

Survey of Proposed Drill Lines in Tenement M59/339 at Extension Hill

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For Extension Hill Pty Ltd: Extension Hill Magnetite Project



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1. Background

Extension Hill Pty Ltd proposes to drill exploration holes in Tenement M59/339 in the North Extension Hill area in the Midwest region of Western Australia, approximately 85 km east of Perenjori, and immediately east of the Great Northern Highway. Previous surveys in the area recorded four threatened flora (T) including *Darwinia masonii*, *Eucalyptus synandra*, *Acacia imitans* and *Lepidosperma gibsonii*. (Bennett Environmental Consulting 2000; ATA Environmental 2004; Meissner and Caruso 2008) The Mount Gibson Range Vegetation Complexes Priority Ecological Community is also recorded in the area.

2. Climate

Extension Hill is located in the transition zone from the wetter south west to the semi-arid Yalgoo region. The climate is Mediterranean with predominantly dry hot summers with occasional thunderstorms with mild wet winters with average rainfall recorded at Mt. Gibson Station (1983 – 2012) as 350.8 mm; Perenjori 329.2 mm and Paynes Find (north) 291.4 mm. Average monthly statistics at Mt. Gibson show a fairly even spread of rainfall with a slight increase 36.5 – 42.4 mm per month recorded in May to August; with 17.3 – 30.3 mm per month recorded from September to April. 2013 records (BOM 2013) show an above average rainfall in May at most centres in the area, except at Paynes Find, with below to well below average rainfall received in June and July.

3. Regional Vegetation

The survey area is located within the Southwest Province, Wheatbelt IBRA region in the Wheatbelt P1 sub-IBRA region. It is very close to the boundary with the Talling IBRA sub-region, and this is reflected in the diversity of species found in the area, with representation from both regions.

Payne et al (1998) has the area mapped as Land Systems of Mt. Gibson – hill with mixed shrublands 12 – Talling – prominent ridges and hills of banded ironstone, dolerite and sedimentary rocks. Vegetation: Scattered to moderately dense tall shrubland of *Acacia ramulosa* and other *Acacias* with undershrubs such as *Thryptomene* and *Eriostemon (Philothea)* species on ridges and hills and understorey of *Eremophila* species and *Ptilotus obovatus* on the slopes. Broad-scale mapping by Beard (1976) has much of the Mt. Gibson Range mapped as shrublands of *Acacia acuminata* and *Allocasuarina acutivalvis* on ironstone; medium woodland of York Gum (*Eucalyptus loxophleba*) on colluvial slopes and – surrounding Mt. Gibson – shrublands of bowgada (*Acacia ramulosa*) and *A. quadrimarginea* on stony ridges and shrublands of bowgada and jam scrub.

The Department of Environment and Conservation (DEC) carried out several surveys in the region on BIF and Greenstone landforms over the past 8 years. Results of these surveys have improved the description of plant assemblages occurring near the survey area and are presented in *Flora and vegetation of banded ironstone formations of the Yilgarn Craton: Mount Gibson and surrounding area* (Meissner & Caruso 2008). These communities have been used to describe the Mount Gibson Range Vegetation Complexes (banded ironstone formation) Priority Ecological Community (PEC).

4. Threatened and Priority Species

Several rare species have been recorded in the area, with some discovered recently through increased survey effort in the region. Threatened flora (T) recorded in the vicinity include *Eucalyptus synandra*, *Darwinia masonii*, *Acacia imitans* and *Lepidosperma gibsonii*. A list of all priority and threatened flora within 20 km are presented in Table 1. (DEC/ DPaW) Conservation codes are described in Appendix 3.

Table 1: Flora of Conservation Significance recorded from within 20km

Family	Scientific Name	Conservation code	<10km
Cyperaceae	<i>Lepidosperma gibsonii</i>	T	Y
Fabaceae	<i>Acacia unguicula</i>	T	
Fabaceae	<i>Acacia imitans</i>	T	Y
Myrtaceae	<i>Eucalyptus synandra</i>	T	Y
Myrtaceae	<i>Darwinia masonii</i>	T	Y
Violaceae	<i>Hybanthus cymulosus</i>	T	Y
Asteraceae	<i>Gnephosis setifera</i>	P1	
Casuarinaceae	<i>Allocasuarina tessellata</i>	P1	Y
Cyperaceae	<i>Lepidosperma</i> sp. Blue Hills	P1	
Fabaceae	<i>Acacia cerastes</i>	P1	Y
Myrtaceae	<i>Chamelaucium</i> sp. Yalgoo	P1	Y
Rutaceae	<i>Philotheca nutans</i>	P1	Y
Asteraceae	<i>Podotheca uniseta</i>	P3	Y
Celastraceae	<i>Psammomoya implexa</i>	P3	
Goodeniaceae	<i>Goodenia perryi</i>	P3	
Lamiaceae	<i>Microcorys tenuifolia</i>	P3	Y
Myrtaceae	<i>Euryomyrtus recurva</i>	P3	Y
Myrtaceae	<i>Thryptomene</i> sp. Wandana	P3	
Myrtaceae	<i>Verticordia venusta</i>	P3	Y
Poaceae	<i>Austrostipa blackii</i>	P3	Y
Proteaceae	<i>Persoonia pentasticha</i>	P3	Y
Proteaceae	<i>Grevillea scabrida</i>	P3	Y
Proteaceae	<i>Grevillea subtiliflora</i>	P3	
Colchicaceae	<i>Wurmbea murchisoniana</i>	P4	
Sapindaceae	<i>Dodonaea amplisemina</i>	P4	Y

