CAPE FLATTERY SILICA MINES PTY. LTD.

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CFSM Reference: CFSMPL_PRCP_Cover Letter L01

29 September 2023

Department of Environment and Science
PO Box 7230
Cairns QLD 4870

Email: Sara.Staunton@des.qld.gov.au, ESCairns@des.qld.gov.au, PRCPTeam@des.qld.gov.au.

Attention: Dr Sara Staunton, Minerals and North Queensland Compliance Environmental Services and Regulation Department of Environment and Science

Dear Sara

RE: Further information required to assess an application for a PRCP Schedule (Ref 101/0008748:C-EATPRCP-100265529)

I refer to the request from the administering authority of 19 September 2022 for further information to assess the application (for the proposed Progressive Rehabilitation and Closure Plan (PRC Plan)). Please find attached to this letter the information package provided in response to the request for further information.

1. Responses to the Department of Environment and Science request for information items are in **Table 1**.
2. A list of flora species of relevance to rehabilitation at Cape Flattery is in **Appendix A**.
3. A map of reference areas (by landform group) at Cape Flattery is in **Appendix B**.
4. An updated version of the Schedule (Version 8) is in **Appendix C**.
5. A copy of the Cape Flattery Silica Mine Inspection Test Procedure Form is in **Appendix D**.

If there are any remaining matters, please contact me (on (07) 4051 8960 or via email (gm@cfsm.com.au)) to allow the opportunity for our input to this very important process and ultimate licencing outcome.

Yours Sincerely,
Cape Flattery Silica Mines Pty Ltd

Dale Flor
General Manager

Encl: Progressive Rehabilitation and Closure Plan Information Request Response Package
Cc: Mistral Farrell, Humphrey Chigeza, Graeme Collins, Dale Flor, and Naoki Harada

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NRA Reference: PRCP_response_cover_L02

21 September 2023

Cape Flattery Silica Mines Pty Ltd
Cairns Corporate Tower Level 15
15 Lake Street
CAIRNS QLD 4870

Attention: Humphrey Chigeza, Quality Control and Environment Manager

Dear Humphrey

RE: Further information required to assess an application for a PRCP Schedule

The Department of Environment and Science (DES) issued an information request in response to the Cape Flattery Silica Mine Progressive Rehabilitation and Closure Plan (PRC Plan) submitted on 9 August 2022. The final version of the response package is enclosed.

If there are any questions, please contact me at lindsay@natres.com.au or on 40345 300.

Yours sincerely
NRA Environmental Consultants

Lindsay Popple
Senior Ecologist

Encl 1: Progressive Rehabilitation and Closure Plan Information Request Response Package (R02)
CC: Dale Flor, Graeme Collins, Mistral Farrell.

Environmental Approval & Compliance Solutions

Progressive Rehabilitation and Closure Plan Information Request Response Package

Cape Flattery Silica Mines Pty Ltd

Document Control Summary

NRA Environmental Consultants

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Project Manager:	Tim Anderson		
Title:	Progressive Rehabilitation and Closure Plan Information Request Response Package		
Client:	Cape Flattery Silica Mines Pty Ltd		
Client Contact:	Humphrey Chigeza, Quality Control and Environment Manager		
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Report Summary	
Key Words	CFSM, Cape Flattery, Progressive Rehabilitation and Closure Plan, PRC Plan, PRCP Schedule, information request, response package
Abstract	This report provides a response to the Queensland Department of Environment of Science on their information request (dated 19 September 2022) on the Progressive Rehabilitation and Closure Plan and Schedule for Cape Flattery Silica Mine.

Citation
This report should be cited as: NRA 2023, *Progressive Rehabilitation and Closure Plan Information Request Response Package*, R02 (Final), prepared by NRA Environmental Consultants for Cape Flattery Silica Mines Pty Ltd, 21 September 2023.

Quality Assurance					
Author	**Technical Review**	**Editor**	**Document Version**	**Approved for Issue by QA Manager**	
				Date	**Signature**
Tim Anderson MAgrSc, BAgrSc(Hons), CEnvP (#002), CPESC (#2723)	Lindsay Popple PhD, BSc(Hons), CEnvP (#803)	Nadine Hunt BA, GDipEd	R01	11/8/23	NHunt
	-	Nadine Hunt BA, GDipEd	R02	21/9/23	NHunt

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Limitations of this Report

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Table of Contents

Tables

Appendices

1. Introduction

Under the provisions of the *Environmental Protection Act* 1994 (EP Act), Cape Flattery Silica Mines Pty Ltd (CFSMPL) is required to submit a Progressive Rehabilitation and Closure Plan (PRC Plan) and associated schedule (PRCP Schedule) for mining activities at Cape Flattery Silica Mine (CFSM)[1].

The PRC Plan and PRCP Schedule are subject to an assessment process, which can be described as follows.

- The administering authority, currently the Queensland Department of Environment and Science (DES), assesses the PRC Plan.
  - The PRC Plan must include information required under the EP Act and the relevant guideline (*ie* ESR/2019/4964).
  - The PRC Plan is not subject to approval.
- At the conclusion of the assessment process, DES approves the PRCP Schedule.

NRA Environmental Consultants (NRA) has been commissioned by CFSMPL to provide support to the development and approval process.

[1] Mining activities at CFSM are conducted under an Environmental Authority (EA) held by CFSMPL: EPML00550113 (dated 9 February 2023).

2. Summary of Actions

Actions pertaining to the PRC Plan and PRCP Schedule undertaken to date are summarised as follows.

- On 29 October 2020, DES issued CFSMPL with a transition notice for a PRC Plan, with a requirement to submit the proposed PRC Plan to relevant administering authority on 1 June 2022.
- On 31 May 2022, NRA submitted the CFSM PRC Plan and PRCP Schedule to DES on behalf of CFSMPL.
- On 13 June 2022, DES issued CFSMPL with a notice to inform that the application (dated 31 May 2022) was not properly made, citing missing information.
- On 9 August 2022, NRA resubmitted the CFSM PRC Plan and PRCP Schedule to DES.
- On 6 September 2022, DES issued CFSMPL with a notice that the proposed PRC Plan was properly made on 9 August 2022, and that DES extended the information request period to 20 September 2022.
- On 19 September 2022, DES issued a request for further information to be provided by 23 March 2023.
- On 13 March 2023, in response to a request from NRA on behalf of CFSMPL, DES granted an extension on the information request response to 3 October 2023.

By 3 October 2023, according to the stipulations of the information request, CFSMPL must elect to take one of the following actions. Provide:

(a) all of the information requested; or

(b) part of the information requested together with a written notice asking the authority to proceed with the assessment of the application; or

(c) a written notice –

i. stating that you do not intend to supply any of the information requested; and

ii. asking the administering authority to proceed with the assessment of the application.

3. Summary of Response Package

NRA has compiled information to respond to DES. The information package is provided as follows.

- DES request for information items and responses are provided in **Table 1**.
- A list of flora species of relevance to rehabilitation at Cape Flattery is in **Appendix A**.
- A map of reference areas (by landform group) at Cape Flattery is in **Appendix B**.
- An updated version of the PRCP Schedule (Version 8) is in **Appendix C**.
- A copy of the CFSM Inspection Test Procedure Form is in **Appendix D**.

The PRCP Schedule has been updated to reflect:

1. changes made in response to the information request (refer to **Table 1**)
2. changes to the proposed area of disturbance made in the most recent EA amendment (dated 9 February 2023)
3. the availability of improved aerial imagery over CFSM, which has enabled refinement of existing disturbance footprints.

Table 1: DES information request items and responses

Item	Relevant section	Matter	Information request	Response
PRC Plan				
1	Section 1.5.2 Revegetation Plan	Section 1.5.2 of the plan provides information on the revegetation plan. This section does not describe the distinction between rehabilitation that was undertaken before 2001 (referred to as legacy areas), between 2001 - 2012 and the rehabilitation undertaken since 2012 and the difference in outcomes that are authorised. Section 1.1.2.3 of the plan indicates that numerous studies of flora and fauna have been undertaken, including the most recent NRA 2020a. It is noted that a list of species used in revegetation prior to 2012 is provided on PDF page 219. However, information about species used in rehabilitation after 2012 is not provided. It is noted that RM20 refers to Schedule F Table 2b for completion criteria. Footnote 16 of the table (on PDF page 192) states this information will be provided in annual returns. Section 3 of the PRCP Guideline requires that all information required by the legislation and guideline must be provided in the PRC Plan submission with no information to be provided at a later date.	Provide an updated Rehabilitation Planning Part that describes the difference in outcomes for the previous rehabilitation undertaken to support the proposed PRCP Schedule. Provide an updated Rehabilitation Planning Part that includes a description of the vegetation species that will be used to achieve each of the PMLUs and reference the list in the PRCP Schedule. Alternatively, provide the various species lists in the PRCP Schedule, where relevant to the milestone criteria.	The outcomes for previous rehabilitation are no different to the outcomes for contemporary rehabilitation. That is, the success criteria apply to past, present and future rehabilitation. A list of species relevant to the rehabilitation is provided in **Appendix A**.
2	Section 1.6 Risk Assessment	Section 1.6 and Appendix 7 of the plan provides information on the risk assessment register currently in place on site. However, the information does not identify risks to achieving each of the Rehabilitation Milestones by the required date in the schedule and the risks that may influence the ability for the land to achieve a stable condition (*eg* change of timing due to undesirable weather conditions, should this impact the proposed completion dates in the schedule). Section 1.6.1 indicates that existing rehabilitation methods alone may not result in a stable condition being achieved. The risk assessment must consider the potential failure scenarios and provide mitigation strategies to ensure the success of the milestone criteria. Many of the current controls refer to the Rehabilitation Plan, Rehabilitation Manual and Rehabilitation Monitoring Manual but it appears this information has not been incorporated into the PRC Plan.	Provide an updated Rehabilitation Planning Part that includes a risk assessment that meets the requirements of section 3.7 of the PRCP Guideline including identifying the factors that may impact the ability of the land to achieve a stable condition.	The risk assessment step is intrinsic to the development of the rehabilitation success criteria in the Environmental Authority (EA) (completed), which are reflected in the PRCP Schedule. The major driving factors are landform preparation, topsoil salvage, weeds, fire and cyclones, all of which are addressed. Other influential factors include misplaced priorities, *ie* landholders, lessees and external agencies have differing priorities, which influence rehabilitation outcomes.
3	Section 1.7 Monitoring and maintenance	Section 1.7 of the plan states that the CFSM Rehabilitation Monitoring Manual describes the methods and protocols for an annual rehabilitation monitoring program. The Rehabilitation Planning Part states that the Manual would provide information on the potential maintenance issues and remedial actions and provides a brief description of scheduled monitoring and reporting.	Provide the Annual Rehabilitation Monitoring Program/Manual. Alternatively, provide an updated Rehabilitation Planning Part that includes the content requirements of section 3.8 of the PRCP Guideline within the PRC Plan.	Monitoring requirements are detailed in the EA. The annual monitoring program is described in Section 1.7.3 of the PRC Plan. Provision of scheduling information for each milestone would result in a complexity and scale that would become intractable from both an operational and a regulatory (auditable) perspective.
4	Section 1.5 Rehabilitation management methodology	The Rehabilitation Planning Part indicates that some roads, access ways, conveyer lines and other infrastructure will not to be retained. However, the Rehabilitation Planning Part does not describe how the infrastructure will be decommissioned.	Provide an updated Rehabilitation Planning Part that describes the decommissioning method for unwanted infrastructures.	The decommissioning method involves removal of unwanted infrastructure. Unwanted infrastructure is that which is not listed in the *Retained Instructure Deed* (a confidential document, though relevant information is in the EA, which is reflected in the PRCP Schedule. Once infrastructure has been removed (apart from areas that may be contaminated) the land becomes available for rehabilitation. As noted on in **Section 1.5.2** of the PRC Plan: *Any infrastructure that is not retained (ie land has been nominated for Conservation Use) needs to be removed and the land included in rehabilitation.* *Land contamination assessments of areas with suspected contamination are to be undertaken by an appropriately qualified person and in accordance with the Queensland Environmental Protection Act 1994.*

Item	Relevant section	Matter	Information request	Response
				A contaminated land assessment will be completed on relevant infrastructure areas where required. This includes all areas where notifiable activities were undertaken ie abrasive blasting, landfill (decommissioned), metal treatment or coating, petroleum product or oil storage (Figure 18), to ensure unacceptable levels of contaminants are not present prior to undertaking rehabilitation. The assessment will include a preliminary site investigation to identify if any areas require further detailed site investigation. The investigation(s) will be prepared and certified by an appropriately qualified person. Where the preliminary site investigation identifies a requirement for further investigation, a targeted detailed site investigation will be undertaken to confirm and characterise areas of concern. If contamination is identified, the potential risks will be assessed and, where required, remediation will be undertaken and/or a site management plan developed.
5	Section 1.7.5 Monitoring methods	Section 1.7.5 of the plan refers to reference sites in undisturbed areas for comparison of milestone criteria for the areas to be rehabilitated to conservation use. No detail has been provided for the location of the reference sites.	Clearly identify where the reference/analogue sites are located and provide justification for their selection as being suitably representative sites for monitoring rehabilitation success against the PMLU of conservation use.	Reference sites are located in the un-mined landscape of the Cape Flattery Dunefield. The extent of the un-mined landscape is subject to change. When a former reference site becomes unavailable (due to mine planning changes and/or precluded access), an alternative reference site is established in the un-mined landscape. Available reference areas for each landform group are shown on the map provided in **Appendix B**.
PRCP Schedule				
6	Schedule generally	Some RAs appear to provide information that may not reflect the intended timing of activities. For example: • For RA1, the schedule indicates that previous RMs have been completed but it will take 30 years to achieve RM4. Justification for this timing is not provided in the PRC Plan and it is unclear how the proposed timing reflects the requirement for each milestone to be achieved as soon as practicable after the land becomes available as per (s126D(4) of the Environmental Protection Act 1994 and Step 7 of section 4.1 of the PRCP Guideline). The rehabilitation planning part does not provide justification for the proposed timing and order of rehabilitation activities and rehabilitation milestones.	Review and update the PRCP Schedule to reflect each milestone being achieved as soon as practicable after the land becomes available. Provide an updated Rehabilitation Planning Part that provides justification for the proposed timing and order of each Rehabilitation Milestone.	The PRCP Schedule reflects milestones being achieved as soon as practicable. The information is provided in PRC Plan Rehabilitation Planning **Section 1.5**, as follows. *The rehabilitation areas (RAs) nominated in the PRCP Schedule have been defined considering the relevant land outcomes, disturbance types and rehabilitation methods. The time periods (date area is available, milestone completed by) have been determined in consideration of:* *1. the requirement for progressive rehabilitation* *2. mine planning* *3. evidence of the period required to achieve successful rehabilitation for different disturbance types ie **30 years where landforms are altered, 20 years elsewhere*** *4. the logical aggregating of land parcels (for RA3).* Based on experience, the 30 year and 20 year timeframes reflect the duration required for rehabilitation establishment. Provision has been included in the EA and mirrored in this PRCP. An updated version of the PRCP Schedule is provided in **Appendix C**. This update reflects the extent of disturbance in the current EA (dated 9 February 2023).
7	Schedule – RA13 Section 1.5.2 Revegetation Plan (Water Management)	Section 1.5.2 of the PRC Plan includes information on water management within the revegetation plan section. It is understood that Arnie's Lake is listed 'to be retained for landowner use' as per Table H of the schedule. The Rehabilitation Planning Part indicates the area of disturbance associated with Arnie's Lake is 17.4 ha. This information conflicts with the schedule that identifies RA13 'Arnie's Dam' having an area of 10 ha.	Provide an updated Rehabilitation Planning Part that provides clarification regarding the area of Arnie's Lake and how this relates to the PRCP Schedule.	An apparent anomaly exists. The information presented in the PRC Plan references the work of ATC Williams (2019), which erroneously reports the catchment area of Arnie's Lake as 17.4 ha. However, it is noted that despite this error the volume reported in ACT Williams (2019) and the information that contributes to the water balance is correct. The actual area of Arnie's Lake is 10 ha, as reflected in the PRCP Schedule.
8	Rehabilitation Milestones	The proposed schedule includes milestone criteria that can be improved to meet the SMART principles. For example: • RM1 and RM3 refer to an Inspection Test Procedure. The Inspection Test Procedure should be specifically defined. • RM17 should specify parameters and values or the specific table in the EA. • In some rehabilitation activities such as RA5 (treatment plant), RM3 (revegetation) occurs before RM4 (removal of infrastructure).	Provide an updated PRCP Schedule that proposes milestone criteria that meet the SMART principles.	• The Inspection Test Procedure is provided in **Appendix D**. • A reference to water quality specifications in the EA has been added to RM17 in the PRCP Schedule (**Appendix C**). • In all RAs where RM3 (*ie* revegetation) applies, RM4 (*ie* removal of infrastructure) is scheduled to occur subsequently. This is necessary because maintenance infrastructure is required for rehabilitation. This infrastructure must remain until rehabilitation is completed.
9	Rehabilitation Areas	The schedule includes areas with different rehabilitation methodologies combined into one rehabilitation activity (RA). For example, mining areas and borrow pits (RA1 and RA3), quarries and fuel storage (RA6). However, the planning part does not identify whether rehabilitation strategies are to be differentiated between different mining areas (e.g. quarries may require different rehabilitation steps to meet the proposed criteria compared with the borrow pits or other active mining areas).	Provide an updated PRC Plan that identifies the difference between various mining areas and the proposed strategies of rehabilitation within each rehabilitation area.	The PRCP Schedule has been updated (**Appendix C**). To avoid exploring minute details and to emphasise the transferable criteria for rehabilitation success, the rehabilitation strategy is the same for all RAs. The recipe has been demonstrated to be successful.

4. References

ATCW 2019, *Cape Flattery Silica Mine – Water Balance Modelling*, *Revision D*, prepared by ATC Williams for Cape Flattery Silica Mines Pty Ltd, 28 October 2019.

NRA 2020, *Cape Flattery Silica Mine: 2019 Flora and Fauna Assessment,* R03, prepared by NRA Environmental Consultants for Cape Flattery Silica Mines Pty Ltd, 21 April 2020.

