ATTACHMENT B – Rehabilitation Assessment Report – Trieste 3D Seismic Project

REHABILITATION ASSESSMENT

TRIESTE 3D SEISMIC PROJECT,

Prepared By

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Prepared For

Beach Energy Limited

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LIST OF ABBREVIATIONS

BAM Act:	*Biosecurity and Agriculture Management Act 2007* (WA)
BC Act:	*Biodiversity Conservation Act 2016* (WA)
BOM:	Bureau of Meteorology
DCCEEW:	Department of Climate Change, Energy, the Environment and Water
DBCA:	Department of Biodiversity, Conservation and Attractions
DPaW:	Department of Parks and Wildlife (now under DBCA)
DPIRD:	Department of Primary Industries and Regional Development (includes Agriculture and Food)
EP Act:	*Environmental Protection Act 1986* (WA)
EPA:	Environmental Protection Authority
EPBC Act:	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
IBRA:	Interim Biogeographical Regionalisation for Australia
MCPL:	Mattiske Consulting Pty Ltd
WAH:	Western Australian Herbarium (PERTH)
WAOL:	Western Australian Organism List
WC Act:	*Wildlife Conservation Act 1950* (WA) (superseded by BC Act as of 01 January 2010)

EXECUTIVE SUMMARY

Mattiske Consulting Pty Ltd was commissioned in August 2022 by Beach Energy Limited to undertake the 2022 monitoring in October2022 of the established rehabilitation transects and analogue transects within the Trieste 3D Seismic Project area. This report summarises the trends over time on these respective transects in the context of assessing the progress of rehabilitation on the Trieste 3D Seismic project area.

The Trieste 3D Seismic Project area lies east of the Brand Highway between the towns Eneabba and Dongara, Western Australia. A large portion of the Trieste 3D Seismic Project area is on Unallocated Crown Land. The focus area includes both rehabilitation and analogue areas. As a result, transects were established to evaluate impact and recovery of native vegetation along proposed Source and Receiver lines. In October 2020, eleven rehabilitation and one analogue transect were established and monitored along with ten analogue transects previously established in 2019 in the Trieste 3D Seismic Project area.

A total of 323 vascular plant taxa, representative of 127 genera and 49 families, were recorded within the Trieste 3D Seismic Project area transects during 2022 monitoring. The majority of taxa recorded were representative of the Proteaceae (46 taxa), Myrtaceae (42 taxa) and Fabaceae (29 taxa) families. No Threatened flora species pursuant to pursuant to Part 2, Division 1, Subdivision 2 of the BC Act and as listed by Department of Biodiversity, Conservation and Attractions, or pursuant to section 179 of the EPBC Act or listed by the Department of Climate Change, Energy, the Environment and Water, were recorded within the Trieste 3D Seismic Project area transects. Ten Priority flora species were recorded within the Trieste 3D Seismic survey area transects during 2022 monitoring. One Priority 1 taxa (*Tricoryne soullierae*), six Priority 3 taxa (*Banksia fraseri* var. *crebra*, *Hemiandra* sp. Eneabba (H. Demarz 3687), *Hypocalymma gardneri*, *Mesomelaena stygia* subsp. *deflexa*, *Persoonia ?filiformis* and *Stylidium drummondianum*) and three Priority 4 taxa (*Banksia scabrella*, *Conostephium magnum* and *Schoenus griffinianus*) were recorded during October 2022 monitoring.

Key indicators of rehabilitation success including native species richness, native species foliage cover, no new introduction of declared or environmental weeds, stable landforms, lack of erosion evidence, and lack of evidence of dieback were assessed for the 11 analogue transects in the Trieste 3D Seismic survey area.

Species richness ranged from 20 to 28 taxa per transect. Across all 11 analogue transects an average species richness of 25.5 was recorded. All transects passed 12- and 24-month assessment criteria. Foliage cover of perennial native species in the 11 rehabilitation transects monitored in October 2022 ranged from 13.8% to 40.4% cover per transect. Foliage cover of perennial native species in the 11 analogue transects monitored in the Trieste 3D Seismic survey area in October 2022 ranged from 59.6% to 95% cover per transect. Of the 11 rehabilitation transects all passed the 24-month completion criteria target of 20% foliage cover of perennial species against their adjacent analogue transects except for transect 9R which fell short by 4.1%. Rehabilitation transect 9R failed to meet the 12-month completion criteria during the 2020 monitoring period. A total of nine introduced (weed) species were recorded during the October 2022 monitoring period, an increase since previous monitoring periods. All weed species recorded are permitted species pursuant to section 11 of the *Biosecurity and Agriculture Management Act 2007* and are not declared environmental weeds. The weeds were recorded within 8 rehabilitation transects and in six

quadrats along four analogue transects. All sites monitored passed visual assessments for stable landforms, lack of erosion evidence, and no impact by dieback.

The Trieste 3D Seismic area supports high conservation values with a high level of native species richness, native foliage cover, high numbers of priority listed taxa and lack of declared weed species. Monitoring during October 2022 has indicated that transects are meeting set completion criteria at the 24-month targets, with only transect 9R failing to meet the species foliage cover target. All measures have increased with time, suggesting that further monitoring at 5 years since disturbance will see all transects pass completion criteria.

Mattiske Consulting Pty Ltd have determined that an adjustment of the species richness completion criteria target, which is currently relatively conservative, should include an 80% species richness target at 5 years following disturbance. Current criteria appear to address measures of recovery adequately for the Trieste 3D Seismic Project. Irrespective of seasonal variation and different vegetation units, transects monitored within the Trieste 3D Seismic survey area are progressing toward analogue targets (e.g., completion criteria).

1. INTRODUCTION

Mattiske Consulting Pty Ltd (MCPL) was commissioned in August 2022 by Beach Energy Limited to undertake the 2022 monitoring of the rehabilitated and analogue transects established in 2020 within the Trieste 3D Seismic survey area. More specifically, this survey outlines the methodology and results from rehabilitation assessment conducted in October 2022 along and adjacent to Source and Receiver lines within the Trieste 3D Seismic Project area, located within EP320.

1.1. Location and Scope of Project

The Trieste 3D Seismic survey area lies within the Irwin Botanical District of the South-West Botanical Province (Beard 1990), east of the Brand Highway between the towns Eneabba and Dongara, Western Australia. The Trieste 3D Seismic Project covers 21,820 ha, and includes areas of native vegetation, a small portion of Nature Reserve (R 25495) and a section of the Arrowsmith River, with remnant vegetation patches and large areas on private properties (Figure 1). The Unallocated Crown Land (UCL; accessible by Correy Road) formed the focus area in which analogue transects were established in August 2019 to characterise the area and provide baseline information prior to disturbance by 3D Seismic survey along source and receiver line, which took place at the end of 2019 and beginning of 2020. In October 2020, rehabilitation transects were established in impacted sites adjacent to analogue transects to evaluate impact and recovery of native vegetation along Source and Receiver lines. Transects were assessed during October 2022. Assessing the progress of regrowth after seismic activities through comparisons with analogue sites can allow for progressive improvements and remedial actions to be undertaken in management practices.

1.2. Environmental Legislation and Guidelines

The following key Commonwealth (federal) legislation relevant to this survey is the:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The following key Western Australian (state) legislation relevant to this survey include the:

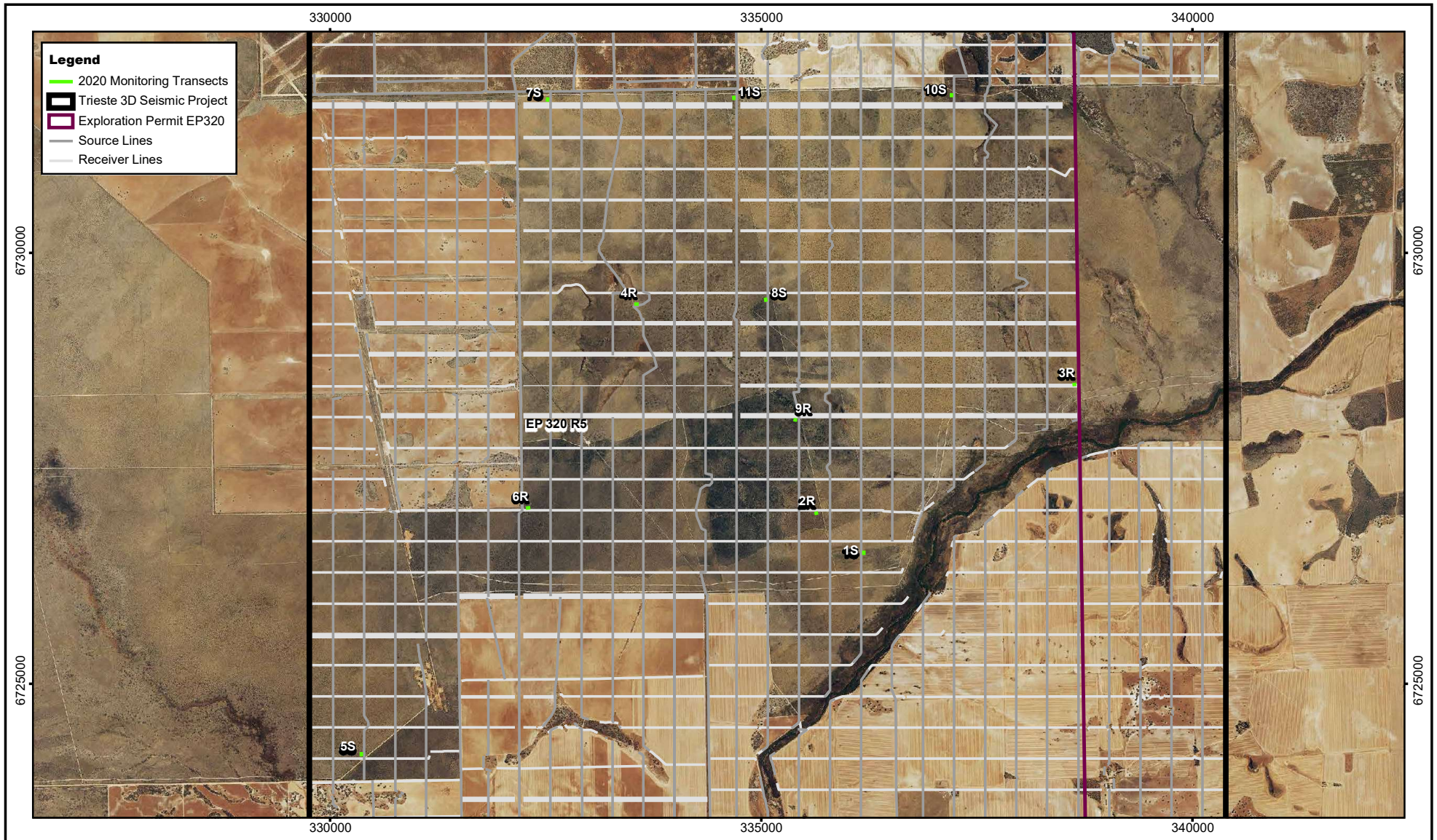
- *Biodiversity Conservation Act 2016* (BC Act);
- *Biosecurity and Agriculture Management Act 2007* (BAM Act); and
- *Environmental Protection Act 1986* (EP Act).

Furthermore, key Western Australian guidelines relevant to this survey are the:

- *Technical Guidance – Flora and vegetation surveys for environmental impact assessment* (Environmental Protection Authority [EPA] 2016a); and
- *Environmental Factor Guideline: Flora and Vegetation* (EPA 2016b).

Definitions of flora and vegetation terminology commonly used throughout this report are set out in Appendices A1 – A3.

Source:



	Client: BEACH ENERGY	N	0 0.75 1.5km Scale: 1:60,000 MGA94 (Zone 50) CAD Ref: a2505F005 Date: December 2020 | Rev: A | A4	Mattiske Consulting Pty Ltd 28 Central Road, Kalamunda WA 6076 ~ Tel: 9257 1625 ~ Fax: 9257 1640 Author: E M Matttiske | MCPL Ref: BEP2002/028/20 Drawn: CAD Resources ~ www.cadresources.com.au Tel: (08) 9246 3242 ~ Fax (08) 9246 3202	**Trieste 3D Seismic Survey** **Transects** **December 2020**	Figure: **1**

2. BACKGROUND

2.1. Regional Context

The Trieste 3D Seismic survey area lies within the Irwin Botanical District of the South-West Botanical Province (Beard 1990). More recently, the vegetation of Western Australia has been assigned to bioregions and subregions under the Interim Biogeographical Regionalisation for Australia (IBRA), with the survey area being within the Lesueur Sandplain sub region of the Geraldton Sandplains Bioregion (DCCEEW 2022a).

2.2. Climate

Beard (1990) described the climate of the Northern Sandplains as dry, warm Mediterranean. The area has a winter precipitation of 300–500 mm and seven to eight dry months per year (Beard 1990). Rainfall and temperature data for Eneabba is no longer available due to the closing of the Eneabba weather station, therefore rainfall data from Green Grove and long-term temperature data from Carnamah are illustrated in Figure 2 (BOM 2023). Above average rainfall was recorded during the two months prior to the survey (August and September; 84.9 mm cf. 54 mm), while below average rainfall was recorded in the beginning of the wet season prior to the survey (May and June 2022; 54.6 mm cf. 89.95) (Figure 2). Similar patterns in rainfall are observed in the years preceding 2022 (Figure 2). Maximum and minimum temperature follow similar trends since the establishment of transects during 2019 (Figure 2).