5. Survey methodology

Predetermined survey lines were marked out and an area of 25 m either side of the line was surveyed for the presence of flora of conservation status. The GPS coordinates for the start and finish of the lines are presented in Table 2.

Table 2: GPS coordinates for the proposed drill lines

Line No	Length	Start		End	
		E	N	E	N
1	293.615	514680	6729541	514941	6729675
2	289.479	514640	6729632	514896	6729768
3	289.412	514580	6729380	514830	6729960
4	286.521	514610	6729730	514870	6729870
5	275.197	514556	6279929	514802	6730052
6	202.675	514558	6730064	514737	6730160

The layout of the drill lines is shown in Figure 1. Line 1 is furthest south.

A description of the vegetation community was recorded based on the NVIS system using strata (dominant species, height and cover) rather than height classes, and coordinates where there was a vegetation change. The vegetation community descriptions are used to compare against communities forming the Mount Gibson Range Vegetation Complexes PEC.

A list of flora of conservation significance recorded from the local area (20 km radius) was determined from a literature search. Flora of conservation significance present in the survey area were recorded and flagged. Other significant flora which occur on similar landforms from a wider area (Blue Hills/ Warriedar area) were also searched for.

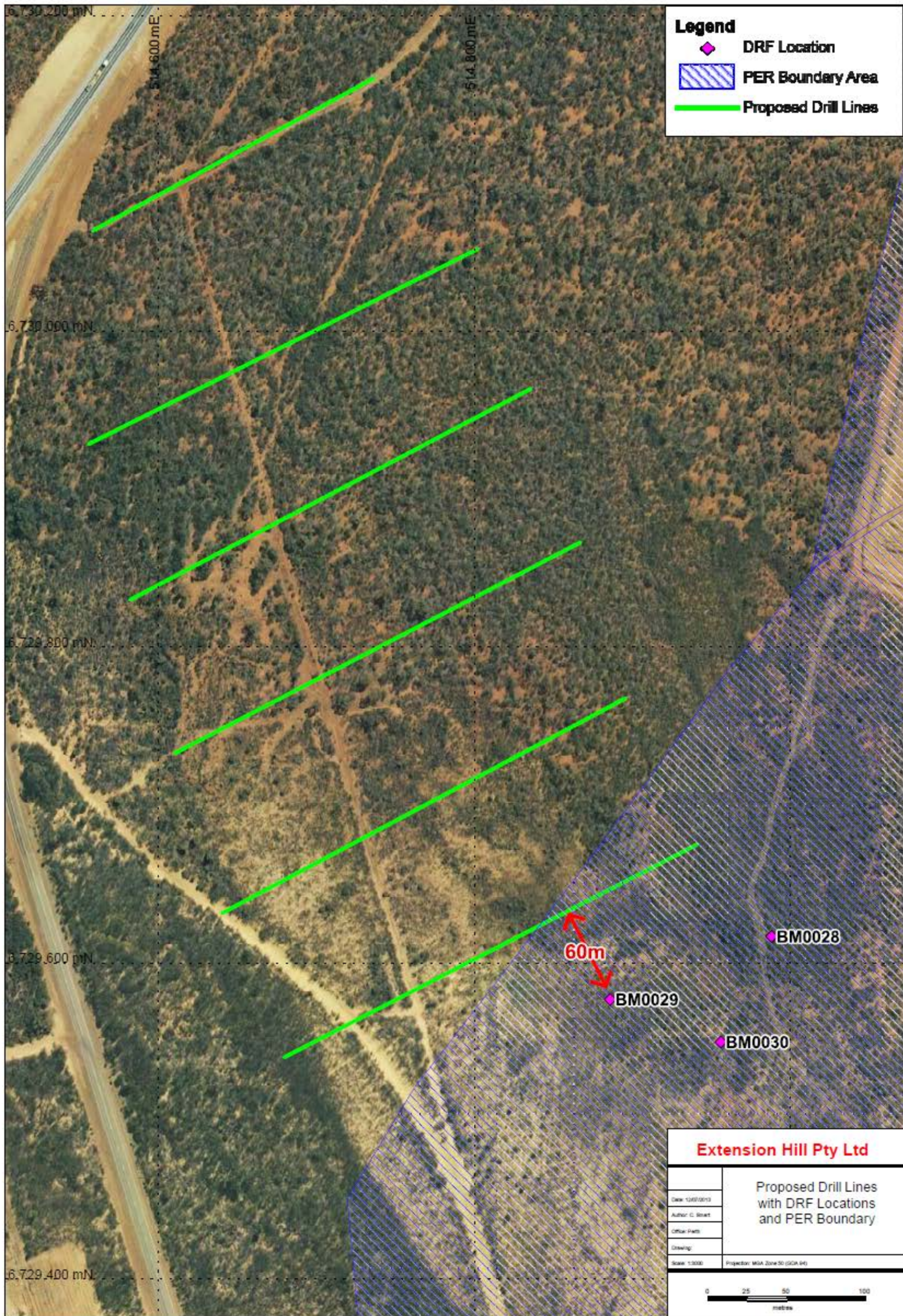


Figure 1: Location of Proposed Drill Lines in relation to PER boundary and previously known *Lepidosperma gibsonii* (DRF) locations (Figure drawn by B. McLernon, Extension Hill Pty Ltd)

6. Results

One threatened species and one priority species were recorded within the survey area – *Lepidosperma gibsonii* (T) and *Persoonia pentasticha* (P3). *Lepidosperma gibsonii* was recorded around the south eastern area of Drill Line 1. *Persoonia pentasticha* was recorded near Drill line 5. (Figure 2) A total of 91 tussocks of *Lepidosperma gibsonii* were recorded, and one *Persoonia pentasticha*.

Three vegetation communities were recorded within the area, with two – (1) sandplain (recently burnt) dominant in the south western area, and (2) laterite/ rocky ridge through the north, central and south eastern area (partly burnt). A small area of (3) Eucalyptus open woodland on colluvial plain occurred at the northern end.

Some disturbance had occurred within the area – mainly old access tracks, gravel removal and fire.

6.1 Flora of Conservation Significance

1. *Lepidosperma gibsonii* (T)

Family: Cyperaceae

Lepidosperma gibsonii was recorded in the area of Line 1, with a total of 91 tussocks within the potential impact area. Most were grazed and individual tussocks were small (generally less than 3cm in diameter, and up to 30cm height). Less than 10% had flowering stems. The area in which they occurred had been burnt within the last few years and occurred in open to mid-dense regrowth to an average height of about 1.2m on a rocky south facing slope in shallow soil.

Description: Tufted perennial with short rhizomes; terete culm; leaves and culms spirodistichous. It is recognised as being in the *L. costale* group based on genetics. It is only known from the Mt. Gibson Range, on BIF ranges, and recorded from gullies and on slopes in shallow soil. (Barrett 2007).