Appendix A:
Cape Flattery Flora

List of Native Terrestrial Flora Relevant to Rehabilitation at Cape Flattery

Family	Species name	EPBC Act status[1]	NC Act status[2]
Acanthaceae	*Avicennia marina* subsp. *australasica*		LC
Acanthaceae	*Avicennia marina* subsp. *eucalyptifolia*		LC
Acanthaceae	*Rostellularia adscendens* var. *hispida*		LC
Acanthaceae	*Rostellularia adscendens* var. *latifolia*		LC
Anacardiaceae	*Pleiogynium timorense*		LC
Apiaceae	*Platysace valida*		LC
Apocynaceae	*Alyxia spicata*		LC
Apocynaceae	*Cynanchum viminale*		LC
Apocynaceae	*Hoya australis* subsp. *australis*		LC
Apocynaceae	*Leichhardtia (syn. Marsdenia) viridiflora*		LC
Apocynaceae	*Parsonsia velutina*		LC
Araucariaceae	*Araucaria cunninghamii* var. *cunninghamii*		LC
Arecaceae	*Livistona muelleri*		SL
Asteraceae	*Cyanthillium cinereum*		LC
Asteraceae	*Sphaeromorphaea australis*		LC
Casuarinaceae	*Allocasuarina littoralis*		LC
Casuarinaceae	*Casuarina equisetifolia*		LC
Casuarinaceae	*Casuarina equisetifolia* subsp. *incana*		LC
Celastraceae	*Denhamia celastroides*		LC
Celastraceae	*Denhamia fasciculiflora*		LC
Chrysobalanaceae	*Parinari nonda*		LC
Cleomaceae	*Arivela viscosa*		LC
Clusiaceae	*Calophyllum inophyllum*		LC
Colchicaceae	*Schelhammera multiflora*		LC
Combretaceae	*Lumnitzera racemosa*		LC
Combretaceae	*Terminalia catappa*		LC
Combretaceae	*Terminalia muelleri*		LC
Combretaceae	*Terminalia sericocarpa*		LC
Commelinaceae	*Commelina lanceolata*		LC
Convolvulaceae	*Evolvulus alsinoides*		LC
Convolvulaceae	*Ipomoea pes-caprae* subsp. *brasiliensis*		LC
Cucurbitaceae	*Cucumis althaeoides*		LC
Cyperaceae	*Anthelepis clarksonii*		LC
Cyperaceae	*Arthrostylis aphylla*		LC
Cyperaceae	*Bulbostylis barbata*		LC
Cyperaceae	*Cyperus pedunculatus*		LC
Cyperaceae	*Fimbristylis cymosa*		LC
Cyperaceae	*Gahnia sieberiana*		LC
Cyperaceae	*Schoenus calostachyus*		LC
Cyperaceae	*Schoenus sparteus*		LC
Cyperaceae	*Scleria rugosa*		LC
Cyperaceae	*Trachystylis stradbrokensis*		LC
Dilleniaceae	*Dillenia alata*		LC
Dilleniaceae	*Hibbertia banksii*		LC
Dilleniaceae	*Hibbertia eciliata*		LC
Droseraceae	*Drosera lunata*		SL
Droseraceae	*Drosera petiolaris*		SL
Ebenaceae	*Diospyros compacta*		LC
Ebenaceae	*Diospyros geminata*		LC
Ebenaceae	*Diospyros hebecarpa*		LC
Ebenaceae	*Diospyros maritima*		LC

Family	Species name	EPBC Act status[1]	NC Act status[2]
Ericaceae	*Styphelia* (syn. *Leucopogon*) *lavarackii*		LC
Ericaceae	*Styphelia* (syn. *Leucopogon*) *ruscifolia*		LC
Ericaceae	*Styphelia* (syn. *Leucopogon*) *yorkensis*		LC
Euphorbiaceae	*Microstachys chamaelea*		LC
Euphorbiaceae	*Shonia tristigma* subsp. *borealis*		LC
Haemodoraceae	*Haemodorum coccineum*		LC
Hemerocallidaceae	*Dianella caerulea*		LC
Hemerocallidaceae	*Dianella longifolia* var. *longifolia*		LC
Hemerocallidaceae	*Dianella nervosa*		LC
Hemerocallidaceae	*Dianella pavopennacea*		LC
Johnsoniaceae	*Tricoryne anceps* subsp. *pterocaulon*		LC
Juncaceae	*Juncus polyanthemus*		LC
Lamiaceae	*Chloanthes parviflora*		LC
Lamiaceae	*Clerodendrum inerme*		LC
Lamiaceae	*Clerodendrum longiflorum* var. *glabrum*		LC
Lamiaceae	*Premna serratifolia*		LC
Lamiaceae	*Vitex trifolia* var. *subtrisecta*		LC
Lauraceae	*Beilschmiedia obtusifolia*		LC
Lauraceae	*Cassytha filiformis*		LC
Lauraceae	*Cryptocarya exfoliata*		LC
Laxmanniaceae	*Lomandra banksii*		LC
Laxmanniaceae	*Lomandra filiformis*		LC
Laxmanniaceae	*Thysanotus banksii*		LC
Lecythidaceae	*Planchonia careya*		LC
Leguminosae	*Acacia aulacocarpa*		LC
Leguminosae	*Acacia brassii*		LC
Leguminosae	*Acacia calyculata*		LC
Leguminosae	*Acacia crassicarpa*		LC
Leguminosae	*Acacia holosericea*		LC
Leguminosae	*Acacia humifusa*		LC
Leguminosae	*Acacia legnota*		LC
Leguminosae	*Acacia leptocarpa*		LC
Leguminosae	*Acacia platycarpa*		LC
Leguminosae	*Acacia pubirhachis*		LC
Leguminosae	*Acacia racospermoides*		LC
Leguminosae	*Acacia simsii*		LC
Leguminosae	*Acacia solenota*		V
Leguminosae	*Acacia torulosa*		LC
Leguminosae	*Aphyllodium biarticulatum*		LC
Leguminosae	*Bossiaea arenicola*		LC
Leguminosae	*Desmodium filiforme*		LC
Leguminosae	*Glycine tomentella*		LC
Leguminosae	*Gompholobium nitidum*		LC
Leguminosae	*Indigofera pratensis*		LC
Leguminosae	*Jacksonia thesioides*		LC
Leguminosae	*Labichea buettneriana*		LC
Leguminosae	*Lamprolobium fruticosum*		LC
Leguminosae	*Pycnospora lutescens*		LC
Leguminosae	*Vandasina retusa*		LC
Leguminosae	*Vigna marina*		LC
Leguminosae	*Zornia albiflora*		LC
Leguminosae	*Zornia maritima*		LC
Loranthaceae	*Dendrophthoe glabrescens*		LC

Family	Species name	EPBC Act status[1]	NC Act status[2]
Loranthaceae	*Diplatia furcata*		LC
Macarthuriaceae	*Macarthuria neocambrica*		LC
Malvaceae	*Hibiscus heterophyllus*		LC
Malvaceae	*Hibiscus meraukensis*		LC
Malvaceae	*Hibiscus tiliaceus*		LC
Melastomataceae	*Melastoma malabathricum* subsp. *malabathricum*		LC
Memecylaceae	*Memecylon pauciflorum*		LC
Menispermaceae	*Hypserpa decumbens*		LC
Menispermaceae	*Stephania japonica* var. *japonica*		LC
Menispermaceae	*Tinospora esiangkara*		LC
Moraceae	*Ficus adenosperma*		LC
Moraceae	*Ficus congesta* var. *congesta*		LC
Moraceae	*Ficus destruens*		LC
Moraceae	*Ficus microcarpa*		LC
Moraceae	*Ficus obliqua*		LC
Moraceae	*Ficus opposita*		LC
Moraceae	*Ficus racemosa*		LC
Moraceae	*Ficus rubiginosa forma rubiginosa*		LC
Myrsinaceae	*Myrsine porosa*		LC
Myrtaceae	*Asteromyrtus angustifolia*		LC
Myrtaceae	*Asteromyrtus lysicephala*		LC
Myrtaceae	*Corymbia clarksoniana*		LC
Myrtaceae	*Corymbia dallachiana*		LC
Myrtaceae	*Corymbia intermedia*		LC
Myrtaceae	*Corymbia nesophila*		LC
Myrtaceae	*Corymbia tessellaris*		LC
Myrtaceae	*Eucalyptus brassiana*		LC
Myrtaceae	*Eucalyptus pellita*		LC
Myrtaceae	*Eugenia reinwardtiana*		LC
Myrtaceae	*Leptospermum polygalifolium*		LC
Myrtaceae	*Lithomyrtus obtusa*		LC
Myrtaceae	*Lophostemon suaveolens*		LC
Myrtaceae	*Melaleuca arcana*		LC
Myrtaceae	*Melaleuca dealbata*		LC
Myrtaceae	*Melaleuca foliolosa*		LC
Myrtaceae	*Melaleuca leucadendra*		LC
Myrtaceae	*Melaleuca polandii*		LC
Myrtaceae	*Melaleuca viridiflora* var. *attenuata*		LC
Myrtaceae	*Melaleuca viridiflora* var. *viridiflora*		LC
Myrtaceae	*Neofabricia myrtifolia*		LC
Myrtaceae	*Osbornia octodonta*		LC
Myrtaceae	*Syzygium banksii*		LC
Myrtaceae	*Syzygium forte* subsp. *forte*		LC
Myrtaceae	*Syzygium suborbiculare*		LC
Myrtaceae	*Syzygium tierneyanum*		LC
Myrtaceae	*Syzgium wilsonii*		LC
Myrtaceae	*Thryptomene oligandra*		LC
Myrtaceae	*Xanthostemon arenarius*		NT
Nymphaeaceae	*Nymphaea violacea*		SL
Oleaceae	*Chionanthus ramiflorus*		LC
Oleaceae	*Jasminum longipetalum*		LC
Oleaceae	*Notelaea* sp. (Elcho Island C.R.Dunlop 7597)		LC
Orchidaceae	*Chiloschista phyllorhiza*		SL

Family	Species name	EPBC Act status[1]	NC Act status[2]
Orchidaceae	*Dendrobium discolor*		SL
Orchidaceae	*Dendrobium* sp. 1 *(bigibbum?)*[3]	V	V
Orchidaceae	*Dendrobium* sp. 2 *(johannis?)*	V	V
Orchidaceae	*Dendrobium* sp 3 *(canaliculatum?)*		SL
Orchidaceae	*Dendrobium speciosum*		SL
Orchidaceae	*Dendrobium trilamellatum*		SL
Orchidaceae	*Luisia atacta*		SL
Pandanaceae	*Pandanus spiralis*		LC
Pandanaceae	*Pandanus tectorius*		LC
Passifloraceae	*Passiflora aurantia* var. *aurantia*		LC
Phyllanthaceae	*Breynia oblongifolia*		LC
Phyllanthaceae	*Flueggea virosa* subsp. *melanthesoides*		LC
Phyllanthaceae	*Phyllanthus carpentariae*		LC
Picrodendraceae	*Choriceras tricorne*		LC
Picrodendraceae	*Neoroepera banksii*		LC
Picrodendraceae	*Petalostigma pubescens*		LC
Pittosporaceae	*Pittosporum revolutum*		LC
Poaceae	*Cenchrus purpurascens*		LC
Poaceae	*Digitaria leucostachya*		LC
Poaceae	*Ectrosia leporina*		LC
Poaceae	*Eragrostis interrupta*		LC
Poaceae	*Eremochloa bimaculata* syn. *muricata*[4]	E	LC
Poaceae	*Eriachne insularis*		LC
Poaceae	*Heteropogon triticeus*		LC
Poaceae	*Ischaemum muticum*		LC
Poaceae	*Mnesithea rottboellioides*		LC
Poaceae	*Paspalidium constrictum*		LC
Poaceae	*Paspalidium rarum*		LC
Poaceae	*Perotis rara*		LC
Poaceae	*Schizachyrium fragile*		LC
Poaceae	*Setaria surgens*		LC
Poaceae	*Spinifex sericeus*		LC
Poaceae	*Sporobolus virginicus*		LC
Poaceae	*Thaumastochloa monilifera*		LC
Poaceae	*Thaumastochloa pubescens*		LC
Poaceae	*Themeda triandra*		LC
Poaceae	*Triodia microstachya*		LC
Polygalaceae	*Comesperma secundum*		LC
Polygalaceae	*Polygala longifolia*		LC
Polypodiaceae	*Drynaria quercifolia*		SL
Polypodiaceae	*Drynaria rigidula*		SL
Portulacaceae	*Calandrinia arenicola*		LC
Proteaceae	*Banksia dentata*		LC
Proteaceae	*Banksia robur*		LC
Proteaceae	*Grevillea glauca*		LC
Proteaceae	*Grevillea pteridifolia*		LC
Proteaceae	*Persoonia falcata*		LC
Pteridaceae	*Adiantum atroviride*		SL
Putranjivaceae	*Drypetes deplanchei*		LC
Ranunculaceae	*Clematis pickeringii*		LC
Restionaceae	*Baloskion tetraphyllum* subsp. *meiostachyum*		LC
Restionaceae	*Dapsilanthus ramosus*		LC
Rhamnaceae	*Alphitonia excelsa*		LC

Family	Species name	EPBC Act status[1]	NC Act status[2]
Rhizophoraceae	*Rhizophora apiculata*		LC
Rhizophoraceae	*Rhizophora stylosa*		LC
Rubiaceae	*Atractocarpus sessilis*		LC
Rubiaceae	*Cyclophyllum coprosmoides*		LC
Rubiaceae	*Cyclophyllum multiflorum*		LC
Rubiaceae	*Morinda citrifolia*		LC
Rubiaceae	*Myrmecodia beccarii*	V	V
Rubiaceae	*Myrmecodia platytyrea* subsp. *antoinii*		SL
Rubiaceae	*Psychotria poliostemma*		LC
Rubiaceae	*Psydrax odorata*		LC
Rubiaceae	*Spermacoce marginata*		LC
Rutaceae	*Boronia alulata*		LC
Rutaceae	*Eriostemon banksii*		LC
Rutaceae	*Halfordia kendack*		LC
Santalaceae	*Anthobolus filifolius*		LC
Santalaceae	*Exocarpos latifolius*		LC
Santalaceae	*Santalum lanceolatum*		SL
Sapindaceae	*Dodonaea malvacea*		LC
Sapindaceae	*Dodonaea polyandra*		LC
Sapotaceae	*Amorphospermum antilogum*		LC
Sapotaceae	*Manilkara kauki*		LC
Sapotaceae	*Mimusops elengi*		LC
Sapotaceae	*Planchonella myrsinodendron*		LC
Sapotaceae	*Sersalisia sericea*		LC
Sparrmanniaceae	*Grewia latifolia*		LC
Sparrmanniaceae	*Triumfetta repens*		LC
Stackhousiaceae	*Stackhousia* sp. (McIvor River J.R.Clarkson 5201)		E
Taccaceae	*Tacca leontopetaloides*		LC
Ulmaceae	*Celtis paniculata*		LC
Violaceae	*Pigea enneasperma*		LC
Vitaceae	*Ampelocissus acetosa*		LC
Xanthorrhoeaceae	*Xanthorrhoea johnsonii*		SL
Xyridaceae	*Xyris complanata*		LC
Zingiberaceae	*Curcuma australasica*		LC

[1] Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. Relevant status categories comprise: Endangered (E) and Vulnerable (V).

[2] Queensland *Nature Conservation Act* 1992. Relevant status categories comprise: Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (LC) and Special Least Concern (SL).

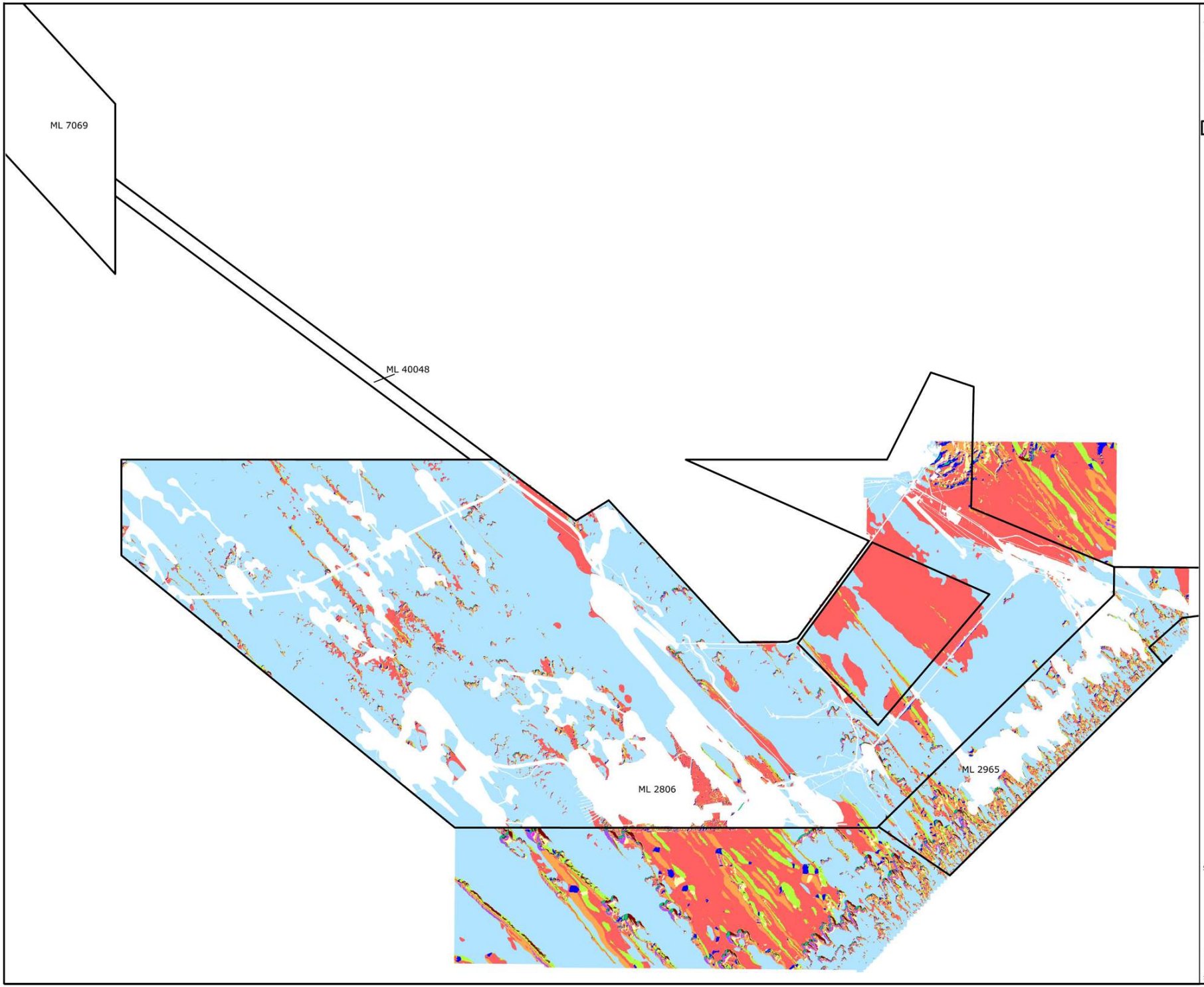
[3] *Dendrobium bigibbum* is listed under the EPBC Act as *Vappodes phalaenopsis*.

