



ARROWSMITH HYDROGEN PROJECT

(AHP1)

REHABILITATION PLAN

Revision Control

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Appendix A Risk Ranking Matrix

Terms & Abbreviations

Term or abbreviation	Definition
AHP1	Arrowsmith Hydrogen Project
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
IGE	Infinite Green Energy

Related Documents

Document #	Document Name
ARW-ENV-PLN-IGE-0001-REV3	AHP1 Construction Environmental Management Plan
ARW-ENV-PLN-IGE-0002-REV3	AHP1 Weed and Dieback Hygiene Management Plant
ARW-ENV-PLN-IGE-0003-REV3	AHP1 Vegetation Management Plan
ARW-ENV-PLN-IGE-0004-REV3	AHP1 Fauna Management Plan
ARW-ENV-ADM-IGE-0001-REV3	AHP1 Section 38 Referral Supporting Documentation

1. Introduction

IGE propose to install the Arrowsmith wind and solar farms and construct a hydrogen plant within IGE owned freehold Lots 3, 4, 100 and 6110 in Arrowsmith, 30 km south of Dongara, within the Shire of Irwin, Western Australia (WA) (Appendix A). The proposed site is former agricultural land and has been grazed by sheep, cattle and goats. The AHP1 layout has been arranged to avoid wetlands, karst formations and Carnaby's Black Cockatoo (CBC) habitat on the property. The required clearing of vegetation for project construction is Gross 139.31 ha from a property maximum extent area of 1,929.68 ha. Existing cleared area on the property is 213.34 ha and these areas incorporated into the project to minimise overall development footprint. (Table 1).

Construction is planned to commence in quarter 1 2023 for production operations commencing in quarter 3 2025, subject to approvals and availability of equipment.

The scope of this referral includes the construction of the Arrowsmith Hydrogen Plant and associated infrastructure including:

- solar farm (65MW minimum to 85MW maximum)
- wind turbines (22 minimum to 25 maximum x 6 MW)
- water supply (groundwater)
- processing plant 23 to 42 tonnes per day output
- storage and offloading

Aspect	Max Extent Proposal Area	Previously Disturbed within project area	Proposal Vegetation Clearing Gross	Rehabilitated
Wind Turbines	22.16	1.09	21.08	10.13
Solar Array	139.85	82.73 (paddock)	57.12	
Hydrogen Plant/access road	35.88	0.47	35.41	
Project /Fire Roads	27.53	12.45	15.09	
Electrical Routes	1.91	0.35	1.56	
Property Boundary	7.83	3.86	3.97	
Marl Pits	4.19	0.0	4.19	4.19
Met Mast Relocation area	0.91	0.01	0.90	
Met Mast & Ex Marl Pit cleared July 2021	2.0	2.0	0.00	
TOTAL	242.28	102.96	139.31	14.32

1.1 Rehabilitation Plan Scope

This rehabilitation plan covers the rehabilitation of temporary areas accessed during the construction of the AHP1. This includes turbine construction assembly areas and marl pits approximately 14.32 ha in total.

The larger proportion of rehabilitation for the project centres around revegetating the Wind turbine single use crane assembly areas.

The property base substrate for 90 percent of the Turbine locations consists of surface penetrating limestone cap rock. Excavation of substrate requires considerable effort and the reinstatement of vegetation in these areas will involve a shallow substrate topsoil replacement and possible re seeding program of approved native shrubs.

1.2 Rehabilitation Objective

The overall objective for rehabilitation at the AHP1 site is to return the site to a post construction land use compatible with the surrounding environment.

In the event plant life extension is not exercised rehabilitation objectives will be achieved by:

- Ensuring there is no contamination
- Removing project infrastructure
- Rehabilitating the disturbed vegetated areas to native vegetation comparable to the surrounding vegetation

1.3 Rehabilitation Planning

Rehabilitation will commence progressively on completion of use at each area of construction.

The completion criteria and performance indicators included in this rehabilitation plan will be in place prior to rehabilitation commencement to ensure that rehabilitation as far as practicable achieves a stable and functioning landform and ecological system consistent with pre-existing and surrounding landscape and environmental values.

2. Site Conditions

2.1 Vegetation Types

Eight broad structural vegetation types were recorded within the survey area based on field observations (Table 2) (Ecoscape 2021). Whilst floristic analysis was conducted, the results of the analysis indicated vegetation condition had a significant effect on the results, and floristic groups were not clear-cut.





The vegetation types within the survey area, grouped broadly based on landform types, are shown in Table 2.





Table 1 presents the areas to be rehabilitated under this Rehabilitation Plan by vegetation type.



Table 1: Rehabilitation Scope

Vegetation Type	Area of Community recorded on IGE Property	Area to be impacted by Proposal	Area to be rehabilitated under this Rehabilitation Plan
EeLW	116.77ha	39.03 ha	1.0 ha
McArGaTS	860.62 ha	70.77 ha	5.8 ha
ArMrTS	88.13 ha	0.57 ha	1.40 ha
LcBsJhMOS	407.72 ha	16.12 ha	4.3 ha
EcArMW	125.24 ha	1.97 ha	2.0 ha
MsCoMrMOW	42.9 ha	0.00 ha	
ArLOF	48.84 ha	10.43 ha	
As1As2TOS	26.12 ha	0.42 ha	
Previous Disturbed Area	192.70 ha		
Existing Cleared Fire Roads	20.64 ha		
TOTAL	1,929.68 ha	139.31 ha	14.32 ha