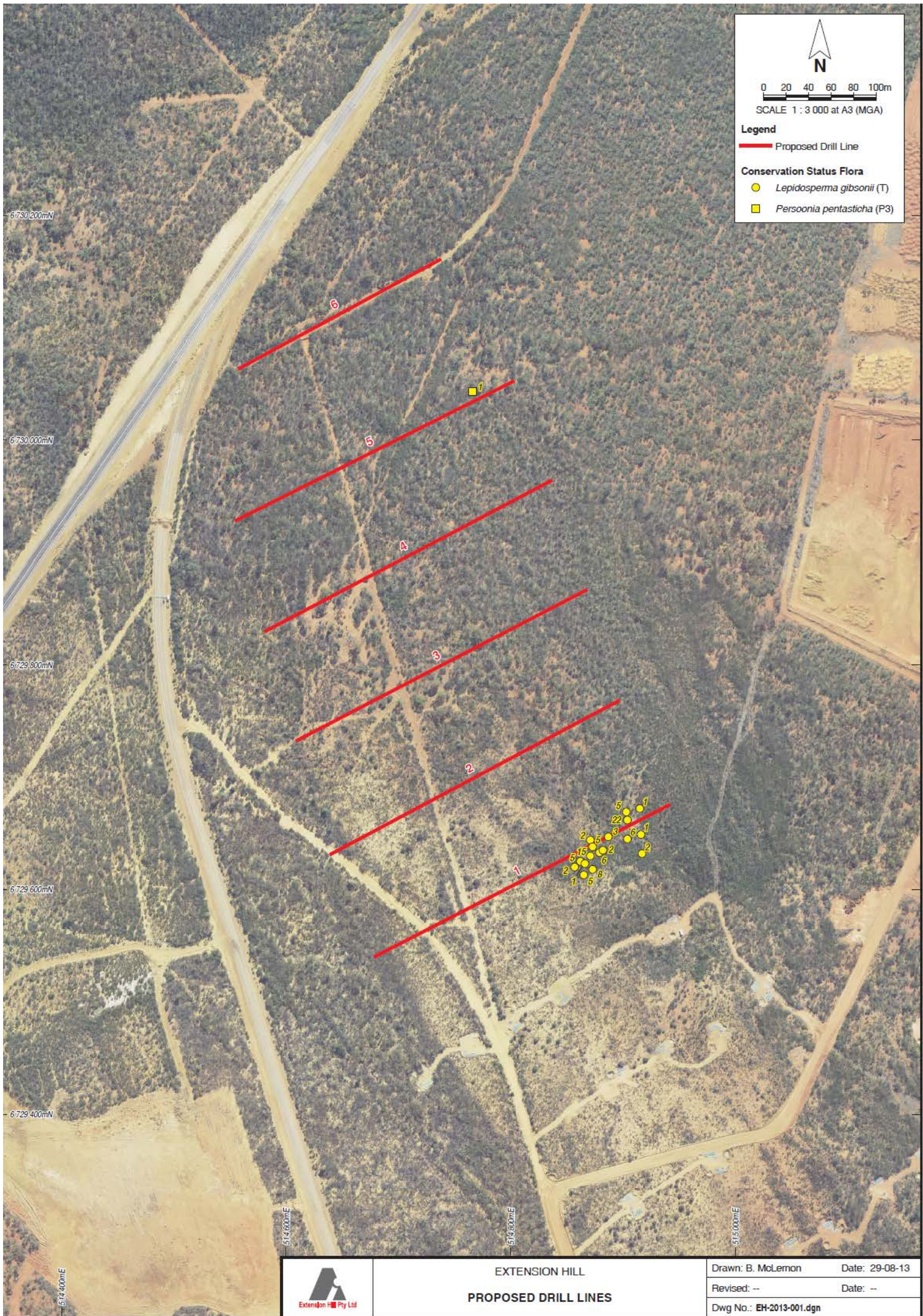


Figure 2: Location of flora of conservation significance (Figure drawn by B. McLernon, EHPL)

2. *Persoonia pentasticha* (P3)

Family: Proteaceae

Figure 3: *Persoonia pentasticha*

Persoonia pentasticha is a low to medium shrub (Figure 3) with a range of approximately 380km occurring in the northern wheatbelt and in the Yalgoo Bioregion. It is often found growing in *Eucalyptus* woodlands often having a sporadic occurrence, rather than forming a dominant part of the stratum (personal observation).



Figure 3: *Persoonia pentasticha*

It is placed within the Chapmaniana group – bark smooth, leaves alternate with 5 prominent veins. Inflorescence axillary to terminal, anauxotelic – growth does not continue beyond the flowering region; flowers actinomorphic, mostly subtended by scale leaves.

Persoonia pentasticha is a shrub to 0.4 – 1.8 m high. The flowers are actinomorphic, tepals yellow, mostly subtended by scale leaves. Leaves are linear 3.5 – 12cm long; more or less terete, alternate with 5 prominent veins. Fruit is a drupe. It has been recorded as flowering from August to November.

Two species are included in the Chapmaniana group – *Persoonia chapmaniana* and *P. pentasticha*. The ovary is densely hairy in *chapmaniana*, and glabrous in *pentasticha*. Both have linear leaves, sub-terete in *chapmaniana*, more or less terete in *pentasticha*; 5 – 30 flowered in *chapmaniana*, 1 – 15 flowered in *pentasticha*. *P. Chapmaniana* has been recorded west of *Persoonia pentasticha*.

6.2 Vegetation Communities

