M08/272
TARGETED WEED SURVEY & SEED MIX DEVELOPMENT

PREPARED FOR: MOBILE CONCRETING SOLUTIONS

Spectrum ECOLOGY

© Spectrum Ecology Pty Ltd
ABN 68 615 115 243
PO Box 314 Leederville
Western Australia 6902
Ph: (08) 9317 8233
Email: info@spectrumecology.com.au

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Prepared For:	Mobile Concreting Solutions		
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Version 1	Susan Murrey	Carmel Winton Melissa Hay	19-Aug-2020

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EXECUTIVE SUMMARY

Mobile Concreting Solutions (MCS) have recently acquired mining tenement M08/272, located in the vicinity of Onslow, Western Australia. Spectrum Ecology was engaged by MCS to conduct a weed survey over a 29 ha Study Area to determine the extent of introduced (weed) species occurring within the tenement. In addition, MCS required details that may assist in completing some outstanding requirements of the Mine Closure Plan, including development of a seed mix list for future rehabilitation areas.

Weed Survey

Three introduced species were recorded during the survey:

- **Aerva javanica*;
- **Cenchrus ciliaris*; and
- **Cenchrus setiger*.

Of the three weed species, **Aerva javanica* was the most common, recorded in high density in areas that have previously been cleared or disturbed. **Cenchrus ciliaris* and **Cenchrus setiger* were less common, growing in scattered clumps across the site.

Vegetation Community Assessment & Seed Mix

A total of 26 native flora taxa were recorded during the assessment. One vegetation type was identified from the native vegetation surrounding the Study Area, National Vegetation Information System (NVIS) vegetation descriptions were used to broadly summarise the dominant vegetation type:

- NVIS level III: *Triodia* hummock grassland;
- NVIS level IV: *Corymbia* low open woodland, over *Acacia* low sparse shrubland, over *Triodia* hummock grassland; and
- NVIS level V: *Corymbia opaca* and *Corymbia zygophylla* low open woodland, *over Acacia ancistrocarpa* and *Acacia inaequilatera* low sparse shrubland, over *Triodia epactia* and *Triodia glabra* hummock grassland.

A seed mix has been developed to produce a similar vegetation composition and structure as the remaining native vegetation found at the Study Area. The seed mix was developed using taxa recorded at the relevés sites and were grouped by life form. The vegetation assessment found that *Triodia epactia* (mean cover = 47%) and *Triodia glabra (*mean cover = 21%), were the dominant species. Therefore, it is recommended that these species comprise the majority of the seed mix being applied to rehabilitation areas, accounting for at least 80% of the seed mix with the aim of achieving 45-70% cover of *Triodia*.

1. INTRODUCTION

1.1. Project Background

Mobile Concreting Solutions (MCS) specialise in the supply of concrete products and services to the construction industry, Australia wide. MCS operate fixed plants in Karratha and Port Hedland and have other operations across the Pilbara including tenement M08/272, located in the vicinity of Onslow, Western Australia (Figure 1.1). MCS have recently acquired mining tenement M08/272 and require an updated assessment of invasive species (weed) composition and population extent across the tenement. The previous weed survey was completed in 2017 with no follow up action.

Spectrum Ecology were engaged to conduct a weed survey over a 29 ha area at tenement M08/272 and provide recommendations for follow up actions that may potentially be required. In addition, MCS require details that may assist in the completion of outstanding requirements in their Mine Closure Plan, including the development of a seed mix list for future rehabilitation areas.