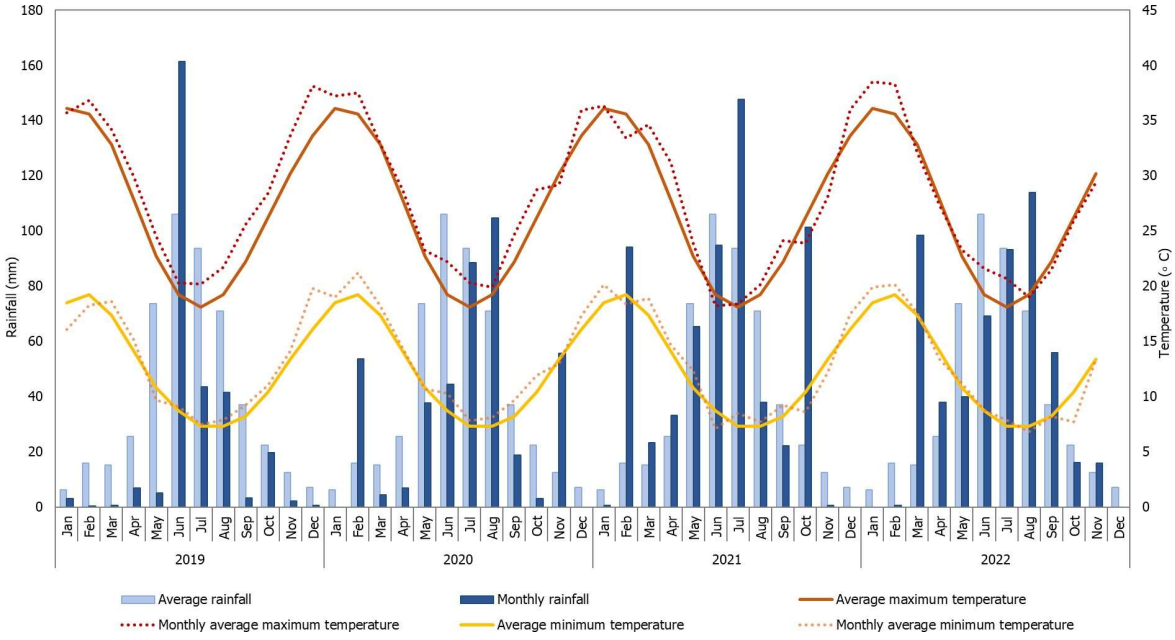


Figure 2: Rainfall and temperature data for Trieste 3D Seismic survey area

Note: Long-term average monthly rainfall (1951-2022) for Green Grove (Station 008057) and temperature (1940-2022) for Carnamah (Station 008025), together with monthly rainfall and temperature data between 2019 and 2022 (BOM 2023).

2.3. Soils and Topography

The Trieste 3D Seismic survey area is located within the Lesueur Sandplain sub region of the Geraldton Sandplains Bioregion (DCCEEW 2021). The system present in the 3D Seismic survey area is the Eridoon system, which occupies a flat coastal plain between coastal limestone deposits and the Pleistocene shoreline. The extensive, undulating, lateritic sandplains mantling Permian to Cretaceous strata (Desmond and Chant 2001), consist of yellow sand that has been blown into ridges, with lakes and swamps in the depressions (Beard 1976).

3. OBJECTIVES

The aim of this survey was to undertake flora and vegetation monitoring of transects within the Trieste 3D Seismic survey area to compare botanical values of rehabilitation areas with those of analogue sites. Specifically, the objectives were:

- Collect and identify vascular plant species present within analogue and rehabilitation transects established during previous survey years along source and receiver lines within the Trieste 3D Seismic survey area;
- Review the conservation status of the vascular plant species recorded by reference to current literature, current listings by the Department of Biodiversity Conservation and Attractions (DBCA 2017, 2022a, 2022b, 2022c), plant collections held at the Western Australian Herbarium (WAH 1998–), and listings by the Department of Climate Change, Energy, the Environment and Water under the EPBC Act (DCCEEW 2022b, 2022c);
- Review the management status of vascular plant species recorded with reference to the BAM Act and *Environmental Weed Strategy for WA* (DPIRD 2023, DPaW 2013);
- Assess each monitoring site for species richness, foliage cover, and presence of declared and environmental weed species;
- Assess the rehabilitation success against completion criteria and progress since the last survey; and,
- Prepare a report summarising the findings.

4. METHODS

4.1. Field Survey

Analogue transects were established during 2019 in the Trieste 3D Seismic survey area. Following establishment of analogue transects four experienced botanists from MCPL established rehabilitation transects in October 2020, and monitored these as well as the analogue transects. All transects have been established in accordance with methods outlined by the Environmental Protection Agencies (EPA) *Technical Guidance – Flora and vegetation surveys for environmental impact assessment* (EPA 2016a). All botanists held valid collection licences to collect flora for scientific purposes, issued under the BC Act.

Between October 3rd and October 6th 2022, eleven transects established along 3D Seismic survey disturbance source and receiver, as well as adjacent analogue transects, were monitored. This included 11 rehabilitation transects (6 along sources lines; 5 along receiver lines) and adjacent analogue transects within the Trieste 3D Seismic survey area. Transect 4R was relocated to the closest disturbed area, 2.3 km away from the transect monitored in August 2019, as no disturbance had taken place on the adjacent receiver line in that specific location (333341 E/ 6729920 N, GDA94_50J). Transect locations are displayed in Table 1 and displayed in Figure 1.

Table 1: Location of transects monitored in the Trieste 3D Seismic survey area, October 2022 (Note: S=source line, R=receiver line)

TRANSECT	TYPE	START (GDA94_50J)		END (GDA94_50J)	
		EASTING	NORTHING	EASTING	NORTHING
1S	Analogue	336184	6726494	336184	6726543
	Rehabilitation	336147	6726494	336149	6726542
2R	Analogue	335658	6726981	335610	6726968
	Rehabilitation	335593	6727009	335544	6727009
3R	Analogue	338652	6728473	338603	6728470
	Rehabilitation	338651	6728449	338604	6728451
4R	Analogue	333550	6729405	333596	6729420
	Rehabilitation	333554	6729381	333601	6729391
5S	Analogue	333557	6724153	330361	6724206
	Rehabilitation	330390	6724168	330390	6724215
6R	Analogue	332321	6727039	332269	6727038
	Rehabilitation	332313	6727008	332267	6727011
7S	Analogue	332522	6731800	332519	6731749
	Rehabilitation	332552	6731798	332554	6731749
8S	Analogue	335045	6729478	335052	6729430
	Rehabilitation	335075	6729508	335075	6729461
9R	Analogue	335412	6728058	335366	6728060
	Rehabilitation	335351	6728088	335302	6728089
10S	Analogue	337203	6731854	337202	6731802
	Rehabilitation	337234	6731821	337236	6731774
11S	Analogue	334678	6731821	334681	6731772
	Rehabilitation	334714	6731825	334716	6731778

Photographs taken at the start and end of each transect are displayed in Appendix B.

Key indicators of rehabilitation success were assessed for the 11 analogue transects in the Trieste 3D Seismic survey area; including, no new introduction of declared or environmental weeds, native species richness, native species foliage cover, stable landform, lack of soil erosion, and absence of dieback evidence.

All plant specimens collected during the field surveys were dried and processed in accordance with the requirements of the Western Australian Herbarium (WAH). The plant species were identified based on taxonomic literature and through comparison with pressed specimens housed at the WAH. Where appropriate, plant taxonomists with specialist skills were consulted. Nomenclature of the species recorded is in accordance with the WAH (1998–).

4.2. Sampling and Transect Design

Transect and quadrat methodology is specified below and displayed in Figure 3.

- Analogue transects were established in August 2019 parallel to Source and Receiver lines, 20 m away in representative vegetation.
- Rehabilitation transects were established in October 2020 in sites along source and receiver lines disturbed by 3D Seismic survey, 20 m away from analogue transects.
- Each 50 m transect made up of 10, 2 × 2 m quadrats spaced at 5 m intervals on the right-hand side of the transect. Photographs taken from the 'start' of transects (Appendix B; wooden or metal stakes indicate start and end points of each transect).

Parameters recorded at each transect included start and end GPS locations as well as photographs at each of end of the transects. Floristic parameters monitored within each 2 × 2 m quadrat included percentage of alive and dead foliage (vegetation) cover of each taxa, the number of alive and dead plants of each taxa, and average height of each taxa.

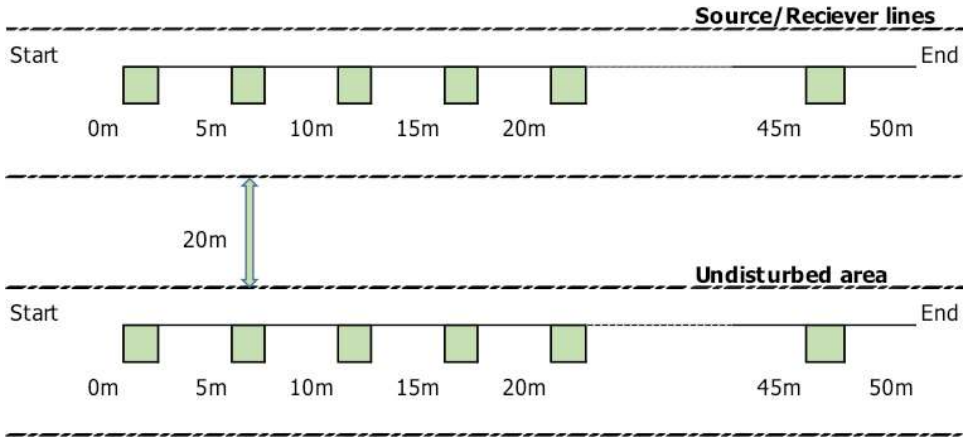


Figure 3: Layout of transects monitored in the Trieste 3D seismic survey area

4.3. Data analysis

Temporal and spatial comparisons were made between rehabilitation and analogue transects, including weed abundance and indicators of regrowth (species richness and foliage cover). The completion criteria are summarised in Table 2 below following the *Guidance Statement No. 6* (EPA 2006).

Table 2: Summary of the rehabilitation criteria for flora and vegetation

CRITERIA TO MEASURE[3]	COMPLETION CRITERIA TARGET
Weeds	No new introduction of declared[1] or environmental[2] weeds into operational areas within 12 months.
Perennial species richness	20% of perennial species richness compared with adjacent areas of native vegetation within 12 months. 40% of perennial species richness in adjacent areas of native vegetation within 24 months.
% Foliage cover of perennial species	10% foliage cover of perennial native species compared with adjacent areas of native vegetation within 12 months. 20% foliage cover of perennial native species compared with adjacent areas of native vegetation within 24 months. 40% foliage cover of perennial native species compared with adjacent areas of native vegetation within 5 years.
Dieback	No new introduction of fungal diseases (dieback).
Landforms	Maintenance of stable landforms, with minimal changes in landform.
Soils	No erosion channels more than 1 m long and 30 cm deep.

[1]Declared organism list (DPIRD 2023)
[2]Environmental Weed Ranking (DPaW 2013)
[3]Rehabilitation monitoring Methodology (Mattiske Consulting 2018)

5. FIELD SURVEY RESULTS

5.1. Flora

A total of 323 vascular plant taxa, representative of 127 genera and 49 families, were recorded within the Trieste 3D Seismic survey area transects during 2022 monitoring. The majority of taxa recorded were representative of the Proteaceae (46 taxa), Myrtaceae (42 taxa) and Fabaceae (29 taxa) families (see Appendix C for a complete species list).

5.1.1. Threatened and Priority Flora

No threatened flora species pursuant to Part 2, Division 1, Subdivision 2 of the BC Act and as listed by DBCA (2022b), or pursuant to section 179 of the EPBC Act or listed by the DCCEEW (2022b), were recorded within the Trieste 3D Seismic survey area transects during October 2022 monitoring.

Ten priority flora species, as listed by DBCA (2022b, 2022c) were recorded within the Trieste 3D Seismic survey area transects during 2022 monitoring (see Appendix D for numbers and locations). One Priority 1 taxa (*Tricoryne soullierae*), six Priority 3 taxa (*Banksia fraseri* var. *crebra*, *Hemiandra* sp. Eneabba (H. Demarz 3687), *Hypocalymma gardneri, Mesomelaena stygia* subsp. *deflexa*, *Persoonia* ?*filiformis* and *Stylidium drummondianum*) and three Priority 4 taxa (*Banksia scabrella*, *Conostephium magnum* and *Schoenus griffinianus*) were recorded during October 2022 monitoring. A brief description of these species is provided below.

PRIORITY ONE

***Tricoryne soullierae* (P1) – HEMEROCALLIDACEAE –** *Tricoryne soullierae* (P1) is a sprawling herb with a perennial rootstock. It has been recorded with yellow flowers in an umbel during October. This species has been found on rises and upper slopes in yellow sandy soils and has a restricted distribution in remnant vegetation in the northern wheatbelt (Macfarlane & Keighery, 2015). WAH houses 3 specimens of *Tricoryne soullierae* (P1) from the Avon Wheatbelt (WAH 1998-).

PRIORITY THREE

***Banksia fraseri* var. *crebra* (P3) – PROTEACEAE –** *Banksia fraseri* var. *crebra* (P3) is a shrub growing to 60 cm high. It produces yellow/green flowers and has been recorded as flowering in April to September. It grows in white, grey, yellow or red sand, gravel, laterite or granite. WAH houses 16 specimens of *Banksia fraseri* var. *crebra* (P3) from the Geraldton Sandplains and Swan Coastal Plain (WAH 1998–; Plate 1).

Plate 1: *Banksia fraseri* var. *crebra* (P3)

***Hemiandra* sp. Eneabba (H. Demarz 3687) (P3) – LAMIACEAE –** *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3) is a straggly erect shrub growing to 90 cm high. It produces blue/violet flowers and has been recorded as flowering in February. It grows in yellow/grey sand on flat land sometimes associated with disturbance. WAH houses 33 specimens of *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3) from the Geraldton Sandplains (WAH 1998–; Plate 2).

Plate 2: *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)

***Hypocalymma gardneri* (P3) – MYRTACEAE –** *Hypocalymma gardneri* (P3) is a shrub growing to 30 cm high. It produces yellow flowers and has been recorded as flowering in August to September. It grows in grey-brown sand and laterite on sandplains, upper slopes and heathland. WAH houses 22 specimens of *Hypocalymma gardneri* (P3) from the Geraldton Sandplains (WAH 1998–; Plate 3)

Plate 3: *Hypocalymma gardneri* (P3)

***Mesomelaena stygia* subsp. *deflexa* (P3) – CYPERACEAE –** *Mesomelaena stygia* subsp. *deflexa* (P3) is a tufted perennial sedge to 50 cm high. It produces brown-black flowers and has been recorded as flowering in March to October. It grows in white, grey or lateritic sand. WAH houses 29 specimens of *Mesomelaena stygia* subsp. *deflexa* (P3) from the Geraldton Sandplains (WAH 1998–; Plate 4).