Vegetation structure was described based on the NVIS system based on strata rather than height classes. Ground cover (forbs, grasses, ferns) was found to be very sparse in most sites most likely due to below average rainfall in June and July. Some shrubs were sterile due to stage of growth (immature) or dry conditions. These are indicated with a question mark. Vegetative characteristics were used to rule out similar species of conservation significance.

1. Sandplain community

Much of this community had been burnt and was dominated by dense low shrubland (Figure 4).

Drill Lines: Western half of Lines 1 and 2

GPS: 514694 E/ 6729655 N (Line 2); 514678 E/ 6729542 N (Line 1)

Two descriptions of the shrublands are listed below. The composition varied with different shrubs being dominant in various areas.

1a. *Eucalyptus oldfieldii*, *E. leptopoda* subsp. *arctata* and *Codonocarpus cotinifolius* isolated low mallee/ tall shrub over *Grevillea paradoxa*, *Melaleuca nematophylla*, *M. conothamnoides*, *Acacia acuaria*, *Acacia coolgardiensis*, *Persoonia hexagona*, ?*Persoonia manotricha* (sterile), *Dodonaea adenophora*, *Hibbertia glomerosa* var. *glomerosa*, *H. stenophylla*, *Hybanthus floribundus* subsp. *floribundus*, *Keraudrenia velutina* subsp. *velutina* mixed low shrubland with isolated forbs (*Waitzia acuminata*) with varying dominance of shrub species.

1b. Isolated *Codonocarpus cotinifolius* and *Acacia murrayana* tall shrubs (> 2m) over mixed shrubland of *Calycopeplus paucifolius*, *Acacia acuaria*, *Hakea minyma*, *Hibbertia glomerosa* var. *glomerosa*, *Persoonia ?manotricha*, *Philotheca sericea*, *Grevillea paradoxa* over isolated forbs.



