</i>	+	0.1
<i>Indigofera monophylla</i>	+	0.45
<i>Isotropis atropurpurea</i>	+	0.3
<i>Mollugo molluginea</i>	+	0.07
<i>Oldenlandia crouchiana</i>	+	0.05

<i>Phyllanthus maderaspatensis</i>	+	0.15
<i>Polycarpaea corymbosa</i>	+	0.07
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.12
<i>Ptilotus calostachyus</i>	+	0.6
<i>Schizachyrium fragile</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.9
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.7
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.1
<i>Senna notabilis</i>	+	0.03
<i>Solanum phlomoides</i>	+	0.25
<i>Trianthema glossostigma</i>	+	prostrate
<i>Triodia epactia</i>	15	0.6
<i>Triodia lanigera</i>	5	0.35
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.06

URS/IOH Iron Valley

Site

IOH50

Location: Southern end of tenement survey boundary
m

Type: Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 26/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 735891 mE **Northing:** 7480571 mN

Habitat: Hill footslope

Soil: Red brown shallow sandy loam

Rock Type: BIF and weathered ironstone coarse fragments

Vegetation: *Acacia inaequilatera*, *Grevillea wickhamii* scattered shrubs over *Triodia basedowii* scattered hummock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Possibly new and active *Pseudomys chapmani* (Pebble-Mound Mouse) mound in quadrat

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.35
<i>Acacia bivenosa</i>	+	0.6
<i>Acacia hilliana</i>	+	0.35
<i>Acacia inaequilatera</i>	+	0.5
<i>Amphipogon sericeus</i>	+	0.22
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.18
<i>Bonamia media</i> var. <i>villosa</i>	+	0.06
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.45
<i>Dodonaea coriacea</i>	+	0.08
<i>Dysphania kalpari</i>	+	0.4
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.2
<i>Eriachne aristidea</i>	+	
<i>Eriachne mucronata</i>	+	0.1
<i>Eriachne pulchella</i>	+	0.12
<i>Fimbristylis simulans</i>	+	0.3
<i>Gomphrena cunninghamii</i>	+	0.12
<i>Goodenia microptera</i>	+	0.2
<i>Goodenia muelleriana</i>	+	0.15
<i>Goodenia stobbsiana</i>	+	0.25
<i>Grevillea wickhamii</i>	+	1.0
<i>Heliotropium chrysocarpum</i>	+	0.3
<i>Mollugo molluginea</i>	+	0.08
<i>Polycarpha holtzei</i>	+	0.03
<i>Pterocaulon sphaeranthoides</i>	+	0.06
<i>Ptilotus astrolasius</i>	+	0.3
<i>Ptilotus auriculifolius</i>	+	0.4
<i>Ptilotus calostachyus</i>	+	1.0
<i>Ptilotus exaltatus</i>	+	0.5
<i>Schizachyrium fragile</i>	+	0.15
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.35
<i>Senna notabilis</i>	+	0.2
<i>Sida arenicola</i>	+	0.4
<i>Sida cardiophylla</i>	+	0.55
<i>Solanum lasiophyllum</i>	+	0.3

<i>Solanum phlomoides</i>	+	0.4
<i>Trianthema glossostigma</i>	+	0.02
<i>Tribulus hirsutus</i>	+	0.05
<i>Triodia basedowii</i>	1	0.35
<i>Triodia epactia</i>	+	0.3

URS/IOH Iron Valley

Site IOH51

Location: Northern triangle of survey area **Type:** Q 50 x 50
1st Observation: **Date:** 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E
2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E
MGA Zone: 50 **Easting:** 737775 mE **Northing:** 7486274 mN
Habitat: Open flat plain with tall hills to the west. Very minor depression running through quadrat
Soil: Orange brown sandy loam
Rock Type: Ironstone rocks and shales
Vegetation: *Grevillea wickhamii* scattered tall shrubs over *Acacia adoxa* var. *adoxo* scattered low shrubs over
Triodia epactia and *Triodia basedowii* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	1	0.8
<i>Acacia bivenosa</i>	+	1.7
<i>Acacia inaequilatera</i>	+	1.6
<i>Acacia pachyacra</i>	+	1.0
<i>Acacia pruinocarpa</i>	+	0.9
<i>Acacia tumida</i>	+	2.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.45
<i>Bonamia erecta</i>	+	0.3
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.5
<i>Dicrastylis cordifolia</i>	+	0.7
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus gamophylla</i>	+	2.5
<i>Euphorbia australis</i>	+	1.2
<i>Fimbristylis simulans</i>	+	0.15
<i>Grevillea wickhamii</i>	1	2.0
<i>Hakea lorea</i>	+	1.65
<i>Indigofera monophylla</i>	+	0.5
<i>Mollugo molluginea</i>	+	0.05
<i>Polycarpaea corymbosa</i>	+	0.05
<i>Polycarpaea holtzei</i>	+	0.05
<i>Polycarpaea longiflora</i>	+	0.1
<i>Portulaca oleracea</i>	+	prostrate
<i>Ptilotus calostachyus</i>	+	0.15
<i>Ptilotus exaltatus</i>	+	0.15
<i>Rhynchosia minima</i>	+	climber
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.15
<i>Senna notabilis</i>	+	0.1
<i>Trianthema glossostigma</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.3
<i>Triodia basedowii</i>	20	0.4
<i>Triodia epactia</i>	25	0.65

URS/IOH Iron Valley

Site IOH52

Location: Southern half of survey area **Type:** Q 50 x 50 m

1st Observation: **Date:** 18/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 26/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 735854 mE **Northing:** 7480824 mN

Habitat: Crest/upper slope of fingerslope hills

Soil: Red brown skeletal sandy loam

Rock Type: BIF

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia deserticola* scattered low trees over *Hakea lorea* scattered tall shrubs over *Triodia basedowii* scattered hummock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.35
<i>Acacia hilliania</i>	+	0.3
<i>Acacia inaequilatera</i>	+	1.5
<i>Amphipogon sericeus</i>	+	0.4
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Corymbia deserticola</i>	1	4.0
<i>Dicrasyllis cordifolia</i>	+	0.7
<i>Dysphania kalpari</i>	+	0.1
<i>Eriachne mucronata</i>	+	0.45
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	4.0
<i>Fimbristylis simulans</i>	+	0.18
<i>Goodenia stobbsiana</i>	+	0.15
<i>Goodenia triodiophila</i>	+	0.3
<i>Grevillea wickhamii</i>	+	1.2
<i>Hakea lorea</i>	+	2.5
<i>Keraudrenia nephrosperma</i>	+	0.6
<i>Paraneurachne muelleri</i>	+	0.4
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.22
<i>Ptilotus calostachyus</i>	+	0.6
<i>Ptilotus exaltatus</i>	+	0.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.4
<i>Senna glutinosa</i> subsp. x <i>lueresenii</i>	+	0.7
<i>Senna notabilis</i>	+	0.08
<i>Sida cardiophylla</i>	+	0.55
<i>Solanum phlomoides</i>	+	0.45
<i>Trianthema glossostigma</i>	+	0.03
<i>Triodia basedowii</i>	1	0.4
<i>Triodia epactia</i>	+	0.45

URS/IOH Iron Valley

Site IOH53

Location: m **Type:** Q **50 x 50**

1st Observation: **Date:** 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738130 mE **Northing:** 7485991 mN

Habitat: Open plain

Soil: Orange brown sandy loam

Rock Type: Ironstone rocks and shale

Vegetation: *Triodia lanigera*, *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	1.0
<i>Acacia bivenosa</i>	+	1.3
<i>Acacia dictyophleba</i>	+	0.8
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.15
<i>Cleome viscosa</i>	+	0.3
<i>Corymbia hamersleyana</i>	+	4.0
<i>Dicrasyllis cordifolia</i>	+	1.1
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.03
<i>Eriachne pulchella</i>	+	0.05
<i>Fimbristylis simulans</i>	+	0.15
<i>Grevillea wickhamii</i>	+	3.0
<i>Hakea lorea</i>	+	1.1
<i>Indigofera monophylla</i>	+	0.8
<i>Mollugo molluginea</i>	+	0.07
<i>Phyllanthus maderaspatensis</i>	+	0.07
<i>Polycarpaea corymbosa</i>	+	0.05
<i>Polycarpaea holtzei</i>	+	0.03
<i>Portulaca oleracea</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.1
<i>Ptilotus calostachyus</i>	+	0.5
<i>Ptilotus exaltatus</i>	+	0.1
<i>Ptilotus polystachyus</i>	+	0.4
<i>Rhynchosia minima</i>	+	0.07
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.0
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.45
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.7
<i>Trachymene oleracea</i>	+	0.3
<i>Trianthema glossostigma</i>	+	prostrate
<i>Triodia epactia</i>	8	1.0
<i>Triodia lanigera</i>	20	0.3

