

**TANTABIDDI BOATING FACILITY PROJECT,
WESTERN AUSTRALIA
FLORA AND VEGETATION SURVEYS**

Addendum to the May 2021 Report

OCTOBER 2021

Prepared for the Department of Transport

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vla

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1. INTRODUCTION

1.1 Project Background

The Department of Transport (DoT) proposes to construct a new boating facility (The Tantabiddi Boating Facility Project (TBFP)) in Ningaloo Marine Park, an A Class Marine Reserve which is also located within the Ningaloo Coast World Heritage Area. The proposed development requires robust environmental studies and referral under both the *Environmental Protection Act 1986 WA* and *The Environment Protection and Biodiversity Conservation Act 1999*.

Vicki Long and Associates (VLA) undertook a wet season flora and vegetation assessment in April 2021 (VLA 2021).

1.2 Scope and Objectives

The April 2021 survey report recommended that a brief survey should be conducted during the dry season (September – November) and should include:

- A targeted search for additional *Cucumis* sp Barrow Island (Priority species) – one plant only was found last survey
- A search for additional late season species (Asteraceae)
- Checking vegetation mapping as completed in the wet season to confirm boundaries
- Checking for further extent of the two vegetation types identified in that report as having locally / regionally high conservation value due to the rarity of their known occurrence.

This report summarises the results from a dry season survey undertaken in October 2021 and is presented as an addendum to the April 2021 report

2. METHODOLOGY

2.1 Desktop Review

Prior to the October survey, aerial photographs and relevant literature were again reviewed to correlate any comparable information with that recorded in the April 2021 survey (VLA 2021) and to better understand its significance.

The survey area is confined to the immediate coastline and adjacent coastal plain which houses very specific habitat and vegetation types which are the result of the linear gradients of the landforms which extend from the beach to the inland coastal plain. The desktop literature reviewed for the April 2021 survey predominantly focuses on areas beyond the immediate coastal area, which is not directly comparable with that found in this survey and only a brief mention of coastal habitat was found.

The April 2021 survey identified *Sporobolus virginicus* closed tussock grassland as having potential conservation significance, being in the process of nomination as a PEC. Two very small areas of this particularly dense, thick *Sporobolus virginicus* grassland type occur within the survey area. However, in addition to this, other related vegetation types which had *Sporobolus virginicus* grassland as the grass strata were described during the April survey. On further review of these vegetation types, the following one stood out as being unusual and potentially of local significance:

- *Lawrenzia viridigrisea* scattered to open shrubland over *Frankenia pauciflora* closed low shrubland over *Sporobolus virginicus* tussock grassland. (FpSv2).

This vegetation type was not described in any of the desktop reports, nor is its occurrence known to the author elsewhere on the Cape Range Peninsula and is therefore regarded as being locally significant and, at this stage, has high conservation value.

Also of interest is the *Atriplex bunburyana* vegetation association (NVIS Level III) (which includes vegetation types AbuFpSvTe1, AbuFpSvTe2, AbuSpSvTe3 and AbuFpSvTe4). Only one reference could be found to any *Atriplex bunburyana* vegetation in one report (Meissner 2010a) which briefly mentions “there are often large tracts of *Atriplex bunburyana* shrublands on the plains”.

Keighery and Gibson (1993) was also reviewed prior to the October survey and although that study does not describe any *Atriplex bunburyana* vegetation types, the species does occur in their flora list.

2.2 Field Survey

The dry season flora and vegetation survey was conducted by Principal botanist and ecologist Vicki Long (VLA) (Flora Permit FB62000120; Threatened Flora Permit TFL 29-1920) over the period 13 October 2021 – 14 October 2021.

All habitats and vegetation types were searched for the presence of new species. Areas outside the survey area were searched for the vegetation types which were considered to have potential local significance. Mapping notes were used to record descriptions of these vegetation types and they are summarised in Appendix A.

