NGARLUMA GREEN ENERGY PROJECT

TARGETED PRIORITY FLORA AND VEGETATION REPORT

SITE 1A

ADDENDUM REPORT TO
NGARLUMA SOLAR SITES A AND B
RECONNAISSANCE FLORA AND VEGETATION SURVEY (VLA 2024)

Prepared for Ngarluma Green Energy

March 2026

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ADDENDUM REPORT TO: NGARLULMA SITES A AND B RECONNAISSANCE FLORA AND VEGETATION SURVEY MAY 2024

Prepared for: Ngarluma Aboriginal Corporation

Job No: VLA-135/26

Reference No: vla_26R-RevB-090426

Revision Status

Rev	Date	Description	Author(s)	Reviewer
A	31/03/26	Rev A for internal review	V Long	P. Aylmore
B	09/04/26	Rev B for Client Review	V. Long	J. Feltham / P.Sheiner
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1. Introduction

Approval for the Ngarluma Green Energy Project to develop Site 1A requires the preparation of a Native Vegetation Clearing Permit (NVCP) and this application requires confirmation of the presence/absence of any Priority Flora. The reconnaissance survey conducted previously in 2024 did not provide optimal conditions for the presence of the short-lived Priority Flora expected to be found in the tussock grasslands, therefore a Targeted survey for Priority flora was required to be undertaken under optimal conditions.

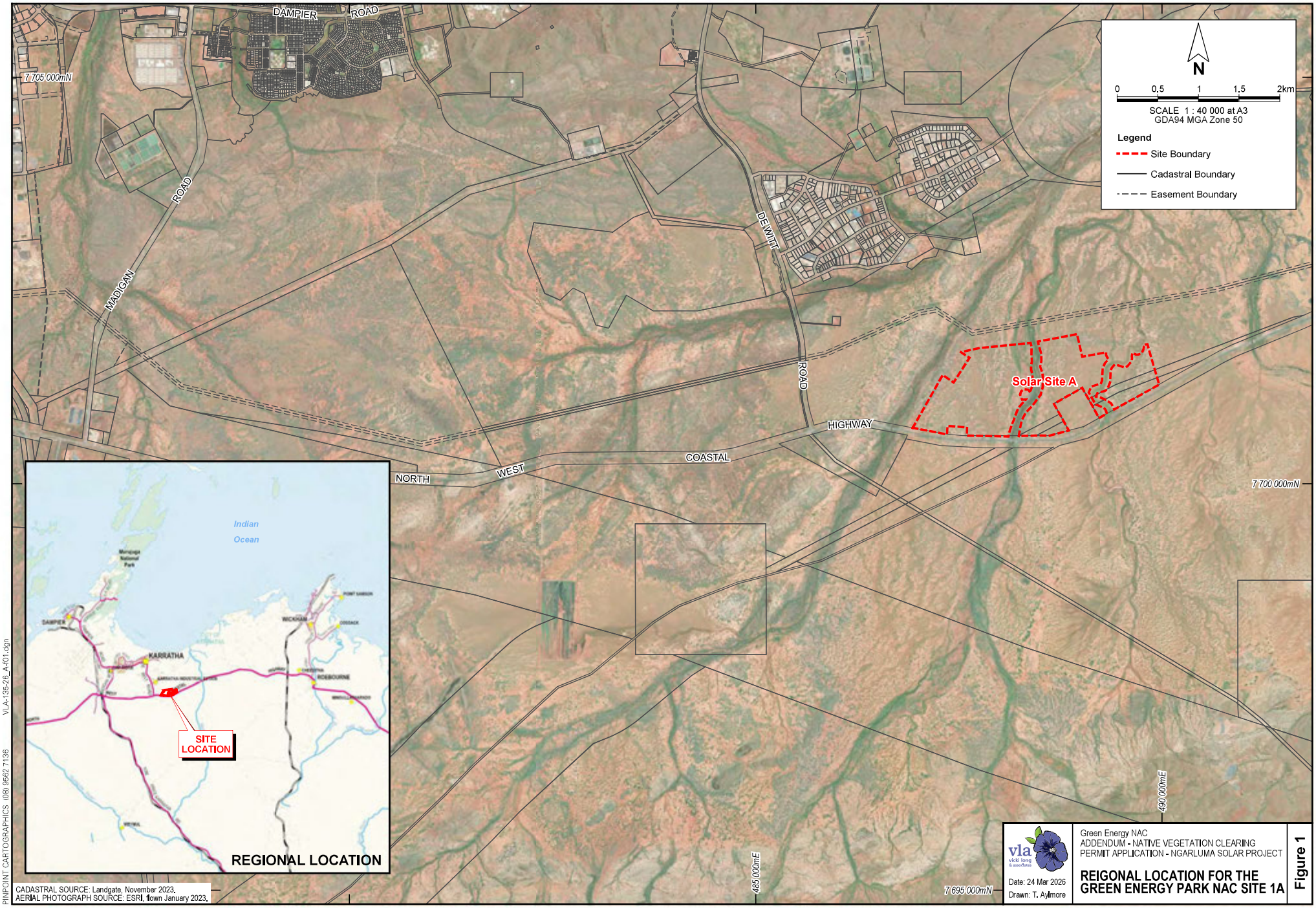
Conditions following rainfall in February 2026 meant that the likelihood of potential Priority flora being present in the survey area was increased as well as there being a greater chance of distinction between the Priority 1 'Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays' (Roebourne Plains gilgai grasslands), and the Priority 3 PEC 'Horseflat land system of the Roebourne Plains', both of which can be dominated by *Eragrostis xerophila* when conditions are dry and not appropriate for other grasses to be obvious (due to these grasses dying back to rootstock during dry periods). Determining the presence of any previously unidentified PECs and their boundaries due to adequate rainfall was also necessary for assessment of the NVCP submission and hence these also were included in the Targeted survey's scope of work.

2. Scope

The Scope of Work included the following:

- Conduct a Targeted Priority flora and Priority vegetation survey (in accordance with EPA (2016) Guidance) within Site 1A, focusing on the presence of any conservation significant and Priority flora, and any Priority 1 PEC areas not previously mapped. If any vegetation type was unable to be matched to that previously described (VLA 2024), conduct a releve and describe vegetation present.

- Prepare an addendum report to the VLA (2024) report which details locations and abundance of any conservation significant flora and Priority 1 PEC vegetation. P1 PEC vegetation not previously recorded will be mapped. Any species not recorded during the previous 2024 survey due to drier conditions will be added to the overall flora list for the survey area.


DAMPIER ROAD
7 705 000mN
MADIGAN ROAD
DE WITT ROAD
HIGHWAY
COASTAL
NORTH WEST
Solar Site A
7 700 000mN
7 695 000mN
485 000mE
490 000mE
N
0 0.5 1 1.5 2km
SCALE 1 : 40 000 at A3
GDA94 MGA Zone 50
Legend
Site Boundary
Cadastral Boundary
Easement Boundary
Indian Ocean
KARRATHA
DAMPIER
WICKHAM
ROEBOURNE
SITE LOCATION
REGIONAL LOCATION
CADASTRAL SOURCE: Landgate, November 2023.
AERIAL PHOTOGRAPH SOURCE: ESRI, flown January 2023.
PINPOINT CARTOGRAPHICS (08) 9562 7136 VLA-135-26_A-f01.dgn
Date: 24 Mar 2026
Drawn: T. Aylmore
Green Energy NAC
ADDENDUM - NATIVE VEGETATION CLEARING
PERMIT APPLICATION - NGARLUMA SOLAR PROJECT
REIGONAL LOCATION FOR THE
GREEN ENERGY PARK NAC SITE 1A
Figure 1

3. Methodology

3.1 Desktop Assessment

A desktop assessment was undertaken as part of the scope of the original flora and vegetation survey and is summarised in Section 3.1 of the VLA (2024) report.

3.2 Field Survey

3.2.1 Regulatory Guidance

The Targeted flora and vegetation survey was undertaken in accordance with the EPA (2016) regulatory guidelines.

3.2.2 Survey Personnel and Timing

The targeted survey was conducted on 19th and 23rd of March by VLA's Principal Botanist, Vicki Long (Flora Taking (Biological Assessment) Licence No. FB62000120-3 valid until 04/07/2028). Vicki lives in Karratha and has had 40 years of botanical experience across the Pilbara, particularly in the vicinity of Karratha. She is therefore qualified to conduct this assessment.

Summer rainfall was below average for the survey area, but the 128 mm rainfall received in February 2026 was sufficient to promote healthy regeneration of the tussock grasslands, and although the substrate was dry, small, short lived annuals and ephemeral species were still present.