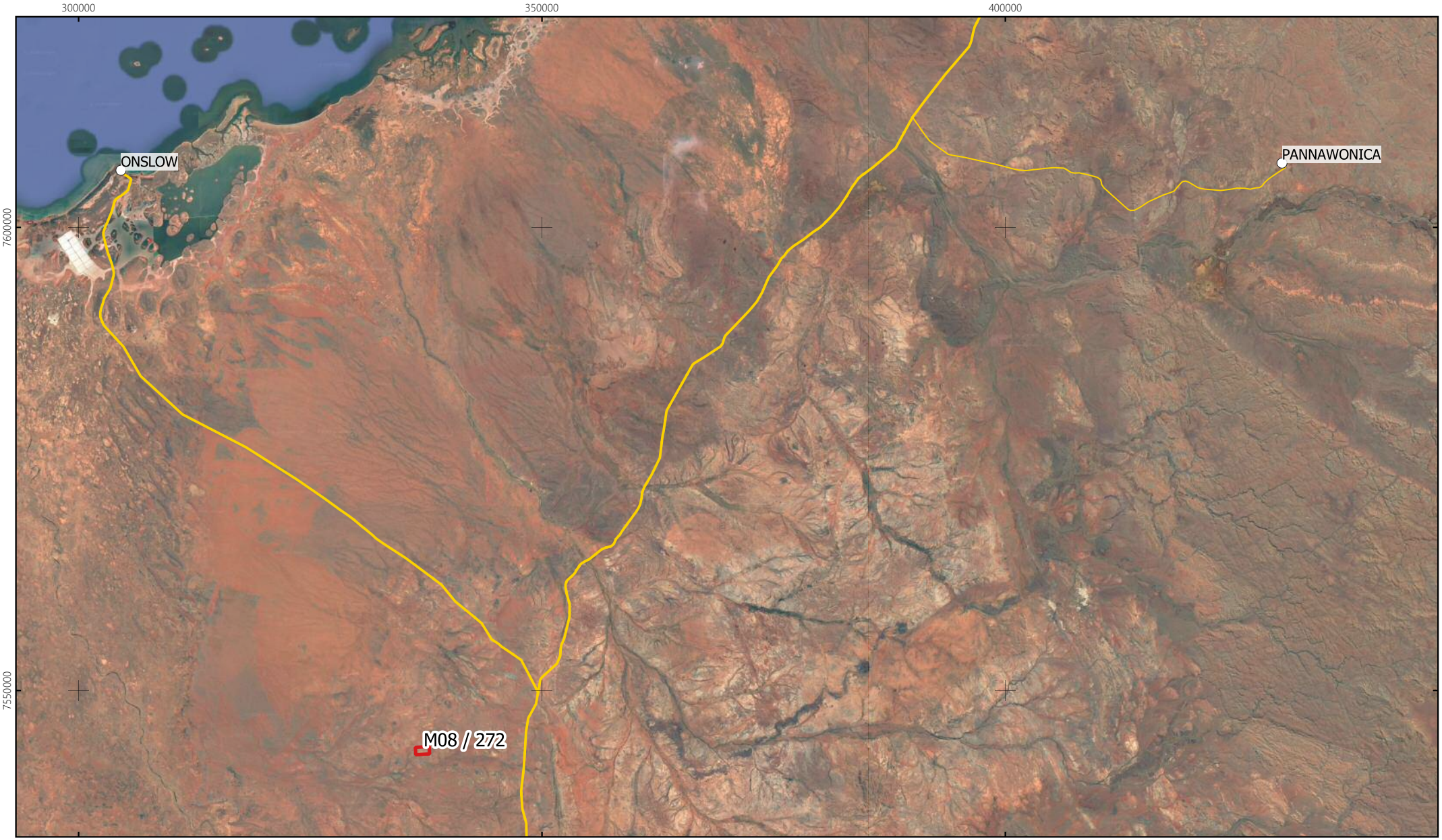
1.2. Legislation & Guidance

This survey and report were completed in accordance with the following legislation:

- Biodiversity Conservation Act 2016 (BC Act) (Western Australian Government, 2016);
- Environmental Protection Act 1986 (EP Act) (Western Australian Government, 1986); and
- Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Department of the Environment and Energy, 2016 [DotEE]).

This assessment is consistent with the following guidelines:

- EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (Environmental Protection Authority, 2016b [EPA]);
- EPA Position Statement No. 3: Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA 2002);
- EPA Environmental Factor Guideline: Flora and Vegetation (EPA 2016a); and
- National Vegetation Information System (NVIS) Australian Vegetation Attribute Manual (ESCAVI, 2003).



Legend

Study Area

Roads

Principal Road

Secondary Road

N

0 5 10 15 20 km

Scale 1:550000 @ A4

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Units: Meter

Spectrum ECOLOGY

Author: SM

Date: 04-08-2020

Location of Study Area

M08/272 Weed Survey &
Seed Mix Development

Prepared for Mobile Concreting Solutions

Figure
1.1

2. METHOD

2.1. Field Survey Timing

The survey was undertaken on the 21 July 2020. Rainfall preceding a field survey influences the number and type of flora species recorded. To characterise these prevailing conditions, monthly rainfall was sourced from the nearest Bureau of Meteorology (BOM) station (Onslow Airport # 5017), for 12 months prior to the survey (Figure 2.1).