[4] In Australia, the name *Eremochloa muricata* has been attributed to a population known only from Cape Flattery (DEWHA 2008). Since 16 August 2019, *E. muricata* has been treated by the Queensland Herbarium as conspecific with the more widespread *Eremochloa bimaculata* (DES 2023); however, the status of *Eremochloa muricata* under the EPBC Act remains.

DES 2023, *WildNet Taxon List for Queensland*, Queensland Department of Environment and Science, Brisbane.

DEWHA 2008, *Approved Conservation Advice for Eremochloa muricata*, Commonwealth Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Appendix B:
Reference Areas



Appendix B: Landform groups of the unmined Cape Flattery dunefield (mine path excluded) based on available LiDAR data

Project: Progressive Rehabilitation and Closure Plan Information Request Response Package

Mining lease boundary

Landform group

1
2
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0 2

Kilometres

Source: DoR 2022, NRA 2019, NRA 2023.

NRA Ref: 101098.01
Date: September 2023

T:_AAA\101\WOR\101098\101098_LandformGroups_230919.WOR

Recommended print size: A3

Appendix C:
Progressive Rehabilitation and Closure Plan Schedule V8

Progressive Rehabilitation and Closure Plan Schedule template

Instructions

General Instructions:

- **This form can be used for completing a PRCP schedule for the submission of a progressive rehabilitation and closure plan (PRC plan).**
- **See the PRCP schedule section of the PRC plan guideline (ESR/2019/4964) for further information requirements.**

- A default value of one (1) Rehabilitation Area (RA) is represented by one RA sheets below (RA1).
- A default value of one (1) Improvement Area (IA) is represented by one IA sheet below (IA1).

- To record additional RAs for your project make a copy of the RA sheet below and update it to the relevant RA number (i.e. RA2).
- To record additional IAs for your project make a copy of the IA sheet below and update it to the relevant IA number (i.e. IA2).
- To remove the IA sheet if there is no IA for your project, delete the IA sheet below.

- Each RA and IA sheet contains **two separate excel tables** (yellow and blue) for recording the time-based rehabilitation milestones.
- Add a new column or row to each table as required for your information requirements.

- Two (2) separate sheets below exist for recording the "Rehabilitation Area Milestones" and "Improvement Area Milestones".
- Delete the Improvement Area Milestone sheet if it does not apply to your project.
- Delete additional rows in either sheet if they do not apply to your project.
- See the PRC plan guideline for a list of reference milestones and further information for developing additional site-specific milestones where appropriate.

Further Instructions when inputting PMLUs

Headings under Rehabilitation Area (RA) sheets

Rehabilitation area - The rehabilitation area must align with the spatial information included in the rehabilitation planning part of the PRC plan. This area must have the same PMLU and same milestones applied to the whole area.

Relevant activities - The relevant activities must align with the activities identified in the rehabilitation planning part of the PRC plan. The relevant activities are those undertaken within the rehabilitation area prior to land becoming available for rehabilitation.

Total size of rehabilitation area (ha) - Total size of rehabilitation area in hectares.

Commencement of first milestone - The applicant must nominate a date for when the first milestone for the rehabilitation area will commence. The milestone reference for the first milestone must be included in the heading.

PMLU - The PMLU must align with those identified in the rehabilitation planning part of the PRC plan and in the proposed final site design.

Date area is available - The PRCP schedule must identify when land within the rehabilitation area becomes available for rehabilitation. If the whole rehabilitation area becomes available at once there should be only one date. If the rehabilitation areas becomes available progressively there should be multiple dates. These dates should reflect the information provided in the rehabilitation planning part of the PRC plan.

Cumulative area available (ha) - The PRCP schedule must identify the area of land within the rehabilitation area that will become available at a given time.

Milestone completed by - The PRCP schedule must identify completion dates for milestones to be completed.

Cumulative area achieved (ha) - The PRCP schedule must show how progressive rehabilitation is being achieved over the life of the mine. This section must reflect the proposed rehabilitation work required for the rehabilitation area to achieve stable condition. The milestone reference to be included refers back to the Rehabilitation Area Milestones sheet with the detailed milestone criteria. The milestones must be achieved consecutively.

Headings under Rehabilitation Area Milestones sheet

Rehabilitation milestone & Milestone criteria - The “rehabilitation milestone” is a short description of the rehabilitation activities. The "milestone criteria" must be able to demonstrate achievement of the milestone.

Further Instructions when inputting NUMAs

Headings under Improvement Area (IA) sheets

Improvement area - The improvement area must align with the spatial information included in the rehabilitation planning part of the PRC plan. This area must have the same NUMA and same milestones applied to the whole area.

Relevant activities - The relevant activities must align with the activities identified in the rehabilitation planning part of the PRC plan. The relevant activities are those undertaken within the improvement area prior to land becoming available for improvement.

Total size (ha) - Total size of improvement area in hectares.

Commencement of first milestone - The applicant must nominate a date for when the first milestone for the improvement area will commence. The milestone reference for the first milestone must be included in the heading.

NUMA - The NUMA must align with those identified in the rehabilitation planning part of the PRC plan and in the proposed final site design.

Date area is available - The PRCP schedule must identify when land within the improvement area becomes available for improvement. If the whole improvement area becomes available at once there should be only one date. If the improvement areas becomes available progressively there should be multiple dates. These dates should reflect the information provided in the rehabilitation planning part of the PRC plan.

Cumulative area available (ha) - The PRCP schedule must identify the area of land within the improvement area that will become available at a given time.

Milestone completed by - The PRCP schedule must identify completion dates for milestones to be completed.

Cumulative area achieved (ha) - The PRCP schedule must show how progressive improvement is being achieved over the life of the mine. This section must reflect the proposed management work required for the improvement area to achieve sufficient improvement. The milestone reference refers back to the Improvement Area Milestones sheet with the detailed milestone criteria. The milestones must be achieved consecutively.

Post-mining land uses (PMLU)										
Rehabilitation area	RA1									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category ''Active mining, non-active mining" and "Borrow Pits" (Existing rehabilitation non-certified)									
Total rehabilitation area size (ha)	81.6									
Commencement of first milestone: RM4	1/06/2022									
PMLU	Conservation Use									
Date area is available	1/01/2008	1/01/2009	1/01/2013	1/01/2015	1/01/2017	1/01/2020	1/01/2021			
Cumulative area available (ha)	13.9	37.6	44.7	47.3	53.8	67.1	81.6			
Milestone completed by	31/12/2038	31/12/2039	31/12/2043	31/12/2045	31/12/2047	31/12/2050	31/12/2051			
Milestone Reference	**Cumulative area achieved (ha)**									
RM4	13.9	37.6	44.7	47.3	53.8	67.1	81.6			
RM20	13.9	37.6	44.7	47.3	53.8	67.1	81.6			

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA2									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Access' (Existing Rehabilitation non-certified)									
Total rehabilitation area size (ha)	11.2									
Commencement of first milestone: RM4	1/06/2022									
PMLU	Conservation Use									
Date area is available	1/01/2011	1/01/2020								
Cumulative area available (ha)	6.6	11.2								
Milestone completed by	31/12/2031	31/12/2040								
Milestone Reference	**Cumulative area achieved (ha)**									
RM4	6.6	11.2								
RM20	6.6	11.2								

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)														
Rehabilitation area	RA3													
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category "Active mining, non-active mining" and "Borrow Pits" (Proposed rehabilitation)													
Total rehabilitation area size (ha)	1184.2													
Commencement of first milestone: RM1	1/01/2023													
PMLU	Conservation Use													
Date area is available	1/01/2023	1/01/2028	1/01/2033	1/01/2038	1/01/2043	1/01/2048	1/01/2053							
Cumulative area available (ha)	200.0	400.0	600.0	750.0	900.0	1050.0	1184.2							
Milestone completed by	31/12/2027	31/12/2032	31/12/2037	31/12/2042	31/12/2047	31/12/2052	31/12/2056	31/12/2057	31/12/2062	31/12/2067	31/12/2072	31/12/2077	31/12/2082	31/12/2086
Milestone Reference	**Cumulative area achieved (ha)**													
RM1	200	400	600	750	900	1050	1184.2							
RM2	200	400	600	750	900	1050	1184.2							
RM3	200	400	600	750	900	1050	1184.2							
RM4								200	400	600	750	900	1050	1184.2
RM20								200	400	600	750	900	1050	1184.2

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)																				
Rehabilitation area	RA4																			
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category "Mobile infrastructure", "Access" (Proposed rehabilitation)																			
Total rehabilitation area size (ha)	225.3																			
Commencement of first milestone: RM1	1/01/2059																			
PMLU	Conservation Use																			
Date area is available	1/01/2059	1/01/2060	1/01/2063	1/01/2066	1/01/2078	1/01/2079		1/01/2082		1/01/2085	1/01/2086	1/01/2087	1/01/2088							
Cumulative area available (ha)	12.7	19.2	44.1	47.6	74.2	100.7		106.6		139.2	168.5	198.5	225.3							
Milestone completed by	31/12/2059	31/12/2060	31/12/2063	31/12/2066	31/12/2078	31/12/2079	31/12/2080	31/12/2082	31/12/2083	31/12/2085	31/12/2086	31/12/2087	31/12/2088	31/12/2098	31/12/2099	31/12/2102	31/12/2105	31/12/2106	31/12/2107	31/12/2108
Milestone Reference	**Cumulative area achieved (ha)**																			
RM2	12.7	19.2	44.1	47.6	74.2	100.7		106.6		139.2	168.5	198.5	225.3							
RM3	12.7	19.2	44.1	47.6	74.2	100.7		106.6		139.2	168.5	198.5	225.3							
RM4						12.7	19.2		44.1		47.6			74.2	100.7	106.6	139.2	168.5	198.5	225.3
RM20						12.7	19.2		44.1		47.6			74.2	100.7	106.6	139.2	168.5	198.5	225.3

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA5									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Treatment Plant' (Proposed rehabilitation)									
Total rehabilitation area size (ha)	54.7									
Commencement of first milestone: RM1	1/01/2057									
PMLU	Conservation Use									
Date area is available	1/01/2057	1/01/2058								
Cumulative area available (ha)	20.1	54.7								
Milestone completed by	31/12/2057	31/12/2058	31/12/2087	31/12/2088						
Milestone Reference	**Cumulative area achieved (ha)**									
RM1	20.1	54.7								
RM2	20.1	54.7								
RM3	20.1	54.7								
RM4			20.1	54.7						
RM20			20.1	54.7						

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA6									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Quarries and Borrow Pits', Disturbance Type 'Quarry (incl borrow pits)'. RA6 relevant to Quarry areas at headlands including abandoned fuel storage area above the township. RA6 does not include Borrow pits (red sand) in mining areas or adjacent to haul roads. (Proposed rehabilitation)									
Total rehabilitation area size (ha)	2.2									
Commencement of first milestone: RM4	1/01/2109									
PMLU	Conservation Use									
Date area is available	1/01/2109									
Cumulative area available (ha)	2.2									
Milestone completed by	31/12/2110									
Milestone Reference	**Cumulative area achieved (ha)**									
RM4	2.2									
RM8	2.2									
RM9	2.2									
RM10	2.2									
RM11	2.2									

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA7									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Township'									
Total rehabilitation area size (ha)	12.9									
Commencement of first milestone: RM4	1/01/2109									
PMLU	Hope Vale Owner Use									
Date area is available	1/01/2109									
Cumulative area available (ha)	12.9									
Milestone completed by	31/12/2110									
Milestone Reference	**Cumulative area achieved (ha)**									
RM4	12.9									
RM5	12.9									
RM12	12.9									
RM19	12.9									

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)											
Rehabilitation area	RA8										
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Infrastructure', Disturbance Type 'Airstrip'										
Total rehabilitation area size (ha)	7.8										
Commencement of first milestone: RM14	1/01/2109										
PMLU	Hope Vale Owner Use										
Date area is available	1/01/2109										
Cumulative area available (ha)	7.8										
Milestone completed by	31/12/2110										
Milestone Reference	**Cumulative area achieved (ha)**										
RM14	7.8										
RM19	7.8										

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA9									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Infrastructure', Disturbance Type 'Landfill'. (Proposed rehabilitation)									
Total rehabilitation area size (ha)	0.7									
Commencement of first milestone: RM4	1/01/2109									
PMLU	Native Grass									
Date area is available	1/01/2109									
Cumulative area available (ha)	0.7									
Milestone completed by	31/12/2110									
Milestone Reference	**Cumulative area achieved (ha)**									
RM4	0.7									
RM6	0.7									
RM7	0.7									
RM8	0.7									

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA10									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Infrastructure' and 'Treatment Plant', All Disturbance Types other than 'Airstrip' (RA6) and 'Landfill' (RA9)									
Total rehabilitation area size (ha)	6.4									
Commencement of first milestone: RM4	1/01/2109									
PMLU	Hope Vale Owner Use									
Date area is available	1/01/2109									
Cumulative area available (ha)	6.4									
Milestone completed by	31/12/2110									
Milestone Reference	**Cumulative area achieved (ha)**									
RM4	6.4									
RM5	6.4									
RM12	6.4									
RM15	6.4									
RM19	6.4									

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)										
Rehabilitation area	RA11									
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Access'									
Total rehabilitation area size (ha)	71.8									
Commencement of first milestone: RM5	1/01/2109									
PMLU	Hope Vale Owner Use									
Date area is available	1/01/2109									
Cumulative area available (ha)	71.8									
Milestone completed by	31/12/2110									
Milestone Reference	**Cumulative area achieved (ha)**									
RM5	71.8									
RM12	71.8									
RM13	71.8									
RM19	71.8									

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)											
Rehabilitation area	RA12										
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Dams and Diversions', Disturbance Type 'Water Diversions'										
Total rehabilitation area size (ha)	10.4										
Commencement of first milestone: RM4	1/01/2109										
PMLU	Hope Vale Owner Use										
Date area is available	1/01/2109										
Cumulative area available (ha)	10.4										
Milestone completed by	31/12/2110										
Milestone Reference	**Cumulative area achieved (ha)**										
RM4	10.4										
RM18	10.4										
RM19	10.4										

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Post-mining land uses (PMLU)											
Rehabilitation area	RA13										
Relevant activities	Environmental Authority Schedule F Table 1 Disturbance Category 'Dams and Diversions', Disturbance Type 'Arnie's Dam'										
Total rehabilitation area size (ha)	10.0										
Commencement of first milestone: RM4	1/01/2109										
PMLU	Hope Vale Owner Use										
Date area is available	1/01/2109										
Cumulative area available (ha)	10.0										
Milestone completed by	31/12/2110										
Milestone Reference	**Cumulative area achieved (ha)**										
RM4	10.0										
RM16	10.0										
RM17	10.0										
RM19	10.0										

1) Insert new columns to the yellow table to include further rehabilitation milestone dates.
2) Insert new columns to the blue table to match rehabilitation milestone dates.
3) Insert new rows to the blue table to include additional rehabilitation milestone references.
4) Insert the relevant number in the "Milestone reference" column (i.e. RM1).

