



## **AUGUSTA BOAT HARBOUR: ENVIRONMENTAL COMPLIANCE ASSESSMENT REPORT (2016) - EPBC APPROVAL 2008/4506**

Table 1 (attached) schedules the Environmental Protection and Biodiversity Conservation (EPBC) Act (1999) approval conditions and identifies those current for the 2016 reporting period and beyond. Only those approval conditions related to the Site Rehabilitation and Environmental Management Plan (SREMP), and its monitoring, reporting and record keeping, remain current. The EPBC approval expires on the 21 December 2021.

The 2016 environmental compliance assessment follows.

### **Condition 2**

*The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan(s) required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.*

Status: Compliant - Accurate records are maintained.

No requests were made by the Department during the compliance assessment reporting period for records substantiating activities associated with, or relevant to, the conditions of approval.

### **Condition 3**

*Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published.*

Status: No non-compliances were recorded against any of the conditions of EPBC Approval 2008/4506.

The attached report is the fifth annual compliance report to be prepared under EPBC Approval 2008/4506.

### **Condition 7**

*The person taking the action must develop a Site Rehabilitation and Environmental Management Plan (SREMP) to mitigate the impacts to Augusta Kennedia (Kennedia lateritia).*

*The Site Rehabilitation and Environmental Management Plan must include but not be limited to:*

- *Overview of existing environment*
- *Objectives*
- *Clearing protocols*



- *Perimeter fencing/security of rehabilitation areas and existing locations of Augusta Kennedia*
- *Rehabilitation activities/program, including figures showing rehabilitation sites*
- *Maintenance of site including: vermin control, fire management, pest management and weed control*
- *Timing and implementation of the above measures*
- *Monitoring and reporting.*

*The Site Rehabilitation and Environmental Management Plan must be submitted to and approved by the Minister prior to construction commencing.*

Status: Compliant

DoT, in consultation with Onshore Environmental Consultants, developed a SREMP which addresses the criteria specified within the approval conditions. The original SREMP was submitted to the Department and approved on 20 September 2011, the most recent revision (Version 12), was approved by the Department on 17 October 2012.

The *Augusta Boat Harbour: 2016 Rehabilitation Assessment* (attached) found that all of the establishment targets were achieved for the assessable completion criteria for the 2014 rehabilitation block (see *Table 2: Completion Criteria for rehabilitation at the Augusta Boat Harbour – compliance for 2014 rehabilitation block October 2016*).

The ongoing monitoring and reporting conditions were clarified via an exchange of letters between the Department and DoT in June and July 2016 (see Appendix 3 of the *Augusta Boat Harbour: 2016 Rehabilitation Assessment*).

**Table 1: Augusta Boat Harbour  
Conditions Compliance Status for EPBC 2008/4506 Approval**

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
1	Within 30 days after commencement of the action, the person taking the action must advise the Department in writing of the actual date of commencement	<p><b>DoT is compliant with this condition.</b></p> <p>A letter from Oceanica on behalf of DoT dated 14 October 2011 was sent to the Department of Environment and Energy (Department)<sup>1</sup> advising that works to implement the Augusta Boat Harbour commenced on 27 September 2011 at which time temporary fencing was installed around the designated site access road area.</p> <p>Condition 1 is not applicable for ongoing operations.</p>	Complete
2	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan(s) required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	<p>Accurate records have been maintained by DoT and activities have been substantiated including evidence provided in the 2012, 2013, 2014 &amp; 2015 Compliance Assessment Reports to the Department and annual reports for the WA Department of Environment and Regulation (DER) clearing permits.</p> <p>No requests were made by the Department during the construction phase for an independent auditor to verify compliance with the conditions of approval.</p> <p><u>Status</u> Records only required for Condiiton7 as at January 1, 2016. Records shall continue to be maintained until the expiry of the EPBC approval on 31 December 2021.</p>	Records to be maintained for the SREMP in accordance with the monitoring calendar in DoT's letter dated 21 June 2016.
3	Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department	<p>Compliance reports are required to be submitted annually by 27 December.</p> <p>Reports were available on the website in:</p> <ul style="list-style-type: none"> <li>• January 2013</li> <li>• December 2013</li> <li>• December 2014</li> <li>• December 2015</li> </ul> <p><u>Status</u> Reporting shall continue until the expiry of the EPBC approval on 21</p>	Reporting to be undertaken for the SREMP in accordance with the monitoring calendar in DoT's letter dated 21 June 2016.

<sup>1</sup> Formerly the Departments of Sustainability, Environment, Water, Population & Communities (DSEWPaC) and the Department of Environment (DoE)

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
	at the same time as the compliance report is published.	December 2021.	
4	If the person taking the action wishes to carry out any activity otherwise than in accordance with the management plan(s) as specified in the Conditions, the person taking the action must submit to the Department for the Minister's written approval a revised version of that management plan(s). The varied activity shall not commence until the Minister has approved the varied management plan(s) in writing. The Minister will not approve a varied management plan(s) unless the revised management plan(s) would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised plan(s), that management plan(s) must be implemented in place of the management plan(s) originally approved.	<p><b>DoT is compliant with this condition.</b></p> <p>A summary of amendments to management plans are below:</p> <ul style="list-style-type: none"> <li>• <b>2012 Annual Compliance Report</b> - DoT submitted a revised version of SREMP, which included the extension to the quarry, to the Department for approval on 7 September 2012. DoT was issued a notification of approval for the extension to the quarry on 17 October 2012. The amendments required for the Marine Noise Management Plan (MNMP) were minor and therefore the plan did not require another revision. The SREMP has undergone two revisions since its original approval, including Version 11 which was approved by Department on 23 November 2011, and Version 12, approved on 17 October 2012.</li> <li>• <b>2013 Annual Compliance Report</b> – No activities other than those described in management plans were undertaken within this reporting period and no revisions were made to management plans.</li> <li>• <b>2014 Annual Compliance Report</b> – DoT provided the Department with an environmental impact assessment for a minor underwater blasting campaign within the harbour. The findings of the assessment and the Department's view were that the proposed blasting was unlikely to have a significant impact to matters of national environmental significance (MNES).</li> </ul> <p>No new activities will be undertaken during operations. Condition 4 is not applicable for ongoing operations.</p>	Complete
5	If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities to do so, the Minister may request that the person taking the action make specified revisions to the management plan(s) specified in the Conditions and submit the revised management plan(s) for the Minister's written approval. The person taking the action must comply with any such request. The revised approved management plan(s) must be implemented. Unless the Minister has approved the revised management plan(s), then the person taking the action must continue to implement the management plan(s) originally approved, as specified in the conditions.	<p><b>DoT is compliant with this condition.</b></p> <p>No requests were received by DoT from the Department to revise any of the management plans during the construction phase of the project.</p> <p>No requests are perceived during operations as there are no significant threats to protected or listed threatened species.</p> <p>Condition 5 is not applicable for ongoing operations.</p>	Complete

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
6	If, at any time after five years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.	<p><b>DoT is compliant with this condition.</b></p> <p>The action was undertaken within the five year time frame. EPBC 2008/4506 approval was received on 22 August 2011 and the activity commenced on 27 September 2011 (refer to Condition 1). Condition 6 is not applicable for ongoing operations.</p>	Completed
7	<p>The person taking the action must develop a Site Rehabilitation and Environmental Management Plan (SREMP) to mitigate the impacts to Augusta Kennedia (<i>Kennedia lateritia</i>). The Site Rehabilitation and Environmental Management Plan must include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Overview of existing environment</li> <li>• Objectives</li> <li>• Clearing protocols</li> <li>• Perimeter fencing/security of rehabilitation areas and existing locations of Augusta Kennedia</li> <li>• Rehabilitation activities/program, including figures showing rehabilitation sites</li> <li>• Maintenance of site including: vermin control, fire management, pest management and weed control</li> <li>• Timing and implementation of the above measures</li> <li>• Monitoring and reporting.</li> </ul> <p>The Site Rehabilitation and Environmental Management Plan must be submitted to and approved by the Minister prior to construction commencing.</p>	<p>DoT, in consultation with Onshore Environmental Consultants, developed the SREMP to address the criteria specified within the approval conditions. The original SREMP was submitted to the Department and approved prior to construction commencing on 20 September 2011, the most recent revision (Version 12), was approved by the Department on 17 October 2012. The first ground works commenced on 27 September 2011.</p> <p>Compliance with the requirements of the SREMP were addressed in the Annual Compliance Assessment Reports located on the DoT website: <a href="http://www.transport.wa.gov.au/imarine/augusta-boat-harbour-facility.asp">http://www.transport.wa.gov.au/imarine/augusta-boat-harbour-facility.asp</a>.</p> <p>The Threatened <i>Kennedia lateritia</i> was originally recorded as a series of disjunct sub-populations separated by highly disturbed and 'weedy' ground. All of the sub-populations of <i>Kennedia lateritia</i> were retained with the boat harbour development re-designed to ensure that no plants were disturbed.</p> <p>The SREMP aimed to rehabilitate the larger area surrounding the sub-populations to form one consolidated population of <i>Kennedia lateritia</i>, significantly increasing the number of plants, area of occurrence, vegetation condition, and long term resilience.</p> <p>At three years of age the 2012 rehabilitation block has been an outstanding success meeting all targets for completion criteria associated with the planning, pre-clearing, pre-rehabilitation and establishment stages. The 2012 rehabilitation cannot be distinguished from surrounding vegetation adjoining into the surrounding reserve. Current maintenance activities are restricted to low intensity spot spraying of woody weeds in season, and selective spraying of remnant introduced grasses.</p> <p>The 2014 rehabilitation block covers either side of the entry road along with the construction office laydown. At 15 months of age this area remains in the establishment phase and requires ongoing management in the short</p>	Monitoring and Reporting to be undertaken for the SREMP in accordance with the monitoring calendar in DoT's letter dated 21 June 2016.

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
		<p>term. <b><u>Importantly the 2014 rehabilitation block does not contain any of the original sub-populations of <i>Kennedia lateritia</i></u></b>; however, rehabilitation will provide an important buffer to these sub-populations and in time provide consolidate the larger population with established plants.</p> <p>Revegetation in the 2014 rehabilitation block was quantitatively assessed in October 2015 and the results reported to the WA DER by DoT in accordance with the requirements of the Clearing Permit. The Clearing Permit expired on 1 August 2016.</p> <p><u>Status</u> Monitoring and reporting to the Department shall continue until the expiry of the EPBC approval on 21 December 2021.</p>	
8	The person taking the action must ensure that no Peppermint Trees greater than 1.5 m in height are cleared from the site, apart from twelve Peppermint Trees located within the proposed access road at the southern area of the site as shown in Attachment A (of the Conditions).	<p><b>DoT is compliant with this condition.</b></p> <p>Clearing of vegetation occurred on 5 October 2011. DEC Clearing procedures were complied with. A letter report from Green Iguana confirms clearing of 12 peppermint trees (Report dated 26 October 2011).</p> <p>No further removal of trees is required during operations.</p> <p>Condition 8 is not applicable for ongoing operations.</p>	Complete
9	<p>The person taking the action must develop a Marine Noise Management Plan (MNMP) to mitigate impacts to Cetaceans during quarry blasting and marine drilling operations. The Marine Noise Management Plan must include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Exclusion zones and mitigation measures during the months of April - November during blasting activities</li> <li>• Blasting time restrictions</li> <li>• Exclusion zones and mitigation measures during drilling, if the breakwater has not been constructed prior to drilling commencing</li> <li>• Drilling methodology</li> <li>• Post blast/drill fauna inspection</li> <li>• Timing and implementation of the above measures</li> </ul> <p>The Marine Noise Management Plan must be submitted to and approved by the Minister prior to</p>	<p><b>DoT is compliant with this condition.</b></p> <p>DoT, in consultation with Oceanica, developed a MNMP to address the criteria specified within the approval conditions. The MNMP was submitted to the Department and approved on 20 September 2011 prior to construction commencing on the 27 September 2011. The most recent revision was approved by the Department on 7 September 2012.</p> <p>No further drilling or blasting is required during Operations.</p> <p>Condition 9 is not applicable for ongoing operations.</p>	Complete

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
	construction commencing.		
10	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans referred to in these conditions of approval on their website. Each Management Plan must be published on the website within 1 month of being approved.	<p><b>DoT is compliant with this condition.</b></p> <p>All management plans are available on the DoT website at: <a href="http://www.transport.wa.gov.au/imate/au Augusta-boat-harbour-facility.asp">http://www.transport.wa.gov.au/imate/au Augusta-boat-harbour-facility.asp</a>.</p> <p>Each management plan was published within one month of being approved:</p> <ul style="list-style-type: none"> <li>• the original SREMP was approved by the Minister on 20 September 2011 and published on the website in September 2011.</li> <li>• the recent version (v12) of the SREMP was approved by the Minister on 17 October 2012 and published on the website in October 2012.</li> <li>• the original MNMP was approved by the Minister on 20 September 2011 and published on the website in September 2011.</li> </ul>	Complete





# Augusta Boat Harbour 2016 Rehabilitation Assessment

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30 November 2016





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## EXECUTIVE SUMMARY

An annual monitoring program designed to assess rehabilitation development success and the requirement for additional management strategies for the 2014 native rehabilitation block at the Augusta Boat Harbour commenced in October 2015 (aged 16 months), and the October 2016 (aged 28 months) assessment represents the second formal assessment.