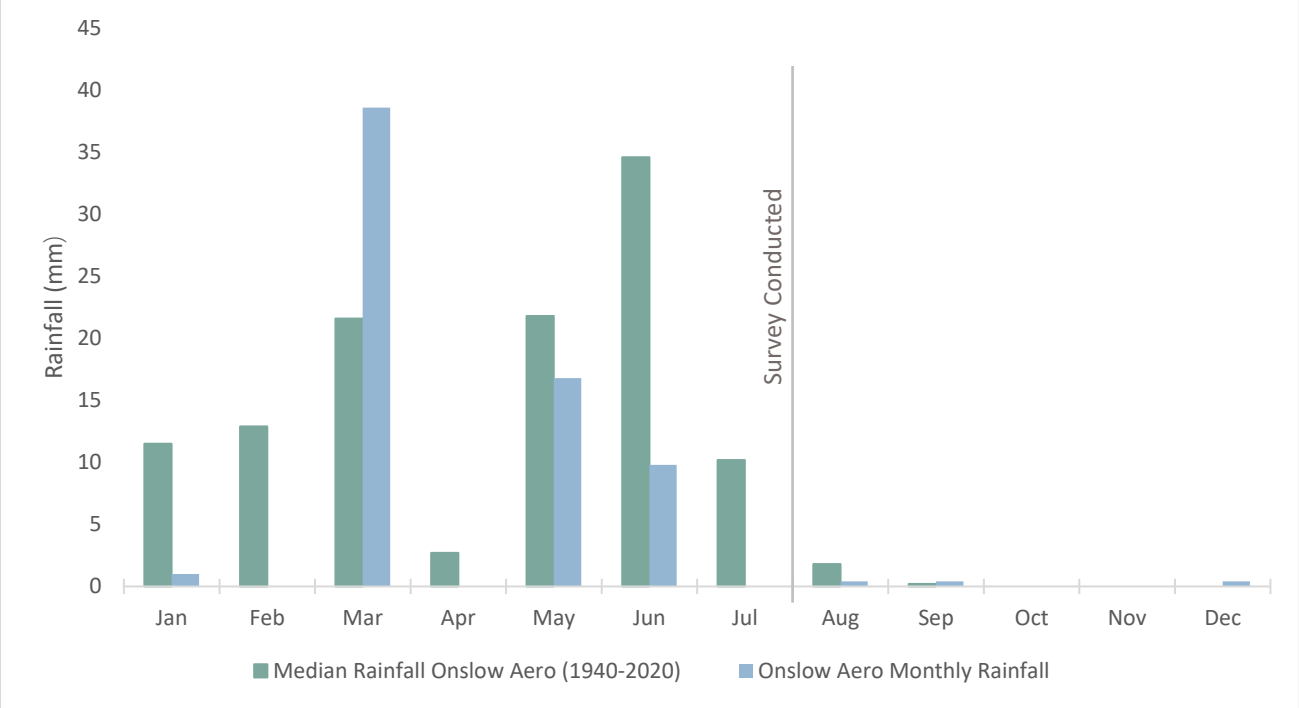


Figure 2.1: Rainfall Recorded at Onslow Aero BOM Station

The following rainfall was recorded at the Onslow Aero station:

- The 12 months preceding the field survey (August 2019 to July 2020) recorded 67.4 mm of rainfall, 49.9 mm lower than the sum of the long-term annual median of 117.3 mm; and
- The three-months preceding the field survey (May to July 2020) recorded 26.6 mm of rainfall, 40.0 mm lower than the sum of the long-term annual median for the same three months (66.6 mm).

The survey was conducted following a period of below median rainfall. It is likely that the drier conditions may have limited the presence of short lived perennial and annual species.

2.2. Project Team & Licences

Spectrum Ecology staff involved with this assessment are listed in Table 2.1, along with their role, years of experience, and relevant licences.

Table 2.1: Project Team & Licences

Personal	Role	Project Tasks	Years of Experience	Flora Licence
Melissa Hay	Principal Botanist	Field survey and reporting	12 years	FB62000006-2
Dr Timothy Hammer	Botanist / Taxonomist	Plant identifications	5 years	-
Susan Murrey	Botanist	Reporting	2 years	-
Carmel Winton	Botanist	Report QA	5 years	-

2.3. Nomenclature, Specimen Identification & Lodgement

Flora nomenclature used in this report is consistent with the Western Australian Herbarium's plant census, provided on FloraBase (Western Australian Herbarium, 2020) and is current at the time of report preparation. Flora specimens were collected to confirm species recorded during the relevés or investigate suspected conservation significance. Specimens were identified using the appropriate taxonomic keys and where required, relevant taxonomic experts at the Western Australian Herbarium.

2.4. Introduced Flora – Declared Pests

Introduced flora can pose a threat to native vegetation and biodiversity. The Department of Primary Industries and Regional Development (DPIRD) keeps a database of organisms that are Declared Pests in Western Australia. This database is regulated under the Biosecurity and Agricultural Management Act (WA Gov, 2007). Legal status and control requirements for these environmentally significant weeds area defined in Appendix A.

2.5. Field Methods & Sampling Effort

During the survey, the Study Area was traversed on foot (4 km) and by car (7 km) to undertake the weed assessment and vegetation community assessment. Sampling effort has been mapped in Figure 2.2.

2.5.1. Weed Survey

A targeted weed assessment was conducted by Spectrum Ecology at the Study Area. Traverses were undertaken to determine composition and population extent of invasive species (Figure 2.2). The survey focused on previously cleared or degraded areas were invasive species were more prevalent.

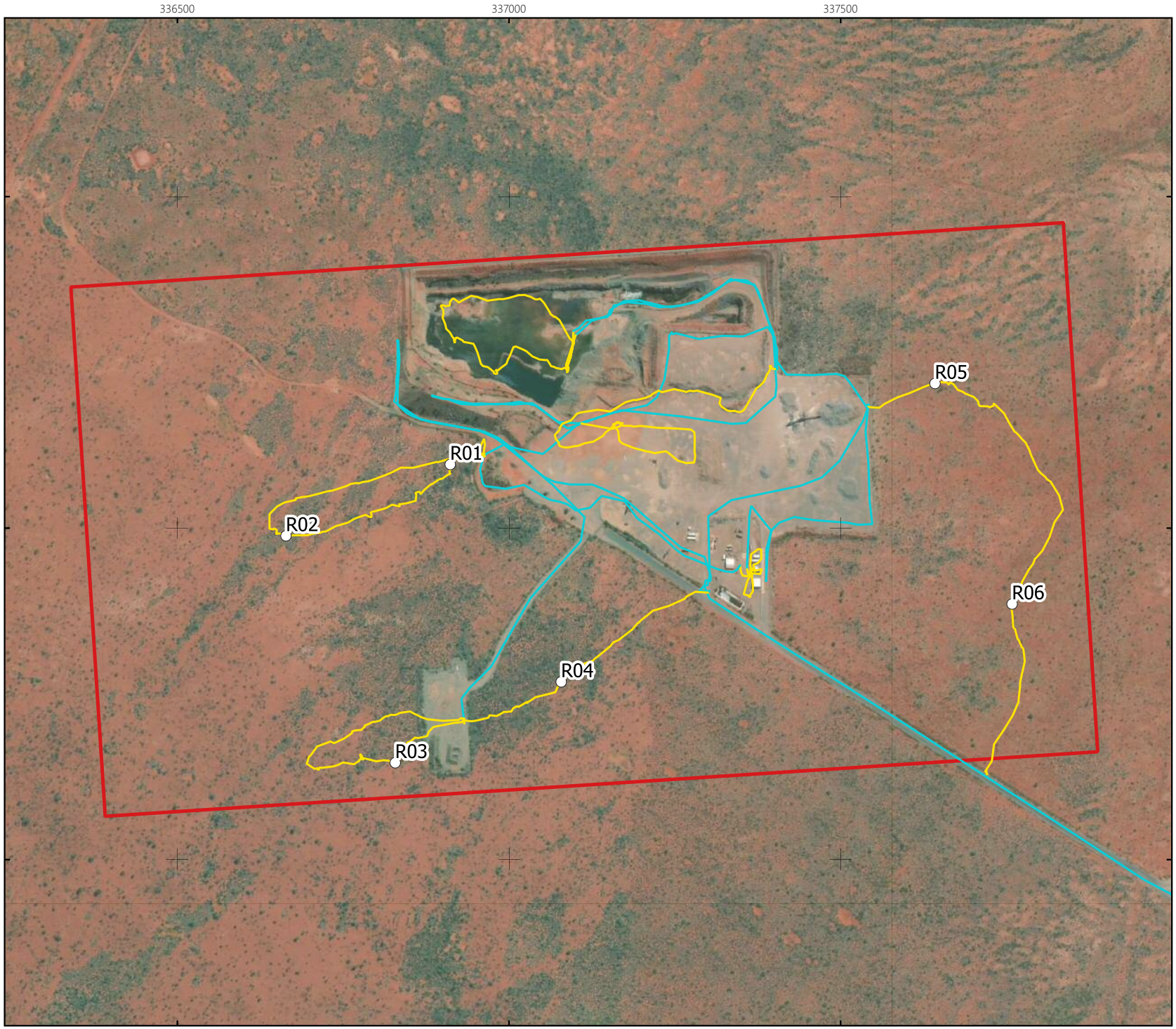
2.5.2. Vegetation Community Assessment & Seed Mix development

