



Rio Tinto Alcan - South of Embley Project
Temporary Barge Plan
INDEPENDENT REVIEW
14 December 2014

SUBMITTED BY EMAIL TO:

Alan Irving
Principal Adviser - Environment
Rio Tinto
123 Albert Street, Brisbane Q 4000
alan.irving@riotinto.com

INDEPENDENT REVIEWER:

Steve Raaymakers
Principal - EcoStrategic Consultants
PO Box 968
Edge Hill, Cairns Q 4870
steve@eco-strategic.com

Rio Tinto Purchase Order No.: 3101474092

DISCLAIMER	2
ACRONYMS USED	3
1. BACKGROUND	4
2. REVIEW FINDINGS	6
2.1 General Review Comments	6
2.2 Review Against Review Criteria	19
ANNEX 1: RECOMMENDED RESTRUCTURE OF TABLE 2	23

DISCLAIMER

1. The views and opinions expressed in this report are those of the Independent Reviewer alone, according to the best of his knowledge and expertise.
2. The views and opinions expressed in this report do not reflect the views and opinions of any other individuals, organizations, institutions or companies, unless where specific references are provided in the text.
3. The Independent Reviewer shall not be liable for any errors of fact that may occur in this report, including errors in any information provided by others.
4. The Independent Reviewer shall not be liable for any decisions, acts or undertakings made or done, or not made or not done, by any persons, organizations, institutions or companies having knowledge of the contents of this report.
5. The Independent Reviewer shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance upon, this report.

ACRONYMS USED

DEHP	(Queensland) Department of Environment & Heritage Protection
EIS	Environmental Impact Statement
EPBC Act	Environment Protection & Biodiversity Conservation Act
RTA	Rio Tinto Alcan Weipa Pty Ltd
SoE Project	South of Embley bauxite mine and port development project
TO	Traditional Owner (local indigenous community)

1. BACKGROUND

1. This report constitutes an Independent Review of the Temporary Barge Plan that has been developed by Rio Tinto Alcan Weipa Pty Ltd (RTA), for the South of Embley bauxite mine and port development project (the SoE Project), located south of Weipa on the west coast of Cape York, Queensland, Australia.
2. The SoE Project was approved by the Australian Minister for the Environment under sections 130(1) and 133 of the *Environment Protection & Biodiversity Conservation Act* (the EPBC Act), on 14 May 2013 (EPBC Approval 2010/5642).
3. Conditions 1 to 4 of the EPBC Approval require RTA to develop a Temporary Barge Plan (the Plan), which documents the principles and practices under which construction, operation and decommissioning of a Temporary Barge Facility (the Facility), will be undertaken for the SoE Project. The purpose of the Plan is to avoid, mitigate and manage impacts on marine turtle species that are listed as either “endangered” or “vulnerable” (under the EPBC Act).
4. The turtle species listed as “endangered” are:
 - Leatherback turtle (*Dermochelys coriacea*)
 - Loggerhead turtle (*Caretta caretta*)
 - Olive Ridley turtle (*Lepidochelys oliva*)
5. The turtle species listed as “vulnerable” are:
 - Green turtle (*Chelonia mydas*)
 - Hawksbill turtle (*Eretmochelys imbricata*)
 - Flatback turtle (*Natator depressus*)
6. The exact wording of Conditions 1 to 4 is as follows:
 - Condition 1: Unless agreed to by the **department** in writing, the approval holder must submit a Temporary Barge Plan to the **Minister** to manage, avoid and mitigate negative **impacts to listed turtle species**, including their breeding and foraging habitat, from the **construction** and **operation** of the temporary barge facility near Pera Head.
 - Condition 2: The Temporary Barge Plan must include surveying to ascertain whether active, or potentially active, nests for the **listed turtle species** are present in the area to be **impacted** by the temporary barge facility.
 - Condition 3: The Temporary Barge Plan must include adaptive management and mitigation measures to benefit **listed turtle species**, including as identified in the

*Final Environmental Impact Statement. The Temporary Barge Plan must include and address effective management strategies to mitigate each potential **impact** to **listed turtle species**, desired outcomes, benchmarks, performance indicators and goals, timeframes for reporting and implementation, corrective actions and contingency measures, and responsibility for implementing actions.*