Table 2: Vegetation Types

Landform	Mapping unit	Vegetation type	Floristic quadrats/ relevés	Representative photograph	Other characteristic species
Uplands (disturbed)	ArLOF	<p>Acacia rostellifera low open forest over *Hordeum leporinum, *Ehrharta longiflora and *Bromus diandrus low closed grassland</p> <p>NVIS: U+ ^Acacia rostellifera\^tree\6;c;G ^Hordeum leporinum,^Ehrharta longiflora,Bromus diandrus\^other grass\1\d</p> <p>Completely Degraded condition, grazed relevé. This vegetation type is adjacent to cleared areas and represents a disturbed vegetation as a result of grazing, and possibly also regenerating vegetation following clearing.</p>	DR20R02		*Arctotheca calendula Austrostipa elegantissima *Ehrharta brevifolia *Hypochaeris glabra *Reichardia tingitana
Karst (limestone upland)	ArMrTS	<p>Acacia rostellifera and Melaleuca raphiophylla tall shrubland over *Bromus diandrus, *Brassica tournefortii and *Hordeum leporinum low closed grassland/forbland with Eucalyptus camaldulensis subsp. obtusa mid scattered trees</p> <p>NVIS: U ^Eucalyptus camaldulensis subsp. obtusa\^tree\7\bi;M+ ^Acacia rostellifera,^Melaleuca raphiophylla\^shrub\4;c;G ^^Bromus diandrus,Brassica tournefortii,Hordeum leporinum\^other grass,forb\1\d</p> <p>Quadrat on limestone ridge on karst formation, notable for having wetland flora species present (Eucalyptus camaldulensis and Melaleuca raphiophylla – although this identification requires confirmation). Relevé and patch with relevé in Completely Degraded condition (very weedy).</p> <p>The majority of this vegetation type has been mapped using interpretation of aerial imagery and known karst locations due to lack of accessibility in this part of the survey area. It is likely that the larger, western patch is smaller than as is mapped and may not have Eucalyptus camaldulensis.</p>	D20R08		Crassula sp. *Ehrharta longiflora *Lycium ferocissimum *Lysimachia arvensis *Petrorhagia dubia Rhagodia preissii subsp. obovata
Upland (disturbed)	As1As2TOS	<p>Acacia saligna and Acacia scirpifolia tall open shrubland over *Vulpia myuros, *Pentameris airoides and *Hypochaeris glabra low closed grassland/forbland</p> <p>NVIS: M+ ^Acacia saligna,^Acacia scirpifolia\^shrub\4\i;G ^^Vulpia myuros,Pentameris airoides,Hypochaeris glabra\^other grass,forb\1\d</p> <p>Disturbed vegetation type.</p>	D20R03		Acacia rostellifera Amyema preissii *Arctotheca calendula *Brassica tournefortii *Bromus diandrus Crassula sp. *Ehrharta longiflora *Petrorhagia dubia *Trifolium arvense
Riparian areas (drainage lines and floodplain)	EcArMW	<p>Eucalyptus camaldulensis subsp. obtusa and Acacia rostellifera mid woodland over Acacia scirpifolia and Rhagodia preissii subsp. obovata tall shrubland/chenopod shrubland over *Ehrharta longiflora, *Avena barbata and *Lysimachia arvensis low open grassland/forbland</p> <p>NVIS: U+ ^Eucalyptus camaldulensis subsp. obtusa,Acacia rostellifera\^tree\7\i;M ^^Acacia scirpifolia,Rhagodia preissii subsp. obovata\^shrub,chenopod shrub\4;c;G ^^Ehrhartalongiflora,Avena barbata,Lysimachia arvensis\^other grass,forb\1\i</p> <p>All relevés were in Degraded or Completely Degraded condition. DR20R09 is somewhat anomalous as it was upslope; it may be more similar to vegetation on the karst formation (vegetation type ArMrTS).</p>	D20R01 D20R07 D20R09 D20R11		*Arctotheca calendula *Brassica tournefortii *Bromus diandrus Crassula sp. *Hordeum leporinum *Hypochaeris glabra *Lolium multiflorum Melaleuca raphiophylla Muehlenbeckia adpressa *Petrorhagia dubia Rytidosperma setaceum Trachymene pilosa *Trifolium campestre *Ursinia anthemoides *Vulpia myuros

Landform	Mapping unit	Vegetation type	Floristic quadrats/ relevés	Representative photograph	Other characteristic species
Limestone uplands	EeLW	<p>Eucalyptus erythrocorys low woodland over Acacia scirpifolia, Rhagodia preissii subsp. preissii and Guichenotia ledifolia mid open shrubland/chenopod shrubland over Acanthocarpus canaliculatus, Hibbertia hypericoides subsp. septentrionalis and Desmocladius asper mid open forbland/shrubland/rushland</p> <p>NVIS: U+ ^Eucalyptus erythrocorys\^tree\6\i;M ^Acacia scirpifolia,\^Rhagodia preissii subsp. preissii,Guichenotia ledifolia\^shrub,\^chenopod shrub\3\i;G ^^Acanthocarpus canaliculatus,Hibbertia hypericoides subsp. septentrionalis,Desmocladius asper\^forb,shrub,rush\2\i ; Vegetation type description is taken from quadrats/relevés in ‘better’ (less weedy) condition.Vegetation type occurs on limestone outcropping.</p>	D20Q05 D20R04 D20R06 D20R12		Acacia rostelifera Austrostipa elegantissima Austrostipa flavescens Austrostipa macalpinei *Brassica tournefortii Calandrinia sp. Shark Bay (A.Markey 1405) Conostylis candicans subsp. Calcicole *Ehrharta longiflora Hybanthus floribundus subsp. floribundus *Hypochaeris glabra *Lysimachia arvensis Macrozamia fraseri Muehlenbeckia adpressa Thysanotus manglesianus Trachymene pilosa Trymalium ledifolium *Ursinia anthemoides *Vulpia myuros Waitzia suaveolens
Sandplain (with limestone pavement)	LcBsJhMOS	<p>Labichea cassioides, Banksia sessilis var. cygnorum and Jacksonia hakeoides mid open shrubland over Hibbertia hypericoides subsp. septentrionalis, Ecdeiocolea monostachya and Desmocladius asper low open shrubland/rushland with Eucalyptus erythrocorys and Banksia prionotes isolated clumps of low trees</p> <p>NVIS: U+ ^Eucalyptus erythrocorys,Banksia prionotes\^tree\6\bc;M+ ^^Labichea cassioides,Banksia sessilis var. cygnorum,Jacksonia hakeoides\^shrub\3\i;G ^^Hibbertia hypericoides subsp. septentrionalis,Ecdeiocolea monostachya,Desmocladius asper\^shrub,rush\1\i</p> <p>Survey at Detailed level would likely result in refinement of vegetation into several additional units, including patches of Banksia prionotes woodland and differentiation of types on deeper sands vs. types on more defined limestone pavement.</p>	D20Q03 D20Q04 D20R10	 	Acacia scirpifolia Acanthocarpus canaliculatus Austrostipa flavescens Austrostipa macalpinei Banksia prionotes Conostylis candicans subsp. calcicola Grevillea leucopteris Hyalosperma cotula Lepidobolus chaetocephalus Melaleuca carrii Neurachne alopecuroidea Thysanotus manglesianus Trachymene pilosa *Ursinia anthemoides *Vulpia myuros Waitzia suaveolens var. suaveolens
Limestone uplands (near coastal)	McArGaTS	<p>Melaleuca cardiophylla, Acacia rostelifera and Grevillea argyrophylla tall shrubland over Beyeria cinerea subsp. cinerea, Acanthocarpus canaliculatus and Diplolaena leemaniana low open shrubland with Eucalyptus oraria and Eucalyptus erythrocorys isolated clumps of low trees/mallee shrubs</p> <p>NVIS: U+ ^Eucalyptus oraria,Eucalyptus erythrocorys\^tree,mallee shrub\6\bc;M+ ^^Melaleuca cardiophylla,Acacia rostelifera,Grevillea argyrophylla\^shrub\4\c;G ^^Beyeria cinerea subsp. cinerea,Acanthocarpus canaliculatus,Diplolaena leemaniana\^shrub\2\i</p> <p>Survey at Detailed level would result in further breakdown of this vegetation type, including into portions dominated by mallees, likely including additional species.</p>	D20Q01 D20Q02 D20R13 D20R14 D20R15		Alyogyne hakeifolia Anthocercis intricata Austrostipa flavescens *Avellinia michelii *Avena barbata *Brassica tournefortii Calandrinia sp. Shark Bay (A.Markey 1405) Commersonia borealis Conostylis prolifera Desmocladius asper Dioscorea hastifolia *Ehrharta longiflora *Erodium botrys Guichenotia ledifolia Hibbertia subvaginata *Hypochaeris glabra Labichea cassioides *Lysimachia arvensis Melaleuca huegelii Melaleuca trichophylla Olearia axillaris *Reichardia tingitana Scholtzia umbellifera Trachymene pilosa *Trifolium campestre *Vulpia myuros Waitzia suaveolens var. suaveolens