3.2.3 Field Methodology

Site 1A was traversed by foot. Each vegetation type mapped in VLA (2024) was visited and searched for Priority flora. The vegetation descriptions given in VLA (2024) were checked against the vegetation figure prepared for the 2024 (VLA) report. Wherever new, or potential Priority plants were recorded, they were collected for verification of identity. Any species not previously recorded in the 2024 survey but found in the 2026 survey were added to the flora list for the Site 1A survey area. Where P1 PEC grassland was found, several GPS points were taken around its boundary, and it was searched for Priority flora. Vegetation types in each area were recorded as mapping notes, identified by a GPS point and matched to those recorded in 2024 (VLA 2024). Dominant species and characteristic flora within each vegetation type were recorded, but a complete list of species was not collated during this survey. Where a vegetation type was encountered that was not identified in the 2024 survey, a releve was searched and flora recorded.

4. Limitations of the Survey

Following the Targeted field survey, a review of any limitations that may have affected a complete assessment of the data collected was conducted.

Table 1 is based on those limitations suggested as considerations in Section 10.2 of the Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

Table 1. Statement of Limitations for the Targeted flora survey of the additional areas

Potential limitation	Statement regarding potential limitations
(i) Sources of information and availability of contextual information	Regional area, and broad-scale information is available from Beard (1975), McKenzie *et al* (2003). Local surveys have been conducted in tussock grassland areas in the Karratha area by Vicki Long for Astron Environmental (Survey of the Maitland Estate) and VLA (2019, 2020, 2024 for Woodside Energy), and VLA (2024) for Ngarluma Solar.
(ii) Scope	There was adequate time to complete the Targeted flora and vegetation survey. Time to complete the scope was not a limitation.
(iii) Proportion of flora and fauna identified, recorded and/or collected	Adequate rainfall had been received in February 2026 for the tussock grasslands to regenerate and for annual species to have emerged. The site has been previously disturbed (station tracks, fences) and in the past, overgrazed. Therefore, many areas on Site 1A do not have abundant vegetation cover. The field botanist, however, estimates 90% of the flora expected to be on this site would have been recorded.
(iv) Completeness	The different vegetation types within the site were well traversed, with more ground covered in larger areas than in the smaller ones. Completeness was not considered a limitation.
(v) Mapping reliability	Colour aerial photography at a scale of 1:5,000 on hard copy in combination with Google Earth imagery were used to locate positions in the survey area and to assist in navigation and delineation of vegetation boundaries. The aerial photography was of good resolution and, in general, accurately represented ground conditions. Mapping was later confirmed when GPS points were transposed onto aerial imagery after the survey. As such, mapping reliability was not considered a limiting factor.
(vi) Timing	The Targeted survey was undertaken following a total of 128.2 mm of rainfall in February 2026. Timing was considered acceptable. Although this figure is below the average rainfall for the summer period and was received over a short period of time (3 days), it was sufficient to regenerate the tussock grasslands. Additionally, rain being so erratic and patchy in the area means that more rain may have been received on site than recorded at Karratha Aero. The site was drying out but the amount of time between the rain and the survey being undertaken ensured small annuals had emerged and were in an identifiable state.

Potential limitation	Statement regarding potential limitations
(vii) Disturbance	Disturbance is evident on the site from historic pastoral activities including overgrazing. However, this is integral to this area and does not constitute a limitation to the survey.
(viii) Intensity	The intensity of the survey was considered adequate for a Targeted survey for recording Priority species and to describe vegetation. Intensity was not considered a limiting factor.
(ix) Resources	Resources were adequate to complete the survey and all appropriate tools and materials required to complete the task were available. Resources were not considered a limiting factor.
(x) Access	The entire site was accessible and was traversed on foot.
(xi) Experience	The field botanist responsible for undertaking the field survey has considerable (40 years) experience in conducting vegetation and flora surveys in the Pilbara especially along the Pilbara/Carnarvon/Kimberley coastline and Pilbara inland. Personnel experience was not considered a limiting factor.

5. Results

5.1 Rainfall

In the twelve-month period prior to the survey being undertaken, a total of 238.8 mm of rainfall had been recorded for the Karratha Aero Stn ID 4083 (BoM 2026), with more than half of that (128.2 mm) received in February 2026, approximately five weeks prior to the survey being undertaken (Figure 2). Rainfall over the summer months was below average, with rain only being received in February 2026. This February rainfall together with high humidity benefited most perennial and annual species.

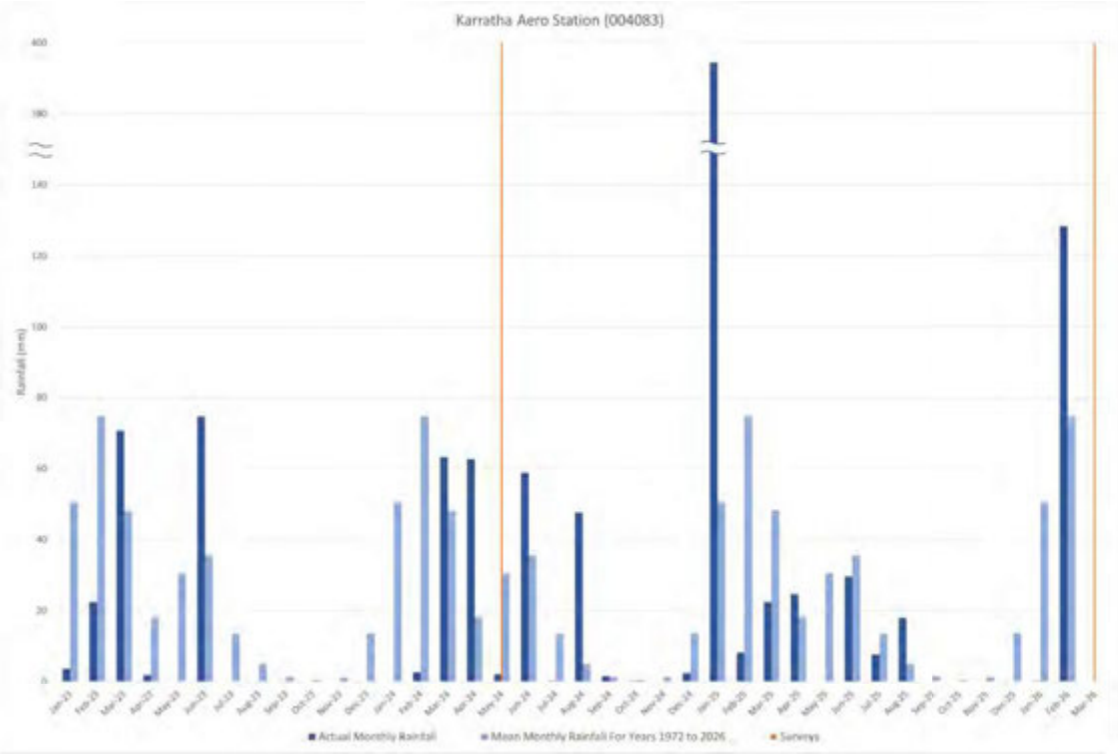


Figure 2. Rainfall data from Karratha Aero (Stn ID 4083) for the twelve months preceding the survey

5.2 Desktop Results

Desktop results for the survey area are summarised in VLA (2024).

5.3 Field Results

5.3.1 General Site Description

The majority of Site 1A is described as *Eragrostis xerophila* tussock grassland ('Horseflat land system of the Roebourne Plains' P3 PEC) mosaiced with small patches of quartz scatters and scalds. This grassland is in varying condition resultant from historical disturbances. The *Eragrostis xerophila* tussock grassland is intercepted by low lying, self-mulching, deep cracking clays of mixed tussock grassland dominated by *Eriachne benthamii*, *Chrysopogon fallax, Iseilema* species, *Eragrostis xerophila* and *Panicum* species over ephemeral and annual herbland ('Roebourne Plains coastal grassland' P1 PEC). These generally follow the

outer extent of drainage lines and are in excellent condition with no weeds recorded. The area is too deeply cracked (and boggy when wet) to have been disturbed by pastoral tracks.

This P1 PEC also occurs in small patches throughout the *Eragrostis xerophila* grassland ('Horseflat system of the Roebourne Plains' P3 PEC) but these are not considered large enough in area to map, or considered separately as the P1 PEC grassland.

Site 1A is dissected north-south by a vegetated creek (Lulu Creek) with open low *Corymbia hamersleyana* woodland over *Acacia coriacea* / *A. trachycarpa* shrubland over mixed tussock and hummock grassland. Along the outer banks of this feature and in the western most portion of the site is *Acacia xiphophylla* (snakewood) open shrubland over generally *Eragrostis xerophila* tussock grassland with areas of patchy *Triodia longifolia* / *T. epactia.*

The P1 PEC '*Chenopod vegetation associations of the Roebourne Plains*' occurs along the northern boundary of Site 1A. This PEC is relatively degraded except for one area. Beyond the northern boundary of Site 1A, a power transmission line and service corridor have been constructed through this PEC.