- Condition 4: The Temporary Barge Plan must be submitted to the **Minister** for approval. Commencement of the temporary barge facility must not occur until the **Minister** has approved the Temporary Barge Plan. The approved Temporary Barge Plan must be implemented.
7. Conditions 60 to 62 of the EPBC Approval require RTA to commission a review of the Plan by an Independent Reviewer who is approved by the Minister, against Review Criteria that are also approved by the Minister. The exact wording of Conditions 60 to 62 is as follows:
- Condition 60: Unless otherwise agreed in writing by the **Minister**, each program/s, plan/s, or strategies specified in the conditions must be **independently peer reviewed** prior to submission to the **Minister** for approval. The approval holder must nominate an **Independent Peer Reviewer** to the **Minister**. The person/organisation/technical committee conducting the **independent peer review** must be approved by the **Minister**, prior to the commencement of the review. The **independent peer review** criteria must be agreed to by the **Minister** and any reviews undertaken must address the criteria to the satisfaction of the **Minister**.
 - Condition 61: The reviews undertaken for condition 60 must include an analysis of the effectiveness of the avoidance and mitigation measures in meeting the objectives, targets or management measures identified in the program/s, plan/s or strategies being reviewed.
 - Condition 62: Unless otherwise specified in these conditions or notified in writing by the **Minister**, the approval holder must provide to the **Minister**, a copy of all advice and recommendations made by the **Independent Peer Reviewer** for program/s, plan/s, or strategies, and an explanation of how the advice and recommendations will be implemented, or an explanation of why the approval holder does not propose to implement certain recommendations.
8. The author of this report has been approved as the Independent Reviewer and the approved Review Criteria are listed in Table 2 in section 2.2 of this report, along with the Reviewer's findings and comments against each Criteria.
9. The version of the Plan that was reviewed for this report is:

*Rio Tinto Alcan Weipa, Temporary Barge Plan DRAFT 20 October 2014
(Document Control: Review and approval by Project team - Approved
24/10/2014).*

2. REVIEW FINDINGS

2.1 General Review Comments

1. Each section of the Plan was reviewed in sequence and general review comments are presented in Table 1. These general review comments were then used as the basis for more detailed assessment of the Plan against the approved Review Criteria as presented in section 2.2 and Table 2 below.
2. Overall comment: Overall the Plan is found to be a reasonable first pass at addressing the Approval Conditions and the approved Review Criteria, with most items being addressed. However, there is some critical information that is currently missing from the Plan that should be added. While it is understood that some of this information may be available from the Environmental Impact Statement (EIS) and other separate plans and documents - e.g. Traditional Owner (TO) employment arrangements, in order to comply properly with the Approval Conditions, the Plan itself needs to contain sufficient information on each significant issue so to allow it to be assessed and used as a stand alone Plan in its own right.
3. Structure of the Plan: The Plan could be made more user-friendly and easier to assess in terms of compliance with the EPBC Approval Conditions and Review Criteria, by re-structuring it slightly, by adding currently missing impacts and measures for each, and by also aligning the structure more closely with the best-practice, descending hierarchy of:
 - a) avoid impacts,
 - b) mitigate impacts; and
 - c) offset impacts.
4. Missing specs & data: Some key specifications, data and details about the Facility that are fundamental to the Plan are currently missing and need to be added, as follows:
 - a) details of the “listed” marine turtle species,
 - b) basic dimensions of the Facility and its components,
 - c) data on the number of people, vehicles, vessels etc that will be involved in the construction, operational and decommissioning phases of the Facility, their demands for fuel, water, energy and other inputs and the types and amounts of solid and liquid wastes they will generate,
 - d) specifications on the vessels that will use the Facility, including whether they will be landing-craft, self-propelled barges, dumb-barges with attendant tugs or other vessels, their overall dimensions (length, beam & draft), what types and volumes of fuel, lubricating oils and other potential pollutants they will carry, how many

crew they will have, and how much sewage, garbage etc will be generated by the crew and how will this be managed etc,

- e) better quantification of the frequency of night-time operations - based on predicted tides - which are known,
 - f) more information on the types, volumes and methods of packaging of the cargoes that will be imported across the Facility, including, as relevant, fuel, other oils, chemicals, explosives and other dangerous goods,
 - g) information on whether or not vessels and vehicles will be refuelled at the Facility and if diesel generators will be present to provide power (during all three phases), and if so the fuel storage and handling arrangements, including volumes and spill prevention and response arrangements; and
 - h) information on the predicted timeframes (time from start to end) of each of the construction, operation and decommissioning phases.
5. Missing potential impacts: Section 3 of the Plan on Potential Impacts fails to mention some key potential impacts, including:
- a) underwater noise,
 - b) vessel strikes,
 - c) vessel-sourced pollution (oil spills, garbage etc); and
 - d) seabed sediment resuspension and turbidity (e.g. propwash resuspension),

The subsequent section 4 on Avoidance, Mitigation & Management Measures does not adequately address these missing impacts, and needs to.

6. Avoidance, impact & management measures: Section 4 of the Plan would be stronger if under each of the three sub-sections of Construction, Operation and Decommissioning, it had sub-headings for each type of potential impact and under each potential impact it listed, in descending hierarchy, the relevant impact avoidance, mitigation and monitoring measures for that impact.
7. Other recommended improvements to section 4 and its subsections 4.1, 4.2 and 4.3 are listed in Table 1 below.
8. Environmental Offsets: Section 4.2 of the Plan references the separately documented Feral Pig Offset program. Feral pigs are known to perhaps be the major threat to nesting marine turtles on Cape York and this Offset is strongly supported and highly commended by this reviewer. As it forms the main Offset under this Plan it is recommended that it should also be subject to independent peer review by relevant experts (if not already).