Landform	Mapping unit	Vegetation type	Floristic quadrats/ relevés	Representative photograph	Other characteristic species
Lakes and floodplain	MsCoMrMOW	<p>Melaleuca strobophylla, Casuarina obesa and Melaleuca raphiophylla mid open woodland over *Vulpia myuros, *Plantago coronopus and *Hordeum leporinum low dense grassland/forbland</p> <p>NVIS: U+ ^Melaleuca strobophylla,^Casuarina obesa,Melaleuca raphiophylla\^tree\7\r;G ^^Vulpia myuros,Plantago coronopus,Hordeum leporinum\^other grass,forb\1\d</p> <p>This vegetation type occurs in the historical floodplain (low-lying) portion of the survey area, towards the northeast, and includes ephemeral lakes and modified structures (dams). It is unlikely that the area now floods, except perhaps during cyclonic events, due to long-term changes to the climate, with surface water flow changes perhaps exacerbated by landscape modifications for roads and agriculture.</p>	D20R05 (lower photo Arramall Lake)	 	<p>Eucalyptus camaldulensis subsp. obtusa</p> <p>*Hordeum leporinum</p> <p>*Lolium multiflorum</p> <p>*Mesembryanthem umnodiflorum</p> <p>*Petrorhagia dubia</p> <p>Rhodanthe oppositifolia subsp. oppositifolia</p> <p>*Trifolium arvense</p>
		Previous Disturbed Area			192.70 ha
		Existing Cleared Roads			20.64 ha

2.2 Significant Flora

No vegetation recorded from the field survey area was assessed as being representative of any currently described threatened ecological community or priority ecological community.

No Commonwealth EPBC Act or Western Australian BC Act-listed Threatened Flora were recorded during the field survey.

Three Priority-listed flora from confirmed taxonomic identifications were recorded during the field survey:

- *Anthocercis intricata* (P3)
- *Beyeria cinerea subsp. cinerea* (P3)
- *Eucalyptus zopherophloia* (P4).

A summary of the Threatened flora and priority flora is provided in Table 3 below.

The likelihood of conservation significant flora occurring in the survey area was revised following the field survey. The following five taxa were identified as having a High likelihood of occurring at desktop stage, and retain this likelihood following field survey despite not being identified on site during survey:




- *Acacia vittata* (P2)
- *Scholtzia calcicola* (P2)
- *Haloragis foliosa* (P3)
- *Thryptomene sp. Lancelin* (M.E. Trudgen 14000) (P3)
- *Stawellia dimorphantha* (P4)

According to the criteria outlined in the Flora and Vegetation Technical Guidance (EPA 2016), *Pelargonium littorale* may be considered as significant as a minor range infill, with the closest records approximately 90 km north and south of the survey area. However, this species has a wide distribution over most of near coastal parts of southern Australia (ALA 2021) thus its significance as a range infill is minor.

Melaleuca strobophylla is a minor range extension of approximately 30 km northwards (thus new range edge), and a new record for the local government area. However, taking this species' distribution over much of the southern parts of Western Australia, this range extension is of only minor significance.

No flora of taxonomic interest was recorded during the field survey.

Table 3: Priority Flora recorded during the field survey

Anthocercis intricata (P3)	
<p>Description:</p> <p>Dense spinescent shrub to 3 m high, growing in sand or loam over limestone (WAH 2021).</p> <p>Within the survey area this species was observed as an intricate, spinescent shrub although open and significantly smaller than the recorded size.</p> 	<p>Habitat: in vegetation type McArGaTS; Melaleuca cardiophylla, Acacia rostellifera and Grevillea argyrophylla tallshrubland, on near-coastal limestone outcropping.</p> <p>Location: Northwestern (more coastal) portion of the survey area.</p> <p>Survey results: 3 records (<10 plants) in survey area, although the species is anticipated to occur widely within the vegetation type.</p> <p>Populations: 1 population, but likely sparsely distributed within the vegetation type.</p> <p>Known records and distribution: According to NatureMap (DBCA 2007-2021) there are 37 records of this species from the Geraldton Sandplains, Yalgoo and (one record) Carnarvon bioregions, with an overall distribution of approximately 430 km (north-south), confined to near-coastal areas.</p> <p>The survey area is located at the extreme southern range edge of the species' distribution.</p>
Beyeria cinerea subsp. cinerea (P3)	
<p>Description:</p> <p>Prostrate, spreading or erect shrub to 50 cm high growing on coastal dunes and limestone (Barrett & Tay 2016).</p> <p>Within the survey area this species was observed as a low shrub that was a common, at times dominant, ground stratum species.</p>  <p>Photo from Ecoscape (2011)</p>	<p>Habitat: in vegetation type McArGaTS; Melaleuca cardiophylla, Acacia rostellifera and Grevillea argyrophylla tallshrubland, on near-coastal limestone outcropping.</p> <p>Location: Northwestern (more coastal) portion of the survey area.</p> <p>Survey results: 1 record (individual plants not counted) in survey area where it was a dominant ground stratum species; it is anticipated to occur through much of this vegetation type.</p> <p>Populations: 1 population, but likely distributed through much of the vegetation type.</p> <p>Known records and distribution: According to NatureMap (DBCA 2007-2021) there are 63 records of this species from the Swan Coastal Plain, Geraldton Sandplains and (one record) Yalgoo bioregions, with an overall distribution of approximately 700 km (north-south), confined to coastal and near-coastal areas.</p> <p>The survey area is at approximately the mid point of this species' distribution.</p>
Eucalyptus zopherophloia (P4)	
<p>Description:</p> <p>Spreading mallee to 6 m high with rough, fibrous bark (WAH 2021).</p> <p>Within the survey area this species was as described, forming occasional clumps or small stands.</p> 	<p>Habitat: in vegetation type McArGaTS; Melaleuca cardiophylla, Acacia rostellifera and Grevillea argyrophylla tallshrubland, on near-coastal limestone outcropping, and vegetation type ArLOF; Acacia rostellifera low open forest, in disturbed upland areas.</p> <p>Location: Northern and northwestern portions of the survey area. Survey results: 70+ individuals recorded in survey area.</p> <p>Populations: 2 populations, although additional plants have been recorded (DBCA database search results) between records from this survey, thus this species is likely to constitute a single population within the survey area. Known records and distribution: According to NatureMap (DBCA 2007-2021) there are 76 records of this species largely from the Geraldton Sandplains bioregion, and also (one record each) Swan Coastal Plain and Carnarvon bioregions. Its overall distribution is approximately 530 km (north-south) and inland up to 65 km.</p>

2.3 Introduced Flora

Thirty-nine introduced flora species (weeds) were recorded during the field survey, representing 20.42% of the overall flora inventory. All are agricultural weeds or commonly occurring in the region.