Figure 4: Regrowth on sandplain

2. Rocky ridge communities

There was some variation in the community structure along the ridge depending on position on the slope and substrate. (Figure 5)

2a. Line 2 East end GPS 514889 E/ 6729769 (also eastern end of Lines 3, 4 and 5)

Landform: rocky ridge with laterite; north east aspect; moderate slope to small areas of steep slope

Isolated *Eucalyptus loxophleba* subsp. *supralaevis* and *Callitris columellaris* trees over *Melaleuca nematophylla*, *Acacia ramulosa* var. *ramulosa*, *Allocasuarina acutivalvis* subsp. *prinsepiana*, *Calycopeplus paucifolius* open tall shrubland (20 – 30 %) over *Aluta aspera* subsp. *hesperia*, *Eremophila clarkei*, *Philotheca deserti* and *P. brucei* subsp. *brucei* sparse low shrubland (2 – 3 %) over isolated *Cheilanthes adiantoides*, *Waitzia acuminata*, *Stylidium confluens* ferns and forbs

2b. Line 6 West end GPS: 514558 E/ 6730059 N (also Lines 5, 4 and 3 central area)

Landform: broad ridge; gravel/ laterite/ rock – sedimentary – ironstone, siltstone; gentle slope

Isolated *Eucalyptus loxophleba* subsp. *supralaevis*, *E. oldfieldii*, *E. kochii* subsp. *amaryissia* and *Callitris columellaris* (< 2%) in *Allocasuarina acutivalvis* subsp. *prinsepiana*, *Acacia nigripilosa* subsp. *nigripilosa*, *A. anthochaera*, *A. assimilis* subsp. *assimilis*, *A. ramulosa* var. *ramulosa*, *Melaleuca leiocarpa* tall shrubland (>50% cover) over isolated low shrubs (*Senna artemisioides*, *Philotheca sericea*, *Aluta aspera* subsp. *hesperia*, *Leucopogon* sp. Clyde Hill, *Eremophila latrobei* subsp. *latrobei*, *Micromyrtus racemosa* var. *racemosa*, *Solanum lasiophyllum* (<1 %) with isolated forbs/ seedlings/ grass tussock (*Eremophila clarkei*, *E. latrobei*, *Waitzia acuminata*, *Drosera macrantha*, *Amphipogon caricinus*, *Cheilanthes adiantoides*)

Other shrubs occurring (not common): *Persoonia pentasticha* P3, *Senna* sp. Austin, *Scaevola spinescens*, *Hibbertia stenophylla*, *Olearia pimeleoides*

2c. Line 1 East end (514903 E/ 6729669 N)

Landform: rocky outcrop; small valley sloping into drainage line; slope mainly south

Regrowth following fire – dense *Acacia* shrubland with several *Lepidosperma gibsonii* (T) tussocks