At October 2016 there were 29 native plant taxa averaging 5.39 plants m<sup>2</sup> and providing 73 percent ground cover. The introduced weed loading had declined over the 12 month period from 32 species providing 27 percent ground cover, to 18 species providing 17 percent ground cover. At October 2016 the dominant native plant taxa included the mid shrubs *Agonis flexuosa*, *Spyridium globulosum*, *Melaleuca incana* subsp. *incana*, *Acacia littorea*, *Rhagodia baccata*, *Eutaxia obovata*, *Billardiera heterophylla* and *Acacia pulchella*, low shrubs *Pimelea ferruginea*, *Scaevola crassifolia*, *Hibbertia amplexicaulis*, and *Phyllanthus calycinus*, creepers *Kennedia lateritia* and *Muehlenbeckia adpressa* and sedges/rushes *Ficinia nodosa*, *Juncus kraussii* subsp. *australiensis* and *Lepidosperma gladiatum*, and herb *Stypantra glauca*. The Threatened Flora taxon *Kennedia lateritia* provided 10 percent ground cover across the rehabilitation area.

The majority of the assessable completion criteria were met for the 2014 rehabilitation block. Non-compliances observed in the 2015 rehabilitation assessment included not spreading subsoil to a consistent depth of 150 mm, and not undertaking surface scarification due to wet conditions. Native revegetation establishment has been slower to establish within these areas, and was further impacted by the absence of management during the first growing season in 2015. At October 2016 however all of the establishment stage targets were achieved. Ongoing management will be required at the site during 2016/17 to ensure appropriate weed control, rabbit control and supplementary watering is undertaken at the appropriate time to maximise rehabilitation success.

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# 1. INTRODUCTION

## 1.1 Preamble

The proposed Augusta Boat Harbour is a community-driven project, arising from the need for safe navigation and mooring in the Southern Ocean off the Augusta coast. The proposed Project area is located on Augusta Boat Harbour Reserve 51096, and occurs on the lower side of the Leeuwin-Naturaliste National Park. The project required the clearing of approximately 3.72 ha of native vegetation.

The concept plan for the boat harbour was redesigned in April 2011 as a result of the state environmental impact assessment process and negotiations regarding native vegetation clearing. Alterations were made to the quarry boundary and native vegetation clearing boundary in the northern area of the site at the request of the Department of Parks and Wildlife (DPaW). The new concept plan (concept design F2R) for the boat harbour further buffered the direct impact area from the threatened *Kennedia lateritia*, which was identified at the northern end of the site, adjacent to the proposed quarry area, as well as the southern sector of the project area during the baseline flora and vegetation survey (Onshore Environmental 2007, 2008). The F2R concept design provided an increased buffer between the quarry site and the northern population of the Threatened Flora *Kennedia lateritia*, as requested by DPaW. In addition to reducing and redesigning the clearing footprint to conserve populations of *Kennedia lateritia*, the revised plan also identified areas where remedial rehabilitation could be undertaken to improve the *in situ* vegetation condition and incorporating revegetation of the Threatened Flora.

The first stage of native rehabilitation at the Augusta Boat Harbour was completed between the 25<sup>th</sup> and 29<sup>th</sup> June 2012 (2012 block), and included approximately 0.56 ha situated in the south-east corner of the project area. A native seed mix collected from site prior to clearing and comprising a total of 54 plant taxa was hand broadcast at a rate of 4,310 grams per ha (Appendix 1). In addition, a total of 23 taxa were planted as nine month old seedlings at a rate of 6,455 seedlings per ha equivalent (Appendix 2). The second stage of native rehabilitation was completed between the 9<sup>th</sup> June and 24<sup>th</sup> July 2014 (2014 block) and included both sides of the access road adjacent to Leeuwin Road, as well as the office laydown area.

## 1.2 Location

The Augusta Boat Harbour site is located within the Shire of Augusta Margaret River, midway between the Augusta town site and Cape Leeuwin Lighthouse on the eastern side of Leeuwin Road. The site is opposite the Skippy Rock Road turnoff and adjacent the Leeuwin Naturaliste National Park (Figure 1).

## 1.3 Climate

The boat harbour experiences a Mediterranean climate with hot, dry summers and mild, wet winters. Average rainfall of 962.7 mm is recorded at the nearest meteorological station of Cape Leeuwin (6 km south west), with approximately 90 percent of this total received between April and October. The maximum 100 year annual rainfall is 1,464.4 mm. Average maximum temperatures range from 23.3 C in February to 16.4 C in July and August. Average minimum temperatures range from 11.2 C in August to 17.2 C in February. Strong winds are predominantly from the west. Winter storms bring squally winds from the north-west to south-west. During summer, prevailing hot dry winds are from the east and south-east. The area experiences strong onshore winds and as a result the existing vegetation is stunted at elevated parts of the site.



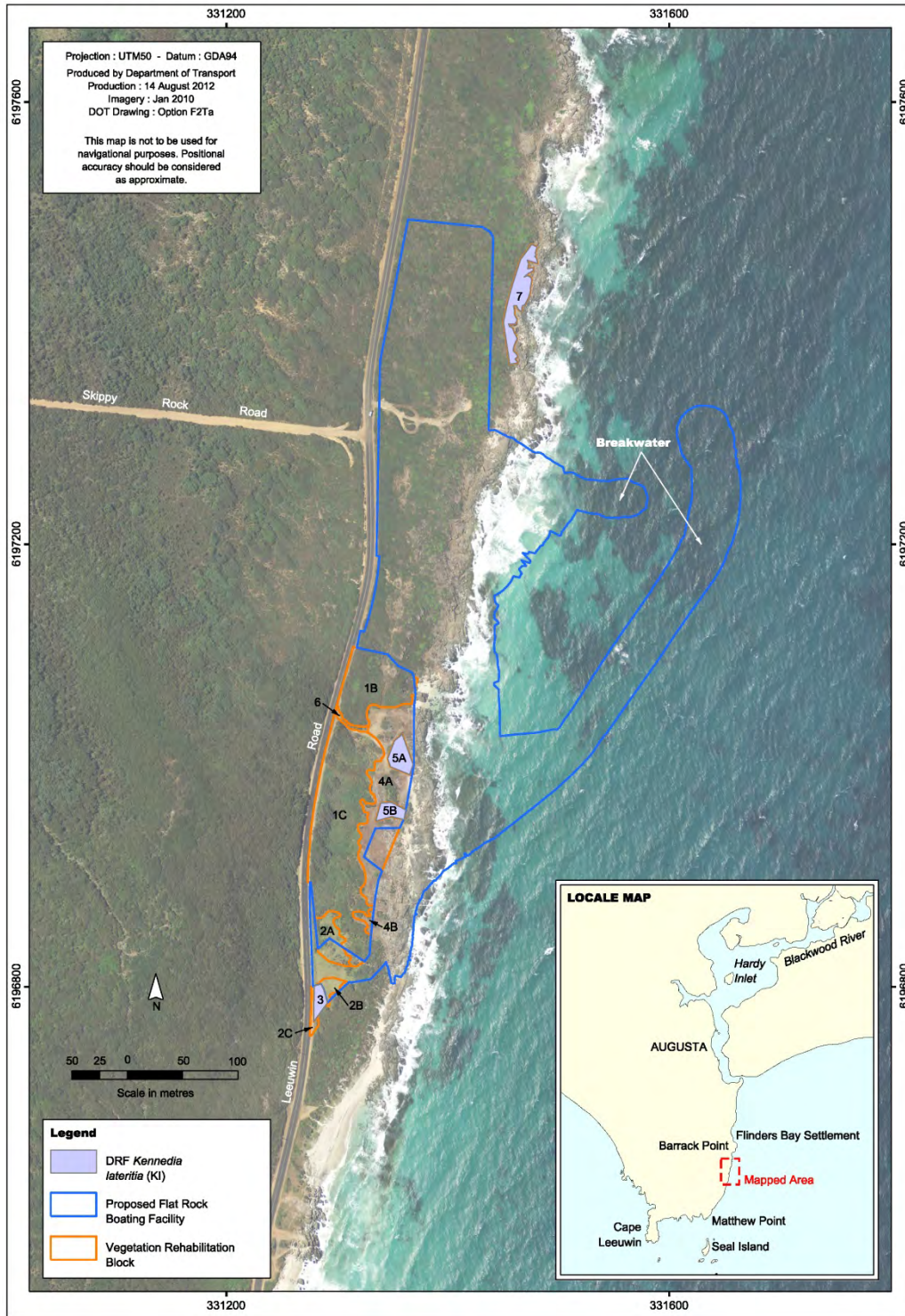


Figure 1 Location of the Augusta Boat Harbour, including rehabilitation blocks.

## 1.4 Current Condition of the Environment

The boat harbour is part of the Boranup vegetation system, situated in the Warren Botanical District of the South West Botanical Province (as described by Beard 1981). The Boranup system extends from Cape Naturaliste in the north to Irwin Inlet in the south, and covers the Leeuwin-Naturaliste Ridge and coastal dunes of the Scott River Plain. The Leeuwin-Naturaliste Ridge is a north-south trending horst of Precambrian granite and granulite forming hills rising to 200 m. Most of the outcrop is obscured by laterite and sand on the eastern side, and by dune sand and calcarenite on the western, seaward side. The seaward slopes are exposed to prevailing storm winds and sea spray. Vegetation is an intricate mosaic controlled by soil type and exposure (Beard 1981). The coast has a rugged retrograding shoreline with small sandy bays between promontories of granite and limestone. Soils are calcareous sands on the seaward slope and acidic grey earths on the inland side.

Five broad vegetation complexes were recorded during a two season Level 2 flora and vegetation survey of the Flat Rock survey area in February 2007 and October 2008 (Onshore Environmental Consultants 2007 and 2008). Vegetation at the Flat Rock site is strongly associated with five distinct landforms:

1. Primary Sand Dune;
2. Humic Granitic/ Sandy Swale;
3. Granitic Coastal Hill Slope;
4. Granitic/ Sandy Foreshore; and
5. Humic Granitic Platforms.

In addition, there is bare sand (beach sand) and bare rock (exposed granite) landform features represented that are devoid of vegetation.

Two flora species of conservation significance were recorded from the proposed Augusta Boat Harbour study area during the above survey:

- *Kennedia lateritia* is listed as 'Endangered' under the EPBC Act (Federal), and as Threatened Flora (DRF) under the Wildlife Conservation Act (State); and
- *Bossiaea disticha* is listed as Priority 4 flora by DPaW.

The site does not show visual evidence of being significantly impacted by disease or pests, and surrounding vegetation generally remains in good health. Glevan Consulting (2011) conducted an assessment for the presence of the disease caused by *Phytophthora cinnamomi* within remnant vegetation of the boat harbour area in September 2011. The threat of *P. cinnamomi* was considered to be low, as site conditions were thought to be unfavorable for the pathogen. Grazing by rabbits and snails has been observed in areas of reduced vegetation condition. The boat harbour included previously disturbed sites that supported established populations of environmental weed species.

A total of 25 environmental weeds were recorded during the baseline flora and vegetation survey (Onshore Environmental Consultants 2007). None are listed as Declared Weeds under the *Agriculture and Related Resources Protection Act, 1976* (ARRP Act). The majority of weeds were recorded at locations that have been subject to historical ground disturbance including road verges, the southern end of the 'Humic Granitic / Sandy Swale' vegetation association, and the granite platform along the eastern fringe of the Project area supporting skeletal sandy soils with high exposure to prevailing winds. Few weeds were recorded from 'intact' vegetation types.

## 2. REHABILITATION OBJECTIVES

The following rehabilitation objectives are stated in the approved Site Rehabilitation and Environmental Management Plan Version 12 (SREMP):

- Propose a conceptual land-use plan for the Project area;
- Minimise disturbance impacts wherever practicable;
- Integrate infrastructure development and rehabilitation schedules to maximise environmental outcomes;
- Provide a description of the development process and how it will be integrated with rehabilitation, reinforcing effective management of rehabilitation resources;
- Maximise the use of rehabilitation resources available on site;
- Address provenance issues such as seed and cutting / root propagule collection;
- Provide prescriptions for restoration of landforms and associated vegetation;
- Ensure that populations of any significant flora and vegetation communities are not compromised by the project;
- Adopt controlled approaches towards the management of existing threatening processes such as weed control, fire and feral animals;
- Assess a reference (analogue) site in tandem with developing rehabilitation to provide an accurate comparison on the success or otherwise; and
- Outline a program for monitoring landform reconstruction and revegetation, environmental impacts and compliance with the SREMP.

As stated in Section 5.1 of the SREMP, the 'annual monitoring program will be undertaken for three years following completion of rehabilitation, and at a three year interval from then onwards'. Furthermore, there is a requirement under condition 7 of the approval for monitoring and reporting associated with the SREMP to align with expiry of the EPBC approval, being 21 December 2021. As confirmed by Department of the Environment (Appendix 3), annual monitoring of the 2012 rehabilitation block has occurred annually between 2013 and 2015, and will subsequently be undertaken in 2018 and 2021. The 2014 rehabilitation block was previously assessed on one occasion in 2015, and will be assessed in 2016, 2017<sup>1</sup>, 2018 and 2021 (Appendix 3).