- *Brassica tournefortii*, *Ehrharta longiflora* and *Vulpia myuros* were all recorded commonly, including from within quadrats.
- *Echium plantagineum* (Paterson's Curse) is a Declared Pest plant in the Shire of Irwin. However, it is in the Exempt category and thus has no management requirements as a result of its presence. It was recorded from one previously grazed relevé and is a sparse occurrence in the previously grazed parts of the survey area.
- *Lycium ferocissimum* (African Boxthorn) is WoNS species that was recorded from one relevé on karst limestone east of Arramall Lake. Although only observed in the one location it is likely to occur sparsely along the limestone ridge. There are no management requirements in relation to its listing as a WoNS species.

2.4 Vegetation Condition

Approximately 10% of the survey area (196.65 ha) has been cleared for farming and does not have native vegetation.

Over one quarter of the survey area (540.93 ha; 28.03%) has vegetation in Degraded-Completely Degraded condition, largely adjacent to the cleared areas. Livestock grazing that has led to weed invasion and lack of diversity in ground and mid strata species is the main threatening process, although some clearing that has now naturally regenerated is possible in some Acacia-dominated vegetation types.

Livestock grazing has now ceased, however, feral goats and rabbits (and potentially feral cattle) are present on the site and are likely to continue the grazing pressure that reduces the prospect of natural regeneration in some vegetation types (e.g. in vegetation type **MsCoMrMOW** (*Melaleuca strobophylla*, *Casuarina obesa* and *Melaleuca raphiophylla* mid open woodland) associated with the ephemeral lakes and floodplain) and is likely to be insufficient to keep the weed cover low to permit natural regeneration.

The remainder of the survey area, largely in the west, south and southeast, is in Good to Excellent condition (1,192.10 ha; 61.78% of the survey area). The better (Excellent) condition vegetation was largely in vegetation type **LcBsJhMOS** (*Labichea cassioides*, *Banksia sessilis* var. *cygnorum* and *Jacksonia hakeoides* mid open shrubland) that over most of its extent has been fenced from grazing by farm livestock.

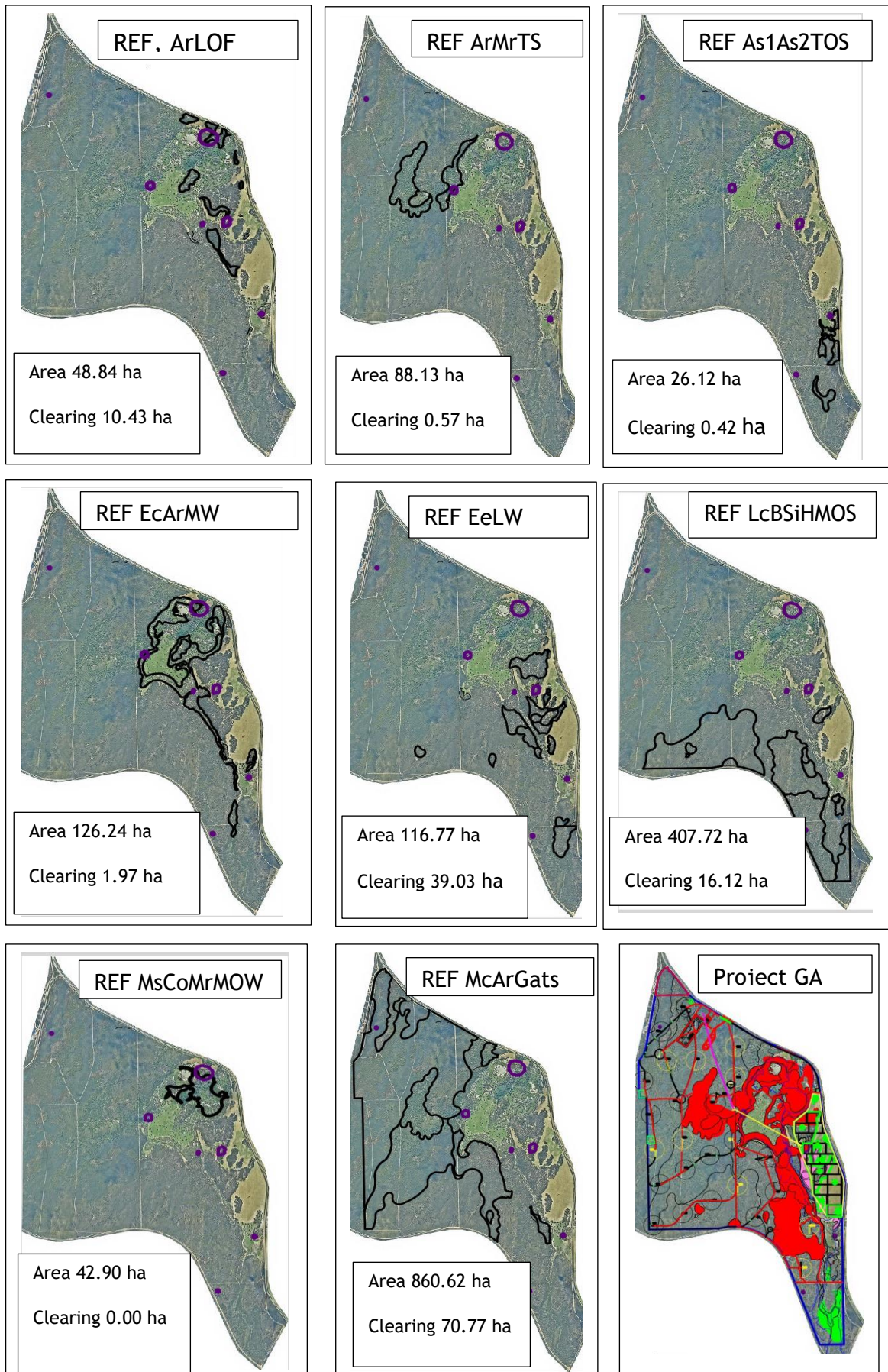
3. Rehabilitation Zones

Figure 1 indicates the areas for rehabilitation at the AHP1 post Construction. These locations and the proposed rehabilitation are listed in Table 4.