Plate 4: *Mesomelaena stygia* subsp. *deflexa* (P3)

***Persoonia filiformis* (P3) – PROTEACEAE –** *Persoonia filiformis* (P3) is an erect spreading shrub to 40 cm high. It produces yellow flowers and has been recorded as flowering in November to December. It grows in yellow or white sand over laterite. WAH houses 23 specimens of *Persoonia filiformis* (P3) from the Geraldton Sandplains (WAH 1998–; Plate 5).

Plate 5: *Persoonia* ?*filiformis* (P3)

***Stylidium drummondianum* (P3) – STYLIDACEAE –** *Stylidium drummondianum* (P3) is a rosetted perennial herb to 25 cm high. It produces pink flowers and has been recorded as flowering in August to October. It grows in sand or clayey sand

over laterite on hillslopes and breakaways. WAH houses 36 specimens of *Stylidium drummondianum* (P3) from the Geraldton Sandplains and Avon Wheatbelt (WAH 1998–; Plate 6).

Plate 6: *Stylidium drummondianum* (P3)

PRIORITY FOUR

***Banksia scabrella* (P4) – PROTEACEAE –** *Banksia scabrella* (P4) is a lignotuberous shrub growing to 2 m high. It produces yellow/cream/purple flowers and has been recorded as flowering in September to January. It grows in white, grey or yellow sand, sometimes with lateritic gravel on sandplains and lateritic ridges. WAH houses 51 specimens of *Banksia scabrella* (P4) from the Geraldton Sandplains (WAH 1998–; Plate 7).

Plate 7: *Banksia scabrella* (P4)

***Conostephium magnum* (P4) – ERICACEAE –** *Conostephium magnum* (P4) is an erect multi-stemmed shrub growing to 2 m high. It produces pink-purple flowers and has been recorded as flowering in July to September. It grows in white-grey sand, sometimes associated with lateritic gravels in sand dunes, swampland, disturbed roadsides, drainage channels and open woodland. WAH houses 30 specimens of *Conostephium magnum* (P4) from the Geraldton Sandplains and Swan Coastal Plain (WAH 1998–).

Plate 8: *Schoenus griffinianus* (P4)

***Schoenus griffinianus* (P4) – ERICACEAE –** *Schoenus griffinianus* (P4) is a small, tufted perennial grass-like herb sedge growing to 0.1 m high. It grows in white sand, typically in disturbed areas such as firebreaks in low heath. WAH houses 42 specimens of *Schoenus griffinianus* (P4) from the Geraldton Sandplains and Swan Coastal Plain (WAH 1998–; Plate 8).

Four of the Priority taxa – *Banksia fraseri* var. *crebra* (P3), *Banksia scabrella* (P4), *Conostephium magnum* (P4), and *Persoonia filiformis* (P3) – were only recorded in analogue transects within the Trieste 3D Seismic survey area transects in October 2022 (Figure 4). The six Priority taxa were recorded in both analogue and rehabilitation transects in October 2020 (Figure 4); including *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Hypocalymma gardneri* (P3), *Mesomelaena stygia* subsp. *deflexa* (P3), *Stylidium*

drummondianum (P3), and *Tricoryne soullierae* (P1). *Schoenus griffinianus* (P4) was only recorded within rehabilitation transects (Figure 4).

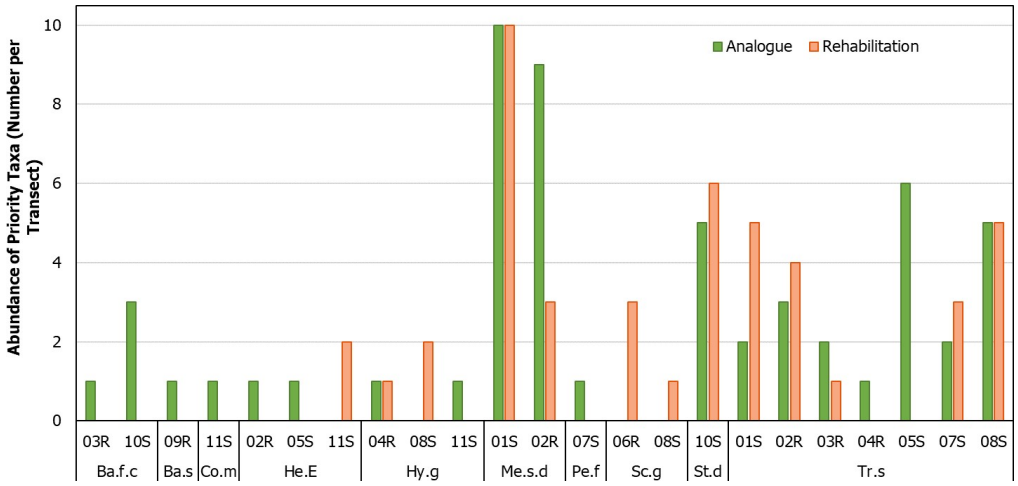


Figure 4: Number of Priority taxa recorded in monitored transects within the Trieste 3D seismic survey area, October 2022

Note: S=source line, R=receiver line. Ba.f.c=*Banksia fraseri* var. *crebra*, Ba.s=*Banksia scabrella*, Co.m.=*Conostephium magnum*, He.E=*Hemiandra* sp. Eneabba (H. Demarz 3687), Hy.g.=*Hypocalymma gardneri*, Me.s.d=*Mesomelaena stygia* subsp. *deflexa*, Pe.f.=*Persoonia* ?*filiformis*, Sc.d=*Schoenus griffinianus*, St.d.=*Stylidium drummondianum*, Tr.s.=*Tricoryne soullierae*.

5.1.2. Introduced (Weed) Species

A total of nine introduced (weed) species were recorded during the October 2022 monitoring period (Table 3). All weed species recorded are permitted species pursuant to section 11 of the BAM Act (DPIRD 2023). All weeds had medium or unknown ecological impact ratings (Table 3; DPaW 2013). **Arctotheca calendula* had a medium invasiveness rating and **Trifolium hirtum* had an unknown invasiveness rating, all other weed species had a rapid invasiveness rating (Table 3; DPaW 2013).

Table 3: Summary of introduced (weed) species found in the October 2022 monitoring period

Note: Ecological impact: U=unknown, M=medium; Invasiveness: U=unknown, M=medium, R=rapid.

INTRODUCED SPECIES	FAMILY	COMMON NAME	ECOLOGICAL IMPACT[1]	INVASIVENESS[1]
**Aira caryophyllea*	Poaceae	Silvery Hairgrass	U	R
**Arctotheca calendula*	Asteraceae	Capeweed	M	M
**Hypochaeris glabra*	Asteraceae	Smooth Catsear	M	R
**Lysimachia arvensis*	Primulaceae	Blue Pimpernel	U	R
**Trifolium hirtum*	Fabaceae	Rose Clover	U	U
**Ursinia anthemoides*	Asteraceae	Ursinia	U	R
**Vulpia myuros*	Poaceae	Rat's Tail Fescue	U	R
**Vulpia* sp.	Poaceae	Vulpia	U	R
**Wahlenbergia capensis*	Campanulaceae	Cape Bluebell	U	R

[1]Ecological impact and invasiveness ratings taken from DPaW (2013) weed prioritisation.

41 weeds were recorded present within 8 rehabilitation transects, whilst weeds were recorded in six quadrats within four analogue transects (Figure 5). **Hypochaeris glabra* was the most abundant weed, recorded in seven rehabilitation transects and in three analogue transects. **Wahlenbergia capensis* was recorded in three rehabilitation and one analogue transect. **Ursinia anthemoides* and **Aira caryophyllea* were each recorded in one quadrat within two rehabilitation transects.

Geographic locations of introduced species and number of quadrats in which the species was recorded in 2022 are summarised in Appendix E.

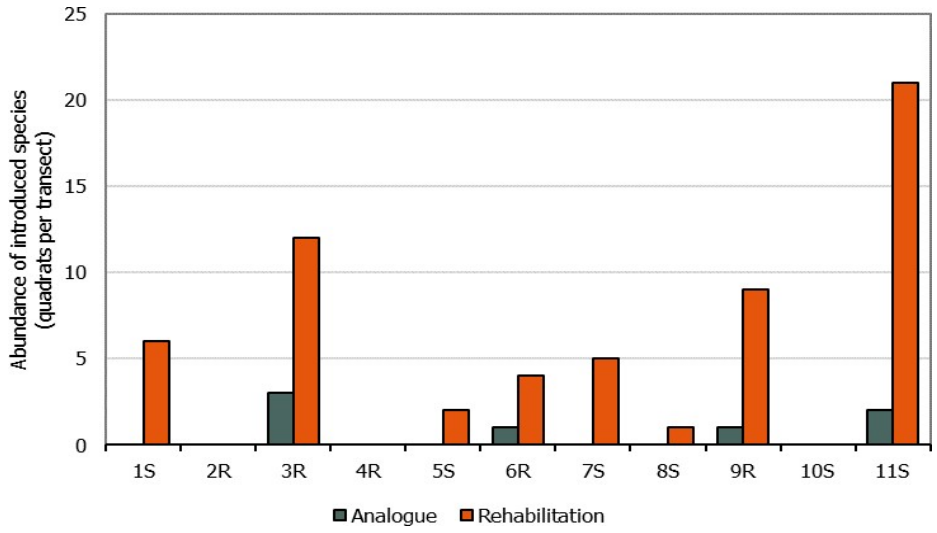


Figure 5: Number of quadrats with recordings of introduced species across monitored transects Trieste 3D seismic survey area, October 2022

Note: S=source line, R=receiver line.

5.1.3. Species Richness

Species richness of the 11 rehabilitation transects established and monitored in the Trieste 3D Seismic survey area in October 2022 ranged from 20 to 28 taxa per transect. Between monitoring years (2019, 2020, and 2022) species richness is increasing among all transects (Figure 6). In 2022 analogue species richness ranged from 20 to 30 taxa per transect. The average species richness was 23.3 taxa per transect in rehabilitation and 25.5 in analogue sites during October 2022 monitoring.

Perennial species richness of the 11 rehabilitation transects monitored in the Trieste 3D Seismic survey area in October 2022 ranged from 14 to 23 taxa per transect. Perennial species richness among analogue transects increased between monitoring years (Figure 7), ranging from 17 to 30 taxa per transect. The average species richness was 20.2 taxa per quadrat in rehabilitation transects and 24.1 in analogue sites.

The percentage of annuals relative to total number of species per quadrat ranged from 0.8% to 33.5% in rehabilitation transects in the Trieste 3D Seismic survey area in October 2022, and from 0% to 15% in analogue sites (Figure 8). On average, annual species amounted to 13.1% of species richness in rehabilitation transects, in comparison with 3.1%, 4.2%, and 4.3% of species richness in analogue transects in 2019, 2020, and 2022 surveys, respectively. All rehabilitation transects passed set 24-month criteria (Figure 7).

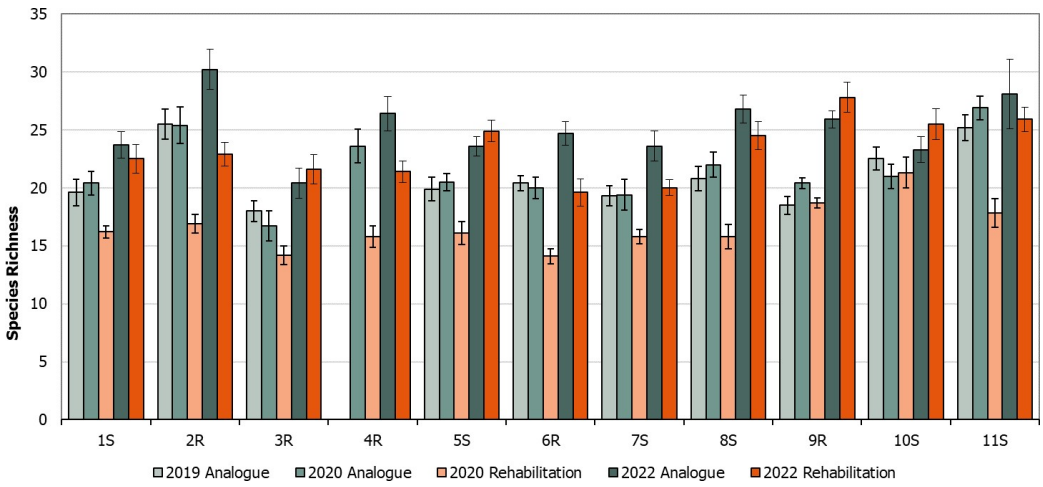


Figure 6: Total species richness per quadrat across monitored transects Trieste 3D seismic survey area, August 2019, October 2020 and October 2022
Note: S=source line, R=receiver line.

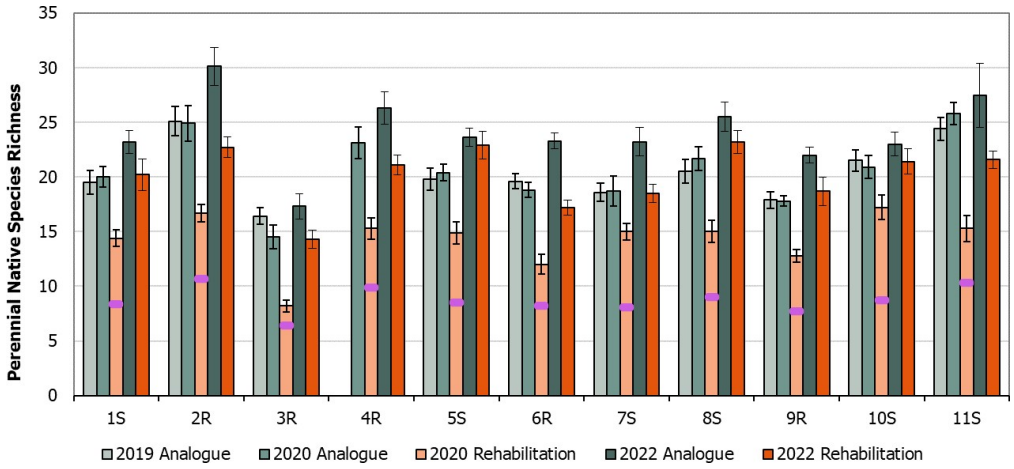


Figure 7: Perennial native species richness per quadrat across monitored transects Trieste 3D seismic survey area, August 2019, October 2020 and October 2022

Note: S=source line, R=receiver line; purple dash indicates minimum 40% target for rehabilitation sites at 24-months.