A vegetation assessment was conducted by Spectrum Ecology at the Study Area. Six relevés were sampled in areas of undisturbed native vegetation in order to determine the dominant species of the vegetation community (Figure 2.2).

A representative seed mix was developed using taxa recorded at these relevés, grouped by life form. Life form proportions (Figure 3.4) were derived from the mean cover of each life form recorded at the relevé sites. The seed mix does not take into consideration seed viability or the rate of seeding required to achieve the desired composition. This information is specific to an individual seed batch and can only be provided by the seed supplier.

Table 2.2: Survey Techniques

Technique	Description
Relevés	Relevés are a low intensity survey technique for gathering information for low-intensity flora and vegetation surveys and are surveyed to provide additional information or where it is too unsafe to survey a quadrat. Information collected at each relevé includes: • Site code, date, GPS coordinates, botanist, photograph; • Vegetation condition, disturbances, fire history; • Landform; slope, soil, rock type, aspect; and • Flora and vegetation information; dominant cover, and structure
Traverse	A traverse is an unmarked route along which data is collected. Traverses were used to gather information on the general characterisation of flora and vegetation and for targeting invasive species, each invasive species encountered along the transect were recorded. Information collected at each invasive species location included: • GPS coordinates; • Photograph; and • Species count.



Legend

- Study Area
- Releves
- Traverse
- Vehicle Track

N

0 0.1 0.2 0.3 km

Scale 1:8000 @ A4

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Units: Meter

Spectrum ECOLOGY

Author: SM

Date: 04-08-2020

Sampling Effort

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Figure
2.2

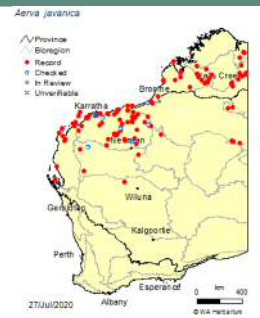
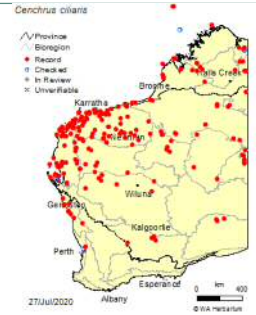
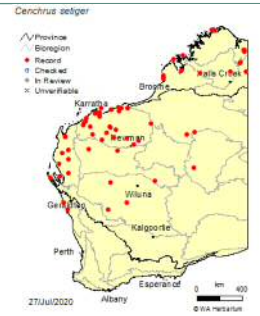
3. RESULTS & DISCUSSION