5.3.2 Flora and Vegetation

5.3.2.1 Flora

Dominant and characteristic flora relevant to each vegetation type were recorded in mapping notes which were made at 32 locations within the survey area. Any flora observed during the 2026 survey (within the previously mapped vegetation types) which were not present in the 2024 survey were recorded.

Thirty-three new flora species and three families were added to the 2024 flora list. The number of new species recorded indicates that survey conditions were optimal in 2026 and that there is a high level of confidence that no Priority species occur on the site. One species recorded, *Maireana glomerifolia,* was considered a range extension as it has not been recorded this far north. Two plants were found on the outer stony banks of the westernmost creekline. However, it is likely that this species has not previously been recorded for this area due to limited surveys undertaken in the area.

The combined 2024 / 2026 species list includes 128 species from 26 families. Fabaceae (peas) and Poaceae (grasses) were the most represented families with 29 and 25 species, respectively. The combined 2024 / 2026 flora list is provided in Appendix A.

5.3.2.2 Threatened and Priority Flora

No Threatened Flora (TF) species listed under the BC Act or the EPBC Act were recorded within the survey area and no Priority Flora were found.

5.3.2.3 Weed Species

Six weed species were recorded within Site 1A (Table 2).

Table 2 Weed Species recorded within Site 1A during the Targeted Survey

Weed Species	Common Name	Comment
**Cenchrus ciliaris*	Buffel grass	Not recorded on gilgai clays and only occasionally on gravelly areas between gilgai and in disturbed areas of snakewood or hakea on quartz areas. Buffel grass was abundant along wooded creeklines dissecting the site.
**Cenchrus setiger*	Birdwood grass	Recorded only along the wooded creeklines dissecting the site and occasionally in snakewood vegetation.
**Citrullus colocynthis*	Bitter melon	Only very occasionally occurring in tussock grassland (PEC)
**Echinochloa colona*	Awnless barnyard grass	Only recorded in very small numbers along the wooded creekline.
**Passiflora foetida*	Stinking passionflower	Only recorded along the wooded creekline. Currently <10 plants but this species is increasing rapidly in the Pilbara
**Vachellia farnesiana*		Scattered shrubs in the east-west drainage line.

It should be noted that **Aerva javanica* (kapok) was not recorded on the site. This species is becoming abundant in the vicinity of Karratha and disturbed areas in the Pilbara generally. The new solar facility should maintain a kapok free vegetation.

5.3.2.4 Vegetation

Eleven vegetation types were described and mapped in VLA (2024) and were verified as being present in this Targeted survey. Two new vegetation types were added during the Targeted survey and a refinement of dominant species cover estimations. The two new vegetation types were:

- *Eragrostis xerophila* tussock grassland with scattered *Acacia xiphophylla* shrubs (ExAx).
- *Acacia inaequilatera* tall shrubland with *Hakea lorea* and occasional *Ehretia saligna* over open *Capparis spinosa, Indigofera monophylla* low shrubland over mixed *Triodia epactia* hummock grassland and *Eragrostis xerophila, *Cenchrus ciliaris* tussock grassland (AiHlTeEx).

The original mapping (VLA 2024) showed Ex tussock grassland as being extensive over the site, however that vegetation type was described as having "scattered *Acacia xiphophylla"* present. During the Targeted survey of the Site 1A undertaken in 2026, it was evident that a more refined mapping should separate extensive stands of pure *Eragrostis xerophila* from areas of *E. xerophila* with scattered, sometimes open *Acacia xiphophylla.* Therefore the 2026 mapping includes a new vegetation type: *Eragrostis xerophila* tussock grassland with scattered *Acacia xiphophylla* shrubs (ExAx) to distinguish it from pure Ex *Eragrostis xerophila* tussock grassland. This ExAx vegetation type identified in 2026 has been mapped as a different vegetation type to the AxEx vegetation type mapped in 2024, due to the *Acacia xiphophylla* (snakewood) not being as abundant as in the original AxEx shrubland.

The original mapping undertaken in 2024 combined areas of snakewood and hakea together but during the Targeted survey it was decided they were distinct entities. The *Acacia inaequilatera* shrubland (AiHlTeEx) was found in in small areas at several locations (one of which is in the Exclusion zone) previously mapped as snakewood. Although snakewood is present, the Acacia *inaequilatera* is dominant with the other tall shrubs mentioned.

Neither of the new vegetation types are considered to be of conservation significance.

The new vegetation types are shown in Figure 3, together with the previously mapped vegetation types and the collated vegetation descriptions (2024, 2026) are presented in Appendix B. Photos of the new vegetation types are given in Appendix C.

5.3.2.5 Priority Ecological Communities

Both the P1 PECs, the 'Roebourne Plains coastal grassland' and the 'Chenopod vegetation association of the Roebourne Plains' were found on Site 1A. The former was very evident having been rejuvenated following good rainfall and all occurrences were recorded as being in 'Excellent' condition (Figure 4).

The 'Roebourne Plains coastal grassland' P1 PEC (EbCfEx) was dominated by *Eriachne benthamii* with frequent *Chrysopogon fallax,* and good representation of *Sorghum plumosum, Panicum* species, *Iseilema* species and *Eragrostis xerophila* over a herbland of *Ptilotus gomphrenoides, Ipomoea diamantinensis, I. lonchophylla*.

The new records of this P1 PEC are associated with a broad, low, wide north-south drainage zone but this area has more recently, following the Heritage survey, been omitted from the site as an Exclusion Zone and therefore will not be disturbed. It is indicated on Figure 3 as EbCfEx and shown to be within the Exclusion Zone in Figure 5.

There are four areas of the P1 PEC 'Chenopod vegetation association of the Roebourne Plains' but only one of these is in good condition and could be classified as a PEC. The four areas of this PEC are indicated on Figure 3 as AbSspEx. The one area in a suitable condition that could be considered a PEC is indicated with hatching (Figure 3). This PEC extends outside the lease to the north and it is noted that a power transmission line has been constructed along a large portion of it in the past.

The 'Horseflat land system of the Roebourne Plains', usually considered a P3 PEC is indicated as Ex on Figure 3. It is in varying condition, the majority of which has been historically overgrazed and disturbed with station tracks and fencelines and although it is regenerating well after two years of good rainfall, it is not considered to have PEC status in the survey area.