URS/IOH Iron Valley

Site IOH54

Location: Southern colluvial plain of tenement **Type:** Q 50 x 50
1st Observation: **Date:** 18/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E
2nd Observation: **Date:** 26/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E
MGA Zone: 50 **Easting:** 736238 mE **Northing:** 7480682 mN
Habitat: Flat colluvial plain
Soil: Red brown shallow sandy loam
Rock Type: Ironstone gravel and coarse fragments
Vegetation: *Eucalyptus gamophylla* scattered low trees over *Sida arenicola* and *Abutilon leucopetalum* scattered low shrubs over *Triodia wiseana*, *T. lanigera* very open hummock grassland.
Vegetation Code:
Vegetation Desc:
Veg Condition: Good
Fire Age: 2 - 5 yrs
Notes:

Species List

Name	% Cover	Height
<i>Abutilon leucopetalum</i>	+	0.8
<i>Abutilon otocarpum</i>	1	0.4
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.3
<i>Acacia ancistrocarpa</i>	+	0.4
<i>Acacia bivenosa</i>	+	2.0
<i>Acacia hilliana</i>	+	0.3
<i>Acacia inaequilatera</i>	+	1.2
<i>Acacia pachyacra</i>	+	0.75
<i>Acacia pruinocarpa</i>	+	0.7
<i>Acacia tumida</i>	+	0.45
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.6
<i>Boerhavia coccinea</i>	+	0.1
<i>Bonamia erecta</i>	+	0.4
<i>Cenchrus ciliaris</i>	+	0.45
<i>Cleome viscosa</i>	+	0.75
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.6
<i>Corymbia hamersleyana</i>	+	2.5
<i>Dicrastylis cordifolia</i>	+	0.6
<i>Dysphania kalpari</i>	+	0.1
<i>Eragrostis eriopoda</i>	+	0.45
<i>Eremophila longifolia</i>	+	0.8
<i>Eriachne mucronata</i>	+	0.35
<i>Eucalyptus gamophylla</i>	1	2.2
<i>Euphorbia australis</i>	+	0.08
<i>Euphorbia biconvexa</i>	+	0.2
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	+	1.2
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.3
<i>Heliotropium chrysocarpum</i>	+	0.45
<i>Hibiscus leptocladus</i>	+	0.35
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.4
<i>Hybanthus aurantiacus</i>	+	0.65
<i>Indigofera monophylla</i>	+	0.6
<i>Mollugo molluginea</i>	+	0.08
<i>Paraneurachne muelleri</i>	+	0.5
<i>Petalostylis cassioides</i>	+	1.2

<i>Polycarpha holtzei</i>	+	0.2
<i>Polymeria ambigua</i>	+	0.05
<i>Ptilotus calostachyus</i>	+	0.6
<i>Ptilotus exaltatus</i>	+	0.5
<i>Ptilotus obovatus</i>	+	1.0
<i>Ptilotus polystachyus</i>	+	0.55
<i>Rhagodia eremaea</i>	+	0.5
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.3
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.25
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.7
<i>Senna notabilis</i>	+	0.4
<i>Sida arenicola</i>	+	1.2
<i>Sida cardiophylla</i>	1	0.85
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	1.1
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.18
<i>Solanum phlomoides</i>	+	0.55
<i>Tephrosia densa</i>	+	0.45
<i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601)	+	0.15
<i>Trianthema glossostigma</i>	+	0.03
<i>Trianthema pilosa</i>	+	0.1
<i>Tribulus hirsutus</i>	+	0.1
<i>Tribulus macrocarpus</i>	+	0.08
<i>Trichodesma zeylanicum</i>	+	0.12
<i>Triodia epactia</i>	+	0.55
<i>Triodia lanigera</i>	1	0.75
<i>Triodia wiseana</i>	2	0.7

URS/IOH Iron Valley

Site

IOH55

Location: **Type:** Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 2/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737646 mE **Northing:** 7485967 mN

Habitat: Open flat plain with very slight depression

Soil: Orange brown sandy loam

Rock Type: Ironstone rocks and shale

Vegetation: *Triodia lanigera* and *T. epactia* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.8
<i>Acacia inaequilatera</i>	+	3.2
<i>Acacia maitlandii</i>	+	1.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.2
<i>Calytrix carinata</i>	+	1.1
<i>Cleome viscosa</i>	+	0.4
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.03
<i>Eriachne aristidea</i>	+	0.3
<i>Eriachne pulchella</i>	+	0.05
<i>Euphorbia australis</i>	+	0.05
<i>Gomphrena cunninghamii</i>	+	0.2
<i>Grevillea wickhamii</i>	+	3.0
<i>Hakea lorea</i>	+	1.65
<i>Indigofera monophylla</i>	+	0.9
<i>Mollugo molluginea</i>	+	0.1
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polycarpaea longiflora</i>	+	0.12
<i>Ptilotus auriculifolius</i>	+	0.2
<i>Ptilotus clementii</i>	+	0.2
<i>Ptilotus exaltatus</i>	+	0.35
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Trianthema pilosa</i>	+	0.07
<i>Trichodesma zeylanicum</i>	+	0.1
<i>Triodia epactia</i>	15	0.8
<i>Triodia lanigera</i>	15	0.4

URS/IOH Iron Valley

Site IOH56

Location: Southwestern hills of tenement **Type:** Q
1st Observation: Date: 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E
2nd Observation: Date: 28/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E
MGA Zone: 50 **Easting:** 736015 mE **Northing:** 7481563 mN
Habitat: Upper hillslope
Soil: Red brown skeletal soil
Rock Type: BIF and weathered ironstone
Vegetation: *Triodia basedowii* scattered hummock grasses.
Vegetation Code:
Vegetation Desc:
Veg Condition: Excellent
Fire Age: 2 - 5 yrs
Notes: Within quadrat was a very likely active *Pseudomys chapmani* (Pebble-Mound Mouse) and a possibly active mound adjacent to the quadrat.

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.2
<i>Acacia bivenosa</i>	+	0.4
<i>Acacia inaequilatera</i>	+	2.2
<i>Acacia tumida</i>	+	0.45
<i>Amphipogon sericeus</i>	+	0.4
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.45
<i>Boerhavia coccinea</i>	+	0.08
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Cleome viscosa</i>	+	0.18
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.55
<i>Corymbia hamersleyana</i>	+	0.6
<i>Cymbopogon ambiguus</i>	+	0.3
<i>Dampiera candicans</i>	+	0.4
<i>Dodonaea coriacea</i>	+	0.6
<i>Dysphania kalpari</i>	+	0.04
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.2
<i>Eriachne mucronata</i>	+	0.35
<i>Eriachne pulchella</i>	+	0.1
<i>Fimbristylis microcarya</i>	+	0.3
<i>Fimbristylis simulans</i>	+	0.18
<i>Gomphrena cunninghamii</i>	+	0.1
<i>Goodenia microptera</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.22
<i>Goodenia triodiophila</i>	+	0.25
<i>Grevillea wickhamii</i>	+	3.0
<i>Hibiscus</i> aff. <i>coatesii</i>	+	0.3
<i>Paraneurachne muelleri</i>	+	0.5
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.25
<i>Ptilotus calostachyus</i>	+	1.0
<i>Ptilotus clementii</i>	+	0.35
<i>Ptilotus exaltatus</i>	+	0.25
<i>Ptilotus fusiformis</i>	+	0.22
<i>Ptilotus obovatus</i>	+	0.3
<i>Ptilotus rotundifolius</i>	+	0.6
<i>Schizachyrium fragile</i>	+	0.25

<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.5
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.6
<i>Senna notabilis</i>	+	0.08
<i>Sida cardiophylla</i>	+	0.9
<i>Solanum phlomoides</i>	+	0.35
<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.04
<i>Triodia basedowii</i>	+	0.3
<i>Triodia epactia</i>	+	0.4
<i>Triodia wiseana</i>	+	0.3

URS/IOH Iron Valley

Site

IOH57

Location: Approximately 500m northeast of camp m **Type:** Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 3/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 739480 mE **Northing:** 7485285 mN

Habitat: Lower slope of westerly facing slope

Soil: Red brown sandy loam

Rock Type: Ironstone rocks and some exposed bedrock

Vegetation: *Acacia hilliana* low open shrubland over *Triodia* sp. Shovelanna Hill hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Probably inactive *Pseudomys chapmani* (Pebble-Mound Mouse) mound.