This report deals specifically with undertaking annual monitoring of the 2014 rehabilitation block in October 2016.

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<sup>1</sup> Monitoring not required if all completion criteria are fulfilled in 2016.

## 3. METHODOLOGY

### 3.1 Preamble

An annual monitoring program designed to assess rehabilitation development success and the requirement for additional management strategies will be undertaken for three years following completion of rehabilitation (from 15 months of age), and at a three year interval from then onwards. Monitoring will continue until it has been proven that revegetation is self-sustaining and can be integrated with the surrounding undisturbed vegetation, as determined by an appropriately qualified botanist appointed by the Department of Transport (DoT). Monitoring will be the responsibility of an appropriately qualified botanist appointed by the DoT, and will be conducted in accordance with the procedures outlined below. DoT will accept final responsibility for the rehabilitation works until such time as the completion criteria, from Augusta Boat Harbour SREMP (Onshore Environmental 2012) have been met.

In addition to the rehabilitation areas, a reference (analogue) site will be selected for annual monitoring. The analogue site will be selected on the basis of having similar soil-landform-vegetation associations to corresponding rehabilitation areas to allow for appropriate comparison of parameters. The analogue site chosen for assessment is situated north of the proposed Augusta Boat Harbour (along the same section of the ridge), in close proximity to Granny's Pool. It comprises coastal heath vegetation and provides a direct comparison to the vegetation cover being established in rehabilitation areas at the Augusta Boat Harbour.

Monitoring will use a series of plant biodiversity parameters such as species richness and diversity, plant density and percentage cover as indicators of ecosystem development and stability, which is endorsed by the EPA (EPA 2006). Qualitative assessment of the developing rehabilitation will be undertaken on a regular basis during the first growing season following establishment, and up to 15 months of age. Seed germination, plant establishment and survival, species diversity and weed establishment will be key parameters monitored during this period. Quantitative monitoring of rehabilitation will commence in the second spring (September/October) following rehabilitation (15 months), and will continue on an annual basis until the third assessment at which time the monitoring interval will be extended to a triennial basis (once every three years).

Rehabilitation blocks will be sampled with adequate replication to ensure the data is representative of the vegetation present. This will be demonstrated via graphing of 'species-area curves' for the understorey vegetation.

As an outcome from the dealings with the DoE (Appendix 3) DoT prepares (through the appropriately qualified botanist) an annual report outlining results which are submitted by the 31<sup>st</sup> December following annual rehabilitation assessments. The report is provided to the DoE and made publicly available on DoT's website <http://www.transport.wa.gov.au/imarine/augusta-boat-harbour-facility.asp#>

Reporting to the Department of Environmental Regulation (DER) under the clearing permit conditions for the boat harbour finished on the 1 June 2016. No further reporting is required to the DER.

The September 2016 rehabilitation assessment represented the second annual reporting period for the 2014 rehabilitation block.

## 3.2 Rehabilitation Implementation

The first stage of native rehabilitation was completed at the Augusta Boat Harbour between the 25<sup>th</sup> and 29<sup>th</sup> June 2012. This included approximately 0.56 ha contained within rehabilitation blocks 4a, 4b, 5a and 5b (see Figure 2). The native seed mix was hand broadcast at a rate of 4,310 grams per ha (Appendix 1). It comprised a total of 54 plant taxa that had been collected from site prior to clearing, as well as neighbouring local Shire Reserves. A total of 23 plant taxa were planted at a rate of 6,455 seedlings per ha equivalent (Appendix 2). The majority of planting stock was nine month old seedlings contained in a combination of cell packs and forestry tubes. The two *Lepidosperma* sedges were planted as advanced stock; *Lepidosperma gladiatum* was planted from a combination of 255 mm and 140 mm pots, and *Lepidosperma pubisquamum* was planted from 70 mm by 100 mm pots.

A second stage of rehabilitation was completed between 9<sup>th</sup> June and 24<sup>th</sup> July 2014 and included Rehabilitation blocks 2a (446 m<sup>2</sup>) and 2b (367 m<sup>2</sup>) situated on both sides of the access road adjacent to Leeuwin Road (Figure 2), along with the office laydown at the Augusta Boat Harbour (888 m<sup>2</sup>, see Figure 2). Native seed comprising a total of 54 plant taxa was hand broadcast at a rate of 4,310 grams per ha (Appendix 1). A total of 26 plant taxa were planted at a rate of 2,454 seedlings per ha (Appendix 2).

## 3.3 Monitoring Protocol

The 2012 rehabilitation block has been monitored annually on four occasions between 2012 and 2015:

- 16<sup>th</sup> to 17<sup>th</sup> November 2012, aged five months;
- 15<sup>th</sup> to 16<sup>th</sup> November 2013, aged 17 months;
- 7<sup>th</sup> to 8<sup>th</sup> October 2014, aged 28 months; and
- 22<sup>nd</sup> and 23<sup>rd</sup> October 2015 aged 40 months.

The 2014 rehabilitation block has been monitored annually on two occasions between 2015 and 2016:

- 22<sup>nd</sup> and 23<sup>rd</sup> October 2015, aged 16 months; and
- 28<sup>th</sup> October 2016, aged 28 months.

The monitoring procedure involved assessment of permanent belt transects of twenty contiguous one metre square quadrats, with four transects assessed within each of the 2012 and 2014 rehabilitation blocks, and an additional two transects assessed at the analogue site. A GPS location of the commencement point and orientation of each transect was recorded and photo-monitoring point established. The twenty 1 m<sup>2</sup> quadrats along each transect line were assessed individually. For each species within a quadrat the number present, percentage ground cover, and maximum plant height was recorded. Summarised data provided mean density values (no. plants m<sup>-2</sup>), mean percentage ground cover, and mean maximum plant height.

An importance value index (IVI), (Mueller-Dombois and Ellenberg 1974) which considers frequency, density, and cover was calculated for each species recorded along a transect line. For all species recorded along each transect line the total IVI value is 300; the larger an individual IVI, the greater the dominance of that species. Species diversity was measured by the Shannon-Wiener diversity Index, with higher values representing a greater level of diversity. The spread of individuals between the species recorded is defined by the 'Evenness' value (J). Evenness ranges between 0 and 1, with the maximum value indicating the same number of individuals being recorded for all species (Zar 1996, Magurran 1988). Lower J values reflect the dominance of one or a few species within the revegetation.



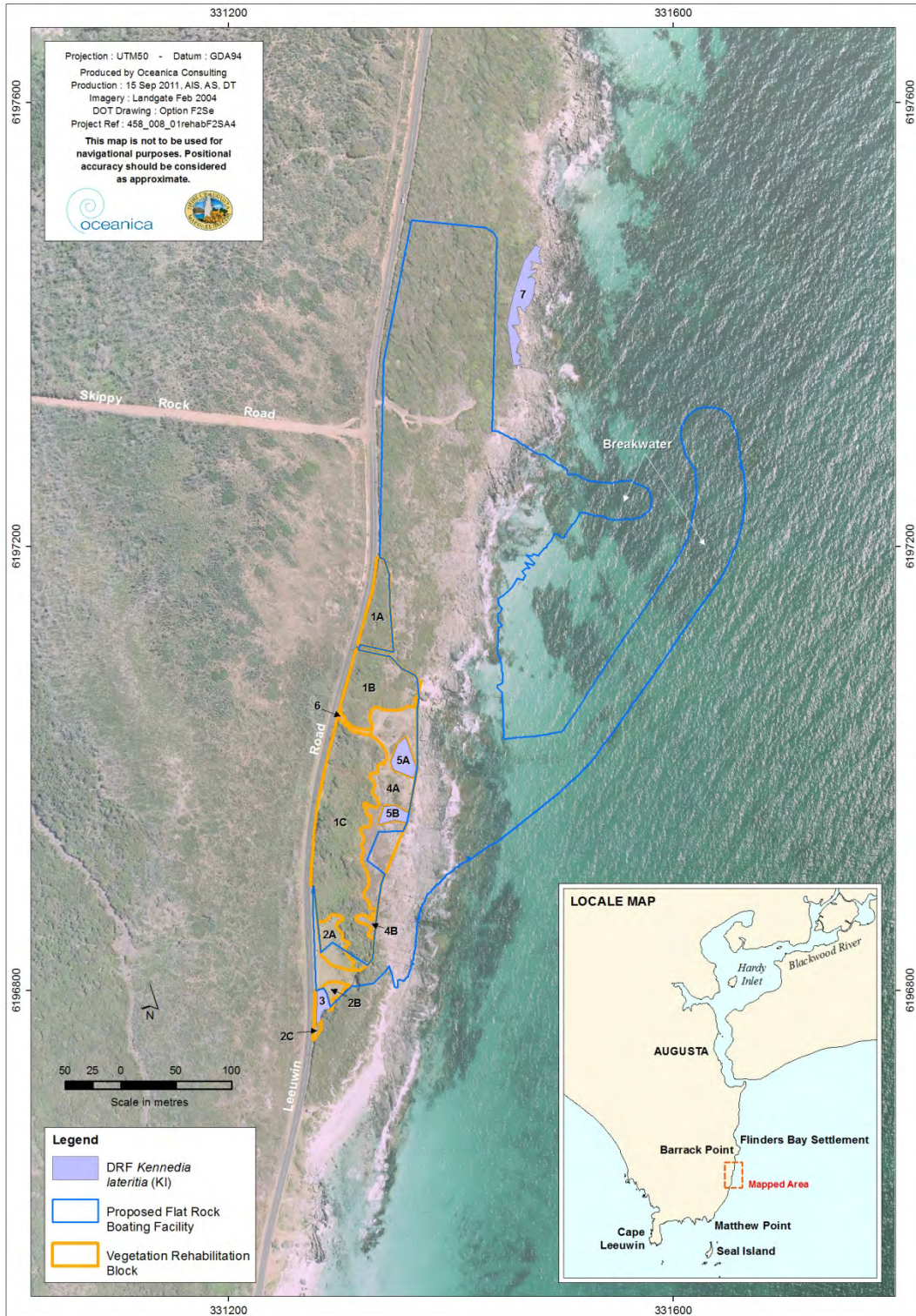


Figure 2 Rehabilitation blocks identified for management at the Augusta Boat Harbour (from SREMP).

### 3.4 Completion Criteria

To enable the assessment of rehabilitation progress towards objectives a number of completion criteria have been developed. For each criterion, performance indicators have been identified to enable progress to be measured and assessed. The targets are both qualitative (audit of design implementation during early stages to ensure maximum likelihood of a positive outcome), and quantitative (direct measure of performance outcomes).

The completion criteria will be assessed during the following five stages of the project:

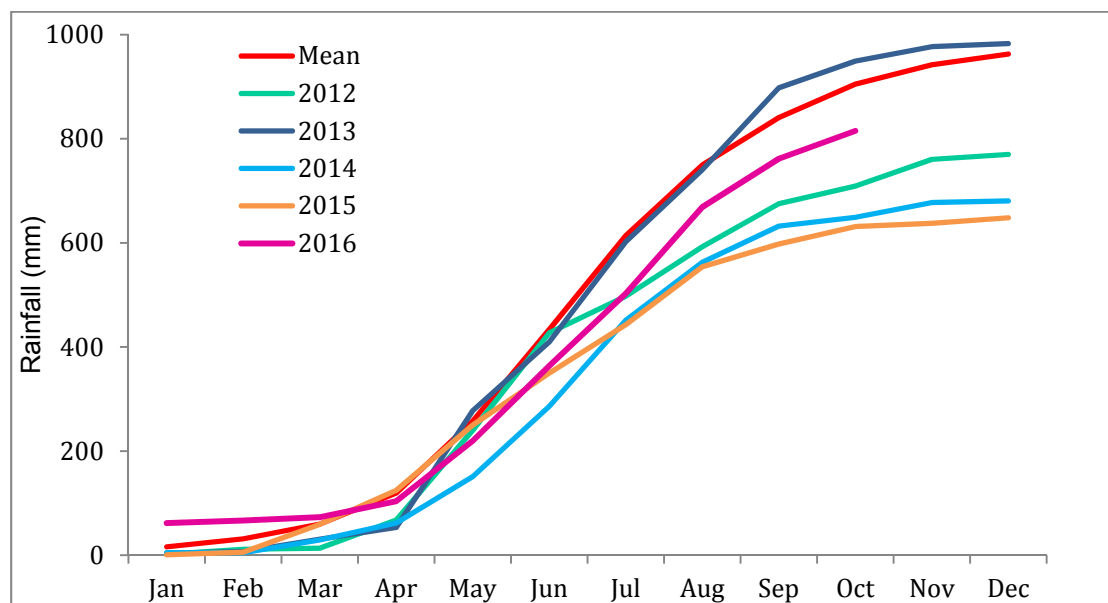
- Planning;
- Pre-clearing;
- Pre-rehabilitation;
- Establishment (0 – 15 months); and
- Development (15 months onwards).