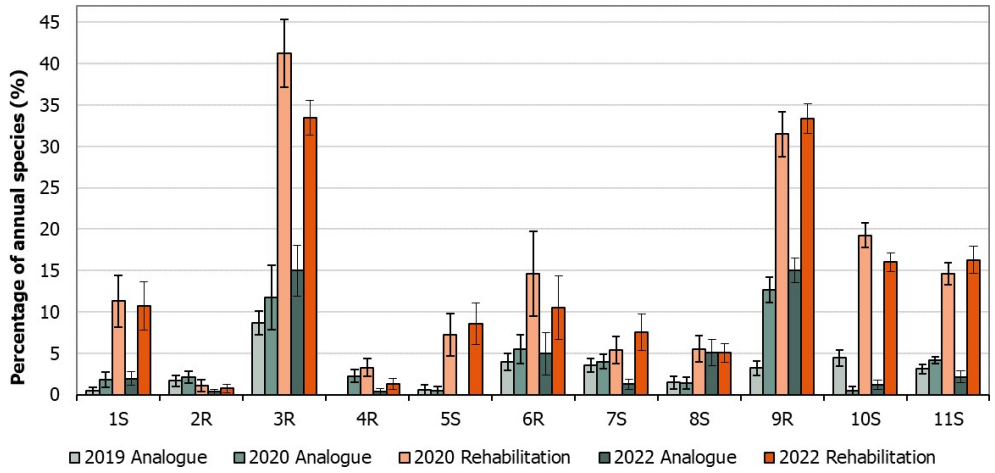


Figure 8: Percentage of annuals relative to total number of species per quadrat across monitored transects Trieste 3D seismic survey area, August 2019, October 2020, and October 2022

Note: S=source line, R=receiver line.

5.1.4. Species Foliage Cover

Perennial species accounted for 98.8% to 100% of total foliage cover in rehabilitation transects monitored in the Trieste 3D Seismic survey area in October 2022, and for 99.9% to 100% total foliage cover in analogue transects in 2022.

Foliage cover of perennial native species in the 11 rehabilitation transects monitored in the Trieste 3D Seismic survey area in October 2022 ranged from 13.8% to 40.4% cover per transect. Foliage cover of perennial native species in the 11 analogue transects monitored in the Trieste 3D Seismic survey area in October 2022 ranged from 59.6% to 95% cover per transect. Cover of perennial species has increased since the last monitoring period in 2020 has increased (Figure 9). Foliage cover of perennials amongst analogue transects is similar and has increased with each monitoring period (Figure 9). During 2022 cover ranged from 59.6% to 95% among analogue transects. One rehabilitation transects (9R) had average perennial species foliage cover that failed to meet 24-month 20% foliage cover completion criteria (Figure 9). All other rehabilitation transects passed set 24-month criteria. Transect R11S had previously failed 12-month targets during 2020 monitoring, with an improvement in cover ensuring its pass during 2022 monitoring.

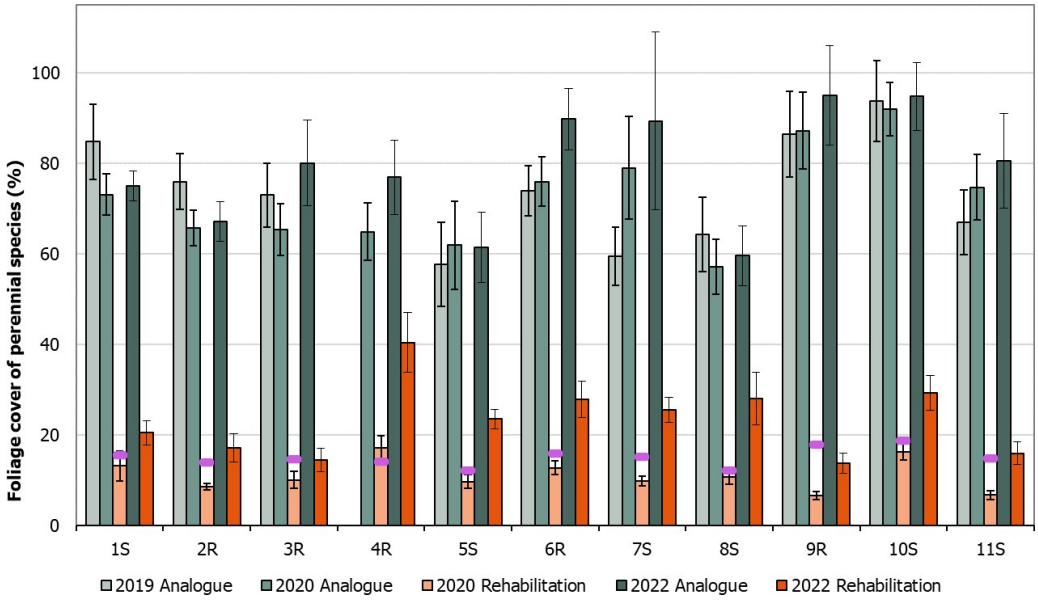


Figure 9: Foliage cover of perennial native species per quadrat across monitored transects Trieste 3D seismic survey area, August 2019, October 2020 and October 2022
Note: S=source line, R=receiver line; purple dash indicates recommended completion criteria target for rehabilitation sites of 20% foliage cover at 24-months.

5.2. Dieback Introduction

No visual impacts of dieback to the Trieste 3D vegetation monitoring transects was visible. Refer to Appendix B for reference photographs of transects monitored during October 2022.

5.3. Landform and Soils

Stable landscapes with minimal erosion was observed along all Trieste 3D vegetation monitoring transects. Refer to Appendix B for reference photographs of transects monitored during October 2022.

6. DISCUSSION

Mattiske Consulting Pty Ltd was commissioned by Beach Energy Limited in to monitor a series of rehabilitation transects and their respective analogues within the Trieste 3D Seismic survey area. Between October 3rd and October 6th 2022 transects established along 3D Seismic survey disturbance source and receiver, as well as adjacent analogue transects, were monitored. Key indicators of rehabilitation success were assessed for the 11 analogue transects in the Trieste 3D Seismic survey area; including, no new introduction of declared or environmental weeds, native species richness, native species foliage cover, stable landform, lack of soil erosion, and absence of dieback evidence.

A total of 323 vascular plant taxa, representative of 127 genera and 49 families, were recorded within the Trieste 3D Seismic survey area transects during 2022 monitoring. The majority of taxa recorded were representative of the Proteaceae (46 taxa), Myrtaceae (42 taxa) and Fabaceae (29 taxa) families. No threatened flora species pursuant to pursuant to Part 2, Division 1, Subdivision 2 of the *BC Act* and as listed by DBCA (2022b), or pursuant to section 179 of the EPBC Act or listed by the DCCEEW (2022b), were recorded within the Trieste 3D Seismic survey area transects. Ten priority flora species, as listed by DBCA (2022b, 2022c) were recorded within the Trieste 3D Seismic survey area transects during 2022 monitoring. One Priority 1 taxon (*Tricoryne soullierae*), six Priority 3 taxa (*Banksia fraseri* var. *crebra*, *Hemiandra* sp. Eneabba (H. Demarz 3687), *Hypocalymma gardneri*, *Mesomelaena stygia* subsp. *deflexa*, *Persoonia ?filiformis* and *Stylidium drummondianum*), and three Priority 4 taxa (*Banksia scabrella*, *Conostephium magnum* and *Schoenus griffinianus*) were recorded during October 2022 monitoring.

Species richness ranged from 20 to 28 taxa per transect. Across all 11 analogue transects an average species richness of 25.5 was recorded. Overall, all rehabilitation transects exceeded the recommended completion criteria target of 20% perennial species richness compared with the adjacent analogue transects at 12 months, and the 40% targets for 24 months. Furthermore, native species richness has increased across each monitoring period suggesting that recovery of the disturbed areas is time dependent.

Foliage cover of perennial native species in the 11 rehabilitation transects monitored in the Trieste 3D Seismic survey area in October 2022 ranged from 13.8% to 40.4% cover per transect. Foliage cover of perennial native species in the 11 analogue transects monitored in the Trieste 3D Seismic survey area in

October 2022 ranged from 59.6% to 95% cover per transect. All rehabilitation transects exceeded the 12-month completion criteria target of 10% foliage cover of perennial species against their adjacent analogue transects. Of the 11 rehabilitation transects all passed the 24-month completion criteria target of 20% foliage cover of perennial species against their adjacent analogue transects except for transect 9R which fell short by 4.1%.

A total of nine introduced (weed) species were recorded during the October 2022 monitoring period (Table 3). All weed species recorded are permitted species pursuant to section 11 of the BAM Act and are not declared environmental weeds (DPIRD 2023). Despite an increase in weed occurrence amongst transects, none of the taxa recorded during October 2022 are listed as declared environmental weeds and all are permitted species pursuant to section 11 of the BAM Act (DPIRD 2023). As such, completion criteria for weed species were met by all rehabilitation transects. It is predictable that as the native species increase their numbers and cover on the rehabilitation areas that the weed species will be out-competed by native species.

Annual and short-live perennials constitute a minor component of the vegetation common to the Trieste region (Riviera et al. 2021). As such, it is not surprising that species with perennial life histories comprise over 90% of the taxa recorded during October 2022 monitoring. The persistence of annuals is therefore expected to decline with time, as annual species become outcompeted by perennial taxa common to this vegetation community (Riviera et al. 2021). All weed species recorded during October 2022 monitoring were annual species that likely will not require remedial activity due to their life histories and the expected natural succession (i.e., recovery) of the vegetation within the Trieste seismic lines.

Only one rehabilitation transect failed to meet all completion criteria during 2022 monitoring – 9R – which failed only the perennial foliage cover criteria but passed the weed and species richness criteria. All other rehabilitation transects passed completion criteria set in 2022, with an improvement in Transect 11S seen since monitoring during 2020. Rehabilitation transect 9R failed to meet the 12-month completion criteria during the 2020 monitoring period. Transect 9R will likely pass these criteria with increasing time and this should be reviewed after the 2024 assessment. Additional monitoring periods should demonstrate recovery of the vegetation community toward that of the analogue sites. This is demonstrated along transect 11S which failed to meet foliage cover criteria during monitoring in 2020 (Mattiske Consulting 2020). Since the previous monitoring period transect 11S has exceeded the criteria for native foliage cover, indicating time not active intervention is necessary for vegetation recovery along the Trieste 3D Seismic disturbance transects. Table 4 summarises the outcomes of rehabilitation transects in regard to achieving completion criteria during 2022 monitoring.

Table 4: Summary outcome of October 2022 rehabilitation monitoring transects and their pass / fail assessed against analogue completion criteria

Note: Analogue targets are calculated from averages of all monitoring years for that particular transect. REHAB=Rehabilitation. ☐ Indicates Rehabilitation Pass ☐ Indicates Rehabilitation Fail

TRANS.	COMPLETION CRITERIA MEASURE									
	ENVIRO. WEEDS ABSENT	PERENNIAL SPECIES RICHNESS			PERENNIAL FOLIAGE COVER			DIABACK	LAND-FORM	SOIL
		REHAB	12 MONTH ANALOGUE TARGET (20%)	24 MONTH ANALOGUE TARGET (40%)	REHAB	12 MONTH ANALOGUE TARGET (10%)	24 MONTH ANALOGUE TARGET (20%)			
1S	YES	20.2 ± 1.43	4.18	8.36	20.50 ± 2.69	7.76	15.53	ABSENT	STABLE	PASS
2R	YES	22.7 ± 0.94	5.34	10.68	17.21 ± 3.09	6.96	13.92	ABSENT	STABLE	PASS
3R	YES	14.3 ± 0.80	3.21	6.43	14.47 ± 2.66	7.28	14.57	ABSENT	STABLE	PASS
4R	YES	21.1 ± 0.89	4.94	9.88	40.40 ± 6.63	7.09	14.19	ABSENT	STABLE	PASS
5S	YES	22.9 ± 1.29	4.25	8.51	23.53 ± 2.12	6.04	12.07	ABSENT	STABLE	PASS
6R	YES	17.2 ± 0.68	4.11	8.23	27.94 ± 4.03	7.99	15.98	ABSENT	STABLE	PASS
7S	YES	18.5 ± 0.82	4.03	8.07	25.53 ± 2.83	7.6	15.2	ABSENT	STABLE	PASS
8S	YES	23.2 ± 1.02	4.51	9.03	28.08 ± 5.79	6.04	12.08	ABSENT	STABLE	PASS
9R	YES	18.7 ± 1.30	3.85	7.69	13.79 ± 2.21	8.96	17.91	ABSENT	STABLE	PASS
10S	YES	21.4 ± 1.15	4.36	8.72	29.34 ± 3.81	9.35	18.7	ABSENT	STABLE	PASS
11S	YES	21.6 ± 0.79	5.18	10.35	15.98 ± 2.50	7.41	14.82	ABSENT	STABLE	PASS

7. CONCLUSIONS AND REVIEW OF CRITERIA

In conclusion, results have shown that the UCL area within the Trieste 3D Seismic survey area supports high conservation values with a high level of native species richness, native foliage cover, high numbers of priority listed taxa, and lack of declared weed species. Monitoring during 2022 has indicated rehabilitation transects are meeting set completion criteria at the 24-month targets (with only one exception (Table 4) for 9R transect) with minimal impact having taken place on source and receiver lines within the Trieste 3D seismic survey area. Increases in native species metrics (e.g., richness, cover) across monitoring periods are time dependent, with increased time since disturbance. As such, transects that have not met criteria are likely to pass during future monitoring periods.

