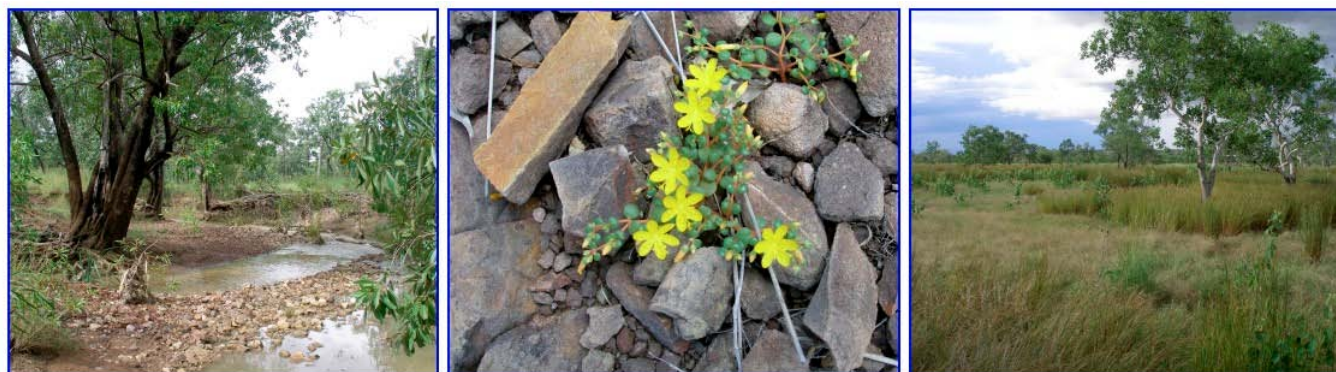


ENVIRONMENTAL IMPACT STATEMENT

MAUD CREEK GOLD PROSPECT

FLORA



REPORT

Prepared for

TERRA GOLD MINING Pty Ltd

&

URS

JULY 2007

by

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EXECUTIVE SUMMARY

Background

- In accordance with the *Environmental Assessment Act* of the Northern Territory, a survey of the flora of the Maud Creek Gold project area was commissioned by Terra Gold Mining Pty Ltd to provide baseline data and information for an Environmental Impact Statement (EIS).
- Mining activities commenced at Maud Creek in the 1890's, continued for a short period during the 1930's and were resumed again in 1999 by Katherine Mining NL when the open pit was mined to a depth of 26 m. Terra Gold Ltd proposes to recommence mining in 2007.
- Some information on the flora of the mining lease was prepared for an EIS in 1998 and the aim of this report is to provide updated information appropriate for the current proposal.
- Field methodology followed current best practice for vegetation assessment in the Northern Territory and as far as possible was in accordance with national standards of the National Vegetation Information System (NVIS).
- Fieldwork was conducted in the wet season, during three site visits between 17th March and 28th April 2007, to coincide with the period of maximum floristic diversity.

Objectives

- The primary objective of the survey was to examine the area for the presence or absence of flora of conservation significance—including plant species and communities listed under Commonwealth (EPBC) or Northern Territory (TPWC) legislation.
- Other objectives included an assessment of the potential for mine construction and operation to have significant negative impacts on threatened species, vegetation or ecological communities of conservation significance both within, adjacent to, or downstream of the project area.
- To meet EIS requirements, the existing vegetation of the project area was described and assessed using standard quantitative techniques and the distribution of the major vegetation types was mapped
- The distribution, diversity and abundance of weeds was also documented and weed management issues were discussed in this report

Plant species

- A total of 153 plant species from 43 families were recorded from study plots, transects and opportunistically during ground truthing of the project area.
- The plant families with the most species were Fabaceae (33 species), Poaceae (22 species) and Myrtaceae (12 species).
- No threatened plant species or ecological communities listed under the EPBC Act (1999) were detected within the mining lease area, nor were any recorded along the proposed access road route.
- One Northern Territory endemic species, *Tephrosia humifusa*, which was a relatively common herb in ground stratum vegetation in low-lying habitats within the project area, is listed as Near Threatened under Northern Territory legislation.
- Plant species classified as near-threatened are thought to be in decline but are not yet classified as threatened. They have lower conservation value than those classified as critically endangered, endangered and vulnerable under IUCN and NT criteria and conservation categories.
- No aquatic plants were observed within the main channels of Gold and Maud creeks, nor were any aquatic plant species observed within any minor tributary creeks.
- The presence of threatened plants within the project area is unlikely, due to the absence of habitats known to support high numbers of threatened species and high levels of previous

disturbance including mining, grazing and dense weed infestations.

- A total of 19 weed species were recorded during the current survey including six Class B declared noxious weeds. *Hyptis* (*Hyptis suaveolens*) was the most abundant and widely distributed weed in the project area and extremely dense infestations of Sicklepod (*Senna obtusifolia*) were recorded in areas heavily impacted by livestock.

Plant communities

- Vegetation within the project area is characteristic of similar habitats within the Katherine region and is widely distributed outside the project area.
- No plant communities of restricted occurrence or habitats known to support threatened species (e.g. monsoon vine-forest, heath or sandstone) occur within the project area.
- No vegetation communities listed as threatened under the EPBC Act, IUCN listing or Northern Territory legislation were detected within the mining lease area, or along the proposed access road route.
- Vegetation on the land immediately to the north and east of the project area owned by Jawoyn Aboriginal Land Trust as part of the Nitmiluk National Park, will be unaffected by the proposed development.
- The existing vegetation may be broadly grouped under three structural formations: open woodland, woodland, and open forest (listed in order of increasing canopy density)
- Ten distinct vegetation communities were distinguished and mapped within the project area. The floristic composition, community structure and condition of these communities are summarised in this report.

Potential Impacts and Mitigation Measures

- Approximately 160 ha of existing vegetation may be disturbed by the recommencement of mining at Maud Creek.
- Clearing of vegetation will be required for construction of the open pit, the ore stockpile, tailings storage dam (60 ha) and mine infrastructure (3 ha)
- Clearing of *Eucalyptys tectifica*-dominated habitats – which appears to be the primary habitat for *Tephrosia humifusa* within the project area – should be avoided where possible, to minimise disturbance to populations of this species.
- The diversion of an approximately 650 m long section of Gold Creek will lead to the temporary loss of riparian vegetation along the existing creek channel.
- Rapid bank stabilisation and rehabilitation of the bund and creek diversion area will be necessary to avoid erosion and downstream sedimentation during the wet season.
- Due to vegetation clearing and terrain disturbance, the proposed development has the potential to encourage the spread of weeds, particularly Mission Grass (*Pennisetum* spp.) and Gamba Grass (*Andropogon gayanus*). These species are perceived as the most serious potential weeds, and their introduction to the mining lease must be avoided.
- *Pennisetum polystachion* (a Class B declared weed) was observed on the proposed access road alignment and represents a major threat to the integrity of native plant communities and a serious fire hazard.
- On-going weed control of the mine site area and access road will be necessary to control existing weeds and to prevent the introduction and spread of new species.
- Ground water dependent ecosystems (eg. riparian habitats) in the local area may be affected by lowering of ground water levels from pit dewatering, at least during the dry season.
- Changes in the composition and structure of vegetation at the pit dewatering irrigation site are expected due to changes in soil moisture, soil chemistry and potential waterlogging.
- Irrigation of pit water should be conducted in a way that minimises the effects of waterlogging in surrounding natural habitats and maximises uptake by crop plants.

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MAUD CREEK GOLD PROJECT

ENVIRONMENTAL IMPACT STATEMENT — FLORA

1 INTRODUCTION

In accordance with the *Environmental Assessment Act* of the Northern Territory, Terra Gold Mining Ltd is preparing an Environmental Impact Statement (EIS) for the proposed Maud Creek Gold Project. This report presents the results of an assessment of the flora of the Maud Creek Gold mining lease and proposed access road (referred to as the project area). A survey of existing vegetation was undertaken to address key flora-related environmental issues identified in section 5.5 of the EIS Guidelines (NT Government, Department of Natural Resources, Environment and the Arts, March 2007). This report includes a brief review of information on vegetation from previous studies within the project area and the results of a recent wet season flora survey to address specific new issues arising from the current development proposal to recommence mining in 2007.

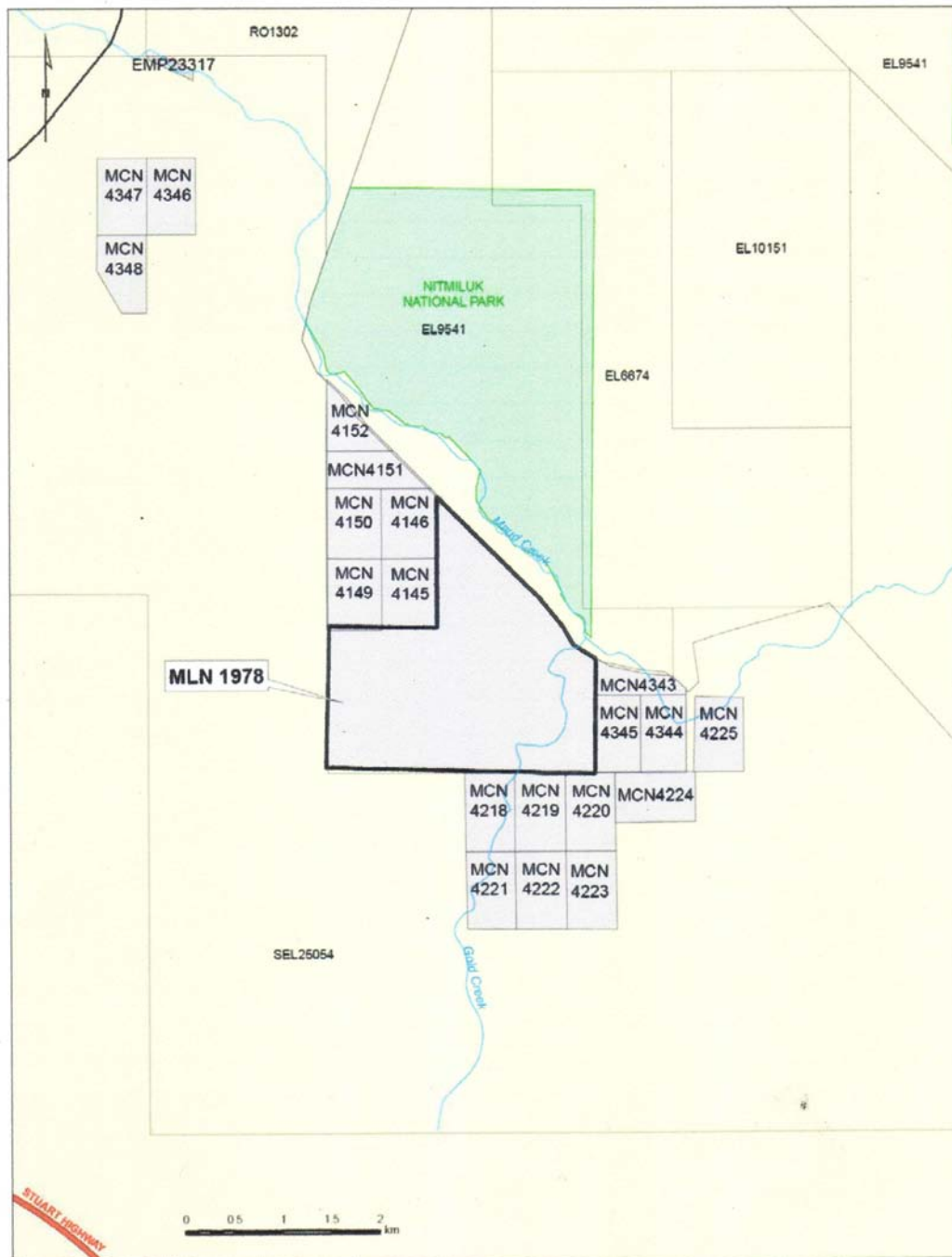
The specific aims of this survey were to:-

- Update the previous body of data with respect to any changes in vegetation community boundaries and to expand existing information from the project area to include a wet season floristic assessment
- Identify any species and ecological communities listed under the *Territory Parks & Wildlife Conservation Act (TPWC Act 2000)* and Commonwealth legislation e.g the *Environmental Protection & Biodiversity Conservation Act 1999 (EPBC Act 1999)*.
- Note the location and habitats of any flora of conservation significance within the project area.
- Identify any ecologically outstanding areas or sensitive environments within or adjacent to the project area, or potentially affected by the project.
- Record the distribution and density of weed species listed in the *NT Weeds Management Act 2001* and note any other weeds of environmental concern.
- Describe other potential negative impacts on existing vegetation from the proposed development.
- Recommend ways to minimise or mitigate negative impacts on vegetation that may result from mine construction, operation and decommissioning.

The survey was focussed within mining lease MLN 1978, comprising 420 ha of relatively disturbed pastoral country that surrounds the existing mine site. The lease area forms part of Maud Creek station where grazing of cattle, buffalo and feral donkeys over an extended period has led to habitat degradation and the proliferation of weeds, particularly along drainage lines. The lease area is bounded by Maud Creek to the north, includes the lower part of the Gold Creek catchment and the Stuart Highway lies approximately 6.5 km from the south-western corner (Figure 1). Both Gold Creek and Maud Creek are ephemeral creeks, which cease to flow during the dry season, although some remnant pools remain throughout the year.

Previous mining within the project area during the 1930's and 1970's resulted in vegetation clearing, weed infestations and terrain disturbance. While disturbance from previous mining activities is largely focussed around the open pit and waste rock dump area, the impacts of grazing on vegetation tend to be evident throughout the project area.

Figure 1: Map showing the location of the main Maud Creek Gold lease area (MLN 1978) in relation to Nitmiluk National Park, the Stuart Highway and the two main drainage lines, Gold Creek and Maud Creek (Source URS, 2006).



1.1 Previous Vegetation Surveys

Prior to environmental studies commissioned for the Maud Creek EIS in 1996, there was little specific information concerning the vegetation of the Maud Creek project area. Early land systems surveys provided plant community descriptions and mapped the area in terms of recurring patterns of landform, soils and vegetation (Aldrick and Robinson, 1970). In *The Land Resources of the Katherine Gorge National Park* the Maud Creek area was stratified at 1: 50,000 for land unit mapping (Sivertson and Day 1984).

More recently, the vegetation of the project area was mapped at a scale of 1 : 1,000,000 scale during production of the *Vegetation survey of the Northern Territory* (Wilson *et al.*, 1990). At this scale, two widespread Eucalypt-dominated woodland communities were mapped

as occurring within the project area. These land resource and vegetation mapping surveys provided a generalised overview of the plant communities of the region, listing dominant species and identifying common genera. Collectively they provide a useful baseline for more detailed studies.

The EIS prepared by Kilkenny Gold NL for the Maud Creek mine (Dames and Moore, 1998) characterised and mapped the vegetation of the mine site area. Eight vegetation communities were defined within the project area, and their distribution was mapped at 1:20,000 scale. This vegetation map was ground truthed, refined and updated during the current survey, but overall was found to be reliable.

Further vegetation survey work for lease extension and a proposed 8 kilometre access track provided more detailed information from the south-western part of the Maud Creek mining area (Metcalf, 1999). This study provided information on vegetation structure and species composition from eight 100 m transects at key locations along the proposed access road, presented as vegetation profile diagrams.

2 METHODOLOGY

Fieldwork for this study was undertaken during three field trips between 17th March 2007 and 28th April 2007. Fieldwork was timed to correspond with the wet season when the majority of plants in most habitats are present and unaffected by fire and seasonal drought. Prior to the field survey, existing information on fauna and flora of the local Maud Creek area was reviewed, including environmental reports, Government websites and fauna and flora listed under the Federal (EPBC) and Northern Territory (TPWC) environmental legislation.

The vegetation of the entire project area (including the mining lease and proposed access road) was assessed during ground-truthing for mapping of the existing vegetation communities. More detailed information on flora was obtained by quantitative assessment of vegetation within 20 m x 20 m study plots and along transects. Such intensive assessment was focussed at locations where vegetation clearing, or other impacts of the development are likely to occur.

2.1 Site selection

Previous mapping of vegetation communities and current aerial photographs were examined prior to site selection. Study sites were selected from aerial photography and located in each of the major vegetation communities delineated in existing mapping and at sites to be ground-truthed (i.e. in unknown vegetation types or those requiring better definition). Study sites were also selected within the new road access corridor, along the existing road, and at specific locations of interest. These included the proposed clay borrow pit area (MC1), within the Gold Creek diversion area (MC4 and MC6) and at an alternate future tailings dam site (MC12), located just outside the eastern boundary.

In all, a total of 16 study plots were established to provide detailed floristic information from within each of the ten different vegetation communities within the project area, denoted by the prefix MC (Table 1). The existing vegetation at a further 29 points was noted and described for vegetation mapping purposes, or ground truthing of the mining lease area. These points are denoted by the prefix GT. Nine additional ground-truthing sites were assessed along the proposed access road and nine sites were surveyed on the existing access road (denoted by prefix RA). One other site, located within map unit 11 (areas disturbed by previous mining) was selected to assist in describing the effects of previous mining on vegetation.