Table 4: AHP1 Rehabilitation Domains following Construction

Zone	Description of Development	Proposed Rehabilitation	Area [ha]
McArGaTS	Turbines Located in McArGaTS for crane assembly	Cultivate/rip soil to relieve any induced compaction, return topsoil and cleared vegetation and rehabilitate the entire area to native vegetation of the surrounding McArGaTS	5.8ha
Marl Pits LcBsJhMOS	Marl Pits in LcBsJhMOS. Reclaimed road material process excavates material using 20 tonne excavator on completion of material removal top soil re spread over area.	Cultivate/rip soil to relieve any induced compaction, return topsoil and cleared vegetation and rehabilitate the entire area to native vegetation of the surrounding LcBsJhMOS	4.19 ha
EeLW	Turbines Located in f EeLW or crane assembly	Cultivate/rip soil to relieve any induced compaction, return topsoil and cleared vegetation and rehabilitate the entire area to native vegetation of the surrounding EeLW	1.0 ha
ArMrTS	Turbines Located in ArMrTS for crane assembly	Cultivate/rip soil to relieve any induced compaction, return topsoil and cleared vegetation and rehabilitate the entire area to native vegetation of the surrounding ArMrTS	1.0 ha
EcArMW	Turbines Located in for crane EcArMW assembly	Cultivate/rip soil to relieve any induced compaction, return topsoil and cleared vegetation and rehabilitate the entire area to native vegetation of the surrounding EcArMW	2.0 ha
TOTAL			14.32 ha

Figure 1: Flora and Fauna Habitat



4. Soil and Water Protection

4.1 Soil Validation Sampling

Baseline soil samples will be taken during site preparation prior to commencement of construction from selected areas around the site, including but not limited to:

- Refuelling areas
- Chemical and hydrocarbon storage areas
- Central Processing Area

The analytical suite will depend on the potential contaminating material in the area of sampling but tests could include physical parameters, petroleum hydrocarbons and dissolved metals (eg. pH, salinity, total recoverable hydrocarbons, BTEX and heavy metals).

Baseline locations for rehabilitation will be resampled once the activities on a location have ceased and during rehabilitation of the site to characterise and validate the soil condition post decommissioning to ensure that activities have not impacted the native soils. Any other areas of concern will also be sampled.

Contaminated soils will be removed from site prior to the completion of rehabilitation activities and further validation will be required until the site is clean.

4.2 Surface Water Validation Sampling

Monthly water samples will be taken from Lake Arramall prior to commencement of construction (4 occasions) or at the closest time when there is water in the lake. Samples will be analysed for the analytes outlined in Table 5 initially. Water samples will then be taken annually until the decommissioning of the CPA and associated chemical storage, handling and pipework for analytes Items 1, 2 and 3 in Table 5. The sampling will be conducted by a suitably qualified environmental technician with samples analysed by a NATA accredited laboratory and results provided to Department of Water and Environmental Regulation (DWER) as per Section 13.3.

Table 5: Water Monitoring Parameters

#	Parameter	Analyte
1	Physical parameters	pH value, Dissolved Oxygen, Electrical Conductivity, Total Dissolved Solids, Total Hardness, Total Alkalinity (field measured)
2.	Petroleum Hydrocarbons	benzene, toluene, ethylbenzene, speciated xylenes and naphthalene (BTEXN), C6-C40 total recoverable hydrocarbons (TRH), ethane and methane
3.	Dissolved metals	aluminium, arsenic, barium, beryllium, boron, cadmium, chromium, hexavalent chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, titanium, uranium, vanadium and zinc.
4.	Nutrients	total nitrogen, total kjeldahl nitrogen (TKN), ammonia, nitrate, nitrite, total phosphorus and filterable reactive phosphorus
5.	Major Cations	calcium, magnesium, potassium and sodium
6.	Major Anions	chloride, sulphate, carbonate and bicarbonate

5. Risk Assessment

A risk assessment of attributes relevant to closure was undertaken using the process described in “a framework for developing mine-site completion criteria in Western Australia” (Young *et al.* 2019). Appendix A presents the risk rating matrix utilised and includes descriptions of the potential ‘likelihood of an event occurring’ and the potential ‘Consequence’ where the event occurs relevant to the overall ‘Risk rating’.

Table 6 presents the risk assessment for rehabilitation of the AHP1.

6. Rehabilitation Works

The rehabilitation works to be undertaken for the AHP1 zones (Section 3) presented in Figure 1 are described below. This adaptive management methodology is to be implemented to achieve the rehabilitation objective (Section 1.2) of this Rehabilitation Plan.

6.1 Hygiene

Hygiene requirements for rehabilitation activities will include:

- Earthmoving equipment inspection and clean down prior to mobilisation to site
- Establishment of a hygiene station (including lined pad, brushes/brooms and weatherproof container for inspection register) located as per the AHP1 Hygiene Management Plan
- Hygiene Procedure in place and Hygiene Inspection Log available at the hygiene station
- Vehicles and equipment to be used only within approved project footprint (areas specified in the Construction Environmental Management Plan)
- All Crew have undertaken the induction

6.2 Weed Control

To minimise the introduction of weeds into the rehabilitation vegetation, the topsoil and mulch stockpiles will be visually inspected for weeds and control implemented as required. Weed control will involve both ‘hand pulling’ and spot/target application of a general nonselective herbicide or in the case of grass weeds the application of a grass selective herbicide (Fusilade®).

To minimise the establishment of weeds in the rehabilitation, visual inspections will be made over the rehabilitation for weeds and subsequent controls implemented by involve both ‘hand pulling’ and spot/target application of a general nonselective herbicide.

6.3 Earthworks and Site Preparation

Compacted imported material will be removed from laydown areas utilising a front-end-loader and reused on site.

The areas to be rehabilitated will be ripped to a depth of approximately 50 cm to relieve induced compaction. NOTE some areas of the site contain solid caprock base preventing ripping of material therefore re instatement will require cleaning of temp material and replacing top 10 cm with removed or local topsoil

6.4 Topsoil return

The existing topsoil stockpiles will be spread evenly over the area to be rehabilitated. Topsoil will be spread back into areas with the same Vegetation Types to maximise the similarity with adjacent vegetation. The final surface will be lightly scarified to 20cm depth on contour to provide a friable seedbed and mitigate surface erosion.

6.5 Vegetation residues

The stockpiled vegetation will be spread over the surface of the scarified topsoil. The vegetation will be spread back into areas with the same Vegetation Types to maximise the similarity with adjacent vegetation.

6.6 Fertilising

The area undergoing rehabilitation will be fertilised with a complete fertiliser in slow-release pellet form to manufacturer specifications immediately following seeding.

Table 6: Results of risk assessment for the AHP1 Rehabilitation

Aspect	Issue	Likelihood	Consequence	Risk Rating	Rehabilitation practices
Soil & Groundwater Protection	Contamination	1	3	Low [L3]	Remedial Action where spill occurs
Disturbance	Unauthorised 3rd party access	2	2	Low [L4]	Restrict access with signage and fencing
Stability	Erosion	3	2	Low [L6]	Deep ripping, to alleviate compaction and facilitate infiltration (where possible). Application of stockpiled vegetation to soil surface.
Vegetation	Poor establishment	3	3	Moderate [M9]	Return of stockpiled topsoil. Application of stockpiled vegetation with retained seed to the soil surface. Monitoring with rectification work where required. Rectification works and supplementary seeding where required.
	Poor growth – foliage cover	3	2	Low [L6]	Deep ripping, to alleviate compaction. Application of slow-release fertiliser.
Weeds	Weeds - spread or introduction	5	1	Moderate [M5]	Construction hygiene procedures. Monitoring with weed control where required.
Dieback	Disease spread or introduction	1	2	Very Low [VL2]	Hygiene procedures to prevent introduction to site.