Current criteria appear to address measures of recovery adequately for the Trieste 3D Seismic Project. Irrespective of seasonal variation and different vegetation units, transects monitored within the Trieste 3D Seismic survey area are progressing toward analogue targets (e.g., completion criteria). As a result, the next assessment should be undertaken after several more years (2024) to allow continued growth to occur on the rehabilitation areas.

At this juncture as the weeds are not listed as declared or environmental weeds, active intervention during the coming 24 months is not warranted as such activities will only re-disturb the surface of some of the

rehabilitation areas which may increase the risks to weeds being introduced which may alter the positive trends in foliage cover of native species as observed in 2022 on most areas.

Refinement of the species richness completion criteria targets, which are relatively conservative, would be one recommendation from Mattiske Consulting. For example, currently species richness is tracking at 75.8% to 109.4% compared to 2022 analogues (including both annual and perennial taxa; or 73.8% to 97% for only perennial taxa in rehabilitation transects compared with analogue transects). We recommend an 80% species richness target compared with adjacent areas of native vegetation within 5 years. All remaining criteria appear adequate in terms of monitoring timing and target values set for the Trieste 3D Seismic Project.

8. ACKNOWLEDGEMENTS

The authors would like to thank Zoë Bowen and Pearl Catford from Beach Energy Limited for their assistance with this project.

9. PERSONNEL

The following Mattiske Consulting Pty Ltd personnel were involved in this project:

NAME	POSITION	PROJECT INVOLVEMENT	FLORA COLLECTION PERMITS
Dr EM Mattiske	Managing Director & Principal Ecologist	Planning, managing, editing, reporting	N/A
Dr S Ruoss	Project Leader	Planning, fieldwork, plant identification	FB62000031-4 & TFL 158-2122
L Cockram	Botanist	Fieldwork	FB620000266-3
L Ducki	Botanist/Ecologist	Fieldwork, data editing, reporting	FB62000394
K Smith (nee Craig)	Botanist	Fieldwork	FB62000423
CM Mooney	Botanist	Fieldwork	FB62000416

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APPENDIX A1: THREATENED AND PRIORITY FLORA DEFINITIONS

Under section 179 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), **threatened flora** are categorised as extinct, extinct in the wild, critically endangered, endangered, vulnerable and conservation dependent (Table A1.1).

Table A1.1 Federal definition of threatened flora species
Note: Adapted from section 179 of the EPBC Act.

CODE	CATEGORY	DEFINITION
Ex	**Extinct**	Species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	**Extinct in the Wild**	Species which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	**Critically Endangered**	Species which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	**Endangered**	Species which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	**Vulnerable**	Species which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent**	Species which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

The *Biodiversity Conservation Act 2016* (BC Act) provides for (amongst other things) the protection of flora that is facing an extremely high risk of extinction in the wild in the immediate, near or medium-term future in Western Australia under Part 10 (Division 2).

Threatened flora are listed in the *Wildlife Conservation (Rare Flora) Notice 2018* (under Part 2, Division 1, Subdivision 2 of the BC Act; Department of Biodiversity, Conservation and Attractions (DBCA 2022a) and are categorised under Schedules 1-3**.** A flora species is defined as **threatened** if it is facing an extremely high risk of extinction in the wild in the immediate, near or medium-term future, pursuant to sections 20, 21 and 22 of the BC Act. Threatened species are categorised as critically endangered, endangered, and vulnerable (Table A1.2).

Table A1.2 State definition of threatened flora species
Note: Adapted from DBCA (2022a).

CODE	CATEGORY	DEFINITION
CR	**Critically endangered**	Species considered to be facing an extremely high risk of becoming extinct in the wild (listed under Schedule 1 of the *Wildlife Conservation (Rare Flora) Notice 2018*).
EN	**Endangered**	Species considered to be facing a very high risk of becoming extinct in the wild (listed under Schedule 2 of the *Wildlife Conservation (Rare Flora) Notice 2018*).
VU	**Vulnerable**	Species considered to be facing a high risk of becoming extinct in the wild (listed under Schedule 3 of the *Wildlife Conservation (Rare Flora) Notice 2018*).

Priority flora species are defined as "possibly threatened species that do not meet the survey criteria, or are otherwise data deficient" or species that are "adequately known, are rare but not threatened, meet criteria for near threatened or have recently been removed from the threatened species list" for other than taxonomic reasons" (DBCA 2022b). Priority species are not afforded the same level of protection under state or federal legislation as the listed Threatened species, however are considered significant under the Environmental Protection Authority's *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority 2016a). The Department of Biodiversity, Conservation and Attractions categorises priority flora into four categories: Priority 1; Priority 2, Priority 3 and Priority 4 (Table A1.3).

Table A1.3: State definition of priority flora species
Note: Adapted from DBCA (2022b).

CODE	CATEGORY	DEFINITION
P1	**Priority 1:** Poorly-known species	Known from one or a few locations (< 5) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation; or are otherwise under threat of habitat destruction or degradation. In urgent need of further survey.
P2	**Priority 2:** Poorly-known species	Known from one or a few locations (< 5). Some occurrences are on lands managed primarily for nature conservation. In urgent need of further survey.
P3	**Priority 3:** Poorly-known species	Known from several locations and the species does not appear to be under imminent threat; or from few but widespread locations with either a large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. In need of further survey.
P4	**Priority 4:** Rare, Near Threatened, and other species in need of monitoring	**a) Rare -** Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. **b) Near Threatened -** Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. **c) Other -** Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

APPENDIX A2: CATEGORIES AND CONTROL MEASURES OF DECLARED PEST (PLANT) ORGANISMS IN WESTERN AUSTRALIA

Section 22 of Western Australia's *Biosecurity and Agriculture Management Act 2007* (*BAM Act*) makes provision for a plant taxon to be listed as a declared pest organism in respect to parts of, or the entire State. According to the BAM Act, a declared pest is defined as a prohibited organism (section 12), or an organism for which a declaration under section 22 (2) of the Act is in force.

Under the *Biosecurity and Agriculture Management Regulations 2013* (WA), declared pest plants are placed in one of three control categories, C1 (exclusion), C2 (eradication) or C3 (management), which determines the measures of control which apply to the declared pest (Table A4.1). The current listing of declared pest organisms and their control category is through the Western Australian Organism List (DPIRD 2023).

Table A3.1 Categories and control measures of declared pest (plant) organisms
Note: Adapted from *Biosecurity and Agriculture Management Regulations 2013*.

CONTROL CATEGORY	CONTROL MEASURES
C1 (Exclusion) '(a) Category 1 (C1) — Exclusion: if in the opinion of the Minister introduction of the declared pest into an area or part of an area for which it is declared should be prevented.' Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.	In relation to a category 1 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to destroy, prevent or eradicate the declared pest.
C2 (Eradication) '(b) Category 2 (C2) — Eradication: if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is feasible.' Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.	In relation to a category 2 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to destroy, prevent or eradicate the declared pest.
C3 (Management) '(c) Category 3 (C3) — Management: if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is not feasible but that it is necessary to: **(i)** alleviate the harmful impact of the declared pest in the area; or **(ii)** reduce the number or distribution of the declared pest in the area; or **(iii)** prevent or contain the spread of the declared pest in the area.' Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.	In relation to a category 3 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to: **(a)** alleviate the harmful impact of the declared pest in the area for which it is declared; or **(b)** reduce the number or distribution of the declared pest in the area for which it is declared; or **(c)** prevent or contain the spread of the declared pest in the area for which it is declared.

APPENDIX A3: OTHER DEFINITIONS

Conservation significant flora

Under the *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority 2016a), flora may be considered significant for a range of reasons, including, but not limited to the following:

- being identified as threatened or priority species;
- locally endemic or associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems);
- new species or anomalous features that indicate a potential new species;
- representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- unusual species, including restricted subspecies, varieties or naturally occurring hybrids; or
- relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.

Conservation significant vegetation

Under the *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority 2016a), vegetation may be considered significant for a range of reasons, including, but not limited to the following:

- being identified as threatened or priority ecological communities;
- restricted distribution;
- degree of historical impact from threatening processes;
- a role as a refuge; or
- providing an important function required to maintain ecological integrity of a significant ecosystem.

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 1S Analogue Start 2022

Transect 1S Analogue Start 2020

Transect 1S Analogue Start 2019

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 1S Analogue End 2022

Transect 1S Analogue End 2020

Transect 1S Analogue End 2019

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 1S Rehab Start 2022

Transect 1S Rehab Start 2020

Transect 1S Rehab End 2022

Transect 1S Rehab End 2020

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 2R Analogue Start 2022

Transect 2R Analogue Start 2020

Transect 2R Analogue Start 2019

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Transect 2R Analogue End 2022

Transect 2R Analogue End 2020

Transect 2R Analogue End 2019

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Transect 2R Rehab Start 2022

Transect 2R Rehab Start 2020

Transect 2R Rehab End 2022

Transect 2R Rehab End 2020

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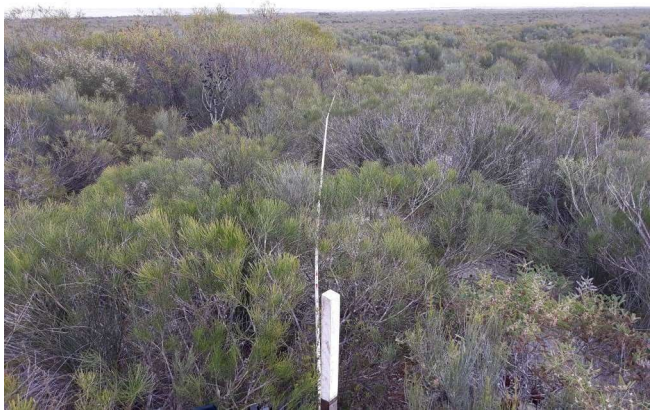
Transect 3R Analogue Start 2022

Transect 3R Analogue Start 2020



Transect 3R Analogue Start 2019

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 3R Analogue End 2022

Transect 3R Analogue End 2020

Transect 3R Analogue End 2019

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 3R Rehab Start 2022

Transect 3R Rehab Start 2020

Transect 3R Rehab End 2022

Transect 3R Rehab End 2020

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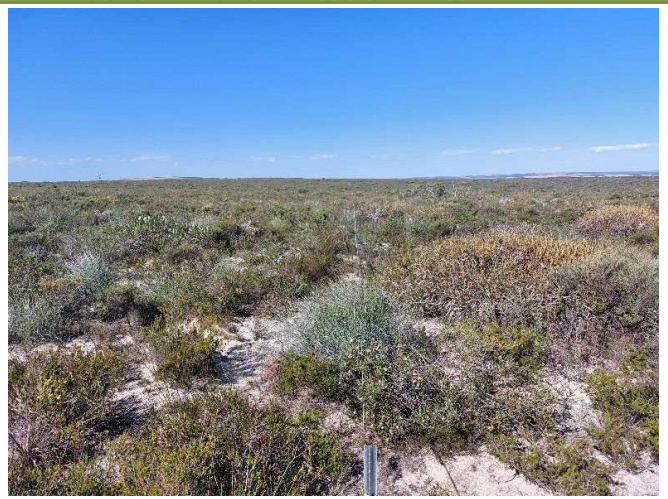


Transect 4R Analogue Start 2022

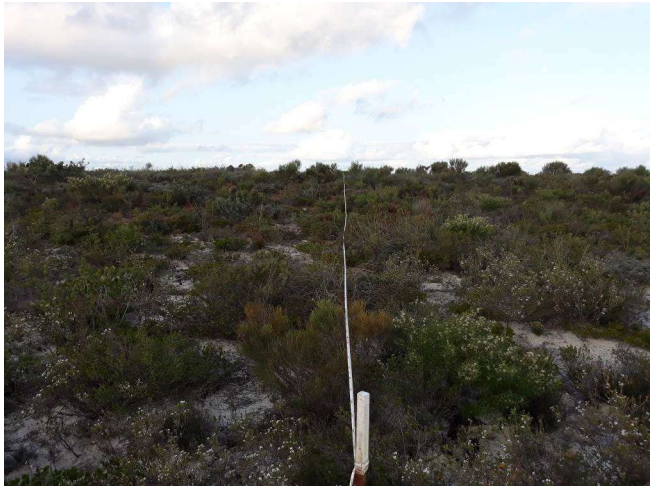
Transect 4R Analogue Start 2020

Transect 4R Analogue Start 2019

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 4R Analogue End 2022

Transect 4R Analogue End 2020



Transect 4R Analogue End 2019

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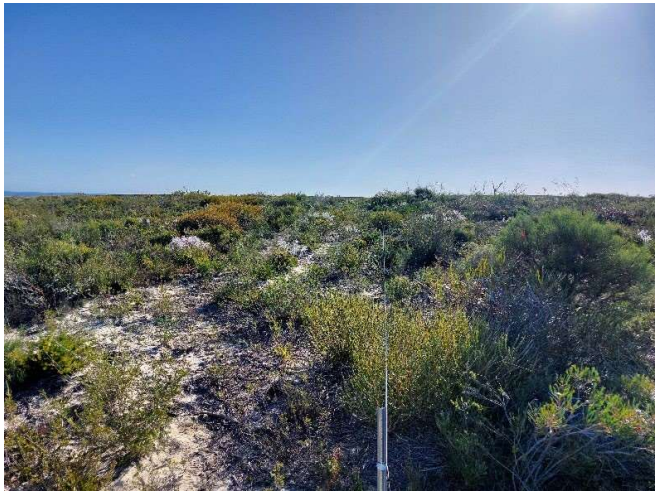
Transect 4R Rehab Start 2022

Transect 4R Rehab Start 2020



Transect 4R Rehab End 2022

Transect 4R Rehab End 2020

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Transect 5S Analogue Start 2022