## 4. RESULTS

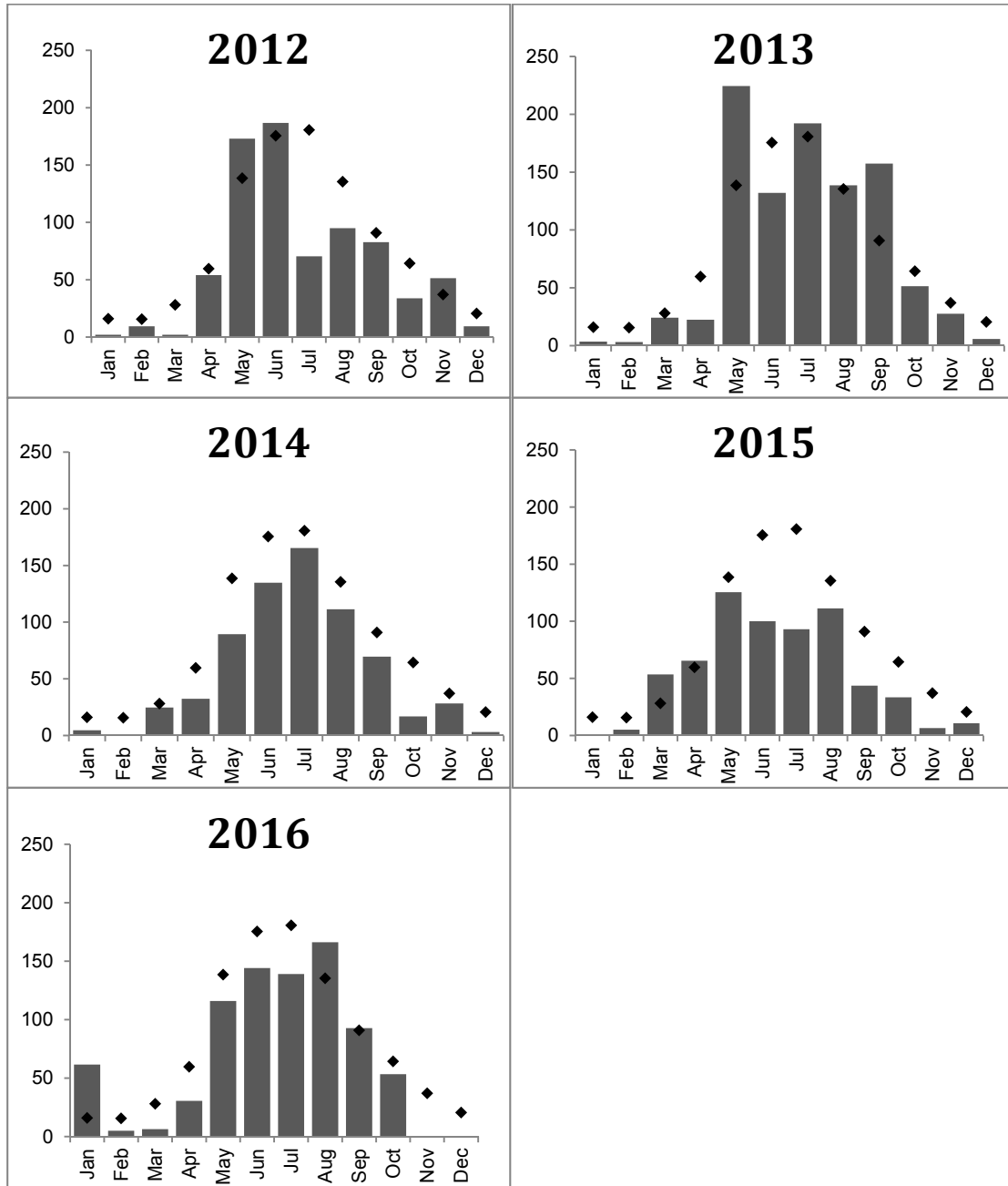
### 4.1 Rainfall

Since native rehabilitation commenced at the Augusta Boat Harbour in mid 2012, three of the four subsequent years have experienced annual rainfall totals less than the long term average (Figure 3).

Annual rainfall for Augusta was well below the long term average of 963 mm for 2012 (770 mm), 2014 (677 mm) and 2015 (648 mm) (Figure 3). In contrast, the 2013 annual total of 983 mm was slightly above the long-term average. Total rainfall from January to October 2016 totalled 815 mm, which was also below the long term average for the same period (905 mm). With the exception of January, August and September, monthly rainfall totals during 2016 were below the long term monthly averages (Figure 4).



**Figure 3** Cumulative monthly rainfall totals for Cape Leeuwin Weather Station (approximately 6 km south-west of the Augusta Boat Harbour) for 2012, 2013, 2014, 2015 and January to October 2016.



**Figure 4** Monthly rainfall totals for Cape Leeuwin from 2012 to 2016, with long term monthly average represented for each year.

## 4.2 Species Richness

Native species richness for the 80 m<sup>2</sup> assessed within the 2014 rehabilitation block has ranged from 31 plant taxa at 16 months (October 2015) to 29 plant taxa at 28 months (October 2016). In comparison, species richness across the 40 m<sup>2</sup> assessed at the analogue site averaged 13 plant taxa (Table 1).

**Table 1 Summary of plant biodiversity parameters recorded at the 2014 rehabilitation block and neighbouring analogue site.**

Assessment	Age	Species Richness		Native Density (no. m <sup>-2</sup> )	% Ground Cover	
		Natives	Weeds		Natives	Weeds
October 2015	16 months	31	32	3.35	29.1	27.1
October 2016	28 months	29	18	5.39	73.0	16.9
Analogue		13	1	1.08	82.9	2.2

### 4.3 Plant Density

Native plant density in the 2014 block averaged 3.35 plants m<sup>-2</sup> at October 2015 (16 months) and increased to 5.39 plants m<sup>-2</sup> in October 2016 (28 months). The higher plant density recorded during the latest assessment reflected native species establishment at the northern end of the infrastructure area, previously dominated by introduced weeds. The current plant density is expected within early stage rehabilitation and reflects better weed management over the past 12 month period.

### 4.4 Revegetation Cover

For the 2014 block native revegetation cover increased from 29 percent at 16 months (October 2015) to 73 percent at 28 months (October 2016). Over the same period the ground cover provided by introduced weed species declined from 27 percent to 17 percent. The positive trends represent a significant improvement in revegetation performance during the third growing season.

### 4.5 Dominant Plant Taxa

The dominant plant taxa represented in the 2014 rehabilitation block at October 2016 (by IVI) were *Stypantra glauca* (IVI 33), *Ficinia nodosa* (IVI 29), *Agonis flexuosa* (IVI 28), *Kennedia lateritia* (IVI 26), *Hibbertia amplexicaulis* (IVI 24), *Billardiera heterophylla* (IVI 16), *Eutaxia obovata* (IVI 14), *Rhagodia baccata* (IVI 14) and *Pimelea ferruginea* (IVI 13).

There were 18 plant taxa providing greater than one percent individual ground cover at October 2016 (Appendices 4 and 5). The highest individual ground coverage was provided by the Threatened Flora taxon *Kennedia lateritia* (10%), followed by *Agonis flexuosa* (9%), *Stypantra glauca* and *Ficinia nodosa* (7% each), *Billardiera heterophylla* and *Pimelea ferruginea* (5% each), *Scaevola crassifolia* (4%), *Hibbertia amplexicaulis*, *Acacia littorea*, *Juncus kraussii* subsp. *australiensis* and *Rhagodia baccata* (3% each), *Eutaxia obovata*, *Muehlenbeckia adpressa*, *Spyridium globulosum*, *Acacia pulchella* and *Melaleuca incana* subsp. *incana* (2% each), and *Lepidosperma gladiatum* and *Phyllanthus calycinus* (>1% each).

### 4.6 Rehabilitation Indices

The Shannon-Wiener diversity index (H) for the four transects in the 2014 rehabilitation block averaged 2.98 in October 2016, reflecting high species richness within the developing revegetation cover. The Evenness value (J) averaged 0.87 at October 2016 reflecting the relative even spread of individuals amongst the wide range of dominant plant taxa recorded.

### 4.7 Compliance to Criteria

At October 2016 with the 2014 rehabilitation block aged 28 months, all targets for the planning and pre-clearing criteria were met, and the majority of the pre-rehabilitation targets were also achieved (Table 2). Completion criteria number 20 and 21 were not



achieved consistently for the 2014 rehabilitation blocks. The preferred subsoil depth of 150 mm was not consistently recorded, and surface scarification was not completed owing to inability of machines to operate efficiently under wet soil conditions. All of the establishment stage targets were achieved including criterion number 30 'No areas greater than 0.01 ha without understorey'. It is noted that at October 2016 development of the native revegetation cover in the northern half of the laydown area is being promoted by continued management of the introduced weed species component.

It will be appropriate to continue management of developing rehabilitation within the 2014 native rehabilitation blocks at the Augusta Boat Harbour to ensure successful development of native revegetation structure.

**Table 2 Completion Criteria for rehabilitation at the Augusta Boat Harbour - compliance for 2014 rehabilitation blocks at October 2016.**

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2014 Rehabilitation Compliance
	1. PLANNING		
Access	1. Stakeholders have been consulted with proposed boat harbour access plans	Emails, letters, minutes of meetings	Yes
Fire	2. Fire management strategies are incorporated into the SREMP aimed at protecting developing rehabilitation	SREMP approved, Fire is excluded from developing rehabilitation for a minimum period of ten years following rehabilitation.	Yes
Land use	3. Area meets land use purpose as defined by land owner / manager	Shire of Augusta Margret River formally approves & adopts the end land use for the project area	Yes
Flora Vegetation and Fauna	4. Baseline flora & vegetation and fauna surveys have been completed	Management strategies for flora, vegetation and fauna of conservation significance are developed, as evidenced by correspondence.	Yes
	2. PRE-CLEARING		
Hydrology Landform and soils	5. Prior to commencement of clearing, surface drainage plan developed for areas earmarked for clearing	Surface drainage plan sighted by Project Manager	Yes
Clearing	6. Disturbance boundaries delineated with white sighter wire	Site inspection, photographs	Yes
Clearing	7. Machinery operators informed of clearing measures	Meeting minutes, correspondence	Yes
Vegetation and flora	8. Search for DRF (and other conservation significant flora) completed prior to clearing	Flora & vegetation survey report, photographs of flagged DRF	Yes
Vegetation and flora	9. Seed and plant material required for propagation removed and appropriately stored	Site inspection, photographs, invoices/receipts from seed merchants & nurseries	Yes
Vegetation and flora	10. Infrastructure and stockpile areas approved for clearing surveyed and pegged	Site inspection, photographs, survey/site plans, approval documents	Yes
	3. PRE-REHABILITATION		

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2014 Rehabilitation Compliance
Landform and soils	11. Native vegetation topsoil stripped in two layers: 0 - 50 mm and 50 - 150 mm, with clear signage delineating the two resources to prevent later confusion	Site inspection, photographs	Yes
Landform and soils	12. Native vegetation topsoil stripped during dry conditions wherever practicable	Site inspection, photographs	Yes
Landform and soils	13. Upper topsoil stripped with a grader (or similar) and stockpiled into pre-determined locations	Site inspection, photographs	Yes
Landform and soils	14. Native vegetation topsoil stockpiled over cleared native vegetation areas to a maximum height of 1 m	Site inspection, photographs, site plan	Yes
Landform and soils	15. Landform design is integrated with existing landscape	Survey plan for proposal area (showing contours before and after development)	Yes
Vegetation and flora	16. Clear and stockpile understorey vegetation	Site inspection, photographs	Yes
Landform and soils	17. Topsoil spread over 100% of the rehabilitated areas	Site plan, schedule, site inspection, photographs	Yes
Landform and soils	18. Aim to direct return 100% of the upper (top 50 mm) topsoil resource over disturbed rehabilitation areas	Site plan, schedule, site inspection, photographs	Yes
Landform and soils	19. Post-disturbance surfaces re-contoured with a grader following survey	Survey report (including pre- and post-disturbance contours), site inspection, photographs	Yes <sup>9</sup>
Landform and soils	20. Re-contoured surface deep ripped / scarified with appropriate machine (grader or small dozer)	Site inspection, photographs	No (too wet)
Landform and soils	21. 'Lower topsoil' material replaced at 150 mm depth	Monitoring (survey) results, site inspection, photographs	Not consistently
Landform and soils	22. 'Upper topsoil' material replaced at 50 mm	Monitoring (survey) results, site inspection, photographs	Yes
Landform and soils Hydrology	23. No uncontrolled surface runoff or soil erosion that is unstable and degrading, and/or compromises end land use objectives	Site inspection, photographs, monitoring results	Yes
Vegetation and flora	24. Perimeter of rehabilitation fenced	Invoice/ receipt from fencing contractor, site plan, site inspection, photographs	Yes