9. Action Plan: Table 2 of the Plan - Action Plan, provides a reasonable starting point for addressing the 4th Review Criteria, however it does require development including:
 - a) having a separate Action Plan for each of the construction, operation and decommissioning phases,
 - b) adding missing potential impacts and related missing benchmarks, desired outcomes/goals, performance indicators etc; and
 - c) adding impact avoidance, mitigation & monitoring measures for each impact, and aligning the benchmarks, desired outcomes/goals, performance indicators etc against each of these.
10. Based on this, a proposed more complete structure for the Action Plan is provided in Annex 1 of this Review, for the construction phase. Additions and comments are shown in [red text]. Similar would apply to the separate Action Plans to be developed for the operational and decommissioning phases.
11. Comments on the benchmarks, desired outcomes/goals, performance indicators etc as contained in the Action Plan shown in [red text] in Annex 1 of this Review.
12. Monitoring & Reporting: Section 5 of the Plan on Monitoring & Reporting is found to be entirely inadequate and requires substantive improvement including listing and describing, in terms of:
 - a) objectives,
 - b) methods,
 - c) timing,
 - d) team,
 - e) data analysis; and
 - f) reporting arrangements,

for each different type of monitoring that will be undertaken in each of the three phases (construction, operation, decommissioning), including but not limited to:

 - a) Nesting-turtle surveys and monitoring.
 - b) Hatching-turtle surveys and monitoring.
 - c) Monitoring turtle presence & movements to avoid vessel strikes.
 - d) Underwater noise monitoring.
 - e) Monitoring for potential spills and discharges from vessels.
 - f) Monitoring both marine and land-based waste management procedures.
 - g) Monitoring vehicle and personnel movements on land (to avoid sensitive areas).
13. Review Criteria 5 & 6: The currently missing sections on TO employment arrangements and publication requirements need to be added, in order for the Plan to address Review Criteria 5 and 6.
14. Assessment against Review Criteria: More specific improvements that are required in relation to the approved Review Criteria are outlined in section 2.2 below.

TABLE 1: General review comments on each section of the Temporary Barge Plan

Section of Plan	Review Comments	RTA Response
Whole Plan / overall structure	<ul style="list-style-type: none"> The Plan could be more user-friendly / easier to assess and monitor compliance with the EPBC Approval Conditions and Review Criteria if it was re-structured to align against those. Two critical requirements are missing from the Plan and need to be added: <ul style="list-style-type: none"> TO employment Publication requirements 	See response below.
1. Purpose	<p>1st paragraph:</p> <ul style="list-style-type: none"> This states that the purpose of the Plan is to “manage, avoid and mitigate potential negative impacts on listed turtle species”. However there is no explanation of what “<u>listed</u>” means (i.e. listed as what under what?) and there is no mention of which species these are. Given the conservation significance of these species, their legal protection and the fact that the entire purpose of the Plan is to avoid and mitigate impacts on these species, it is fundamental that the reader be provided with this information right up-front in this section of the Plan. Simple wording along the lines of points 3, 4 and 5 of section 1 of this Review could be used as a basis. <p>Last paragraph:</p> <ul style="list-style-type: none"> This lists four dot points which explain what the Plan has been designed to achieve. However, two key points are missing, relating to: <ul style="list-style-type: none"> TO employment Publication requirements These are key elements that the Plan is required to achieve and need to be added as two additional points so as to ensure completeness. 	<p>“Listed turtle species” is a defined term in the EPBC 2010/5642 approval and the definition is contained in the Glossary (Section 6).</p> <p>The relevant species names have been added to Section 1.</p> <p>An fifth dot point has been added,:</p> <ul style="list-style-type: none"> documents the process for identifying Traditional Owner employment opportunities <p>The publication of the Plan on the RTAW website as per Conditions of approval is not in itself an objective of the Plan, but a requirement of the EPBC approval and is</p>