Species were identified in the field by the Principal botanist. Any species not able to be identified in the field were collected, labelled and pressed for later identification by Vicki Long (utilising the Pilbara Regional Herbarium) or sent to the WA Herbarium. Priority species identified in the field or any suspected Priority species were recorded with GPS, photographed and collected for confirmation / identification by the WA Herbarium.

3. RESULTS

3.1 Flora and Vegetation Survey

Above average rainfall was received in the six months prior to the October 2021 dry season survey, with the majority of rain associated with a low-pressure system in mid-June which delivered 193 mm of rain over a period of two days. There was very little rain following the storm front and subsequently the vegetation was generally dry during the survey.

3.1.1 Flora

Nineteen additional flora species were recorded during the October dry season survey. These additional species are listed in Table 1 and an updated site by species matrix covering both surveys is included in Appendix B.

Table 1. Additional flora species recorded during the October 2021 dry season survey.

Family	Species
Amaranthaceae	<i>Amaranthus clementii</i>
Asteraceae	<i>Angianthus acrohyalinus</i>
Asteraceae	<i>Angianthus milnei</i>
Asteraceae	<i>Peripleura hispidula</i> var. <i>setosa</i>
Asteraceae	<i>Pluchea longiseta</i>
Asteraceae	<i>Pterocaulon sphaeranthoides</i>
Convolvulaceae	<i>Ipomoea muelleri</i>
Euphorbiaceae	<i>Adriana tomentosa</i>
Fabaceae	<i>Crotalaria medicaginea</i>
Fabaceae	<i>Indigofera linifolia</i>
Fabaceae	<i>Swainsona calcicola</i>
Loranthaceae	<i>Amyema miraculosa</i> (Miq.) Tiegh. subsp. <i>miraculosa</i>
Malvaceae	* <i>Malvastrum americanum</i>
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i>
Pittosporaceae	<i>Pittosporum phillyreoides</i>
Poaceae	<i>Eragrostis dielsii</i>
Poaceae	<i>Eragrostis falcata</i>
Scrophulariaceae	<i>Eremophila longifolia</i>
Solanaceae	<i>Nicotiana occidentalis</i>

3.1.1.1 Conservation Significant Flora

A targeted search for P2 vine *Cucumis* sp Barrow Island (D.W. Goodall 1264) was undertaken for the entire length of the secondary dune habitat within the survey area, but no further plants were recorded, nor were they found in any other vegetation types / habitats within the survey area which were searched for late season flora.

A single plant of this species was recorded approximately 2 km south of the survey area, with the location and description of the area in which it was found recorded in Mapping Note MN13-1 (Appendix A).


One new Priority species, *Acacia ryaniana*, was found during the October 2021 dry season survey. This P2 species is a spreading, prostrate spiny shrub that was found in a swale behind the beach dune. There was a small grove of approximately 15 plants (many of them were seedlings). This small, dark green spreading shrub is very similar to *Acacia gregorii*, which has the same habit and was also found

in the beach swales. The swale habitat was checked in its entirety and no other occurrences of *Acacia ryaniana* were found.

Acacia ryaniana has also been recorded previously by the author along the coast, both within close proximity to the survey area (GHD 2021) and more remotely (VLA 2019). Florabase indicates it occurs south of the Cape Range National Park with an outlier recorded at Northampton.

Table 2 provides the details of the conservation significant flora recorded within the survey area.

Table 2. Conservation significant flora recorded during the October dry season survey.

Species	Estimated abundance	Vegetation type(s)	Location	Photo
<i>Acacia ryaniana</i> (P2)	Sparse Small grove of 15 plants (<2% cover)	EaTe1	GPS location [REDACTED] [REDACTED]	

3.1.3 Vegetation

The vegetation mapping boundaries from the April 2021 survey were checked during this October visit and were found to be accurate. No new vegetation types were described.

3.1.3.1 Vegetation of local conservation significance

Brief visual searches were made in three areas beyond the survey area to try and locate any vegetation similar to those identified as “unusual” within the survey area in the April 2021 wet season survey. No detailed surveys were conducted as permission to enter neighbouring lands had not been sought.