3.1. Weed Survey

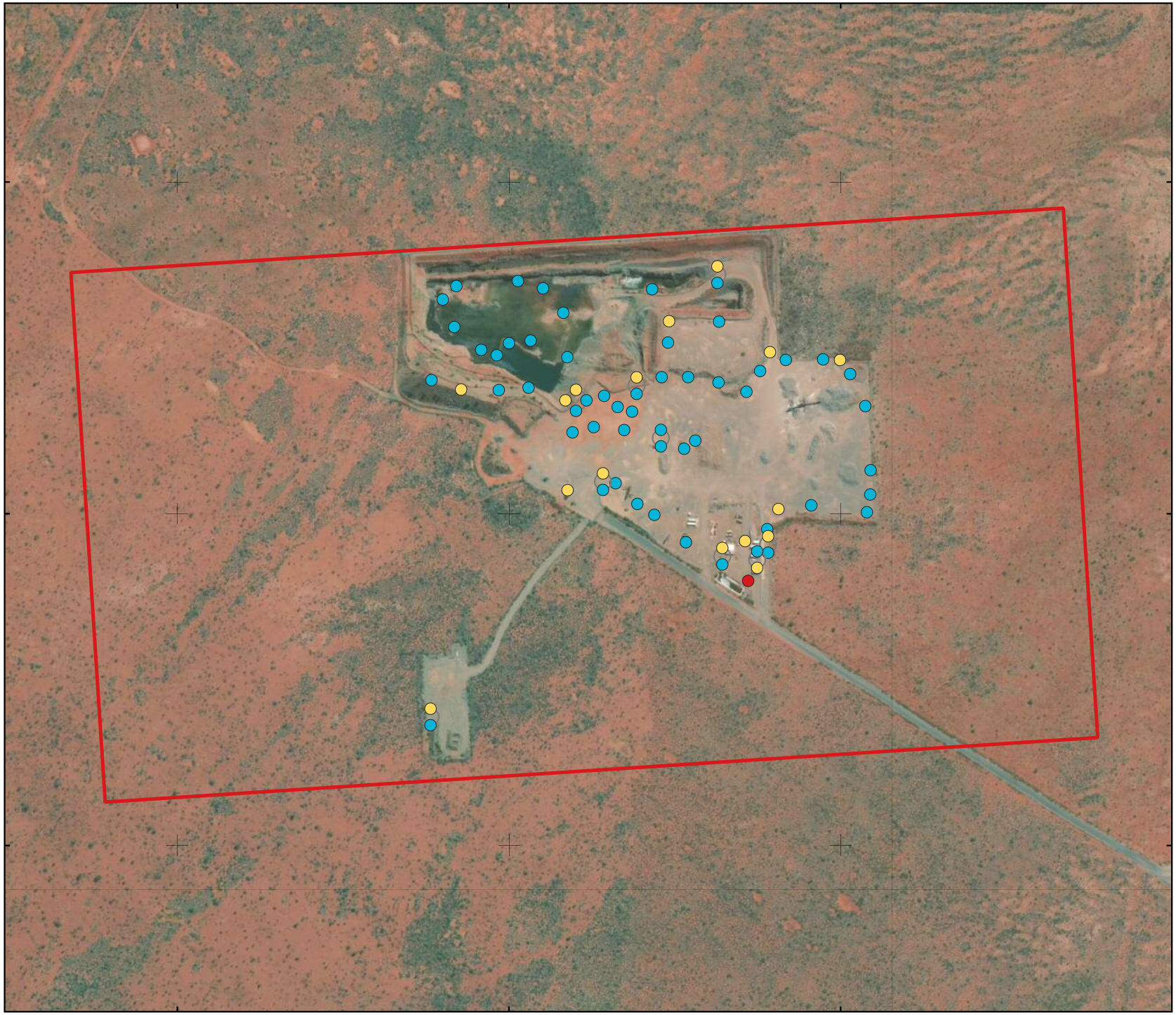
Three introduced flora species were recorded within the Study Area; **Aerva javanica*, **Cenchrus ciliaris*, and **Cenchrus setiger*. Species descriptions and records within the Study Area are provided in Table 3.1. **Aerva javanica* was recorded in high density in areas that have previously been cleared or disturbed across the site. **Cenchrus ciliaris* was less common, growing in scattered clumps across the site, and **Cenchrus setiger* was only recorded from one location. Representative photographs taken at the Study Area are shown in Figure 3.1. Introduced species locations are mapped in Figure 3.2 and coordinates of mapped records are provided in Appendix B. None of these species are Declared Pests in Western Australia and are common throughout the Pilbara.

Figure 3.1: Representative Photographs of Disturbed Areas , taken during the weed survey depicting **Aerva javanica* and **Cenchrus ciliaris* in disturbed areas

Table 3.1: Introduced Flora Recorded

Taxa	Description	Records	Distribution	Photographs
**Aerva javanica*	Erect, much-branched perennial, herb, 0.4-1.6 m high. Flowers white, Jan to Oct. Often on sandy soils. Along drainage lines.	Frequent across all disturbed areas at high numbers. Records: 54 Number of plants: 5080		 
**Cenchrus ciliaris*	Tufted or sometimes stoloniferous perennial grass, 0.2-1.5 m high. Flowers purple, Feb to Oct. White, red or brown. Sand, stony red loam, black cracking clay.	Common in disturbed areas as scattered clumps of individuals. Records: 16 Number of plants: 792		 
**Cenchrus setiger*	Erect, tussock, stoloniferous perennial grass, to 0.5 m high. Flowers cream-purple, Apr to May. Brown sands, red loam, pindan soils. Sand dunes, plains, rangelands, stony hillsides, floodplains.	Uncommon, only a few plants recorded in disturbed areas. Records: 1 Number of plants: 10		 

* Denotes Invasive species. Maps & descriptions used with permission of the WA Herbarium, Department of Biodiversity, Conservation and Attractions (https: florabase.dpaw.wa.gov.au/help/copyright). Accessed on 03/08/2020.



Legend

Study Area

Introduced Species

- Aerva javanica
- Cenchrus ciliaris
- Cenchrus setiger

N

0 0.1 0.2 0.3 km

Scale 1:8000 @ A4

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Units: Meter

Spectrum ECOLOGY

Author: SM

Date: 04-08-2020

Introduced Flora Recorded

M08/272 Targeted Weed Survey & Seed Mix Development

Figure 3.2

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3.2. Vegetation Community Assessment & Seed Mix development

The Study Area was comprised of flat sandy to sandy-clay plains. A total of 26 native taxa were recorded during the assessment. Drier conditions preceding the survey likely effected the occurrence of annuals and perennial herbs, reducing the overall number of species recorded. A species list is provided in Appendix D. The following NVIS vegetation descriptions broadly summarise the dominant vegetation type recorded at the Study Area (see Figure 3.3 for representative photographs):

- NVIS level III: *Triodia* hummock grassland;
- NVIS level IV: *Corymbia* low open woodland, over *Acacia* low sparse shrubland, over *Triodia* hummock grassland;
- NVIS level V: *Corymbia opaca* and *Corymbia zygophylla* low open woodland, *over Acacia ancistrocarpa* and *Acacia inaequilatera* low sparse shrubland, over *Triodia epactia* and *Triodia glabra* hummock grassland.