Table 1 : Summary table of study sites established for full floristic survey within the project area (MC sites), for ground truthing (GT), along the proposed access road (GT) and the existing road (RA).

Site ID	Easting	Northing	Mapping unit	Site description	C value
20m X 20m Quadrats					
MC1	225561	8400603	4	Low open woodland- <i>E. tectifical/ Corymbia</i> spp.	Low
MC2	224999	8401748	2	Low open woodland <i>E. tectifical /C. foelscheana</i>	Low
MC3	224764	8401742	3	Low open woodland- <i>E. pruinosa /E. chlorostachys</i>	Low
MC4	225357	8401434	6	Woodland -Riparian coridor	Low
MC5	225712	8401460	6	Low woodland-Riparian coridor	Low
MC6	225455	8401286	4	Low open woodland- <i>E. tectifical /C. foelscheana</i>	Low
MC7	225659	8402146	4	Low open woodland- <i>E. tectifical / C. foelscheana</i>	Low
MC8	225952	8402530	6	Low woodland -Riparian coridor	Low
MC9	224798	8402332	1	Isolated low trees - <i>T. platyphylla</i>	Low
MC10	223722	8401638	4	Low open woodland- <i>E. tectifical, C. foelscheana</i>	Low
MC11	224135	8401456	5	Low woodland <i>E. tectifical/C.dichromophloial /E.chlorostachys</i>	Low
MC12	226331	8400826	8	Low woodland- Mixed species	Low
MC13	224542	8401182	7	Low open woodland - Mixed species	Low
MC14	223080	8400410	8	Low woodland- Mixed species	Low
MC15	222265	8400058	2	Low open woodland <i>E. tectifical / C. foelscheana</i>	Low
MC16	220525	8098648	8	Low open woodland- Mixed species	Low
Ground truthing					
GT1	223881	8401626	4	Low woodland- <i>E. tectifical, / C. foelscheana</i>	Low
GT2	223625	8401622	4	Low woodland- <i>E. tectifical /C. foelscheana</i>	Low
GT3	223475	8401620	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
GT4	223864	8402012	8	Low woodland- Mixed species	Low
GT5	223519	8402168	9	Low Open Forest - Mixed species	Low
GT6	223454	8402564	6	Low woodland -Riparian coridor	Low
GT7	223643	8402474	8	Low woodland- Mixed species	Low
GT8	225527	8402056	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
GT9	225630	8402462	7	Low open woodland - Mixed species	Low
GT10	225483	8402733	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
GT11	225215	8402686	7	Low open woodland - Mixed species	Low
GT12	224897	8402646	6	Low woodland -Riparian coridor	Low
GT13	225002	8402520	9	Low Open Forest - Mixed species	Low
GT14	225349	8402214	7	Low open woodland - Mixed species	Low
GT24	224044	8402394	8	Low woodland- Mixed species	Low
GT25	224331	8402028	9	Low Open Forest - Mixed species	Low
GT26	224338	8402564	8	Low woodland- Mixed species	Low
GT27	225818	8402848	6	Low woodland -Riparian coridor	Low
GT28	225627	8403184	6	Low woodland -Riparian coridor	Low
GT29	225316	8403440	6	Low woodland -Riparian coridor	Low
Proposed access road					
GT15	224015	8400990	7	Low open woodland - Mixed species	Low
GT16	223700	8400826	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
GT17	222580	8400180	7	Low open woodland - Mixed species	Low
GT18	222497	8400116	7	Low open woodland - Mixed species	Low
GT19	221875	8400092	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
GT20	220900	8399478	10	Woodland - <i>Corymbia</i> sp / <i>Eucalyptus</i> sp.	Low
GT21	220093	8397676	10	Woodland - <i>Corymbia</i> sp / <i>Eucalyptus</i> sp.	Low
GT22	220322	8397228	7	Low open woodland - Mixed species	Low
GT23	220251	8396990	8	Low woodland- Mixed species	Low
Existing access road					
RA1	225785	8400946	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
RA2	225867	8400676	4	Low woodland- <i>E. tectifical / C. foelscheana</i>	Low
RA3	225977	8399908	7	Low open woodland - Mixed species	Low
RA4	225957	8399322	8	Low woodland- Mixed species	Low
RA5	225217	8398076	8	Low woodland- Mixed species	Low
RA6	225027	8398556	8	Low woodland- Mixed species	Low
RA7	225478	8398054	8	Low woodland- Mixed species	Low
RA8	225728	8397664	8	Low woodland- Mixed species	Low
RA9	225770	8396554	8	Low woodland- Mixed species	Low
Other					
	225250	8401650	11	Disturbed area - Previous mining	

2.2 Data collection

The methods used for this survey are in accordance with those recommended for Vegetation Survey and Mapping by the Northern Territory Government, Department of Natural Resources, Environment and the Arts (NRETA, 2007). Vegetation assessment techniques are also consistent with national standards of the National Vegetation Information System (NVIS), being based on the collection of full floristic and structural information within 20 m x 20 m study plots.

Study plots of this size are widely applied by NRETA for specific vegetation assessment projects throughout the Top End of the Northern Territory. The methodology represents standard techniques used for regional surveys and characterisation of flora for large scale mapping of Northern Territory vegetation (e.g. Wilson et al. 1990). Similar to the NT Guidelines and NVIS methodology, the current field surveys also recorded adjunct information on crown cover, which was obtained from transects, to assist in characterising the vegetation representative of particular areas.

A total of 16 study sites were established at key locations for full floristic survey (denoted by the prefix MC). At each site, a randomly placed 20 m x 20 m quadrat was established within which a range of floristic and environmental attributes were recorded including:

1. GPS location

2. Species composition and structure

- **Upper stratum:** tree species and abundance, DBH (diameter at breast height), estimated crown cover by species, tree height (range and average height)
- **Mid stratum:** species composition and abundance, DBH if ≥ 2 cm and ≥ 2 m, height, average height
- **Lower stratum:** species composition and average height

3. Site disturbance including ranked impact of fire, feral animals, erosion and weeds

4. Ground cover—estimated % cover of bare ground, grass, litter and other within 5 randomly placed 1 m x 1 m quadrats.

5. Total basal area of trees ($\text{m}^2 \text{ha}^{-1}$) at each study site was estimated using a Bitterlich gauge with 0.25 BAF.

6. Weed cover (estimated percentage cover for individual species)

7. Site photo. All sites were photographed using a labelled marker board placed 4 m along the diagonal from the NW corner post.

A two-page fieldwork proforma was used to record data in the field (Appendix 1). Any plant species not able to be identified in the field were sampled, pressed and dried for later identification at the Northern Territory Herbarium.

In addition to data from study plots, the canopy cover or crown separation of the wider vegetation community was characterised along transects through vegetation most representative of the community surrounding the study plot (see pp. 67-73 McDonald *et al* 1984). Crown separation ratio calculated in this way provides an objective method to assess and assist in classifying vegetation structure. Classification is an important component of vegetation survey and mapping, as it assists in the definition of patterns and the simplification of complex vegetation data. To achieve consistency at regional and national levels, field data on vegetation should be analysed and classified into floristic and

structural groupings according to a recognised classification system (NRETA, 2007). The vegetation communities within the project area were classified according to NVIS Classification System of structural formation classes (Table 2).

To ground truth vegetation within the project area, the existing vegetation was assessed by recording the following data at a total of 29 groundtruthing sites (denoted by prefix GT):

1. Dominant species in upper, mid and lower ground strata
2. Average tree and shrub height
3. Weed species and a ranking of weed density
4. Site descriptions and photographs

Table 2: NVIS Growth forms, height classes, cover characteristics and corresponding structural formations (Source: NRETA, 2007) for the mid- and upper stratum.

		Cover Characteristics				
Foliage cover*		70-100%	30-70%	10-30%	<10%	0
Crown cover**		>80	50-80	20-50	5-20	<5
% Cover ***		>80	50-80	20-50	5-20	<5
Life form	Height Ranges	Structural Formation Classes				
Tree	>30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland	Isolated trees
Tree	10-30 m	Mid closed forest	Mid open forest	Mid woodland	Mid open woodland	Isolated trees
Tree	<10 m	Low closed forest	Low open forest	Low woodland	Low open woodland	Isolated trees
Shrubs	>2 m	Tall closed shrubland	Tall shrubland	Tall open shrubland	Tall sparse shrubland	Isolated shrubs
Shrubs	1-2 m	Mid closed shrubland	Shrubland	Open shrubland	Sparse shrubland	Isolated shrubs
Shrubs	0.5-1 m	Low closed shrubland	Low shrubland	Low open shrubland	Low sparse shrubland	
	* Foliage cover	Proportion of ground cover which would be shaded if sunshine came directly overhead including branches and leaves				
	** Crown cover (canopy cover)	Percentage of the sample site within the vertical projection of the periphery of the crowns where crowns are treated as opaque				
	*** Percentage cover	Percentage of a strictly defined area covered by vegetation. Can be either estimated or a precise measure (densiometer or point intercept transects).				

All flora data collected in the field was entered into *Excel* spreadsheets which were used to calculate mean values for study sites and for presentation in summary tables. Further statistical analysis of the data was beyond the scope of the current survey. A plant species checklist was compiled which lists the conservation status of each species according to Northern Territory legislation.

The conservation status of flora may be considered within the context of federal (*Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999*) or Northern Territory environmental legislation (*Parks and Wildlife Conservation (TPWC) Act 2000*). The EPBC act relates to proposals that may have a significant impact on matters of national environmental significance (NES) whilst Northern Territory legislation concerns the management and conservation of native species and communities within the Northern Territory framework. Only threatened plant species are listed on Commonwealth (IUCN) conservation schedules (i.e. extinct, critically endangered, endangered or vulnerable). Northern Territory legislation also lists near-threatened and data deficient species (Holmes et al., 2005).

3 RESULTS & DISCUSSION

During three field surveys of flora within the Maud Creek project area between 17th March and 28th April 2007 the vegetation was assessed at a total of 55 study sites (Table 1). Survey effort was mainly focussed within the mine site area, where full floristic information was obtained from sixteen sites, with study plots within each of the characteristic vegetation types. The vegetation occurring along the existing access road, the proposed access road and at other areas within the project area that required ground-truthing was also examined.

3.1 PLANT SPECIES

Appendix 2 lists all plant species recorded during this survey and indicates their endemic status and conservation value according to Northern Territory legislation (*TPWC Act, 2000*). In all, 153 plant species were recorded from 14 plant families (Appendix 2). Of that total, 17 species were introduced weeds (see Section 3.3). The plant families with the highest number of species were Fabaceae (33 species), Poaceae (22 species) and Myrtaceae (12 species).

A total of 243 plant specimens were sampled and pressed for later identification by reference to botanical keys and the reference collection at the Northern Territory Herbarium. These specimens included many duplicate specimens of grasses and ground cover species collected during the full floristic assessment of study plots.

3.1.1 Plant species of Conservation Significance

A search of the Northern Territory Government database for records of plant species collected from the Maud Creek Gold project area revealed no previous records. Expansion of the search to include an area of 0.1 degree latitude and 0.1 degree of longitude which encompassed the project area produced a total of 51 records of plant species (NRETA database, 2007). Of that total, all were classified as lc (least concern) in terms of conservation status.

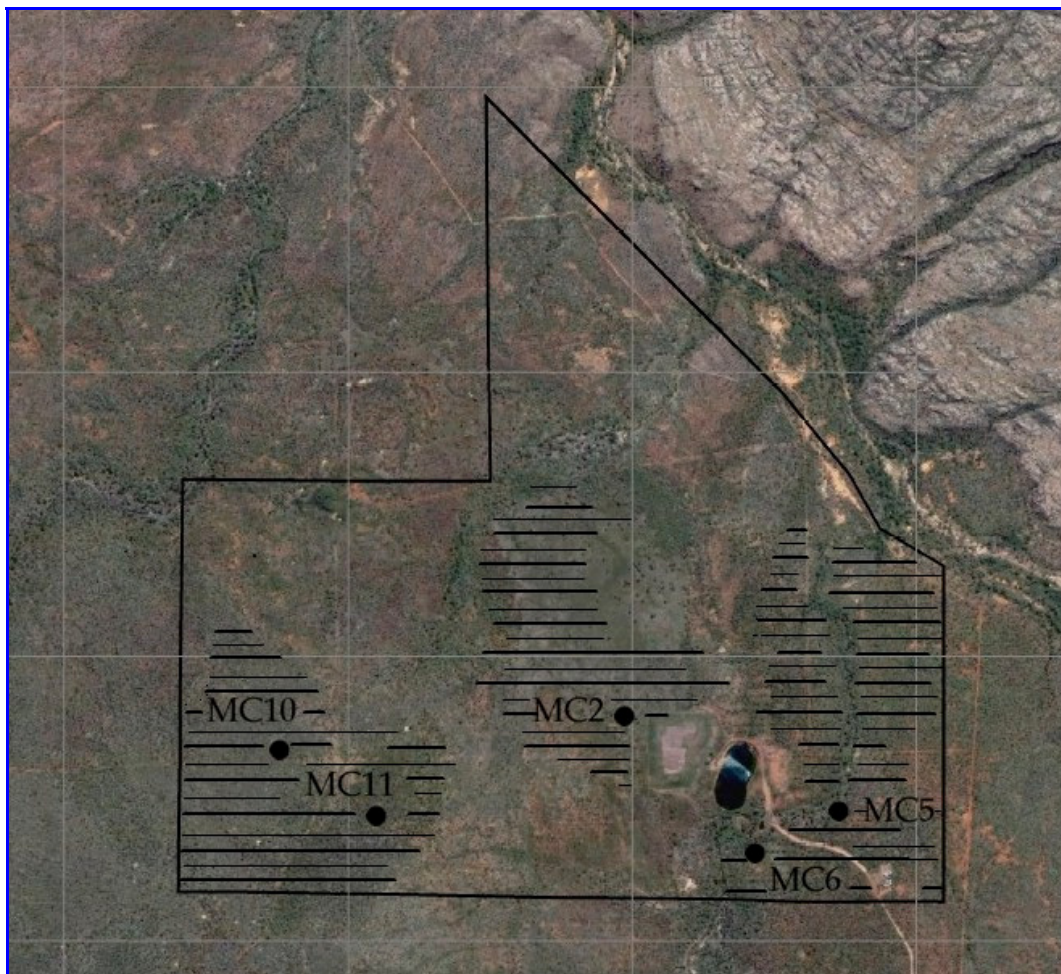
None of the 153 plant species recorded during this survey were listed under Commonwealth legislation (*EPBC Act, 1999*) as vulnerable, threatened, rare or endangered (see IUCN categories and criteria at <http://www.redlist.org>). Species listed under Commonwealth legislation are considered to have the highest conservation significance, being of importance at a national level. Species listed under NT legislation are important for conservation of Northern Territory flora, but are of lesser significance than Commonwealth listed plants.

Eight of the recorded plant species are listed as endemic to the Northern Territory and seven of these species are considered to be of least concern in terms of conservation value (Appendix 2). One endemic species *Tephrosia humifusa*, recorded at 5 of the 16 study sites surveyed, was listed as NT (near threatened) on the Northern Territory database (NRETA 2007). All other plant species recorded during the flora survey are listed as LC (least concern) and of lower conservation significance (Appendix 2). Plant species classified as least concern are considered to be widespread and abundant with healthy populations that are not in decline. Near threatened taxa are not yet classified as threatened, and exist either as small fragmented populations, or occur in populations thought to be in decline (Holmes et al. 2005). Although *Tephrosia humifusa* is classified as Near-Threatened according to Northern Territory legislation under the TPWC Act (2000), this species does not have conservation status on the Commonwealth EPBC register (EPBC 1999). The conservation significance of near-threatened species is not as high as those with V or vulnerable status under Northern Territory listing, is also potentially lower than many species listed as DD or

data deficient (Kym Brennan, NRETA, pers. com.).

Tephrosia humifusa appeared to be locally common, occurring at over one quarter of full floristic study sites and in a range of habitat types from low open woodland to low woodland and open forest along riparian corridors (Figure 2, Appendix 3). The Northern Territory Herbarium contains records of *T. humifusa* from 5 different locations in the Top End of the Northern Territory. The current known distribution for this species appears to span an area from Maningrida to the southern end of Kakadu National Park. The Maud Creek population represents a sixth location for this species and an extension of the known range.

Figure 2: Air photograph of the Maud Creek Gold project area indicating the five study sites where *Tephrosia humifusa* was recorded. Hatching indicates the approximate distribution of vegetation in the mining lease where *Eucalyptus tectifica* occurs as a dominant species (i.e likely extent of habitat suitable for *T. humifusa*).