7. Completion Criteria

Table 7 presents the completion criteria for the AHP1 rehabilitation. The objective for rehabilitation is to achieve the completion criteria within 3 years following rehabilitation works.

Table 7: Completion Criteria

Aspect	Objective	Performance Standard	Rehabilitation Action	Measurement Criteria
Validation Sampling	To ensure that no contaminated material remains in the project area	Validation sampling is undertaken in accordance with Section 4.1 to confirm there is no contamination on site at: <ul style="list-style-type: none"> Refuelling areas Chemical and hydrocarbon storage areas Locations of spills during the activity And that sampling continues until all contaminated material has been removed.	Conduct Validation Sampling prior to decommissioning each location.	Validation Sample results confirm that all contaminated soil has been removed from site
			Remediate identified contamination in accordance with the AHP1 Construction Environmental Management Plan	
Decommissioning	To ensure that all visual disturbances are removed by immediate remedial action to the greatest extent practicable	There should be no permanent markers infrastructure or litter left on the rehabilitated area at any time following rehabilitation	Personnel remove all IGE items from the rehabilitation area prior to and during rehabilitation.	Monthly workplace inspection record form confirms there are no permanent markers, infrastructure or litter left on site
Landform	To reinstate the land topography to integrate with the surrounding landscape	The borrow material imported to site will be reused elsewhere on site.	Earthworks undertaken during rehabilitation take borrow material to alternate location	Post rehabilitation report documents location borrow material has been taken to
		Natural contours will be re-instated to pre-disturbance conditions upon rehabilitation	Earthworks undertaken during rehabilitation re-instate pre-disturbance contours	Post rehabilitation report documents natural contours have been re-instated to pre-disturbance conditions
		The area to be rehabilitated will be ripped to a depth of approximately 50 cm to relieve compaction. The existing topsoil stockpiles will then be spread evenly over the area to be rehabilitated. The final surface will be lightly scarified to 20cm depth on contour to provide a friable seedbed and the stockpiled vegetation spread over the surface.	Preparation to be undertaken during rehabilitation to provide conditions for natural colonisation of vegetation.	End of rehabilitation report contains photos of the prepared surface.
		There will be no active erosion rills greater than 10 m x 0.15 m at three years following rehabilitation Erosion patterns should be decreasing over time	Mitigate potential for erosion through: <ul style="list-style-type: none"> Deep ripping to improve infiltration and Spreading of mulch over the topsoil surface. 	Records of visual inspection and physical measurement of any points of erosion
				Annual Monitoring Report (as per section 13.3) documents any observations of active erosion rills Action to remediate active erosion rills recorded in the operating system
Vegetation	To re-establish pre-existing or comparable vegetation types consistent with adjacent undisturbed remnant vegetation	There should be no bare patches larger than 10 m ² after 3 years	Potential for plant establishment enhanced through: <ul style="list-style-type: none"> Spreading of stockpiled topsoil over the soil surface and Spreading of mulch over the spread topsoil surface. 	Annual Monitoring Report (as per section 13.3) documents any observations of bare patches Action to remediate bare patches recorded in the action tracking system
		The foliage cover of weeds on rehabilitated areas should be not greater than surrounding areas after 3 years	Mitigate potential for weeds in the rehabilitation through: <ul style="list-style-type: none"> Inspection for and control of weeds in topsoil and vegetation stockpiles and Inspection and control of weeds during establishment phase of vegetation. 	Annual Monitoring Report (as per section 13.3) reports on assessment of covers in monitoring quadrats
				Rehabilitation closeout report after 3 years

Aspect	Objective	Performance Standard	Rehabilitation Action	Measurement Criteria
		<p>Total native vegetation percentage cover of perennials should reach at least 50% of the control after 3 years for VTs.</p> <p>Native vegetation cover will show a pattern of increasing over time.</p>	<p>Enhance potential for plant growth through:</p> <ul style="list-style-type: none"> Spreading of stockpiled topsoil over the soil surface Spreading of mulch over the spread topsoil surface and Application of slow-release complete fertiliser. 	<p>Annual Monitoring Report (as per section 13.3) reports on quadrat assessment</p>
		<p>Keystone species</p> <p>a) The species richness of keystone species per monitoring plot / transect is at least 50% of the control transects within three years.</p> <p>b) At least one of the keystone species should be represented (as % Cover) in >90% of monitoring quadrats within each vegetation type within three years</p> <p>NOTE: the list of keystone species for each vegetation type listed below may be revised following survey of control transects in adjacent undisturbed vegetation.</p>		<p>Rehabilitation closeout report after 3 years</p>
		<p>ArMrTS</p> <ul style="list-style-type: none"> <i>Acacia rostellifera</i> <i>Melaleuca raphiophylla</i> 	<p>Enhance potential for species introduction through:</p> <ul style="list-style-type: none"> Return of stockpiled topsoil from the same VT Spread of stockpiled mulch from the same VT and Application of seed collected from the same VT (where rehabilitation deferred for more than 2 years) 	<ul style="list-style-type: none"> Annual Monitoring Report (as per section 13.3) reports on quadrat assessment Rehabilitation closeout report after 3 years
		<p>LcBsJhMOS</p> <ul style="list-style-type: none"> <i>Labichea cassioides</i> <i>Banksia sessilis</i> var. <i>cygnorum</i> <i>Jacksonia hakeoides</i> <i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i> <i>Ecdeiocolea monostachya</i> <i>Desmocladius asper</i> <i>Eucalyptus</i> <i>Erythrocorys</i> 		
		<p>McArGaTS</p> <ul style="list-style-type: none"> <i>Melaleuca cardiophylla</i> <i>Acacia rostellifera</i> <i>Grevillea argyrophylla</i> <i>Beyeria cinerea</i> subsp. <i>cinerea</i> <i>Acanthocarpus canaliculatus</i> <i>Diplolaena leemaniana</i> <i>Eucalyptus oraria</i> <i>Eucalyptus erythrocorys</i> 		
Disease	To prevent the introduction and spread of dieback disease (<i>Phytophthora multivora</i>)	The occurrence of dieback disease within the project is no greater than prior to the project within 3 years of initiating rehabilitation.	Prevent introduction of disease to site through Hygiene Procedures, Hygiene Inspections and Site Induction	Annual Monitoring Report (as per section 13.3) reports on visual assessment
				Rehabilitation closeout report after 3 years

8. Thresholds and Triggers

Table 8 presents the threshold criteria that provide a limit beyond which the rehabilitation outcomes are deemed not to have been achieved. It provides the trigger criteria that will provide an early warning that the rehabilitation outcomes are not likely to be met, how the criteria will be monitored and contingency measures that will be implemented if threshold or trigger criteria are met.