Transect 5S Analogue Start 2020

Transect 5S Analogue Start 2019

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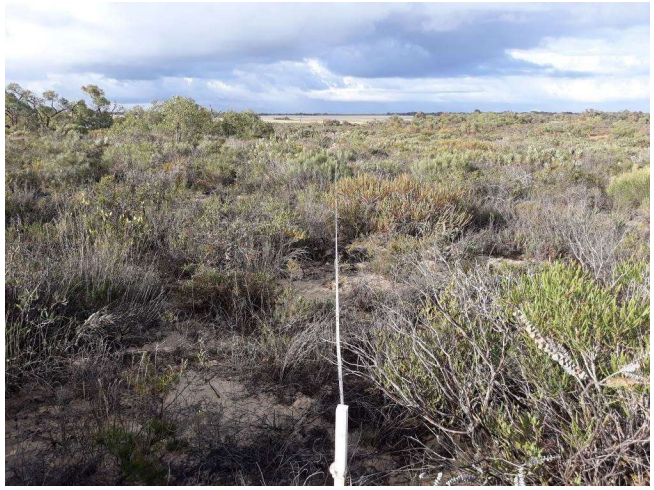
Transect 5S Analogue End 2022

Transect 5S Analogue End 2020



Transect 5S Analogue End 2019

APPENDIX B1: PHOTOS OF REHABILITATION AND ANALOGUE TRANSECTS MONITORED IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Transect 5S Rehab Start 2022

Transect 5S Rehab Start 2020

Transect 5S Rehab End 2022

Transect 5S Rehab End 2020

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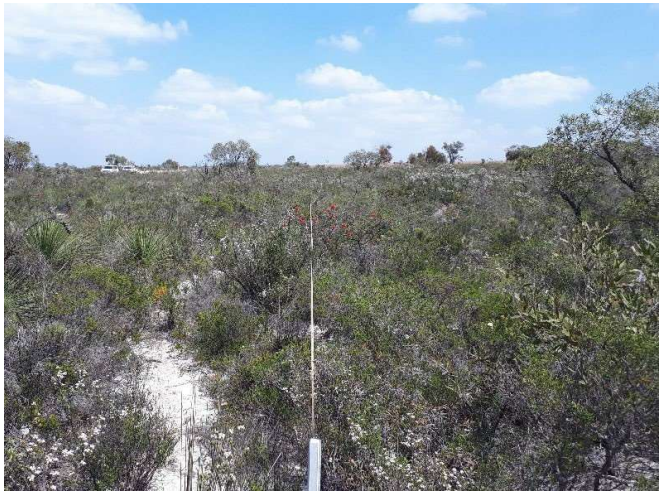
Transect 6R Analogue Start 2022



Transect 6R Analogue Start 2020

Transect 6R Analogue Start 2019

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Transect 6R Analogue End 2022

Transect 6R Analogue End 2020

Transect 6R Analogue End 2019

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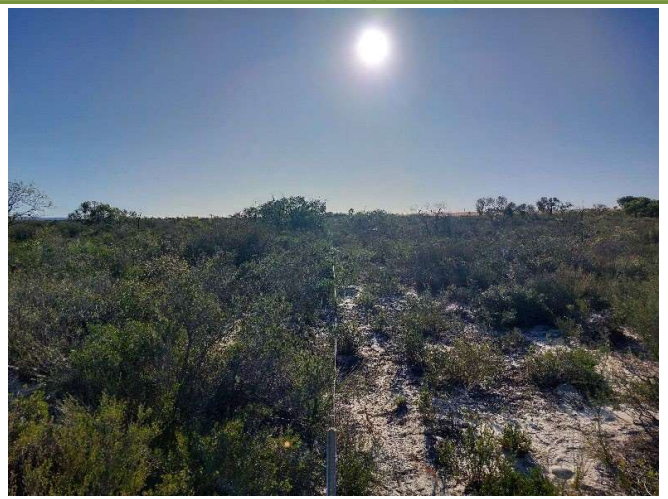

Transect 6R Rehab Start 2022

Transect 6R Rehab Start 2020

Transect 6R Rehab End 2022

Transect 6R Rehab End 2020

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Transect 7S Analogue Start 2022

Transect 7S Analogue Start 2020

Transect 7S Analogue Start 2019

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Transect 7S Analogue End 2022

Transect 7S Analogue End 2020

Transect 7S Analogue End 2019

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Transect 7S Rehab Start 2022

Transect 7S Rehab Start 2020

Transect 7S Rehab End 2022

Transect 7S Rehab End 2020

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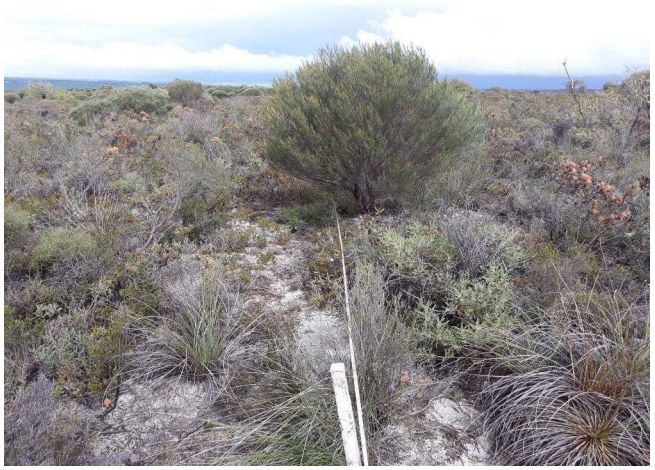
Transect 8S Analogue Start 2022

Transect 8S Analogue Start 2020



Transect 8S Analogue Start 2019

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Transect 8S Analogue End 2022

Transect 8S Analogue End 2020

Transect 8S Analogue End 2019

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Transect 8S Rehab Start 2022

Transect 8S Rehab Start 2020

Transect 8S Rehab End 2022

Transect 8S Rehab End 2020

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Transect 9R Analogue Start 2022

Transect 9R Analogue Start 2020

Transect 9R Analogue Start 2019

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Transect 9R Analogue End 2022

Transect 9R Analogue End 2020

Transect 9R Analogue End 2019

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Transect 9R Rehab Start 2022

Transect 9R Rehab Start 2020

Transect 9R Rehab End 2022

Transect 9R Rehab End 2020

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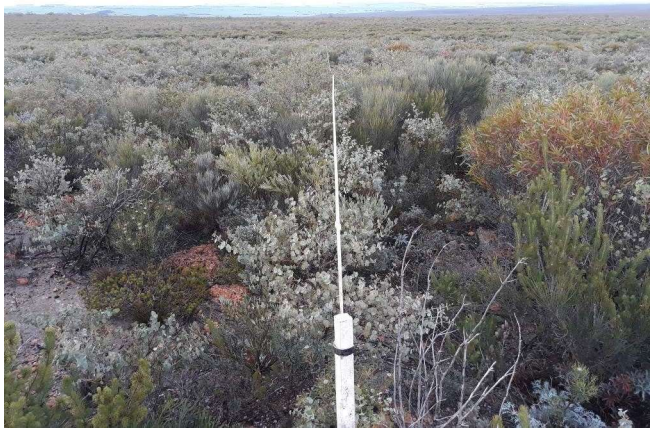
Transect 10S Analogue Start 2022

Transect 10S Analogue Start 2020



Transect 10S Analogue Start 2019

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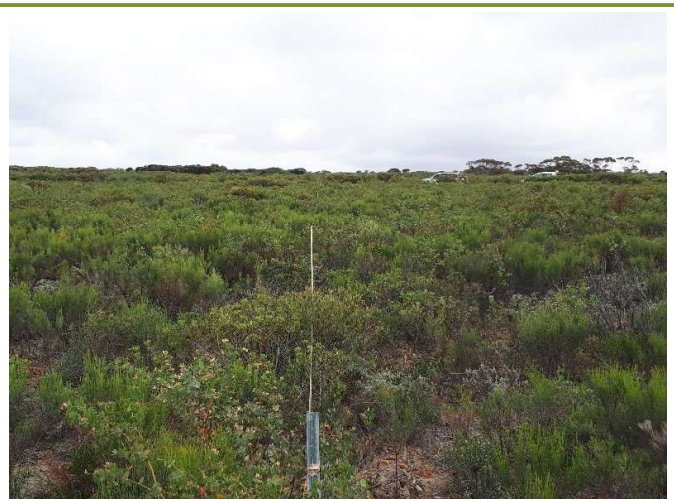
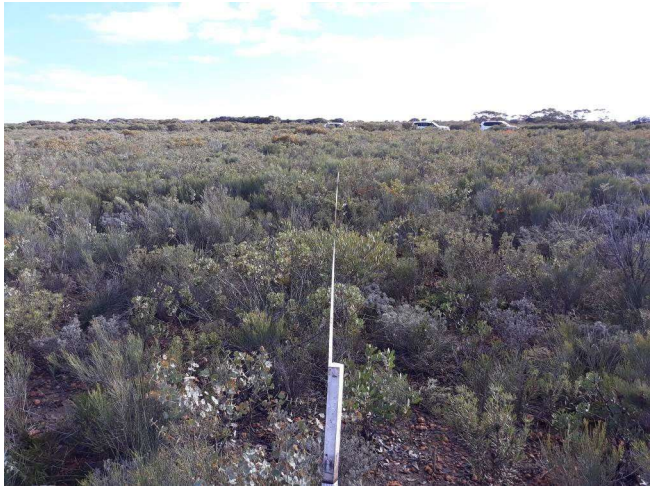
Transect 10S Analogue End 2022



Transect 10S Analogue End 2020



Transect 10S Analogue End 2019

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Transect 10S Rehab Start 2022

Transect 10S Rehab Start 2020

Transect 10S Rehab End 2022

Transect 10S Rehab End 2020

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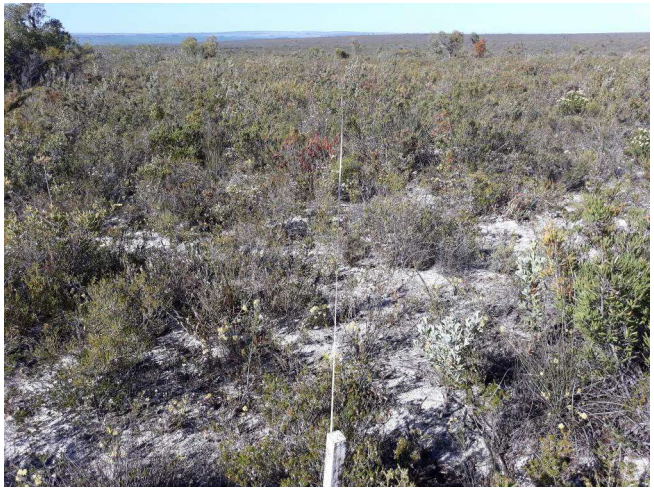
Transect 11S Analogue Start 2022

Transect 11S Analogue Start 2020



Transect 11S Analogue Start 2019

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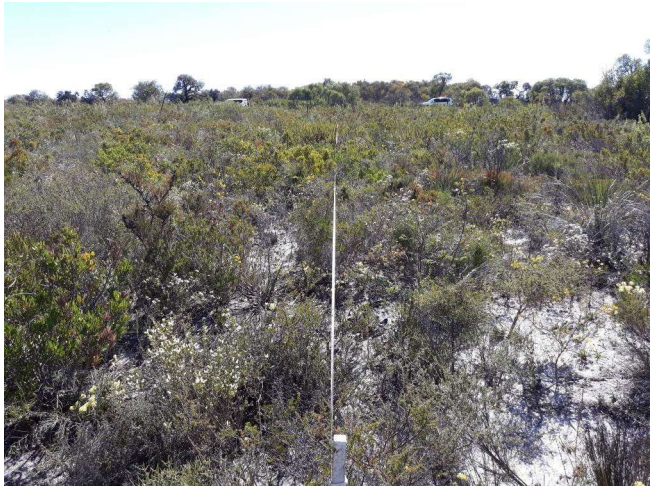
Transect 11S Analogue End 2022

Transect 11S Analogue End 2020



Transect 11S Analogue End 2019

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Transect 11S Rehab Start 2022

Transect 11S Rehab Start 2020

Transect 11S Rehab End 2022

Transect 11S Rehab End 2020

APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SUREVY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
AMARANTHACEAE	*Ptilotus stirlingii*					X
	Ptilotus stirlingii subsp. stirlingii				X	X
	Ptilotus polystachyus				X	X
	Ptilotus sp.					X
ANARTHRIACEAE	*Lyginia barbata*	X	X	X	X	X
APIACEAE	*Actinotus leucocephalus*		X	X	X	X
	Xanthosia huegelii	X	X	X		X
	Xanthosia sp.	X				
	Apiaceae sp.	X				
ARALIACEAE	*Trachymene pilosa*			X	X	X
ASPARAGACEAE	*Acanthocarpus preissii*	X	X	X	X	X
	Laxmannia omnifertilis	X				
	Laxmannia sessiliflora	X	X	X	X	X
	Lomandra hastilis		X	X	X	X
	Lomandra suaveolens	X	X	X	X	X
	Lomandra preissii			X		
	Lomandra sp.	X	X	X	X	X
	Thysanotus dichotomus	X	X	X		
	Thysanotus triandrus		X	X		
	Thysanotus thyrsoideus			X		
	Thysanotus sp. (climbing)	X	X	X		X
	Thysanotus sp.		X	X		X
ASTERACEAE	* *Arctotheca calendula*					X
	Gnephosis tenuissima	X	X	X	X	X
	Hyalosperma cotula		X	X	X	X
	* *Hypochaeris glabra*		X	X	X	X
	Millotia tenuifolia					X
	Podotheca angustifolia		X	X	X	X
	Pterochaeta paniculata	X	X	X	X	X
	* *Ursinia anthemoides*			X	X	X
	Waitzia acuminata				X	X
	Waitzia acuminata var. *acuminata*					X
	Waitzia suaveolens var. *suaveolens*				X	X
	* Asteraceae sp.		X	X		
BORAGINACEAE	*Halgania* sp.	X				
	Halgania sp. Wongan Hills (K.F. Kenneally 2393)		X	X	X	X
BORYACEAE	*Borya sphaerocephala*	X	X	X	X	X
CAMPANULACEAE	*Isotoma hypocrateriformis*				X	X
	Lobelia heterophylla		X	X	X	X
	* *Wahlenbergia capensis*		X	X	X	X
	Wahlenbergia gracilenta					X
	Wahlenbergia preissii		X	X	X	X