Vegetation type FpSv2, “*Lawrenzia viridigrisea* scattered to open shrubland over *Frankenia pauciflora* closed low shrubland over *Sporobolus virginicus* tussock grassland” was observed to occur in an area approximately 200 m immediately south of the survey area (Mapping Note MN13-2) but was not found elsewhere in similar habitat along the coast between the current Tantabiddi boat ramp facility and the Jantz access track. It is possible that the occurrence of this vegetation type is rare, and therefore of high conservation significance. It could potentially occur in the lower, saline marshy area surrounding the Department of Defence towers, but this area was not accessible without permission.

Vegetation type AbuFpSvTe4, “*Atriplex bunburyana* open to closed shrubland with *Frankenia pauciflora* over mixed *Sporobolus virginicus*, **Cenchrus ciliaris* tussock and *Triodia epactia* hummock grassland” was found to occur for a short distance south of the survey area boundary and for approximately 5 km to the north of the northern survey area boundary (MN13-1 and MN13-3, MN13-4, MN13-5).

3.2 Suggested species suitable for revegetation and landscaping

When considering species for revegetation purposes, each habitat / vegetation type needs to be considered. A specific list can be provided once the areas requiring revegetation are known. The area will need a rehabilitation plan prepared to ensure compaction is alleviated (especially in areas used as car parks), soils are replaced in the appropriate linear topographical / soil type gradients from the beach, inland and the appropriate species used for revegetation.

For example, if the current boat ramp carpark needs to be revegetated, it is suggested that species which have regenerated on the nearby old soil stockpile areas be considered, as they have successfully established under the current conditions. Due to difficulty in sourcing provincial seed, it is recommended that species targeted for revegetation be kept simple and that seed collection begins in the project planning stage. The erratic annual rainfall in the area and low viability of many species means that seed is not always available in sufficient quantities and therefore must be collected for many years prior to it being needed. This prior seed collection would also require an adequate and appropriate storage facility.

Table 3 lists eleven species which have been recommended for revegetation as they occur within at least two of the coastal habitats, as well as being found on the stockpile area on the northern side of the current parking area.

Table 3: Species Recommended for Revegetation Purposes

Genus Species	Common Name	Type
Beach berm and seaward face of dune		
<i>Spinifex longifolius</i>	Beach spinifex	Tall tussock grass
<i>Eulalia aurea</i>	Silky brown-top	Tussock grass
<i>Acacia coriacea</i> subsp <i>coriacea</i>	Wirewood	Shrub
<i>Rhagodia preissii</i> subsp <i>obovata</i>		Low shrub
<i>Threlkeldia diffusa</i>	Coast bonefruit	Low shrub
Dune crest and leeward side of dune		
<i>Triodia epactia</i>	Gummy spinifex	Hummock grass
<i>Acacia coriacea</i> subsp <i>coriacea</i>	Wirewood	Shrub
<i>Acacia tetragonaphylla</i>	Kurara	Shrub
<i>Rhagodia preissii</i> subsp <i>obovata</i>		Low shrub
<i>Olearia</i> sp Kennedy Range (G Byrne 66)		Low Shrub
<i>Myoporum montanum</i>	Native myrtle	Low shrub

Genus Species	Common Name	Type
<i>Threlkeldia diffusa</i>	Coast bonefruit	Low shrub
<i>Acacia gregorii</i>	Gregory's wattle	Prostrate shrub
<i>Thryptomene dampieri</i>		Prostrate shrub
Coastal plain		
<i>Triodia epactia</i>	Gummy spinifex	Hummock grass
<i>Acacia tetragonaphylla</i>	Kurara	Shrub
<i>Olearia</i> sp Kennedy Range (G Byrne 66)		Low Shrub
<i>Threlkeldia diffusa</i>	Coast bonefruit	Low shrub
<i>Acacia gregorii</i>	Gregory's wattle	Prostrate shrub

4 DISCUSSION AND RECOMMENDATIONS

4.1 Potential Impacts of proposed activities

4.1.1 Clearing of vegetation and subsequent erosion

The proposed TBFP project will include clearing vegetation from the dunes and coastal plain within the survey area. The survey area is located on a very well vegetated area of coastal dune. The coastal dunes to both the north and south of the survey area, and particularly the former, are significantly eroded. The unvegetated, loosely consolidated, white beach sands are highly mobile, encroaching inland and do not allow for vegetation establishment.