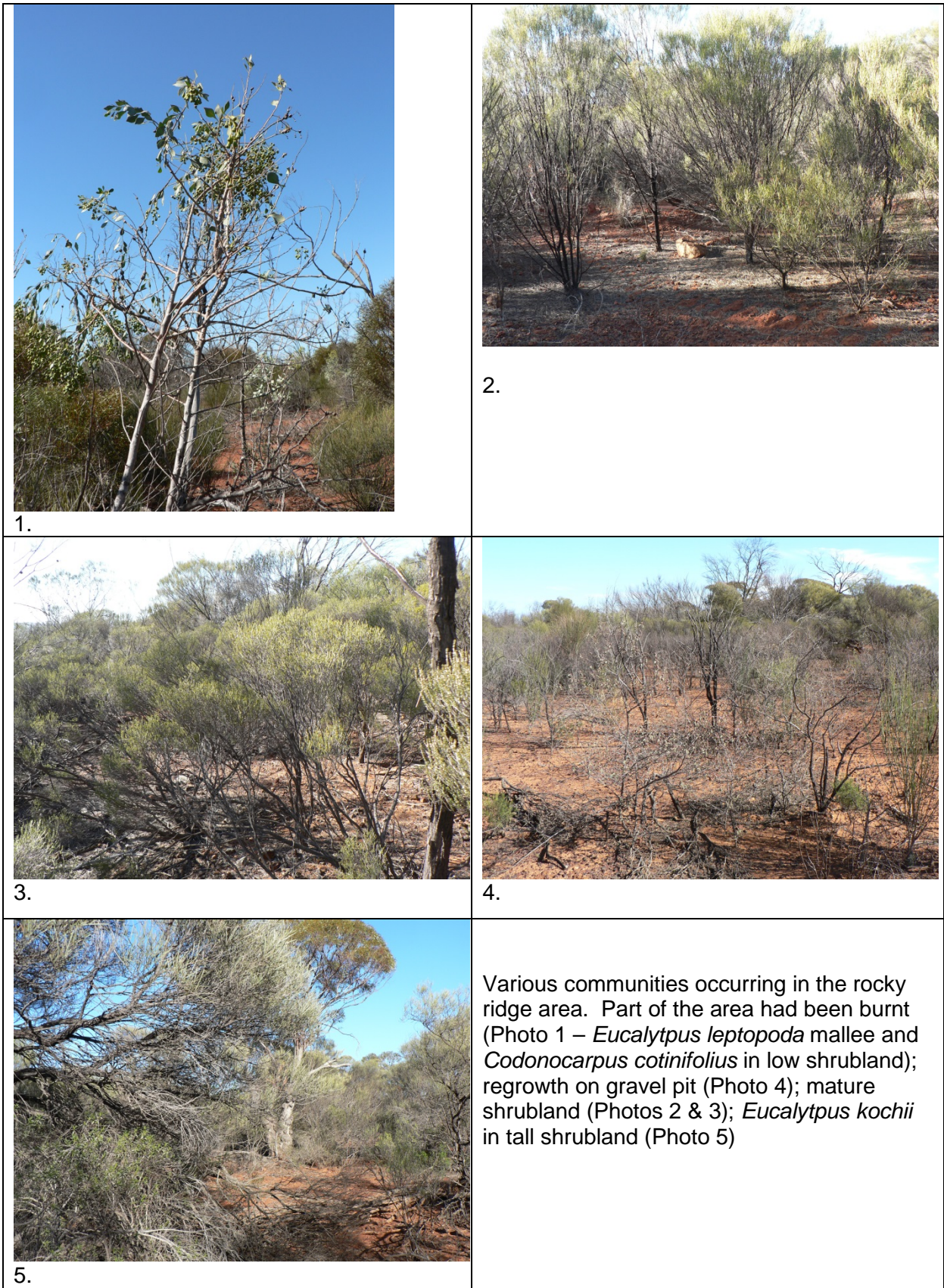
Isolated *Allocasuarina acutivalvis* subsp. *prinsepiana* low trees over *Acacia andrewsii*, *Grevillea paradoxa*, *Mirbelia depressa*, *Philotheca brucei* subsp. *brucei*, *P. deserti* subsp. *deserti*, *Melaleuca nematophylla*, *M. radula* low shrubland to closed shrubland over sparse *Lepidosperma gibsonii*, *Lomandra ?effusa* (sterile), *Cheilanthes sieberi* subsp. *sieberi*, *Waitzia acuminata*

2d. Line 3 & 4 Western end (Fire regrowth - recent; historic disturbance from gravel removal; old access tracks)

Landform: broad ridge, gently sloping to the south west; gravel

Acacia ramulosa var. *ramulosa* and *Allocasuarina acutivalvis* subsp. *prinsepiana* shrubland with *Micromyrtus racemosa* var. *racemosa*, *Melaleuca nematophylla*, *Glischrocaryon aureum*, *Eremophila latrobei* subsp. *latrobei* over isolated forbs (*Stylidium confluens* dominant)

Figure 5: Vegetation communities on the rocky ridge landform



3. *Eucalyptus supralaevis* subsp. *loxophleba* low open woodland over *Acacia anthochaera*, *A. ramulosa* and *Melaleuca leiocarpa* tall shrubland community

Drill Line: 6

GPS: 514675 E/ 6730136 N

Landform: change of slope: lower slope to plain

Land surface: red brown clay loam; surface rock <2 % - gravel; litter 30 – 40%; fallen timber < 5%

Disturbance: old access track with some regrowth; minor erosion

Stratum & height (m)	% cover	Habit	Dominant Species
U1 8 – 11	10 – 15	T	<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i> , <i>Allocasuarina acutivalvis</i> subsp. <i>prinsepiana</i>
M1 2 – 6	30 – 50	S	<i>Acacia anthochaera</i> , <i>A. ramulosa</i> var. <i>ramulosa</i> , <i>Melaleuca leiocarpa</i> , <i>Dodonaea inaequifolia</i> , <i>Acacia nigripilosa</i> subsp. <i>nigripilosa</i>
M2 <2	2 – 10	S	<i>Alyxia buxifolia</i> , <i>Eremophila clarkei</i> , <i>Scaevola spinescens</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Comesperma integerrimum</i> , <i>Dianella revoluta</i> var. <i>divaricata</i>
G <0.1	<1	G	<i>Amphipogon caricinus</i> , <i>Erodium cygnorum</i> , <i>Waitzia acuminata</i>



Figure 6: York gum open woodland

7. Relevant Legislation and Compliance with Recognised Standards

7.1 Commonwealth Legislation

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

- **The survey area does not have national environmental significance under the EPBC Act 1999**

7.2 State Legislation

Clearing of Native Vegetation

The Environmental Protection (Clearing of Native Vegetation) Regulations WA 2004 establishes that any clearing of native vegetation requires a permit from DPaW. Under section 51A of the Environmental Protection Act, 1986

Regulation 6 of the Regulations defines Environmentally Sensitive Areas (ESA) as “the area covered by vegetation within 50 m of Rare Flora, to the extent to which the vegetation is continuous with the vegetation in which the Rare Flora is located”. The area covered by a TEC is also considered an ESA wherein clearing cannot occur unless a clearing permit is granted.