T. humifusa is an annual species, unlikely to be recorded during dry season surveys. It typically occurs in habitats with heavy soils, which tend to be poorly drained but is also occasionally found on fine sediments on hillsides. Its likely distribution within the project area may be roughly correlated with communities in which *Eucalyptus tectifica* is dominant (Figure 2).

The paucity of records and information for this species from elsewhere in the Northern Territory is not surprising given the poor wet season access to the low-lying habitats where it occurs, and its ephemeral life cycle. Nevertheless, it is probable that future botanical surveys in such habitats in this region during the wet season are likely to reveal a wider distribution for this species (Ian Cowie, NT Herbarium, pers. com.). Due to its apparent restricted distribution however, it is recommended that clearing within the project area of vegetation communities and habitats which support this species, should be avoided as far as

possible (Figure 2). No other special provisions for the conservation management of *Tephrosia humifusa* are suggested by the Northern Territory Herbarium (Ian Cowie, pers comm.).

3.2 VEGETATION COMMUNITIES

3.2.1 The Existing Environment

The main vegetation communities within the project area may be broadly grouped as either woodlands, low woodlands or low open woodlands (Table 3, Appendices 4 and 5). Local variations in topography, substrate and drainage throughout the project area are reflected by distinct differences in species dominance, stratum height and canopy cover. The vegetation of the project area was classified according to these characteristics, using data on vegetation structure and composition collected from study plots. Adjunct information from transects was also used in the characterisation and classification of vegetation mapping units (see section 3.2.2, Vegetation Mapping).

Woodlands in upland areas are characterised by well-drained gravelly or sandy lateritic soils with various *Corymbia* species, *Eucalyptus tectifera* and *Erythrophleum chlorostachys* as dominant upper stratum species. Mean tree heights recorded at these study sites generally ranged between 6-10 metres. Many canopy species across the western lease boundary area were either dead or reshooting—indicating that a severe fire event had occurred since the previous survey. Mid-storey vegetation typically comprised species such as *Hakea arborescens*, *Brachychiton megaphyllus*, *Petalostigma pubescens*, *Persoonia falcata*, *Cochlospermum fraseri* and *Carissa lanceolata* but the mid-stratum was typically very sparse at most survey sites (Figure 3). The lower stratum in woodland communities characteristically included *Heteropogon contortus* (Black Speargrass) and *Themeda triandra* (Kangaroo Grass) as the dominant grass species.



Figure 3 : Typical low woodland community near the western boundary of the project area (left) and fire affected community nearby (right).

Open woodland communities were typically located in shallow, poorly drained soils subject to water logging during the wet season. Open woodlands also occurred along rocky ridges with skeletal soils, which tend to support fewer upper stratum species. *Terminalia platyphylla* was sparsely distributed across the dark heavy soils located in the central area of the mining lease (Figure 1). *Eucalyptus pruinosa* formed stands of low open woodland, often co-dominant with *Erythrophleum chlorostachys* on the clayey flats and poorly drained depressions adjacent to the existing waste rock dump.

The upper stratum height in open woodland communities ranged between 5 - 7 metres, with a very sparse mid stratum layer. Areas of dense grass cover dominated by *Brachyachne convergens*, annual herbs and legumes were characteristic of open woodlands in the project area. In highly disturbed locations, patches of bare ground were not uncommon (Figure 4).



Figure 4 Isolated trees of *Terminalia platyphylla* in central lease area (left) and *Eucalyptus tectifolia*/*Corymbia foelscheana* open woodland at south west road access (right)

Riparian vegetation formed a narrow corridor of woodland and low woodland along the network of seasonal drainage lines and Gold Creek, which flows into Maud Creek. The dominant tree species were *Lophostemon grandiflorus*, *Corymbia foelscheana*, *Terminalia platyphylla* and *Eucalyptus patellaris*. The width of the riparian corridor Maud Creek was greater and supported a more diverse vegetation community including *Corymbia bella*, *Melaleuca leucadendra*, *Ficus racemosa* and *Timonius timon* (Figure 5).



Figure 5: Woodland and low woodland along the riparian corridor of Gold Creek (left) and Maud creek (right).

3.2.2 Vegetation Mapping

The major vegetation communities of the project area have been mapped at a scale of 1:20,000 for a previous environmental survey (Dames and Moore, 1998) which defined eight different communities within the mining lease area. On the basis of results from the current survey, a total of ten different vegetation communities were delineated within the project area (i.e. also including the access road corridor and vegetation at selected sites outside the main lease area). In all, 11 vegetation types or map units have been identified in the project area, including one anthropogenically disturbed habitat (Map unit 11).

The vegetation communities within the mining lease area appear typical of those in the local area. All but one community recorded along the 6.5 km road corridor for example, was also represented within the mining lease area (Table 3).

The major vegetation communities are listed in Table 3 and the distribution of each is mapped in Figure 6 (Vegetation map). The major floristic and structural characteristics of each vegetation community are briefly described below.

Table 3 : Summary table of vegetation communities within the Maud Creek project area indicating the corresponding map unit number and their location within the proposed mining development.

Map Unit	Description	Mining lease area	South Road access	South West Road Access	Clay borrow pit	Tailings Dam
1	<i>Terminalia platyphylla</i> isolated low trees -	•				
2	<i>Eucalyptus tectifical/ Corymbia</i> spp. low open woodland	•				
3	<i>Eucalyptus pruinosa/ Erythrophleum chlorostachys</i> low woodland	•				
4	<i>Eucalyptus tectifical/ Corymbia foelscheana</i> low woodland	•	•	•	•	•
5	<i>Eucalyptus tectifical/ Corymbia dichromophloia/ Erythrophleum chlorostachys</i> low woodland	•				
6	Riparian corridor low woodland/	•				
7	Mixed species low open woodland -	•	•	•		
8	Mixed species low woodland -	•	•	•		
9	Mixed species mid open forest	•				
10	<i>Eucalyptus</i> spp. / <i>Corymbia</i> spp. woodland			•		
11	Mining disturbance	•				
NB : Description represents dominant upper stratum species and NVIS level 2 structural formation class.						

3.2.3 Vegetation community descriptions

Unit 1: *Terminalia platyphylla* isolated low trees

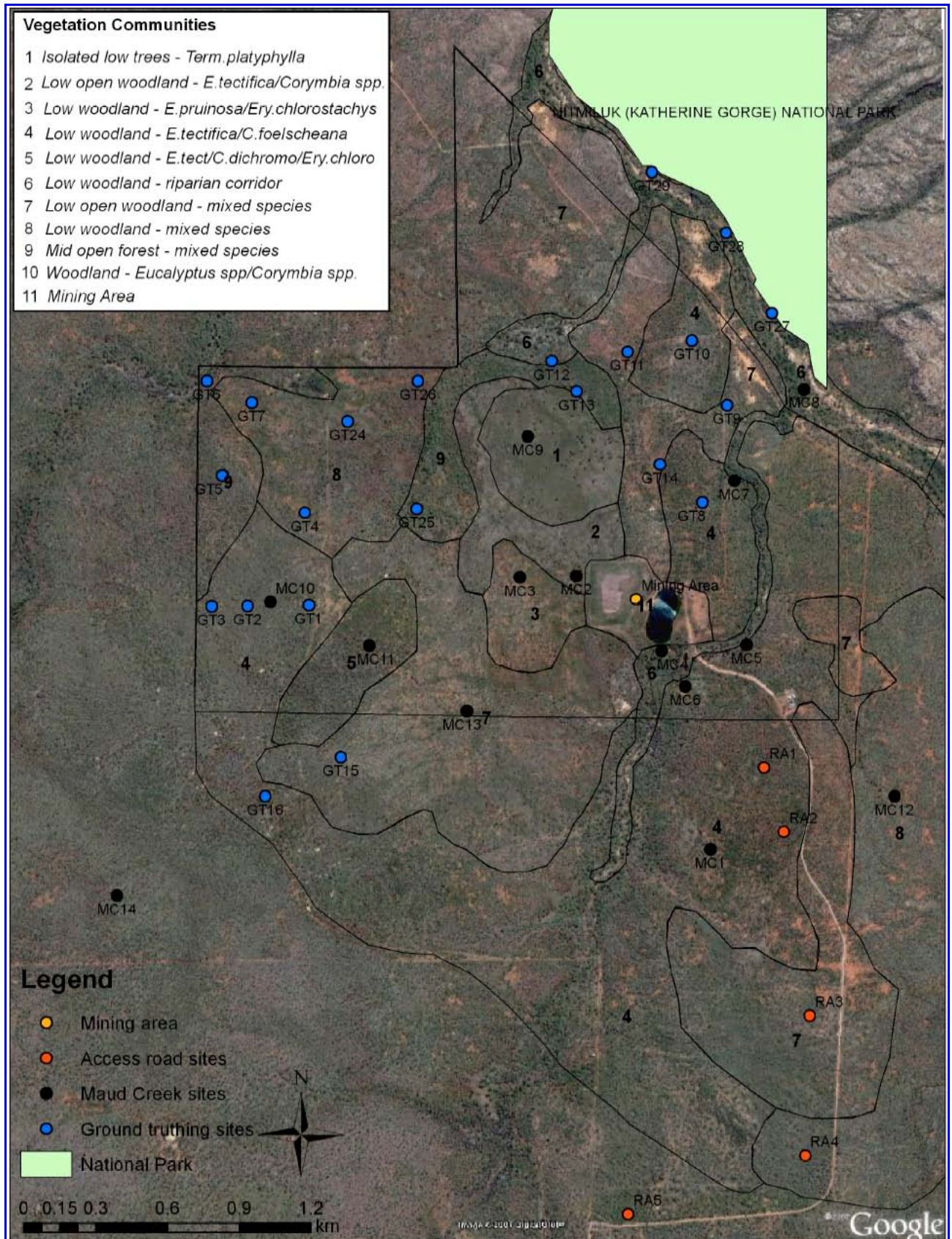
This distinctive community occurs in the central section of the mining lease area and is restricted to an area of approximately 24 ha. Study site MC9 characterised the vegetation in this area, which is the proposed location for the pit dewatering irrigation site. The vegetation community is distinguished by isolated low to mid-height *Terminalia platyphylla*. The upper stratum tends to comprise only this species with an estimated basal area of 2 m²/ha. A mid stratum layer is generally absent, or where present, comprises isolated saplings of *T. platyphylla* and occasional shrubs of *Carrisa lanceolata*. The ground cover is mostly composed of native grasses such as *Brachyachne convergens*, *Sehima nervosum* and *Chionachne hubbardiana*. Combined with the abundant annual herbs, legumes, vines and sub-shrubs such as *Hibiscus panduriformis*, the grassy ground layer provided complete coverage. No weeds were recorded in this community.

Unit 2: *Eucalyptus tectifical / Corymbia foelscheana* low open woodland

This community occurs on the slightly better drained soils surrounding seasonally wet areas and is dominated by the upper stratum species, *E. tectifical* and *C. foelscheana* with occasional *C. confertiflora*. Two study sites were located within this community (Sites MC2 & MC15), the first forming an ecotone adjacent to the low lying central lease area, the latter occurs midway along the proposed alternate access track.

Average tree height in *Eucalyptus tectifical / Corymbia foelscheana* low open woodland ranged between 5-7 m whilst mean basal area varied between 2.5- 7 m²/ha (Appendix 6). A dense ground cover of grasses including *Brachyachne convergens* and *Heteropogon contortus*, and a variety of annual herbs generally occurred beneath a very sparse mid stratum. Each site varied greatly in species richness and almost twice as much bare ground was recorded at the road access site, where pastoral impacts on native vegetation were evident. *Hyptis suaveolens* was a common weed in this vegetation community.

Figure 6 : Vegetation map of the Maud Creek Gold project area (map digitised by URS).



Unit 3: *Eucalyptus pruinosa* / *Erythrophleum chlorostachys* low woodland

Eucalyptus pruinosa in association with sparsely distributed *Erythrophleum chlorostachys* forms a low woodland to low open woodland community covering an area approximately 18 ha to the west of the waste rock dump. Upper stratum height averaged only 5.3 m at Site

MC3 and the area is clearly subject to seasonal waterlogging. Mid storey species generally included isolated saplings of the dominant species and the grassy lower stratum was generally dominated by *Heteropogon contortus*.

E. pruinosa was occasionally recorded within other vegetation communities where it typically occurred as either a small isolated patch, or as one of several canopy species in a mixed species community. *Hyptis suaveolens* was the primary weed species recorded in this community and was patchily distributed in infestations to 0.5 m high.

Unit 4: *Eucalyptus tectifica* / *Corymbia foelschaeana* low woodland

This community was previously reported as the most widespread vegetation association within the project area, both along the proposed access route and within the mining lease area (Dames and Moore, 1996). Communities in which *E. tectifica* and *C. foelschaeana* occur as co-dominants in a low woodland formation are indeed widespread throughout the project area (Figure 6). During the current survey, this vegetation type was common within the mining lease area, along the existing road, the proposed access road, clay borrow pit and alternate tailings dam area (sites MC1, MC7, MC5, MC6, MC10 were located in map unit 4).

It appears however, that severe fire damage in the western section of the lease area may have contributed to a decline in the previous distribution of this vegetation community. The total area mapped as *E. tectifica* and *C. foelschaeana* low woodland in this report is consequently reduced, presumably due to mortality of mature trees or insufficient regeneration time between fire events. These areas have typically been reclassified as mixed species low woodland (map unit 8).

Percentage crown cover in *E. tectifica* / *C. foelschaeana* woodland averages 40% and stand basal area ranges between 6.25 - 8.25 m²/ha (Appendix 6). Weed infestations in the fire affected and areas of shallow soil were found to be approximately half as dense as those recorded in communities not impacted by severe fire.

Unit 5: *Eucalyptus tectifica* / *Corymbia dichromophloia* / *Erythrophleum chlorostachys* low woodland

Woodlands co-dominated by *Eucalyptus tectifica*, *Corymbia dichromophloia* and *Erythrophleum chlorostachys* covered approximately 25 ha in the south-western corner of the mining lease area (Figure 6) and included study site MC11. This vegetation community appeared to have escaped the severe fire damage that had affected woodlands on the surrounding sideslopes. Well established *E. chlorostachys* trees formed co-dominant stands with *E. tectifica* and *C. dichromophloia* on well-drained soils. The upper stratum ranged between 7-10 m in height with a mean canopy cover of 33% and stand basal area of 14.5 m²/ha (Appendix 6).

Whilst *E. tectifica* was not recorded at study site MC11, observations within the surrounding habitat indicated that it was present in the mid-stratum and was typically a co-dominant species in this low woodland community. Saplings of the dominant species tended to comprise the very sparse mid stratum layer. Native grasses *Heteropogon contortus* and *Chrysopogon oliganthus*, and the litter from desiccated grasses comprised >90% of the ground cover. Weed species were not recorded within this community.

Unit 6: Riparian corridor low woodland

Narrow corridors of riparian vegetation formed woodland communities along Maud Creek, Gold Creek and two unnamed seasonal streams in the northern section of the mining lease. Minor variations in community species composition and structure were evident both within and between the vegetation fringing these drainage lines.

Substantial alluvial deposits at the junction of Gold Creek and Maud Creek (Site MC8) formed loamy soils which supported a tall upper stratum consisting of *Corymbia bella*, *Corymbia latifolia*, *Terminalia platyphylla* and *Brachychiton diversifolius*. The mean canopy height in this area was 9.6 m. Tree canopies were generally slightly separated, forming a linear corridor of woodland vegetation along Maud Creek.

A mid stratum was generally not evident and the ground stratum comprised mainly patchy cover of the grass *Bothriochloa pertusa*. Seasonal disturbance by wet season flooding and the presence of livestock tend to be focussed along riparian corridors. Such disturbances appear to have encouraged the establishment and proliferation of dense infestations of the weeds *Hyptis suaveolens*, *Senna obtusifolia* and *Stylosanthes hamata*.

Melaleuca leucadendra and *Lophostemon lactifluus* were often the dominant species along the banks of the minor tributaries. The primary species in the upper and mid stratum of woodlands fringing the larger Gold Creek included *Corymbia foelscheana*, *Lophostemon grandifloris*, *Terminalia platyphylla* and *Eucalyptus patellaris*. Occasional clumps of *Pandanus spiralis* and other riverine species occur within the understorey (e.g. sites MC4 and MC5, Appendix 3).

The ground cover vegetation within riparian habitats is relatively diverse with annual herbs, legumes, vines and grasses flourishing in the rich, moist soils along creek banks. The declared weeds *Calotropis procera*, *Hyptis suaveolens*, *Senna obtusifolia* and *Sida acuta* were also recorded in riparian habitats. Sites MC4 and MC5 were located within riparian vegetation on Gold Creek, the former site was located at the edge of the existing pit and falls within the planned riparian diversion of Gold Creek, and the latter, will lie within the diversion area adjacent to the proposed bund wall.



Figure 7: Dense weed infestations in riparian vegetation at the confluence of Gold Creek and Maud Creek (left) and woodland vegetation at the junction of a seasonal tributary creek and Maud Creek (right).