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2014 Rehabilitation Compliance
	4. ESTABLISHMENT (0-15 MONTHS)		
Vegetation and flora	25. Prepared rehabilitation areas direct seeded with a native species mix	Seed list outlining volume of seed utilised for each species, area direct-seeded, site inspection, photographs	Yes
Vegetation and flora	26. Nursery propagated seedlings (from a mixture of seed, cuttings, root divisions, and tissue culture) replanted throughout the rehabilitation area at a density >1,000 seedlings ha <sup>-1</sup>	Species list showing seedling numbers for each species, area of rehabilitation, site inspection, photographs, monitoring results	Yes
Vegetation and flora	27. At 15 months total number of <i>Kennedia lateritia</i> plants at the site to be 150% of the number recorded prior to development	Site inspection, photographs, monitoring results	Yes
Vegetation and flora	28. At 15 months species richness to be at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Monitoring results confirm species richness at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Yes
Landform and soils	29. Surfaces stable with no evidence of surface erosion that is likely to limit establishment of a native vegetation cover	Monitoring results (erosion and vegetation) confirming that erosion is not limiting plant establishment in the rehabilitation	Yes
Vegetation and flora	30. No areas greater than 0.01 ha without understorey	Monitoring results, site inspection to confirm there are no areas greater than 0.01 ha without understorey	Yes
	5. DEVELOPMENT (>15 MONTHS)		
Vegetation and flora	31. Longer term species richness to be at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Monitoring results confirm species richness at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Yes
Vegetation and flora	32. For Peppermint trees ( <i>Agonis flexuosa</i> ) planted to consolidate the existing southernmost clump of taller trees at the project site, a minimum number of 15 trees have survived 5 years following commencement of rehabilitation.	Annual monitoring results confirm survival of at least 15 Peppermint trees ( <i>Agonis flexuosa</i> ) at 5 years.	Yes, noting rehabilitation is 1.5 years old
Vegetation and flora	33. No Declared Plants (weeds) as defined by DAFWA (2007) present within rehabilitation areas.	Monitoring results, site inspection confirm no Declared Plants present in the rehabilitation	Yes

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2014 Rehabilitation Compliance
Access	34. The agreed access plan has been implemented	Access plan, site inspection, correspondence from regulatory authorities	Yes
Land use	35. The site meets the agreed end land use	Site inspection, photographs, correspondence from regulatory agencies	Yes
Landform and soils	36. The rehabilitation surface is stable and vegetated, with no uncontrolled run-off	Monitoring results, site inspection, photographs	Yes

## 5. SUMMARY

At October 2016 and aged 28 months there were 29 native plant taxa recorded within the 2014 rehabilitation averaging 5.39 plants m<sup>2</sup> and providing 73 percent ground cover. The introduced weed loading had declined over the 12 month period from 32 species providing 27 percent ground cover, to 18 species providing 17 percent ground cover. At October 2016 the dominant native plant taxa included the mid shrubs *Agonis flexuosa*, *Spyridium globulosum*, *Melaleuca incana* subsp. *incana*, *Acacia littorea*, *Rhagodia baccata*, *Eutaxia obovata*, *Billardiera heterophylla* and *Acacia pulchella*, low shrubs *Pimelea ferruginea*, *Scaevola crassifolia*, *Hibbertia amplexicaulis*, and *Phyllanthus calycinus*, creepers *Kennedia lateritia* and *Muehlenbeckia adpressa* and sedges/rushes *Ficinia nodosa*, *Juncus kraussii* subsp. *australiensis* and *Lepidosperma gladiatum*, and herb *Stypandra glauca*. The Threatened Flora taxon *Kennedia lateritia* provided 10 percent ground cover across the 2014 rehabilitation area.

The majority of the assessable completion criteria were met for the 2014 rehabilitation block. Non-compliances included not spreading subsoil to a consistent depth of 150 mm, and not undertaking surface scarification due to wet conditions. Native revegetation establishment has been slower to establish within these areas, and further impacted by the absence of management during the first growing season. At October 2016 all of the establishment stage targets were achieved. However, ongoing management will be required at the site during 2016/17 to ensure appropriate weed control, rabbit control and supplementary watering is undertaken at the appropriate time to maximise rehabilitation success.

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# APPENDIX 1

Native seed mix and individual sowing rates for the 2014 rehabilitation block

Species	Location	Batch #	Collection Season	2014 Seed Rate (g)
<i>Acacia alata</i>	Res39156	KMV400	2010/11	49
<i>Acacia alata</i>	Res39156	KMV-453	2011/12	
<i>Acacia littorea</i>	Res25141	KMV401	2010/11	100
<i>Acacia myrtifolia</i>	Res39156	KMV-454	2011/12	20
<i>Acacia pulchella</i> var <i>goadbyi</i>	Res 20761	KMV-456	2011/12	25
<i>Acacia pulchella</i> var <i>pulchella</i>	Res25141	KMV402	2010/11	25
<i>Acanthocarpus preissii</i>	Res25141	KMV403	2010/11	350
<i>Acrotriche cordata</i>	Res25141	KMV404	2010/11	100
<i>Agonis flexuosa</i>	Res25141	KMV405	2010/11	150
<i>Anthocercis littorea</i>	Res25141	KMV406	2010/11	5
<i>Baumea juncea</i>	Res25141	KMV407	2010/11	5
<i>Boronia alata</i>	Res25141	KMV-455	2011/12	30
<i>Boronia alata</i>	Res25141	KMV408	2010/11	
<i>Bossiaea distichea</i> *	Res25141	KMV-462	2011/12	150
<i>Bossiaea linophylla</i>	Res 20761	KMV-457	2011/12	150
<i>Carpobrotus virescens</i>	Res25141	KMV409	2010/11	90
<i>Carpobrotus virescens</i>	Res25141	KMV410	2010/11	
<i>Chorilaena quercifolia</i>	Res25141	KMV411	2010/11	0.5
<i>Chorizema diversifolium</i>	Res39156	KMV412	2010/11	0.4
<i>Clematis pubescens</i>	Res25141	KMV413	2010/11	120
<i>Comosperma confertum</i>	Res25141	KMV414	2010/11	0.1
<i>Daucus glochidiatus</i>	Res 27432	KMV-461	2011/12	3
<i>Dodonaea ceratocarpa</i>	Res25141	KMV415	2010/11	
<i>Eutaxia obovata</i>	Res25141	KMV416	2010/11	350
<i>Exocarpus sparteus</i>	Res25141	KMV417	2010/11	24
<i>Ficinia nodosa</i>	Res25141	KMV418	2010/11	30
<i>Hakea oleifolia</i>	Res25141	KMV-452	2011/12	
<i>Hardenbergia comptoniana</i>	Res25141	KMV419	2010/11	300
<i>Hovea elliptica</i>	Res20761	KMV420	2010/11	22
<i>Hovea elliptica</i>	Res39156	KMV421	2010/11	
<i>Kennedia carinata</i>	Res25141	KMV422	2010/11	1.3
<i>Kennedia coccinea</i>	Res39156	KMV423	2010/11	6
<i>Kennedia macrophylla</i> *#1	Res25141	KMV-447	2011/12	280
<i>Kennedia macrophylla</i> *#2	Res25141	KMV-448	2011/12	
<i>Kennedia macrophylla</i> *#3	Res25141	KMV-449	2011/12	
<i>Kennedia macrophylla</i> *#4	Res25141	KMV-450	2011/12	
<i>Kennedia prostrata</i>	Res25141	KMV424	2010/11	5
<i>Kennedia prostrata</i>	Res25141	KMV-458	2011/12	
<i>Leucophyta brownii</i>	Res25141	KMV425	2010/11	30
<i>Leucopogon parviflorus</i>	Res25141	KMV426	2010/11	300
<i>Linum marginale</i>	Res 27432	KMV-460	2011/12	1.3
<i>Lobelia anceps</i>	Res25141	KMV427	2010/11	3
<i>Logania vaginalis</i>	Res20761	KMV428	2010/11	10
<i>Melaleuca incana</i> ssp. <i>incana</i>	Res9658/2514 1	KMV-451	2011/12	50
<i>Patersonia occidentalis</i>	Res25141	KMV429	2010/11	15
<i>Patersonia umbrosa</i> var <i>xantha</i>	Res25141	KMV430	2010/11	7
<i>Philothea spicata</i>	Res25141	KMV431	2010/11	0.1
<i>Phyllanthus calycinus</i>	Res25141	KMV432	2010/11	11

Species	Location	Batch #	Collection Season	2014 Seed Rate (g)
<i>Pimelia ferruginea</i>	Res25141	KMV433	2010/11	60
<i>Rhagodia baccata</i>	Res25141	KMV434	2010/11	250
<i>Scaevola crassifolia</i>	Res25141	KMV435	2010/11	16
<i>Sollya heterophylla</i>	Res25141	KMV436	2010/11	40
<i>Sphenotoma capitatum</i>	Res25141	KMV437	2010/11	1.6
<i>Sporobolus virginicus</i>	Res25141	KMV438	2010/11	3
<i>Spyridium globosum</i>	Res25141	KMV439	2010/11	200
<i>Stylidium adnatum</i>	Res 27432	KMV-459	2011/12	
<i>Stylidium adnatum</i> var <i>adnatum</i>	Res25141	KMV440	2010/11	0.05
<i>Templetonia retusa</i>	Res25141	KMV441	2010/11	0.7
<i>Threlkeldia diffusa</i>	Res25141	KMV442	2010/11	50
<i>Viminaria juncea</i>	Res20761	KMV443	2010/11	220
<i>Viminaria juncea</i>	Res25141	KMV444	2010/11	
<i>Xanthorrhoea preissii</i>	Res 27432	KMV445	2010/11	650
<i>Xanthosia candida</i>	Res25141	KMV446	2010/11	0.7
<b>TOTAL</b>				<b>4310.75</b>

## **APPENDIX 2**

Native seedling mix and individual planting rates for the 2014 rehabilitation block

Species	Seedling Planting Rate (no. per ha)	
	2014 (upland)	2014 (wetland)
<i>Acacia littorera</i>	50	
<i>Agonis flexuosa</i>	40	
<i>Anthocercis littorea</i>	40	
<i>Banksia littoralis</i>		25
<i>Carpobrotus virescens</i>	50	
<i>Conostylis aculeata</i>	170	
<i>Diplolaena dampieri</i>	150	
<i>Dodonea ceratocarpa</i>	80	
<i>Ficinia nodosa</i>	260	
<i>Juncus kraussii</i> subsp. <i>austaliensis</i>	210	
<i>Kennedia laterita</i>	140	24
<i>Lepidosperma squamatum</i> 140mm	170	
<i>Leucophyta brownii</i>	50	
<i>Melaleuca incana</i> subsp. <i>incana</i>	50	
<i>Olearia axillaris</i>	85	
<i>Patersonia occidentalis</i>	170	
<i>Pimelia ferruginea</i>	170	
<i>Rhagodia baccata</i>	85	
<i>Scaevola crassifolia</i>	161	
<i>Scaevola nitida</i>	150	
<i>Sollya heterophylla</i>	40	
<i>Spyridium globulosum</i>	84	
<i>Viminaria juncea</i>	25	
<b>TOTAL</b>	<b>2,405</b>	<b>49</b>

## **APPENDIX 3**

Clarification of reporting requirements between Department of Transport and  
Department of the Environment



## Coastal Infrastructure

Mr Alex Taylor  
Acting Director, Monitoring and Assurance Section  
Department of the Environment  
GPO Box 787  
Canberra ACT 2601

22 June 2016

Dear Mr Taylor

### **AUGUSTA BOAT HARBOUR EPBC 2008/4506 – CLARIFICATION OF REPORTING REQUIREMENTS**

I refer to the Department of Transport's (DoT) letter dated the 19 October 2015 advising fulfilment of conditions attached to EPBC approval 2008/4506, the Department of Environment (DoE) response dated the 18 May 2016, and the subsequent discussions held between DoT Project Manager, Mr Stephen Smith and DoE Assistant Director, Mr Vaughn Cox .

I note the advice received from DoE for ongoing monitoring and reporting required under the EPBC approval conditions. In the reading of the conditions, and the approved Site Rehabilitation and Environmental Management Plan – Version 12 (SREMP), there is some ambiguity that DoT seeks to clarify. This letter details DoT's understanding for which we seek DoE's agreement. Once agreement has been reached with DoE we can progress with certainty the necessary contracts for the required environmental services.

Table 1 attached provides a compliance status of the conditions. Only those conditions relating to the SREMP, and its monitoring and reporting, remain outstanding. The balance of conditions have been completed and require no future monitoring or reporting.

Table 2 attached provides a schedule of the SREMP completion criterion, the status of those criteria at June 2016, and the timeframes for monitoring of criteria not yet completed for the two rehabilitation blocks. Table 2 has been derived from Table 5 in the SREMP.

#### ***Points of clarification:***

1. The SREMP, required under condition 7 of approval, is silent on the end date for monitoring and reporting. The approval has an expiry date of the 21 December 2021.

#### Comment

It is inferred that the end date for monitoring and reporting associated with the SREMP aligns to the expiry of the EPBC approval, being 21 December 2021. Would you please confirm this to be the case.





2. SREMP Clause 5.1 Monitoring – 1<sup>st</sup> sentence of 1<sup>st</sup> para.

*An annual monitoring program designed to assess rehabilitation development success and the requirement for additional management strategies will be undertaken for three years following completion of rehabilitation, and at a three year interval from then onwards.*

Completion of rehabilitation relates to the date when all ground works including topsoil spreading, mulching, fencing, planting, retic etc are completed. The Augusta Boat Harbour rehabilitation works were completed in two phases in 2012 and 2014, hereafter referred to as the 2012 block and the 2014 block. Refer Figure A attached.