The location of the current boat ramp and car park is on more stable, pink, granular sands which are less likely to erode. The new location is very susceptible to erosion and any hardstand facility placed within these sands would likely cause erosion. The facility design needs to consider integration of a less compact facility boundary which will allow plants to establish and help stabilise the area.

4.1.2 Potential loss of Priority Flora Species

Clearing of vegetation for the proposed project may potentially result in the loss of two P2 species within the project area; *Cucumis* sp Barrow Island (D.W. Goodall 1264) and *Acacia ryaniana*. Both these species occur elsewhere on both the immediate and more remote coastline and hence the removal of these species is not considered to be significant. These species could be included in the revegetation list as they were seen to be seeding prolifically during the October 2021 survey.

4.1.3 Potential loss of a PEC (currently under nomination)

The *Sporobolus virginicus* (Sv1) potential PEC (currently under nomination and being reviewed) is unlikely to be impacted by the proposed activities, providing appropriate management strategies are employed regarding potential leaks / spills of hydrocarbons / chemicals from the carpark. Two occurrences of this vegetation type have been recorded both within and near the survey area. The Sv1 vegetation type within the survey area immediately fringes the tidal inlet and it is unlikely that the new facility will impact this area. The second occurrence of Sv1 was recorded outside the proposed development area around the sink hole on the south-east side of Yardie Creek Road. Any leaks or spills (chemicals, hydrocarbons) from the carpark will drain towards the Sv1 vegetation type and sinkhole, hence management strategies need to be implemented to prevent any damage to the vegetation or landform.

4.1.4 Potential loss of locally significant vegetation with high conservation value

The vegetation type FpSv2 “*Lawrenzia viridigrisea* scattered to open shrubland over *Frankenia pauciflora* closed low shrubland over *Sporobolus virginicus* tussock grassland” was observed within the survey area as well as for 200 m south of the study area. However, because it is not described in any of the available vegetation surveys conducted for the Cape Range Peninsula, nor was it seen by the author to occur outside this area, it is concluded at this stage, that it is locally significant and therefore has high conservation value. It is recommended that once the proposed facility footprint is finalised, an assessment of the extent of this vegetation type requiring removal be assessed. If necessary, a wider search, made with all relevant landowner permissions should be undertaken to ensure it occurs elsewhere on or beyond the Cape Range Peninsula.

5. REFERENCES

GHD 2021, Harold E Holt Area A Perimeter Fence. Flora and Fauna Survey. Prepared for Ventia Australia Pty Ltd. 21st June 2021.

Keighery G and Gibson N 1993, Biogeography and composition of the flora of the Cape Range Peninsula, Western Australia. In *The Biogeography of Cape Range Western Australia – Records of the Western Australian Museum Supplement No 45, 1993* – Edited by W.F. Humphreys.

Vicki Long and Associates (VLA) 2021, Tantabiddi Boating Facility Project – Flora and Vegetation Assessment, May 2021. Prepared for the Department of Transport.