Unit 7: Mixed species low open woodland

Low open woodlands characterised by an upper stratum comprising a variety of canopy tree species, none of which assumes dominance or co-dominance, are found across a large portion of the lease area. Furthermore, approximately half of the area traversed by the proposed access road supports mixed species open woodland formations.

The upper stratum generally comprises a mixture of low to mid-height species from the genera *Corymbia* or *Eucalyptus*, often with sparse *Erythrophleum chlorostachys*. Typical mid stratum species include *Hakea arborescens*, *Petalostigma pubescens* and *Terminalia pterocarya*. This community is common on the slopes of low ridges and on skeletal soils in the northern and south western sections of the mining lease area.

Apparent overgrazing has affected approximately 2.5 linear kilometres of mixed species

low open woodland along the existing access road. The overgrazed area extending roughly 200 m to the east and 100 m to the west of the existing road. Grazing impacts are also evident at an area surrounding a watering point on the proposed access route (i.e. Site MC15). These locations were characterised by sparse vegetation and dense weed infestations.

Unit 8: Mixed species low woodland

The mixed species low woodland community has a similar species composition to Unit 7 and tree heights are low, ranging between 5-10 m, but canopy cover is generally more dense, ranging between 10 and 30%. Aside from an area of mixed species low woodland in the north-western corner of the lease area, this community was found mainly outside the lease area. It occurs extensively just outside the eastern boundary, where it extends along the existing road access to become the dominant community towards the Ross Road entrance. Weed infestations of *Hyptis suaveolens*, *Senna obtusifolia* and *Sida acuta* were moderate to heavy and weeds were widely distributed throughout this community.

Based on information collected at, and in the vicinity of, sites MC14, GT7, GT24 and GT26, the proposed access route is also dominated by mixed species low woodland communities. In these habitats the mid-storey species tend to be very sparse and the lower stratum of dense native grasses appeared to be relatively weed free.

Unit 9: Mixed species mid open forest

Surrounding the upper drainage lines that form the seasonal streams which flow into Maud Creek (GT25, GT13) open forest comprising a combination of species were recorded. These drainage lines were predominantly fringed by mid-height *Lophostemon grandiflorus*, *Corymbia latifolia*, *Corymbia foelscheana*, *Terminalia platyphylla* and *Eucalyptus tectifica*. Canopy cover was estimated at greater than 30% with little understorey, except for occasional *Terminalia pterocarya*. Species represented here were typical of those occurring along drainage lines and in habitats with high soil moisture conditions.

Mid-high open forest communities with mixed canopy species also occurred on the western boundary of the lease area, in association with seasonal water courses and drainage ways. Tree height ranged between 12 - 15 m and canopy density was greater at this location than in the same community in the northern survey area. A few saplings were sparsely distributed and ground cover vegetation was also very sparse, presumably due to shading from the relatively dense canopy.

Unit 10: *Eucalyptus* / *Corymbia* species woodland

Woodland with *Eucalyptus* and *Corymbia* species as dominants occurred only on sections of the proposed access route with low limestone outcrops and small depressions. Species included *Eucalyptus patellaris*, *E. tectifica*, *E. tetradonta*, *Corymbia ferruginea*, *C. confertiflora*, *C. foelscheana* and abundant well-established *Erythrophleum chlorostachys*. The trees at these locations were predominantly taller than at any other survey sites. Some *Corymbia* species reached heights of up to 15 m but the average upper stratum trees ranged between 11-13 m high. The mid-story generally comprised sparse *Brachychiton megaphyllus* and scattered saplings of the upper stratum species, especially eucalypts. *Themeda triandra* and *Heteropogon contortus* formed dense cover of native grasses. No weeds were recorded in this community

Unit 11: Mining disturbance

This mapping unit comprised disturbed areas associated with the existing open pit, the former waste dump, and clearings for infrastructure that remain from previous mining

activities.

Appendix 3 contains species lists for each of the 16 study sites within the mining lease with data on abundance of species in upper and mid-stratum layers. Appendix 7 contains similar detailed information from study sites and ground truthing points selected along the existing access road. Appendix 8 presents floristic and structural information from key points along the proposed new access road. The location of all study sites and ground truthing points on both the existing and proposed access roads, is shown in Figure 8.

The vegetation communities traversed by the proposed access road are summarised in Table 2, with further detail contained in Appendix 8.

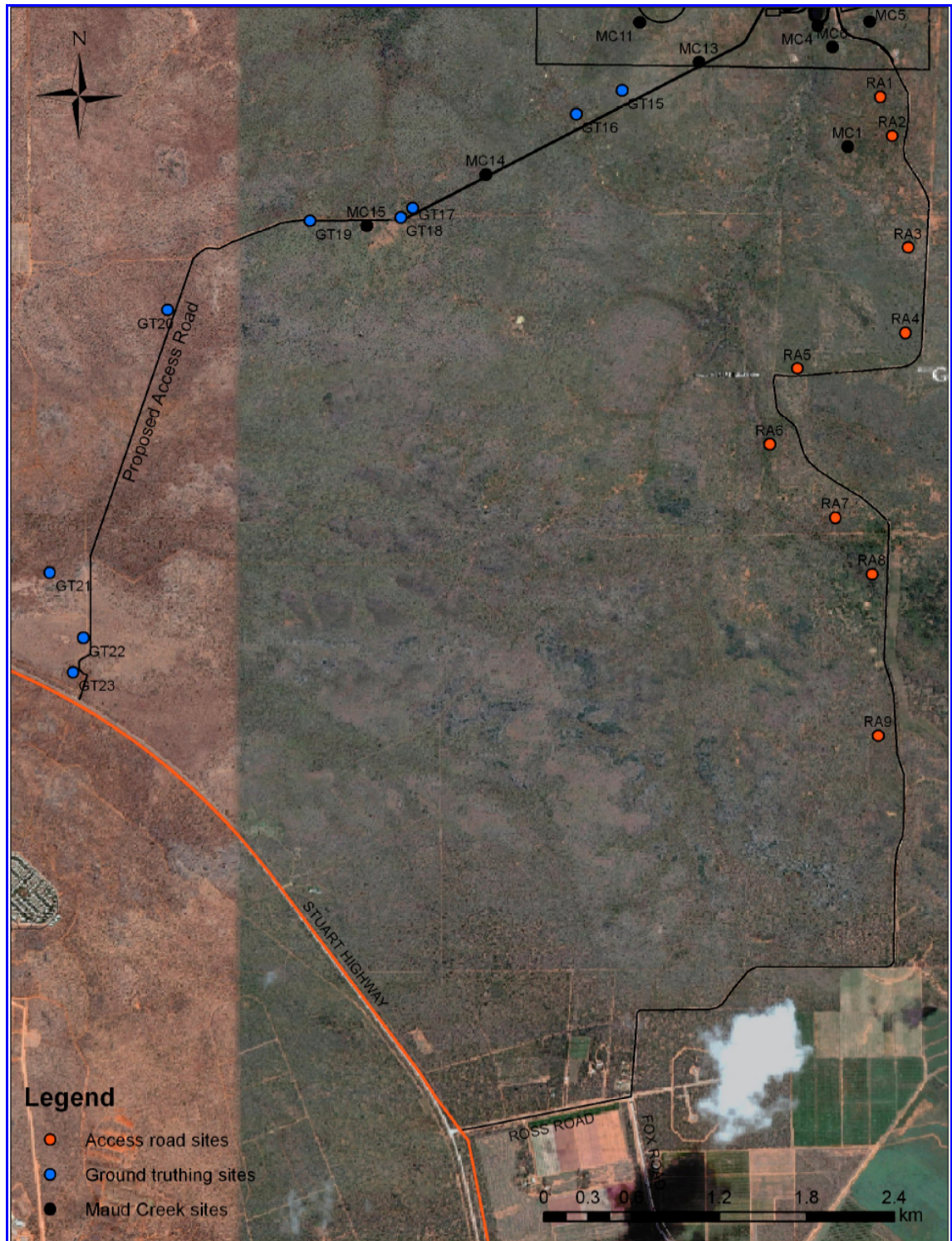


Figure 8: Location of existing access road and proposed new road indicating the position of study sites surveyed during field assesment of vegetation (map digitised by URS).

3.2.4 Vegetation Communities of Conservation Significance

No vegetation communities of conservation significance or ecological communities of ecological importance were found within the project area. Although extensive sandstone communities protected within Nitmiluk National Park parallel the northern boundary of the project area, no sandstone habitats or vine-forest associations (both habitats of restricted occurrence likely to support rare plants) occur within it. No habitats or vegetation communities of importance to plants of conservation significance were evident.

3.3 INTRODUCED SPECIES

A total of 19 exotic species were recorded during the 2007 vegetation assessment survey. Six species were declared class B under the *NT Weed Management Act (2001)* indicating that the land owner must make a reasonable attempt to control and prevent the spread of these species. A further eleven environmental weeds, which do not have declared status under the *Weeds Management Act 2001*, were also recorded within the project area (Table 4).

Previous land use activities within the Maud Creek Gold project area have contributed to the patchy distribution of weeds. Dense weed infestations have become established in highly disturbed areas. Elsewhere, weed density ranged from isolated plants to scattered clumps and localised dense infestations. The highest weed densities were observed at stock watering points, along drainage lines (particularly on highly disturbed creek banks), fringing vehicle access tracks and areas of terrain disturbance from previous mining.

Three weed species (*Hyptis suaveolens*, *Calotropus procera* and *Crotalaria goreensis*) were recorded in a previous survey of a proposed access road (Metcalf, 1999) with *Hyptis* noted as the most widespread and abundant weed. A DPIF survey of the mining lease also noted dense infestations of *Hyptis* within the mining lease and the presence of Devil's claw (*Martynia annua*, undeclared) and Candle Bush (*Senna alata*, declared class B) as occurring within several kilometres of the project area.

Hyptis suaveolens remains the most abundant and widespread weed throughout the mining lease area and along the existing access road. Infestations of *Hyptis* along the existing road range from sparse plants interspersed with native grasses to very dense monospecific infestations that clearly dominate the ground cover vegetation. Extremely dense populations of *Senna obtusifolia* were observed at the stock watering point along the existing road access and at the tanks and bore area in the north-west corner of the lease, where it forms blanket coverage.



Figure 9: Dense swards of Sicklepod (*Senna obtusifolia*) on disturbed and overgrazed ground near a stock watering point in the north-west section of the project area.

Table 4 : List of weed species recorded during survey of the Maud Creek Gold project area in March-April 2007 indicating declared status under NT legislation.

Family	Genus & species	Common Name	Class	Location (Study site no.)		
				MC	GT	RA
DECLARED NOXIOUS WEEDS						
ASCLEPIADACEAE	<i>Calotropis procera</i>	Rubber bush	B South of 16° 30' latitude	4, 15		
CAESALPINIACEAE	<i>Senna obtusifolia</i>	Sicklepod	B	1, 3, 4, 8, 9, 10, 15	17,18, 21, 24, 25, 27	3, 4, 8, 9
LAMIACEAE	<i>Hyptis suaveolens</i>	Hyptis	B	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.	1, 8, 9, 10, 12, 16, 17, 18, 19, 21, 24, 25, 27, 28, 29	1, 2, 3, 4, 5, 6, 7, 8, 9.
MALVACEAE	<i>Sida acuta</i>	Spinyhead sida	B	2, 3, 4, 6, 8,	1, 4, 10, 21	8, 9
POACEAE	<i>Themeda quadrivalvis</i>	Grader grass	B		21	
POACEAE	<i>Pennisetum polystachion</i>	Mission Grass	B		21	
UNDECLARED ENVIRONMENTAL WEEDS						
ASTERACEAE	<i>Bidens bipinnata</i>	Cobblers peg	E	5		
ASTERACEAE	<i>Tridax procumbens</i>	Tridax	E		17,23	
FABACEAE	<i>Alysicarpus ovalifolius</i>	Buffalo clover	E	1, 5, 6, 12, 13, 15	17, 21	
FABACEAE	<i>Calopogonium mucunoides</i>	Calopo	E	4	21, 27, 28	
FABACEAE	<i>Crotalaria goreensis</i>	Gambia pea	E	15	27, 28	6
FABACEAE	<i>Macroptilium atropurpureum</i>	Siratro	E	4	21, 27, 28	
FABACEAE	<i>Macroptilium lathyroides</i>	Phasey Bean	E		21	
FABACEAE	<i>Stylosanthes hamata</i>	Carribbean stylo, Verano	E	3, 4, 5, 8, 10, 13, 15, 16,	17, 18, 21	3, 4, 6, 7,
PASSIFLORACEAE	<i>Passiflora foetida</i>	Wild passionfruit	E	1, 4, 5	21, 27, 28	
PEDALIACEAE	<i>Sesamum indicum</i>	Sesame	E	4, 8		
POACEAE	<i>Echinochloa colona</i>	Barnyard grass	E	4		
KEY TO WEED CLASSES:						
A To be eradicated						
Reasonable effort must be made to eradicate the plant within the NT						
B Growth and spread to be controlled						
Reasonable attempts must be made to contain the growth and prevent the movement of the plant						
C Not to be introduced to the Territory						
All Class A and Class B weeds are also considered to be Class C weed						
E Weeds of environmental concern						
Weeds that may threaten natural ecosystems but are not declared in the <i>Weeds Management Act 2001</i>						

The results of vegetation surveys of the proposed access road indicated that the majority of the route was currently relatively weed free (Appendix 8). However, moderately dense

infestations of *Hyptis suaveolens* were located adjacent to sites GT17, GT18, & MC14. Further along the proposed route and approximately 1.5 km from the Stuart Highway (at site GT21) another dense and diverse infestation of weeds was recorded. Two declared class B grass species, *Pennisetum polystachion* (Mission grass) and *Themeda quadrivalvis* (Grader grass) were found only at this location (Appendix 8).

The Northern Territory *Weed Management Act (2001)* places obligations on land owners and occupiers to manage the introduction and spread of declared weeds, and to comply with approved weed management plans relating to declared weeds on their land. A comprehensive Weed Management Plan is the recommended framework for landholders to identify, prioritise and to deal with both declared noxious weeds and undeclared weed species reported to be of further concern to the environment. A weed management plan for the project area will be prepared to adequately address weed management issues and to minimise the potential impacts of weeds on the environment.

3.4 POTENTIAL IMPACTS OF THE PROPOSAL ON FLORA

The proposed Maud Creek development is anticipated to have a number of potential impacts on the existing vegetation which may be considered under several main headings; clearing of vegetation, weeds, fire, dust and pit dewatering impacts.

3.4.1 Clearing and other direct impacts associated with construction and operation

The proposed area of disturbance for mining at Maud Creek is approximately 160 ha including the open pit, ore stockpile, processing facilities, tailings storage facility and other associated infrastructure (URS 2006). Further clearing of up to 80 ha (to be confirmed) would be necessary for construction of road access linking the mine site to the Stuart Highway via the proposed new access route.

Despite the loss (in the short to medium term at least) of existing natural habitats, clearing for mining activities and associated infrastructure does not pose any known threats to the survival and viability of any individual native plant species or vegetation community.

Vegetation communities at the proposed operations site.

The proposed construction area for the processing operations will affect five of the ten vegetation communities identified in the 2007 vegetation survey. The waste dump settlement pond will require clearing and excavation within two communities i.e. the central area with scattered *Terminalia platyphylla* and *Eucalyptus tectifica* / *Corymbia foelscheana* low woodland.

The proposed contractor's area will be located within low woodland with *Eucalyptus tectifica* / *Corymbia foelscheana* and woodland habitat with mixed species *Eucalyptus* and *Corymbia* species. The maintenance warehouse facility will also be sited within these two vegetation communities (Figure 6). Between these structures and adjacent to the existing waste rock dump is the proposed site for the processing plant where *Eucalyptus pruinosa* / *Erythrophleum chlorostachys* are dominant in a low open woodland.

Clearing of vegetation within vegetation communities in which *Eucalyptus tectifica* is dominant or co-dominant is likely to reduce the area of habitat suitable for the near-threatened herb *Tephrosia humifusa*. Clearing for the waste dump settlement pond and the contractor's area may lead to a reduction in the local distribution of this species.

In general however, the vegetation communities and plant species affected by construction are represented in other sections of the lease area and occur elsewhere the region generally. None of the communities likely to be impacted by construction and operation of the proposed operations site are habitats with exceptional ecological significance.

Vegetation communities at the proposed Gold Creek Diversion

Construction of the creek diversion channel and flood protection levee will require removal of the narrow corridor of Gold Creek riparian vegetation in that area. Construction of the creek diversion and bund will inevitably result in temporary fragmentation of the existing riparian habitat on Gold Creek. The creek bank vegetation will however, regenerate over time, a process which could potentially be quite rapid, particularly if landscaping and rehabilitation of the creek diversion occurs. Furthermore, construction of the diversion will not isolate or threaten any existing plant species or vegetation communities of conservation significance.