Figure 3.3: Representative Photographs of Relevé Sites, depicting undisturbed native vegetation dominated by *Triodia* hummock grass lands

The Study Area is dominated by Hummock Grasses (mean cover = 45.0%, mean species richness = 2), followed by Shrubs (mean cover = 6.3%, mean species richness = 4) and Trees (mean cover =1.7%, mean species richness = 4). Other Grasses and Herbs did not form a dominant component (Figure 3.4).

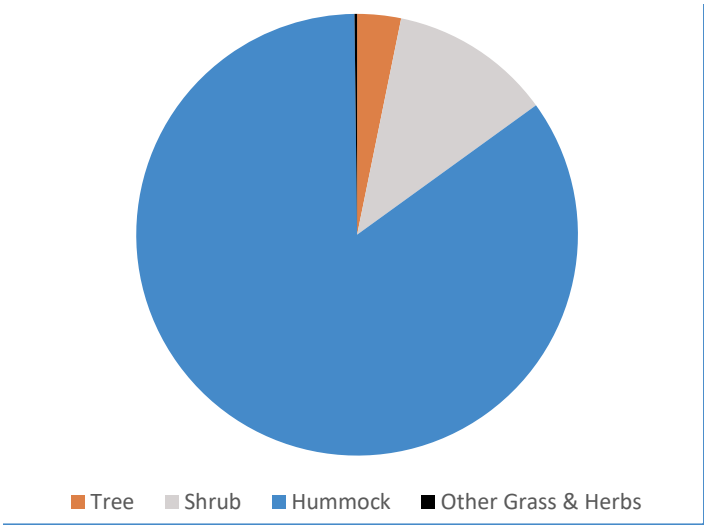

Figure 3.4: Lifeform Proportions, based on average cover of each lifeform recorded at relevé sites

MCS requested guidance on suitable species to be included in a seed mix, which may be used to rehabilitate local disturbance areas. The seed mix has been developed using taxa recorded across the Study Area grouped by lifeform. It is important to note that recommended life form proportions (Figure 3.4) were derived from the mean cover of each life form recorded at the Study Area relevé sites, and do not take into consideration seed viability or the rate of seeding required to achieve the desired composition. This information is specific to an individual seed batch and can only be provided by the seed supplier. The seed mix is outlined in Table 3.2 and detailed relevé data is supplied in Appendix C.

The vegetation assessment found that *Triodia epactia* (mean cover = 47%) and *Triodia glabra (*mean cover = 21%), were the key species, forming the dominant hummock grasslands. Therefore, it is recommended that these species comprise the majority of the seed mix being applied to rehabilitation areas, accounting for at least 80% of the seed mix with the aim of achieving 45-70% cover of *Triodia*. Other commonly occurring species include *Corymbia zygophylla* trees, and *Acacia ancistrocarpa* and *Acacia inaequilatera* shrubs. These should be included in the seed mix where practicable, if these species are not available supplementary species can be used. Trees and shrubs should account for 20% of the seed mix, with the aim of achieving 5–10% of the total vegetation cover. The seed mix is presented in Table 3.2.

Table 3.2: Recommended Species for Seed Mix

Proportion	NVIS Stratum	Dominant Species	% of Mix	Supplementary Species
80.0%	Hummock Grass	*Triodia epactia* *Triodia glabra*	60.0 20.0	-
17.0%	Shrub	*Acacia ancistrocarpa* *Acacia inaequilatera* *Bonamia pilbarensis* *Hakea chordophylla*	10.0 5.0 1.0 1.0	*Acacia bivenosa* *Acacia synchronicia* *Acacia trachycarpa* *Codonocarpus cotinifolius* *Cullen lachnostachys* *Isotropis atropurpurea*
3.0%	Tree	*Corymbia terminalis* *Corymbia zygophylla*	1.0 2.0	-
<0.1%	Other Grass	-		*Eragrostis eriopoda*

4. CONCLUSIONS

4.1. Weed Survey

Three introduced species were recorded during the weed survey:

- **Aerva javanica;*
- **Cenchrus ciliaris; and*
- **Cenchrus setiger.*

Of the three species **Aerva javanica* was the most common and is the key weed species on site. This species was recorded in high density across all areas that have been previously cleared or disturbed, with 5,080 individuals recorded from 54 locations. **Cenchrus ciliaris* and **Cenchrus setiger* were less common, growing in scattered clumps across the site.

Established weed populations are notoriously difficult to control and a weed management program may be required. This can involve weed spraying and/or vehicle and topsoil hygiene in order to prevent the weeds spreading into the surrounding native vegetation, including along haul roads or around the periphery of the disturbed areas.

4.2. Vegetation Community Assessment & Seed Mix development

The vegetation assessment found that Hummock Grass was the dominant lifeform across the Study Area accounting for 45-70% of native vegetation cover. Therefore, it is recommended that *Triodia* species comprise the majority of the rehabilitation seed mix. Trees and shrubs only accounted for 5-10% native vegetation cover and should form a smaller component of the seed mix.

Consideration should be given as to whether or not topsoil will be applied, and the quality of topsoil used. Where good quality topsoil is available, fewer species may be included in the seed mix as the topsoil may carry significant seed diversity and abundance and could reduce the requirement and costs of additional seeding. Conversely, sites that are rehabilitated without the application of topsoil may require additional seeding and species.