Section of Plan	Review Comments	RTA Response
		described in Section 5. Explicit reference to Condition 59 has been added to Section 5.
2. Background		
2.1 Regulatory Requirements	No specific comments	
2.2 Description of Temporary Barge Facility	<p>3rd paragraph:</p> <ul style="list-style-type: none"> Incomplete data is provided on the scale, size and dimensions of the overall Facility and its sub-components, and there is no data on the number of people, vehicles, vessels etc that will be involved in the construction, operational and decommissioning phases of the Facility, their demands for fuel, water and other inputs and the types and amounts of solid and liquid wastes they will generate. As this is fundamental to placing potential impacts into spatial context of the broader project and the overall surrounding environment, such data should be added to the Plan (e.g. <i>"the pontoon (dumb barge) will be X m long and Y m wide, the semi-flexible matting will be 7.5 m wide and will extend for X m from the pontoon to the bauxite plateau, there will be X personnel involved in constructing the Facility. . ."</i> and so on as per the missing items listed above). This paragraph also states that piles will be installed using a vibratory hydraulic hammer from a barge. However, RTA does not appear have collected any geotechnical data for the site and the proposed use of a hydraulic hammer is based on an "assumption" that the seabed material is soft enough for this technique. If harder material is encountered pile driving may be required - with different impacts - esp. re. underwater noise (this issue appears in section 4.1 of the Plan - and therefore should be reflected in section 2.2 as well). <p>4th paragraph:</p>	<p>The following information has been added to Section 2.2:</p> <ul style="list-style-type: none"> The approximate length and width of the pontoon (dumb barge) The approximate length of semi-flexible matting from the pontoon to the bauxite plateau. The approximate number of people involved in construction, operation and decommissioning. The type of equipment used in construction and decommissioning. <p>A statement has been added that wastes will be disposed of at the existing licensed waste disposal facility at Evans Landing. The amount of fuel and water used is not considered relevant to protection measures for the listed turtle species.</p> <p>The information about installation of piles from Section 4.1 has been added to section 2.2.</p> <p>The following information has been added to</p>

Section of Plan	Review Comments	RTA Response
	<ul style="list-style-type: none"> This states that the Facility will receive up to four deliveries a day with some night operation to suit the tides. No specifications at all are provided for the vessels that will make these deliveries - i.e.: <ul style="list-style-type: none"> will they be landing-craft, self-propelled barges, dumb-barges with attendant tugs etc?, what are their overall dimensions (length, beam & draft)?, what types and volumes of fuel, lubricating oils and other potential pollutants will they carry?, how many crew will they have?; and how much sewage, garbage etc from the crew will they generate and how will this be managed?, etc As such information is fundamental to considering, avoiding and mitigating potential impacts from the Facility, these specifications should be added to this section of the Plan. As night operations are highly relevant to potential impacts on nesting and hatching turtles, and as the tides for this location can be predicted with certainty into the future, the statement that <i>"some night operation to suit the tides will be required"</i>, should be firmly quantified and included in this section (i.e. based on predicted tides, state how often night operations and therefore additional lighting will actually be required). No information is provided on the types, volumes and methods of packaging of the cargoes that will be imported across the Facility, including, as relevant, fuel, other oils, chemicals, explosives and other dangerous goods. As such information is fundamental to considering, avoiding and mitigating potential impacts from the Facility, it should be added to this section of the Plan. 	<p>Section 2.2:</p> <ul style="list-style-type: none"> Typical types of barges, typical crew numbers and typical dimensions; Typical cargo (e.g. earthmoving equipment, demountable portable buildings, quarry materials (sand, gravel, rock), diesel fuel tanker) A statement that no sewerage from vessels will be disposed of at the facility. A statement that no explosives or chemical reagents are required for bauxite mining or processing and hence none will be brought in. <p>With regard to the frequency of use of the barge landing at night, this shall depend on whether there is an above average rate of incoming cargo in any particular period (e.g. delivery of a batch of demountable portable buildings). This will in turn depend on suppliers and cannot yet be predicted with certainty.</p>
3. Potential Impacts	<ul style="list-style-type: none"> This refers to the EIS and an Appendix A to the Plan, which is said to 	Section 3 states that benthic habitat and turtle

Section of Plan	Review Comments	RTA Response
	<p>provide a summary of potential impacts of the Facility on listed marine turtle species. However, Appendix A is more of a summary of “previous studies and habitat mapping for listed marine turtles” than a summary of potential impacts of the facility on marine turtles.</p> <ul style="list-style-type: none"> • This section lists three potential impacts of the Facility on marine turtles, as follows: <ul style="list-style-type: none"> ○ disturbance of turtle nesting habitat, ○ disorientation of hatchling turtles by lights during operation of the facility; and ○ disturbance of foraging habitat. • However, it fails to mention “how” the Facility might cause each of these impacts. The Plan would be strengthened if a sentence or two was added to each potential impact describing the actual “mechanism” of impact. • This section fails to mention some key potential impacts, including: <ul style="list-style-type: none"> ○ underwater noise, ○ vessel strikes, ○ vessel-sourced pollution (oil spills, garbage etc), ○ seabed sediment resuspension and turbidity, ○ liquid and solid waste management (including for land based crews during all three phases). <p>For the Plan to be complete these need to be added to section 3 (& also to section 4) of the Plan.</p>	<p>nesting surveys, not impacts, are presented in Appendix A.</p> <p>The EIS (section 7.3.5.3) found the potential impacts from underwater noise, vessel strike and vessel discharges from construction-related shipping would be negligible and short-term. However, the following potential impacts have been added to Section 3:</p> <ul style="list-style-type: none"> • underwater noise, • vessel strike, • waste discharges (ie solid and liquid waste discharge) <p>Seabed sediment re-suspension and turbidity has been covered under “disturbance of foraging habitat”.</p> <p>The possible cause of these potential impacts has been expanded in Section 3. The text has been amended to describe that the EIS (section 7.3.5.3) found the potential impacts from underwater noise, vessel strike and vessel discharges from construction-related shipping would be negligible and short-term.</p>
4. Avoidance, Mitigation & Management Measures	<ul style="list-style-type: none"> • This section would be stronger if under each of the three sub-sections of Construction, Operation and Decommissioning, it had sub-headings for each type of potential impact and under each potential impact it listed, in descending hierarchy, the relevant impact avoidance, mitigation & offset 	<p>Action plans have been separated into three tables – construction, operation and decommissioning.</p>