It should be noted however, that the large trees that currently line the creek banks (e.g. *Eucalyptus patellaris*, *Lophostemon grandiflorus* and *Corymbia foelscheana*) are highly effective in reducing erosion from floods and in creek bank stabilisation. Diversion of Gold Creek through less densely vegetated areas is likely to result in erosion during the wet season, with increased siltation downstream. Erosion can reduce water quality through elevated turbidity levels, downstream siltation within drainage lines can potentially affect the natural pattern of drainage. Such changes represent negative impacts in riparian habitats, generally resulting in habitat degradation, which should be avoided where possible by appropriate mitigation methods (see section 3.5).

Vegetation communities traversed by the proposed access road.

The proposed new access road will exit the south-west corner of the lease and represents an alternative route for the haul road to the Stuart Highway. This road alignment would replace the existing access road (i.e. that entering via Ross Road, see Appendix 7) as the main access road for the mine. A major benefit of the proposed access road is that it avoids crossing any major drainage lines (Gold Creek for example).

Just south-west of the main lease area, the proposed road alignment traverses *Eucalyptus tectifical* / *Corymbia dichromophloia* / *Erythrophleum chlorostachys* low woodland. Assessment of this area did not reveal any plant species of conservation significance, but this was the only location in which this particular community was mapped and described during the 2007 vegetation survey.

The road continues through low woodland and low open woodland before connecting with an existing vehicle track/fenceline where significant disturbance to the vegetation from pastoral activity and weed invasion is already evident. Once diverting from the track the proposed road will traverse woodlands dominated by *Eucalyptus* and *Corymbia* species where native grasses are abundant and weed infestation is low (Appendix 8). Road construction activities are likely to facilitate the introduction of weeds into these adjacent, relatively undisturbed areas.

Road construction generally also facilitates increased frequency of wildfires and controlled burns, lit for fire management purposes. Hence a potential indirect impact of road construction in fire-sensitive and fire-affected communities may be habitat degradation due to increased frequency of fire.

Vegetation communities at the proposed clay borrow area

Approximately 14.5 ha of low woodland/ low open woodland will be cleared for the proposed clay borrow pit. The communities directly affected by construction of the borrow area are, however, common throughout the environs. It is anticipated that impacts on vegetation will be limited just to the temporary loss of habitat at the proposed site.

3.4.2 Introduction and spread of weeds

Weeds are abundant and well established throughout the majority of vegetation communities within the lease area and the existing access road. Infestations are particularly dense along drainage lines and waterways, fencelines and vehicle tracks and at watering points for stock. Construction of infrastructure and road access will increase the total area of terrain disturbance where weeds can proliferate and potentially exclude native vegetation. Disturbance of the soil can also increase germination of weed seeds that were previously dormant in the soil seed bank. Furthermore, the introduction of earthmoving equipment to the area has the potential to introduce new and declared weeds listed in the *Weeds Management Act 2001* eg. *Jatropha gossypifolia* (Bellyache bush)

The potential for mine construction and operation to encourage the spread of weeds, particularly the tall exotic grasses Mission Grass (*Pennisetum polystachion*) and Gamba Grass (*Andropogon gayanus*) represents perhaps the most significant threat to native vegetation and fauna from the proposed development. These species exclude native grasses and vegetation as well as supporting very intense fires, late in the dry season (Smith 2002). Invasion of these introduced grasses hence poses a major threat to native flora and fauna (Holmes et al. 2005, Rossiter et al. 2005). The growth, establishment and spread of these grasses is exacerbated by disturbance, particularly vegetation clearing and soil disturbance associated with, mining activities. The rapid spread of weeds into new areas may be encouraged along linear corridors associated with roads and service corridors if adequate and on-going weed control is not maintained.

3.4.3 Fire management

Fire is inevitable in the woodland vegetation found within the project area. The Bushfires Council of the NT requires landholders to undertake a number of actions to manage fire, including managing the perimeters of the properties. This may require slashing and burning to prevent entry of wildfires or escaped fires from the property. Fire breaks coupled with adequate and appropriate prescribed burns will effectively manage fires on the lease and reduce the risk of wildfires entering the lease area.

3.4.4 Dust impacts

During the clearing, mining and transport of materials associated with this mining proposal, some dust will be generated within the lease area and along the transport corridors. The dust has the potential to coat the leaves and stems of exposed vegetation in the immediate vicinity and if sufficiently thick can have a negative impact on plant growth and survival. It is unlikely however, that the level of dust generated at the mine site or along the haul road will have a significant impact on survival, growth or vigour of affected vegetation.

3.4.5 Impacts on vegetation at pit dewatering and irrigation sites

The water table in areas surrounding the pit will be lowered due to dewatering operations, a process that may span 5 years (and up to a maximum of 10 years). The lowering of ground water is likely to affect surrounding ecosystems, at least for approximately 4 - 6 months during the dry season. Those vegetation communities most dependent on ground water (e.g freshwater swamp, floodplain or riparian habitats) will be the most affected by a reduction in groundwater. Other habitats better adapted to seasonal drought will be less affected by pit dewatering operations. The lowering of ground water is not expected to affect vegetation on Maud Creek however, or other riparian habitats downstream, as the catchment of Gold Creek is relatively small and a number of other (unaffected) tributary creeks also feed into Maud Creek.

Also as a result of pit dewatering, increased water supply to irrigation areas will presumably cause local waterlogging of the soil and a potential reduction in vegetative

cover. In general, poorly drained and seasonally wet habitats characteristically have only sparse tree cover, comprised of relatively few tree species adapted to several months of boggy conditions and/or inundation. Ground layer vegetation generally comprises sedges and grasses adapted to swampy conditions. The magnitude of the impact of irrigation from pit dewatering will depend on the native vegetation community affected (i.e. its natural tolerance of wet conditions). The duration and amount of waterlogging will also determine the impact of irrigation on existing vegetation.

The cultivation of crops or pasture species with high water demands within irrigation areas may potentially alleviate problems associated with water disposal. The uptake and concentration of elements from pit water by crop plants will need to be monitored however, as will soil chemistry and pH in irrigation areas.

3.5 AVOIDANCE, MITIGATION and MANAGEMENT MEASURES

Avoidance, management and mitigation measures will need to be implemented to minimise the impact of the project on the existing vegetation and ecological communities of the area. The primary impacts on native flora relate to vegetation clearing and the potential for increased weed density and distribution in vegetation communities surrounding the project lease area and access roads.

A number of mitigation measures have been previously identified in the NOI (URS, 2006) and the management of potential impacts on flora may be considered under several headings as follows:

3.5.1 Vegetation clearance

- Clearing of vegetation should be kept to the minimum required for each section of the development. In order to ensure that contractors clear only that area required, the boundaries of the areas to be cleared should be clearly marked prior to any works taking place.
- Additional areas required for plant turn-around areas, construction access tracks, storage areas and construction camps, should be kept to a minimum and immediately rehabilitated after construction.
- All vegetation to be removed from weed free areas should be chipped and used as mulch in rehabilitation, or pit burnt if taken from weed infested areas
- A revegetation, rehabilitation and monitoring strategy must be developed prior to clearing of land that also includes a specific plan for the Gold Creek diversion channel and flood protection levee.
- Rehabilitation of disturbed areas must be commenced as soon as possible after they are no longer required for mining operations.
- Felled timber may be used as batters along the new riparian corridor during period of tree establishment in the Gold Creek diversion channel.
- Seeds from the local provenance are best suited for revegetation works and should be used in rehabilitation wherever possible
- Grazing animals must be excluded from newly revegetated areas.

3.5.2 Weed management

- Regular (6 monthly) monitoring of weeds in construction areas should be conducted for the duration of the construction phase.
- Weed species identification and timely eradication must be implemented as part of ongoing weed management for the project area.
- A comprehensive weed management plan for the lease area, proposed access road and surrounding areas must be developed, implemented and monitored.

- Weed control and monitoring should be included as an ongoing regular duty of one or more staff members.
- Wash down units must be used for vehicles and any other equipment moving on or off the mine site (particularly earthmoving equipment) to prevent the spread of declared and other environmental weeds
- All materials sourced outside the project lease area must be weed-free prior to being taken on site.

3.5.3 Fire management

- A fire management program should be developed and implemented for the construction and operational phases of the project
- The fire management plan must be planned in conjunction with the weed management plan and any rehabilitation works, so as not to jeopardise weed control strategies and regeneration of native vegetation.
- A controlled burn regime should be implemented that takes into account not only the fire prevention requirements for mine infrastructure but also the previous burning history and fire-sensitivity of the vegetation communities within the project area.
- Develop procedures to avoid, control and regulate potential unplanned fires.
- Strictly avoid the introduction of Gamba Grass (*Andropogon gayanus*) and Mission Grass (*Pennisetum polystachion*) to the site. If detected on site, these weeds should be immediately controlled or eradicated to reduce the severe fire risk posed to infrastructure, rehabilitation and native habitats from these weeds.

3.5.4 Dust management

- Watering of haulage roads for dust suppression is recommended both during and after construction
- Where appropriate, vegetation cover on denuded areas should be replaced to reduce dust levels.
- Monitoring for dust effects should be conducted during the dry season.

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APPENDICES

APPENDIX 1 cont. : Fieldwork proforma used during vegetation surveys of Maud Creek project area.

<i>Maud Creek Gold Prospect</i>	<i>Flora Survey for EIS</i>	<i>March/April 2007</i>
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	Site No. MC -	Date	Location
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Vegetation Community:

CROWN SEPN RATIO	1	2	3	4	5	6	7	8	9	10			
Gap													
Crown width													
	11	12	13	14	15	16	17	18	19	20	Total	Mean	% FC
Gap													
Crown width													

GROUND COVER (within plot)		Subplot				
		1	2	3	4	5
Bare						
Grass						
litter						
Other						
Tot%						

Vegetation Community:

Stratum	Upper	Mid	Lower	(estimates across wider area than plot)
Average				
Height (m)				
Ht Range (m)				
% Cover				

Basal Sweep	BAF =	
Total stems		

Site Disturbance							(estimate across wider area than plot)
Agent	0=no impact, 5=whole site						
Pig	0	1	2	3	4	5	
Buffalo / Cattle	0	1	2	3	4	5	
Erosion	0	1	2	3	4	5	
Weed	0	1	2	3	4	5	
Fire	0	1	2	3	4	5	
Other:	0	1	2	3	4	5	

APPENDIX 2: Plant species list recorded during field surveys of the Maud Creek Gold project area from 17 March to 22 April 2007 indicating family and conservation status according to Northern Territory legislation (*TPWC Act 2000*).

Family	Genus & species	Conservation status
ACANTHACEAE	<i>Nelsonia campestris</i>	lc
ANACARDIACEAE	<i>Buchanania obovata</i>	lc
APOCYNACEAE	<i>Carissa lanceolata</i>	lc
ASCLEPIADACEAE	<i>Calotropis procera</i>	lc*
ASCLEPIADACEAE	<i>Marsdenia viridiflora</i> subsp. <i>tropica</i>	lc
ASTERACEAE	<i>Bidens bipinnata</i>	lc*
ASTERACEAE	<i>Pterocaulon serrulatum</i>	lc
ASTERACEAE	<i>Tridax procumbens</i>	lc*
BIXACEAE	<i>Cochlospermum fraseri</i>	lc
BORAGINACEAE	<i>Heliotropium</i> sp.	-
BORAGINACEAE	<i>Trichodesma zeylanicum</i>	lc
BURSERACEAE	<i>Canarium australianum</i>	lc
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	lc
CAESALPINIACEAE	<i>Senna obtusifolia</i>	lc*
CARYOPHYLLACEAE	<i>Polycarpaea brevoiflora</i>	lc
COMBRETACEAE	<i>Terminalia canescens</i>	lc
COMBRETACEAE	<i>Terminalia platyphylla</i>	lc
COMBRETACEAE	<i>Terminalia pterocarya</i>	LC
COMMELINACEAE	<i>Commelina ensifolia</i>	lc
CONVOLVULACEAE	<i>Ipomoea eriocarpa</i>	lc
CONVOLVULACEAE	<i>Ipomoea polymorpha</i>	lc
CONVOLVULACEAE	<i>Ipomoea triloba</i>	lc*
CONVOLVULACEAE	<i>Merremia quinata</i>	lc
CONVOLVULACEAE	<i>Polymeria ambigua</i>	lc
CONVOLVULACEAE	<i>Xenostegia tridentata</i>	lc
CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>	lc
CYPERACEAE	<i>Fimbristylis</i> spp	-
CYPERACEAE	<i>Rhynchospora exserta</i>	lc
EBENACEAE	<i>Diospyros humilis</i>	lc
EUPHORBIACEAE	<i>Euphorbia schizolepis</i>	lc
EUPHORBIACEAE	<i>Euphorbia schultzii</i>	lc
EUPHORBIACEAE	<i>Euphorbia vachellii</i>	lc
EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	lc
EUPHORBIACEAE	<i>Leptopus decaisnei</i>	lc
EUPHORBIACEAE	<i>Petalostigma banksii</i>	lc
EUPHORBIACEAE	<i>Petalostigma pubescens</i>	lc
EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>	lc
EUPHORBIACEAE	<i>Sauropus stenocladus</i>	LC
FABACEAE	<i>Alysicarpus muelleri</i>	lc
FABACEAE	<i>Alysicarpus ovalifolius</i>	lc*
FABACEAE	<i>Alysicarpus schomburgkii</i>	lc
FABACEAE	<i>Cajanus marmoratus</i>	lc
FABACEAE	<i>Calopogonium mucunoides</i>	lc*
FABACEAE	<i>Christia australasica</i>	lc
FABACEAE	<i>Crotalaria brevis</i>	lc
FABACEAE	<i>Crotalaria goreensis</i>	lc*
FABACEAE	<i>Crotalaria medicaginea</i>	lc

Family	Genus & species	Conservation status
FABACEAE	<i>Crotalaria montana</i>	lc
FABACEAE	<i>Crotalaria novae-hollandiae</i>	lc
FABACEAE	<i>Crotalaria retusa</i>	lc
FABACEAE	<i>Cullen badocanum</i>	lc
FABACEAE	<i>Desmodium filiforme</i>	lc
FABACEAE	<i>Desmodium flagellare</i>	lc
FABACEAE	<i>Desmodium muelleri</i> var. <i>majus</i>	lc
FABACEAE	<i>Erythrina variegata</i> var. <i>orientalis</i>	ne
FABACEAE	<i>Flemingia parviflora</i>	lc
FABACEAE	<i>Indigofera linifolia</i>	lc
FABACEAE	<i>Macroptilium atropurpureum</i>	lc*
FABACEAE	<i>Macroptilium lathyroides</i>	lc*
FABACEAE	<i>Rhynchosia minima</i>	lc
FABACEAE	<i>Sesbania cannabina</i>	lc
FABACEAE	<i>Stylosanthes hamata</i>	lc*
FABACEAE	<i>Tephrosia filipes</i> var. <i>indeterminate</i>	lc
FABACEAE	<i>Tephrosia humifusa</i>	NT
FABACEAE	<i>Tephrosia leptoclada</i>	lc
FABACEAE	<i>Tephrosia polyzyga</i>	lc
FABACEAE	<i>Uraria lagopodioides</i>	lc
FABACEAE	<i>Vigna lanceolata</i>	lc
FABACEAE	<i>Vigna radiata</i>	lc
FABACEAE	<i>Vigna vexillata</i>	lc
FABACEAE	<i>Zornia muriculata</i> subsp. <i>angustata</i>	lc
GOODENIACEAE	<i>Goodenia leiosperma</i>	LC
GOODENIACEAE	<i>Goodenia</i> sp. Melville Island	lc
GOODENIACEAE	<i>Goodenia</i> sp.	-
LAMIACEAE	<i>Anisomeles malabarica</i>	lc
LAMIACEAE	<i>Hyptis suaveolens</i>	lc*
LOGANIACEAE	<i>Mitrasacme nudicaulis</i>	lc
MALVACEAE	<i>Abutilon</i> sp.	-
MALVACEAE	<i>Gossypium australe</i>	lc
MALVACEAE	<i>Hibiscus panduriformis</i>	lc
MALVACEAE	<i>Sida acuta</i>	lc*
MALVACEAE	<i>Sida spinosa</i>	lc
MENISPERMACEAE	<i>Tinospora smilacina</i>	lc
MIMOSACEAE	<i>Acacia holosericea</i>	lc
MIMOSACEAE	<i>Acacia umbellata</i>	lc
MIMOSACEAE	<i>Vachelli pallidifolia</i>	LC
MORACEAE	<i>Ficus racemosa</i>	lc
MYRTACEAE	<i>Corymbia bella</i>	lc
MYRTACEAE	<i>Corymbia confertiflora</i>	lc
MYRTACEAE	<i>Corymbia dichromophloia</i>	lc
MYRTACEAE	<i>Corymbia ferruginea</i>	lc
MYRTACEAE	<i>Corymbia foelscheana</i>	lc
MYRTACEAE	<i>Corymbia latifolia</i>	lc
MYRTACEAE	<i>Eucalyptus patellaris</i>	LC
MYRTACEAE	<i>Eucalyptus pruinosa</i>	lc
MYRTACEAE	<i>Eucalyptus tectifera</i>	lc
MYRTACEAE	<i>Eucalyptus tetradonta</i>	lc
MYRTACEAE	<i>Lophostemon grandiflorus</i> subsp. <i>indeterminate</i>	lc