Milestone reference	Rehabilitation milestone	Milestone criteria
RM1	Landform preparation.	Landform preparation completed as evidenced in Inspection Test Procedure.
RM2	Surface preparation.	(a) Tracks ripped (RA4 only) to a depth of 0.5 m and graded; (b) Topsoil spread to a depth of 300 mm (± 200 mm) (RA3 and RA5 only); and (c) Evidence of (a) and (b) documented in Inspection Test Procedure.
RM3	Revegetation.	Revegetation process commenced as evidenced in Inspection Test Procedure.
RM4	All infrastructure/ assets not listed in Appendix 2 Table H are removed.	• All infrastructure/ assets not stipulated in a landholder statement as being retained are removed. • All areas where infrastructure/ assets have been removed have been rehabilitated to meet the completion criteria for Conservation Use as prescribed in **Schedule F - Table 2b** (applicable to RA7, RA10 and RA13).
RM5	Contamination associated with notifiable activities identified, risk to human or ecological receptors in terrestrial or aquatic environments assessed and remediation carried out or site management plan established.	• Site Investigation Report: - prepared and certified by an appropriately qualified person; and - approved in accordance with the Environmental Protection Act 1994. • Site removed from Contaminated Land Register by the registrar; or • Site Management Plan: - prepared and certified by an appropriately qualified person and - approved in accordance with the Environmental Protection Act 1994 and - includes a statement by the underlying landholder accepting responsibility to implement the Site Management Plan.
RM6	Landfill decommissioned according to a plan prepared by an **appropriately qualified person**.	• Decommissioning Plan prepared by an **appropriately qualified person** and implemented as approved by the administering authority. • Native grass present in revegetation of the landfill.
RM7	Landfill seepage water quality does not present a risk of impacting the environmental values of the local aquifer.	• Site Investigation Report: - prepared and certified by an appropriately qualified person; and - approved in accordance with the Environmental Protection Act 1994. • Site removed from Contaminated Land Register by the registrar; or • Site Management Plan: - prepared and certified by an appropriately qualified person and - approved in accordance with the Environmental Protection Act 1994 and - includes a statement by the underlying landholder accepting responsibility to implement the Site Management Plan.
RM8	Stormwater managed to minimise erosion and the likelihood of environmental values in the receiving environment being diminished.	• Within 2 months prior to relinquishment, all retained ESCSs are **certified** by an **appropriately qualified person** as: - being **fit for purpose**; and - causing no environmental harm.
RM9	Achievement of vegetation requirements for quarries.	• Declared pest plants[2] are being managed to minimise their threat to the surrounding landscape. - A Weed Management Plan is implemented to minimise the weed burden on lease areas and the risk of infestation in rehabilitated areas. - No declared pest plants[2] are recorded in the rehabilitation domain; or - The proportion of **declared pest plant** species relative to reference conditions is **not increasing**[2]. *2 Declared pest plant is defined as a Restricted or Prohibited Matter under the Queensland Biosecurity Act 2014, or are listed under the Weeds of National Significance list (DoEE 2016) and/or the National Environmental Alert List (DoEE 2016). 'Not increasing' is defined as the difference between rehabilitated and reference conditions not showing a successive increase over three successive monitoring events. DoEE 2016, National weeds lists, Australian Government Department of the Environment and Energy, Canberra, <http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/index.html>.*
RM10	Geotechnical stability is assessed as part of the preparation of the Quarries Decommissioning Plan and works implemented to provide acceptable geotechnical stability.	Within six months prior to relinquishment, a geotechnical assessment has been undertaken by an **appropriately qualified person** to certify that the quarry area is geotechnically stable and meets relevant standards.
RM11	Quarries decommissioned according to a plan developed within 36 months of closure prepared by an appropriately qualified professional.	An **appropriately qualified person** has **certified** that that the quarry area has been decommissioned in accordance with an approved Quarries Decommissioning Plan that has been agreed to in writing by the administering authority.
RM12	Stormwater managed to minimise likelihood of environmental values in the receiving environment being diminished.	• Within 2 months prior to relinquishment, all retained ESCSs are **certified** by an **appropriately qualified person** as: - being **fit for purpose**; and - causing no environmental harm.
RM13	Hopevale Owner Use linear infrastructure fit for purpose on transfer.	• Access roads maintained at transfer. • Fuel and power lines in serviceable condition. • All signage and safety devices retained in place and maintained. • Minor tracks to be retained will remain open and usable at relinquishment. • Within 2 months prior to relinquishment, all retained township access roads, fuel and power lines are **certified** by an **appropriately qualified person** as: - being **fit for purpos**e; and - causing no environmental harm.
RM14	Hopevale Owner Use airstrip infrastructure fit for purpose on transfer.	• Airstrip and fuel storage meet relevant standards and are maintained at transfer. • All signage and safety devices retained in place and maintained. • Within 2 months prior to relinquishment, the airstrip and fuel storage area is **certified** by an **appropriately qualified person** as: - being **fit for purpos**e; and - causing no environmental harm.
RM15	Hope Vale Owner Use Infrastructure and Treatment Plant equipment and assets meet relevant standards and/or performance is in compliance with the conditions of the environmental authority (EPML00550113).	• Within 2 months prior to relinquishment, all retained infrastructure/ assets associated with the main fuel farm; sewage treatment plant (STP); water supply; powerhouse and fuel storage; water pump, nursery, pipe shed, filter belt pad and laydown areas are **certified** by an **appropriately qualified person** as: - being **fit for purpose**; and - causing no environmental harm.
RM16	All equipment and infrastructure/ assets meet relevant standards and/or performance as required by existing approvals (such as Water Licences).	• Within 2 months prior to relinquishment, all retained Dams and Diversions are **certified** by an **appropriately qualified person** as: - being **fit for purpose**; and - causing no environmental harm.
RM17	Releases or run-off to the surface water receiving environment does not diminish environmental values in the receiving environment.	• Within 2 months prior to relinquishment, a site investigation report is prepared by **appropriately qualified perso**n that verifies that Arnie's Dam: - meets the relevant water quality parameter requirements specified in EPML00550113; and - meet the requirements of its intended final use.
RM18	Diversion channels will be open and functional with no signs of active erosion that could compromise functionality.	• Within 2 months prior to relinquishment, all retained ESCSs are **certified** by an **appropriately qualified person** as: - being **fit for purpose**; and - causing no environmental harm. • Within 2 months prior to relinquishment, all retained water diversions and channels are **certified** by an **appropriately qualified person** as: - being **fit for purpose**; and - causing no environmental harm.
RM19	Agreement reached with Traditional Owners on transfer of infrastructure/ assets to maintain existing land use.	• Landholder statement in place to cover infrastructure/ assets. • All areas where infrastructure/ assets have been removed have been rehabilitated to meet the completion criteria for Conservation Use as prescribed in **Schedule F - Table 2b** (RA8, RA11 and RA13 only).
RM20	Rehabilitation objectives in accordance with **Schedule F Table 2b**	Rehabilitation completion criteria in accordance with **Schedule F Table 2b**

1) Insert new rows below the table to record more Rehabilitation Area Milestones for the project
2) Ensure all Rehabiitation Milestones recorded in this table align with those included in the RA sheets in this form.
3) See the PRCP guideline before developing site-specific Rehabilitation Area Milestones

Schedule F - Table 2b (Land rehabilitation completion criteria for the attainment of the goals: safe, stable, does not cause environmental harm, and is able to sustain the post-mining land use)

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
Conservation Use[1]	• Borrow pits • Non-active Mining • Active Mining	Borrow pits (red sand) in mining areas or adjacent to haul roads	Socio-economic	Conservation Use is confirmed by TOs as the preferred post-mining land use prior to relinquishment[1].	• Documentation.	• Documented confirmation exists that Conservation Use remains the preferred post-mining land use prior to relinquishment.

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
		All areas disturbed directly by sand mining (sand removal and/or rejects replacement) including mining under rehabilitation, current mining or awaiting commencement of rehabilitation.		Rehabilitation to include plants recognised by TOs as important food plants or those having the potential for commercial exploitation by TOs (referred to generally as 'special use plants')[5] through inclusion of planting material in revegetation works.	• Species composition.	• Two or more (≥2) special use plants (**Appendix 2 Table A**)[5] are recorded in each rehabilitation domain.
			Landscape context[19]	Mining on the project area will not result in the loss of a rare or significant landform type[6] in the Cape Flattery Dunefield.	• Land occupied by a rare or significant landform type[6] disturbed by mining on the project area.	• No loss of a rare or significant landform type (**Appendix 2 Table B**)[6] in the Cape Flattery Dunefield as a result of mining on the project area.
				Rehabilitated landforms will contain complexity at different scales that is characteristic of the surrounding un-mined dunefield landform.	• **Landform element**[7] **richness** per rehabilitation area.	• Each rehabilitation area will contain no less than 4 different landform elements (**Appendix 2 Table C**)[7]. [Rehabilitation area scale complexity.]
					• **Landform element**[7] richness per rehabilitation area. • **Landform element**[7] **richness** per nominal 4 ha grid cell in un-mined areas.	• Within each rehabilitation domain, the median landform element[7] richness per rehabilitation area will be greater than or equal to eight landform elements (≥8). [Rehabilitation domain scale complexity.]
					• **Landform element**[7] **richness** per rehabilitation area. • **Landform element**[7] **richness** per nominal 4 ha grid cell in un-mined areas.	• The range in **landform element**[7] **richness** per rehabilitation area, across all rehabilitation domains available for assessment, will fall within the range of 3 to 47 landform elements. [Dunefield scale complexity.]

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
				Rehabilitated landforms will contain a range of **landform elements** that are common to and characteristic of the surrounding un-mined dunefield.	• Proportion of land area in each rehabilitation domain occupied by the 30 **landform elements**[8] common to all dunefield landforms in un-mined areas. • Proportion of land area in each rehabilitation domain occupied by the 24 **landform elements** that account for 95% of the un-mined dunefield land area[9].	• The land area of each rehabilitation domain occupied by any of the 30 common **landform elements**[8] will be greater than or equal to 80% ***or*** • The land area of each rehabilitation domain occupied by any of the 24 **landform elements** that account for 95% of the un-mined dunefield land area[9] will be greater than or equal to 75%.
					• The proportion of land occupied by each **landform element** in each rehabilitation domain. • The proportion of land occupied by each **landform element** in each dunefield landform type potentially affected by mining[10].	• For at least one dunefield landform type, the average difference (all differences treated as positive values) between the proportion of land area occupied by each **landform element** in a rehabilitation domain compared to the proportion of land area occupied by the same **landform element** provided in **Appendix 2 Table D**[10] is equal to or less than 1.5 %
					• Proportion of land area in each **rehabilitation domain** occupied by **landform elements** with northeast and southwest facing aspects.	• Northeast and southwest facing **landform elements** will dominate and occupy greater than or equal to 60% of the land area in each rehabilitated domain.

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
			Structure/ species composition	The rehabilitation strategy shall maximise the likely return of native plant species represented in the un-mined Cape Flattery Dunefield.	• Documentation of topsoil, trash and/or brushmatting placement[11].	• Propagules are returned to rehabilitated areas in the form of applied stored/direct placed topsoil, trash or brushmatting[11].
				Declared pest plants[2] are being managed to minimise their threat to the surrounding landscape.	• Documentation of weed management. • Presence and proportion of declared pest plant[2] species.	• A Weed Management Plan is implemented to minimise the weed burden on lease areas and the risk of infestation in rehabilitated areas. • No declared pest plants[2] are recorded in the rehabilitation domain; or • The proportion of **declared pest plant** species relative to reference conditions is **not increasing**[2].
				Fauna recolonisation from the surrounding landscape is promoted through the provision of vegetation community structure in dominant landform groups in rehabilitation domains[12] similar to the landform groups in the surrounding ecosystem.	• Vegetation structure.	• **Crown class**[4] equivalent to, or crown cover (%) progressing towards, that of surrounding undisturbed vegetation community[4] on dominant landform-groups in rehabilitation domains[12].
			Ecosystem function	**Plant functional group richness** on dominant **landform groups** in **rehabilitation domains**[12] similar to or greater than the surrounding landscape.	• Species composition. • **Plant functional group richness**.	• At least 70% of the **plant functional groups**[13] present in reference sites (on equivalent **landform groups**) are represented in the **rehabilitation domains**[14] or

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
						• In areas of standing water or regular periodic inundation, characterised by the accumulation of organic detritus in depressions, at least two species of flora wetland indicator species[15] are present.
				The rehabilitation shows active recruitment of species from the surrounding landscape (a normal function of a recovering ecosystem).	• Species composition. • Documentation of seed mix or tubestock planting applied[16]. • Evidence of flowering and reproduction.	• Native species that are not in the original revegetation broadcast seed or planted tubestock species mix[16] are present in each **landform group** within each **rehabilitation domain**; and ○ At least 3 native species[17] are reproductively mature (flowering or seeding); and ○ At least 3 native species have at least 1 seedling or sapling[17].
			Ecosystem stability / resilience	Vegetation community resilient to periodic stress (drought, cyclone or fire nominated as the stresses likely to affect rehabilitation outcomes).	• Annual rainfall (as an indicator of drought). • Fire events. • Tropical cyclones. • Plant functional group richness	• All other rehabilitation criteria have been met ***and*** the **rehabilitation domain** has at some point since seeding or final surface preparation experienced either: i. at least one year with annual rainfall in the first decile range; or ii. at least one fire event covering > 50% of the rehabilitation domain; or iii. at least one severe tropical cyclone (Category 3 or greater); or iv. if the rehabilitation domain has never experienced one of the stress events (*i.e.* i, ii, or iii), then at least 80% of the plant functional groups[13] in a rehabilitation domain (on equivalent landform groups), that has experienced a stress event, are present.

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
				Long-term sustainability of rehabilitation outcomes is demonstrated.	• Attainment of completion criteria.	• **Legacy areas** (rehabilitated before 2001, **Appendix 1 Figure 1**)[18]: o all rehabilitation completion criteria have been met during the first monitoring event; or o all rehabilitation completion criteria have been met on a minimum of three consecutive occasions over a period of not less than 3 years. • **Rehabilitation domains** rehabilitated since 2001: o all rehabilitation completion criteria have been met on a minimum of three consecutive occasions over a period of not less than 3 years.
Conservation Use[1]	• Treatment plant (old) • Access • Treatment plant (new) • Township • Infrastructure • Dams and diversions	Stockpile and mill outwash Mining access roads, power lines, sand and water transport systems not to be retained Process pond and new mill infrastructure not to be retained	Socio-economic	*Conservation Use* is confirmed by TOs as the preferred post-mining land use prior to relinquishment[1].	• Documentation.	• Documented confirmation exists that *Conservation Use* remains the preferred post-mining land use prior to relinquishment.
				Rehabilitation to include plants recognised by TOs as important food plants or those having the potential for commercial exploitation by TOs (referred to generally as 'special use plants')[5] through inclusion of planting material in revegetation works.	• Species composition.	• Two or more (≥2) special use plants (**Appendix 2 Table A**)[5] are recorded in each **rehabilitation domain**.

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
		Township infrastructure (not to be retained) Infrastructure (not to be retained) Dams and diversions (not to be retained)	**Landscape context**[19]	Mining on the project area will not result in the loss of a rare or significant landform type[6] in the Cape Flattery Dunefield.	• Land occupied by a rare or significant **landform type**[6] disturbed by mining on the project area.	• No loss of a rare or significant **landform type** (**Appendix 2 Table B**)[6] in the Cape Flattery Dunefield as a result of mining on the project area.
			Structure/ species composition	The rehabilitation strategy shall maximise the likely return of native plant species represented in the un-mined Cape Flattery Dunefield.	• Documentation of topsoil, trash and/or brushmatting placement[11].	• Propagules are returned to rehabilitated areas in the form of applied stored/direct placed topsoil, trash or brushmatting[11].
				Declared pest plants[2] are being managed to minimise their threat to the surrounding landscape.	• Documentation of weed management. • Presence and proportion of declared pest plant[2] species.	• A Weed Management Plan is implemented to minimise the weed burden on lease areas and the risk of infestation in rehabilitated areas. • No declared pest plants[2] are recorded in the rehabilitation domain; or The proportion of **declared pest plant** species relative to reference conditions is **not increasing**[2].
				Fauna recolonisation from the surrounding landscape is promoted through the provision of vegetation community structure in dominant landform groups in rehabilitation domains[12] similar to the landform groups in the surrounding ecosystem.	• Vegetation structure.	• **Crown class**[4] equivalent to, or crown cover (%) progressing towards, that of surrounding undisturbed vegetation community[4] on dominant **landform groups** in **rehabilitation domains**[12].

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
			Ecosystem function	**Plant functional group richness** on dominant **landform groups** in **rehabilitation domains**[12] similar to or greater than the surrounding landscape.	• Species composition. • **Plant functional group richness**.	• At least 70% of the **plant functional groups**[13] present in reference sites (on equivalent **landform groups**) are represented in the **rehabilitation domains**[14]; or • In areas of standing water or regular periodic inundation, characterised by the accumulation of organic detritus in depressions, at least two species of flora wetland indicator species[15] are present.
				The rehabilitation shows active recruitment of species from the surrounding landscape (a normal function of a recovering ecosystem).	• Species composition. • Documentation of seed mix or tubestock planting applied[16]. • Evidence of flowering and reproduction.	• Native species that are not in the original revegetation broadcast seed or planted tubestock species mix[16] are present in each **landform group** within each **rehabilitation domain**; and o At least 3 native species[17] are reproductively mature (flowering or seeding); and o At least 3 native species have at least 1 seedling or sapling[17].
			Ecosystem stability / resilience	Vegetation community resilient to periodic stress (drought, cyclone or fire nominated as the stresses likely to affect rehabilitation outcomes).	• Annual rainfall (as an indicator of drought). • Fire events. • Tropical cyclones. • **Plant functional group richness**.	• All other rehabilitation criteria have been met ***and*** the **rehabilitation domain** has at some point since seeding or final surface preparation experienced either: i. at least one year with annual rainfall in the first decile range; or ii. at least one fire event covering> 50% of the **rehabilitation domain**; or iii. at least one severe tropical cyclone (Category 3 or greater); or iv. if the **rehabilitation domain** has never experienced one of the stress events (*i.e.* i, ii, or iii), then at least 80% of the **plant functional groups**[13] in a

Post-mining land use description	Disturbance category	Disturbance type	Main attribute group	Rehabilitation objectives	Indicators	Completion criteria
						rehabilitation domain (on equivalent **landform groups**), that has experienced a stress event, are present.
				Long-term sustainability of rehabilitation outcomes is demonstrated.	• Attainment of completion criteria.	• Legacy areas (rehabilitated before 2001, **Appendix 1 Figure 1**)[18]: o all rehabilitation completion criteria have been met during the first monitoring event; or o all rehabilitation completion criteria have been met on a minimum of three consecutive occasions over a period of not less than 3 years. • **Rehabilitation domains** rehabilitated since 2001: o all rehabilitation completion criteria have been met on a minimum of three consecutive occasions over a period of not less than 3 years.

[1] Post-mining land use *Conservation Use* has been nominated for areas not identified by Hope Vale Owners for alternative uses. Prior to lease surrender Hope Vale Owners may nominate alternative suitable post-mining land uses (for example, retention of some roads or development of horticulture areas). Where alternative post-mining land uses are agreed between the holder of this environmental authority and Hope Vale Owners these nominated post-mining land uses will be adopted. Infrastructure/ assets that are not to be retained under Hope Vale Owner Use will revert to Conservation Use as a post-mining land use.

[2] Declared pest plant is defined as a *Restricted* or *Prohibited Matter* under the Queensland *Biosecurity Act* 2014, or are listed under the Weeds of National Significance list (DoEE 2016) and/or the National Environmental Alert List (DoEE 2016). '***Not increasing***' is defined as the difference between rehabilitated and reference conditions not showing a successive increase over three successive monitoring events. DoEE 2016, *National weeds lists,* Australian Government Department of the Environment and Energy, Canberra, <http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/index.html>.

[3] Intentionally left blank

[4] Crown class according to Neldner *et al.* (2019) Table 28. If assessment of crown class shows that the rehabilitated domain is not equivalent to surrounding vegetation, crown cover (%) must be increasing towards equivalent crown class. '*Equivalent to'* means a crown class equal to or denser than that of the surrounding vegetation. '*Increasing*' defined as showing a net increase over three successive monitoring events (or until equivalence is reached).
Neldner, VJ, Wilson, BA, Dillewaard, HA, Ryan, TS, Butler, DW, McDonald, WJF, Addicott, EP & Appelman, CN, 2019, *Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland version 5.0*, Queensland Department of Environment and Science, Brisbane.

[5] Special use plants, that are recognised by Traditional Owners as important food plants or those having potential for commercial exploitation, are listed in **Appendix 2 Table A**.

[6] Rare or significant landform types in the Cape Flattery dunefield, and the pre-mining area of each landform type, are listed in **Appendix 2 Table B**.

[7] Refer to **Appendix 2 Table C** for landform characteristic classes and data used to generate landform elements.

[8] The 30 common landform elements are 111, 112, 113, 114, 121, 122, 123, 124, 134, 211, 212, 213, 214, 221, 222, 223, 224, 233, 234, 311, 312, 313, 314, 321, 322, 323, 324, 332, 333 and 334.