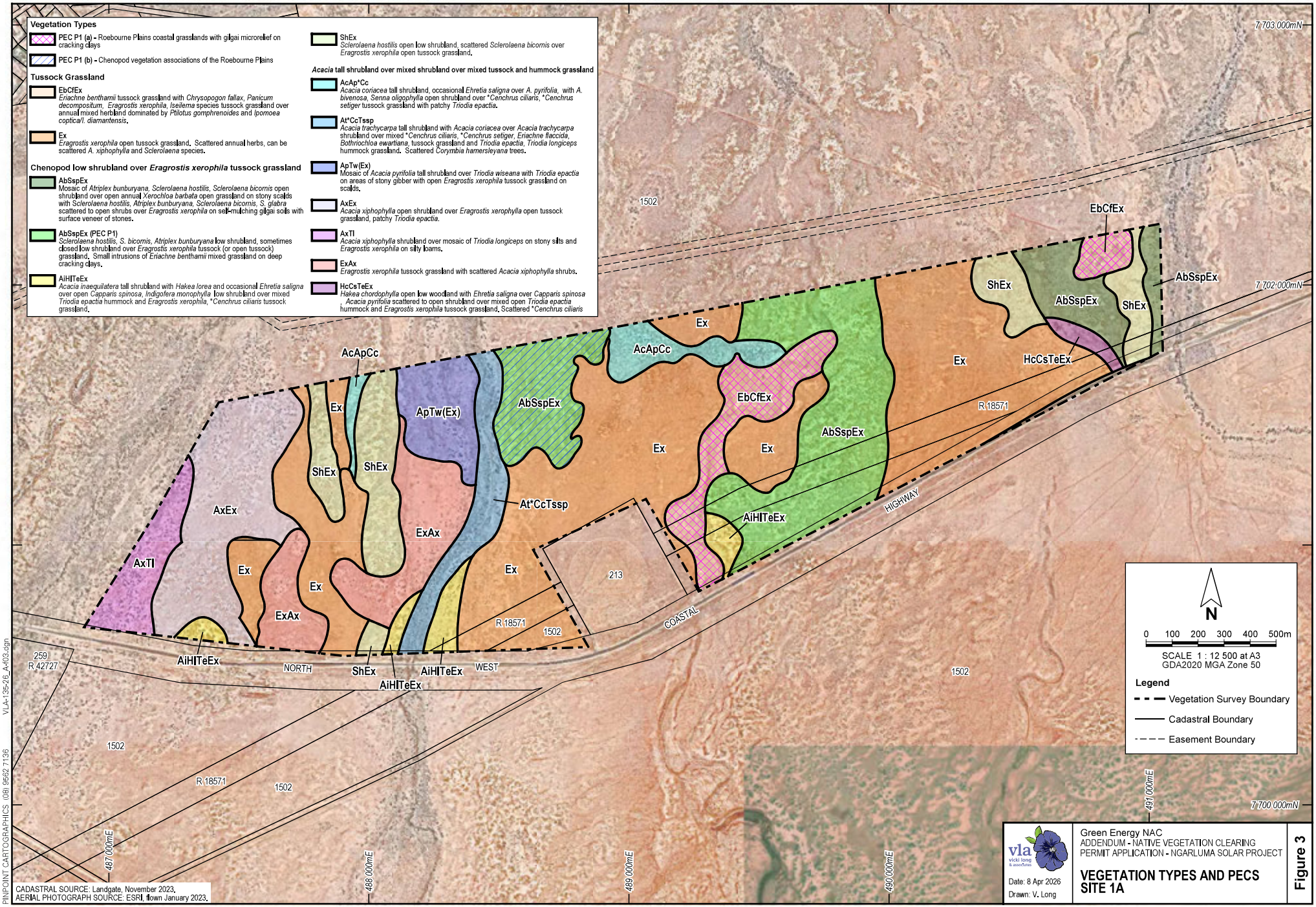
5.3.2.6 Vegetation Condition

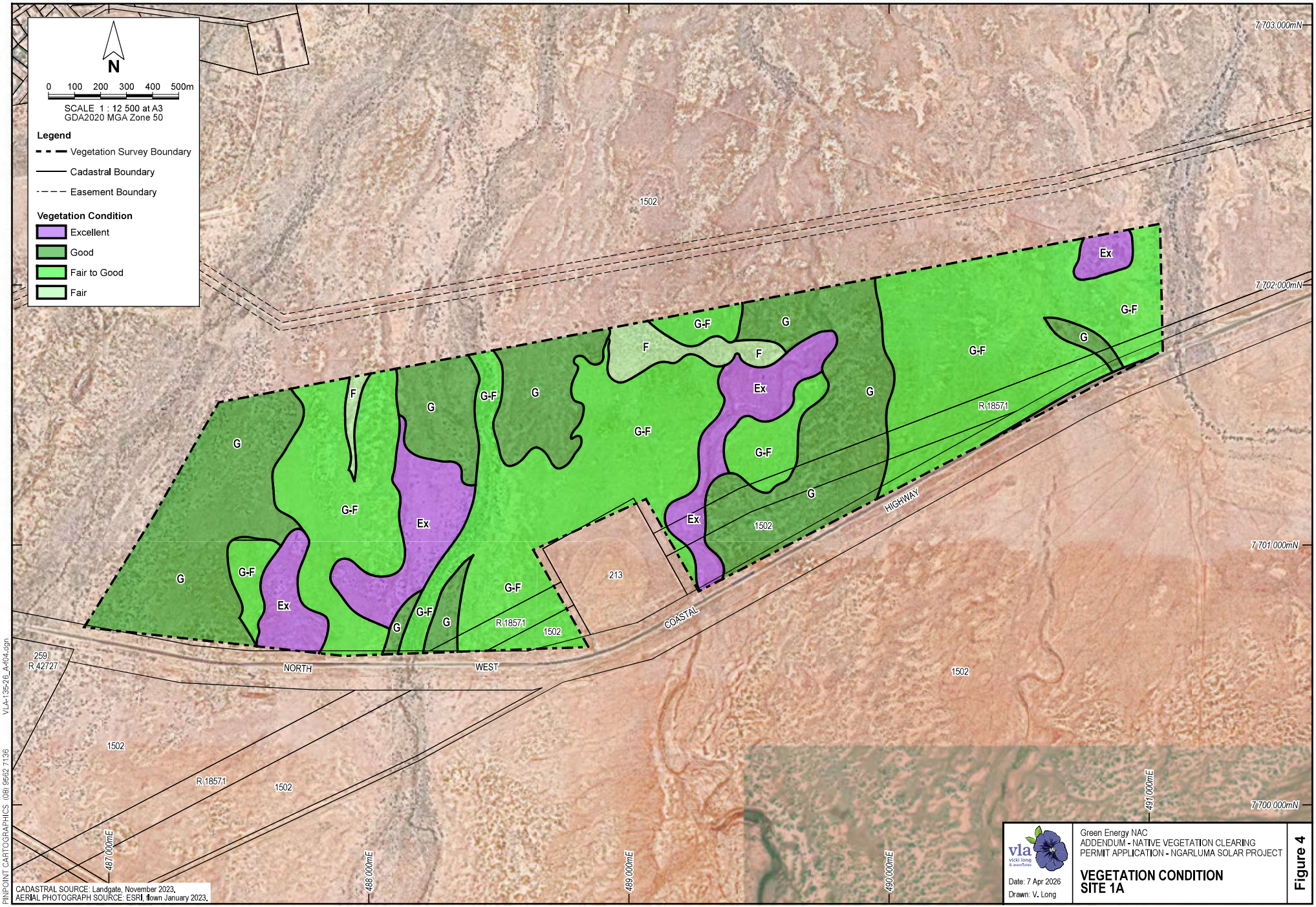
Vegetation condition was assessed using the vegetation condition scale adapted from Keighery (1994) and Kaesehagen (1995) (Appendix D). The vegetation condition throughout Site 1A ranged from 'Excellent' to 'Fair', with some sites ranging from 'Fair' to 'Good', but areas were too small and mosaiced to map individually. Site 1A has historically been overgrazed, however after two good rainfall years and no grazing on this site, the tussock grassland has recovered well. Weeds are generally only associated with old tracks, some wooded sites (i.e. *Acacia inaequilatera, Hakea* species) and along Lulu Creek. The low, broad drainage lines however were in 'Excellent' condition. The self-mulching, deep cracking clays here are not favoured by weeds. Vegetation condition is indicated in Figure 4.