- **Part of the survey area is located within an ESA – Line 1 eastern area – several occurrences of *Lepidosperma gibsonii*.**
- **The survey area does not contain any TEC listed under the EPBC Act 1999 or by DPaW.**

Priority Ecological Communities

Part of the survey area (rocky ridge; York gum woodland) is located within the Mt. Gibson Range Vegetation Complexes (banded ironstone formation) PEC. Community vegetation structure/ composition are close to the Mt. Gibson Community 3 (open Eucalyptus woodlands over *Acacia* spp. on colluvial plains: Line 6) and Community 4 (mallee woodland and woodlands of *Eucalyptus* spp. over *Acacia acuminata* – lower slopes Mt. Gibson and colluvial sites: Lines 3 – 5; part Lines 1 & 2)) as described by Meissner and Caruso (2008). The yellow sandplain community is not representative of the PEC (part Lines 1 & 2 - west).

Community 3 is fairly widely represented in the area (Mt. Gibson, Extension Hill, Yandhanoo Hills and other hills near the Great Northern Highway) , whereas Community 4 is more restricted to the Mt. Gibson range area.

- **Part of the area is potentially representative of Mt. Gibson PEC.**

8. References

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Appendix 1: Flora recorded from the survey area

Family	Scientific Name	Cons code
Amaranthaceae	<i>Ptilotus obovatus</i> var. <i>obovatus</i>	
Apiaceae	<i>Xanthosia bungei</i>	
Apocynaceae	<i>Alyxia buxifolia</i>	
Asparagaceae	<i>Lomandra ?effusa</i>	
Asteraceae	<i>Gilberta tenuifolia</i>	
Asteraceae	<i>Olearia dampieri</i> subsp. <i>eremicola</i>	
Asteraceae	<i>Olearia muelleri</i>	
Asteraceae	<i>Olearia pimeleoides</i>	
Asteraceae	<i>Waitzia acuminata</i> var. <i>acuminata</i>	
Casuarinaceae	<i>Allocasuarina acutivalvis</i> subsp. <i>prinsepiana</i>	
Chenopodiaceae	<i>Enchylaena lanata</i>	
Chenopodiaceae	<i>Sclerolaena diacantha</i>	
Crassulaceae	<i>Crassula colorata</i> var. <i>colorata</i>	
Cupressaceae	<i>Callitris columellaris</i>	
Cyperaceae	<i>Lepidosperma gibsonii</i>	T
Dilleniaceae	<i>Hibbertia arcuata</i>	
Dilleniaceae	<i>Hibbertia glomerosa</i> var. <i>glomerosa</i>	
Dilleniaceae	<i>Hibbertia stenophylla</i>	
Droseraceae	<i>Drosera macrantha</i> subsp. <i>macrantha</i>	
Ericaceae	<i>Leucopogon</i> sp. Clyde Hill	
Euphorbiaceae	<i>Calycopeplus paucifolius</i>	
Fabaceae	<i>Acacia acuaria</i>	
Fabaceae	<i>Acacia acuminata</i>	
Fabaceae	<i>Acacia andrewsii</i>	
Fabaceae	<i>Acacia anthochaera</i>	
Fabaceae	<i>Acacia assimilis</i> subsp. <i>assimilis</i>	
Fabaceae	<i>Acacia coolgardiensis</i>	
Fabaceae	<i>Acacia murrayana</i>	
Fabaceae	<i>Acacia nigripilosa</i> subsp. <i>nigripilosa</i>	
Fabaceae	<i>Acacia obtecta</i>	
Fabaceae	<i>Acacia prainii</i>	
Fabaceae	<i>Acacia ramulosa</i> var. <i>ramulosa</i>	
Fabaceae	<i>Acacia stereophylla</i> var. <i>stereophylla</i>	
Fabaceae	<i>Acacia tetragonophylla</i>	
Fabaceae	<i>Leptosema aphyllum</i>	
Fabaceae	<i>Mirbelia depressa</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	
Fabaceae	<i>Senna</i> sp. Austin	
Geraniaceae	<i>Erodium cygnorum</i>	