5. REFERENCES

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Appendix A: Declared Plant Categories

Legal Status Definition of Listed Plants in Western Australia

Legal Status	Definition
Declared Pest, Prohibited – s12	Prohibited organisms are declared pests by virtue of section 22(1) and may only be imported and kept subject to permits.
Declared Pest – s22(2)	Declared pests must satisfy any applicable import requirements when imported and may be subject to control keeping requirements.
Permitted – s11	Permitted organisms must satisfy applicable import requirements and import permits (where required).
Permitted, Requires Permit – r73	Regulation 73 permitted organisms may be subject to restriction under legislation other than the BAM Act (2007).
Unlisted	Unlisted organisms are prohibited in WA.
Control Categories	**Definition**
C1 Exclusion	Organisms should be excluded from parts or all of WA.
C2 Eradication	Organisms should be eradicated from all or parts of WA.
C3 Management	Organisms should have some form of management applied that will alleviate the harmful impact of the organism, reduce the numbers or distribution of the organism or prevent or contain the spread of the organism.
Unassigned	Declared pest that are recognised as having a harmful impact under certain circumstances where their subsequent control requirements are determined by a plan or other legislative arrangements under the Act.
Keeping Categories	**Definition**
Prohibited keeping	Can only be kept under a permit for public display, education or scientific purposes.
Restricted keeping	Kept under a permit by private individuals due to a low risk of becoming a problem for the environment.
Exempt keeping	No permit or conditions are required for keeping. Organism may be subject to restrictions under the Wildlife Conservation Act (WCA, 1950).

Appendix B: Introduced Flora Records

Species	Zone	Easting	Northing	Species	Zone	Easting	Northing
*Aerva javanica	50	337088	7543736	*Aerva javanica	50	337474	7543733
	50	337033	7543761		50	337515	7543711
	50	337000	7543757		50	337537	7543662
	50	336958	7543747		50	337545	7543566
	50	336918	7543781		50	337545	7543529
	50	336900	7543823		50	337540	7543502
	50	336921	7543843		50	337456	7543513
	50	337013	7543851		50	337389	7543477
	50	337051	7543840		50	337391	7543454
	50	337082	7543803		50	337379	7543430
	50	337216	7543838		50	337322	7543436
	50	337314	7543860		50	337267	7543457
	50	337379	7543715		50	337219	7543498
	50	337358	7543684		50	337194	7543515
	50	337316	7543698		50	337161	7543546
	50	337270	7543706		50	337142	7543548
	50	337230	7543706		50	336886	7543200
	50	337192	7543693		50	336982	7543739
	50	337144	7543678	*Cenchrus ciliaris	50	337394	7543744
	50	337104	7543675		50	337094	7543661
	50	337103	7543674		50	336928	7543687
	50	337096	7543623		50	337241	7543790
	50	337128	7543631		50	337499	7543732
	50	337164	7543661		50	337406	7543507
	50	337186	7543654		50	337356	7543459
	50	337281	7543610		50	337370	7543431
	50	337264	7543598		50	337088	7543536
	50	337235	7543616		50	336877	7543188
	50	337223	7543612		50	337142	7543548
	50	337174	7543626		50	337103	7543674
	50	337030	7543690		50	337391	7543454
	50	336985	7543686		50	337322	7543436
	50	336883	7543701		50	337192	7543693
	50	337240	7543758		50	337314	7543860
	50	337317	7543790	*Cenchrus setiger	50	337361	7543399
	50	337417	7543732				

Appendix C: Relevé Data

Site: R01		Type: Releve		Date: 21/7/2020		Botanist: Melissa Hay
Landform:	Flat, Plain					
Slope, aspect:	<1° - Level					
Soil:	Sandy clay. Red, orange					
Rocks:	Ironstone					
Abundance:	20-50% Many					
Size:	60-200 mm - Cobbles					
Fire:	> 5 yrs fire					
Condition:	Excellent					
Notes:	None					
Location (NW):	50 336913 7543595					
Species		Height	Cover	Species	Height	Cover
Acacia ancistrocarpa		2.1	5	*Eragrostis eriopoda*	0.3	0.1
Acacia bivenosa		2.5	0.2	*Hakea chordophylla*	2.5	0.5
Acacia synchronicia		2.3	0.1	*Triodia epactia*	0.3	35
Codonocarpus cotinifolius		2	0.2			

Site: R02		Type: Releve		Date: 7/21/2020		Botanist: Melissa Hay
Landform:	Flat, Plain					
Slope, aspect:	<1° - Level					
Soil:	Sand. Red, orange					
Rocks:	Ironstone					
Abundance:	<2% Very few					
Size:	6-20 mm - Medium gravel					
Fire:	> 5 yrs fire					
Condition:	Excellent					
Notes:	None					
Location (NW):	50 336665 7543491					
Species		Height	Cover	Species	Height	Cover
Acacia inaequilatera		2.2	1	*Triodia epactia*	0.4	40
Hakea chordophylla		2	0.5	*Triodia glabra*	0.3	10
Isotropis atropurpurea		0.3	0.1			