Appendix A: Mapping Notes

MAPPING NOTES

Job No. VLA-082

SITE: Tantabiddi

Date 13/10/21

MN No.	GPS Co-ordinates (E/N)	Vegetation / Dominant Species	Condition
MN13-1	49K 806827 7571869 (south of study area)	<i>Acacia bivenosa</i> , <i>Atriplex bunburyana</i> low shrubland to closed low shrubland over <i>Triodia epactia</i> hummock grassland on coastal plain pinky-brown silts, scattered limestone. Associated species: <i>Solanum lasiophyllum</i> , <i>Threlkeldia diffusa</i> , <i>Acacia tetragonaphylla</i> , <i>Alectryon oleifolius</i> , <i>Enchyleana tomentosa</i> , <i>Neobassia astrocarpa</i> , * <i>Cenchrus ciliaris</i> 2-5%. P2 <i>Cucumis</i> sp Barrow Island (DW Goodall 1264) @806870 7571849 x 1	Ex
MN13-2	49K 807126 7572500 (south of study area)	<i>Lawrenzia viridigrisea</i> open shrubland over <i>Frankenia pauciflora</i> low shrubland to closed low shrubland over <i>Sporobolus virgicus</i> tussock grassland. (= FpSv2) Coastal plain with very pale pinky fine silty loam. Associated species: <i>Muellerlimon salicornicum</i> , <i>Pluchea longiseta</i> , <i>Neobassia astrocarpa</i> , <i>Scleroleana uniflora</i> .	Ex
MN13-3	49K 807193 7572492 (south of study area, west side of road)	<i>Atriplex bunburyana</i> shrubland to closed shrubland with occasional <i>Acacia bivenosa</i> over <i>Frankenia pauciflora</i> open low shrubland over mixed grassland of * <i>Cenchrus ciliaris</i> , patchy <i>Triodia epactia</i> . (Similar to AbuFpSvTe but no Sv) Pale pinky-brown fine silty loams with limestone fragments, with dark algae mat on surface. Associated species: <i>Solanum lasiophyllum</i> , <i>Neobassia astrocarpa</i> , <i>Swainsona kingii</i> , * <i>Cenchrus setiger</i>	Poor
MN13-4	49K 809323 7575645 (north of study area)	<i>Atriplex bunburyana</i> , <i>Acacia bivenosa</i> with <i>Frankenia pauciflora</i> low shrubland over <i>Triodia epactia</i> open hummock grassland. Patchy * <i>Cenchrus ciliaris</i> . (Similar to AbuFpSvTe but no Sv) Coastal plain, pale brown fine silty loams. Associated species: <i>Enchyleana tomentosa</i> , <i>Neobassia astrocarpa</i> , <i>Scleroleana uniflora</i> .	
MN13-5	50K 0192424 7579454 (north of study area)	<i>Atriplex bunburyana</i> , <i>Thelkeldia diffusa</i> , <i>Frankenia pauciflora</i> , <i>Acacia bivenosa</i> low shrubland over * <i>Cenchrus ciliaris</i> tussock grassland with patchy <i>Triodia epactia</i> . Coastal plain, pale brown fine silty loams. Associated species: <i>Scaevola cunninghamii</i> , <i>Scleroleana uniflora</i>	

Appendix B: Updated Site x Species Matrix

Table B1. Vascular flora species list for the sites surveyed (updated October 2021)

Family	Species name	1	2	3	4	5	6	7	8	9	10	11	12	MN -1	MN -2	MN -3	MN -4	MN -5	MN -6	MN -7	MN -8	MN -9	MN -10	MN -11	Op p	Ext ra sp. Oct '21
Acanthaceae	<i>Avicennia marina</i>														X											
	<i>Dipteracanthus australasicus</i>	X																								
Aizoaceae	<i>Sesuvium portulacastrum</i>			X										X	X											
Amaranthaceae	* <i>Aerva javanica</i>													X												
	<i>Amaranthus clementii</i>																									X
	<i>Ptilotus obovatus</i>	X																								
	<i>Ptilotus villosiflorus</i>						X							X										X		
Apocynaceae	<i>Cynanchum viminalis</i> subsp. <i>australe</i>	X																								
Asparagaceae	<i>Acanthocarpus verticillatus</i>	X															X									
	<i>Acanthocarpus preissii</i>						X				X															
Asteraceae	<i>Angianthus acrohyalinus</i>																									X
	<i>Angianthus milnei</i>																									X
	<i>Brachysome ciliaris</i>																								X	
	<i>Launaea sarmentosa</i>						X																			
	<i>Minuria cunninghamii</i>																								X	
	<i>Olearia</i> sp. Kennedy Range (G. Byrne 66)	X				X		X						X												
	<i>Peripleura hispidula</i> var. <i>setosa</i>																									X
	<i>Pluchea dunlopii</i>												X													