Annual monitoring commenced for the 2012 block in December 2013 and was completed in December 2015 (three years following completion of rehabilitation). Three annual monitoring assessments were completed and reported. All completion criteria have been met for the planning, pre-clearing, pre-rehabilitation and establishment phases. Refer website link below for relevant reports.

<http://www.transport.wa.gov.au/imagery/augusta-boat-harbour-facility.asp#>.

Monitoring of the 2012 block will now be undertaken at three year intervals with the first due in December 2018 and the final due in December 2021.

Comment

Annual monitoring for the 2014 block commenced in December 2015 with the three year annual monitoring scheduled to be complete in December 2017 if all completion criteria are met. I seek your agreement that should the completion criteria be met at the 2016 annual monitoring assessment then the next monitoring date would be moved out to 2018 as per Table 1. This would have the added benefit of aligning the 2012 and 2014 blocks to the same 3 year monitoring calendar. DoT would consider this a reasonable approach given the 2014 block represents only 8% of the total rehabilitation area and our confidence in achieving similar outstanding success to that of the 2012 block after only two years of establishment. Any issues that may arise with this approach would be identified and addressed in the 2018 monitoring and reporting. I advise that there would be negligible risk in fulfilling the overall rehabilitation objectives in adopting this approach. All reporting shall occur in the same year as the monitoring.

Please note that DoT's Project Botanist undertakes biannual inspections of the 2012 and 2014 blocks. These inspections are in addition to the monitoring requirements for the EPBC approval and identify the need for onground actions. Any actions identified by the Project Botanist are scheduled for timely implementation.



**Table 1: Proposed Monitoring Calendar**

REHABILITATION BLOCK	MONITORING YEAR								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
2012	✓	✓	✓						
2014			✓		①				

- ① Not required if all completion criteria fulfilled in 2016
- ✓ Completed

Yours sincerely

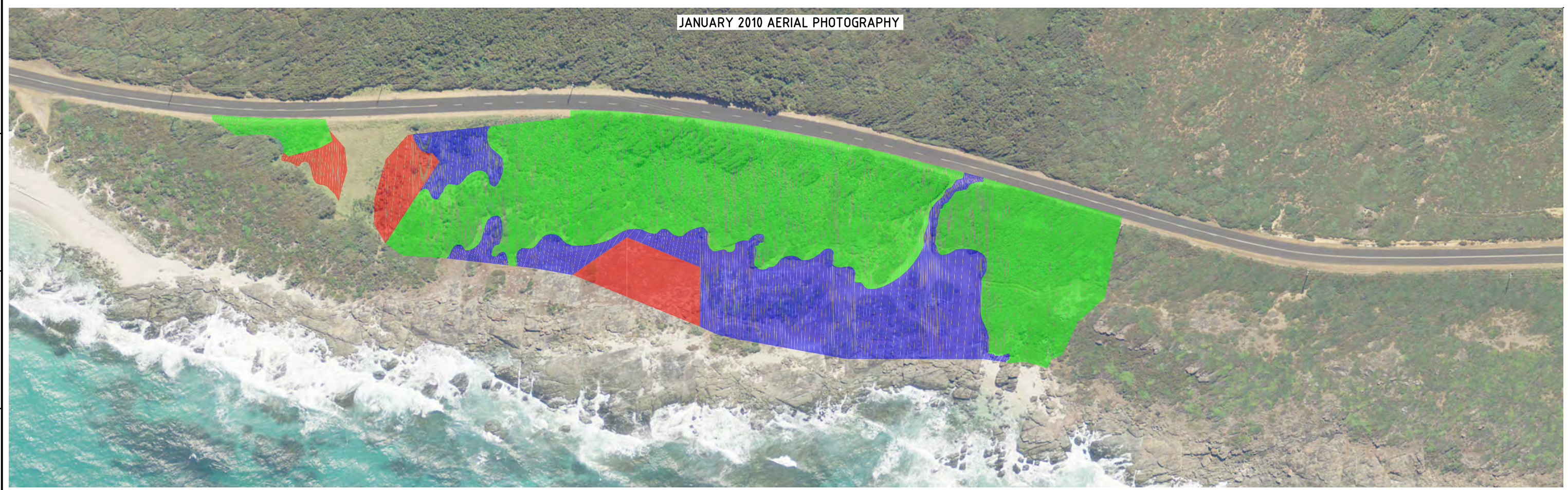


**Steve Jenkins**  
 Coastal Infrastructure General Manager

Enclosed: Table 1 Conditions compliance status for EPBC 2008/4506 Approval  
 Table 2 Completion criterion status for the 2012 & 2014 rehabilitation blocks (June 2016)  
 Site Rehabilitation and Environmental Management Plan V12  
 Figure A






JANUARY 2010 AERIAL PHOTOGRAPHY



DECEMBER 2014 AERIAL PHOTOGRAPHY



LEGEND

-  2012 WEED CONTROL MANAGEMENT (64%)
-  2012 REHABILITATION (28%)
-  2014 REHABILITATION (8%)

1:1500 @ A3 0 10 20 30 40



AUGUSTA BOAT HARBOUR  
REHABILITATION PHASES 2012 & 2014

FIGURE A



**Table 1: Augusta Boat Harbour  
Conditions Compliance Status for EPBC 2008/4506 Approval**

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
1	Within 30 days after commencement of the action, the person taking the action must advise the Department (DoE) in writing of the actual date of commencement	<p><b>DoT is compliant with this condition.</b></p> <p>A letter from Oceanica on behalf of DoT dated 14 October 2011 was sent to the Department advising that works to implement the Augusta Boat Harbour commenced on 27 September 2011 at which time temporary fencing was installed around the designated site access road area.</p> <p>Condition 1 is not applicable for ongoing operations.</p>	Complete
2	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan(s) required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	<p>Accurate records have been maintained by DoT and activities have been substantiated including evidence provided in the 2012, 2013, 2014 &amp; 2015 Compliance Assessment Reports to the Department and annual reports for the Department of Environment and Conservation (now DER) clearing permits.</p> <p>No requests were made by the Department during the construction phase for an independent auditor to verify compliance with the conditions of approval.</p> <p><u>Status</u></p> <p>Records only required for Condiiton7 as at January 1, 2016.</p> <p>Records shall continue to be maintained until the expiry of the EPBC approval on 31 December 2021.</p>	Records to be maintained for the SREMP in accordance with the monitoring calendar in DoT's letter dated 21 June 2016.
3	Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published.	<p>Compliance reports are required to be submitted annually by 27 December. A one month extension was granted by the Department (email from Sam Wagstaff from the Department dated 21 December 2012) advising the initial report could be submitted no later than 27 January 2013.</p> <p>Reports were available on the website in:</p> <ul style="list-style-type: none"> <li>• January 2013</li> <li>• December 2013</li> <li>• December 2014</li> <li>• December 2015</li> </ul> <p><u>Status</u></p> <p>Reporting only required for Condition 7 as at January 1, 2016.</p> <p>Reporting shall continue until the expiry of the EPBC approval on 31 December 2021.</p>	Reporting to be undertaken for the SREMP in accordance with the monitoring calendar in DoT's letter dated 21 June 2016.

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
4	<p>If the person taking the action wishes to carry out any activity otherwise than in accordance with the management plan(s) as specified in the Conditions, the person taking the action must submit to the Department for the Minister's written approval a revised version of that management plan(s). The varied activity shall not commence until the Minister has approved the varied management plan(s) in writing. The Minister will not approve a varied management plan(s) unless the revised management plan(s) would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised plan(s), that management plan(s) must be implemented in place of the management plan(s) originally approved.</p>	<p><b>DoT is compliant with this condition.</b></p> <p>A summary of amendments to management plans are below:</p> <ul style="list-style-type: none"> <li>• <b>2012 Annual Compliance Report</b> - DoT submitted a revised version of SREMP, which included the extension to the quarry, to the Minister (DSEWPaC) for approval on 7 September 2012. DoT was issued a notification of approval for the extension to the quarry on 17 October 2012. The amendments required for the Marine Noise Management Plan (MNMP) were minor and therefore the plan did not require another revision. The SREMP has undergone two revisions since its original approval, including Version 11 which was approved by DSEWPaC on 23 November 2011, and Version 12, approved on 17 October 2012.</li> <li>• <b>2013 Annual Compliance Report</b> – No activities other than those described in management plans were undertaken within this reporting period and no revisions were made to management plans.</li> <li>• <b>2014 Annual Compliance Report</b> – DoT provided the Department with an environmental impact assessment for a minor underwater blasting campaign within the harbour. The findings of the assessment and the Department's view were that the proposed blasting was unlikely to have a significant impact to matters of national environmental significance (MNES).</li> </ul> <p>No new activities will be undertaken during operations. Condition 4 is not applicable for ongoing operations.</p>	Complete
5	<p>If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities to do so, the Minister may request that the person taking the action make specified revisions to the management plan(s) specified in the Conditions and submit the revised management plan(s) for the Minister's written approval. The person taking the action must comply with any such request. The revised approved management plan(s) must be implemented. Unless the Minister has approved the revised management plan(s), then the person taking the action must continue to implement the management plan(s) originally approved, as specified in the conditions.</p>	<p><b>DoT is compliant with this condition.</b></p> <p>No requests were received by DoT from the Minister to revise any of the management plans during the construction phase of the project.</p> <p>No requests are perceived during operations as there are no significant threats to protected or listed threatened species.</p> <p>Condition 5 is not applicable for ongoing operations.</p>	Complete
6	<p>If, at any time after five years from the date of this approval, the person taking the action has not substantially commenced the action, then the</p>	<p><b>DoT is compliant with this condition.</b></p> <p>The action was undertaken within the five year time frame. EPBC 2008/4506 approval was received on 22 August 2011 and the activity</p>	Completed

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
	<p>person taking the action must not substantially commence the action without the written agreement of the Minister.</p>	<p>commenced on 27 September 2011 (refer to Condition 1). Condition 6 is not applicable for ongoing operations.</p>	
7	<p>The person taking the action must develop a Site Rehabilitation and Environmental Management Plan (SREMP) to mitigate the impacts to Augusta Kennedia (<i>Kennedia lateritia</i>). The Site Rehabilitation and Environmental Management Plan must include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Overview of existing environment</li> <li>• Objectives</li> <li>• Clearing protocols</li> <li>• Perimeter fencing/security of rehabilitation areas and existing locations of Augusta Kennedia</li> <li>• Rehabilitation activities/program, including figures showing rehabilitation sites</li> <li>• Maintenance of site including: vermin control, fire management, pest management and weed control</li> <li>• Timing and implementation of the above measures</li> <li>• Monitoring and reporting.</li> </ul> <p>The Site Rehabilitation and Environmental Management Plan must be submitted to and approved by the Minister prior to construction commencing.</p>	<p>DoT, in consultation with Onshore Environmental Consultants, developed the SREMP to address the criteria specified within the approval conditions. The original SREMP was submitted to DSEWPaC and approved on 20 September 2011, the most recent revision (Version 12), was approved by DSEWPaC on 17 October 2012.</p> <p>The SREMP was approved by the Minister prior to construction commencing. The original SREMP was approved by DSEWPaC on 20 September 2011 and the first ground works commenced on 27 September 2011.</p> <p>Compliance with the requirements of the SREMP were addressed in the Annual Compliance Assessment Reports located on the DoT website: <a href="http://www.transport.wa.gov.au/imarine/augusta-boat-harbour-facility.asp">http://www.transport.wa.gov.au/imarine/augusta-boat-harbour-facility.asp</a>.</p> <p>The Threatened <i>Kennedia lateritia</i> was originally recorded as a series of disjunct sub-populations separated by highly disturbed and 'weedy' ground. All of the sub-populations of <i>Kennedia lateritia</i> were retained with the boat harbour development re-designed to ensure that no plants were disturbed.</p> <p>The SREMP aimed to rehabilitate the larger area surrounding the sub-populations to form one consolidated population of <i>Kennedia lateritia</i>, significantly increasing the number of plants, area of occurrence, vegetation condition, and long term resilience.</p> <p>At three years of age the 2012 rehabilitation block has been an outstanding success meeting all targets for completion criteria associated with the planning, pre-clearing, pre-rehabilitation and establishment stages. The 2012 rehabilitation cannot be distinguished from surrounding vegetation adjoining into the surrounding reserve. Current maintenance activities are restricted to low intensity spot spraying of woody weeds in season, and selective spraying of remnant introduced grasses.</p> <p>The 2014 rehabilitation block covers either side of the entry road along with the construction office laydown. At 15 months of age this area remains in the establishment phase and requires ongoing management in the short term. <b><u>Importantly the 2014 rehabilitation block does not contain any of</u></b></p>	<p>Monitoring and Reporting to be undertaken for the SREMP in accordance with the monitoring calendar in DoT's letter dated 21 June 2016.</p>

CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
		<p><b><u>the original sub-populations of <i>Kennedia lateritia</i></u></b>; however, rehabilitation will provide an important buffer to these sub-populations and in time provide consolidate the larger population with established plants.</p> <p>Revegetation in the 2014 rehabilitation block was quantitatively assessed in October 2015 and the results reported to the WA DER by DoT in accordance with the requirements of the Clearing Permit. The Clearing Permit expires on 1 August 2016.</p> <p><u>Status</u> Monitoring and reporting shall continue until the expiry of the EPBC approval on 31 December 2021.</p>	
8	The person taking the action must ensure that no Peppermint Trees greater than 1.5 m in height are cleared from the site, apart from twelve Peppermint Trees located within the proposed access road at the southern area of the site as shown in Attachment A (of the Conditions).	<p><b>DoT is compliant with this condition.</b></p> <p>Clearing of vegetation occurred on 5 October 2011. DEC Clearing procedures were complied with. A letter report from Green Iguana confirms clearing of 12 peppermint trees (Report dated 26 October 2011).</p> <p>No further removal of trees is required during operations.</p> <p>Condition 8 is not applicable for ongoing operations.</p>	Complete
9	<p>The person taking the action must develop a Marine Noise Management Plan to mitigate impacts to Cetaceans during quarry blasting and marine drilling operations. The Marine Noise Management Plan must include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Exclusion zones and mitigation measures during the months of April - November during blasting activities</li> <li>• Blasting time restrictions</li> <li>• Exclusion zones and mitigation measures during drilling, if the breakwater has not been constructed prior to drilling commencing</li> <li>• Drilling methodology</li> <li>• Post blast/drill fauna inspection</li> <li>• Timing and implementation of the above measures</li> </ul> <p>The Marine Noise Management Plan must be submitted to and approved by the Minister prior to construction commencing.</p>	<p><b>DoT is compliant with this condition.</b></p> <p>DoT, in consultation with Oceanica, developed a MNMP to address the criteria specified within the approval conditions. The MNMP was submitted to DSEWPaC and approved on 20 September 2011. The most recent revision was approved by the Department on 7 September 2012.</p> <p>The MNMP was approved by the Minister prior to construction commencing. The MNMP was approved by DSEWPaC on 20 September 2011 and the first ground works commenced on 27 September 2011.</p> <p>No further drilling or blasting is required during Operations.</p> <p>Condition 9 is not applicable for ongoing operations.</p>	Complete



CONDITION NUMBER	CONDITION	COMPLIANCE STATUS	COMMENT
10	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans referred to in these conditions of approval on their website. Each Management Plan must be published on the website within 1 month of being approved.	<p><b>DoT is compliant with this condition.</b></p> <p>All management plans are available on the DoT website at: <a href="http://www.transport.wa.gov.au/imate/australia-boat-harbour-facility.asp">http://www.transport.wa.gov.au/imate/australia-boat-harbour-facility.asp</a>.</p> <p>Each management plan was published within one month of being approved:</p> <ul style="list-style-type: none"> <li>• the original SREMP was approved by the Minister on 20 September 2011 and published on the website in September 2011.</li> <li>• the recent version (v12) of the SREMP was approved by the Minister on 17 October 2012 and published on the website in October 2012.</li> <li>• the original MNMP was approved by the Minister on 20 September 2011 and published on the website in September 2011.</li> </ul>	Complete

**Table 2: Augusta Boat Harbour – 2012 & 2014 Rehabilitation Blocks  
Completion Criterion Status as at June 2016**

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2012 BLOCK STATUS	2014 BLOCK STATUS
<b>PLANNING</b>				
Access	1. Stakeholders have been consulted with proposed boat harbour access plans	Emails, letters, minutes of meetings	Complete	Complete
Fire	2. Fire management strategies are incorporated into the SREMP aimed at protecting developing rehabilitation	SREMP approved, Fire is excluded from developing rehabilitation for a minimum period of ten years following rehabilitation.	Complete	Complete
Land Use	3. Area meets land use purpose as defined by land owner / manager	Shire of Augusta Margaret River formally approves & adopts the end land use for the project area	Complete	Complete
Flora Vegetation and Fauna	4. Baseline flora & vegetation and fauna surveys have been completed	Management strategies for flora, vegetation and fauna of conservation significance are developed, as evidenced by correspondence.	Complete	Complete
<b>PRE-CLEARING</b>				
Hydrology Landform and soils	5. Prior to commencement of clearing, surface drainage plan developed for areas earmarked for clearing	Surface drainage plan sighted by Project Manager	Complete	Complete
Clearing	6. Disturbance boundaries delineated with white sighter wire	Site inspection, photographs	Complete	Complete
Clearing	7. Machinery operators informed of clearing measures	Meeting minutes, correspondence	Complete	Complete
Vegetation and flora	8. Search for Threatened Flora (and other conservation significant flora) completed prior to clearing	Flora & vegetation survey report, photographs of flagged Threatened Flora	Complete	Complete
Vegetation and flora	9. Seed and plant material required for propagation removed and appropriately stored	Site inspection, photographs, invoices/receipts from seed merchants and nurseries	Complete	Complete
Vegetation and flora	10. Infrastructure and stockpile areas approved for clearing surveyed and pegged	Site inspection, photographs, survey/site plans, approval documents	Complete	Complete

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2012 BLOCK STATUS	2014 BLOCK STATUS
<b>PRE-REHABILITATION</b>				
Landform and soils	11. Native vegetation topsoil stripped in two layers: 0 - 50 mm and 50 - 150 mm, with clear signage delineating the two resources to prevent later confusion	Site inspection, photographs	Complete	Complete
Landform and soils	12. Native vegetation topsoil stripped during dry conditions wherever practicable	Site inspection, photographs	Complete	Complete
Landform and soils	13. Upper topsoil stripped with a grader (or similar) and stockpiled into pre-determined locations	Site inspection, photographs	Complete	Complete
Landform and soils	14. Native vegetation topsoil stockpiled over cleared native vegetation areas to a maximum height of 1 m	Site inspection, photographs, site plan	Complete	Complete
Landform and soils	15. Landform design is integrated with existing landscape	Survey plan for proposal area (showing contours before and after development)	Complete	Complete
Vegetation and flora	16. Clear and stockpile understorey vegetation	Site inspection, photographs	Complete	Complete
Landform and soils	17. Topsoil spread over 100% of the rehabilitated areas	Site plan, schedule, site inspection, photographs	Complete	Complete
Landform and soils	18. Aim to direct return 100% of the upper (top 50 mm) topsoil resource over disturbed rehabilitation areas	Site plan, schedule, site inspection, photographs	Complete	Complete
Landform and soils	19. Post-disturbance surfaces re-contoured with a Posi Track following survey	Survey report (including pre- and post-disturbance contours), site inspection, photographs	Complete	Complete
Landform and soils	20. Re-contoured surface deep ripped / scarified with appropriate machine (Posi Track)	Site inspection, photographs	Complete	Complete
Landform and soils	21. 'Lower topsoil' material replaced at 150 mm depth	Monitoring (survey) results, site inspection, photographs	Complete	Complete
Landform and soils	22. 'Upper topsoil' material replaced at 50 mm	Monitoring (survey) results, site inspection, photographs	Complete	Complete
Landform and soils Hydrology	23. No uncontrolled surface runoff or soil erosion that is unstable and degrading, and/or compromises end land use objectives	Site inspection, photographs, monitoring results	Complete	Complete

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2012 BLOCK STATUS	2014 BLOCK STATUS
Vegetation and flora	24. Fencing strategically erected to minimise impact of prevailing south-easterly winds on seedling development	Invoice/ receipt from fencing contractor, site plan, site inspection, photographs	Complete	Complete
<b>ESTABLISHMENT (0 - 15 months)</b>				
Vegetation and flora	25. Prepared rehabilitation areas direct seeded with a native species mix	Seed list outlining volume of seed utilised for each species, area direct-seeded, site inspection, photographs	Complete	Complete
Vegetation and flora	26. Nursery propagated seedlings (from a mixture of seed, cuttings, root divisions, and tissue culture) replanted throughout the rehabilitation area at a density >1,000 seedlings ha <sup>-1</sup>	Species list showing seedling numbers for each species, area of rehabilitation, site inspection, photographs, monitoring results	Complete	Complete
Vegetation and flora	27. At 15 months total number of <i>Kennedia lateritia</i> plants at the site to be 150% of the number recorded prior to development	Site inspection, photographs, monitoring results	Complete	2016 Monitoring
Vegetation and flora	28. At 15 months species richness to be at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Monitoring results confirm species richness at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Complete	2016 Monitoring
Landform and soils	29. Surfaces stable with no evidence of surface erosion that is likely to limit establishment of a native vegetation cover	Monitoring results (erosion and vegetation) confirming that erosion is not limiting plant establishment in the rehabilitation	Complete	2016 Monitoring
Vegetation and flora	30. No areas greater than 0.01 ha without understorey	Monitoring results, site inspection to confirm there are no areas greater than 0.01 ha without understorey	Complete	2016 Monitoring

ASPECT	COMPLETION CRITERION	PERFORMANCE INDICATOR	2012 BLOCK STATUS	2014 BLOCK STATUS
<b>DEVELOPMENT (&gt;15 months)</b>				
Vegetation and flora	31. Longer term species richness to be at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	Monitoring results confirm species richness at least 80% of that recorded at the analogue site, with not more than 10 percent of the annual assessment plots failing to record this level of diversity	2018 & 2021 Monitoring	2017 <sup>(1)</sup> , 2018, 2021 Monitoring
Vegetation and flora	32. For Peppermint trees ( <i>Agonis flexuosa</i> ) planted to consolidate the existing southernmost clump of taller trees at the project site, a minimum number of 15 trees have survived 5 years following commencement of rehabilitation.	Annual monitoring results confirm survival of at least 15 Peppermint trees ( <i>Agonis flexuosa</i> ) at 5 years.	2018 Monitoring	2021 Monitoring
Vegetation and flora	33. No Declared Plants (weeds) as defined by DAFWA (2007) present within rehabilitation areas.	Monitoring results, site inspection confirm no Declared Plants present in the rehabilitation	2018 & 2021 Monitoring	2017 <sup>(1)</sup> , 2018, 2021 Monitoring
Access	34. The agreed access plan has been implemented	Access plan, site inspection, correspondence from regulatory authorities	Complete	Complete
Land use	35. The site meets the agreed end land use	Site inspection, photographs, correspondence from regulatory agencies	Complete	Complete
Landform and soils	36. The rehabilitation surface is stable and vegetated, with no uncontrolled run-off	Monitoring results, site inspection, photographs	2018 & 2021 Monitoring	2017 <sup>(1)</sup> , 2018, 2021 Monitoring

(1) It is proposed that should the completion criteria be met at the 2016 annual monitoring then the next reporting year would be 2018. In this case the 2017 monitoring would not be required.



Mr Steve Jenkins  
Coastal Infrastructure General Manager  
WA Department of Transport  
1 Essex Street  
Freemantle WA 6160

Dear Mr Jenkins

**Clarification of Reporting and Monitoring Requirements – EPBC 2008/4506**

I write in reference to your letter of 22 June 2016, seeking clarification of reporting and monitoring requirements of *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval 2008/4506; Augusta Boat Harbour.

In your letter you seek to clarify:

- A. The end date for monitoring and reporting associated with the Site Rehabilitation and Environmental Management Plan (SREMP); and
- B. A proposed monitoring schedule for the 2012 and 2014 blocks.

In relation to the end date for monitoring and reporting associated with the SREMP, I confirm that this is required under expiry of the EPBC approval on 21 December 2021.

In relation to the proposed monitoring schedule for the 2012 and 2014 blocks, I can confirm that the Department of the Environment (the Department) agrees with the monitoring schedule as proposed in your letter.

Management plans associated with EPBC Act approvals may be revised by the approval holder and submitted to the Department for approval; in which case that revised management plan can be implemented in place of the one originally approved. Similarly, an approval holder can request a variation to the conditions attached to an approval; this process can be initiated by contacting the Department's Post Approval Section ([postapproval@environment.gov.au](mailto:postapproval@environment.gov.au)).

You may revise management plans or seek a variation should you wish to articulate explicitly the requirements pertaining to monitoring or reporting, or to reflect changes to the project over time.

Should you have any further questions in relation to EPBC matters, please do not hesitate to contact me on 02 6274 2209 or [alex.taylor@environment.gov.au](mailto:alex.taylor@environment.gov.au).