Section of Plan	Review Comments	RTA Response
	measures for that impact (refer Annex 1 of this Review).	
4.1 Construction	<p>General:</p> <ul style="list-style-type: none"> It is recommended that this section be reorganized as per the comment immediately above and to include the potential impacts currently missing. This section should start by stating the expected timing of the construction phase (time of year and time from commencement to completion). This is fundamental to assessing, avoiding, mitigating and offsetting potential impacts. Consideration should be given to timing construction activities to avoid Aug/Sept, which is reported to be the peak turtle-nesting season for this area. This would be the simplest and most effective impact avoidance measure for the construction phase. <p>2nd paragraph:</p> <ul style="list-style-type: none"> This states that nesting-turtle surveys will be conducted <i>“ten days prior to commencement of construction of the Facility”</i>. It is not clear why RTA proposes to undertake the nesting-turtle survey ten days out from commencement of construction – as turtles may nest in the area right up to the commencement of and during the construction period. It is recommended that nesting-turtle surveys should commence 10 days before construction and continue every night right up to when construction commences and then periodically throughout the construction period. It is not stated over what area the nesting-turtle survey will be conducted (radius from the construction site) and nor what team and methods will be used. These details should be added. This paragraph states that one option if nests are found is to relocate them to a distance outside the zone of impact. The viability of nest relocation should be pre-agreed with Qld DEHP and the safe distance also pre- 	<p>Vessel discharges has been added to the Construction Action Plan in Section 4. No specific actions are required to reduce the already negligible risk of underwater noise and vessel strike from barges. Action plans have been separated into three tables – construction, operation and decommissioning.</p> <p>The text has been amended to emphasise the facility is needed prior to commissioning of both the permanent barge/ferry terminals and the all-weather mine access road. The option of constructing the temporary barge facility at any time during the year is needed.</p> <p>The text has been amended to say that visual surveys for crawls and for nests will be conducted within 100m of the proposed centreline ten days prior to installation of the semi-flexible matting, and then daily up until installation.</p> <p>Agree that the likelihood of successful nest-relocation is low (and it is not the preferred approach). However, the option of having more than one type of response available is desirable. Relocation would not be pursued if QEHP disagree. Reference to a safe distance</p>

Section of Plan	Review Comments	RTA Response
	<p>agreed and set in the Plan.</p> <p>3rd paragraph:</p> <ul style="list-style-type: none"> This states that should driven piles be required, a soft start procedure will be followed and observation and exclusion zones established in accordance with Condition 12 of the EPBC 2010/5642 approval. The area (radius from the construction site) of the observation and exclusion zones should be pre-set in the Plan. Underwater noise monitoring and remediation measures also need to be added for the construction phase (as per comments on this issue under section 4.2 below). 	<p>of 100m has been added.</p> <p>The observation zone and exclusion zone criteria for Condition 12 have been added to Section 4 (in the event that driven piles are required).</p>
4.2 Operation	<p>General:</p> <ul style="list-style-type: none"> It is recommended that this section be reorganized as per the generic comment for section 4 above and to include the potential impacts that are currently missing. This section should start by stating the expected timing of the operational phase (time of year and time from commencement to completion). This is fundamental to assessing, avoiding, mitigating and offsetting potential impacts. <p>1st paragraph:</p> <ul style="list-style-type: none"> This states that the pathway will remove a “very small proportion” of the available 5.8km marine turtle nesting habitat . . . “. This “proportion” should be quantified in terms of actual area and as a % of the broader area. <p>2nd paragraph:</p> <ul style="list-style-type: none"> This states that “<i>excessive underwater noise will be investigated and remedied</i>”. The Plan needs to state, in terms of numbers and units, what constitutes “excessive” noise, considering any relevant State, national and 	<p>Vessel discharges have been added to Table 3 Action Plan – Operations in Section 4. No specific actions are required to reduce the already negligible risk of underwater noise and vessel strike from barges. Action plans have been separated into three tables – construction, operation and decommissioning.</p> <p>The text has been amended to state that the temporary barge facility may be used throughout the wet season and the dry season.</p> <p>The semi-flexible matting occupies 7.5m of 5800m of nesting beach between Boyd Point and Pera head. This percentage is 0.1%, a “very small proportion”, and has been referred to.</p> <p>The text has been amended to describe that the EIS (section 7.3.5.3) found the potential impacts from underwater noise from</p>