[9] The landform elements that cover 95% of the un-mined dunefield are 111, 112, 113, 114, 121, 122, 123, 124, 211, 212, 213, 214, 221, 222, 224, 311, 312, 313, 314, 321, 322, 324, 332 and 334.

[10] Refer to **Appendix 2 Table D** for the list of landform types that occur in the un-mined Cape Flattery dunefield relevant to the borrow pits and mined-out areas, and the baseline proportions of landform elements which comprise each landform type.

[11] Pre-2012: Based on inclusion of procedures for the application of stored/direct placed topsoil, trash or brushmatting to rehabilitated areas. Post-2012: records of application of stored/direct placed topsoil, trash or brushmatting to individual rehabilitation areas. Areas rehabilitated before 2012 are shown on **Appendix 1 Figure 2**.

[12] Refer to **Appendix 2 Table E** for landform group classification and landform group descriptions. Dominant landform groups will be the two landform groups, when ranked by land area, that account for the top 50% (or more) of the rehabilitation domain. To achieve a 'high' to 'very high' sampling intensity, relative to the total area of dominant landform group at each rehabilitation domain (as per McKenzie *et al.* (2008) Table 3.1); a rehabilitation domain will comprise of at least one rehabilitation area (grouped by similar age, treatment and/or proximity) and must have a cumulative area greater than 1.8 ha and less than 40 ha.
McKenzie, NJ, Grundy, MJ, Webster, R & Ringrose-Voase, AJ 2008, *Guidelines for surveying soil and land resources, Australian Soil and Land Survey Handbooks Series, Second Edition*, CSIRO Publishing, Collingwood, Victoria.

[13] Refer to **Appendix 2 Table F** for the plant functional group codes that are used to determine the plant functional group for each plant species.

[14] On at least one occasion per monitoring site, it will be necessary to validate that plants regarded as nitrogen fixers show these functions, or those forming mycorrhizal associations show these functions or conditions are favourable in rehabilitated domains (*i.e.* soil has demonstrated mycorrhizal infection in bait plants).

[15] Flora wetland indicator species are native plants that are adapted to and dependent on wet conditions for at least part of their life cycle, and can successfully reproduce in wet conditions (DES 2019). Wet conditions are defined as areas where the root zone of the plant becomes periodically saturated or inundated during the growing season (DES 2019). DES 2019, *Wetland flora (plants), WetlandInfo,* Queensland Department of Environment and Science, Brisbane, <https://wetlandinfo.des.qld.gov.au/wetlands/ecology/components/flora/>.

[16] Verification that native species are present in rehabilitation domains that were not introduced in the seed mix/tubestock planting. For areas rehabilitated pre-2012 (**Appendix 1 Figure 2**): the seed or planted tubestock species mix is based on the plant species listed in the **Appendix 2 Table G**. Areas rehabilitated post-2012: this is based on records of planting stock used in individual rehabilitation areas which will be provided with the Annual Return for Environmental Authority EPML00550113. The species lists provided in the Annual Returns for areas rehabilitated after 2012 should be used to assess natural recruitment of plants into these areas.

[17] These criteria are based on 'very good' condition assessment class in the *Native Vegetation Condition Assessment and Monitoring Manual for Western Australia* (Casson *et al*. 2009). Casson, N, Downes, S & Harris, A 2009, *Native vegetation condition assessment and monitoring manual for Western Australia*, Western Australia Department of Environment and Conservation, Perth.

[18] Legacy areas were rehabilitated before 2001 and are shown on **Appendix 1 Figure 1**.

[19] Landscape context relates to topographic features and complexity. The method to create the data that is required to assess the landscape context completion criteria given in **Schedule F - Table 2b**, is provided in **Appendix 2 Table C** and **Appendix 2 Table D**.

Schedule H - Definitions

"acceptance criteria" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete (same as completion criteria).

Active mining includes land:

a) that is cleared of vegetation, stripped of topsoil, and where sand is being extracted for processing

b) that is an active rejects area.

The upper limit for active mining at any one time is 150 ha.

"appropriately qualified person" means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.

"active gegenwalles" means a rare and significant landform on the Cape Flattery dunefield that is characterised by small vegetated ridges (less than 2 m), that run perpendicular to the prevailing wind with deflation areas of bare sand, devoid of vegetation and seasonally inundated, occurring between the ridges.

"authority" means environmental authority (mining activities) under the *Environmental Protection Act 1994*.

"certified" means assessed and approved by an appropriately qualified and experienced person via a written declaration.

"commercial place" means a place used as an office or for business or commercial purposes, other than a place within the boundaries of the operational land.

"competent person" means a person with the demonstrated skill and knowledge required to carry out the task to a standard necessary for the reliance upon collected data or protection of the environment.

"Crown Class" is determined in accordance with the methodology outlined in Neldner, VJ, Wilson, BA, Dillewaard, HA, Ryan, TS, Butler, DW, McDonald, WJF, Addicott, EP & Appelman, CN, 2019, Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland version 5.0, Queensland Department of Environment and Science, Brisbane.

"declared pest plants" means a plant that is defined as a *Restricted* or *Prohibited Matter* under the Queensland *Biosecurity Act* 2014, or are listed under the Weeds of National Significance list (DoEE 2016) and/or the National Environmental Alert List (DoEE 2016). DoEE 2016, *National weeds lists,* Australian Government Department of the Environment and Energy, Canberra, <http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/index.html>.

"deflation corridor of active elongate/ parabolic dune" means the areas of low relief that occur between the trailing arms of active elongate parabolic dunes formed by the removal of sand by wind.

"elongate parabolic dune head" means a rare and significant landform on the Cape Flattery dunefield that is characterised by an actively advancing apical dune head of an elongate parabolic dune. It has a single or several slip faces with the upwind side paralleling the downwind side which are both devoid of vegetation.

"environmental authority holder" means the holder of this environmental authority.

"extensive development of small parabolic dune and associated deflation areas" means a rare and significant landform on the Cape Flattery dunefield that comprises of a field of parabolic dunes that are too small to be mapped individually. They are produced by local remobilisation of sand from their associated deflation areas.

"**fit for purpose**" means the purpose that something is designed or expected to fulfil and meets relevant standards.

"flora wetland indicator species" means native plants that are adapted to and dependent on wet conditions for at least part of their life cycle, and can successfully reproduce in wet conditions. The root zone of the plant becomes periodically saturated or inundated during the growing season.

"gegenwalles modified by parabolic dune inception" means a rare and significant landform on the Cape Flattery dunefield that is characterised by gegenwalles formations that have been substantially modified by the development of small parabolic dunes at the windward side of the landform.

"land" in the "land schedule" of this document means land excluding waters and the atmosphere.

"land capability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"**landscape context**" relates to topographic features and complexity. The method to create the data that is required to assess the landscape context completion criteria given in **Schedule F - Table 2b**, is provided in **Appendix 2 Table C** and **Appendix 2 Table D**.

"landform element" means parts of a landform with defined unique combinations of slope, relief and aspect. Refer to **Appendix 2 Table C** for landform characteristic classes and data used to generate landform elements.

"Landform element richness" means the number of landform elements recorded in an area.

"Landform group" means the landform elements that grouped according to their collective influence on vegetation structure and composition. Refer to **Appendix 2 Table E** for the landform group classification, and a description of each landform group, for assessment of relevant ecological criteria.

"Landform type" The type of landscape feature which occurs in the Cape Flattery dunefield (e.g. coastal parabolic dune, waterbody, long narrow ridges). Refer to **Appendix 2 Table D** for the landform types that naturally occur in the Cape Flattery dunefield.

"land use" term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

"legacy areas" means land that was rehabilitated before 2001 and are shown on **Appendix 1 Figure 1.**

Mobile infrastructure includes:

a) infrastructure that can be relocated from one position to another

b) land area associated with access tracks, conveyors, pipelines, slurry lines, power lines, transfer stations and mill infrastructure.

The upper limit for the disturbance area occupied by mobile infrastructure at any one time is 125 ha.

Non-active mining includes disturbed land that is not active mining, mobile infrastructure or exploration.

"**not increasing**" is defined as the difference between rehabilitated and reference conditions not showing a successive increase over three successive monitoring events.

"offensive" means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.

"protected area" means - a protected area under the Nature Conservation Act 1992; or

a) a marine park under the Marine Parks Act 1992; or
b) a World Heritage Area.

"Plant functional group" means plants that are grouped according to their functional attributes and traits (ie growth form, primary regeneration mode and nutrient acquisition strategy). Refer to **Appendix 2 Table F** for the plant functional group codes that are used to determine the plant functional group for each plant species.

"Plant functional group richness" - The number of plant functional groups recorded in an area.

"progressive rehabilitation" means rehabilitation (defined below) undertaken progressively or a staged approach to rehabilitation as mining operations are ongoing.

"rehabilitation" the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

"rehabilitation area" means an area of land that is no longer active for mining and rehabilitation of that land has progressed (i.e. terraforming has occurred).

"rehabilitation domain" means one or more rehabilitation areas that are grouped by similar age, treatment and/or proximity and have a cumulative area greater than or equal to 1.8 ha and less than or equal to 40 ha.

"relict gegenwalles" means a rare and significant landform on the Cape Flattery dunefield that is characterised by gegenwalles that have been covered in vegetation and are no longer active.

"**relief**" means the difference in elevation relative to the surrounding landscape.

"significant disturbance" – includes land

(a) if it is contaminated land; or

(b) it has been disturbed and human intervention is needed to rehabilitate it.

i. to a state required under the relevant environmental authority; or

ii. if the environmental authority does not require the land to be rehabilitated to a particular state – to its state immediately before the disturbance.

Some examples of disturbed land include:

- areas where soil has been compacted, removed, covered, exposed or stockpiled;
- areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation & topsoil)
- areas where land use suitability or capability has been diminished;
- areas within a watercourse, waterway, wetland or lake where mining activities occur;
- areas submerged by tailings or hazardous contaminant storage and dam walls in all cases;
- areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after mining activities have ceased; or
- areas where land has been contaminated and a suitability statement has not been issued.

However, the following areas are not included:

- areas off lease (e.g. roads or tracks which provide access to the mining lease);
- areas previously significantly disturbed which have achieved the rehabilitation outcomes;
- by agreement with the EPA, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
- areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the EPA;
- disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.

"sensitive place" means;

- a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- a motel, hotel or hostel; or
- an educational institution; or

- a medical centre or hospital; or
- a protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area; or
- a public park or gardens; or
- a place used as a workplace, an office or for business or commercial purposes which is not part of the mining activity and does not include employees accommodation or public roads.

"special use plants" plants that are recognised by Traditional Owners as important food plants or those having potential for commercial exploitation, are listed in **Appendix 2 Table A**.

"stable" means geotechnical stability of the rehabilitated landform where instability related to the excessive settlement and subsidence caused by consolidation / settlement of the wastes deposited, and sliding / slumping instability has ceased.

"trivial harm" means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than $5,000.

"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea) or any part-thereof.

Appendix 1

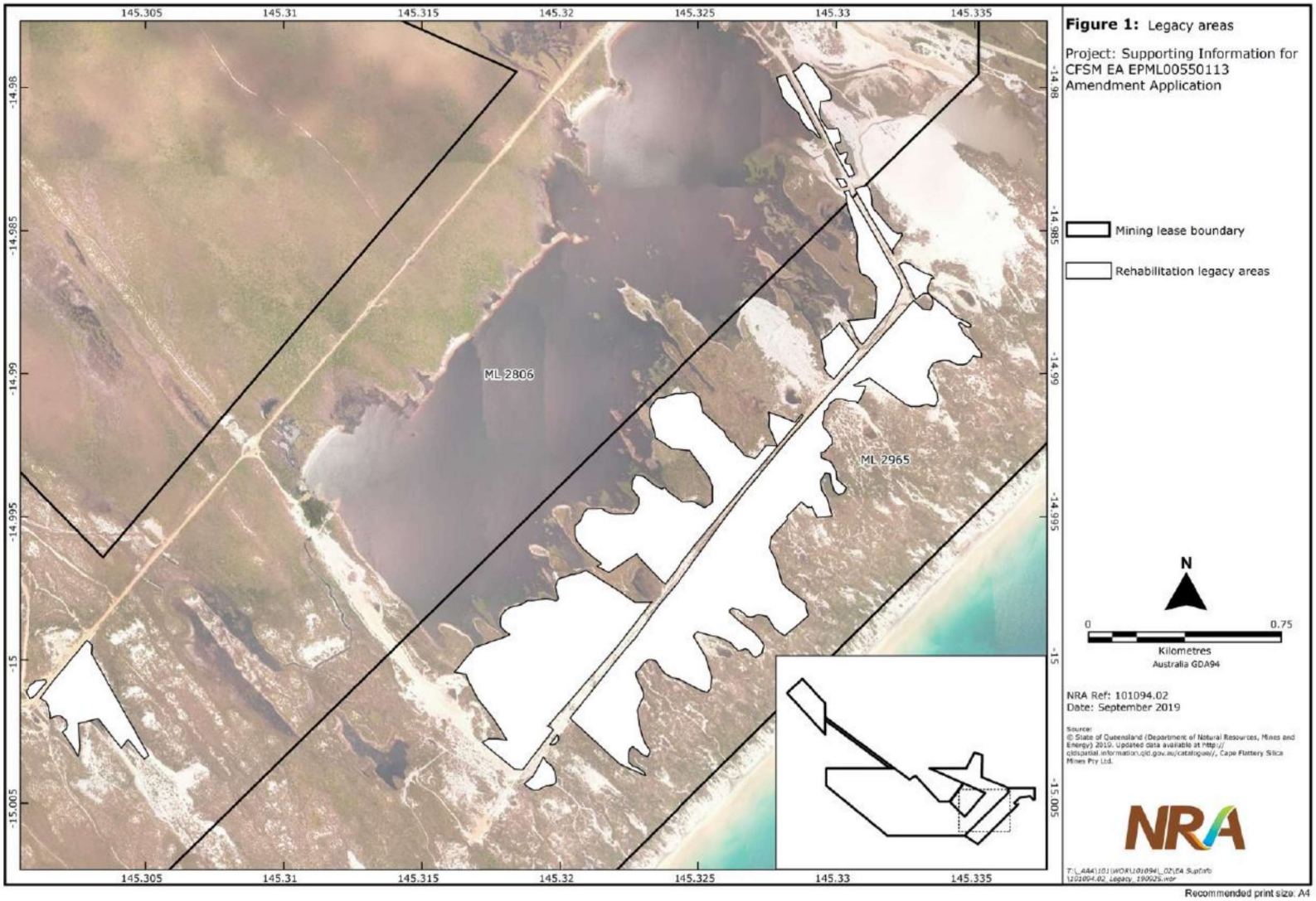

Figure 1: Legacy areas

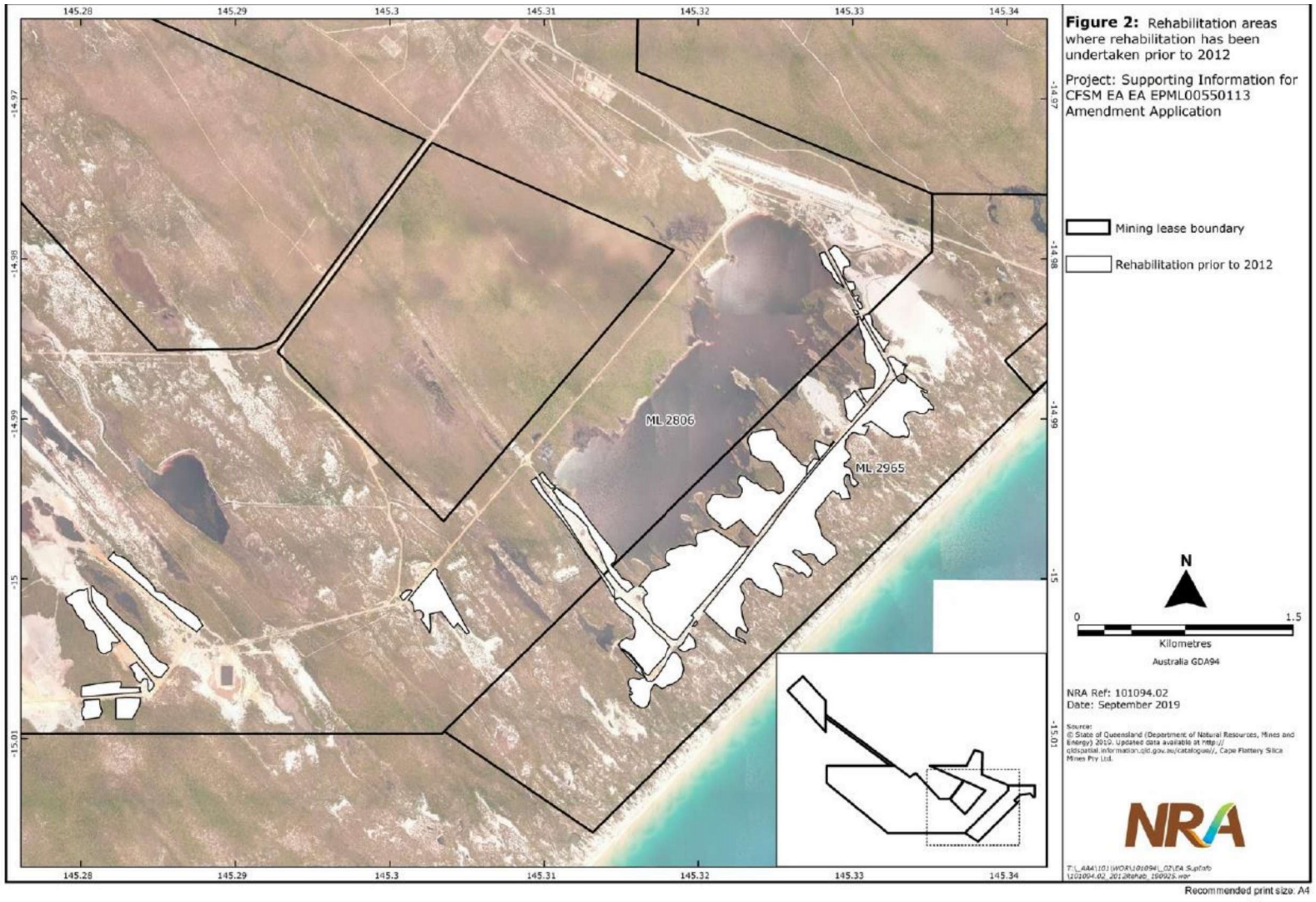

Figure 2: Rehabilitation areas where rehabilitation has been undertaken prior to 2012

Figure 3: Authorised Maximum Surface Areas of Disturbance

Appendix 2

Supporting rehabilitation tables

Table A: Special Use Plants recognised by Traditional Owners

Family	Species
Chrysobalanaceae	*Parinari nonda*
Combretaceae	*Terminalia muelleri*
Ebenaceae	*Diospyros compacta*
Ericaceae	*Leucopogon ruscifolius*
Fabaceae	*Labichea buettneriana*
Menispermaceae	*Tinospora esiangkara*
Myrtaceae	*Asteromyrtus lysicephala*
Myrtaceae	*Leptospermum polygalifolium*
Myrtaceae	*Lithomyrtus obtusa*
Myrtaceae	*Melaleuca polandii*
Myrtaceae	*Syzygium banksii*
Myrtaceae	*Syzygium forte* subsp. *forte*
Myrtaceae	*Syzygium suborbiculare*
Myrtaceae	*Thryptomene oligandra*
Myrtaceae	*Xanthostemon arenarius*
Proteaceae	*Grevillea pteridifolia*
Proteaceae	*Persoonia falcata*
Restionaceae	*Baloskion tetraphyllum* subsp. *meiostachyum*
Rutaceae	*Boronia alulata*
Sapotaceae	*Manilkara kauki*
Sapotaceae	*Sersalisia sericea*

Table B: Cape Flattery Dunefield Rare or significant landform types[1] (pre-mining)

Cape Flattery Dunefield Rare or significant landform types	Landform type area mapped in dunefield (pre-mining)
Active gegenwalles	190 ha
Deflation corridor of active elongate/parabolic dune	888 ha
Elongate parabolic dune head	494 ha
Extensive development of small parabolic dune and associated deflation areas	147 ha
Gegenwalles modified by parabolic dune inception	309 ha
Relict gegenwalles	2300 ha

[1] These data are to be referred to for the analysis of land occupied by a rare or significant landform type. Definitions of each rare or significant landform type are provided in **Schedule H**.
Notes: Rare or significant landforms were classified in the CFSM Land Capability Report (NRA 1996). From the mapping presented in NRA (1996) and with reference to the Landform Mapping of Cape Flattery Dunefield Report (NRA 1995) and to the Assessment of the Cape Bedford - Cape Flattery Dunefield for National Estate Listing (Stock 1991) the rare or significant landforms were inferred. The landform areas were calculated from NRA (1995).