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.4
<i>Acacia adsurgens</i>	+	0.75
<i>Acacia bivenosa</i>	+	3.0
<i>Acacia hilliana</i>	10	0.5
<i>Acacia pruinocarpa</i>	+	2.0
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.55
<i>Cucumis maderaspatanus</i>	+	0.35
<i>Cymbopogon ambiguus</i>	1	0.9
<i>Eremophila longifolia</i>	+	1.9
<i>Eriachne aristidea</i>	+	0.15
<i>Eriachne pulchella</i>	+	0.15
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	3.5
<i>Fimbristylis simulans</i>	+	0.15
<i>Goodenia stobbsiana</i>	+	0.6
<i>Grevillea wickhamii</i>	+	2.2
<i>Hakea chordophylla</i>	+	0.65
<i>Hakea lorea</i>	+	2.5
<i>Mollugo molluginea</i>	+	0.07
<i>Notoleptopus decaisnei</i>	+	0.4
<i>Polycarpaea holtzei</i>	+	0.03
<i>Pterocaulon sphaeranthoides</i>	+	0.1
<i>Ptilotus astrolasius</i>	+	0.4
<i>Ptilotus calostachyus</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.8
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	1.1
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.8
<i>Senna notabilis</i>	+	0.1
<i>Solanum phlomoides</i>	+	0.35
<i>Trianthema glossostigma</i>	+	0.01
<i>Triodia epactia</i>	+	0.35
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	45	0.25

URS/IOH Iron Valley

Site IOH58

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736100 mE **Northing:** 7481715 mN

Habitat: Crest of BIF hillslope

Soil: Red brown, skeletal and shallow

Rock Type: BIF weathered ironstone exposed seam

Vegetation: *Triodia basedowii* scattered hummock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes: Possible old inactive *Pseudomys chapmani* (Pebble-Mound Mouse) mound in quadrat

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.2
<i>Acacia adsurgens</i>	+	1.0
<i>Acacia bivenosa</i>	+	2.2
<i>Acacia citrinoviridis</i>	+	2.2
<i>Acacia pruinocarpa</i>	+	2.5
<i>Amphipogon sericeus</i>	+	0.3
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Calytrix carinata</i>	+	0.5
<i>Cleome viscosa</i>	+	0.18
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.45
<i>Cucumis maderaspatanus</i>	+	0.2
<i>Dampiera candidans</i>	+	0.45
<i>Eriachne mucronata</i>	+	0.35
<i>Eriachne pulchella</i>	+	0.12
<i>Euphorbia australis</i>	+	0.06
<i>Fimbristylis simulans</i>	+	0.18
<i>Goodenia stobbsiana</i>	+	0.35
<i>Goodenia triodiophila</i>	+	0.3
<i>Grevillea wickhamii</i>	+	4.0
<i>Hakea lorea</i>	+	3.5
<i>Paraneurachne muelleri</i>	+	0.3
<i>Polycarpaea holtzei</i>	+	0.05
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus calostachyus</i>	+	0.8
<i>Ptilotus exaltatus</i>	+	0.3
<i>Ptilotus obovatus</i>	+	0.6
<i>Ptilotus polystachyus</i>	+	0.25
<i>Ptilotus rotundifolius</i>	+	0.6
<i>Schizachyrium fragile</i>	+	0.4
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.2
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.6
<i>Senna notabilis</i>	+	0.15
<i>Sida arenicola</i>	+	1.6
<i>Sida cardiophylla</i>	+	0.45
<i>Solanum phlomoides</i>	+	0.4

<i>Stemodia grossa</i>	+	0.45
<i>Streptoglossa bubakii</i>	+	0.45
<i>Trachymene oleracea</i>	+	0.1
<i>Trianthema glossostigma</i>	+	0.04
<i>Tribulus suberosus</i>	+	0.5
<i>Triodia basedowii</i>	1	0.45
<i>Triodia epactia</i>	+	0.3
<i>Triodia wiseana</i>	+	0.3

URS/IOH Iron Valley

Site IOH59

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 17/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736207 mE **Northing:** 7482283 mN

Habitat: Hill crest

Soil: Orange brown sandy loam/fine sand

Rock Type: Ironstone rocks with some exposed bedrock

Vegetation: *Triodia* sp. Shovelanna Hill very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes: Scattered *Eucalyptus ?leucophloia* trees in depression adjacent to quadrat

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.15
<i>Acacia bivenosa</i>	+	0.1
<i>Acacia hilliana</i>	+	0.25
<i>Acacia pruinocarpa</i>	+	0.25
<i>Amphipogon sericeus</i>	+	0.35
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.65
<i>Bonamia media</i> var. <i>villosa</i>	+	0.02
<i>Calytrix carinata</i>	+	0.06
<i>Cleome viscosa</i>	+	0.35
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Cucumis maderaspatanus</i>	+	climber
<i>Cymbopogon ambiguus</i>	+	0.9
<i>Dampiera candidans</i>	+	0.55
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eragrostis eriopoda</i>	+	0.35
<i>Eriachne pulchella</i>	+	0.1
<i>Euphorbia australis</i>	+	0.15
<i>Fimbristylis simulans</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.07
<i>Goodenia microptera</i>	+	0.35
<i>Goodenia stobbsiana</i>	+	0.4
<i>Grevillea wickhamii</i>	+	1.2
<i>Hakea lorea</i>	+	2.5
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.4
<i>Paraneurachne muelleri</i>	+	0.35
<i>Phyllanthus maderaspatensis</i>	+	0.1
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.1
<i>Ptilotus calostachyus</i>	+	1.1
<i>Ptilotus exaltatus</i>	+	0.6
<i>Ptilotus fusiformis</i>	+	0.3
<i>Schizachyrium fragile</i>	+	0.3
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.25
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	0.4
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	1.1
<i>Solanum phlomoides</i>	+	0.9

<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.04
<i>Trachymene oleracea</i>	+	0.03
<i>Tribulus hirsutus</i>	+	prostrate
<i>Triodia lanigera</i>	10	0.2

URS/IOH Iron Valley

Site IOH60

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 17/04/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 735965 mE **Northing:** 7481180 mN

Habitat: Colluvial drainage off hillslope

Soil: Red brown shallow

Rock Type: BIF and occasional coarse fragments of ironstone gravel

Vegetation: *Eucalyptus gamophylla* scattered low trees over *Acacia tumida* scattered shrubs over *Corchorus lasiocarpus* subsp. *parvus* scattered low shrubs.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 years

Notes: Post fire

Species List

Name	% Cover	Height
<i>Abutilon lepidum</i>	+	0.75
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.3
<i>Acacia adsurgens</i>	+	0.4
<i>Acacia ancistrocarpa</i>	+	0.4
<i>Acacia dictyophleba</i>	+	0.7
<i>Acacia inaequilatera</i>	+	2.2
<i>Acacia pachyacra</i>	+	1.6
<i>Acacia tumida</i>	1	1.0
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.6
<i>Aristida inaequiglumis</i>	+	1.2
<i>Atalaya hemiglauca</i>	+	1.4
<i>Bonamia erecta</i>	+	0.4
<i>Bonamia media</i> var. <i>villosa</i>	+	0.06
<i>Cenchrus ciliaris</i>	+	0.5
<i>Cleome viscosa</i>	+	0.55
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	1	0.45
<i>Cullen lachnostachys</i>	+	0.3
<i>Dicrastylis cordifolia</i>	+	0.7
<i>Duperreya commixta</i>	+	1.4
<i>Dysphania kalpari</i>	+	0.08
<i>Enneapogon polyphyllus</i>	+	0.2
<i>Eragrostis eriopoda</i>	+	0.5
<i>Eucalyptus gamophylla</i>	1	4.0
<i>Euphorbia australis</i>	+	0.1
<i>Euphorbia biconvexa</i>	+	0.25
<i>Goodenia microptera</i>	+	0.2
<i>Goodenia muelleriana</i>	+	0.3
<i>Goodenia stobbsiana</i>	+	0.3
<i>Gossypium robinsonii</i>	+	2.2
<i>Grevillea wickhamii</i>	+	2.0
<i>Heliotropium chrysocarpum</i>	+	0.3
<i>Hibiscus leptocladus</i>	+	0.4
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.35
<i>Hibiscus sturtii</i> var. <i>platychlamys</i>	+	0.7
<i>Hybanthus aurantiacus</i>	+	0.5

<i>Indigofera monophylla</i>	+	0.55
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	1.0
<i>Keraudrenia nephrosperma</i>	+	0.8
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polycarpaea longiflora</i>	+	0.15
<i>Pterocaulon sphaeranthoides</i>	+	0.2
<i>Ptilotus astrolasius</i>	+	0.4
<i>Ptilotus auriculifolius</i>	+	0.45
<i>Ptilotus calostachyus</i>	+	1.0
<i>Ptilotus exaltatus</i>	+	0.45
<i>Ptilotus polystachyus</i>	+	0.35
<i>Rhynchosia minima</i>	+	0.12
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.3
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.45
<i>Senna ferraria</i>	+	0.7
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	0.45
<i>Senna notabilis</i>	+	0.4
<i>Sida arenicola</i>	+	1.2
<i>Sida cardiophylla</i>	+	0.7
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	1.0
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.1
<i>Tephrosia</i> aff. <i>supina</i>	+	0.1
<i>Tephrosia densa</i>	+	0.5
<i>Themeda triandra</i>	+	0.4
<i>Trachymene oleracea</i>	+	1.0
<i>Trianthema pilosa</i>	+	0.06
<i>Tribulus hirsutus</i>	+	0.08
<i>Tribulus macrocarpus</i>	+	0.06
<i>Trichodesma zeylanicum</i>	+	0.35
<i>Triodia epactia</i>	+	0.3
<i>Triodia wiseana</i>	+	0.25

URS/IOH Iron Valley

Site IOH61

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 17/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736145 mE **Northing:** 7482090 mN