Section of Plan	Review Comments	RTA Response
	<p>international standards and noise tolerance values for marine turtles.</p> <ul style="list-style-type: none"> The Plan also needs to state over what distance (radius from the Facility) “excessive” noise will be assessed and also provide details of the methods to be used for monitoring underwater noise. The Plan also needs to specify “how” any excessive underwater noise will be “remedied” (i.e. what management measures will be applied). This provisions also need to be applied to both the construction and decommissioning phases. <p>3rd paragraph:</p> <ul style="list-style-type: none"> This states that night-time barge deliveries will only be required to meet high tide. As outlined in the comments on section 2.2 above, as the tides for this location can be predicted with certainty into the future, the predicted frequencies of night-time operations should be firmly quantified and included. This also states that lighting will only be utilised when barges are loading or unloading for safe access. In order to avoid lighting impacts on nesting and hatching turtles, is recommended that reactive monitoring of nesting and hatching turtles should be carried out within the light-impact radius of the facility throughout the operational period, and that night operations should be prohibited when nesting or hatching nesting are detected within this radius. This also states that lighting will be shielded and appropriately directed to minimise light spill, however there is no reference to relevant standards, specifications and guidelines, when several are available, e.g. <ul style="list-style-type: none"> www.epa.wa.gov.au - Environmental Assessment Guideline (EAG) No. 5 There is also no reference to types of turtle-friendly lighting that will be used, e.g. <ul style="list-style-type: none"> www.turtlesafelighting.com www.starrynightlights.com/Sea-Turtles/turtle-friendly-lighting.html 	<p>construction-related shipping would be negligible and short-term and that noise causing harm to turtles is unlikely. The text has been amended to state any unusual or excessive noise from tug engines detected by the vessel master will be investigated and remedied. The setting of noise limits for underway noise from vessels is not considered necessary.</p> <p>See comment above about the constraints associated with predicting frequency of use of the barge landing at night.</p> <p>The text has been amended to state that there will be no lights on land side of the beach and that (a) lights will be kept off when not needed, (b) kept low, and (c) shielded (as per the principles from the <i>Environmental Assessment Guideline for Protecting Marine Turtles from Lighting Impacts</i> (WA EPA, 2010)).</p>

Section of Plan	Review Comments	RTA Response
	<ul style="list-style-type: none"> ○ www.technilux.com.au/blog/turtle-friendly-night-lights-barrow-island_2011_10_13 • These should be specified in the Plan. <p>4th paragraph:</p> <ul style="list-style-type: none"> • This states that staff inductions will include “appropriate behaviours” – these should be specified in the Plan – i.e. spell out what “appropriate behaviours” are. <p>Last paragraph:</p> <ul style="list-style-type: none"> • This references the separately documented Feral Pig Offset program. Feral pigs are known to perhaps be the major threat to nesting marine turtles on Cape York and this Offset is strongly supported and highly commended by this reviewer. As it forms the main Offset under this Plan it is recommended that it should also be subject to independent peer review by relevant experts (if not already). 	<p>The text has been amended to say that interfering with nests or hatchlings is forbidden.</p> <p>The Feral Pig Offset Management Strategy is subject to independent peer review as per EPBC Act approval condition 60.</p>
4.3 Decommissioning	<p>General:</p> <ul style="list-style-type: none"> • It is recommended that this section be reorganized as per the generic comment for section 4 above and to include the potential impacts that are currently missing. • This section should start by stating the expected timing of the operational phase (time of year and time from commencement to completion). This is fundamental to assessing, avoiding, mitigating and offsetting potential impacts. • Overall this section is very “light-on” and more information should be provided on the potential impacts during this phase and the proposed impact avoidance, reduction, mitigation and offset measures. 	<p>Vessel discharges has been added to Table 4 Action Plan -Decommissioning in Section 4. No specific actions are required to reduce the already negligible risk of underwater noise and vessel strike from barges. Action plans have been separated into three tables – construction, operation and decommissioning.</p> <p>Section 4.3 has been amended to state that all material in tidal waters shall be removed within 6 months of cessation of use of the facility.</p>