Family	Species name	1	2	3	4	5	6	7	8	9	10	11	12	MN -1	MN -2	MN -3	MN -4	MN -5	MN -6	MN -7	MN -8	MN -9	MN -10	MN -11	Op p	Ext ra sp. Oct '21
	<i>Pluchea ferdinandi-muelleri</i>				X	X		X					X								X					
	<i>Pluchea longiseta</i>																									X
	<i>Pterocaulon sphaeranthoides</i>																									X
	<i>Roebuckiella oncocarpa</i>					X																				
Boraginaceae	<i>Heliotropium ammophilum</i>																								X	
	<i>Heliotropium crispatum</i>									X																
Capparaceae	<i>Capparis spinosa</i>																							X		
Chenopodiaceae	<i>Atriplex bunburyana</i>		X		X	X		X	X	X		X	X						X	X		X	X			
	<i>Atriplex isatidea</i>						X																			
	<i>Enchylaena tomentosa</i>	X		X	X	X		X		X									X	X			X			
	<i>Maireana plantifolia</i>							X																		
	<i>Maireana polypterygia</i>							X																		
	<i>Maireana tomentosa subsp. tomentosa</i>								X				X													
	<i>Neobassia astrocarpa</i>		X	X	X													X								
	<i>Rhagodia preissii</i> subsp <i>obovata</i>	X		X		X				X													X	X		
	<i>Salsola australis</i>	X	X		X									X												
	<i>Sclerolaena uniflora</i>	X	X	X					X			X	X													
	<i>Tecticornia halocnemoides subsp. tenuis</i>			X											X											
	<i>Tecticornia indica</i> subsp. <i>lei ostachya</i>			X												X										

Family	Species name	1	2	3	4	5	6	7	8	9	10	11	12	MN-1	MN-2	MN-3	MN-4	MN-5	MN-6	MN-7	MN-8	MN-9	MN-10	MN-11	Op p	Ext ra sp. Oct '21
	<i>Threlkeldia diffusa</i>		X	X	X	X	X		X			X		X	X		X					X	X			
Cleomaceae	<i>Arivela viscosa</i>					X																				
Convolvulaceae	<i>Ipomoea costata</i>	X										X														
	<i>Ipomoea muelleri</i>																									X
Cucurbitaceae	<i>Cucumis sp. Barrow Island (D.W. Goodall 1264) P2</i>																								X	
Cyperaceae	<i>Bulbostylis barbata</i>	X						X																		
	<i>Cyperus bulbosus</i>											X														
	<i>Fimbristylis dichotoma</i>							X																		
Euphorbiaceae	<i>Adriana tomentosa</i>																									X
	<i>Euphorbia sharkeonsis</i>	X				X																	X			
	<i>Euphorbia tannensis</i>					X				X		X														
	<i>Euphorbia trigonospema</i>		X		X	X								X												
Fabaceae	<i>Acacia bivenosa</i>	X	X			X		X	X	X		X	X					X		X	X	X	X			
	<i>Acacia coriacea</i> subsp <i>coriacea</i>	X	X			X	X										X						X	X		
	<i>Acacia gregorii</i>										X															
	<i>Acacia ligulata</i>										X															
	<i>Acacia ryaniana</i>																									
	<i>Acacia synchronicia</i>																								X	
	<i>Acacia tetragonophylla</i>	X				X		X		X								X				X				
	<i>Crotalaria cunninghamii</i>	X																								
	<i>Crotalaria medicaginea</i>																									X