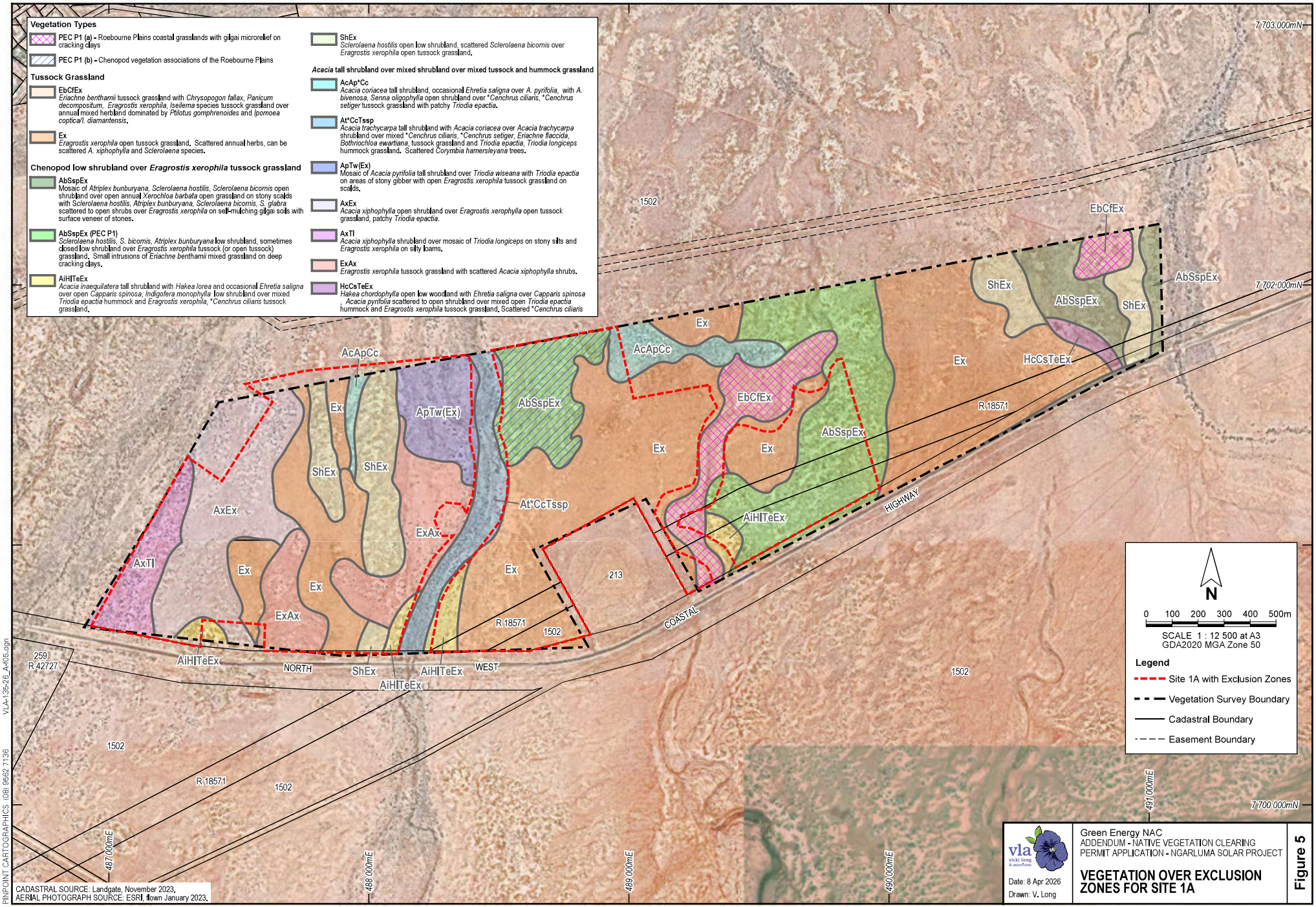
5.3.3 Search Effort

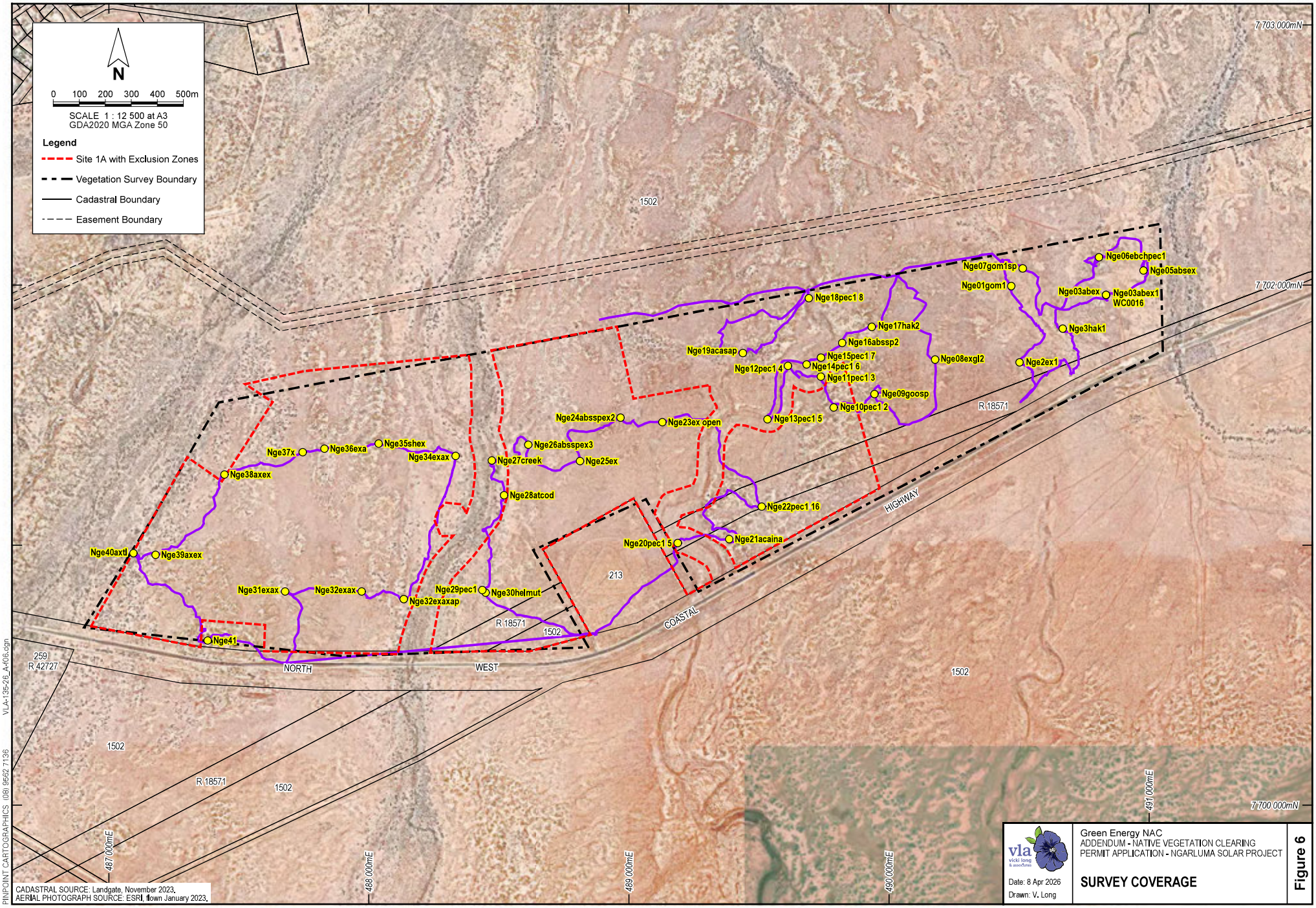
All vegetation was walked over with representative mapping notes being made in each vegetation type. Each vegetation type was searched in at least two locations and more in larger areas.

It is considered that the site was well searched despite no Priority Species being found. Search effort is represented on Figure 6.


Vegetation Types
PEC P1 (a) - Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays
PEC P1 (b) - Chenopod vegetation associations of the Roebourne Plains
Tussock Grassland
EbCfEx
Eriachne benthamii tussock grassland with Chrysopogon fallax, Panicum decompositum, Eragrostis xerophila, Iseilema species tussock grassland over annual mixed herbland dominated by Ptilotus gomphrenoides and Ipomoea coptica/I. diamantensis.
Ex
Eragrostis xerophila open tussock grassland. Scattered annual herbs, can be scattered A. xiphophylla and Scleroleana species.
Chenopod low shrubland over Eragrostis xerophila tussock grassland
AbSspEx
Mosaic of Atriplex bunburyana, Sclerolaena hostilis, Sclerolaena bicornis open shrubland over open annual Xerochloa barbata open grassland on stony scalds with Sclerolaena hostilis, Atriplex bunburyana, Sclerolaena bicornis, S. glabra scattered to open shrubs over Eragrostis xerophila on self-mulching gilgai soils with surface veneer of stones.
AbSspEx (PEC P1)
Sclerolaena hostilis, S. bicornis, Atriplex bunburyana low shrubland, sometimes closed low shrubland over Eragrostis xerophila tussock (or open tussock) grassland. Small intrusions of Eriachne benthamii mixed grassland on deep cracking clays.
AiHlTeEx
Acacia inaequilatera tall shrubland with Hakea lorea and occasional Ehretia saligna over open Capparis spinosa, Indigofera monophylla low shrubland over mixed Triodia epactia hummock and Eragrostis xerophila, *Cenchrus ciliaris tussock grassland.
ShEx
Sclerolaena hostilis open low shrubland, scattered Sclerolaena bicornis over Eragrostis xerophila open tussock grassland.
Acacia tall shrubland over mixed shrubland over mixed tussock and hummock grassland
AcAp*Cc
Acacia coriacea tall shrubland, occasional Ehretia saligna over A. pyrifolia, with A. bivenosa, Senna oligophylla open shrubland over *Cenchrus ciliaris, *Cenchrus setiger tussock grassland with patchy Triodia epactia.
At*CcTssp
Acacia trachycarpa tall shrubland with Acacia coriacea over Acacia trachycarpa shrubland over mixed *Cenchrus ciliaris, *Cenchrus setiger, Eriachne flaccida, Bothriochloa ewartiana, tussock grassland and Triodia epactia, Triodia longiceps hummock grassland. Scattered Corymbia hamersleyana trees.
ApTw(Ex)
Mosaic of Acacia pyrifolia tall shrubland over Triodia wiseana with Triodia epactia on areas of stony gibber with open Eragrostis xerophila tussock grassland on scalds.
AxEx
Acacia xiphophylla open shrubland over Eragrostis xerophylla open tussock grassland, patchy Triodia epactia.
AxTl
Acacia xiphophylla shrubland over mosaic of Triodia longiceps on stony silts and Eragrostis xerophila on silty loams.
ExAx
Eragrostis xerophila tussock grassland with scattered Acacia xiphophylla shrubs.
HcCsTeEx
Hakea chordophylla open low woodland with Ehretia saligna over Capparis spinosa , Acacia pyrifolia scattered to open shrubland over mixed open Triodia epactia hummock and Eragrostis xerophila tussock grassland. Scattered *Cenchrus ciliaris
7 703 000mN
7 702 000mN
7 700 000mN
1502
EbCfEx
ShEx
AbSspEx
ShEx
AbSspEx
Ex
AcApCc
AcApCc
Ex
HcCsTeEx
Ex
R 18571
AbSspEx
EbCfEx
Ex
Ex
ApTw(Ex)
AbSspEx
ShEx
ShEx
At*CcTssp
AxEx
ExAx
AiHlTeEx
HIGHWAY
AxTl
Ex
Ex
ExAx
Ex
213
R 18571
1502
COASTAL
259
R 42727
AiHlTeEx
NORTH
ShEx
AiHlTeEx
WEST
AiHlTeEx
1502
1502
R 18571
1502
487 000mE
488 000mE
489 000mE
490 000mE
491 000mE
N
0 100 200 300 400 500m
SCALE 1 : 12 500 at A3
GDA2020 MGA Zone 50
Legend
Vegetation Survey Boundary
Cadastral Boundary
Easement Boundary
CADASTRAL SOURCE: Landgate, November 2023.
AERIAL PHOTOGRAPH SOURCE: ESRI, flown January 2023.
PINPOINT CARTOGRAPHICS (08) 9622 7136
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Green Energy NAC
ADDENDUM - NATIVE VEGETATION CLEARING
PERMIT APPLICATION - NGARLUMA SOLAR PROJECT
VEGETATION TYPES AND PECS
SITE 1A
Figure 3