Habitat: Colluvial flat plain south of minor drainage line and between low hills

Soil: Red brown clayey sand

Rock Type: Ironstone

Vegetation: *Corchorus tectus* and *Bonamia erecta*, *Sida* sp. Pilbara, *Hibiscus sturtii* var. *platyklamys* open herbland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes: Fire disturbance evident

Species List

Name	% Cover	Height
<i>Abutilon trudgenii</i>	+	0.8
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.3
<i>Acacia adsurgens</i>	+	0.25
<i>Acacia dictyophleba</i>	+	1.0
<i>Acacia inaequilatera</i>	+	3.5
<i>Acacia pachyacra</i>	+	0.9
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Bonamia erecta</i>	5	0.4
<i>Chrysopogon fallax</i>	+	1.3
<i>Cleome viscosa</i>	+	0.55
<i>Corchorus tectus</i>	15	0.35
<i>Corymbia opaca</i>	+	1.6
<i>Cucumis maderaspatanus</i>	+	2.0
<i>Dicrastylis cordifolia</i>	+	0.6
<i>Dysphania kalpari</i>	+	0.05
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.2
<i>Eragrostis eriopoda</i>	+	0.6
<i>Euphorbia australis</i>	+	0.08
<i>Goodenia microptera</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.1
<i>Grevillea wickhamii</i>	+	1.2
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	1	0.5
<i>Hybanthus aurantiacus</i>	+	0.75

<i>Indigofera monophylla</i>	+	0.4
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	0.9
<i>Paraneurachne muelleri</i>	+	0.4
<i>Pterocaulon sphaeranthoides</i>	+	0.08
<i>Ptilotus astrolasius</i>	+	0.4
<i>Ptilotus calostachyus</i>	+	0.4
<i>Ptilotus exaltatus</i>	+	0.8
<i>Ptilotus polystachyus</i>	+	0.5
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.25
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.8
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.7
<i>Senna notabilis</i>	+	0.08
<i>Sida arenicola</i>	+	1.1
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	2	0.5
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	1.3
<i>Solanum phlomoides</i>	+	0.55
<i>Trianthema pilosa</i>	+	0.05
<i>Tribulus hirsutus</i>	+	creeper
<i>Tribulus macrocarpus</i>	+	creeper
<i>Trichodesma zeylanicum</i>	+	0.2
<i>Triodia epactia</i>	+	0.25
<i>Triodia</i> sp.	+	0.15
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.07

URS/IOH Iron Valley

Site IOH62

Location: Southwest tenement boundary
m **Type:** Q 50 x 50

1st Observation: **Date:** 17/04/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 26/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 735762 mE **Northing:** 7481319 mN

Habitat: Lower slope of finger slope

Soil: Red brown shallow sandy loam

Rock Type: Weathered BIF angular coarse fragments

Vegetation: *Triodia epactia*, *T. wiseana* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.3
<i>Acacia bivenosa</i>	+	0.3
<i>Acacia pruinocarpa</i>	+	0.3
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.6
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.55
<i>Corchorus tectus</i>	+	0.5
<i>Dysphania kalpari</i>	+	0.04
<i>Eriachne aristidea</i>	+	.2
<i>Eriachne mucronata</i>	+	0.2
<i>Eucalyptus gamophylla</i>	+	2.0
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.12
<i>Fimbristylis microcarya</i>	+	0.4
<i>Fimbristylis simulans</i>	+	0.1
<i>Goodenia stobbsiana</i>	+	0.3
<i>Goodenia triodiophila</i>	+	0.3
<i>Grevillea wickhamii</i>	+	0.6
<i>Hakea lorea</i>	+	4.5
<i>Hibiscus coatesii</i>	+	0.55
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.3
<i>Paraneurachne muelleri</i>	+	0.5
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.1
<i>Ptilotus calostachyus</i>	+	0.5
<i>Ptilotus exaltatus</i>	+	0.6
<i>Ptilotus fusiformis</i>	+	0.35
<i>Ptilotus polystachyus</i>	+	0.4
<i>Ptilotus rotundifolius</i>	+	0.6
<i>Schizachyrium fragile</i>	+	0.4
<i>Senna ferraria</i>	+	0.6
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.3
<i>Sida arenicola</i>	+	1.0
<i>Solanum phlomoides</i>	+	0.5
<i>Tephrosia supina</i>	+	0.05

<i>Triodia basedowii</i>	+	0.2
<i>Triodia epactia</i>	2	0.5
<i>Triodia wiseana</i>	1	0.3

URS/IOH Iron Valley

Site IOH63r

Location: Near IOH61 **Type:** R
1st Observation: **Date:** 17/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E
2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E
MGA Zone: 50 **Easting:** 736194 mE **Northing:** 7482120 mN
Habitat: Minor incised drainage channel leading to shallow drainage
Soil: Orange brown clayey sand
Rock Type: Ironstone
Vegetation: *Acacia tumida*, *Gossypium robinsonii* tall shrubland over *Tephrosia rosea* scattered low shrubs.
Vegetation Code:
Vegetation Desc:
Veg Condition: Excellent
Fire Age: 2 - 5 yrs
Notes:

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.35
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.20
<i>Acacia tumida</i>	10	1.70
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.60
<i>Boerhavia coccinea</i>	+	prostrate
<i>Bonamia erecta</i>	+	0.60
<i>Bonamia media</i> var. <i>villosa</i>	+	prostrate
<i>Cleome viscosa</i>	+	0.40
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.50
<i>Cullen lachnostachys</i>	+	0.60
<i>Dampiera candidans</i>	+	0.40
<i>Eriachne mucronata</i>	+	0.40
<i>Gomphrena cunninghamii</i>	+	0.10
<i>Goodenia stobbsiana</i>	+	0.40
<i>Gossypium robinsonii</i>	2	2.10
<i>Grevillea wickhamii</i>	+	0.50
<i>Hybanthus aurantiacus</i>	+	0.55
<i>Indigofera monophylla</i>	+	0.25
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	0.50
<i>Paraneurachne muelleri</i>	+	0.60
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polycarpaea longiflora</i>	+	0.10
<i>Ptilotus astrolasius</i>	+	0.45
<i>Ptilotus exaltatus</i>	+	0.60
<i>Rhynchosia minima</i>	+	0.05
<i>Senna notabilis</i>	+	0.20
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	2.0
<i>Solanum phlomoides</i>	+	0.30
<i>Tephrosia densa</i>	+	0.6
<i>Tephrosia rosea</i>	1	0.45
<i>Themeda triandra</i>	+	0.70
<i>Triodia</i> sp. (<i>epactia/pungens</i>)	+	0.40

URS/IOH Iron Valley

Site

IOH64

Location:

m

Type: Q

50 x 50

1st Observation: Date: 17/04/2011 Described by: WT/CW

Seasonal Conditions: E

2nd Observation: Date: 27/07/2011 Described by: WTTDO

Seasonal Conditions: E

MGA Zone: 50 Easting: 736527 mE

Northing: 7481175 mN

Habitat: Colluvial outwash plain

Soil: Red brown shallow sandy loam

Rock Type: BIF weathered coarse fragments

Vegetation: *Acacia pruinocarpa* scattered tall shrubs over *Corchorus tectus* and *Scaevola parvifolia* subsp. *pilbarae* low open shrubland over *Triodia wiseana* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Notes: **Cenchrus ciliaris* (approx. 10 specimens) within minor creek adjacent to quadrat

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.30
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.30
<i>Acacia ancistrocarpa</i>	+	0.20
<i>Acacia inaequilatera</i>	+	2.20
<i>Acacia pruinocarpa</i>	1	5.00
<i>Acacia pyrifolia</i>	+	0.50
<i>Acacia tumida</i>	+	0.45
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.55
<i>Bonamia erecta</i>	+	0.30
<i>Cenchrus ciliaris</i>	+	0.40
<i>Cleome viscosa</i>	+	0.45
<i>Corchorus tectus</i>	1	0.50
<i>Corymbia hamersleyana</i>	+	8.00
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dicrastylis cordifolia</i>	+	0.50
<i>Dysphania kalpari</i>	+	0.12
<i>Eragrostis eriopoda</i>	+	0.45
<i>Euphorbia australis</i>	+	0.12
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.20
<i>Goodenia microptera</i>	+	0.40
<i>Gossypium robinsonii</i>	+	0.70
<i>Grevillea wickhamii</i>	+	0.70
<i>Hakea lorea</i>	+	0.60
<i>Hibiscus sturtii</i> var. <i>platychlamys</i>	+	0.20
<i>Hybanthus aurantiacus</i>	+	0.35
<i>Indigofera monophylla</i>	+	0.35