Family	Genus species	Conservation status
MYRTACEAE	<i>Lophostemon lactifluus</i>	lc
NYCTAGINACEAE	<i>Boerhavia</i> sp.	-
OLEACEAE	<i>Jasminum molle</i>	lc
PANDANACEAE	<i>Pandanus spiralis</i>	lc
PASSIFLORACEAE	<i>Passiflora foetida</i>	lc*
PEDALIACEAE	<i>Sesamum indicum</i>	lc*
POACEAE	<i>Alloteropsis semialata</i>	lc
POACEAE	<i>Aristida</i> sp.	-
POACEAE	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>	lc
POACEAE	<i>Bothriochloa pertusa</i>	lc*
POACEAE	<i>Brachyachne convergens</i>	lc
POACEAE	<i>Cenchrus</i> sp.	lc*
POACEAE	<i>Chionachne hubbardiana</i>	lc
POACEAE	<i>Chrysopogon fallax</i>	lc
POACEAE	<i>Chrysopogon oliganthus</i>	lc
POACEAE	<i>Dichanthium fecundum</i>	lc
POACEAE	<i>Echinochloa colona</i>	lc*
POACEAE	<i>Eragrostis schultzei</i>	lc
POACEAE	<i>Heteropogon contortus</i>	lc
POACEAE	<i>Iseilema macrathrum</i>	lc
POACEAE	<i>Mnesithea formosa</i>	lc
POACEAE	<i>Pennisetum polystachion</i>	lc*
POACEAE	<i>Sarga intrans</i>	lc
POACEAE	<i>Sehima nervosum</i>	lc
POACEAE	<i>Setaria apiculata</i>	lc
POACEAE	<i>Themeda triandra</i>	lc
POACEAE	<i>Themeda quadrivalvi</i>	lc*
POACEAE	<i>Yakirra australiensis</i> var. <i>australiensis</i>	lc
POLYGALACEAE	<i>Polygala barbata</i>	lc
POLYGALACEAE	<i>Polygala integra</i>	lc
POLYGALACEAE	<i>Polygala</i> sp.	-
PROTEACEAE	<i>Hakea arborescens</i>	lc
PROTEACEAE	<i>Persoonia falcata</i>	lc
RUBIACEAE	<i>Oldenlandia mitrasacmoides</i>	lc
RUBIACEAE	<i>Pavetta brownii</i> var. <i>brownii</i>	lc
RUBIACEAE	<i>Timonius timon</i>	lc
RUBIACEAE	<i>Spermacoce dolichosperma</i>	lc
RUBIACEAE	<i>Spermacoce pogostoma</i>	lc
RUBIACEAE	<i>Spermacoce tectanthera</i>	lc
SCROPHULARIACEAE	<i>Stemodia viscosa</i>	lc
SCROPHULARIACEAE	<i>Striga curviflora</i>	lc
STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>	lc
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	LC
STERCULIACEAE	<i>Helicteres</i> sp. (probably <i>dentata</i>)	-
STERCULIACEAE	<i>Waltheria indica</i>	lc
TACCACEAE	<i>Tacca leontopetaloides</i>	lc
THYMELAEACEAE	<i>Thecanthes concreta</i>	lc
TILIACEAE	<i>Grewia retusifolia</i>	lc
TILIACEAE	<i>Triumfetta rhomboidea</i>	lc
VERBENACEAE	<i>Clerodendrum floribundum</i>	lc
VIOLACEAE	<i>Hybanthus enneaspermus</i>	lc
VITACEAE	<i>Ampelocissus acetosa</i>	lc

Family	Genus & species	Conservation status
VITACEAE	<i>Ampelocissus frutescens</i>	LC
VITACEAE	<i>Cayratia maritima</i>	lc
VITACEAE	<i>Cayratia trifolia</i>	lc
<i>Key Abbreviations in plant Species list</i>		
lc	least concern	
v	vulnerable	
ne	not evaluated	
nt	near threatened	
upper case = endemic	occurs only in NT	
*	exotic	

APPENDIX 3: Plant species composition and structure recorded within 16 study plots during field surveys of the Maud Creek Gold project area from 17 March to 22 April 2007. The GPS location, vegetation map unit number and structural classification of each vegetation community is shown. Species abundance, family and and conservation status according to Northern Territory legislation (TPWC Act 2000) is also indicated