Yours sincerely

Alex Taylor  
Acting Director  
Monitoring and Assurance Section  
Department of the Environment

17 July 2016

## APPENDIX 4

Plant biodiversity parameters recorded from four 20m by 1m transects within the 2014 rehabilitation block at October 2015 and October 2016



Species	October 2015				October 2016			
	IVI	Density (no. / m <sup>2</sup> )	% Cover	Height (m)	IVI	Density (no. / m <sup>2</sup> )	% Cover	Height (m)
* <i>Arctotheca calendula</i>	0.91		0.59					
* <i>Arctotheca populifolia</i>	0.13		0.08					
* <i>Avena barbata</i>	0.02		0.01					
* <i>Baeometra uniflora</i>	1.04		0.18					
* <i>Briza maxima</i>	0.01		0.01		0.73		0.61	
* <i>Briza minor</i>	0.17		0.10					
* <i>Bromus diandrus</i>					0.02		0.01	
* <i>Carduus tenuiflorus</i>	0.37		0.15					
* <i>Catapodium rigidum</i>	0.05		0.02					
* <i>Cenchrus clandestinus</i>	0.58		0.44					
* <i>Centaurium erythraea</i>	0.72		0.31		0.13		0.10	
* <i>Conyza bonariensis</i>	0.04		0.03					
* <i>Cynodon dactylon</i>	8.39		6.32		9.95		7.89	
* <i>Dittrichia graveolans</i>					0.53		0.13	
* <i>Ehrharta calycina</i>	0.07		0.04					
* <i>Euphorbia peplus</i>	0.70		0.44		0.71		0.79	
* <i>Helichrysum luteoalbum</i>	10.98		0.33		0.98		0.06	
* <i>Holcus lanatus</i>	0.18		0.12		0.05		0.06	
* <i>Hypochaeris glabra</i>	5.44		0.08		0.09		0.08	
* <i>Isolepis marginata</i>	0.06		0.03		0.74		0.53	
* <i>Lotus subbiflorus</i>	13.36		7.56					
* <i>Lysimachia arvensis</i>	5.09		2.24					
* <i>Malva parviflora</i>	0.03		0.01					
* <i>Melilotus indica</i>	2.27		0.92					
* <i>Pelargonium capitatum</i>	0.02		0.01					
* <i>Plantago lanceolata</i>					0.07		0.06	
* <i>Polypogon monspeliensis</i>	9.15		4.63		0.52		0.43	

Species	October 2015				October 2016			
	IVI	Density (no. / m <sup>2</sup> )	% Cover	Height (m)	IVI	Density (no. / m <sup>2</sup> )	% Cover	Height (m)
<i>*Romulea rosea</i>	0.02		0.01					
<i>*Senecio elegans</i>	0.31		0.24					
<i>*Solanum nigrum</i>	2.52		0.76					
<i>*Sonchus aspera</i>	0.14		0.06					
<i>*Sonchus oleraceus</i>	2.78		1.24		0.18		0.16	
<i>*Symphyotrichum squamatum</i>					0.39		0.30	
<i>*Trifolium arvense</i>	0.02		0.01					
<i>*Trifolium glomeratum</i>	0.20		0.08		0.39		0.28	
<i>*Vellereophyton dealbatum</i>	0.08		0.03					
<i>Acacia littorea</i>	11.56	0.15	1.89	0.7	9.91	0.20	3.01	50
<i>Acacia pulchella</i>	8.28	0.14	0.31	0.2	8.77	0.15	1.94	19
<i>Agonis flexuosa</i>	30.09	0.73	1.66	0.5	27.88	0.66	9.48	65
<i>Austrostipa mollis</i>	0.01	0.00	0.01					
<i>Baumea arthrophylla</i>	8.22	0.06	0.97	1.1				
<i>Billardiera heterophylla</i>	6.06	0.13	0.86	0.1	16.03	0.30	4.70	34
<i>Bossiaea disticha</i>	7.48	0.15	1.03	0.2	0.83	0.03	0.18	43
<i>Carpobrotus virescens</i>	1.12	0.03	0.09	0.2	1.58	0.04	0.21	19
<i>Chorilaena quercifolia</i>	2.06	0.01	0.01	0.0				
<i>Dampiera linearis</i>	0.65	0.01	0.01	0.1				
<i>Desmocladius flexuosus</i>	1.25	0.04	0.04	0.1				
<i>Diplolaena dampieri</i>					0.83	0.01	0.56	105
<i>Dodonaea ceratocarpa</i>					1.19	0.03	0.25	9
<i>Eutaxia obovata</i>	28.63	0.54	1.49	0.3	14.38	0.43	2.39	33
<i>Ficinia nodosa</i>	36.69	0.43	1.59	1.3	29.08	0.44	6.51	81
<i>Herbs (unidentifiable)</i>	2.76	0.00	2.09					
<i>Hibbertia amplexicaulis</i>	16.24	0.24	1.28	0.2	23.74	0.56	3.30	18
<i>Hypolaena pubescens</i>					3.54	0.08	0.16	10

Species	October 2015				October 2016			
	IVI	Density (no. / m <sup>2</sup> )	% Cover	Height (m)	IVI	Density (no. / m <sup>2</sup> )	% Cover	Height (m)
<i>Juncus kraussii</i> subsp. <i>australiensis</i>					7.66		2.76	
<i>Kennedia coccinea</i>	0.50	0.01	0.01	0.1				
<i>Kennedia lateritia</i>	6.62	0.01	2.90	3.9	25.71	0.15	10.28	32
<i>Lepidosperma gladiatum</i>	7.02	0.11	0.73	0.5	6.98	0.13	1.43	49
<i>Lepidosperma pubisquameum</i>	0.53	0.01	0.03	0.3	1.53	0.04	0.18	34
<i>Leucopogon australis</i>	4.17	0.06	0.41	0.6				
<i>Melaleuca incana</i> subsp. <i>incana</i>	6.45	0.09	0.51	0.5	6.91	0.13	1.73	54
<i>Muehlenbeckia adpressa</i>	2.77	0.00	1.61	0.3	4.16	0.08	2.01	18
<i>Olearia axillaris</i>	2.07	0.01	0.01	0.1	0.77	0.01	0.29	50
<i>Ornduffia parnassifolia</i>					0.13		0.13	
<i>Orthosanthus laxus</i>					0.73	0.03	0.06	15
<i>Patersonia occidentalis</i>	0.71	0.01	0.04	0.1	1.25	0.03	0.09	15
<i>Phyllanthus calycinus</i>	3.58	0.05	0.29	0.2	7.11	0.15	1.38	18
<i>Pimelea ferruginea</i>	4.70	0.08	1.04	0.3	12.67	0.20	4.66	37
<i>Rhagodia baccata</i>	17.31	0.10	4.65	0.5	13.60	0.24	2.60	36
<i>Scaevola crassifolia</i>	8.48	0.09	1.24	0.2	8.75	0.11	3.90	46
<i>Spyridium globulosum</i>	2.80	0.06	0.22	0.3	4.80	0.13	1.96	34
<i>Stypandra glauca</i>	3.31	0.00	2.13		32.73	1.05	6.69	16
<i>Tetragia</i> sp. Jarrah Forest					0.83	0.03	0.18	32
<i>Viminaria juncea</i>	2.06	0.01	0.01	0.0				
TOTAL	300.00	3.56	56.16		300.00	5.39	89.88	
NATIVES	234.17	3.35	29.11	31.0	274.08	5.39	72.99	
WEEDS	65.83		27.06		25.92		16.89	

## **APPENDIX 5**

Photographic representation of rehabilitation development  
along permanent monitoring transects within the 2014 Rehabilitation Area at the  
Augusta Boat Harbour (four transects) - assessed October 2015  
and October 2016



**Plate 1**      **Transect 1, assessed October 2015 aged 16 months.**



**Plate 2**      **Transect 1, assessed October 2016 aged 28 months.**





**Plate 3**      **Transect 2, assessed October 2015 aged 16 months.**

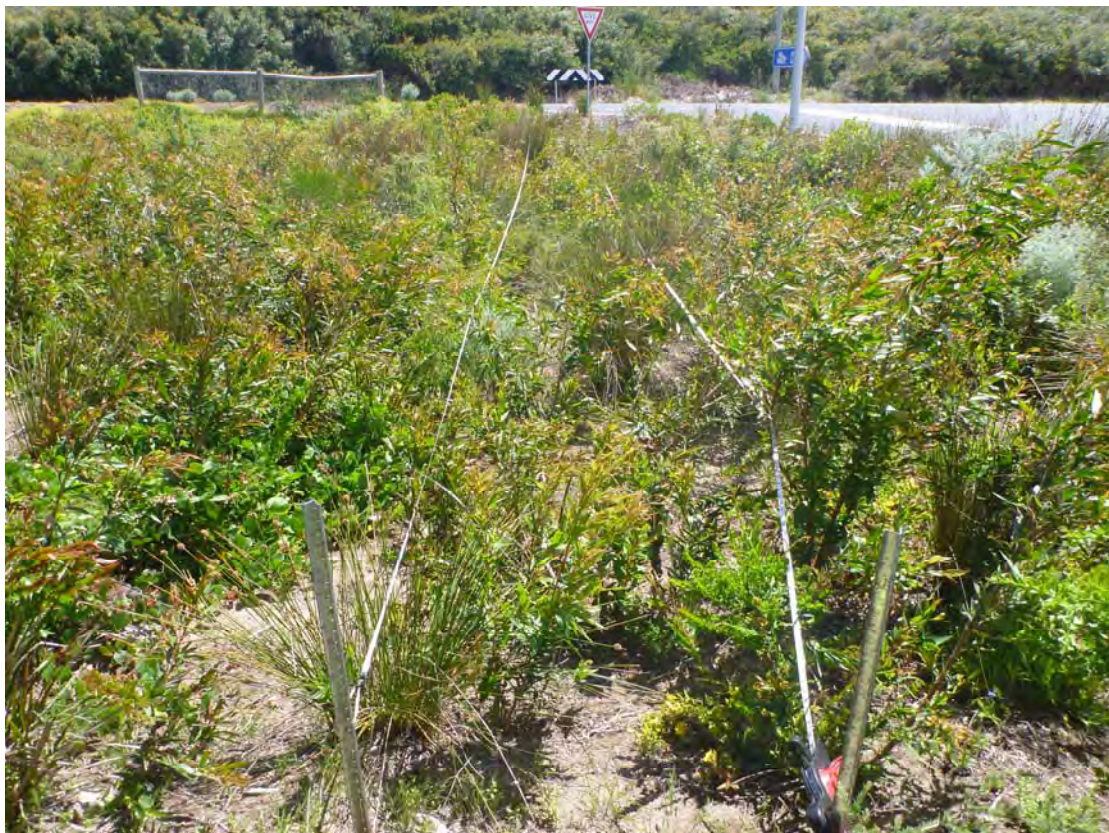


**Plate 4**      **Transect 2, assessed October 2016 aged 28 months.**



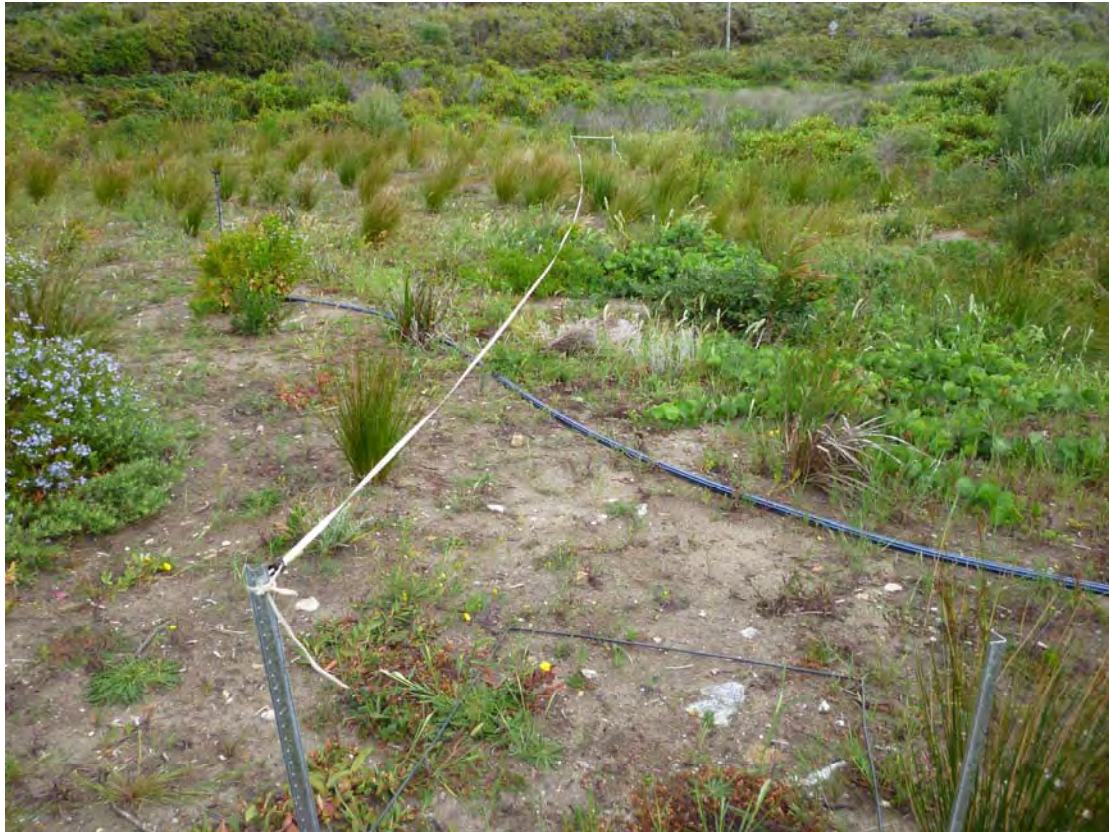


**Plate 5**      **Transect 3, assessed October 2015 aged 16 months.**



**Plate 6**      **Transect 3, assessed October 2016 aged 28 months.**





**Plate 7**      **Transect 4, assessed October 2015 aged 16 months.**



**Plate 8**      **Transect 4, assessed October 2016 aged 28 months.**





**Plate 9**      **Transect 1, Analogue Site.**



**Plate 10**      **Transect 2, Analogue Site.**