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Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
CASUARINACEAE	*Allocasuarina campestris*	X	X	X	X	X
	Allocasuarina humilis	X	X	X	X	X
	Allocasuarina microstachya	X	X	X	X	X
	Allocasuarina sp.				X	X
CELASTRACEAE	*Stackhousia dielsii*			X		
	Stackhousia monogyna					X
	Stackhousia sp.					X
	Tripterococcus brunonis				X	X
	Tripterococcus sp.					X
CENTROLEPIDACEAE	*Centrolepis aristata*		X	X		
	Centrolepis pilosa	X				X
COLCHICACEAE	*Burchardia congesta*	X	X	X	X	X
CRASSULACEAE	Crassula colorata		X	X	X	X
CYPERACEAE	*Caustis dioica*	X	X	X	X	X
	Chaetospora curvifolia		X	X	X	X
	Lepidosperma apricola	X	X	X	X	X
	Lepidosperma squamatum	X	X	X	X	X
	Lepidosperma sp. P1 small head (M.D. Tindale 166A)	X	X	X	X	X
	Lepidosperma sp.	X	X	X	X	X
	Mesomelaena pseudostygia	X	X	X	X	X
	Mesomelaena stygia subsp. d*eflexa* (P3)	X	X	X	X	X
	Schoenus ?andrewsii	X	X	X	X	X
	Schoenus brevisetis			X	X	X
	Schoenus clandestinus	X	X	X	X	X
	Schoenus curvifolius	X				
	Schoenus griffinianus (P4)					X
	Schoenus nanus			X	X	X
	Schoenus pleiostemoneus	X	X	X	X	X
	Schoenus unispiculatus			X		
	Schoenus sp.	X			X	X
	Cyperaceae sp.				X	X
DASYPOGONACEAE	*Calectasia narragara*	X	X	X	X	X
DILLENIACEAE	*Hibbertia acerosa*	X	X	X	X	X
	Hibbertia aurea	X	X			
	Hibbertia crassifolia	X	X	X	X	X
	Hibbertia hypericoides subsp. *hypericoides*	X	X	X	X	X
	Hibbertia robur	X	X	X	X	X
	Hibbertia subvaginata	X	X	X	X	X
	Hibbertia sp.				X	X
DROSERACEAE	*Drosera eneabba*	X	X	X	X	X
	Drosera erythrorhiza	X	X	X	X	X
	Drosera humilis			X		X
	Drosera magna			X		X

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Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
DROSERACEAE	*Drosera pallida*	X	X	X	X	
(continued)	*Drosera porrecta*			X		X
	Drosera thysanosepala			X		X
	Drosera sp. (climbing)	X	X	X	X	X
	Drosera sp.	X	X	X	X	X
ECDEIOCOLEACEAE	*Ecdeiocolea monostachya*	X	X	X	X	X
	Georgeantha hexandra	X	X	X	X	X
ERICACEAE	*Andersonia heterophylla*	X	X	X		
	Andersonia lehmanniana subsp. lehmanniana	X	X	X	X	X
	Andersonia sp.	X		X		X
	Astroloma glaucescens	X				
	Astroloma microdonta	X				
	Conostephium magnum (P4)	X	X	X		
	Conostephium sp.				X	X
	Leucopogon inflexus	X	X	X	X	X
	Leucopogon prolatus					X
	Leucopogon sp. Northern ciliate (R. Davis 3393)	X	X	X	X	X
	Leucopogon sp.	X	X	X		
	Lysinema pentapetalum	X	X	X		
	Styphelia glaucifolia				X	X
	Styphelia leptantha			X		
	Styphelia microdonta		X	X		X
	Styphelia tortifolia		X	X		X
	Styphelia xerophylla	X	X	X	X	X
	Styphelia sp. Eneabba (N. Marchant s.n. PERTH 01291777)	X	X	X	X	X
	Styphelia sp.			X		
	Eriaceae sp.	X			X	X
EUPHORBIACEAE	*Monotaxis grandiflora*	X	X	X	X	X
	Stachystemon axillaris	X	X	X	X	X
FABACEAE	*Acacia auronitens*	X	X	X	X	X
	Acacia blakelyi	X	X	X	X	X
	Acacia dilatata	X	X	X		
	Acacia lasiocarpa		X	X	X	X
	Acacia pulchella	X	X	X	X	X
	Acacia stenoptera	X	X	X	X	X
	Acacia sp.		X	X	X	X
	Bossiaea eriocarpa	X	X	X	X	X
	Chorizema aciculare subsp. *laxum*	X				
	Cristonia stenophylla	X	X	X		X
	Daviesia daphnoides	X	X	X		
	Daviesia divaricata subsp. *divaricata*	X	X	X	X	X
	Daviesia nudiflora	X	X	X	X	X
	Daviesia pedunculata	X	X	X	X	X
	Daviesia podophylla	X	X	X		
	Daviesia triflora	X	X	X		X
	Daviesia ?incrassata subsp. *teres*	X	X	X	X	X
	Daviesia oxyclada			X		

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Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
FABACEAE	*Daviesia* sp.		X		X	X
(continued)	*Gastrolobium spinosum*	X	X	X	X	X
	Gastrolobium sp.	X				
	Gompholobium tomentosum	X	X	X	X	X
	Isotropis cuneifolia	X	X	X	X	X
	Jacksonia floribunda	X	X	X	X	X
	Jacksonia hakeoides			X		X
	Jacksonia nutans			X		
	Jacksonia restioides			X		
	Mirbelia trichocalyx	X	X	X		
	Mirbelia sp.					X
	* *Trifolium hirtum*					X
	Fabaceae sp.				X	X
GOODENIACEAE	*Dampiera carinata*		X	X	X	X
	Dampiera juncea	X				X
	Dampiera spicigera	X	X	X	X	X
	Dampiera oligophylla			X		X
	Dampiera sp.	X	X	X	X	X
	Goodenia reinwardtii		X	X		X
	Lechenaultia biloba				X	X
	Lechenaultia hirsuta			X		
	Scaevola canescens	X	X	X	X	X
	Scaevola glandulifera					X
	Scaevola phlebopetala			X	X	X
	Scaevola sp.					X
	Verreauxia reinwardtii	X				
	Goodeniaceae sp.				X	X
GYROSTEMONACEAE	*Gyrostemon ramulosus*					X
	Tersonia cyathiflora					X
HAEMODORACEAE	*Anigozanthos humilis*	X	X	X	X	X
	Conostylis ?aculeata	X				
	Conostylis androstemma	X	X	X		
	Conostylis angustifolia	X	X	X		
	Conostylis aurea	X	X	X	X	X
	Conostylis candicans		X	X	X	X
	Conostylis canteriata		X	X	X	X
	Conostylis neocymosa	X	X	X		
	Conostylis resinosa		X	X		
	Conostylis crassinerva			X		X
	Conostylis sp.	X	X	X	X	X
	Haemodorum ?venosum		X	X	X	X
	Hemiandra sp. Eneabba (H. Demarz 3687) (P3)	X	X	X	X	X
	Haemodorum sp.	X	X	X	X	X

APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SUREVY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
HEMEROCALLIDACEAE	*Arnocrinum preissii*			X		X
	Chamaescilla versicolor	X	X	X	X	X
	Johnsonia pubescens	X	X	X	X	X
	Johnsonia pubescens subsp. *pubescens*			X		X
	Tricoryne soullierae (P1)		X	X	X	X
	Tricoryne sp.	X		X		X
IRIDACEAE	*Patersonia drummondii*	X	X	X		
	Patersonia occidentalis				X	X
	Patersonia sp.					X
LAMIACEAE	*Hemiphora bartlingii*				X	X
	Pityrodia hemigenioides	X	X	X		
	Lamiaceae sp.					X
LAURACEAE	*Cassytha glabella*	X	X	X		X
	Cassytha ?racemosa	X	X	X		
	Cassytha sp.	X	X	X	X	X
LOGANIACEAE	*Orianthera spermacocea*		X	X		
	Phyllangium paradoxum			X	X	X
MALVACEAE	*Guichenotia sarotes*	X	X	X	X	X
	Lasiopetalum drummondii	X	X	X	X	X
MYRTACEAE	*Babingtonia camphorosmae*	X	X	X	X	X
	Babingtonia grandiflora		X	X	X	X
	Beaufortia elegans	X	X	X	X	X
	Calothamnus blepharospermus	X	X	X	X	X
	Calothamnus longissimus	X	X	X		
	Calothamnus quadrifidus subsp. *angustifolius*	X	X	X	X	X
	Calothamnus sanguineus	X	X	X	X	X
	Calothamnus sp.				X	X
	Calytrix cravenii		X	X		X
	Calytrix ?drummondii					
	Calytrix leschenaultii	X			X	X
	Calytrix sapphirina	X	X	X		X
	Calytrix strigosa		X	X		X
	Calytrix sp.	X	X	X		
	Darwinia sanguinea			X		
	Darwinia speciosa	X	X	X	X	X
	Eremaea beaufortioides	X	X	X	X	X
	Eremaea ectadioclada	X	X	X		X
	Eremaea violacea			X		X
	Eremaea violacea subsp. *violacea*	X	X	X	X	X
	Eremaea sp.				X	
	Eucalyptus horistes	X	X			

APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SUREVY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
MYRTACEAE	*Eucalyptus todtiana*	X	X	X	X	X
(continued)	*Hypocalymma gardneri* (P3)	X	X	X		X
	Hypocalymma hirsutum	X	X	X		
	Hypocalymma xanthopetalum		X	X	X	X
	Hypocalymma sp.	X	X	X	X	X
	Leptospermum oligandrum	X	X	X	X	X
	Leptospermum spinescens	X	X	X	X	X
	Melaleuca aspalathoides	X	X	X	X	X
	Melaleuca leuropoma	X	X	X	X	X
	Melaleuca trichophylla	X	X	X	X	X
	Melaleuca sp.				X	X
	Pileanthus filifolius	X	X	X	X	X
	Scholtzia laxiflora	X	X	X	X	X
	Thryptomene racemulosa		X	X		X
	Verticordia centipeda					X
	Verticordia densiflora	X	X	X		X
	Verticordia densiflora var. *densiflora*		X	X		
	Verticordia grandis	X	X	X	X	X
	Verticordia nobilis		X	X		
	Verticordia pennigera		X	X	X	X
	Verticordia ?plumosa	X				
	Verticordia sp.	X	X	X		
	Myrtaceae sp.		X	X	X	X
OLACACEAE	*Olax benthamiana*	X	X	X		
ORCHIDACEAE	*Caladenia* sp.	X				X
	Prasophyllum sp.	X				
	Orchidaceae sp.	X	X	X		X
PHYLLANTHACEAE	*Poranthera microphylla*			X	X	X
POACEAE	* *Aira caryophyllea*				X	X
	Amphipogon caricinus var. *caricinus*				X	X
	Amphipogon turbinatus	X	X	X	X	X
	Amphipogon sp.	X	X	X	X	X
	Aristida holathera				X	X
	Austrostipa macalpinei		X	X	X	X
	Eragrostis sp.		X	X		
	Neurachne alopecuroidea	X	X	X	X	X
	* *Vulpia myuros*					X
	* *Vulpia* sp.					X
	Poaceae sp.	X	X	X	X	X
POLYGALACEAE	*Comesperma calymega*		X	X		X
	Comesperma virgatum					X
	Comesperma sp.	X		X	X	X

APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SUREVY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
PORTULACACEAE	*Calandrinia corrigioloides*					X
PRIMULACEAE	* *Lysimachia arvensis*					X
PROTEACEAE	*Adenanthos cygnorum*	X				
	Banksia attenuata	X	X	X	X	X
	Banksia candolleana	X	X	X	X	X
	Banksia carlinoides	X	X	X	X	X
	Banksia dallanneyi	X				
	Banksia fraseri var. *crebra* (P3)	X	X	X		
	Banksia hookeriana	X	X	X		
	Banksia lanata			X		
	Banksia nivea	X	X	X	X	X
	Banksia scabrella (P4)	X	X	X		
	Banksia sessilis	X	X	X	X	X
	Banksia shuttleworthiana	X	X	X	X	X
	Banksia sphaerocarpa					X
	Banksia sphaerocarpa var. *sphaerocarpa*	X	X	X	X	X
	Banksia tridentata	X	X	X	X	X
	Banksia sp.				X	X
	Conospermum triplinervium	X	X	X	X	X
	Conospermum unilaterale	X	X	X		X
	Conospermum nervosum					X
	Grevillea biformis subsp. *biformis*	X	X	X		
	Grevillea eriostachya	X	X	X	X	X
	Grevillea shuttleworthiana					X
	Grevillea shuttleworthiana subsp. *canarina*	X	X	X		
	Grevillea sp.				X	
	Hakea auriculata	X	X	X	X	X
	Hakea circumalata	X	X	X	X	X
	Hakea costata	X	X	X		
	Hakea cygnus subsp. *cygnus*			X		
	Hakea eneabba	X	X	X	X	X
	Hakea incrassata	X	X	X	X	X
	Hakea lissocarpha	X	X	X		
	Hakea neospathulata	X	X	X		X
	Hakea polyanthema	X	X	X		X
	Hakea prostrata	X				
	Hakea trifurcata	X	X	X	X	X
	Hakea stenocarpa			X		
	Hakea sp.				X	X
	Isopogon linearis	X	X		X	
	Isopogon tridens	X	X	X	X	X
	Lambertia multiflora	X	X	X	X	X
	Persoonia ?filiformis (P3)	X	X	X		
	Persoonia acicularis	X	X	X	X	X
	Petrophile brevifolia	X	X	X	X	X

APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SUREVY AREA, AUGUST 2019, OCTOBER 2020 AND OCTOBER 2022

Note: * denotes introduced species; P1-P4 denote priority flora species in brackets (DBCA 2022c, WAH 1998-).