NRA 1996, *Land Capability Report*, Report prepared for CFSM Pty Ltd by NRA Environmental Consultants, dated December 1996.

NRA 1995, *Landform Mapping of Cape Flattery Dunefield*, prepared for CFSM Pty Ltd by NRA Environmental Consultants, November 1995.

Stock, EC 1991, *Assessment of the Cape Bedford - Cape Flattery Dunefield for National Estate Listing*, Objection Assessment, A Report to the Australian Heritage Commission, September 1991.

Table C: Landform characteristic classes used to generate landform elements[1]

Relief [2]	Code identifier	Slope angle	Code identifier	Slope aspect	Code identifier
<5 m	**100**	<10°	**10**	87.5° - 177.5°	**1**
5 m – 10 m	**200**	10° - 30°	**20**	177.5° - 267.5°	**2**
10 m – 35 m	**300**	>30°	**30**	267.5° - 357.5°	**3**
>35 m	**400**	**-**	**-**	357.5° - 87.5°	**4**

[1] Landform element data (generated from relief, slope angle and slope aspect characteristic classes) for assessment of rehabilitation areas and domains is to be generated using a Digital Elevation Model (DEM) (created using a triangulation method) with a grid cell size equal to or less than 2 m.

For example, landform element 331 = 10 – 35 m relief, >30° slope, and south-easterly aspect.

[2] Relief is the difference in elevation relative to the surrounding landscape (ie Australian Height Datum (AHD) DEM minus Lake Reference DEM). Point data that are used to create the Lake Reference DEM are provided in Appendix 2 Table C(i).

Table C(i): Cape Flattery Silica Mine elevation point data for the creation of Lake Reference DEM for landform element relief component[1]

Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94	
	Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude
0.5	145.3190	-15.0090	5	145.3260	-14.9936	5.5	145.3270	-14.9782	6.5	145.3070	-14.9991	8	145.3070	-15.0067	13	145.2480	-14.9769	19	145.2790	-14.9980
1	145.3410	-14.9888	5.5	145.3030	-15.0242	5.5	145.3280	-14.9873	6.5	145.3080	-15.0011	8.5	145.3010	-14.9863	13	145.2480	-14.9771	20	145.2610	-14.9928
1.5	145.2940	-14.9643	5.5	145.3050	-15.0098	5.5	145.3280	-14.9852	6.5	145.3080	-15.0004	8.5	145.3030	-14.9944	13	145.2480	-14.9710	20.5	145.2510	-14.9875
1.5	145.3050	-14.9637	5.5	145.3190	-14.9954	5.5	145.3280	-14.9838	6.5	145.3090	-15.0012	10	145.2490	-14.9657	13.5	145.2490	-14.9786	20.5	145.2520	-14.9867
1.5	145.3420	-14.9864	5.5	145.3190	-14.9777	5.5	145.3280	-14.9863	6.5	145.3090	-15.0014	10	145.2500	-14.9623	13.5	145.2500	-14.9784	20.5	145.2520	-14.9875
2	145.3050	-14.9639	5.5	145.3200	-14.9806	5.5	145.3280	-14.9817	6.5	145.3100	-15.0018	10.5	145.3010	-15.0020	13.5	145.2500	-14.9790	20.5	145.2520	-14.9878
2.5	145.3080	-15.0131	5.5	145.3200	-14.9886	5.5	145.3280	-14.9826	6.5	145.3100	-15.0019	10.5	145.3020	-15.0018	13.5	145.2510	-14.9790	20.5	145.2620	-14.9936
2.5	145.3090	-15.0135	5.5	145.3200	-14.9945	5.5	145.3280	-14.9831	6.5	145.3100	-15.0025	10.5	145.3020	-15.0020	13.5	145.2510	-14.9794	21	145.2260	-14.9774
2.5	145.3100	-15.0140	5.5	145.3200	-14.9956	5.5	145.3280	-14.9806	6.5	145.3100	-15.0024	10.5	145.3030	-15.0018	13.5	145.2630	-14.9827	21	145.2510	-14.9849
2.5	145.3440	-14.9835	5.5	145.3200	-14.9999	5.5	145.3290	-14.9906	6.5	145.3120	-15.0016	11	145.2540	-14.9706	14	145.2690	-14.9717	21	145.2530	-14.9872
3	145.3050	-14.9640	5.5	145.3210	-14.9844	5.5	145.3290	-14.9864	6.5	145.3150	-15.0042	11	145.2540	-14.9709	14	145.2780	-14.9872	21	145.2660	-15.0240
3	145.3060	-15.0236	5.5	145.3210	-14.9819	5.5	145.3290	-14.9875	6.5	145.3350	-14.9780	11	145.2550	-14.9725	15	145.2720	-14.9859	21	145.2660	-15.0242
3	145.3410	-14.9838	5.5	145.3220	-14.9925	5.5	145.3290	-14.9857	6.5	145.3350	-14.9816	11	145.2560	-14.9720	15	145.2810	-14.9932	21	145.2660	-15.0244
3	145.3430	-14.9834	5.5	145.3220	-14.9928	5.5	145.3290	-14.9859	6.5	145.3360	-14.9790	11	145.2560	-14.9727	15	145.2850	-14.9983	21	145.2660	-15.0249
3.5	145.3260	-14.9996	5.5	145.3220	-14.9935	5.5	145.3290	-14.9848	6.5	145.3370	-14.9786	11	145.2600	-14.9729	15	145.2850	-14.9981	21.5	145.2150	-14.9759
3.5	145.3330	-14.9903	5.5	145.3220	-14.9940	5.5	145.3300	-14.9885	6.5	145.3370	-14.9802	11	145.2640	-14.9833	15	145.2850	-14.9983	22	145.2490	-14.9857
3.5	145.3340	-14.9890	5.5	145.3220	-14.9946	5.5	145.3300	-14.9872	6.5	145.3380	-14.9829	11	145.2640	-14.9845	15	145.2860	-14.9988	22.5	145.2900	-15.0058
3.5	145.3400	-14.9839	5.5	145.3230	-14.9975	5.5	145.3300	-14.9879	6.5	145.3380	-14.9829	11	145.2650	-14.9853	15	145.2860	-14.9995	23	145.2740	-15.0061
3.5	145.3440	-14.9827	5.5	145.3230	-14.9947	5.5	145.3300	-14.9851	7	145.3030	-15.0164	11	145.2660	-14.9832	15.5	145.2740	-14.9880	23	145.2740	-15.0067
4	145.3120	-15.0126	5.5	145.3230	-14.9937	5.5	145.3300	-14.9858	7	145.3040	-15.0182	11	145.2660	-14.9857	16	145.2300	-14.9687	23.5	145.2590	-14.9976
4	145.3270	-14.9978	5.5	145.3240	-14.9961	5.5	145.3390	-14.9804	7	145.3090	-14.9982	11	145.2670	-14.9844	17	145.2810	-14.9996	24.5	145.2250	-14.9788
4	145.3310	-14.9919	5.5	145.3240	-14.9770	5.5	145.3390	-14.9822	7	145.3370	-14.9802	11	145.2670	-14.9858	17	145.2810	-14.9977	24.5	145.2250	-14.9787
4	145.3320	-14.9875	5.5	145.3240	-14.9933	6	145.3130	-15.0038	7	145.3400	-14.9779	11	145.2670	-14.9874	17	145.2830	-15.0010	25	145.2660	-14.9995
4	145.3350	-14.9870	5.5	145.3260	-14.9909	6	145.3150	-15.0029	7	145.3420	-14.9774	11	145.2670	-14.9877	17	145.2840	-15.0020	25.5	145.2250	-14.9795

Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94		Elevation (m AHD)	GDA94	
	Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude		Longitude	Latitude
4	145.3390	-14.9841	5.5	145.3260	-14.9924	6	145.3160	-15.0020	7	145.3420	-14.9766	11	145.2690	-14.9887	17	145.2840	-15.0025	27.5	145.2070	-14.9754
4.5	145.3070	-15.0100	5.5	145.3260	-14.9888	6	145.3210	-14.9781	7	145.3420	-14.9771	11	145.2700	-14.9871	17.5	145.2040	-14.9625	27.5	145.2640	-15.0013
4.5	145.3080	-15.0105	5.5	145.3260	-14.9850	6	145.3220	-14.9922	7	145.3420	-14.9761	11	145.2700	-14.9886	17.5	145.2770	-14.9957	28	145.2100	-14.9789
4.5	145.3250	-14.9983	5.5	145.3260	-14.9779	6	145.3230	-14.9926	7	145.3430	-14.9783	11	145.2710	-14.9883	17.5	145.2780	-14.9952	28	145.2100	-14.9791
4.5	145.3290	-14.9927	5.5	145.3260	-14.9932	6	145.3260	-14.9845	7.5	145.3020	-15.0207	11	145.2710	-14.9888	18	145.2800	-14.9983	28	145.2130	-14.9822
4.5	145.3400	-14.9828	5.5	145.3270	-14.9862	6	145.3270	-14.9827	7.5	145.3030	-15.0161	11	145.3010	-15.0019	18	145.2800	-14.9972	30.5	145.2460	-14.9974
4.5	145.3410	-14.9831	5.5	145.3270	-14.9851	6	145.3380	-14.9790	7.5	145.3030	-15.0155	11.5	145.2630	-14.9832	18.5	145.2800	-14.9982	31.5	145.2450	-15.0009
5	145.3060	-15.0195	5.5	145.3270	-14.9840	6.5	145.3050	-15.0173	7.5	145.3330	-14.9769	12	145.2710	-14.9892	19	145.2260	-14.9744	31.5	145.2470	-15.0017
5	145.3140	-15.0089	5.5	145.3270	-14.9824	6.5	145.3060	-14.9981	7.5	145.3330	-14.9764	12.5	145.2840	-14.9925	19	145.2710	-15.0257	32	145.2490	-15.0022
5	145.3260	-14.9941	5.5	145.3270	-14.9829															

[1] These data are to be used to create the Lake Reference DEM which is then used to calculate relief. These point data were derived from the surface water elevations of lakes that occur in the Cape Flattery dunefield.

Table D: Baseline proportions of landform elements within each landform type in the un-mined natural dunefield

Landform type[1,2]	Landform element proportion (%) of landform type[3]											
	111	112	113	114	121	122	123	124	131	132	133	134
Active gegenwalles	10.5622	15.3794	10.3839	52.5581	0.3874	1.8761	0.5866	2.7634	0.0050	0.0158	0.0140	0.0529
Coastal parabolic dunes	8.5788	9.2444	4.9059	14.8323	2.6129	7.6858	2.1867	7.4096	0.0366	0.4228	0.1469	0.4224
Deflation corridor of active elongate/parabolic dune	12.1363	15.8274	8.6020	45.9789	0.5055	2.1935	0.5663	2.7762	0.0027	0.0325	0.0150	0.0275
Depositional area in deflation corridor	11.2686	14.0597	15.5791	49.2055	0.8484	1.9811	0.9722	2.1979	0.0070	0.0373	0.0345	0.0439
Elongate parabolic dune head	1.0412	1.4847	0.6461	3.5281	0.2383	2.0098	0.3642	2.7931	0.0091	0.2707	0.0960	0.4747
Extensive development of small parabolic dune and associated deflation areas	12.4651	19.3504	17.1167	42.5380	0.4855	1.3415	1.1937	1.1409	0.0000	0.0060	0.0074	0.0098
Gegenwalles modified by parabolic dune inception	23.1685	18.4960	3.9785	49.8857	0.0721	0.2096	0.1768	0.3618	0.0000	0.0000	0.0000	0.0067
Ill-defined lakes and swamps	10.9993	16.5982	12.6560	45.9403	0.4079	1.5091	0.6248	1.7545	0.0003	0.0262	0.0105	0.0282
Inter-dune sand plains <20 m[4]	10.7109	15.4387	6.5552	34.6443	0.3962	1.2473	0.4006	1.5105	0.0074	0.0135	0.0071	0.0126
Inter-dune sand plains >20 m[4]	6.5331	10.3129	3.0977	18.1462	0.1650	0.9159	0.2577	1.3929	0.0005	0.0077	0.0064	0.0253
Long narrow ridges	1.7665	5.0487	1.3160	7.3169	0.2090	4.2215	0.3282	3.8767	0.0044	0.3153	0.0305	0.1545
Relict gegenwalles	17.2016	36.9290	2.3307	40.7464	0.0378	1.3373	0.1096	0.2511	0.0000	0.0021	0.0022	0.0000
Small deflation areas	18.2296	11.7787	9.9205	41.0952	1.1972	1.3679	0.7729	2.7102	0.0000	0.0288	0.0000	0.0301
Small parabolic dunes	6.0700	7.6752	5.2957	15.3524	1.6984	3.9107	1.5809	3.9749	0.0349	0.2544	0.1610	0.3527
Transition: Lakes and swamps with small deflation areas	18.4041	18.5980	11.4956	41.5304	0.3875	0.5950	0.7272	0.7434	0.0000	0.0000	0.0000	0.0000
Landform type[1,2]	Landform element proportion (%) of landform type[3]											
	211	212	213	214	221	222	223	224	231	232	233	234
Active gegenwalles	0.6649	0.7526	0.1767	0.3771	0.3259	0.7053	0.2110	0.7763	0.0086	0.0720	0.0196	0.1492
Coastal parabolic dunes	2.3528	2.3682	1.3519	2.5722	2.9581	5.7451	1.7136	5.5912	0.1293	0.9332	0.3624	0.9682
Deflation corridor of active elongate/parabolic dune	1.3593	1.1386	0.6754	2.0796	0.4442	1.0115	0.2231	1.2907	0.0119	0.0509	0.0431	0.0884
Depositional area in deflation corridor	0.4405	0.5258	0.4920	0.7846	0.2945	0.3609	0.2447	0.3882	0.0150	0.0425	0.0358	0.0588
Elongate parabolic dune head	0.5414	0.6342	0.2188	0.8512	0.6298	3.3723	0.3846	3.2248	0.0408	1.7997	0.7615	2.7412
Extensive development of small parabolic dune and associated deflation areas	0.6930	0.7032	0.4727	0.7141	0.3378	0.4455	0.3342	0.3716	0.0029	0.1001	0.0569	0.0507
Gegenwalles modified by parabolic dune inception	0.6187	0.6366	0.4280	0.5906	0.1739	0.5011	0.2748	0.2578	0.0000	0.0215	0.0069	0.0131
Ill-defined lakes and swamps	1.1509	2.0461	1.1039	2.3104	0.2793	0.5892	0.3055	0.6694	0.0014	0.0428	0.0227	0.0383
Inter-dune sand plains <20 m[4]	3.0344	6.3812	2.8399	8.9798	0.2015	0.6548	0.2193	0.7163	0.0319	0.0181	0.0207	0.0278
Inter-dune sand plains >20 m[4]	1.6353	2.5341	1.2869	3.7844	0.2472	1.2675	0.3498	1.4525	0.0040	0.0417	0.0314	0.1014