Section of Plan	Review Comments	RTA Response
Table 2. Action Plan	<ul style="list-style-type: none"> Table 2 of the Plan - Action Plan, provides a reasonable starting point for addressing the 4th Review Criteria, however it does require further development including: <ul style="list-style-type: none"> having a separate Action Plan for each of the construction, operation and decommissioning phases, adding missing potential impacts and related missing benchmarks, desired outcomes/goals, performance indicators etc; and adding impact avoidance, mitigation & monitoring measures for each impact, and aligning the benchmarks, desired outcomes/goals, performance indicators etc against each of these. Based on this, a proposed more complete structure for the Action Plan is provided in Annex 1 of this Review, for the construction phase. Additions and comments are shown in [red text]. Similar would apply to the separate Action Plans to be developed for the operational and decommissioning phases. Comments on the benchmarks, desired outcomes/goals, performance indicators etc as contained in the Action Plan shown in [red text] in Annex 1 of this Review. 	<p>Vessel discharges have been added to the Action Plans in Section 4. No specific actions are required to reduce the already negligible risk of underwater noise and vessel strike from barges. Action plans have been separated into three tables – construction, operation and decommissioning.</p>
5. Monitoring & Reporting	<ul style="list-style-type: none"> This section is found to be entirely inadequate and requires substantive improvement including listing and describing, in terms of: <ul style="list-style-type: none"> objectives, methods, timing, team, data analysis; and reporting arrangements for each different type of monitoring that will be undertaken in each of the three phases (construction, operation, decommissioning), including but not limited to: <ul style="list-style-type: none"> Nesting-turtle surveys and monitoring. Hatching-turtle surveys and monitoring. 	<p>Section 5 has been amended to note that a breach of an aspect of the Temporary Barge Plan will be an incident under the HSE Management System and will trigger and investigation and, if necessary, corrective action. Under the HSE Management System, employees are required to report incidents of, for example, hydrocarbon spills, solid and liquids waste discharges and disturbance outside authorised areas.</p> <p>Section 5 has been amended to include the pre-installation survey to detect turtle nesting in</p>

Section of Plan	Review Comments	RTA Response
	<ul style="list-style-type: none"> ○ Monitoring turtle presence & movements to avoid vessel strikes. ○ Underwater noise monitoring. ○ Monitoring for potential spills and discharges from vessels & land-based fuel storage & handling areas. ○ Monitoring both marine and land-based waste management procedures. ○ Monitoring vehicle and personnel movements on land (to avoid sensitive areas). 	<p>the vicinity of the facility. Monitoring of turtle nesting is a component of the Feral Pig Management Offset Strategy.</p> <p>Appendix A has been amended to illustrate the relatively low density of turtle nesting on the relevant beach (only 1% of the density compared to a Gulf of Carpentaria rookery such as Crab Island).</p> <p>Monitoring of underwater noise and turtle movement is not justified for transient and short term barge movements which the EIS shows would have negligible impacts.</p>

2.2 Review Against Review Criteria

1. The Plan was reviewed against the approved Review Criteria and review comments are presented in Table 2. Assessment of the Plan against the Review Criteria is very much based on the general review of each section of the Plan as presented in section 2.1 and Table 1 above, and this should be referred to where indicated.

TABLE 2: Review of Temporary Barge Plan against approved Review Criteria

Review Criteria	Independent Review Comments	RTA Response
1. Measures to <u>manage</u> , <u>avoid</u> and <u>mitigate</u> impacts on <u>listed turtle species</u> , including their <u>breeding</u> and <u>foraging habitat</u> , from the <u>construction</u> , <u>operation</u> and <u>decommissioning</u> of the temporary barge facility near Pera Head:	<ul style="list-style-type: none"> As outlined in section 2.1 and Table 1 of this Review, there are a number of potential impacts during all three phases of the Facility that are not addressed adequately or at all in the Plan, including: <ul style="list-style-type: none"> underwater noise, vessel strikes, vessel-sourced pollution (oil spills, garbage etc), seabed sediment resuspension and turbidity, liquid and solid waste management (including for land based crews during all three of the construction, operation and decommissioning phases). It is recommended that these be addressed as outlined in the comments in Table 1 of this Review on sections 4, 4.1, 4.2 and 4.3 of the Plan, including adding impact avoidance, mitigation and monitoring measures for each of these missing impacts. 	See responses in Table 1 above.
	<ul style="list-style-type: none"> As outlined in section 2.1 and Table 1 of this Review, there are also some deficiencies with the proposed impact avoidance, mitigation and monitoring measures for those impacts that have been included in the Plan. It is recommended that these be addressed as outlined in the comments in Table 1 of this Review on sections 4, 4.1, 4.2 and 4.3 of the Plan. 	See responses in Table 1 above.
2. Requirement to <u>survey</u> the <u>area</u> to be impacted by the temporary barge facility to <u>ascertain</u> whether <u>active</u> or <u>potentially active listed turtle species nests</u> are present:	<ul style="list-style-type: none"> As outlined in section 2.1 and Table 1 of this Review, in the 2nd paragraph of section 4.1 of the Plan, it states that nesting-turtle surveys will be conducted “<i>ten days prior to commencement of construction of the Facility</i>”. It is not clear why RTA proposes to undertake the nesting-turtle survey ten days out from commencement of construction – as turtles may nest in the area right up to the commencement of and during the construction period. It is recommended that nesting-turtle surveys should commence 10 days before construction and continue every night right up to when construction commences and then periodically throughout the construction period. 	See responses in Table 1 above.
	<ul style="list-style-type: none"> It is not stated over what area the nesting-turtle survey will be conducted (radius 	See responses in Table 1 above.