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC1	225561	8400603	Upper	MYRTACEAE	<i>Corymbia foelscheana</i>	2	lc
Unit 4	Low Open Woodland			MYRTACEAE	<i>Eucalyptus tectifica</i>	3	lc
			Mid	COMBRETACEAE	<i>Terminalia canescens</i>	2	lc
				FABACEAE	<i>Erythrina variegata</i> var. <i>orientalis</i>	1	ne
				MYRTACEAE	<i>Eucalyptus tectifica</i>	1	lc
				PROTEACEAE	<i>Hakea arborescens</i>	1	lc
			Lower	ASTERACEAE	<i>Tridax procumbens</i>		lc*
				CAESALPINIACEAE	<i>Senna obtusifolia</i>		lc*
				CONVOLVULACEAE	<i>Ipomoea triloba</i>		lc*
				CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>		ne
				CYPERACEAE	<i>Rhynchospora exserta</i>		lc
				EUPHORBIACEAE	<i>Euphorbia schizolepis</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus muelleri</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Rhynchosia minima</i>		lc
				FABACEAE	<i>Tephrosia filipes</i>		lc
				FABACEAE	<i>Vigna radiata</i>		lc
				GOODENIACEAE	<i>Goodenia leiosperma</i>		LC
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Abutilon</i> sp		lc
				MALVACEAE	<i>Hibiscus panduriformis</i>		lc
				MALVACEAE	<i>Sida spinosa</i>		lc
				PASSIFLORACEAE	<i>Passiflora foetida</i>		lc*
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Themeda triandra</i>		lc
				SCROPHULARIACEAE	<i>Stemodia viscosa</i>		lc
				SCROPHULARIACEAE	<i>Striga curviflora</i>		lc
				STERCULIACEAE	<i>Waltheria indica</i>		lc
				THYMELAEACEAE	<i>Thecanthes concreta</i>		lc
				VITACEAE	<i>Ampelocissus acetosa</i>		lc
				VITACEAE	<i>Cayratia trifolia</i>		lc
MC2	224999	8401748	Upper	MYRTACEAE	<i>Corymbia confertiflora</i>	3	lc
Unit 2:	Low Open Woodland			MYRTACEAE	<i>Eucalyptus tectifica</i>	3	lc
			Mid	FABACEAE	<i>Erythrina variegata</i> var. <i>orientalis</i>	1	ne
				MYRTACEAE	<i>Corymbia confertiflora</i>	1	lc
			Lower	BORAGINACEAE	<i>Heliotropium</i> sp.		ne
				COMMELINACEAE	<i>Commelina ensifolia</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC2	224999	8401748	Lower				
contd.							
				CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>		ne
				CYPERACEAE	<i>Rhynchospora exserta</i>		lc
				EUPHORBIACEAE	<i>Euphorbia vachellii</i>		lc
				EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus muelleri</i>		lc
				FABACEAE	<i>Desmodium muelleri</i> var. <i>majus</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Tephrosia filipes</i> var. <i>indeterminate</i>		lc
				FABACEAE	<i>Tephrosia humifusa</i>		NT
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc
				MALVACEAE	<i>Sida acuta</i>		lc*
				MALVACEAE	<i>Sida spinosa</i>		lc
				NYCTAGINACEAE	<i>Boerhavia</i> sp		lc
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Heteropogon contortus</i>		lc
				POACEAE	<i>Sehima nervosum</i>		lc
				POACEAE	<i>Themeda triandra</i>		lc
				RUBIACEAE	<i>Spermacoce pogostoma</i>		lc
				SCROPHULARIACEAE	<i>Stemodia viscosa</i>		lc
				SCROPHULARIACEAE	<i>Striga curviflora</i>		lc
				TILIACEAE	<i>Grewia retusifolia</i>		lc
				VITACEAE	<i>Ampelocissus acetosa</i>		lc
MC3	224764	8401742	Upper	MYRTACEAE	<i>Eucalyptus pruinosa</i>	5	lc
Unit 3	Low Open Woodland -			CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	4	lc
	Euc. pruinosa, Ery.chlorostachys		Mid	MYRTACEAE	<i>Eucalyptus pruinosa</i>	10	lc
			Lower	CAESALPINIACEAE	<i>Senna obtusifolia</i>		lc*
				CONVOLVULACEAE	<i>Polymeria ambigua</i>		lc
				EUPHORBIACEAE	<i>Petalostigma banksii</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus ovalifolius</i>		lc*
				FABACEAE	<i>Crotalaria montana</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Stylosanthes hamata</i>		lc*
				FABACEAE	<i>Tephrosia filipes</i> var. <i>indeterminate</i>		lc
				FABACEAE	<i>Vigna radiata</i>		lc
				FABACEAE	<i>Zornia muriculata</i> subsp. <i>angustata</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Hibiscus panduriformis</i>		lc
				MALVACEAE	<i>Sida acuta</i>		lc*
				NYCTAGINACEAE	<i>Boerhavia</i> sp.		lc
				POACEAE	<i>Aristida</i> sp.		lc
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Heteropogon contortus</i>		lc
				RUBIACEAE	<i>Spermacoce pogostoma</i>		lc
				VITACEAE	<i>Ampelocissus acetosa</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC4	225357	8401434	Upper	MYRTACEAE	<i>Eucalyptus patellaris</i>	3	LC
Unit 6	Woodland -	Riparian corridor	Mid	ANACARDIACEAE	<i>Buchanania obovata</i>	1	lc
				COMBRETACEAE	<i>Terminalia platyphylla</i>	1	lc
				EBENACEAE	<i>Diospyros humilis</i>	1	lc
				MYRTACEAE	<i>Lophostemon grandiflorus</i> subsp. <i>indeterminate</i>	1	lc
				PROTEACEAE	<i>Hakea arborescens</i>	2	lc
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>	1	lc
			Lower	ASCLEPIADACEAE	<i>Calotropis procera</i>		lc*
				ASTERACEAE	<i>Bidens bipinnata</i>		lc*
				BORAGINACEAE	<i>Trichodesma zeylanicum</i>		lc
				CAESALPINIACEAE	<i>Senna obtusifolia</i>		lc*
				CONVOLVULACEAE	<i>Polymeria ambigua</i>		lc
				EUPHORBIACEAE	<i>Euphorbia vachellii</i>		lc
				EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>		lc
				EUPHORBIACEAE	<i>Leptopus decaisnei</i>		lc
				FABACEAE	<i>Alysicarpus muelleri</i>		lc
				FABACEAE	<i>Calopogonium mucunoides</i>		lc*
				FABACEAE	<i>Crotalaria medicaginea</i>		lc
				FABACEAE	<i>Flemingia parviflora</i>		lc
				FABACEAE	<i>Macroptilium atropurpureum</i>		lc*
				FABACEAE	<i>Rhynchosia minima</i>		lc
				FABACEAE	<i>Sesbania cannabina</i>		lc
				FABACEAE	<i>Stylosanthes hamata</i>		lc*
				FABACEAE	<i>Vigna radiata</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Sida acuta</i>		lc*
				MALVACEAE	<i>Sida spinosa</i>		lc
			Lower	MIMOSACEAE	<i>Vachelli pallidifolia</i>		LC
				PASSIFLORACEAE	<i>Passiflora foetida</i>		lc*
				PEDALIACEAE	<i>Sesamum indicum</i>		lc*
				POACEAE	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>		lc
				POACEAE	<i>Bothriochloa pertusa</i>		lc*
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Cenchrus</i> sp.		lc*
				POACEAE	<i>Echinochloa colona</i>		lc*
				POACEAE	<i>Heteropogon contortus</i>		lc
				POACEAE	<i>Setaria apiculata</i>		lc
				POACEAE	<i>Yakirra australiensis</i> var. <i>australiensis</i>		lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>		LC
				TACCACEAE	<i>Tacca leontopetaloides</i>		lc
				TILIACEAE	<i>Grewia retusifolia</i>		lc
				VITACEAE	<i>Ampelocissus acetosa</i>		lc
MC5	225712	8401460	Upper	MYRTACEAE	<i>Corymbia foelscheana</i>	1	lc
Unit 6	Low woodland -	Riparian corridor		PROTEACEAE	<i>Hakea arborescens</i>	1	lc
				MYRTACEAE	<i>Lophostemon grandiflorus</i> subsp. <i>indeterminate</i>	3	lc
				COMBRETACEAE	<i>Terminalia platyphylla</i>	2	lc
			Mid	BIXACEAE	<i>Cochlospermum fraseri</i>	2	lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC5				COMBRETACEAE	<i>Terminalia platyphylla</i>	3	lc
Cont.				MYRTACEAE	<i>Lophostemon grandiflorus</i>	6	lc
				PROTEACEAE	<i>Hakea arborescens</i>	13	lc
			Lower	ASTERACEAE	<i>Bidens bipinnata</i>		lc*
				CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>		ne
				EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>		lc
				EUPHORBIACEAE	<i>Leptopus decaisnei</i>		lc
				FABACEAE	<i>Alysicarpus ovalifolius</i>		lc*
				FABACEAE	<i>Crotalaria medicaginea</i>		lc
				FABACEAE	<i>Crotalaria novae-hollandiae</i>		lc
				FABACEAE	<i>Stylosanthes hamata</i>		lc*
				FABACEAE	<i>Tephrosia humifusa</i>		NT
				FABACEAE	<i>Vigna radiata</i>		lc
				FABACEAE	<i>Vigna radiata</i> var. <i>sublobata</i>		lc
				LAMIACEAE	<i>Anisomeles malabarica</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MIMOSACEAE	<i>Vachelli pallidifolia</i>		LC
				PANDANACEAE	<i>Pandanus spiralis</i>		lc
				PASSIFLORACEAE	<i>Passiflora foetida</i>		lc*
				POACEAE	<i>Heteropogon contortus</i>		lc
				POLYGALACEAE	<i>Polygala</i> sp.		ne
				PROTEACEAE	<i>Persoonia falcata</i>		lc
				RUBIACEAE	<i>Spermacoce dolichosperma</i>		lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>		LC
				TILIACEAE	<i>Grewia retusifolia</i>		lc
				VITACEAE	<i>Ampelocissus acetosa</i>		lc
				VITACEAE	<i>Cayratia maritima</i>		lc
MC6	225455	8401286	Upper	BIXACEAE	<i>Cochlospermum fraseri</i>	1	lc
Unit 4: Low Open Woodland				MYRTACEAE	<i>Corymbia foelscheana</i>	8	lc
				MYRTACEAE	<i>Corymbia latifolia</i>	1	lc
			Mid	EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	1	lc
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>	1	lc
				BIXACEAE	<i>Cochlospermum fraseri</i>	1	lc
				VITACEAE	<i>Ampelocissus acetosa</i>	1	lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
				MIMOSACEAE	<i>Acacia holosericea</i>	1	lc
				MYRTACEAE	<i>Corymbia foelscheana</i>	1	lc
			Lower	EUPHORBIACEAE	<i>Euphorbia schizolepis</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus muelleri</i>		lc
				FABACEAE	<i>Alysicarpus ovalifolius</i>		lc*
				FABACEAE	<i>Cajanus marmoratus</i>		lc
				FABACEAE	<i>Crotalaria montana</i>		lc
				FABACEAE	<i>Crotalaria montana</i>		lc
				FABACEAE	<i>Crotalaria novae-hollandiae</i>		lc
				FABACEAE	<i>Cullen badocanum</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Rhynchosia minima</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC6	225455	8401286		FABACEAE	<i>Tephrosia filipes</i>		lc
Contd.				FABACEAE	<i>Tephrosia humifusa</i>		NT
				FABACEAE	<i>Zornia muriculata</i> subsp. <i>angustata</i>		lc
				GOODENIACEAE	<i>Goodenia leiosperma</i>		LC
				LAMIACEAE	<i>Anisomeles malabarica</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Sida acuta</i>		lc*
				MYRTACEAE	<i>Corymbia ferruginea</i>		lc
				POACEAE	<i>Mnesithea formosa</i>		lc
				RUBIACEAE	<i>Spermacoce tectanthera</i>		lc
				VITACEAE	<i>Ampelocissus frutescens</i>		LC
				VITACEAE	<i>Cayratia trifolia</i>		lc
MC7	225659	8402146	Upper	MYRTACEAE	<i>Corymbia foelscheana</i>	8	lc
Unit 4	Low Open Woodland			MYRTACEAE	<i>Eucalyptus tectifica</i>	1	lc
				PROTEACEAE	<i>Hakea arborescens</i>	1	lc
			Mid	ANACARDIACEAE	<i>Buchanania obovata</i>	1	lc
				APOCYNACEAE	<i>Carissa lanceolata</i>	1	lc
				BIXACEAE	<i>Cochlospermum fraseri</i>	3	lc
				CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	1	lc
				COMBRETACEAE	<i>Terminalia pterocarya</i>	1	LC
				MIMOSACEAE	<i>Vachelli pallidifolia</i>	1	LC
				MYRTACEAE	<i>Corymbia foelscheana</i>	1	lc
				MYRTACEAE	<i>Eucalyptus tectifica</i>	2	lc
				PROTEACEAE	<i>Hakea arborescens</i>	11	lc
				PROTEACEAE	<i>Persoonia falcata</i>		lc
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>	1	lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
				VERBENACEAE	<i>Clerodendrum floribundum</i>	1	lc
				VITACEAE	<i>Ampelocissus frutescens</i>	1	LC
			Lower	COMBRETACEAE	<i>Terminalia pterocarya</i>		LC
				CONVOLVULACEAE	<i>Merremia quinata</i>		lc
				CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>		lc
				CYPERACEAE	<i>Fimbristylis</i> spp		lc
				EUPHORBIACEAE	<i>Euphorbia schizolepis</i>		lc
				EUPHORBIACEAE	<i>Leptopus decaisnei</i>		lc
				EUPHORBIACEAE	<i>Petalostigma pubescens</i>		lc
				FABACEAE	<i>Alysicarpus schomburgkii</i>		lc
				FABACEAE	<i>Cajanus marmoratus</i>		lc
				FABACEAE	<i>Crotalaria brevis</i>		lc
				FABACEAE	<i>Crotalaria medicaginea</i>		lc
				FABACEAE	<i>Flemingia parviflora</i>		lc
				FABACEAE	<i>Rhynchosia minima</i>		lc
				GOODENIACEAE	<i>Goodenia leiosperma</i>		LC
				GOODENIACEAE	<i>Goodenia</i> sp. Melville Island		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				POACEAE	<i>Alloteropsis semialata</i>		lc
				POACEAE	<i>Heteropogon contortus</i>		lc
				POACEAE	<i>Sehima nervosum</i>		lc
				POACEAE	<i>Themeda triandra</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC7	225659	8402146	Lower	RUBIACEAE	<i>Oldenlandia mitrasacmoides</i>		lc
Contd.				RUBIACEAE	<i>Spermacoce tectanthera</i>		lc
				THYMELAEACEAE	<i>Thecanthes concreta</i>		lc
				VIOLACEAE	<i>Hybanthus enneaspermus</i>		lc
MC8	225952	8402530	Upper	MYRTACEAE	<i>Corymbia bella</i>	3	lc
Unit 6	Low Woodland -			MYRTACEAE	<i>Corymbia latifolia</i>	1	lc
	Riparian corridor			COMBRETACEAE	<i>Terminalia platyphylla</i>	4	lc
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>	2	lc
			Mid	ANACARDIACEAE	<i>Buchanania obovata</i>	1	lc
				COMBRETACEAE	<i>Terminalia platyphylla</i>	1	lc
				EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	1	lc
				MIMOSACEAE	<i>Acacia holosericea</i>	1	lc
				MYRTACEAE	<i>Lophostemon lactifluus</i>	1	lc
				RUBIACEAE	<i>Pavetta brownii</i> var. <i>brownii</i>	1	lc
				TILIACEAE	<i>Grewia retusifolia</i>	1	lc
				TILIACEAE	<i>Triumfetta rhomboidea</i>	1	lc
				VERBENACEAE	<i>Clerodendrum floribundum</i>	1	lc
			Lower	ACANTHACEAE	<i>Nelsonia campestris</i>		lc
				CAESALPINIACEAE	<i>Senna obtusifolia</i>		lc*
				FABACEAE	<i>Desmodium filiforme</i>		lc
				FABACEAE	<i>Stylosanthes hamata</i>		lc*
				FABACEAE	<i>Vigna vexillata</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Sida acuta</i>		lc*
				OLEACEAE	<i>Jasminum molle</i>		lc
				PEDALIACEAE	<i>Sesamum indicum</i>		lc*
				POACEAE	<i>Bothriochloa pertusa</i>		lc*
				POACEAE	<i>Chrysopogon oliganthus</i>		lc
				POACEAE	<i>Heteropogon contortus</i>		lc
MC9	224798	8402332	Upper	COMBRETACEAE	<i>Terminalia platyphylla</i>	2	lc
Unit 1: Isolated low trees			Mid	APOCYNACEAE	<i>Carissa lanceolata</i>	1	lc
				COMBRETACEAE	<i>Terminalia platyphylla</i>	7	lc
			Lower	CAESALPINIACEAE	<i>Senna obtusifolia</i>		lc*
				CONVOLVULACEAE	<i>Polymeria ambigua</i>		lc
				EUPHORBIACEAE	<i>Euphorbia schizolepis</i>		lc
				EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus muelleri</i>		lc
				FABACEAE	<i>Alysicarpus ovalifolius</i>		lc*
				FABACEAE	<i>Desmodium flagellare</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Tephrosia filipes</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Sida spinosa</i>		lc
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Chionachne hubbardiana</i>		lc
				POACEAE	<i>Echinochloa colona</i>		lc*
				POACEAE	<i>Sehima nervosum</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
				POACEAE	<i>Themeda triandra</i>		lc
				PROTEACEAE	<i>Hakea arborescens</i>		lc
				RUBIACEAE	<i>Oldenlandia mitrasacmoides</i>		lc
				RUBIACEAE	<i>Spermacoce pogostoma</i>		lc
				SCROPHULARIACEAE	<i>Stemodia viscosa</i>		lc
				VITACEAE	<i>Ampelocissus acetosa</i>		lc
				VITACEAE	<i>Ampelocissus frutescens</i>		LC
MC10	223722	8401638	Upper	COMBRETACEAE	<i>Terminalia pterocarya</i>	7	LC
Unit 4	Low Open Woodland			MYRTACEAE	<i>Corymbia foelscheana</i>	1	lc
				MYRTACEAE	<i>Eucalyptus tectifera</i>	1	lc
				PROTEACEAE	<i>Hakea arborescens</i>	3	lc
			Mid	BIXACEAE	<i>Cochlospermum fraseri</i>	1	lc
				COMBRETACEAE	<i>Terminalia pterocarya</i>	54	LC
				PROTEACEAE	<i>Hakea arborescens</i>	15	lc
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>		lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>		LC
			Lower	BORAGINACEAE	<i>Trichodesma zeylanicum</i>		lc
				CAESALPINIACEAE	<i>Senna obtusifolia</i>		lc*
				CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>		lc
				EUPHORBIACEAE	<i>Euphorbia schizolepis</i>		lc
				EUPHORBIACEAE	<i>Petalostigma banksii</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus muelleri</i>		lc
				FABACEAE	<i>Desmodium flagellare</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Stylosanthes hamata</i>		lc*
				FABACEAE	<i>Tephrosia humifusa</i>		NT
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Abutilon</i> sp.		-
				MALVACEAE	<i>Hibiscus panduriformis</i>		lc
				MALVACEAE	<i>Sida spinosa</i>		lc
				POACEAE	<i>Alloteropsis semialata</i>		lc
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Dichanthium fecundum</i>		lc
				POACEAE	<i>Mnesithea formosa</i>		lc
				POACEAE	<i>Themeda triandra</i>		lc
				RUBIACEAE	<i>Oldenlandia mitrasacmoides</i>		lc
				STERCULIACEAE	<i>Helicteres</i> sp.		-
				STERCULIACEAE	<i>Waltheria indica</i>		lc
				TILIACEAE	<i>Grewia retusifolia</i>		lc
MC11	224135	8401456	Upper	CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	8	lc
Unit 5:	Low Woodland			MYRTACEAE	<i>Corymbia dichromophloia</i>	9	lc
			Mid	CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	1	lc
			Lower	ASCLEPIADACEAE	<i>Marsdenia viridiflora</i> subsp. <i>tropica</i>		lc
				CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>		lc
				CONVOLVULACEAE	<i>Polymeria ambigua</i>		lc
				EUPHORBIACEAE	<i>Euphorbia schizolepis</i>		lc
				EUPHORBIACEAE	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC11	224135	8401456		FABACEAE	<i>Alysicarpus schomburgkii</i>		lc
Cont.				FABACEAE	<i>Tephrosia humifusa</i>		NT
				GOODENIACEAE	<i>Goodenia</i> sp.		-
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Gossypium australe</i>		lc
				MALVACEAE	<i>Sida acuta</i>		lc*
				MALVACEAE	<i>Sida spinosa</i>		lc
				MENISPERMACEAE	<i>Tinospora smilacina</i>		lc
				MIMOSACEAE	<i>Acacia umbellata</i>		lc
				POACEAE	<i>Chrysopogon oliganthus</i>		lc
				POACEAE	<i>Sarga intrans</i>		lc
				POLYGALACEAE	<i>Polygala integra</i>		lc
				RUBIACEAE	<i>Spermacoce dolichosperma</i>		lc
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>		lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>		LC
				VIOLACEAE	<i>Hybanthus enneaspermus</i>		lc
				VITACEAE	<i>Ampelocissus frutescens</i>		LC
MC12	226331	8400826	Upper	MYRTACEAE	<i>Corymbia foelscheana</i>	2	lc
Unit 8: Low Woodland				MYRTACEAE	<i>Eucalyptus tectifera</i>	2	lc
				Mixed species	MYRTACEAE	2	lc
				CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	3	lc
			Upper	BIXACEAE	<i>Cochlospermum fraseri</i>	2	lc
			Mid	ANACARDIACEAE	<i>Buchanania obovata</i>	1	lc
				BIXACEAE	<i>Cochlospermum fraseri</i>	2	lc
				CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	5	lc
				MALVACEAE	<i>Hibiscus panduriformis</i>	1	lc
				MYRTACEAE	<i>Corymbia foelscheana</i>	2	lc
				PROTEACEAE	<i>Hakea arborescens</i>	2	lc
				PROTEACEAE	<i>Persoonia falcata</i>	2	lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
				VERBENACEAE	<i>Clerodendrum floribundum</i>	1	lc
				VITACEAE	<i>Ampelocissus frutescens</i>	1	LC
			Lower	CONVOLVULACEAE	<i>Ipomoea eriocarpa</i>		lc
				CONVOLVULACEAE	<i>Xenostegia tridentata</i>		lc
				EUPHORBIACEAE	<i>Euphorbia schultzei</i>		lc
				EUPHORBIACEAE	<i>Sauropus stenocladus</i>		LC
				FABACEAE	<i>Alysicarpus ovalifolius</i>		lc*
				FABACEAE	<i>Cajanus marmoratus</i>		lc
				FABACEAE	<i>Cajanus marmoratus</i>		lc
				FABACEAE	<i>Crotalaria montana</i>		lc
				FABACEAE	<i>Tephrosia leptoclada</i>		lc
				FABACEAE	<i>Tephrosia leptoclada</i>		lc
				FABACEAE	<i>Vigna lanceolata</i>		lc
				FABACEAE	<i>Vigna vexillata</i>		lc
				GOODENIACEAE	<i>Goodenia</i> sp.		-
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				LOGANIACEAE	<i>Mitrasacme nudicaulis</i>		lc
				MALVACEAE	<i>Sida acuta</i>		lc*
				POACEAE	<i>Chrysopogon fallax</i>		lc
				POACEAE	<i>Sehima nervosum</i>		lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC12	226331	8400826		POACEAE	<i>Sehima nervosum</i>		lc
Contd.				POLYGALACEAE	<i>Polygala integra</i>		lc
MC13	224542	8401182	Upper	MYRTACEAE	<i>Corymbia latifolia</i>	2	lc
Unit 7: Low Open Woodland			Mid	MYRTACEAE	<i>Corymbia ferruginea</i>	1	lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
				FABACEAE	<i>Erythrina variegata</i> var. <i>orientalis</i>	1	ne
				PROTEACEAE	<i>Hakea arborescens</i>	1	lc
			Lower	CARYOPHYLLACEAE	<i>Polycarpaea breviflora</i>		lc
				CONVOLVULACEAE	<i>Polymeria ambigua</i>		lc
				CUCURBITACEAE	<i>Cucumis melo</i> subsp. <i>melo</i>		lc
				EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> var. <i>angustifolius</i>		lc
				FABACEAE	<i>Alysicarpus ovalifolius</i>		lc*
				FABACEAE	<i>Cajanus marmoratus</i>		lc
				FABACEAE	<i>Crotalaria novae-hollandiae</i>		lc
				FABACEAE	<i>Indigofera linifolia</i>		lc
				FABACEAE	<i>Stylosanthes hamata</i>		lc*
				FABACEAE	<i>Vigna radiata</i>		lc
				LAMIACEAE	<i>Hyptis suaveolens</i>		lc*
				MALVACEAE	<i>Hibiscus panduriformis</i>		lc
				POACEAE	<i>Aristida</i> sp.		-
				POACEAE	<i>Brachyachne convergens</i>		lc
				POACEAE	<i>Heteropogon contortus</i>		lc
				POACEAE	<i>Iseilema macratherum</i>		lc
				POACEAE	<i>Mnesithea formosa</i>		lc
				POACEAE	<i>Themeda triandra</i>		lc
				RUBIACEAE	<i>Spermacoce tectanthera</i>		lc
MC14	223080	8400410	Upper	MYRTACEAE	<i>Corymbia ferruginea</i>	1	lc
Unit 8: Low Woodland				MYRTACEAE	<i>Corymbia foelscheana</i>	6	lc
				MYRTACEAE	<i>Eucalyptus tectifica</i>	3	lc
				MYRTACEAE	<i>Eucalyptus patellaris</i>	3	LC
				MYRTACEAE	<i>Corymbia confertiflora</i>	2	lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
			Mid	APOCYNACEAE	<i>Carissa lanceolata</i>	1	lc
				CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	1	lc
				MYRTACEAE	<i>Eucalyptus patellaris</i>	2	LC
				STERCULIACEAE	<i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>	1	lc
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
			Lower	CONVOLVULACEAE	<i>Ipomoea polymorpha</i>		lc
				FABACEAE	<i>Cajanus marmoratus</i>		lc
				POACEAE	<i>Alloteropsis semialata</i>		lc
				POACEAE	<i>Bothriochloa pertusa</i>		lc*
				POACEAE	<i>Eragrostis schultzei</i>		lc
				POACEAE	<i>Sehima nervosum</i>		lc
				POACEAE	<i>Themeda triandra</i>		lc
MC15	222265	840058	Upper	MYRTACEAE	<i>Eucalyptus tectifica</i>	3	lc
Unit 2: Low Open Woodland			Mid	BURSERACEAE	<i>Canarium australianum</i>	1	lc
				MIMOSACEAE	<i>Acacia holosericea</i>	1	lc
				MYRTACEAE	<i>Corymbia foelscheana</i>	1	lc

Site ID	Easting	Northing	Stratum	Family	Genus & species	Abundance	Cons value (NT)
MC 15	222265	840058	Lower	ASCLEPIADACEAE	<i>Calotropis procera</i>		1c*
Cont.				ASTERACEAE	<i>Tridax procumbens</i>		1c*
				BURSERACEAE	<i>Canarium australianum</i>		1c
				CAESALPINIACEAE	<i>Senna obtusifolia</i>		1c*
				CARYOPHYLLACEAE	<i>Polycarpha breviflora</i>		1c
				FABACEAE	<i>Alysicarpus ovalifolius</i>		1c*
				FABACEAE	<i>Cajanus marmoratus</i>		1c
				FABACEAE	<i>Crotalaria goreensis</i>		1c*
				FABACEAE	<i>Indigofera linifolia</i>		1c
				FABACEAE	<i>Stylosanthes hamata</i>		1c*
				FABACEAE	<i>Tephrosia filipes</i>		1c
				FABACEAE	<i>Uraria lagopodioides</i>		1c
				FABACEAE	<i>Vigna radiata</i>		1c
				LAMIACEAE	<i>Hyptis suaveolens</i>		1c*
				MALVACEAE	<i>Hibiscus panduriformis</i>		1c
				POACEAE	<i>Brachyachne convergens</i>		1c
				POACEAE	<i>Chrysopogon fallax</i>		1c
				POACEAE	<i>Heteropogon contortus</i>		1c
				POACEAE	<i>Sehima nervosum</i>		1c
				RUBIACEAE	<i>Spermacoce tectanthera</i>		1c
				SCROPHULARIACEAE	<i>Striga curviflora</i>		1c
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>		LC
				STERCULIACEAE	<i>Waltheria indica</i>		1c
				VITACEAE	<i>Ampelocissus frutescens</i>		LC
MC16	220525	8098648	Upper	CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	2	1c
Unit 8:	Low Open Woodland			MYRTACEAE	<i>Corymbia foelscheana</i>	2	1c
	Mixed species			MYRTACEAE	<i>Eucalyptus tectifera</i>	2	1c
				PROTEACEAE	<i>Hakea arborescens</i>	1	1c
				STERCULIACEAE	<i>Brachychiton diversifolius subsp. diversifolius</i>	1	1c
				ANACARDIACEAE	<i>Buchanania obovata</i>	1	1c
			Mid	FABACEAE	<i>Tephrosia polyzyga</i>	1	1c
				MYRTACEAE	<i>Corymbia foelscheana</i>	1	1c
				PROTEACEAE	<i>Hakea arborescens</i>	1	1c
				PROTEACEAE	<i>Persoonia falcata</i>	1	1c
				STERCULIACEAE	<i>Brachychiton diversifolius subsp. diversifolius</i>	1	1c
				STERCULIACEAE	<i>Brachychiton megaphyllus</i>	1	LC
			Lower	ASTERACEAE	<i>Pterocaulon serrulatum</i>		1c
				FABACEAE	<i>Christia australasica</i>		1c
				FABACEAE	<i>Crotalaria novae-hollandiae</i>		1c
				FABACEAE	<i>Crotalaria retusa</i>		1c
				FABACEAE	<i>Stylosanthes hamata</i>		1c*
				POACEAE	<i>Alloteropsis semialata</i>		1c
				POACEAE	<i>Themeda triandra</i>		1c
			Lower	POLYGALACEAE	<i>Polygala barbata</i>		1c
				TILIACEAE	<i>Grewia retusifolia</i>		1c
				VITACEAE	<i>Cayratia maritima</i>		1c
See Table 1, Structural formations for NVIS classification of vegetation							

APPENDIX 4: Summary table of structural data recorded within 16 study plots indicating structural formations according to NVIS classification system (see NRETA, 2007).