<i>Mollugo molluginea</i>	+	0.06
<i>Petalostylis labicheoides</i>	+	1.00
<i>Phyllanthus maderaspatensis</i>	+	0.08
<i>Polycarpaea corymbosa</i>	+	0.12
<i>Polycarpaea holtzei</i>	+	0.30
<i>Ptilotus astrolasius</i>	+	0.30
<i>Ptilotus exaltatus</i>	+	0.35
<i>Ptilotus polystachyus</i>	+	0.60
<i>Rhynchosia minima</i>	+	climber
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	1	0.25
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.40
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.75
<i>Senna notabilis</i>	+	0.18
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.45
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	1.60
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.20
<i>Solanum lasiophyllum</i>	+	0.50
<i>Solanum phlomoides</i>	+	0.40
<i>Solanum sturtianum</i>	+	0.20
<i>Tephrosia rosea</i>	+	0.15
<i>Trianthema pilosa</i>	+	0.05
<i>Tribulus hirsutus</i>	+	0.12
<i>Tribulus macrocarpus</i>	+	0.10
<i>Trichodesma zeylanicum</i>	+	0.30
<i>Triodia epactia</i>	+	0.30
<i>Triodia wiseana</i>	2	0.70

URS/IOH Iron Valley

Site IOH65

Location: Far south of camp
 m

Type: Q 50 x 50

1st Observation: **Date:** 17/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 18/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737145 mE **Northing:** 7482132 mN

Habitat: Open flat plain

Soil: Orange brown clayey sand

Rock Type: Ironstone rocks in patches but largely absent

Vegetation: *Sida* sp. verrucose glands and mixed spp. herbland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Good

Fire Age: 0 - 2 yrs

Notes: Presence of **Cenchrus ciliaris*, fire and cattle disturbance

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.60
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.30
<i>Acacia ancistrocarpa</i>	+	0.80
<i>Acacia aptaneura</i>	+	1.30
<i>Acacia citrinoviridis</i>	+	0.50
<i>Acacia inaequilatera</i>	+	2.50
<i>Acacia pachyacra</i>	+	1.10
<i>Acacia tumida</i>	+	1.10
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.60
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.30
<i>Boerhavia coccinea</i>	+	0.20
<i>Bonamia erecta</i>	+	0.50
<i>Bonamia media</i> var. <i>villosa</i>	+	0.03
<i>Cenchrus ciliaris</i>	+	0.50
<i>Cenchrus setiger</i>	+	0.50
<i>Chrysopogon fallax</i>	+	1.40
<i>Cleome viscosa</i>	+	0.60
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.70
<i>Corchorus tectus</i>	+	0.60
<i>Corymbia hamersleyana</i>	+	5.00
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dicrastylis cordifolia</i>	+	0.05
<i>Dysphania kalpari</i>	+	0.10
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.15

<i>Eragrostis eriopoda</i>	+	0.40
<i>Eriachne aristidea</i>	+	0.45
<i>Eucalyptus gamophylla</i>	+	1.90
<i>Euphorbia australis</i>	+	0.05
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	+	0.60
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.05
<i>Goodenia microptera</i>	+	
<i>Goodenia stobbsiana</i>	+	0.20
<i>Gossypium australe</i>	+	0.45
<i>Gossypium robinsonii</i>	+	1.50
<i>Grevillea wickhamii</i>	+	1.00
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.40
<i>Hibiscus sturtii</i> var. <i>platychlamys</i>	+	0.4
<i>Indigofera georgei</i>	+	0.10
<i>Indigofera monophylla</i>	+	0.15
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	climber
<i>Paraneurachne muelleri</i>	+	0.05
<i>Perotis rara</i>	+	0.15
<i>Petalostylis labicheoides</i>	+	1.10
<i>Phyllanthus maderaspatensis</i>	+	0.20
<i>Polycarpaea corymbosa</i>	+	0.15
<i>Polycarpaea holtzei</i>	+	0.05
<i>Polycarpaea longiflora</i>	+	0.30
<i>Portulaca oleracea</i>	+	prostrate
<i>Pterocaulon sphaeranthoides</i>	+	0.05
<i>Ptilotus astrolasius</i>	+	0.40
<i>Ptilotus auriculifolius</i>	+	0.25
<i>Ptilotus exaltatus</i>	+	1.00
<i>Ptilotus fusiformis</i>	+	0.22
<i>Ptilotus obovatus</i>	+	0.45
<i>Ptilotus polystachyus</i>	+	0.50
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.40
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.50
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.40
<i>Senna notabilis</i>	+	0.15
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.15
<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	+	1.40
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	1	0.25
<i>Sporobolus australasicus</i>	+	0.20
<i>Tephrosia densa</i>	+	0.40
<i>Tephrosia rosea</i>	+	0.60
<i>Themeda triandra</i>	+	0.55
<i>Tragus australianus</i>	+	0.10
<i>Trianthema pilosa</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.20
<i>Triodia</i> sp (epactia/pungens)	+	0.40

URS/IOH Iron Valley

Site IOH66

Location: Southern third of tenement
m

Type: Q 50 x 50

1st Observation: **Date:** 18/04/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 736475 mE **Northing:** 7481753 mN

Habitat: Mid slope of finger hillslope

Soil: Red brown, shallow

Rock Type: Weathered ironstone

Vegetation: *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) scattered hummock grasses.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 2 - 5 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.20
<i>Acacia bivenosa</i>	+	0.55
<i>Acacia inaequilatera</i>	+	0.70
<i>Acacia pruinocarpa</i>	+	1.00
<i>Amphipogon sericeus</i>	+	0.40
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	+	0.45
<i>Cucumis maderaspatanus</i>	+	climber
<i>Cymbopogon obtectus</i>	+	0.20
<i>Dampiera candidans</i>	+	0.45
<i>Dodonaea coriacea</i>	+	1.30
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.06
<i>Eriachne aristidea</i>	+	0.22
<i>Eriachne lanata</i>	+	0.45
<i>Eriachne mucronata</i>	+	0.30
<i>Eriachne pulchella</i>	+	0.10
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	+	13.00
<i>Fimbristylis simulans</i>	+	0.18
<i>Goodenia microptera</i>	+	0.20
<i>Goodenia muelleriana</i>	+	0.35
<i>Goodenia stobbsiana</i>	+	0.35
<i>Goodenia triodiophila</i>	+	0.30
<i>Grevillea wickhamii</i>	+	2.50
<i>Hakea chordophylla</i>	+	3.00
<i>Heliotropium chrysocarpum</i>	+	0.40
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	+	0.30
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polygala isingii</i>	+	0.02
<i>Ptilotus astrolasius</i>	+	0.12
<i>Ptilotus calostachyus</i>	+	0.50
<i>Ptilotus exaltatus</i>	+	0.20
<i>Ptilotus fusiformis</i>	+	0.30
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.30
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.00
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.35
<i>Solanum phlomoides</i>	+	1.20

<i>Tephrosia</i> sp. Cathedral Gorge (F.H. Mollemans 2420)	+	0.04
<i>Trianthera glossostigma</i>	+	0.04
<i>Triodia basedowii</i>	+	0.35
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	1	0.30

URS/IOH Iron Valley

Site IOH67

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 17/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 27/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737154 mE **Northing:** 7482306 mN

Habitat: Open flat plain

Soil: Orange brown clayey sand

Rock Type: Ironstone rocks and shale

Vegetation: *Corchorus tectus* scattered herbs over *Triodia lanigera* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.50
<i>Abutilon trudgenii</i>	+	0.10
<i>Acacia ancistrocarpa</i>	+	0.15
<i>Acacia dictyophleba</i>	+	0.45
<i>Acacia inaequilatera</i>	1	3.50
<i>Acacia pachyacra</i>	+	1.50
<i>Acacia pruinocarpa</i>	+	0.60
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	0.50
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.35
<i>Boerhavia coccinea</i>	+	prostrate
<i>Bonamia erecta</i>	+	0.45
<i>Cenchrus ciliaris</i>	+	0.50
<i>Chrysopogon fallax</i>	+	0.90
<i>Cleome viscosa</i>	+	0.60
<i>Corchorus tectus</i>	1	0.35
<i>Corymbia hamersleyana</i>	+	5.50
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dampiera candidans</i>	+	0.55
<i>Duperreya commixta</i>	+	climber
<i>Dysphania kalpari</i>	+	0.30
<i>Eragrostis eriopoda</i>	+	0.50
<i>Eremophila longifolia</i>	+	0.80
<i>Eriachne aristidea</i>	+	0.40
<i>Eriachne pulchella</i>	+	0.15
<i>Euphorbia australis</i>	+	0.15
<i>Euphorbia biconvexa</i>	+	0.45