Table 8: Threshold and trigger criteria for rehabilitation outcomes

#	Threshold Criteria	Trigger Criteria	Monitoring	Contingency Measures
1.	No contamination of soil, groundwater or surface water	Surveillance monitoring shows an analyte above baseline levels	Soil and surface water sampling as per Section 4 Site inspections identifying spill risks and contaminated soil (and its removal) are undertaken Compliance audits confirm there is no evidence of soil contamination on site	Implement spill response measures Investigation into potential sources of leak Continue remediation and sampling program until confirmation contamination has been removed
2.	No permanent markers, infrastructure or litter are left at rehabilitating sites on completion of rehabilitation	Permanent markers, infrastructure or litter is left at rehabilitation site at any time	Monthly inspections of rehabilitating sites confirm no foreign materials	Any foreign materials are removed from the rehabilitating site
3.	Natural contours are re-instated to pre-disturbance conditions upon rehabilitation as per pre-project survey	Contours do not appear to be pre-disturbance condition	Land survey confirms earthmoving equipment has achieved natural contours to pre-disturbance conditions	Earthworks will be undertaken again before proceeding with ripping and spreading of topsoil and vegetation
4.	No bare patches larger than 10 m ² after 3 years	Bare patches are larger than 10 m ² after 12 months	Annual rehabilitation monitoring confirms no bare patches larger than 10 m ² after 12 months	Re-rehabilitation options investigated with the potential for propagule introduction
5.	The foliage cover of environmental weeds on rehabilitated areas should not be greater than surrounding areas after 3 years	Weed control program is not managing weeds to foliage cover less than 80% of surrounding areas	Annual rehabilitation monitoring confirms environmental weeds are not greater than on surrounding areas	Weed control program in particular 2 weeks after each rainfall event
6.	Total native vegetation percentage cover of perennials should reach at least 50% of the control after 3 years for VTs	Total native vegetation percentage cover of perennials is less than 40%	Annual rehabilitation monitoring confirms total native vegetation percentage cover of perennials is at least 50% of the control	Re-rehabilitation options investigated
7.	Native vegetation cover shows a pattern of increasing over time	Native vegetation cover is not increasing over time	Annual rehabilitation monitoring confirms native vegetation cover is increasing over time	Re-rehabilitation options investigated
8.	The species richness of keystone species per monitoring plot is at least 50% of the control monitoring plot within 3 years	Species richness of keystone species is less than 40% of the control monitoring plots	Annual rehabilitation monitoring confirms species richness of keystone species is at least 50% of the control monitoring plot	Re-rehabilitation options investigated with the potential for propagule introduction
9.	At least one of the keystone species is represented (as % cover) in >90% of monitoring quadrats within each VT within 3 years	There are no keystone species represented (as % cover) in >25% of monitoring quadrats within each VT	Annual rehabilitation monitoring confirms at least one of the keystone species is represented (as % cover) in >90% of monitoring quadrats within each VT	Re-rehabilitation options investigated with the potential for propagule introduction
10.	The occurrence of dieback within the project is no greater than prior to the project within 3 years of initiating rehabilitation	Suspect <i>Banksia sessilis</i> deaths	Monthly inspections of project area vegetation confirm no suspect <i>Banksia sessilis</i> deaths Annual rehabilitation monitoring checks for visual signs of dieback Triennial dieback interpretation of vulnerable areas in project area	Hygiene measures implemented to protect susceptible areas

9. Rehabilitation Schedule

Table 9 indicates the proposed schedule of activities for AHP1 rehabilitation.

Table 9: AHP1 Rehabilitation Schedule

Activity	Indicative Timing
Finalise Rehabilitation Plan	On Issue of Ministerial Statement
Rehabilitation	Progressive Demobilisation of Construction Equipment
Remove borrow material	(Construction Rehabilitation Commencement Date (CRCD))
Deep ripping and surface cultivation	(CRCD)
Complete, topsoil return and vegetation material spreading	(CRCD)
Initial establishment monitoring for erosion, weeds and plant establishment	(CRCD + 3 months)
Conduct weed control if required	(CRCD + 3 months and 6 months)
Establish rehabilitation performance monitoring quadrats and assess	(Spring after CRCD)
Year 2 Post Rehabilitation Activity – Monitoring Program	(Year following Spring after CRCD)
Year 3 Post Rehabilitation Activity – Monitoring Program	(Two years following Spring after CRCD)
Year 4 Post Rehabilitation Activity	Anticipate completion criteria achieved in Year 3 Contingency for rectification and further monitoring

10. Responsibility and Accountability

10.1 Responsibilities

The IGE Project Manager has overall responsibility for the safe and environmentally acceptable management of the operation. The Project Manager must ensure that the commitments and requirements of this Rehabilitation Plan are implemented. All personnel, contractors and visitors must adhere to the requirements of this Rehabilitation Plan.

10.2 Rehabilitation Supervision

Reporting to the Project Manager, a suitably qualified environmental professional will supervise rehabilitation works.

10.3 Training

Training on relevant sections of this Rehabilitation Plan will be incorporated into the AHP1 Induction. Upon completion, trained personnel will be signed off and recorded in the training log along with the date and the specific induction for which training was conducted. All personnel and contractors are required to undertake the induction.

11. Monitoring

11.1 Inspections

Routine site inspections are undertaken as per Table 10.

Table 10: Routine Site Inspections

#	Stage	Frequency	Inspection Requirement
10.1.1	Rehabilitation Works	Daily	Ground Condition Checks as part of Daily Vehicle / Operational Checks
10.1.2	Post Rehabilitation Activity	On Activity	Rehabilitation Plan Check
10.1.3	Site Inspections (including rehabilitation inspections)	Monthly	Visual Site Inspection documented on the workplace inspection checklist

11.2 Rehabilitation Monitoring

A program of rehabilitation monitoring will be conducted by a suitably qualified environmental professional initially the first Spring following rehabilitation and then on an annual basis. The locations of monitoring sites are the two Marl Pits and the Wind Turbine assembly areas..

- One permanent monitoring plot / transect comprising 10 2m x 2m quadrats in Vegetation Type McArGaTS over the WP14 track turnaround rehabilitation
- Four permanent monitoring plots / transects comprising 10 2m x 2m quadrats in Vegetation Type McArGaTS over the WP6, WP12, WP16 and WP21 wind turbine rehabilitation
- One permanent monitoring plot / transect comprising 10 2m x 2m quadrats in Vegetation Type LcBsJhMOS over the WP4 wind turbine rehabilitation
- Three permanent monitoring plots / transects comprising 25 2m x 2m quadrats in Vegetation Type McArGaTS over the marl pits rehabilitation
- Six paired permanent monitoring plots / transects comprising 10 2m x 2m quadrats as controls for each VT in immediately adjacent track turn around / wind turbine vegetation
- Three paired permanent monitoring plots / transects comprising 25 2m x 2m quadrats as controls for Vegetation Type McArGaTS in immediately adjacent marl pits vegetation

Additional survey of rehabilitation areas outside of quantitative monitoring transects will occur and will focus on ensuring that the rehabilitation performance is consistent across the area (plant cover and species richness) and that any potential constraints such as weeds or bare areas receive appropriate remediation.