Family	Scientific Name	Cons code
Goodeniaceae	<i>Scaevola spinescens</i>	
Goodeniaceae	<i>Velleia rosea</i>	
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>	
Haloragaceae	<i>Glischrocaryon aureum</i>	
Hemerocallidaceae	<i>Dianella revoluta</i> var. <i>divaricata</i>	
Lamiaceae	<i>Hemigenia</i> sp. Yuna	
Lamiaceae	<i>Lachnostachys coolgardiensis</i>	
Lamiaceae	<i>Microcorys</i> sp. Mt Gibson	
Malvaceae	<i>Keraudrenia velutina</i> subsp. <i>velutina</i>	
Myrtaceae	<i>Aluta aspera</i> subsp. <i>hesperia</i>	
Myrtaceae	<i>Chamelaucium pauciflorum</i> subsp. <i>Perenjori</i>	
Myrtaceae	<i>Eucalyptus kochii</i> subsp. <i>amaryissia</i>	
Myrtaceae	<i>Eucalyptus leptopoda</i> subsp. <i>arctata</i>	
Myrtaceae	<i>Eucalyptus loxophleba</i> subsp. <i>supralaevis</i>	
Myrtaceae	<i>Eucalyptus oldfieldii</i>	
Myrtaceae	<i>Malleostemon tuberculatus</i>	
Myrtaceae	<i>Melaleuca conothamnoides</i>	
Myrtaceae	<i>Melaleuca leiocarpa</i>	
Myrtaceae	<i>Melaleuca nematophylla</i>	
Myrtaceae	<i>Micromyrtus racemosa</i> var. <i>racemosa</i>	
Poaceae	<i>Amphipogon caricinus</i>	
Poaceae	<i>Austrostipa elegantissima</i>	
Poaceae	<i>Austrostipa nitida</i>	
Poaceae	<i>Monachather paradoxus</i>	
Polygalaceae	<i>Comesperma integerrimum</i>	
Proteaceae	<i>Grevillea ?obliquistigma</i> subsp. <i>obliquistigma</i>	
Proteaceae	<i>Grevillea paradoxa</i>	
Proteaceae	<i>Hakea minyma</i>	
Proteaceae	<i>Hakea recurva</i> subsp. <i>recurva</i>	
Proteaceae	<i>Persoonia ?manotricha</i>	
Proteaceae	<i>Persoonia hexagona</i>	
Proteaceae	<i>Persoonia pentasticha</i>	P3
Pteridaceae	<i>Cheilanthes adiantoides</i>	
Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	
Rutaceae	<i>Philotheca brucei</i> subsp. <i>brucei</i>	
Rutaceae	<i>Philotheca deserti</i> subsp. <i>deserti</i>	
Rutaceae	<i>Philotheca sericea</i>	
Sapindaceae	<i>Dodonaea adenophora</i>	
Sapindaceae	<i>Dodonaea inaequifolia</i>	
Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	
Scrophulariaceae	<i>Eremophila clarkei</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	
Solanaceae	<i>Solanum lasiophyllum</i>	

Family	Scientific Name	Cons code
Stylidiaceae	<i>Stylidium confluens</i>	
Violaceae	<i>Hybanthus floribundas</i> subsp. <i>floribundas</i>	

Appendix 2: GPS coordinates of Conservation Significant Flora

Scientific Name	Cons Cd	Easting	Northing	Date	No. tussocks
<i>Lepidosperma gibsonii</i>	T	514857	6792620	14/08/2013	2
<i>Lepidosperma gibsonii</i>	T	514862	6729625	14/08/2013	5
<i>Lepidosperma gibsonii</i>	T	514865	6729613	14/08/2013	5
<i>Lepidosperma gibsonii</i>	T	514866	6729623	14/08/2013	1
<i>Lepidosperma gibsonii</i>	T	514871	6729630	14/08/2013	15
<i>Lepidosperma gibsonii</i>	T	514871	6729644	14/08/2013	2
<i>Lepidosperma gibsonii</i>	T	514873	6729638	14/08/2013	5
<i>Lepidosperma gibsonii</i>	T	514873	6729618	14/08/2013	8
<i>Lepidosperma gibsonii</i>	T	514879	6729633	14/08/2013	6
<i>Lepidosperma gibsonii</i>	T	514882	6729635	14/08/2013	2
<i>Lepidosperma gibsonii</i>	T	514887	6729647	14/08/2013	3
<i>Lepidosperma gibsonii</i>	T	514903	6729669	14/08/2013	5
<i>Lepidosperma gibsonii</i>	T	514904	6729645	14/08/2013	6
<i>Lepidosperma gibsonii</i>	T	514904	6729662	14/08/2013	22
<i>Lepidosperma gibsonii</i>	T	514915	6729672	14/08/2013	1
<i>Lepidosperma gibsonii</i>	T	514916	6729649	14/08/2013	1
<i>Lepidosperma gibsonii</i>	T	514917	6729632	14/08/2013	2
				Total	91
<i>Persoonia pentasticha</i>	P3	514766	6730043	14/08/2013	1

Appendix 3: Conservation codes

T: Threatened Flora (Declared Rare Flora — Extant)

Taxa¹ 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).

1: Priority One: Poorly-known taxa

Taxa 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. Taxa 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.

2: Priority Two: Poorly-known taxa

Taxa 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. Taxa 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.

3: Priority Three: Poorly-known taxa

Taxa 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. Taxa 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.

4: Priority Four: Rare, Near Threatened and other taxa in need of monitoring

1. **Rare.** Taxa 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 taxa are usually represented on conservation lands.
2. **Near Threatened.** Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
3. Taxa that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

5: Priority Five: Conservation Dependent taxa

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