<i>Euphorbia tannensis</i>	+	0.30
<i>Gomphrena cunninghamii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.25
<i>Goodenia stobbsiana</i>	+	0.40
<i>Gossypium australe</i>	+	1.00
<i>Grevillea wickhamii</i>	+	1.10
<i>Hakea chordophylla</i>	+	0.60
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.40
<i>Indigofera monophylla</i>	+	0.35
<i>Ipomoea polymorpha</i>	+	0.10
<i>Jasminum didymum</i> subsp. <i>lineare</i>	+	1.00
<i>Paraneurachne muelleri</i>	+	0.45
<i>Perotis rara</i>	+	0.10
<i>Petalostylis labicheoides</i>	+	1.10
<i>Phyllanthus maderaspatensis</i>	+	0.10
<i>Polycarpaea holtzei</i>	+	0.03
<i>Polycarpaea longiflora</i>	+	0.40
<i>Portulaca oleracea</i>	+	prostrate
<i>Pterocaulon sphaeranthoides</i>	+	0.18
<i>Ptilotus astrolasius</i>	+	0.35
<i>Ptilotus calostachyus</i>	+	1.10
<i>Ptilotus exaltatus</i>	+	0.60
<i>Ptilotus gaudichaudii</i>	+	0.30
<i>Ptilotus obovatus</i>	+	0.60
<i>Ptilotus polystachyus</i>	+	0.50
<i>Salsola tragus</i>	+	0.45
<i>Sclerolaena cornishiana</i>	+	0.15
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	0.50
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.30
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.25
<i>Senna notabilis</i>	+	0.15
<i>Sida arenicola</i>	+	1.10
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.90
<i>Sida</i> sp. verrucose glands (F.H. Mollemans 2423)	+	0.15
<i>Solanum lasiophyllum</i>	+	0.40
<i>Solanum phlomoides</i>	+	0.15
<i>Sporobolus australasicus</i>	+	0.50
<i>Tephrosia rosea</i>	+	0.15
<i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601)	+	0.12
<i>Tribulus hirsutus</i>	+	prostrate
<i>Tribulus macrocarpus</i>	+	prostrate
<i>Trichodesma zeylanicum</i>	+	0.10
<i>Triodia epactia</i>	+	0.50
<i>Triodia lanigera</i>	5	0.25
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.05

URS/IOH Iron Valley

Site IOH68

Location: Southeastern flats
m

Type: Q 50 x 50

1st Observation: Date: 18/04/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: Date: 28/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737029 mE **Northing:** 7481682 mN

Habitat: Colluvial plain/outwash

Soil: Red brown sandy loam

Rock Type: Weathered ironstone coarse fragments and gravel

Vegetation: *Sida cardiophylla* very open herbland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.35
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.30
<i>Acacia ancistrocarpa</i>	+	0.40
<i>Acacia inaequilatera</i>	+	2.80
<i>Acacia pachyacra</i>	+	0.40
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	1.00
<i>Bonamia erecta</i>	+	0.40
<i>Cleome viscosa</i>	+	1.00
<i>Corchorus tectus</i>	+	0.40
<i>Dicrastylis cordifolia</i>	+	0.60
<i>Dysphania kalpari</i>	+	0.15
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.40
<i>Eragrostis eriopoda</i>	+	0.35
<i>Eriachne aristidea</i>	+	0.20
<i>Euphorbia australis</i>	+	0.12
<i>Goodenia microptera</i>	+	0.30
<i>Grevillea wickhamii</i>	+	1.30
<i>Haloragis gossei</i> var. <i>gossei</i>	+	0.12
<i>Heliotropium chrysocarpum</i>	+	0.35
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.50
<i>Indigofera monophylla</i>	+	0.55
<i>Paraneurachne muelleri</i>	+	0.60
<i>Petalostylis labicheoides</i>	+	1.30
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.25
<i>Ptilotus calostachyus</i>	+	0.80
<i>Ptilotus exaltatus</i>	+	0.85
<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	+	0.25
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.45
<i>Senna notabilis</i>	+	0.2
<i>Sida cardiophylla</i>	2	1.20
<i>Solanum sturtianum</i>	+	0.55
<i>Trianthema pilosa</i>	+	0.06
<i>Tribulus hirsutus</i>	+	0.06
<i>Trichodesma zeylanicum</i>	+	0.30
<i>Triodia lanigera</i>	+	0.30
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.15

URS/IOH Iron Valley

Site

IOH69r

Location: Between camp and laydown yard**Type:** R**1st Observation:** **Date:** 17/04/2011 **Described by:** NC/NK**Seasonal Conditions:** E**2nd Observation:** **Date:** 3/08/2011 **Described by:** WTTDO**Seasonal Conditions:** E**MGA Zone:** 50 **Easting:** 739337 mE**Northing:** 7484947 mN**Habitat:** Shallow ephemeral minor creek running east-west**Soil:** Red brown rocks and shallow sandy loam**Rock Type:** Ironstone rock and shale**Vegetation:** *Acacia tumida* var. *pilbarensis*, *Gossypium robinsonii* tall shrubland over **Cenchrus setiger* and **C. ciliaris* very open tussock grassland over *Triodia epactia* very open hummock grassland**Vegetation Code:****Vegetation Desc:****Veg Condition:** Excellent**Fire Age:** 5 - 10 yrs**Notes:****Species List**

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.30
<i>Acacia pyrifolia</i>	+	2.00
<i>Acacia tumida</i> var. <i>pilbarensis</i>	15	4.00
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.30
<i>Atalaya hemiglauca</i>	+	3.00
<i>Bonamia erecta</i>	+	0.25
<i>Cenchrus ciliaris</i>	1	0.60
<i>Cenchrus setiger</i>	1	0.80
<i>Cleome viscosa</i>	+	0.30
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.50
<i>Cucumis maderaspatanus</i>	+	climber
<i>Cymbopogon obtectus</i>	+	1.20
<i>Eriachne mucronata</i>	+	0.40
<i>Eriachne tenuiculmis</i>	+	0.30
<i>Fimbristylis simulans</i>	+	0.10
<i>Goodenia microptera</i>	+	0.45
<i>Gossypium robinsonii</i>	1	3.00
<i>Grevillea wickhamii</i>	+	2.50
<i>Hybanthus aurantiacus</i>	+	0.50
<i>Paraneurachne muelleri</i>	+	0.50
<i>Petalostylis labicheoides</i>	+	2.00
<i>Polycarpha holtzei</i>	+	0.03
<i>Polycarpha longiflora</i>	+	0.10
<i>Ptilotus astrolasius</i>	+	0.55
<i>Santalum lanceolatum</i>	+	2.20
<i>Tephrosia rosea</i>	+	0.45
<i>Themeda triandra</i>	+	0.60
<i>Trichodesma zeylanicum</i>	+	0.10
<i>Triodia epactia</i>	3	0.40

URS/IOH Iron Valley

Site

IOH70

Location: Eastern outcropping
m **Type:** Q 50 x 50

1st Observation: **Date:** 18/04/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 29/07/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 737406 mE **Northing:** 7482928 mN

Habitat: Crest of outcrop

Soil: Red brown, shallow

Rock Type: Weathered ironstone- bedrock and coarse fragments

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia* sp. Shovelanna Hill very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 0 - 2 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	0.35
<i>Acacia bivenosa</i>	+	2.00
<i>Acacia dictyophleba</i>	+	0.45
<i>Acacia pachyacra</i>	+	0.30
<i>Acacia pruinocarpa</i>	+	1.00
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.30
<i>Bonamia media</i> var. <i>villosa</i>	+	0.06
<i>Bulbostylis barbata</i>	+	0.08
<i>Cleome viscosa</i>	+	0.10
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.25
<i>Cullen lachnostachys</i>	+	0.55
<i>Dysphania kalpari</i>	+	0.12
<i>Eragrostis eriopoda</i>	+	0.45
<i>Eriachne pulchella</i>	+	0.18
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	3	5.50
<i>Euphorbia australis</i>	+	0.12
<i>Gomphrena affinis</i> subsp. <i>pilbarensis</i>	+	0.15
<i>Gomphrena cunninghamii</i>	+	0.12
<i>Goodenia muelleriana</i>	+	0.40
<i>Goodenia stobbsiana</i>	+	0.15
<i>Goodenia triodiophila</i>	+	0.30
<i>Gossypium australe</i>	+	0.40
<i>Grevillea wickhamii</i>	+	0.55
<i>Haloragis gossei</i> var. <i>gossei</i>	+	0.06
<i>Heliotropium chrysocarpum</i>	+	0.20
<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	+	0.25

<i>Mollugo molluginea</i>	+	0.10
<i>Oldenlandia crouchiana</i>	+	0.08
<i>Paraneurachne muelleri</i>	+	0.45
<i>Polycarpaea corymbosa</i>	+	0.10
<i>Polycarpaea holtzei</i>	+	0.04
<i>Polycarpaea longiflora</i>	+	0.12
<i>Polygala isingii</i>	+	0.03
<i>Ptilotus auriculifolius</i>	+	0.25
<i>Ptilotus calostachyus</i>	+	0.60
<i>Ptilotus exaltatus</i>	+	0.15
<i>Schizachyrium fragile</i>	+	0.20
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.45
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.00
<i>Sida arenicola</i>	+	1.60
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.45
<i>Solanum phlomoides</i>	+	0.15
<i>Tephrosia supina</i>	+	0.08
<i>Trachymene oleracea</i>	+	0.35
<i>Tribulus hirsutus</i>	+	0.06
<i>Triodia basedowii</i>	+	0.25
<i>Triodia epactia</i>	+	0.35
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	2	0.20
<i>Triodia wiseana</i>	+	0.30

URS/IOH Iron Valley

Site IOH71

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 18/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738534 mE **Northing:** 7484229 mN