N
0 100 200 300 400 500m
SCALE 1 : 12 500 at A3
GDA2020 MGA Zone 50
Legend
Vegetation Survey Boundary
Cadastral Boundary
Easement Boundary
Vegetation Condition
Excellent
Good
Fair to Good
Fair
7 703 000mN
7 702 000mN
7 701 000mN
7 700 000mN
487 000mE
488 000mE
489 000mE
490 000mE
491 000mE
1502
R 18571
213
259
R 42727
NORTH
WEST
COASTAL
HIGHWAY
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VEGETATION CONDITION
SITE 1A
Figure 4


Vegetation Types
PEC P1 (a) - Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays
PEC P1 (b) - Chenopod vegetation associations of the Roebourne Plains
Tussock Grassland
EbCfEx
Eriachne benthamii tussock grassland with Chrysopogon fallax, Panicum decompositum, Eragrostis xerophila, Iseilema species tussock grassland over annual mixed herbland dominated by Ptilotus gomphrenoides and Ipomoea coptica/I. diamantensis.
Ex
Eragrostis xerophila open tussock grassland. Scattered annual herbs, can be scattered A. xiphophylla and Sclerolaena species.
Chenopod low shrubland over Eragrostis xerophila tussock grassland
AbSspEx
Mosaic of Atriplex bunburyana, Sclerolaena hostilis, Sclerolaena bicornis open shrubland over open annual Xerochloa barbata open grassland on stony scalds with Sclerolaena hostilis, Atriplex bunburyana, Sclerolaena bicornis, S. glabra scattered to open shrubs over Eragrostis xerophila on self-mulching gilgai soils with surface veneer of stones.
AbSspEx (PEC P1)
Sclerolaena hostilis, S. bicornis, Atriplex bunburyana low shrubland, sometimes closed low shrubland over Eragrostis xerophila tussock (or open tussock) grassland. Small intrusions of Eriachne benthamii mixed grassland on deep cracking clays.
AiHlTeEx
Acacia inaequilatera tall shrubland with Hakea lorea and occasional Ehretia saligna over open Capparis spinosa, Indigofera monophylla low shrubland over mixed Triodia epactia hummock and Eragrostis xerophila, *Cenchrus ciliaris tussock grassland.
ShEx
Sclerolaena hostilis open low shrubland, scattered Sclerolaena bicornis over Eragrostis xerophila open tussock grassland.
Acacia tall shrubland over mixed shrubland over mixed tussock and hummock grassland
AcAp*Cc
Acacia coriacea tall shrubland, occasional Ehretia saligna over A. pyrifolia, with A. bivenosa, Senna oligophylla open shrubland over *Cenchrus ciliaris, *Cenchrus setiger tussock grassland with patchy Triodia epactia.
At*CcTssp
Acacia trachycarpa tall shrubland with Acacia coriacea over Acacia trachycarpa shrubland over mixed *Cenchrus ciliaris, *Cenchrus setiger, Eriachne flaccida, Bothriochloa ewartiana, tussock grassland and Triodia epactia, Triodia longiceps hummock grassland. Scattered Corymbia hamersleyana trees.
ApTw(Ex)
Mosaic of Acacia pyrifolia tall shrubland over Triodia wiseana with Triodia epactia on areas of stony gibber with open Eragrostis xerophila tussock grassland on scalds.
AxEx
Acacia xiphophylla open shrubland over Eragrostis xerophylla open tussock grassland, patchy Triodia epactia.
AxTl
Acacia xiphophylla shrubland over mosaic of Triodia longiceps on stony silts and Eragrostis xerophila on silty loams.
ExAx
Eragrostis xerophila tussock grassland with scattered Acacia xiphophylla shrubs.
HcCsTeEx
Hakea chordophylla open low woodland with Ehretia saligna over Capparis spinosa , Acacia pyrifolia scattered to open shrubland over mixed open Triodia epactia hummock and Eragrostis xerophila tussock grassland. Scattered *Cenchrus ciliaris
7 703 000mN
7 702 000mN
7 700 000mN
1502
EbCfEx
ShEx
AbSspEx
HcCsTeEx
AcApCc
Ex
ApTw(Ex)
AxEx
ShEx
AxTl
ExAx
At*CcTssp
AiHlTeEx
R 18571
HIGHWAY
213
COASTAL
259
R 42727
NORTH
WEST
N
0 100 200 300 400 500m
SCALE 1 : 12 500 at A3
GDA2020 MGA Zone 50
Legend
Site 1A with Exclusion Zones
Vegetation Survey Boundary
Cadastral Boundary
Easement Boundary
487 000mE
488 000mE
489 000mE
490 000mE
491 000mE
CADASTRAL SOURCE: Landgate, November 2023.
AERIAL PHOTOGRAPH SOURCE: ESRI, flown January 2023.
PINPOINT CARTOGRAPHICS (08) 9562 7136 VLA-135-26_A-f05.dgn
Date: 8 Apr 2026
Drawn: V. Long
Green Energy NAC
ADDENDUM - NATIVE VEGETATION CLEARING PERMIT APPLICATION - NGARLUMA SOLAR PROJECT
VEGETATION OVER EXCLUSION ZONES FOR SITE 1A
Figure 5


N
0 100 200 300 400 500m
SCALE 1 : 12 500 at A3
GDA2020 MGA Zone 50
Legend
Site 1A with Exclusion Zones
Vegetation Survey Boundary
Cadastral Boundary
Easement Boundary
7 703 000mN
7 702 000mN
7 700 000mN
487 000mE
488 000mE
489 000mE
490 000mE
491 000mE
1502
R 18571
213
259
R 42727
Nge06ebchpec1
Nge05absex
Nge07gom1sp
Nge01gom1
Nge03abex
Nge03abex1
WC0016
Nge18pec1 8
Nge17hak2
Nge3hak1
Nge16abssp2
Nge19acasap
Nge15pec1 7
Nge12pec1 4
Nge14pec1 6
Nge08exgl2
Nge2ex1
Nge11pec1 3
Nge09goosp
Nge10pec1 2
Nge13pec1 5
Nge24absspex2
Nge23ex open
Nge37x
Nge36exa
Nge35shex
Nge34exax
Nge26absspex3
Nge27creek
Nge25ex
Nge38axex
Nge28atcod
Nge22pec1 16
Nge21acaina
Nge20pec1 5
Nge40axtl
Nge39axex
Nge31exax
Nge32exax
Nge29pec1
Nge30helmut
Nge32exaxap
Nge41
HIGHWAY
COASTAL
NORTH
WEST
CADASTRAL SOURCE: Landgate, November 2023.
AERIAL PHOTOGRAPH SOURCE: ESRI, flown January 2023.
PINPOINT CARTOGRAPHICS (08) 9582 7136
VLA-135-26_A-f06.dgn
vla
vicki long & associates
Date: 8 Apr 2026
Drawn: V. Long
Green Energy NAC
ADDENDUM - NATIVE VEGETATION CLEARING
PERMIT APPLICATION - NGARLUMA SOLAR PROJECT
SURVEY COVERAGE
Figure 6

6. Discussion

Vegetation condition throughout Site 1A is variable. During the 2024 survey, impacts of overgrazing and tracks were more obvious as the tussock grasslands had lower foliar cover, than in the 2026 Targeted survey. Although 125 mm of summer rain had been received prior to the May 2024 survey, well below average annual rainfall (only 173 mm) was received for 2023. This meant that vegetation in 2024 was only just beginning to recover from the dry 2023 period. Following the May 2024 survey, a further 108 mm of rainfall was received for the year. In 2025, the area experienced well above average annual rainfall, totalling 504 mm. This appears to have provided the tussock grasslands with very favourable growing conditions and regeneration from previous overgrazing appears to have been progressing well.