FAMILY	SPECIES	ANALOGUE			REHABILITATION	
		2019	2020	2022	2020	2022
PROTEACEAE (continued)	*Petrophile drummondii*	X	X	X	X	X
	Petrophile linearis	X	X	X		X
	Petrophile macrostachya	X	X	X	X	X
	Petrophile scabriuscula	X	X	X		X
	Petrophile shuttleworthiana	X	X	X	X	X
	Petrophile sp.				X	X
	Synaphea xela (P2)	X				
	Xylomelum angustifolium				X	X
	Proteaceae sp.				X	X
RESTIONACEAE	*Alexgeorgea nitens*	X	X	X	X	X
	Chordifex sinuosus	X	X	X	X	X
	Chordifex sp.					X
	Desmocladus asper	X	X	X	X	X
	Desmocladus parthenicus	X	X	X	X	X
	Desmocladus semiplanus	X	X	X	X	X
	Desmocladus sp.			X	X	X
	Lepidobolus chaetocephalus			X		
	Lepidobolus preissianus	X	X	X	X	X
RHAMNACEAE	*Cryptandra myriantha*	X	X	X		X
	Cryptandra sp.	X	X	X		
	Polianthion wichurae	X				
	Stenanthemum notiale subsp. *notiale*	X	X	X	X	X
RUBIACEAE	*Opercularia vaginata*	X	X	X	X	X
RUTACEAE	*Boronia cymosa*	X	X	X	X	X
	Boronia ramosa subsp. *anethifolia*	X				
	Cyanothamnus ramosus subsp. *anethifolius*			X	X	X
	Rutaceae sp.		X	X		
SAPINDACEAE	*Dodonaea ericoides*	X	X	X	X	X
STYLIDIACEAE	*Levenhookia pusilla*		X	X	X	X
	Levenhookia stipitata		X	X	X	X
	Stylidium adpressum		X	X	X	X
	Stylidium crossocephalum	X	X	X	X	X
	Stylidium diuroides			X		
	Stylidium diuroides subsp. *paucifoliatum*		X	X		X
	Stylidium drummondianum (P3)	X	X	X	X	X
	Stylidium flagellum	X	X	X	X	X
	Stylidium kalbarriense				X	X
	Stylidium ponticulus		X	X	X	X
	Stylidium repens		X	X	X	X
	Stylidium sp.	X	X	X	X	X
THYMELAEACEAE	*Pimelea leucantha*		X	X	X	X
	Pimelea imbricata					X
	Pimelea sp.	X	X	X	X	X
VIOLACEAE	*Hybanthus floribundus* subsp. Hill River (E.M. Bennett	X	X	X	X	X
XANTHORRHOEACEAE	*Xanthorrhoea drummondii*	X	X	X	X	X

APPENDIX D: GEOGRAPHIC LOCATIONS OF CONSERVATION (CONS.) SIGNIFICANT TAXA RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SURVEY AREA, OCTOBER 2022

Note: P1-P4 denote priority flora species (DBCA 2019, WAH 1998-). GPS (GDA 94, UTM 50) coordinates are taken from the start of their associated monitoring transect.

CONS. CODE	SPECIES	ANALOGUE / REHABILITATION	TRANSECT	NO. PLANTS	GPS (GDA 94, UTM 50)	
					EASTING	NORTHING
P1	*Tricoryne soullierae* [HEMEROCALLIDACEAE]	Analogue	01S	2	336184	6726494
			02R	3	335658	6726981
			03R	2	338652	6728473
			04R	1	333550	6729405
			05S	6	333557	6724153
			07S	2	332522	6731800
			08S	5	335045	6729478
		Rehabilitation	01S	5	336147	6726494
			02R	4	335593	6727009
			03R	1	338651	6728449
			07S	3	332552	6731798
			08S	5	335075	6729508
P3	*Banksia fraseri* var. *crebra* [PROTEACEAE]	Analogue	03R	1	338652	6728473
			10S	3	337203	6731854
	Hemiandra sp. Eneabba (H. Demarz 3687) [HAEMODORACEAE]	Analogue	02R	1	335658	6726981
			05S	1	333557	6724153
		Rehabilitation	05S	2	330390	6724168
			11S	2	334714	6731825
	Hypocalymma gardneri [MYRTACEAE]	Analogue	04R	1	333550	6729405
			11S	1	334678	6731821
		Rehabilitation	04R	1	333554	6729381
			08S	2	335075	6729508
	Mesomelaena stygia subsp. *Deflexa* [CYPERACEAE]	Analogue	01S	10	336184	6726494
			02R	9	335658	6726981
		Rehabilitation	01S	10	336147	6726494
			02R	3	335593	6727009
	Persoonia ?filiformis [PROTEACEAE]	Analogue	07S	1	332522	6731800

APPENDIX D: GEOGRAPHIC LOCATIONS OF CONSERVATION (CONS.) SIGNIFICANT TAXA RECORDED IN TRANSECTS FROM TRIESTE 3D SEISMIC SURVEY AREA, OCTOBER 2022

Note: P1-P4 denote priority flora species (DBCA 2019, WAH 1998-). GPS (GDA 94, UTM 50) coordinates are taken from the start of their associated monitoring transect.

CONS. CODE	SPECIES	ANALOGUE / REHABILITATION	TRANSECT	NO. PLANTS	GPS (GDA 94, UTM 50)	
					EASTING	NORTHING
P3	*Stylidium drummondianum* [STYLIDIACEAE]	Analogue	10S	5	337203	6731854
		Rehabilitation	10S	6	337234	6731821
P4	*Banksia scabrella* [PROTEACEAE]	Analogue	09R	1	335412	6728058
	Conostephium magnum [ERICACEAE]	Analogue	11S	1	334678	6731821
	Schoenus griffinianus [CYPERACEAE]	Rehabilitation	06R	3	332313	6727008
			08S	1	335075	6729508

APPENDIX E: GEOGRAPHIC LOCATIONS OF INTRODUCED TAXA RECORDED IN THE TRIESTE 3D SEISMIC SURVEY AREA, OCTOBER 2022

Note: * indicates introduced species. Co-ordinates represent the start for the transect. A = Analogue, R = Rehabilitation. Under 'surveyed year', number of quadrats in which the weed species' were recorded, where shaded boxes indicate transects were not surveyed. Location Easting/Northings are from start of transects.

SPECIES	TRANSECT	ANALOGUE / REHABILITATION	LOCATION (GDA94 Z50)		SURVEY YEAR		
			EASTING (mE)	NORTHING (mN)	2019	2020	2022
* *Aira caryophyllea*	08S	R	335075	6729508			1
	11S	R	334714	6731825		1	1
* *Arctotheca calendula*	06R	R	332313	6727008			1
* *Hypochaeris glabra*	01S	R	336147	6726494		4	6
	03R	A	338652	6728473		1	2
		R	338651	6728449		5	7
	05S	R	330390	6724168		2	2
	06R	A	332321	6727039			1
		R	332313	6727008		2	3
	07S	R	332552	6731798		2	4
	09R	R	335351	6728088		3	8
	11S	A	334678	6731821			1
		R	334714	6731825		6	9
* *Lysimachia arvensis*	03R	R	338651	6728449			1
* *Trifolium hirtum*	11S	R	334714	6731825			1
* *Ursinia anthemoides*	09R	R	335351	6728088			1
	11S	A	334678	6731821			1
		R	334714	6731825		1	2
* *Vulpia myuros*	11S	R	334714	6731825			2
* *Vulpia* sp.	03R	R	338651	6728449			1
* *Wahlenbergia capensis*	03R	R	338651	6728449		3	3
	07S	R	332552	6731798			1
	09R	A	335412	6728058		1	1
	11S	R	334714	6731825			6

APPENDIX F: AVERAGE SPECIES RICHNESS AND PERENNIAL FOLIAGE COVER ACROSS MONITORED TRANSECTS IN THE TRIESTE 3D SEISMIC SURVEY AREA, AUGUST 2019, OCTOBER 2020, OCTOBER 2022

Note: * results shown as average ± standard error.

Transect	Average Species Richness					Average Perennial Foliage Cover (%)				
	2019	2020		2022		2019	2020		2022	
	Analogue	Analogue	Rehabilitation	Analogue	Rehabilitation	Analogue	Analogue	Rehabilitation	Analogue	Rehabilitation
1S	19.60 ±1.19	20.40 ±1.07	16.20 ±0.57	23.70 ±1.16	22.50 ±1.26	84.79 ± 8.71	73.12 ±4.82	13.20 ±3.44	75.03 ±3.31	20.51 ±2.69
2R	25.50 ±1.37	25.40 ±1.65	16.90 ±0.85	30.20 ±1.73	22.90 ±1.00	75.98 ± 6.51	65.70 ±4.08	8.62 ±0.75	67.16 ±4.43	17.21 ±3.09
3R	18.00 ±0.96	16.70 ±1.37	14.20 ±0.85	20.40 ±1.30	21.60 ±1.24	73.08 ± 7.44	65.60 ±5.9	11.65 ±1.8	80.15 ±9.44	14.60 ±2.65
4R	- -	23.60 ±1.51	15.80 ±0.99	26.40 ±1.49	21.40 ±0.93	- -	64.94 ±6.65	17.14 ±2.78	76.97 ±8.20	40.42 ±6.63
5S	19.90 ±1.06	20.50 ±0.78	16.10 ±1.06	23.60 ±0.83	24.90 ±0.92	57.69 ± 9.77	61.91 ±10.15	10.00 ±1.62	61.47 ±7.72	23.61 ±2.10
6R	20.40 ±0.71	20.00 ±0.97	14.10 ±0.69	24.70 ±1.01	19.60 ±1.18	74.02 ± 5.84	76.19 ±5.71	12.80 ±1.61	89.83 ±6.79	28.38 ±4.36
7S	19.30 ±0.92	19.40 ±1.38	15.80 ±0.65	23.60 ±1.29	20.00 ±0.68	59.58 ± 6.8	73.64 ±7.47	9.93 ±1.09	89.40 ±19.68	25.56 ±2.83
8S	20.80 ±1.12	22.00 ±1.14	15.80 ±1.11	26.80 ±1.19	24.50 ±1.20	64.37 ± 8.67	57.15 ±6.31	10.76 ±1.65	59.63 ±6.58	28.11 ±5.78
9R	18.50 ±0.82	20.40 ±0.5	18.70 ±0.45	25.90 ±0.76	27.80 ±1.30	86.61 ± 9.86	87.37 ±8.89	7.33 ±0.97	95.19 ±10.96	14.32 ±2.22
10S	22.50 ±1.05	21.00 ±1.11	21.30 ±1.39	23.30 ±1.14	25.50 ±1.34	94.04 ± 9.34	92.05 ±6.15	16.77 ±1.89	94.78 ±7.47	29.43 ±3.85
11S	25.20 ±1.17	26.90 ±1.06	17.80 ±1.3	28.09 ±2.97	25.90 ±1.06	67.05 ± 7.56	74.75 ±7.56	7.27 ±1.07	80.62 ±10.44	17.05 ±2.57

ATTACHMENT C - Email correspondence between Beach and DCCEEW

From: Cox, Vaughn <Vaughn.Cox@dcceew.gov.au>
Sent: Thursday, 3 November 2022 5:06 PM
To: Zoë Bowen <Zoe.Bowen@beachenergy.com.au>
Cc: Pearl Catford <pearl.catford@beachenergy.com.au>; DeFay, Kara <Kara.DeFay@dcceew.gov.au>
Subject: RE: Query re EPBC2017/8133 [SEC=UNOFFICIAL]

Hi Zoe,

Thank you for the clarification.

I note the CPS 8171/1 expires May 2024. Following the 2020 and 2022 monitoring events Beach propose to "*include a new condition to monitor weed infestations to allow vegetation cover to achieve completion criteria (out compete weeds) for a period of four years before condition 8b) is implemented*".

If agreed by the State, this would mean Beach may not be next responsible for weed control until 2026, and after the Permit has expired. The EPBC Act approval expires September 2034.

On this basis I suggest consideration be given to extending the duration of the permit to ensure Beach suitably monitors and controls weeds in the rehabilitation area unless and until the rehabilitation completion criteria are attained/maintained, or September 2034, whichever is sooner.

This does not mean DCCEEW agrees to the proposed permit variation. DCCEEW would appreciate an opportunity to consult with DMIRS on its decision on the variation request.

Thanks again.

Vaughn Cox
Assistant Director
Post Approval Section
0422 369 431

From: Zoë Bowen <Zoe.Bowen@beachenergy.com.au>
Sent: Thursday, 3 November 2022 9:52 AM
To: Cox, Vaughn <Vaughn.Cox@dcceew.gov.au>
Cc: Pearl Catford <pearl.catford@beachenergy.com.au>
Subject: RE: Query re EPBC2017/8133 [SEC=UNOFFICIAL]

Hi Vaughn

Beach have been requested to provide details of consultation with DCCEEW in our NVCP application. I can contact the DMIRS NVAB and see if Richard is still there, however we won't know who in DMIRS NVAB has been assigned to assess our clearing permit amendment application until we submit the application. Once we have some feedback from yourselves we will be able to submit the application.

As indicated below, implementing the native vegetation clearing permit (NVCP) is a condition of the EPBC Approval, however there will be no impact to MNES if condition 8 of the clearing permit is amended, as proposed, to include a new condition to *monitor weed infestations to allow vegetation cover to achieve completion criteria (i.e. out compete weeds) for a period of four years before condition 8b) is implemented*

We are looking for advice on whether DCCEEW considers the proposed amendments to the clearing permit condition will affect Part A Condition 2 of the EPBC Approval, *To minimise the impacts of the action on EPBC Act listed species, the approval holder must implement condition 8 of the Western Australian Clearing Permit (8171/1) for the life of the approval from the commencement of the action*, if the activity is undertaken in the manner as proposed in Condition 8 of the clearing permit.

If you are able to provide some initial advice we can include your feedback in our clearing permit amendment application to DMIRS, submit the application and facilitate direct consultation between yourselves and DMIRS.

Thank you
Zoë

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