Habitat: Crest of low hill

Soil: Orange brown fine sandy loam

Rock Type: Ironstone rocks and exposed bedrock

Vegetation: *Acacia bivenosa* scattered tall shrubs over *Triodia* sp. Shovelanna Hill, *T. wiseana* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Scattered *Eucalyptus leucophloia* (?subsp. *leucophloia*) adjacent to quadrat

Species List

Name	% Cover	Height
<i>Acacia bivenosa</i>	1	3.50
<i>Acacia hilliana</i>	+	0.45
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.15
<i>Bonamia media</i> var. <i>villosa</i>	+	0.05
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.10
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.07
<i>Eragrostis eriopoda</i>	+	0.30
<i>Eriachne pulchella</i>	+	0.10
<i>Fimbristylis simulans</i>	+	0.15
<i>Gomphrena kanisii</i>	+	0.15
<i>Goodenia triodiophila</i>	+	0.40
<i>Grevillea wickhamii</i>	+	2.50
<i>Mollugo molluginea</i>	+	0.10
<i>Polycarpaea corymbosa</i>	+	0.10
<i>Polycarpaea holtzei</i>	+	0.03
<i>Ptilotus astrolasius</i>	+	0.20
<i>Ptilotus calostachyus</i>	+	
<i>Ptilotus exaltatus</i>	+	0.02
<i>Schizachyrium fragile</i>	+	0.10
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	0.40
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	+	1.30
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	+	1.50
<i>Sporobolus australasicus</i>	+	0.10
<i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835)	40	0.25
<i>Triodia wiseana</i>	5	0.30

URS/IOH Iron Valley

Site

IOH72r

Location: Creekline just west of camp **Type:** R 200 m

1st Observation: **Date:** 18/04/2011 **Described by:** WT/CW **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738910 mE **Northing:** 7485007 mN

Habitat: Minor creekline

Soil: Red brown

Rock Type: Ironstone rocks and gravel

Vegetation: *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* tall open shrubland over **Cenchrus ciliaris* with *Triodia epactia*, *Themeda triandra* tussock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Fair

Fire Age:

Notes:

Species List

Name	% Cover	Height
<i>Acacia tumida</i> var. <i>pilbarensis</i>	+	6.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.5
<i>Atalaya hemiglauca</i>	+	2.2
<i>Cenchrus ciliaris</i>	35	0.6
<i>Cenchrus setiger</i>	+	0.3
<i>Cleome viscosa</i>	+	0.4
<i>Corchorus tectus</i>	+	0.25
<i>Corymbia hamersleyana</i>	5	8.0
<i>Cucumis maderaspatanus</i>	+	1.0
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.3
<i>Eriachne tenuiculmis</i>	1	0.45
<i>Eulalia aurea</i>	+	0.2
<i>Euphorbia biconvexa</i>	+	0.22
<i>Fimbristylis simulans</i>	+	0.2
<i>Goodenia microptera</i>	+	0.3
<i>Gossypium robinsonii</i>	+	2.5
<i>Grevillea wickhamii</i>	4	6.0
<i>Indigofera monophylla</i>	+	0.25
<i>Paraneurachne muelleri</i>	+	0.6
<i>Petalostylis labicheoides</i>	+	1.6
<i>Polycarpaea longiflora</i>	+	0.2
<i>Ptilotus astrolasius</i>	+	0.2
<i>Ptilotus exaltatus</i>	+	0.3
<i>Santalum lanceolatum</i>	+	2.0
<i>Scaevola spinescens</i>	+	1.5
<i>Tephrosia densa</i>	+	0.6
<i>Tephrosia rosea</i>	+	0.5
<i>Themeda triandra</i>	3	0.7
<i>Trachymene oleracea</i>	+	0.3
<i>Trichodesma zeylanicum</i>	+	0.4
<i>Triodia epactia</i>	10	0.7

URS/IOH Iron Valley

Site

IOH73

Location: Approximately 700 m south of camp east of main m **Type:** Q 50 x 50

1st Observation: **Date:** 18/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738758 mE **Northing:** 7484277 mN

Habitat: Narrow plain between low hills, possible floodplain in wet season

Soil: Red brown fine clayey sand

Rock Type:

Vegetation: *Corymbia hamersleyana* scattered trees over *Acacia citrinoviridis* tall open shrubland over *Gossypium australe* scattered shrubs over *Eulalia aurea*, *Themeda triandra* tussock grassland and *Triodia epactia* very open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes: Very little **Cenchrus ciliaris*

Species List

Name	% Cover	Height
<i>Abutilon otocarpum</i>	+	0.5
<i>Acacia adsurgens</i>	+	2.2
<i>Acacia ancistrocarpa</i>	+	1.1
<i>Acacia citrinoviridis</i>	2	3.5
<i>Acacia pachyacra</i>	+	0.5
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Bidens bipinnata</i>	+	0.5
<i>Boerhavia coccinea</i>	+	prostrate
<i>Bonamia erecta</i>	+	0.3
<i>Cenchrus ciliaris</i>	1	0.60
<i>Cenchrus setiger</i>	+	0.5
<i>Chrysopogon fallax</i>	+	1.3
<i>Cleome viscosa</i>	+	0.3
<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	+	0.4
<i>Corchorus tectus</i>	+	0.4
<i>Corymbia hamersleyana</i>	2	10
<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	+	0.35
<i>Cucumis maderaspatanus</i>	+	climber
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.1
<i>Eragrostis eriopoda</i>	+	0.45
<i>Eriachne aristidea</i>	+	0.35
<i>Eriachne mucronata</i>	+	0.6
<i>Eucalyptus gamophylla</i>	+	2.5
<i>Eulalia aurea</i>	50	0.5
<i>Euphorbia biconvexa</i>	+	0.6
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	+	0.2
<i>Fimbristylis simulans</i>	+	0.2
<i>Gomphrena cunninghamii</i>	+	0.2
<i>Gomphrena kanisii</i>	+	0.15
<i>Goodenia microptera</i>	+	0.05
<i>Goodenia muelleriana</i>	+	0.4
<i>Gossypium australe</i>	1	0.4
<i>Grevillea wickhamii</i>	+	3.0
<i>Hakea chordophylla</i>	+	0.9

<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	+	0.3
<i>Hybanthus aurantiacus</i>	+	0.4
<i>Indigofera georgei</i>	+	0.4
<i>Indigofera monophylla</i>	+	0.5
<i>Mollugo molluginea</i>	+	0.1
<i>Paraneurachne muelleri</i>	+	0.4
<i>Paspalidium clementii</i>	+	0.07
<i>Perotis rara</i>	+	0.15
<i>Petalostylis labicheoides</i>	+	2.0
<i>Phyllanthus maderaspatensis</i>	+	0.1
<i>Polycarpaea corymbosa</i>	+	0.15
<i>Polycarpaea holtzei</i>	+	0.05
<i>Polycarpaea longiflora</i>	+	0.4
<i>Pterocaulon sphaeranthoides</i>	+	0.06
<i>Ptilotus calostachyus</i>	+	0.8
<i>Ptilotus exaltatus</i>	+	0.4
<i>Rhyncharrhena linearis</i>	+	climber
<i>Rhynchosia minima</i>	+	climber
<i>Salsola tragus</i>	+	0.5
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	0.5
<i>Senna artemisioides</i> subsp. <i>oligophylla</i> x <i>helmsii</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	+	0.8
<i>Senna notabilis</i>	+	0.1
<i>Sida arenicola</i>	+	0.3
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.5
<i>Sida</i> sp. <i>verrucose glands</i> (F.H. Mollemans 2423)	+	0.2
<i>Sporobolus australasicus</i>	+	0.2
<i>Streptoglossa bubakii</i>	+	0.08
<i>Themeda triandra</i>	1	1.0
<i>Trianthema pilosa</i>	+	0.05
<i>Tribulus macrocarpus</i>	+	creeper
<i>Trichodesma zeylanicum</i>	+	0.3
<i>Triodia epactia</i>	5	0.55
<i>Triodia wiseana</i>	+	0.3
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

URS/IOH Iron Valley

Site IOH75

Location: m **Type:** Q 50 x 50

1st Observation: **Date:** 18/04/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 1/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 738971 mE **Northing:** 7484646 mN

Habitat: Open flat plain below low hill to east

Soil: Orange brown fine sandy loam

Rock Type: Ironstone rocks

Vegetation: *Eucalyptus gamophylla* scattered low trees over *Acacia bivenosa* scattered tall shrubs over *Triodia lanigera* hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia adoxa</i> var. <i>adoxo</i>	+	1.0
<i>Acacia ancistrocarpa</i>	+	2.3
<i>Acacia bivenosa</i>	1	4.5
<i>Acacia pachyacra</i>	+	2.2
<i>Acacia pruinocarpa</i>	+	0.15
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Bonamia erecta</i>	+	0.45
<i>Cenchrus ciliaris</i>	+	0.1
<i>Cleome viscosa</i>	+	0.05
<i>Corchorus tectus</i>	+	0.2
<i>Cucumis maderaspatanus</i>	+	1.5
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.05
<i>Eragrostis eriopoda</i>	+	0.2
<i>Eucalyptus gamophylla</i>	1	2.4
<i>Euphorbia australis</i>	0.1	+
<i>Goodenia microptera</i>	+	0.05
<i>Hakea chordophylla</i>	+	3.5
<i>Hakea lorea</i>	+	2.2
<i>Hybanthus aurantiacus</i>	+	0.1
<i>Petalostylis labicheoides</i>	+	1.1
<i>Phyllanthus maderaspatensis</i>	+	0.02
<i>Pterocaulon sphaeranthoides</i>	+	0.25
<i>Ptilotus exaltatus</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	+	1.1
<i>Senna notabilis</i>	+	0.1
<i>Sida</i> sp. Pilbara (A.A Mitchell PRP 1543)	+	0.12
<i>Triodia epactia</i>	+	0.3
<i>Triodia lanigera</i>	50	0.4
<i>Triodia wiseana</i>	+	0.45
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.05