Vegetation observed in Site 1A during the 2026 visit had increased cover and was generally healthier than that observed in the 2024 survey. However, overgrazing was still apparent in some areas and the presence of buffel and birdwood grass on disturbed areas more obvious. The deep cracking clays where the P1 'Roebourne Plains coastal grassland' PECs are found retain moisture for longer periods, giving plants the opportunity to establish and reproduce.

During the 2026 Targeted survey, the P1 'Roebourne Plains coastal grassland' PEC (EbCfEx) was very healthy and distinct, occurring along a broad, low drainage line that has previously been identified as a Heritage Exclusion zone. As such, this PEC will not be impacted.

The 'Chenopod vegetation associations of the Roebourne Plains' P1 PEC (AbSspEx) was found in a reasonable condition along the northern boundary of Site 1A, and in some areas extends south through the site. The majority of this is in poor condition and therefore not considered to have P1 PEC status. One area, approximately mid site on the northern side is in relatively good condition and is considered to be P1 PEC. The good condition 'Chenopod vegetation associations of the Roebourne Plains' P1 PEC extends beyond the northern boundary of Site 1A as it nears the saline coastline.

The 'Horseflat land system of the Roebourne Plains' (Ex) was found to be in variable condition and in 2024 it was considered too degraded to be considered a PEC. Whilst it is recovering following two good rainfall years, there is still evidence of the historic tracks and fencelines and therefore sufficiently impacted to not be considered a PEC.

The optimal timing of the survey following the above average rainfall in 2025 and the summer rainfall in 2026 was evident from the 33 new species that were recorded this visit. All the flora recorded in 2024 were found again. No Priority flora were found which is somewhat unusual for gilgai clays after rain, but it should also be remembered that the site has been grazed historically, and this potentially has had an impact on the presence of flora. A comparison of a similar sized area on gilgai clays west of Karratha identified 160 species in 31 families (one of which was a Priority P3 species) compared to the 128 species from 26 families recorded at Site 1A (VLA 2020)

Depending on the installation and maintenance strategy for the solar farm, it is possible that the entire development area will be stripped of vegetation. This will not only encourage surface erosion but, may increase the gilgai nature of the soil. Besides the impact of removal of vegetation, the second most significant impact will be the potential for the introduction of new weed species and the spread of existing ones. The majority of Site 1A is weed free due to the gilgai swelling and shrinking nature of the clays. However, removing the vegetation, installation of infrastructure (vehicular movement) and the provision

of shade (panels) and moisture (condensation from panels) will no doubt encourage weed introduction and spread. It should be noted that there is currently no **Aerva javanica* (kapok) on Site 1A, with buffel and birdwood only found on semi disturbed or wooded areas, and stinking passionflower in shrubs along the creek line.

Once the method of site clearing for installation of infrastructure is known, a Weed Management Plan should be prepared.

7 References

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APPENDIX A

COMBINED FLORA LISTS FOR THE 2024 AND 2026 SURVEYS

Table A1. Site A Species Summary (New species recorded during 2026 survey denoted by red text)

Family	Species
Aizoaceae	*Trianthema triquetrum*
Amaranthaceae	*Gomphrena* "Erect"
	Gomphrena affinis
	Gomphrena canescens
	Ptilotus exaltatus
	Ptilotus gomphrenoides
	Ptilotus helipteroides
	Ptilotus murrayi
Asteraceae	*Podolepis aristata*
	Pterocaulon sphaeranthoides
	Streptoglossa bubakii
	Streptoglossa decurrens
Boraginaceae	*Ehretia saligna*
	Euploca cunninghamii
	Trichodesma zeylanicum
Capparaceae	*Capparis spinosa*
Chenopodiaceae	*Atriplex bunburyana*
	Atriplex codonocarpa
	Enchylaena tomentosa
	Maireana glomerifolia
	Rhagodia eremaea
	Salsola australis
	Sclerolaena bicornis
	Sclerolaena bicornis
	Sclerolaena glabra
	Sclerolaena hostilis
Cleomaceae	*Arivela viscosa*
	Areocleome oxalidea
Convolvulaceae	*Bonamia pannosa*
	Bonamia media
	Bonamia rosea
	Ipomoea coptica
	Ipomoea diamantinensis
	Ipomoea lonchophylla
	Ipomoea muelleri
	Operculina aequisepala
Cucurbitaceae	**Citrullus colocynthis*
	Cucumis variabilis
Cyperaceae	*Bulbostylis barbata*
	Bulbostylis sp. (dead)
	Cyperus bulbosus
	Cyperus bifax
	Cyperus iria
	Schoenoplectus dissachantha
Euphorbiaceae	*Euphorbia australis*
	Euphorbia drummondii

Family	Species
	Euphorbia tannensis
Fabaceae	**Vachellia farnesiana*
	Acacia ancistrocarpa
	Acacia bivenosa
	Acacia coriacea
	Acacia inaequilatera
	Acacia pyrifolia
	Acacia sclerosperma
	Acacia sclerosperma x Acacia bivenosa
	Acacia trachycarpa
	Acacia xiphophylla
	Alysicarpus muelleri
	Cullen cinereum
	Grona filiformis (was Desmodium filiformis)
	Indigofera monophylla
	Indigofera trita
	Lotus australis
	Lotus cruentus
	Neptunia dimorphantha
	Rhynchosia minima
	Senna glutinosa
	Senna glutinosa (DC) Randell subsp. glutinosa
	Senna oligophylla
	Senna glutinosa subsp. ×luerssenii (Domin) Randell
	Sesbania cannabina
	Tephrosia clementii
	Tephrosia sp clay soils (S van Leeuwen et al PBS 0273)
	Tephrosia sp NW Eremaean (S van Leeuwen et al PBS 0356)
	Tephrosia supina
	Vigna lanceolata
Goodeniaceae	*Goodenia forrestii*
	Goodenia lamprosperma
	Scaevola spinescens
	Scaevola spinescens "broad form"
Malvaceae	*Abutilon lepidum*
	Corchorus tridens
	Corchorus walcottii
	Hibiscus brachysiphonius
	Sida fibulifera
	Triumfetta clementii
Myrtaceae	*Corymbia hamersleyana*
Marsileaceae	*Marsilea hirsuta*
Nyctaginaceae	*Boerhavia coccinea*
	Boerhavia gardneri
Passifloraceae	**Passiflora foetida*
Phyllanthaceae	*Notoleptopus decaisnei*
	Phyllanthus erwinii

Family	Species
	Phyllanthus maderaspatensis
Phrymaceae	*Mimulus gracilis*
Plantaginaceae	*Stemodia kingii*
Poaceae	**Cenchrus ciliaris*
	**Cenchrus setiger*
	**Echinochloa colona*
	Aristida contorta
	Aristida inaequiglumis
	Bothriochloa ewartiana
	Chrysopogon fallax
	Dactyloctenium radulans
	Dichanthium sericeum subsp. humilius
	Enneapogon caerulescens
	Eragrostis xerophila
	Eriachne benthamii
	Eriachne flaccida
	Eulalia aurea
	Iseilema sp. (dead)
	Iseilema membranaceum
	Iseilema vaginiflorum
	Panicum decompositum
	Panicum laevinode
	Sorghum plumosum
	Triodia epactia
	Triodia longiceps
	Triodia wiseana
	Xerochloa barbata
	Xerochloa laniflora
Portulacaceae	*Portulaca conspicua*
	Portulaca filifolia
	Portulaca oleracea
Proteaceae	*Hakea chordophylla*
	Hakea lorea
Scrophulariaceae	*Eremophila longifolia*
Solanaceae	*Solanum lasiophyllum*

APPENDIX B

COLLATED AND UPDATED VEGETATION TYPES AND CONDITIONS FOR SITE 1A FROM THE 2024 AND 2026 SURVEYS

Table B.1 Collated and updated Vegetation Types and Condition 2024 and 2026.