Long narrow ridges	1.3048	3.4841	0.8465	3.6765	0.8625	4.9938	0.6281	5.2197	0.0271	0.9310	0.1242	0.6948
Relict gegenwalles	0.0758	0.0779	0.0593	0.0699	0.0379	0.4349	0.1127	0.0721	0.0000	0.0078	0.0003	0.0000
Small deflation areas	2.0702	1.5370	1.0140	2.1627	1.1117	0.7066	0.3941	1.5328	0.0181	0.0254	0.0110	0.0241
Small parabolic dunes	1.8167	2.0054	1.3503	2.3718	2.8689	4.0864	1.7278	3.7810	0.2584	1.1777	0.8716	1.3575
Transition: Lakes and swamps with small deflation areas	2.1067	1.0378	0.9584	1.5194	0.4320	0.2695	0.6305	0.5341	0.0000	0.0000	0.0025	0.0280
Landform type[1,2]	**Landform element proportion (%) of landform type[3]**											
	311	**312**	**313**	**314**	**321**	**322**	**323**	**324**	**331**	**332**	**333**	**334**
Active gegenwalles	0.2268	0.1479	0.0312	0.0650	0.0676	0.2201	0.0611	0.2556	0.0083	0.0478	0.0070	0.0378
Coastal parabolic dunes	1.2632	1.1906	0.7481	1.3497	1.6563	3.0564	0.9939	2.7561	0.1085	0.5539	0.2352	0.5417
Deflation corridor of active elongate/parabolic dune	0.7290	0.1328	0.0569	0.2244	0.4792	0.4210	0.0370	0.6943	0.0022	0.0432	0.0086	0.0729
Depositional area in deflation corridor	0.0153	0.0052	0.0089	0.0104	0.0098	0.0107	0.0083	0.0122	0.0000	0.0006	0.0003	0.0000
Elongate parabolic dune head	2.3270	1.2296	1.0972	3.6463	3.3477	7.0910	1.2741	6.3492	0.5166	9.9906	3.5317	11.5421
Extensive development of small parabolic dune and associated deflation areas	0.0064	0.0064	0.0039	0.0054	0.0103	0.0054	0.0098	0.0093	0.0000	0.0039	0.0001	0.0015
Gegenwalles modified by parabolic dune inception	0.0049	0.0072	0.0056	0.0016	0.0034	0.0636	0.0280	0.0000	0.0000	0.0048	0.0002	0.0019
Ill-defined lakes and swamps	0.0698	0.2047	0.1069	0.1003	0.0399	0.1340	0.0497	0.1321	0.0005	0.0218	0.0057	0.0195
Inter-dune sand plains <20 m[4]	0.7556	1.9047	0.6864	2.0302	0.0493	0.2186	0.0511	0.2054	0.0078	0.0084	0.0044	0.0080
Inter-dune sand plains >20 m[4]	5.6362	9.1914	3.7350	12.3139	0.8097	5.0181	1.0948	4.9491	0.0140	0.0937	0.0761	0.1774
Long narrow ridges	2.1398	4.3841	1.2288	4.1312	1.0747	11.5648	1.1182	8.8094	0.1667	3.1340	0.2867	2.8913
Relict gegenwalles	0.0107	0.0160	0.0193	0.0134	0.0000	0.0323	0.0088	0.0003	0.0000	0.0022	0.0005	0.0000
Small deflation areas	0.2187	0.1112	0.1750	0.4067	0.2942	0.0631	0.2010	0.7829	0.0000	0.0000	0.0038	0.0045
Small parabolic dunes	1.1765	1.1559	0.6977	1.2324	3.4299	4.0196	1.7718	3.9202	1.3537	3.4234	2.4030	3.5792
Transition: Lakes and swamps with small deflation areas	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landform type[1,2]	**Landform element proportion (%) of landform type[3]**											
	411	**412**	**413**	**414**	**421**	**422**	**423**	**424**	**431**	**432**	**433**	**434**
Active gegenwalles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Coastal parabolic dunes	0.0009	0.0006	0.0002	0.0006	0.0033	0.0035	0.0028	0.0033	0.0000	0.0000	0.0000	0.0000
Deflation corridor of active elongate/parabolic dune	0.0034	0.0000	0.0000	0.0000	0.0089	0.0058	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
Depositional area in deflation corridor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Elongate parabolic dune head	1.6775	1.9296	0.4944	1.8873	1.1613	5.0307	0.4696	2.7944	0.1582	1.7192	0.7219	1.8564
Extensive development of small parabolic dune and associated deflation areas	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Gegenwalles modified by parabolic dune inception	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ill-defined lakes and swamps	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inter-dune sand plains <20 m[4]	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Inter-dune sand plains >20 m[4]	0.2517	0.3535	0.1979	0.4551	0.1441	0.8837	0.0832	0.8829	0.0051	0.0252	0.0003	0.0105
Long narrow ridges	1.3823	2.2539	0.5075	1.4392	0.2320	3.8309	0.2078	1.7252	0.0000	0.0324	0.0165	0.0613
Relict gegenwalles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Small deflation areas	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Small parabolic dunes	0.0635	0.0650	0.0434	0.0699	0.1757	0.2532	0.1089	0.2233	0.1381	0.2377	0.1621	0.2611
Transition: Lakes and swamps with small deflation areas	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

[1]These data are to be used for the analysis of the proportion of land occupied by each landform element in each dunefield landform type relevant to the borrow pits and mined-out areas disturbance types (*ie* it excludes these landform types: outcrops, sand veneer over outcrop, stream corridors and large waterbodies).
Notes: landforms were classified in the Landform Mapping of Cape Flattery Dunefield Report (NRA 1995, *Landform Mapping of Cape Flattery Dunefield*, prepared for CFSM Pty Ltd by NRA Environmental Consultants, November 1995) with reference to the Assessment of the Cape Bedford - Cape Flattery Dunefield for National Estate Listing (Stock, EC 1991, *Assessment of the Cape Bedford - Cape Flattery Dunefield for National Estate Listing*, Objection Assessment, A Report to the Australian Heritage Commission, September 1991).

[2] Landform mapping was updated using contemporary elevation data captured in 2014 and aerial photography dated 2015.

(NRA 2019. *Cape Flattery Silica Mine Landform Mapping Update and Baseline Natural Un-mined Dunefield Landform Element Area Proportion Table*, prepared for CFSM Pty Ltd by NRA Environmental Consultants. Issued, 25 September 2019.)

[3] Landform elements are parts of a landform with defined unique combinations of slope, relief and aspect. Refer to **Table C** for landform characteristic classes and data used to generate landform elements.

[4] Refers to elevation above sea level (AHD).

Table E: Landform group classification and landform group descriptions

Landform group	Relief	Slope angle	Slope aspect	Relevant landform element codes[1]	Landform group description
1	<5 m	all	all	111-134	• All low-lying areas. Slope angle and aspect would have a negligible influence on vegetation structure and composition when relief is <5 m. • A high proportion of these areas are likely to be subject to waterlogging, which would influence vegetation composition similarly across each landform element.
2	≥5 m	<10°	all	211-214, 311-314, 411-414	• All relatively flat, elevated areas. • Relief above 5 m would have little influence on vegetation structure and composition within the narrow range of elevations at CFSM. • Slope aspect is unlikely to have an influence in relatively flat terrain because differences in exposure to prevailing conditions are negligible and inconsistent.
3	≥5 m	10° - 30°	87.5° - 177.5°	221, 321, 421	• All elevated areas with moderate slopes and aspects (*ie* sides of ridges). • Relief above 5 m would have little influence on vegetation structure and composition within the narrow range of elevations at CFSM. • Slope aspect on moderate slopes is likely to have some influence on exposure and is likely to influence vegetation structure and composition.
4	≥5 m	10° - 30°	177.5° - 267.5	222, 322, 422	
5	≥5 m	10° - 30°	267.5° - 357.5°	223, 323, 423	
6	≥5 m	10° - 30°	357.5°-87.5°	224, 324, 424	
7	≥5 m	>30°	87.5°-177.5°	231, 331, 431	• All elevated areas with steep slopes and aspects (*ie* sides of ridges). • Relief above 5 m would have little influence on vegetation structure and composition within the narrow range of elevations at CFSM. • Slope aspect and steep terrain is likely to influence exposure and is likely to influence vegetation structure and composition.
8	≥5 m	>30°	177.5°-267.5°	232, 332, 432	
9	≥5 m	>30°	267.5°-357.5°	233, 333, 433	
10	≥5 m	>30°	357.5°-87.5°	234, 334, 434	

[1] Refer to **Table C** for landform characteristic classes used to generate landform element codes.

Table F: Plant functional group codes that are used to determine plant functional groups

Plant functional attribute	Range of possible traits	Plant functional group (PFG) code component[1]
Growth form	• Woody species (trees and shrubs) • Graminoids (grasses, sedges and rushes) • Forbs (including vines, ferns and epiphytes)	• W • G • F
Nutrient acquisition strategy	• Nitrogen-fixing (may also be mycorrhizal) • Specialised root systems (some graminoids) • Mycorrhizal associations only (for woody species and forbs) • Other	• N • S • M • -
Primary regeneration mode	• Seeder • Resprouter organ (rhizomes, corms, tubers, large woody subterranean organs) • Vegetative reproduction/dispersal	• 1 • 2 • 3

[1] For example, a plant species with a plant functional group code of WN1: has a woody species growth form (either a tree or a shrub), has a nitrogen-fixing nutrient acquisition strategy, and its primary reproduction mode is by seed.

Notes: Nutrient acquisition strategy identified with reference to Brundrett (2008), Lamont (1982) and MESA (1999-2015).

Brundrett, M 2008, *Mycorrhizal Associations: The Web Resource Version 2*, sponsored by Australian Centre for International Agricultural Research, Lotterywest and School of Plant Biology, The University of Western Australia, <https://mycorrhizas.info/info.html>.

Lamont, B 1982, Mechanisms for enhancing nutrient uptake in plants, with particular reference to mediterranean South Africa and Western Australia, *The Botanical Review*, 48: 597-689.

MESA 1999-2015, *Mangroves of Australia – Adaptations*, Marine Education Society of Australasia, <http://www.mesa.edu.au/mangroves/mangroves02.asp.>

Table G: Native plant framework species used in the original seeding and tubestock planting in areas rehabilitated before 2012

Growth form	Family	Species
Tree	Chrysobalanaceae	*Parinari nonda*
Tree	Combretaceae	*Terminalia muelleri*
Gramminoid	Cyperaceae	*Arthrostylis aphylla*
Gramminoid	Cyperaceae	*Fimbristylis cymosa*
Gramminoid	Cyperaceae	*Gahnia sieberiana*
Gramminoid	Cyperaceae	*Schoenus calostachyus*
Gramminoid	Cyperaceae	*Schoenus sparteus*
Forb	Dilleniaceae	*Hibbertia banksii*
Shrub	Ebenaceae	*Diospyros compacta*
Shrub	Ericaceae	*Leucopogon ruscifolius*
Shrub	Ericaceae	*Leucopogon yorkensis*
Tree	Fabaceae	*Acacia brassii*
Shrub	Fabaceae	*Acacia calyculata*
Tree	Fabaceae	*Acacia crassicarpa*
Shrub	Fabaceae	*Acacia humifusa*
Shrub	Fabaceae	*Acacia legnota*
Tree	Fabaceae	*Acacia platycarpa*
Shrub	Fabaceae	*Acacia pubirhachis*
Tree	Fabaceae	*Acacia racospermoides*
Shrub	Fabaceae	*Bossiaea arenicola*
Shrub	Fabaceae	*Labichea buettneriana*
Forb	Hemerocallidaceae	*Dianella caerulea*
Forb	Hemerocallidaceae	*Dianella longifolia* var. *longifolia*
Forb	Laxmanniaceae	*Lomandra banksii*
Vine	Menispermaceae	*Tinospora esiangkara*
Shrub	Myrsinaceae	*Myrsine porosa*
Shrub	Myrtaceae	*Asteromyrtus lysicephala*
Tree	Myrtaceae	*Corymbia intermedia*
Shrub	Myrtaceae	*Leptospermum polygalifolium*
Shrub	Myrtaceae	*Lithomyrtus obtusa*
Shrub	Myrtaceae	*Melaleuca arcana*
Shrub	Myrtaceae	*Melaleuca polandii*
Shrub	Myrtaceae	*Neofabricia myrtifolia*
Shrub	Myrtaceae	*Syzygium banksii*
Tree	Myrtaceae	*Syzygium forte* subsp. *forte*
Shrub	Myrtaceae	*Syzygium suborbiculare*
Shrub	Myrtaceae	*Thryptomene oligandra*
Shrub	Myrtaceae	*Xanthostemon arenarius*
Shrub	Picrodendraceae	*Neoroepera banksii*
Shrub	Picrodendraceae	*Petalostigma pubescens*

Growth form	Family	Species
Shrub	Proteaceae	*Grevillea glauca*
Shrub	Proteaceae	*Grevillea pteridifolia*
Shrub	Proteaceae	*Persoonia falcata*
Shrub	Putranjivaceae	*Drypetes deplanchei*
Gramminoid	Restionaceae	*Baloskion tetraphyllum* subsp. *meiostachyum*
Gramminoid	Restionaceae	*Dapsilanthus ramosus*
Shrub	Rubiaceae	*Psydrax odorata*
Shrub	Rutaceae	*Boronia alulata*
Shrub	Santalaceae	*Exocarpos latifolius*
Shrub	Sapindaceae	*Dodonaea polyandra*
Tree	Sapotaceae	*Manilkara kauki*
Shrub	Sapotaceae	*Sersalisia sericea*
Forb	Violaceae	*Hybanthus enneaspermus*

[1] This species list is to be used when assessing natural recruitment of plants into rehabilitation domains rehabilitated before 2012. Land rehabilitated before 2012 is shown on **Figure 2**.

Table H: Infrastructure to be retained for Hope Vale Owner Use as itemised in the Retained Infrastructure Deed[1]

Disturbance category	Disturbance Type	Retained Infrastructure assets
Township (excluding landfill) and infrastructure	• Township • Old offices, workshop and store. • Quarry (current sand blasting area and pad) • New workshops, store and offices • Supply wharf area • Communications	1. Concrete pads that are situated under the following: • Township • Workshop, offices, store and bunker • Blast yard • Administration office • Crib rooms • Abandoned fuel storage • Washdown bay (including oil/water separator) 2. Township buildings (including swimming pool and associated infrastructure) and Ellicott House 3. Hardstand lawns and garden areas 4. Old workshop (new shed behind Main Fuel Farm) 5. Water tanks 6. Fuel storage area 7. Supply wharf area 8. Service jetty and all associated infrastructure 9. Communications infrastructure 10. Administration office 11. Workshop 12. Stores buildings 13. Bunker
Access	Township access roads, fuel line and power lines	14. Main township access roads including: • All township roads • Infrastructure access roads • Wharf and beach access roads • All roads leading to concrete pads, buildings and hardstand areas
	Mining access tracks to be retained	15. Main mining access roads including:

Disturbance category	Disturbance Type	Retained Infrastructure assets
		• Slurry Line road • Haul roads • Conveyer road for access north of the mine • Airport Lake and First Ridge rehabilitation access roads • All roads leading to concrete pads, buildings and hardstand areas
Infrastructure	Airstrip and associated infrastructure	16. Concrete pads that are situated under the following: • Airstrip and hanger 17. Airport building 18. Hardstand, lawns and garden areas
Infrastructure and Treatment Plant	• Main fuel farm • Sewage Treatment Plant (STP) • Water supply • Power house and fuel storage • Water pump, nursery, pipe shed, filter belt pad and laydown areas	19. Concrete pads that are situated under the following: • Reclaimer rails • Bucket wheel • Power screen • Nursery • Filter belt • Low Iron Plant • Old Mill • Motor Control Centre and transformers 20. Power house fuel storage 21. Main Fuel Farm 22. Sewage Treatment Plant 23. Power house 24. Crib room 25. Poly shed 26. Nursery 27. Water tanks 28. Hardstand, lawns and garden areas 29. Water supply 30. Water pump, pipe shed 31. Filter belt 32. Motor Control Centre 33. Laydown areas
Dams and Diversions	Arnie's Dam	34. Arnie's Dam (*Syn*. Arnie's Lake)
	Water diversions	35. Diversion channels[2]
Treatment Plant (old)	Stockpile and mill outwash	36. Concrete pads that are situated under the following: • Reclaimer rails • Bucket wheel • Power screen • Filter belt • Low Iron Plant • Old Mill 37. Hardstand areas
Treatment Plant (new)	Process pond and new mill infrastructure	38. Concrete pads that are situated under the following: • New mill • Trommel • Water tanks • Constant Density Cone (CDC) • Water supply 39. Hardstand areas 40. Crib room

[1] Infrastructure for retention as nominated in the *Retained Infrastructure Deed* current as of 13th June 2019. In accordance with clauses 3.1 and 3.2 of the *Retention Infrastructure Deed* (Variations to Retained Infrastructure) between Hope Vale Congress Aboriginal Corporation and Cape Flattery Silica Mines Pty Ltd, the parties can agree to vary the list of Retained Infrastructure by adding additional items of infrastructure or removing items of infrastructure from that list. The parties agree that any variation to the Retained Infrastructure [list] must be: agreed by the AIC [Agreement Implementation Committee] in accordance with the processes set out in the Compensation Agreement (or otherwise agreed by the parties); and documented as a minute of the meeting at which the variation was agreed, upon with the terms of this Deed, as the case requires (*ie* apply to additional items of infrastructure ***or*** cease to apply to any items of infrastructure removed from the list of Retained Infrastructure).

[2] The diversions are channels between natural waterbodies that are not disturbed by other mining operations.