Site ID Code	Mean Gap / Mean Crown	Crown Separation Ratio	Crown Cover (%)	Mean height	Crown Class	Height Class	Structural formation
MC 1	10 4.5	2.22	8	6.1	Very sparse	Low	Low open woodland
MC 2	12.3 4.1	3.00	5	7.1	Very sparse	Low	Low open woodland
MC 3	9.35 3.35	2.79	6	5.3	Very sparse	Low	Low open woodland
MC 4	9.2 5.25	1.75	11	13.2	Sparse	Mid-high	Woodland
MC 5	10.95 6.05	1.81	10	7.6	Sparse	Low	Low woodland
MC 6	6.85 2.875	2.38	7	8.4	Very sparse	Low	Low open woodland
MC 7	7.185 2.895	2.48	7	7.0	Very sparse	Low	Low open woodland
MC 8	9.675 5.45	1.78	10	9.6	Sparse	Low	Low woodland
MC 9	72.865 4.98	14.63	0	8.8	Isolated	Low	Isolated low trees
MC 10	5.415 2.27	2.39	7	6.6	Very sparse	Low	Low open woodland
MC 11	8.29 5.245	1.58	12	8.2	Sparse	Low	Low woodland
MC 12	5.625 4.145	1.36	15	6.9	Sparse	Low	Low woodland
MC 13	16.55 4.75	3.48	4	5.8	Very sparse	Low	Low open woodland
MC 14	9.8 5.7	1.72	11	9.1	Sparse	Low	Low woodland
MC 15	35.4 4.45	7.96	1	5.4	Very sparse	Low	Low open woodland
MC 16	15.25 4.55	3.35	4	7.5	Very sparse	Low	Low open woodland

APPENDIX 5: Photographs of 13 study sites within mining lease area indicating structural classification of vegetation.



MC1 Low Open Woodland



MC2 Low Open Woodland



MC3 Low Open Woodland



MC4 Woodland - Riparian corridor



MC5 Low Woodland- Riparian corridor



MC6 Low Open Woodland



MC7 Low Open Woodland



MC8 Low Woodland - Riparian corridor

APPENDIX 5 continued: Photographs of 13 study sites within mining lease area indicating structural classification of vegetation.



MC9 Isolated low trees



MC10 Low Open Woodland



MC11 Low Woodland



MC12 Low Woodland









MC13 Low Open Woodland

APPENDIX 6: Summary table of study site data including basal area, canopy cover, ground cover and percentage of weed cover for study sites within the mining lease area. A ranked estimate of disturbance by different agents is also listed.

Date	Site No	Plot No	Stand basal area (m ² /ha)	Crown cover (%)	% Weed cover	GROUND COVER (%)				DISTURBANCE (Ranked 0= no impact, 5= whole site)					
						Bare	Grass	litter	Other	Pig	Buffalo	Erosion	Weed	Fire	Other
17/3/07	MC1	1	12.75	38	28	39	27	13	23	0	1	0	2	0	0
17/3/07	MC2	1	7	45	4	35	41	14	10	0	1	0	2	0	0
18/3/07	MC3	1	11.75	44	4	38	31	21	10	0	1	0	2	0	0
7/4/07	MC4	1	5	33	47	35	30	11	24	0	1	2	4	0	2
7/4/07	MC5	1	8.25	33	30	42	8	32	18	0	1	1	3	0	1
7/4/07	MC6	1	6.25	40	21	7	40	16	37	0	1	1	4	0	0
8/4/07	MC7	1	10.5	41	1	1	68	22	7	0	1	1	2	1	0
8/4/07	MC8	1	11.5	33	2	26	59	5	10	2	3	4	4	1	0
8/4/07	MC9	1	2	71	0	3	60	2	29	1	2	1	3	1	0
9/4/07	MC10	1	7.5	40	10	18	16	23	49	0	2	2	2	4	0
9/4/07	MC11	1	14.5	30	0	0	58	38	4	0	1	1	1	3	0
9/4/07	MC12	1	6.5	27	0	70	18	8	3	0	2	4	1	2	0
21/4/07	MC13	1	3	49	35	28	21	29	22	2	1	2	4	3	0
21/4/07	MC14	1	8.25	32	0	1	33	66	0	0	2	0	2	1	0
22/4/07	MC15	1	2.25	64	8	59	29	5	7	0	4	1	4	0	0
22/4/07	MC16	1	8.5	48	0	74	16	10	1	0	2	2	0	2	1





APPENDIX 7: Vegetation structure and composition, photographs, weeds and disturbance at study sites located along existing access road.

NB: See Figure 8 for location of study sites

Site ID	Easting	Northing	Vegetation community classification	Dominant species	Disturbance type /ranking 0=no impact 5=whole site
RA1	225785	8400946	Low Woodland <i>E. tectifical/C.foelscheana/C. dichromophloia</i>	U <i>Eucalyptus tectifical</i> <i>Corymbia foelscheana</i> <i>Corymbia dichromophloia</i> M <i>Hakea arborescens</i> L <i>Heteropogon contortus</i>	Weeds 1 <i>Hyptis suaveolens</i> Grazing 1 Erosion 0 Fire 1 other 0
					
			View East	View West	
RA2	225867	8400676	Low woodland Mixed species	U <i>Erythrophleum chlorostachys</i> <i>Eucalyptus tectifical</i> <i>Corymbia foelscheana</i> M <i>Petalostigma pubescens</i> <i>Ficus scobina</i> L <i>Heteropogon contortus</i> <i>Themeda triandra</i> <i>Aristida spp.</i>	Weeds 2 <i>Hyptis suaveolens</i> Grazing 2 Erosion 0 Fire 1 other 0
					
			View East	View West	
RA3	225977	8399908	Low open woodland Mixed species	U <i>Eucalyptus tectifical</i> <i>Corymbia foelscheana</i> <i>Corymbia ferruginea</i> <i>Corymbia dichromophloia</i> M <i>Hakea arborescens</i> <i>Carissa lanceolata</i> <i>Persoonia falcata</i> L <i>Heteropogon contortus</i> <i>Aristida spp.</i> <i>Brachyachne convergens</i>	Weeds 3 <i>Hyptis suaveolens</i> <i>Stylosanthes hamata</i> <i>Senna obtusifolia</i> Grazing 2 Erosion 0 Fire 1 other 0
					
			View East	View West	





APPENDIX 7 cont. : Vegetation structure and composition, photographs, weeds and disturbance at study sites located along existing access road.

NB: See Figure 8 for location of study sites

Site ID	Easting	Northing	Vegetation community classification	Dominant species	Disturbance type /ranking 0=no impact 5=whole site	
RA4	225957	8399322	Low woodland Mixed species	U <i>Eucalyptus tectifica</i> <i>Corymbia foelscheana</i> <i>Corymbia dichromophloia</i> M <i>Hakea arborescens</i> <i>Petalostigma pubescens</i> <i>Ficus scobina</i> <i>Brachychiton megaphyllus</i> L <i>Heteropogon contortus</i> <i>Aristida spp.</i> <i>Brachyachne convergens</i>	Weeds 3 Grazing 1 Erosion 0 Fire 1 other 0	<i>Hyptis suaveolens</i> <i>Stylosanthes hamata</i> <i>Senna obtusifolia</i>
						
				View East	View West	
RA5	225217	8390076	Low woodland Mixed species	U <i>Eucalyptus tectifica</i> <i>Erythrophleum chlorostachys</i> <i>Corymbia dichromophloia</i> <i>Corymbia latifolia</i> M <i>Carissa lanceolata</i> <i>Ficus scobina</i> l <i>Heteropogon contortus</i> <i>Aristida spp.</i> <i>Themeda triandra</i> <i>Mnesteia formosa</i>	Weeds 4 Grazing 1 Erosion 0 Fire 1 other 0	<i>Hyptis suaveolens</i> <i>Stylosanthes hamata</i>
						
				View East	View West	
RA6	225027	8390556	Low woodland	U <i>Eucalyptus tectifica</i>	Weeds 3	<i>Hyptis suaveolens</i>
RA7	225478	8390054	Mixed species	<i>Erythrophleum chlorostachys</i> <i>Corymbia latifolia</i>	Grazing 2 Erosion 0 Fire 1 other 0	<i>Stylosanthes hamata</i>
RA8	225728	8397664	Low woodland	U <i>Eucalyptus tectifica</i>	Weeds 4	<i>Hyptis suaveolens</i>
RA9	225770	8396554	Mixed species	<i>Erythrophleum chlorostachys</i> <i>Corymbia latifolia</i> <i>Corymbia foelscheana</i>	Grazing 3 Erosion 0 Fire 1 other 0	<i>Senna obtusifolia</i> <i>Sida acuta</i>







APPENDIX 8: Vegetation structure and composition, site photographs, assessment of weeds and disturbance at study sites located along proposed access road.

NB: See Figure 8 for location of study sites

Site ID	Easting	Northing	Vegetation community classification		Dominant species	Disturbance type /ranking 0=no impact 5=whole site	
MC13	224542	8401182	Low open woodland Mixed species	U	<i>Corymbia confertiflora</i> <i>Corymbia ferruginea</i> <i>Corymbia foelscheana</i> <i>Eucalyptus patellaris</i> <i>Eucalyptus tectifera</i> M <i>Corymbia ferruginea</i> <i>Hakea arborescens</i> L <i>Heteropogon contortus</i> <i>Themeda triandra</i> <i>Mnesithea formosa</i> <i>Brachyacne convergens</i>	Weeds 3 Grazing 0 Erosion 2 Fire 1 other 1	<i>Hyptis suaveolens</i> <i>Stylosanthes hamata</i> Pig
							
		View East				View west	
GT15	224015	8400990	Low open woodland Mixed species	U	<i>Eucalyptus tectifera</i> <i>Corymbia foelscheana</i> <i>Corymbia dichromophloia</i> M <i>Terminalia canescens</i> <i>Persoonia falcata</i> <i>Petalostigma pubescens</i> L <i>Heteropogon contortus</i>	Weeds 0 Grazing 0 Erosion 1 Fire 1 other 0	
GT16	223700	8400826	Low woodland Mixed species	U	<i>Erythrophleum chlorostachys</i> <i>Eucalyptus tectifera</i> <i>Corymbia foelscheana</i> <i>Corymbia dichromophloia</i> M <i>Brachychiton megaphyllus</i> L <i>Heteropogon contortus</i> <i>Aristida</i> spp.	Weeds 1 Grazing 0 Erosion 0 Fire 2 other 0	<i>Hyptis suaveolens</i>
							
		View East				View west	







Appendix 8 cont.: Vegetation structure and composition, site photographs, assessment of weeds and disturbance at study sites located along proposed access road.

NB: See Figure 8 for location of study sites

Site ID	Easting	Northing	Vegetation community classification	Dominant species	Disturbance type /ranking 0=no impact 5=whole site
MC14	223080	8400410	Low woodland - Mixed species	U <i>Corymbia confertiflora</i> <i>Corymbia ferruginea</i> <i>Corymbia foelscheana</i> <i>Eucalyptus patellaris</i> <i>Eucalyptus tectifica</i> M <i>Brachychiton megaphyllus</i> <i>Erythrophloeum chlorostachys</i> <i>Carissa lanceolata</i> L <i>Themeda triandra</i>	Weeds 0 Grazing 0 Erosion 0 Fire 1 other 0
					
			View East	View west	
GT17	222580	8400180	Low open woodland Mixed species	U <i>Eucalyptus tectifica</i> <i>Corymbia foelscheana</i> <i>Corymbia dichromophloia</i> M <i>Corymbia foelscheana</i> <i>Acacia holoserica</i> L <i>Heteropogon contortus</i> <i>Brachyachne convergens</i>	Weeds 3 <i>Hyptis suaveolens</i> <i>Alysicarpus ovalifolius</i> Grazing 3 Erosion 1 Fire 1 other 1 Vehicle track
					
			View East	View west	
GT18	222497	8400116	Low open woodland Mixed species	U <i>Eucalyptus tectifica</i> <i>Corymbia foelscheana</i> <i>Corymbia dichromophloia</i> M <i>Corymbia foelscheana</i> L <i>Brachyachne convergens</i>	Weeds 3 <i>Hyptis suaveolens</i> Grazing 3 Erosion 1 Fire 1 other 1 Vehicle track
					
			View East	View west	



Appendix 8 cont.: Vegetation structure and composition, site photographs, assessment of weeds and disturbance at study sites located along proposed access road.

NB: See Figure 8 for location of study sites

Site ID	Easting	Northing	Vegetation community classification	Dominant species	Disturbance type /ranking 0=no impact 5=whole site	
MC15	222265	840058	Low open woodland	U <i>Eucalyptus tectifica</i> <i>Corymbia foelscheana</i> M <i>Brachychiton megaphyllus</i> L <i>Brachyachne convergens</i> <i>Heteropogon contortus</i>	Weeds 4 Grazing 4 Erosion 1 Fire 0 other 0	<i>Hyptis suaveolens</i> <i>Calotropis procera</i> <i>Senna obtusifolia</i> <i>Tridax procumbens</i>
						
				View East	View west	
GT19	221875	8400092	Low woodland	U <i>Corymbia latifolia</i> <i>Eucalyptus tectifica</i> <i>Corymbia foelscheana</i> <i>Erythrophleum chlorostachys</i> M <i>Persoonia falcata</i> L <i>Themeda triandra</i>	Weeds 1 Grazing 0 Erosion 0 Fire 0 other 0	<i>Hyptis suaveolens</i>
						
				View East	View west	
GT20	220900	8099478	Woodland	U <i>Corymbia latifolia</i> <i>Corymbia foelscheana</i> <i>Corymbia confertiflora</i> <i>Eucalyptus tectifica</i> <i>Erythrophleum chlorostachys</i> <i>Eucalyptus tetradonta</i> M <i>Brachychiton megaphyllus</i> <i>Ampelocissus frutescens</i> G <i>Themeda triandra</i>	Weeds 0 Grazing 0 Erosion 0 Fire 1 other 0	
						
				View East	View west	

Appendix 8 cont.: Vegetation structure and composition, site photographs, assessment of weeds and disturbance at study sites located along proposed access road.

NB: See Figure 8 for location of study sites

Site ID	Easting	Northing	Vegetation community classification		Dominant species	Disturbance type /ranking 0=no impact 5=whole site			
GT23	220251	8396990	Low woodland Mixed species	U	<i>Corymbia confertiflora</i>	Weeds	1	<i>Pennisetum polystachion</i>	
					<i>Erythrophleum chlorostachys</i>				<i>Hyptis suaveolens</i>
					<i>Eucalyptus tectifica</i>				<i>Tridax procumbens</i>
				M	<i>Hakea arborescens</i>	Grazing	0		
					<i>Brachychiton megaphyllus</i>	Erosion	1		
				L	<i>Sarga intrans</i>	Fire	1		
					<i>Themeda triandra</i>	other	1	Vehicle track	
									
									
				View East		View west			