Veg Code	Vegetation Description	Habitat	Vegetation Condition[1]	Status
EbCfEx	*Eriachne benthamii* tussock grassland with *Chrysopogon fallax, Panicum decompositum, Eragrostis xerophila, Iseilema* species tussock grassland over annual mixed herbland dominated by *Ptilotus gomphrenoides* and *Ipomoea coptica/I. diamantinensis.*	Low lying broad drainage lines and small localised pocket of deeply cracking dark brown clay on flat weakly gilgai plain.	Excellent	P1 PEC (a) Roebourne Plains gilgai grassland (Fig 3)
Ex	*Eragrostis xerophila* open tussock grassland. Scattered annual herbs, can be scattered *Sclerolaena* species.	Flat plan. Weakly gilgai mosaiced with areas of stony gibber. Parts have been disturbed with tracks, old fences, sheetwash and over grazing.	Good to Fair	Condition varies. Approximately 65% of the total Ex vegetation type has been historically disturbed and overgrazing has occurred. In good condition this would be the P3PEC but overall it is too degraded to be considered a PEC.
AbSspEx (degraded)	Mosaic of *Atriplex bunburyana, Sclerolaena hostilis, Sclerolaena bicornis* open shrubland over open annual *Xerochloa barbata* open grassland on stony scalds with *Sclerolaena hostilis, Atriplex bunburyana, Sclerolaena bicornis, S. glabra* scattered to open shrubs over *Eragrostis xerophila* on self-mulching gilgai soils with surface veneer of stones.	Flat plain. Mosaic of stoney scalds mixed with on pinky brown silty clay mixed with areas of weakly gilgai semi saline soils with surface veneer of stones.	Good – Fair some historical disturbance	P1 PEC (b) Chenopod vegetation associations of the Roebourne Plains Largely degraded by overgrazing and tracks so large percentage is no longer considered a PEC.

Veg Code	Vegetation Description	Habitat	Vegetation Condition[1]	Status
AbSspEx (P1 PEC)	*Sclerolaena hostilis, S. bicornis, Atriplex bunburyana* low shrubland, sometimes closed low shrubland over *Eragrostis xerophila* tussock (or open tussock) grassland. Small intrusions of *Eriachne benthamii* mixed grassland on deep cracking clays.	Flat plain. Mosaic of semi saline stony silts, with dense stony mantle in places with areas of weakly gilgai clays and intrusions of deep cracking clays.	Good	P1 PEC (b) is in good condition (Fig 3) with small intrusions of PEC P1(b)
ShEx	*Sclerolaena hostilis* open low shrubland, scattered *Sclerolaena bicornis* over *Eragrostis xerophila* open tussock grassland.	Flat plain. Weakly gilgai and soft reb-brown loamy soils, mosaiced with areas of stony gibber and scattered quartz. Area degraded, historical tracks, overgrazed	Good to Fair	Areas degraded but overall Good
AcAp*Cc	*Acacia coriacea* tall shrubland, occasional *Ehretia saligna* over *A. pyrifolia,* with *A. bivenosa, Senna oligophylla* open shrubland over **Cenchrus ciliaris, *Cenchrus setiger* tussock grassland with patchy *Triodia epactia.*	Broad shallow low-lying area, pale pinky silts, scattered stones. Lots of dead shrubs here	Fair	*Acacia pyrifolia* has regenerated with rain and is now the dominant understory therefore description has changed. Shrubland in good condition but grassland with high cover of weed species.
At*CcTssp	*Acacia trachycarpa* tall shrubland with *Acacia coriacea* over *Acacia trachycarpa* shrubland over mixed **Cenchrus ciliaris, *Cenchrus setiger, Eriachne flaccida, Bothriochloa ewartiana,* tussock grassland and *Triodia epactia, Triodia*	Narrow incised creek line with washed stones and gravels over brown silty loams. Becomes more narrow, less stony and more densely vegetated upstream.	Good to Fair	Grassland is mixed but buffel and birdwood are present. Stinking passionflower is healthy here and likely to spread. *Corymbia hamersleya* trees increase mid creekline and both the low woodland and shrubland is healthy.

Veg Code	Vegetation Description	Habitat	Vegetation Condition[1]	Status
	longiceps hummock grassland. Scattered *Corymbia hamersleyana* trees.			Many small ephemeral herbs recorded here.
ApTw(Ex)	Mosaic of *Acacia pyrifolia* tall shrubland over *Triodia wiseana* with *Triodia epactia* on areas of stony gibber with open *Eragrostis xerophila* tussock grassland on scalds.	Slightly undulating plain, pinky-red brown silts with patches of stony gibber mosaiced with scalds.	Good	Mostly weed free, occasional buffel nearer outer creeklines.
AxEx	*Acacia xiphophylla* open shrubland over *Eragrostis xerophylla* open tussock grassland, patchy *Triodia epactia.*	Flat plain. Mosaic of stony gibber with scalds, red-brown silty loams.	Good	Occasional buffel grass under snakewood. Snakewood can be scattered to open shrubland.
AxTl	*Acacia xiphophylla* shrubland over mosaic of *Triodia longiceps* on stony silts and *Eragrostis xerophila* on silty loams.	Flat plain, Mosaic of red-brown silts with quartz scatter and red-brown soft loams, sometimes weakly gilgaied.	Good	Occasional buffel grass under snakewood. Snakewood can be scattered to open shrubland.
HcCsTeEx	*Hakea chordophylla* open low woodland with *Ehretia saligna* over *Capparis spinosa, Acacia pyrifolia* scattered to open shrubland over mixed open *Triodia epactia* hummock and *Eragrostis xerophila* tussock grassland. *Scattered *Cenchrus ciliaris*	Very shallow broad drainage feature, pinky pale brown silty loams.	Good	Small pockets of this vegetation only – low cover of buffel grass only (<2%)

Veg Code	Vegetation Description	Habitat	Vegetation Condition[1]	Status
ADDITIONAL VEGETATION TYPES ADDED 2026				
ExAx	*Eragrostis xerophila* tussock grassland with scattered, sometimes open *Acacia xiphophylla* shrubs.	Very weakly gilgai plain with patches of quartz scatter	Excellent	Originally mapped as Ex but review of site considered that Ax needed to be added as scattered – these shrubs are not found on Ex.
AiHlTeEx	*Acacia inaequilatera* tall shrubland with *Hakea lorea* and occasional *Ehretia saligna* over open *Capparis spinosa, Indigofera monophylla* low shrubland over mixed *Triodia epactia* hummock and *Eragrostis xerophila, *Cenchrus ciliaris* tussock grassland.	Along outer bank of Lulu creek, and in two other areas of quartz scatter over loamy clays.	Good	Buffel grass only at one site. Not originally mapped as small areas but included this time as one has been identified as a heritage area.

APPENDIX C

REPRESENTATIVE PHOTOGRAPHS OF NEW VEGETATION TYPES MAPPED AND PRIORITY ECOLOGICAL COMMUNITES (PECs)

Table C.1. Representative photographs of new vegetation types mapped during the 2026 additional areas survey.

Code	Description	Representative Photo
Weakly gilgaied Coastal Plain with quartz mosaic		
ExAx	*Eragrostis xerophila* tussock grassland with scattered *Acacia xiphophylla* shrubs.	
Outer creek lines		
AiHlTeEx	*Acacia inaequilatera* tall shrubland with *Hakea lorea* and occasional *Ehretia saligna* over open *Capparis spinosa, Indigofera monophylla* low shrubland over mixed *Triodia epactia* hummock and *Eragrostis xerophila, *Cenchrus ciliaris* tussock grassland.	

Table C.2 Representative photographs of PECs on Site 1A

Code	Description	Representative Photo
Self mulching deeply cracking clays – Roebourne Plains Coastal Grassland P1 PEC		
EbCfEx	*Eriachne benthamii* tussock grassland with *Chrysopogon fallax, Panicum decompositum, Eragrostis xerophila, Iseilema* species tussock grassland over annual mixed herbland dominated by *Ptilotus gomphrenoides* and *Ipomoea coptica/I. diamantinensis.*	 
Stony but weakly gilgai plain with Chenopod vegetations associations of the Roebourne Plains P1 PEC		
AbSspEx	*Sclerolaena hostilis, S. bicornis, Atriplex bunburyana* low shrubland, sometimes closed low shrubland over *Eragrostis xerophila* tussock (or open tussock) grassland	

Code	Description	Representative Photo
		
Weakly gilgai coastal plains with Horseflat system of the Roebourne Plains – considered to be too degraded overall to be considered P3 PEC.		
Ex *Eragrostis xerophila* open tussock grassland. Scattered annual herbs, can be very scattered *A. xiphophylla* and *Sclerolaena* species. *(Mosaiced with quartz scatters).*		 

APPENDIX D

VEGETATION CONDITION SCALE

Table D.1 Vegetation condition scale adapted from Keighery (1994) and Kaesehagen (1995).

Rating	Condition	Descriptive Features
5	Excellent	>80% native flora composition Vegetation Structure intact or nearly so Minor signs of disturbance Weeds are non-aggressive species (cover <5%).
4	Good	60-80% native flora composition Vegetation Structure altered in places Obvious signs of disturbance Weed cover abundance 5-20%.
3	Fair	40-60% native flora composition Vegetation Structure significantly altered Very obvious signs of multiple disturbance Weed cover abundance 20-50%.
2	Poor/Partially degraded	20-40% native flora composition Vegetation Structure severely impacted by disturbance Scope for regenerating but not without intensive management Weed cover abundance 50-80%.
1	Completely degraded	0-20% native flora composition Vegetation Structure no longer intact Extensive disturbance/modification present Weeds are highly invasive (cover >80%).