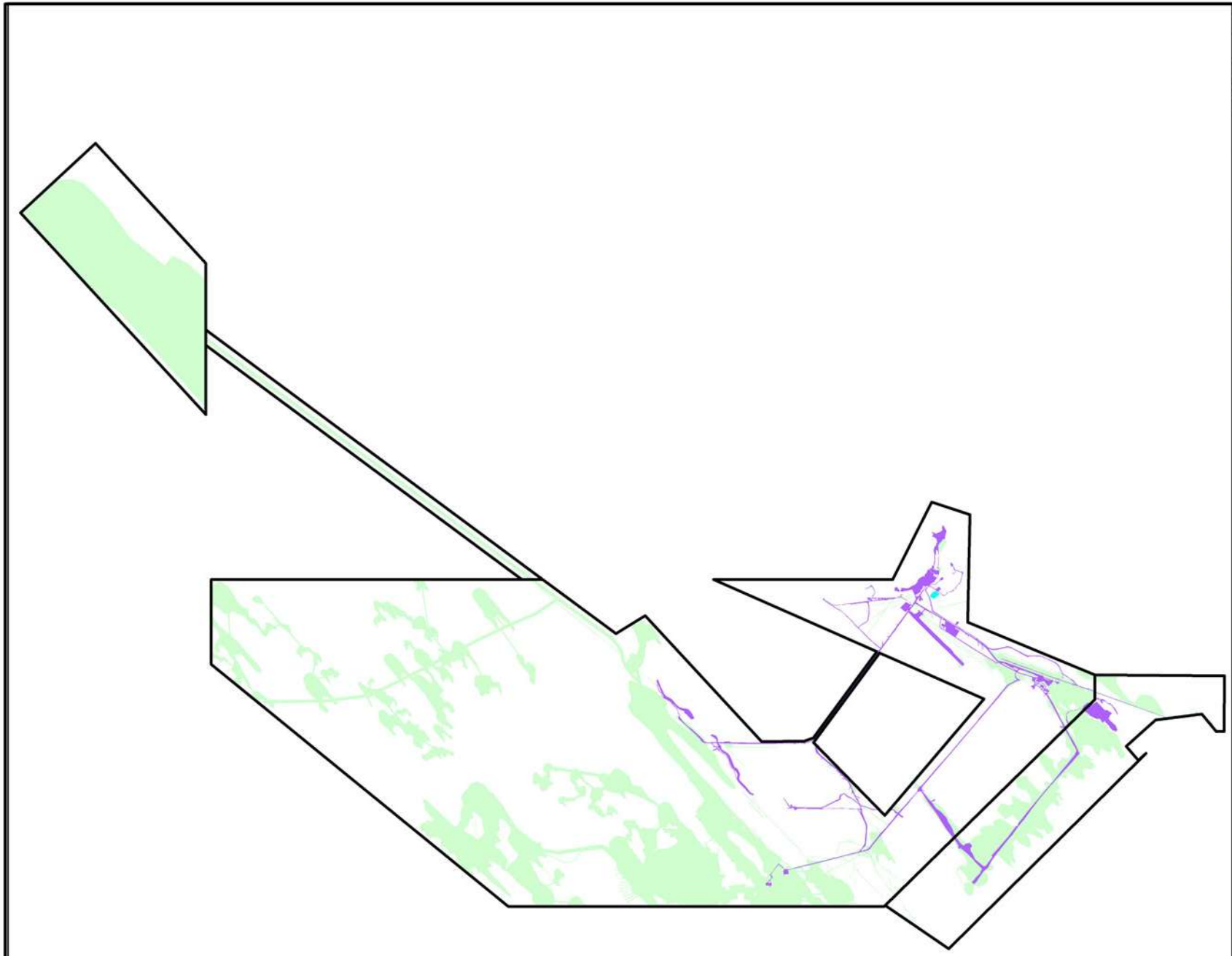

Figure 1: Final site design

Project: Cape Flattery Silica Mine Progressive Rehabilitation and Closure Plan

Mining lease

Maximum disturbance footprint[3, 4]

Post-mining Land Use

- Conservation Use
- Hope Vale Owner Use
- Native Grass

Environmental Authority EPML00550113 Appendix 1 Figure 3 relevant footnotes:

3. Production schedule is indicative and is not absolute, with variation due to many factors. Areas and types of disturbance will remain within approved limits (*ie* approved in EA and reflected in the ERC). Dune fields are mobile and therefore spatial definition will vary over time (Pye 1983a; 1983b). The upper limit for active mining at any one time is 150 ha.

4. Mobile infrastructure corridors presented are indicative and subject to change. Future mine planning areas are not precise. The maximum disturbance area for mobile infrastructure at any one time is 125 ha.

N

0 5

Kilometres

Source: Queensland Department of Resources 2022, Cape Flattery Silica Mines Pty Ltd 2019.

NRA Ref: 101098.01
Date: September 2023

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Recommended print size: A4

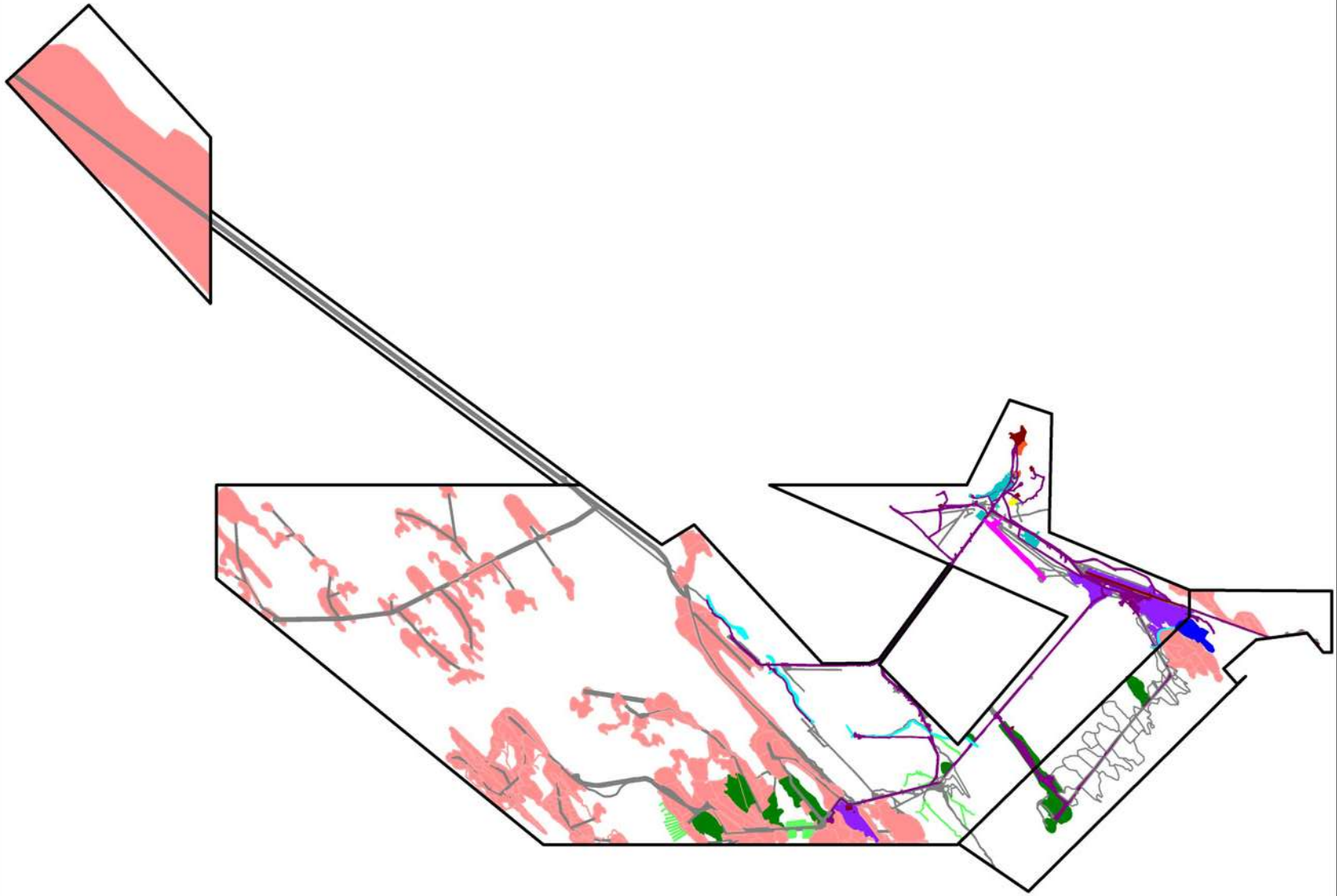

Figure 2: Rehabilitation areas

Project: Cape Flattery Silica Mine Progressive Rehabilitation and Closure Plan

Mining lease

PMLU Conservation Use [3, 4]

- Existing rehabilitation (certified)
- RA1 - Existing rehabilitation (mining)
- RA2 - Existing rehabilitation (access)
- RA3 - Mining (and Borrow Pits)
- RA4 - Access and mobile infrastructure
- RA5 - Treatment Plant
- RA6 - Quarries

PMLU Hope Vale Owner Use [3]

- RA7 - Township
- RA8 - Infrastructure (airstrip)
- RA10 - Infrastructure and treatment plant
- RA11 - Access
- RA12 - Dams and diversions (water diversions)
- RA13 - Dams and diversions (Arnie's Dam)

PMLU Native Grass [3]

- RA9 - Infrastructure (landfill)

Environmental Authority EPML00550113 Appendix 1 Figure 3 relevant footnotes:

3. Production schedule is indicative and is not absolute, with variation due to many factors. Areas and types of disturbance will remain within approved limits (*ie* approved in EA and reflected in the ERC). Dune fields are mobile and therefore spatial definition will vary over time (Pye 1983a; 1983b). The upper limit for active mining at any one time is 150 ha.

4. Mobile infrastructure corridors presented are indicative and subject to change. Future mine planning areas are not precise. The maximum disturbance area for mobile infrastructure at any one time is 125 ha.

N

0 4

Kilometres

Source: Pye 1983a;1983b, Queensland Department of Resources 2022, Cape Flattery Silica Mines Pty Ltd 2019.

NRA Ref: 101098.01
Date: September 2023

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Recommended print size: A4

Appendix D:
Cape Flattery Silica Mine
Inspection Test Procedure Form

Inspection Test Procedure Form

To be read in conjunction with the CFSM Environmental Authority (EA) EPML00550113, the CFSM Rehabilitation Manual and relevant CFSM environmental procedures. Each disturbance type will be rehabilitated in accordance with the post-mining land use as nominated in EA Schedule F.

An Inspection Test Procedure (ITP) form must be completed for each disturbance area number, as nominated on the CFSM Disturbed Land Register (DLR). Each ITP component, for pre-mining rehabilitation planning and post-mining rehabilitation works, must be checked for compliance by the CFSMPL General Manager or their nominated delegate before the disturbance area number can proceed to the next step (*ie* release of hold point).

Completed ITP forms will be submitted to the relevant administrative authorities as supporting evidence for rehabilitation certification. They must be filed on-site with all supporting documentation attached (in hard copy and digital formats) and accessible on request by any appropriate authority.

Disturbed Land Register Disturbance Area Number:

Pre-mining rehabilitation planning		
Final landform design		
Description of final landform type:		
Final landform design model (SURPAC) attached:	✓	X
Final landform design model reference number:		
Final landform design model tested against completion criteria[1]:	✓	X
Final landform design model passes all completion criteria:	✓	X
Explain reason if any completion criteria failed:		
Final landform design rectified and passes all completion criteria:	✓	X
Additional comments:		
Release of hold point		
The final landform type design complies with the CFSM EA conditions[1]. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

[1] *Landscape context* completion criteria in EA Schedule F Table 2b.

Disturbed Land Register Disturbance Area Number:

Pre-mining rehabilitation planning		
Pre-disturbance Land Clearing Permit		
Land Clearing Permit number:		
Land Clearing Permit approved:	✓	X
Land Clearing Permit attached:	✓	X
Completed Vegetation Inspection Form attached:	✓	X
Were T&NT[1] plants identified during vegetation inspection:	✓	X
T&NT plants[1] found:		
Epiphytic T&NT plants translocated:	✓	X
Translocation date:		
Species translocated:		
Number of individuals translocated:		
Translocated from: latitude/longitude: °S, °E		
Translocated to: latitude/longitude: °S, °E		
Translocation site description:		
Vegetation removed and stockpiled as per the Land Clearing Procedure[2]	✓	X
Topsoil removed and stockpiled as per the Land Clearing Procedure[2]:	✓	X
Date topsoil removed:		
Topsoil directly placed on available rehabilitation area:	✓	X
If yes, DLR disturbance area number where topsoil placed:		
If no, topsoil stockpile location (latitude/longitude): °S, °E		
Estimated stockpile volume (m^3):		
Topsoil stockpile treatment details (*ie* trash layering, revegetation):		
Additional comments:		
Release of hold point		
The Land Clearing Permit complies with the CFSM Land Clearing Procedure[2] requirements. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

[1] Threatened and Near Threatened (T&NT) plants listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) and/or the Queensland *Nature Conservation Act* 1992 (NC Act) as Critically Endangered, Endangered, Vulnerable or Near Threatened.

[2] CFSM Procedure number CFSM-ENV-PRO-0007.

Disturbed Land Register Disturbance Area Number:

Post mining rehabilitation works		
Infrastructure removal		
Disturbance area (or part thereof) listed on the *Retention of Infrastructure Deed*:	✓	X
If yes, give details (*ie* infrastructure type, location):		
Infrastructure removed/retained in accordance with the *Retention of Infrastructure Deed*:	✓	X
Retained infrastructure has been certified by an appropriately qualified person:	✓	X
Certification report attached:	✓	X
Recommendations actioned:	✓	X
Additional comments:		
Release of hold point		
All infrastructure has been removed/retained in accordance with the *Retained Infrastructure Deed*. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

Disturbed Land Register Disturbance Area Number:

Post mining rehabilitation works		
Land contamination		
Land has been used for a notifiable activity and may be contaminated:	✓	X
If no, go to release of hold point		
If yes, give details (*ie* notifiable activity type, location, extent, duration of notifiable activity):		
Site has been inspected by an appropriately qualified person:	✓	X
Site inspection report attached:	✓	X
Recommendations actioned:	✓	X
If no, give details:		
Site removed from Contaminated Land Register:	✓	X
Site Management Plan required:	✓	X
If yes, give details:		
Site Management Plan attached:	✓	X
Landholder statement accepting Site Management Plan implementation is attached:	✓	X
Additional comments:		
Release of hold point		
Contamination associated with a notifiable activity has been removed from the Contaminated Land Register ***OR*** a Site Management Plan has been certified by an appropriately qualified person and approved by the regulator, under the *Environmental Protection Act* 1994, and the Site Management Plan implementation has been accepted by the landholder. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

Disturbed Land Register Disturbance Area Number:

Post-mining rehabilitation works		
Landform type re-formation		
Final landform type design reviewed and updated[1]:	✓	X
Final landform type design remodel (SURPAC) attached:	✓	X
Final landform type design remodel tested against completion criteria[2]:	✓	X
Final landform type design remodel passes all completion criteria:	✓	X
Explain reason if any completion criteria failed:		
Final landform design rectified and passes all completion criteria:	✓	X
Landform group classification maps provided to CFSM Nursery Officer:	✓	X
Rehabilitation area re-profiled as per the final landform design specifications:	✓	X
Drainage conforms with water management plans (where applicable):	✓	X
Type of erosion and sediment control structures in place (where applicable):		
As Built Drawings/Plans attached:	✓	X
Additional comments:		
Release of hold point		
The landform re-formation, drainage, and erosion and sediment control works comply with the design requirements and the conditions of the CFSM EA. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

[1] Final landform design reviewed and updated with consideration of the landform types in the surrounding landscape, availability of sand and topsoil for re-profiling, drainage and/or water requirements, and potential for re-disturbance.

[2] *Landscape context* completion criteria in EA Schedule F Table 2b.

Disturbed Land Register Disturbance Area Number:

Post-mining rehabilitation works		
Surface preparation		
Ripping of compacted access tracks/conveyer lines completed:	✓	X
Details (*ie* depth (m), area (ha), location description):		
Topsoil placement undertaken in accordance with design requirements[1]:	✓	X
Topsoil source:		
Stockpile source location:		
Stockpile storage history (*ie* duration stockpiled, vegetated):		
Topsoil coverage:		
Depth (m):		
Area (ha):		
Comments:		
Trash/brushmatting cover placed[1]:	✓	X
If yes, provide details:		
Cover type:		
Source location:		
Depth (m):		
Area (ha):		
Comments:		
Additional comments:		
Release of hold point		
Topsoil/trash/brushmatting placement complies with design requirements. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

[1] As per EA conditions in Schedule F Table 2b, records of propagule application (*ie* stored/directly placed topsoil, trash or brusmatting) used in individual rehabilitation areas must be kept as proof of placement.

Disturbed Land Register Disturbance Area Number:

Post-mining rehabilitation works		
Direct seeding and fertilising		
Sterile Sorghum/Millet mix complies with requirements:	✓	X
Native seed treated according to requirements:	✓	X
Direct seeding native species list submitted for annual return statutory reporting[1]:	✓	X
Direct seeding mix native species used:		
Direct seeding mix application rates:		
Sterile Sorghum/Millet mix (kg/ha):		
Native groundcover or grass mix (kg/ha):		
Acacia solenota and *Acacia racospermoides* mix (kg/ha):		
Native shrub framework species (kg/ha):		
Fertiliser applied to rehabilitation area:	✓	X
Fertiliser used:		
Application rate (kg/ha):		
Details of fertiliser reapplication:		
Dates reapplied:		
Additional comments:		
Release of hold point		
The direct seeding and fertilising treatments comply with the design requirements. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

[1] As per EA conditions in Schedule F Table 2b, records of planting stock (direct seeding/tubestock planting) used in individual rehabilitation areas must be provided with the CFSMPL Annual Return for Environmental Authority EPML00550113.

Disturbed Land Register Disturbance Area Number:

Post-mining rehabilitation works		
Tubestock planting		
Tubestock species list and planting densities attached:	✓	X
Tubestock species list submitted for annual return statutory reporting[1]:	✓	X
Tubestock species planted are appropriate for the landform group:	✓	X
Dates planted:		
Total area planted:		
Total number planted:		
Average planting density (plants/ha):		
Fertiliser used:		
Tubestock mulched with trash:	✓	X
Supplementary irrigation required:	✓	X
If yes, give details (*ie* infrastructure used, distance from water source, reason required):		
Date irrigation infrastructure removed:		
Additional comments:		
Release of hold point		
The tubestock planting complies with design requirements. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

[1] As per EA conditions in Schedule F Table 2b, records of planting stock (direct seeding/tubestock planting) used in individual rehabilitation areas must be provided with the CFSMPL Annual Return for Environmental Authority EPML00550113.

Disturbed Land Register Disturbance Area Number:

Rehabilitation maintenance monitoring		
Maintenance monitoring		
Rehabilitation has been monitored/maintained for minimum 12 months:	✓	X
Retreatment of direct seeding and/or tubestock required:	✓	X
If yes, give details:		
Area of retreatment (ha):		
Direct seeding mix used:		
Tubestock species list and planting densities attached:	✓	X
Comments:		
Further remedial landform stabilisation techniques required:	✓	X
If yes, give details:		
Technique applied:		
Comments:		
Rehabilitation area can be included in the CFSM Rehabilitation Monitoring Program for certification:	✓	X
Additional comments:		
Release of hold point		
The rehabilitation area has been monitored and maintained for a minimum of 12 months and is available for inclusion into the annual CFSM Rehabilitation Monitoring Program and progressive certification. Approval to proceed is granted by the CFSMPL General Manager or delegate.		
SIGNED **POSITION** **DATE**		

Following completion of ITP form

At the completion of this ITP form, the rehabilitation area, rehabilitated for *Conservation Use*, is approved for inclusion in the annual CFSM Rehabilitation Monitoring Program and will be assessed herein in accordance with the conditions outlined in EA Schedule F. Refer to annual monitoring reports for progress towards successful achievement of rehabilitation and certification.

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