The requirements of the monitoring are presented in Table 11.

Table 11: Weed, Dieback and Rehabilitation Monitoring

Aspect	Monitoring
Initial establishment	<p>Establishment inspection Q2/Q3</p> <p>A visual inspection of rehabilitation areas will be undertaken to identify any areas of erosion, weeds and bare areas. Identification of areas with inadequate establishment of vegetation enables early intervention with rectification work to return the rehabilitation to a trajectory for meeting the completion criteria.</p>
Vegetation	<p>Annual monitoring in Spring (September/October):</p> <ul style="list-style-type: none"> • Assess vegetation within permanent monitoring transects (sampling 40m² (consisting of 10 2m x 2m quadrats) and 100m² (consisting of 25 2m x 2m quadrats)) for both the wind turbines / track turnaround and marl pits rehabilitation and adjacent native vegetation. The proposed indicative locations of the 18 monitoring plots comprise: <ul style="list-style-type: none"> ○ Eight transects in McArGaTS rehabilitation and eight transects (controls) in adjacent McArGaTS native vegetation. ○ One transect in LcBsJhMOS rehabilitation and one transect (control) in adjacent LcBsJhMOS native vegetation. ○ Record the following data in each quadrat: <ul style="list-style-type: none"> ▪ Total cover of each native plant species, and ▪ Total cover of weed species. ▪ Cover of Keystone species • Photograph of each monitoring plot • Walk through rehabilitation and along tracks will be undertaken to provide an assessment over the entire rehabilitated area. Areas with inadequate establishment of vegetation will be recorded with GPS locations for follow up rectification work to return the rehabilitation to a trajectory for meeting the completion criteria. The rehabilitation will be visually assessed for:

Aspect	Monitoring
	<ul style="list-style-type: none"> ○ bare areas ○ weeds ○ signs of dieback disease ○ additional taxa not recorded within plots and transects.
Erosion	Visual inspection over the site with GPS record of locations and physical measurement (regular monitoring) of any points of erosion

Should the monitoring results indicate the rehabilitation is not progressing adequately, an assessment will be made to determine rectification requirements.

Monitoring will continue until rehabilitation objectives have been met.

12.Maintenance and Rectification

The annual rehabilitation monitoring program will identify any maintenance or rectification work required (such as erosion control, weed control, reseeding etc). This information will be used to develop and implement the rectification work plan.

13.Reporting and Review

13.1 Non-Compliance Reporting

13.1.1 Incidents

Environmental incidents shall be reported and investigated as soon as practicable following identification, enabling effective actions to be implemented without delay. Environmental incidents are defined as events that cause or could potentially cause harm to the environment.

13.1.2 Threshold Criteria Exceedance

The exceedance of a threshold criteria (regardless of whether threshold contingency measures have been or are being implemented), and / or failure to comply with the requirements of the Rehabilitation Plan represents a non-compliance which is required to be reported in the annual Compliance Assessment Report to be submitted to the DWER.

13.2 End of Rehabilitation Internal Report

On completion of any rehabilitation activities, an End of Rehabilitation Report will be submitted by the Rehabilitation Supervisor to the Project Manager. This will be included in the Annual Environmental Report to be submitted to DWER.

13.3 Annual Environmental Report

The AER requires details of:

- Activities that have been undertaken
- Clearing or rehabilitation that has been undertaken
- Compliance for each threshold and trigger in the AHP1 Management Plans
- Monitoring results against completion criteria
- Results of audits undertaken with reference to the Rehabilitation Plan
- Incidents that have occurred

13.4 Rehabilitation Plan Review

The Rehabilitation Plan is to be finalised and approved prior to implementation.

14. References

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Appendix A Risk Ranking Matrix

		Consequence					
		Assessment Impact Score	Minor (1) FAI <\$10K	Medium (2) MTI \$10K - \$100K	Serious (3) RWI \$100K - \$500K	Major (4) LTI \$500K - \$2M	Critical (5) Fatality >\$2M
Likelihood	Assessment Impact Score	Risk Level	1	2	3	4	5
	Almost Certain (A) >1 per week	A	Moderate 11	High 16	Extreme 20	Extreme 23	Extreme 25
	Likely (B) 1/week - 1/month	B	Moderate 7	High 12	High 17	Extreme 21	Extreme 24
	Possible (C) 1/month - 1/year	C	Low 4	Moderate 8	High 13	High 18	Extreme 22
	Unlikely (D) 1/year - 1/10 years	D	Low 2	Low 5	Moderate 9	High 14	High 19
	Rare (E) <1/10 years	E	Low 1	Low 3	Low 6	Moderate 10	High 15

Risk level	Category	Description	Criteria	Control Level
Extreme	4	Unacceptable	Not acceptable at all. Treatment plans to be explored, implemented and managed by highest level of authority and	Managing Director
High	3	Urgent attention required	Risk only acceptable with excellent controls, managed by Senior Management / Executive and subject to monthly monitoring.	Senior Site Official
Moderate	2	Monitor	Risk acceptable with adequate controls, managed by specific procedures and subject to semi-annual monitoring.	Management Supervision
Low	1	Acceptable	Risk acceptable with adequate controls, managed by routine procedures and subject to annual monitoring.	Procedural control

Consequence					
Assessment Impact Score	Minor (1)	Medium (2)	Serious (3)	Major (4)	Critical (5)
Financial	<\$10K	\$10K - \$100K	\$100K - \$500K	\$500K - \$2M	>\$2M
Health and Safety	Injury requiring first aid treatment only.	Injury requiring treatment by medically qualified person. No lost time.	Life-threatening injury requiring hospital or medevac.	Serious permanent disabling injury.	Fatality.
Environment	Minor confined and can be easily remediated, minimal disturbance to receiving environment.	Remediation required on localised environmental impact. Short term impact only, minor disturbance of limited area, can be easily treated.	Unplanned release to the environment. Large area disturbed disruption to functions of receiving environment, medium-term impact. Effects could have had catastrophic outcome in different circumstances.	Long-term environmental impairment of ecosystem function. Impacts on environment of regional importance or significant conservation value. Public or regulatory intervention is possible.	Irreparable damage to the environment. Possible flora or fauna extinction. Impacts on environment of national or international importance. Regulatory intervention.
Heritage	Local complaint managed internally and easily resolved.	Minor medium-term damage to relationship, property structure or item.	Moderate medium-term impact to relationship, property structure or item.	Ongoing impact to relationship, property, structure or item.	Serious social impacts. Significant medium-term damage to relationship.
Community	Minor, adverse local public or media attention and complaints.	Heightened concern by local community.	Media attention.	Significant adverse reaction by community.	Serious public or media outcry. National attention by media.
Compliance	Breach of internal/external obligations. Internal management.	Breach of internal/external obligations with formal complaint.	Breach of internal/external obligations with penalties and rectification. Complaint from third party.	Breach of internal/external obligations, substantial fines/penalties and potential for prosecution, rectification programs.	Single loss of certification, licences, and prosecution, long-term remediation programs.