URS/IOH Iron Valley

Site IOH77

Location: Approximately 150 m south of laydown yard
 m **Type:** Q 50 x 50

1st Observation: **Date:** 18/08/2011 **Described by:** NC/NK **Seasonal Conditions:** E

2nd Observation: **Date:** 3/08/2011 **Described by:** WTTDO **Seasonal Conditions:** E

MGA Zone: 50 **Easting:** 739242 mE **Northing:** 7484790 mN

Habitat: Gentle northern facing mid-slope of low stoney hill

Soil: Red brown clayey sand

Rock Type: Ironstone

Vegetation: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia lanigera* open hummock grassland.

Vegetation Code:

Vegetation Desc:

Veg Condition: Excellent

Fire Age: 5 - 10 yrs

Notes:

Species List

Name	% Cover	Height
<i>Acacia bivenosa</i>	+	3.3
<i>Acacia citrinoviridis</i>	+	1.3
<i>Aristida contorta</i>	+	0.3
<i>Bonamia erecta</i>	+	0.35
<i>Cleome viscosa</i>	+	0.3
<i>Corymbia hamersleyana</i>	+	1.8
<i>Duperreya commixta</i>	+	climber
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	+	0.08
<i>Eriachne pulchella</i>	+	0.1
<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	1	7.0
<i>Fimbristylis simulans</i>	+	0.15
<i>Mollugo molluginea</i>	+	0.02
<i>Ptilotus calostachyus</i>	+	0.7
<i>Ptilotus exaltatus</i>	+	0.25
<i>Ptilotus obovatus</i>	+	0.45
<i>Schizachyrium fragile</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.0
<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	+	1.2
<i>Trachymene oleracea</i>	+	0.2
<i>Trianthema glossostigma</i>	+	0.03
<i>Tribulus macrocarpus</i>	+	creeper
<i>Tribulus suberosus</i>	+	1.0
<i>Triodia epactia</i>	+	0.4
<i>Triodia lanigera</i>	25	0.25

URS/IOH Iron Valley

Site

IOH-OPPORTUNISTIC RECORDS

Location:

1st Observation: Date: 1/08/2011 Described by: WTTDO

2nd Observation: Date: 29/09/2011 Described by:

Type:

Seasonal Conditions:

Seasonal Conditions:

MGA Zone: Easting: mE

Northing: mN

Habitat:

Soil:

Rock Type:

Vegetation:

Vegetation Code:

Vegetation Desc:

Veg Condition:

Fire Age:

Notes:

Species List

Name	% Cover	Height
<i>Clerodendrum floribundum</i> var. <i>angustifolium</i>		
<i>Crotalaria novae-hollandiae</i> subsp. <i>novae-hollandiae</i>		
<i>Ficus brachypoda</i>		
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	+	0.2
<i>Triumfetta maconochieana</i>	+	0.3

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Appendix L: Quadrat and Relevé Photographs

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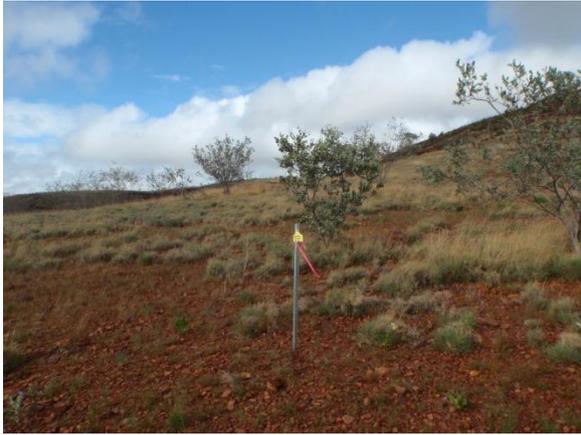


Plate 1: Quadrat IOH01, April 2011



Plate 2: Quadrat IOH01, July/August 2011



Plate 3: Quadrat IOH02, April 2011

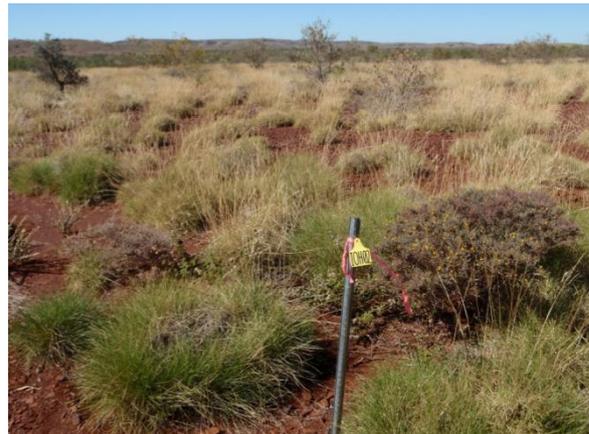


Plate 4: Quadrat IOH02, July/August 2011



Plate 5: Quadrat IOH03, April 2011



Plate 6: Quadrat IOH03, July/August 2011



Plate 7: Quadrat IOH04, April 2011



Plate 8: Quadrat IOH04, July/August 2011



Plate 9: Quadrat IOH05, April 2011



Plate 10: Quadrat IOH05, July/August 2011



Plate 11: Quadrat IOH06, April 2011



Plate 12: Quadrat IOH06, July/August 2011



Plate 13: Quadrat IOH07, April 2011

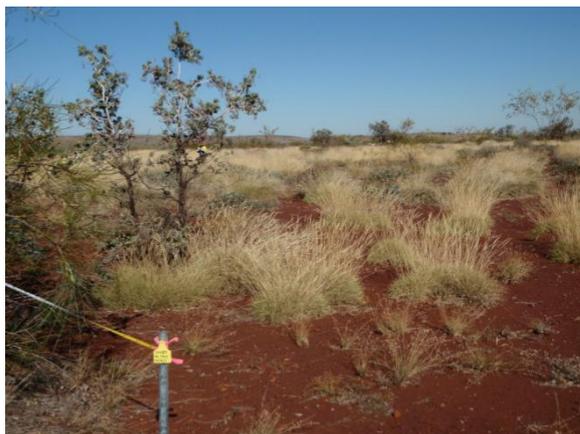


Plate 14: Quadrat IOH07, July/August 2011



Plate 15: Quadrat IOH08, April 2011



Plate 16: Quadrat IOH08, July/August 2011



Plate 17: Quadrat IOH09, April 2011



Plate 18: Quadrat IOH09, July/August 2011



Plate 19: Quadrat IOH10, April 2011



Plate 20: Quadrat IOH10, July/August 2011



Plate 21: Relevé IOH11r, April 2011 (facing southeast)



Plate 22: Relevé IOH11r, April 2011 (facing northwest)



Plate 23: Relevé IOH11r, July/August 2011 (facing southeast)



Plate 24: Relevé IOH11r, July/August 2011 (facing northwest)



Plate 25: Quadrat IOH12, April 2011



Plate 26: Quadrat IOH12, July/August 2011



Plate 27: Quadrat IOH13, April 2011



Plate 28: Quadrat IOH13, July/August 2011



Plate 29: Quadrat IOH14, April 2011

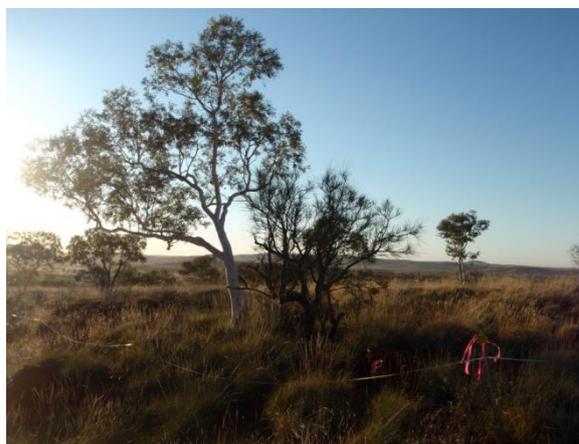


Plate 30: Quadrat IOH14, July/August 2011



Plate 31: Quadrat IOH15, April 2011



Plate 32: Quadrat IOH15, July/August 2011



Plate 33: Quadrat IOH16, April 2011



Plate 34: Quadrat IOH16, July/August 2011



Plate 35: Quadrat IOH17, April 2011



Plate 36: Quadrat IOH17, July/August 2011