Family	Species name	1	2	3	4	5	6	7	8	9	10	11	12	MN -1	MN -2	MN -3	MN -4	MN -5	MN -6	MN -7	MN -8	MN -9	MN -10	MN -11	Op p	Ext ra sp. Oct '21
	<i>Indigofera boviperta</i> subsp. <i>boviperta</i>	X																								
	<i>Indigofera colutea</i>	X				X		X																		
	<i>Indigofera linifolia</i>																									X
	<i>Indigofera linnaei</i>																					X				
	<i>Rhynchosia minima</i>	X				X						X														
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	X																								
	<i>Swainsona calcicola</i>																									X
	<i>Swainsona kingii</i>									X		X														
	<i>Swainsona pterostylis</i>				X			X	X			X										X				
	* <i>Vachellia farnesiana</i>		X																							
Frankeniaceae	<i>Frankenia pauciflora</i>		X	X	X			X	X			X	X			X			X		X	X				
Geraniaceae	<i>Erodium cygnorum</i>											X														
Goodeniaceae	<i>Scaevola cunninghamii</i>									X																
	<i>Scaevola spinescens</i>							X	X				X									X	X			
Hemerocallidaceae	<i>Corynotheca flexuosissima</i>					X						X					X									
Lauraceae	<i>Cassytha aurea</i>																						X			
Loranthaceae	<i>Amyema miraculosa</i> (Miq.) <i>Tiegh.</i> subsp. <i>miraculosa</i>																									X
Malvaceae	* <i>Malvastrum americanum</i>																									X
	<i>Gossypium robinsonii</i>		X																							
	<i>Lawrenca viridigrisea</i>				X								X									X				
	<i>Sida fibulifera</i>								X	X																

Family	Species name	1	2	3	4	5	6	7	8	9	10	11	12	MN-1	MN-2	MN-3	MN-4	MN-5	MN-6	MN-7	MN-8	MN-9	MN-10	MN-11	Op p	Ext ra sp. Oct '21
	<i>Sida rohlenae</i> subsp. <i>rohlenae</i>									X		X														
Myrtaceae	<i>Thryptomene dampieri</i>																							X		
Nyctaginaceae	<i>Boerhavia schomburgkiana</i>					X																				
	<i>Commicarpus australis</i>					X																		X		
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i>																									X
Phyllanthaceae	<i>Phyllanthus erwinii</i>							X																		
Pittosporaceae	<i>Pittosporum phillyreoides</i>																									X
Plumbaginaceae	<i>Muellerolimon salicorniaceum</i>			X											X											
Poaceae	* <i>Cenchrus ciliaris</i>	X	X		X	X		X	X	X		X	X	X					X				X	X		
	* <i>Cenchrus setiger</i>	X						X											X	X						
	<i>Chrysopogon fallax</i>							X											X	X						
	<i>Dactyloctenium radulans</i>																		X							
	<i>Eragrostis dielsii</i>																									X
	<i>Eragrostis eriopoda</i>	X																								
	<i>Eragrostis falcata</i>																									X
	<i>Eriachne obtusa</i>	X								X																
	<i>Eulalia aurea</i>										X						X						X	X		
	<i>Spinifex longifolius</i>					X	X			X	X			X			X						X	X		
	<i>Sporobolus virginicus</i>			X	X				X	X		X	X		X	X		X	X	X	X	X				
	<i>Triodia epactia</i>	X	X			X	X	X		X	X	X					X						X	X		
	<i>Whiteochloa airoides</i>					X	X				X												X			
Portulacaceae	<i>Portulaca oleraceae</i>																								X	

Family	Species name	1	2	3	4	5	6	7	8	9	10	11	12	MN -1	MN -2	MN -3	MN -4	MN -5	MN -6	MN -7	MN -8	MN -9	MN -10	MN -11	Op p	Ext ra sp. Oct '21
Santalaceae	<i>Exocarpos aphyllus</i>																							X		
Sapindaceae	<i>Alectryon oleifolius</i>																							X		
Scrophulariaceae	<i>Eremophila longifolia</i>																									X
	<i>Myoporum montanum</i>		X			X			X	X		X												X		
Solanaceae	<i>Nicotiana occidentalis</i>																									X
	<i>Solanum lasiophyllum</i>	X				X				X														X		
Surianaceae	<i>Stylobasium spathulatum</i>	X	X																							
Zygophyllaceae	<i>Roepera aurantiaca</i>		X																							
	<i>Roepera fruticulosa</i>																								X	
	<i>Tribulus occidentalis</i>																						X			