Site: R003		Type: Releve		Date: 21/7/2020		Botanist: Melissa Hay
Landform:	Flat, Plain					
Slope, aspect:	<1° - Level					
Soil:	Sandy clay. Red, orange					
Rocks:	Granite					
Abundance:	<2% Very few					
Size:	6-20 mm - Medium gravel					
Fire:	> 5 yrs fire					
Condition:	Excellent					
Notes:	None					
Location (NW):	50 336829 7543146					
Species		Height	Cover	Species	Height	Cover
Acacia ancistrocarpa		2.3	5	*Triodia epactia*	0.5	25
Cullen lachnostachys		0.6	0.1	*Triodia glabra*	0.3	5
Hakea chordophylla		2.3	0.1	*Corymbia opaca*	2.2	0.5
Heliotropium pachyphyllum		0.2	0.1	*Trigastrotheca molluginea*	0.1	0.1

Site: R004		Type: Releve		Date: 21/7/2020		Botanist: Melissa Hay
Landform:	Flat, Plain					
Slope, aspect:	<1° - Level					
Soil:	Sand. Red, orange					
Rocks:	Granite					
Abundance:	<2% Very few					
Size:	6-20 mm - Medium gravel					
Fire:	> 5 yrs fire					
Condition:	Excellent					
Notes:	None					
Location (NW):	50 337060 7543249					
Species		Height	Cover	Species	Height	Cover
Acacia ancistrocarpa		2.5	8	*Hakea chordophylla*	2.2	0.5
Corymbia zygophylla		3	0.5	*Triodia glabra*	0.4	40

Site: R05		Type: Releve		Date: 21/7/2020		Botanist: Melissa Hay
Landform:	Flat, Plain					
Slope, aspect:	<1° - Level					
Soil:	Sand. Red, orange					
Rocks:	Granite					
Abundance:	<2% Very few					
Size:	<6 mm - Fine gravel					
Fire:	> 5 yrs fire					
Condition:	Excellent					
Notes:	None					
Location (NW):	50 337646 7543719					
Species		Height	Cover	Species	Height	Cover
Acacia ancistrocarpa		2.2	5	*Corymbia zygophylla*	3	0.5
Acacia inaequilatera		3	0.5	*Triodia epactia*	0.4	30
Acacia trachycarpa		1.2	0.1	*Triodia glabra*	0.2	10
Bonamia pilbarensis		0.3	0.5			

Site: R006		Type: Releve		Date: 21/7/2020		Botanist: Melissa Hay
Landform:	Flat, Plain					
Slope, aspect:	<1° - Level					
Soil:	Sand. Red, orange					
Rocks:	Granite					
Abundance:	<2% Very few					
Size:	6-20 mm - Medium gravel					
Fire:	2-5 yrs fire					
Condition:	Excellent					
Notes:	None					
Location (NW):	50 337759 7543385					
Species		Height	Cover	Species	Height	Cover
Acacia ancistrocarpa		2.5	1	*Triodia epactia*	0.3	10
Acacia inaequilatera		2.5	3	*Triodia glabra*	0.3	20
Corymbia zygophylla		2.5	0.2			

Appendix D: Species List

Family	Taxon Name	Lifeform	Longevity	R001	R002	R003	R004	R005	R006	Opp - Coll
Amaranthaceae	*Ptilotus astrolasius*	Shrub	Perennial	-	-	-	-	-	-	x
	Ptilotus polystachyus	Shrub	Annual	-	-	-	-	-	-	x
Boraginaceae	*Heliotropium pachyphyllum*	Herb	Perennial	-	-	x	-	-	-	-
Convolvulaceae	*Bonamia pilbarensis*	Shrub	Perennial	-	-	-	-	x	-	x
Fabaceae	*Acacia ancistrocarpa*	Shrub	Perennial	x	-	x	x	x	x	-
	Acacia bivenosa	Shrub	Perennial	x	-	-	-	-	-	-
	Acacia inaequilatera	Shrub	Perennial	-	x	-	-	x	x	-
	Acacia pyrifolia var. *morrisonii*	Shrub	Perennial	-	-	-	-	-	-	x
	Acacia synchronicia	Shrub	Perennial	x	-	-	-	-	-	-
	Acacia trachycarpa	Shrub	Perennial	-	-	-	-	x	-	-
	Cullen lachnostachys	Shrub	Perennial	-	-	x	-	-	-	-
	Indigofera sp.	Shrub	Perennial	-	-	-	-	-	-	x
	Isotropis atropurpurea	Shrub	Perennial	-	x	-	-	-	-	
	Tephrosia ?sp. Bungaroo Creek (M.E. Trudgen 11601)	Shrub	Perennial	-	-	-	-	-	-	x
Gyrostemonaceae	*Codonocarpus cotinifolius*	Shrub	Perennial	x	-	-	-	-	-	
Malvaceae	*Abutilon ?otocarpum*	Shrub	Perennial	-	-	-	-	-	-	x
	Triumfetta ramosa	Shrub	Perennial	-	-	-	-	-	-	x
Molluginaceae	*Trigastrotheca molluginea*	Herb	Annual	-	-	x	-	-	-	-
Myrtaceae	*Corymbia zygophylla*	Tree	Perennial	-	-	-	x	x	x	x
	Corymbia opaca	Tree	Perennial	-	-	x	-	-	-	x
Poaceae	*Eragrostis eriopoda*	Other Grass	Perennial	x	-	-	-	-	-	-
	Triodia epactia	Hummock	Perennial	x	x	x	-	x	x	-
	Triodia glabra	Hummock	Perennial	x	x	x	x	x	x	x
Proteaceae	*Hakea chordophylla*	Shrub	Perennial	x	x	x	x	-	-	-
Solanaceae	*Solanum lasiophyllum*	Shrub	Perennial	-	-	-	-	-	-	x
Typhaceae	*Typha domingensis*	Sedge	Perennial	-	-	-	-	-	-	x