Review Criteria	Independent Review Comments	RTA Response
	<p>from the construction site) and nor what team and methods will be used. These details should be added.</p> <ul style="list-style-type: none"> This paragraph states that one option if nests are found is to relocate them to a distance outside the zone of impact. The viability of nest relocation should be pre-agreed with Qld DEHP and the safe distance also pre-agreed and set in the Plan. 	See responses in Table 1 above.
3. <u>Adaptive management and mitigation measures to benefit listed turtle species:</u>	<ul style="list-style-type: none"> All of the proposed adaptive management and mitigation measures will “benefit” listed turtle species by helping to protect them from potential impacts from the Facility. However, as such impacts would not occur if the Facility was not built, it could be argued that the effect of the measures, even if positive, will not truly be a “net benefit”. The true “benefits” (i.e. net improvement over baseline scenario with no Facility) can only occur from the proposed environmental offsets program – i.e. the proposed Feral Pig Control Program. 	Noted. Condition 3 requires a “benefit” rather than a “net benefit”.
4. <u>Effective management strategies to mitigate each potential impact, desired outcomes, benchmarks, performance indicators and goals, timeframes for reporting and implementation, corrective actions and contingency measures, and specify the persons/ roles with responsibility for implementing actions:</u>	<ul style="list-style-type: none"> The Review Comments in response to Review Criteria No 1 apply equally to this Review Criteria. Additionally, the only place where <u>desired outcomes, benchmarks, performance indicators and goals, timeframes for reporting and implementation, corrective actions and contingency measures, roles and responsibilities</u> appear in the Plan is in Table 2 - Action Plan, at the end of section 4 of the Plan. As outlined in section 2.1 and Table 1 of this Review, Table 2 of the Plan is found to provide a reasonable starting point for addressing the 4th Review Criteria, however it does require further development including: <ul style="list-style-type: none"> having a separate Action Plan for each of the construction, operation and decommissioning phases, adding missing potential impacts and related missing benchmarks, desired outcomes/goals, performance indicators etc; and adding impact avoidance, mitigation & monitoring measures for each impact, and aligning the benchmarks, desired outcomes/goals, performance indicators etc against each of these. 	See responses in Table 1 above.

Review Criteria	Independent Review Comments	RTA Response
	<ul style="list-style-type: none"> Based on this, a proposed more complete structure for the Action Plan is provided in Annex 1 of this Review, for the construction phase. Additions and comments are shown in [red text]. Similar would apply to the separate Action Plans to be developed for the operational and decommissioning phases. Comments on the benchmarks, desired outcomes/goals, performance indicators etc as contained in the Action Plan shown in [red text] in Annex 1 of this Review. 	
5. <u>Traditional Owner employment opportunities, and mechanisms for reporting the number of local indigenous person/s actually employed in the implementation of the Temporary Barge Plan (as per EPBC Approval Condition 42):</u>	<ul style="list-style-type: none"> The Plan currently contains nothing at all on this issue and is therefore found to not comply with this requirement. A dedicated section needs to be added to the Plan on this issue. 	A new section has been added on Traditional Owner Employment Opportunities (this is Section 6 in the final Plan)
	<ul style="list-style-type: none"> It is understood that the Feral Pig Control Program, which forms a major environmental offset for the SoE Project, includes TO employment provisions, and these should be reflected in the Plan. 	The TO Owner Employment Opportunities for each EPBC Act approval Plan or Strategy differ a little according to the nature of the work. The opportunities related to the Temporary Barge Plan have been reflected in the new section.
6. <u>Publication requirements as per EPBC approval condition 59:</u>	<ul style="list-style-type: none"> Condition 59 states “Unless otherwise agreed in writing by the Minister the approval holder must publish, for the life of the project including decommissioning, all current approved programs/s, plans/s, review/s (including the Independent Peer Reviews) or strategies referred to in these conditions of approval on their website. Each of the approved programs/s, plans/s or strategies (including revised versions) must be published on the approval holders website within one (1) month of approval.” No reference to this requirement can be found in the Plan, although a reference to requirements relating to reporting of survey and monitoring data under approval condition 57 is provided in section 5 of the Plan. The publication requirements under approval condition 59 should also be referenced. 	This sentence has been added to Section 5: <i>In accordance with Condition 59, this Plan will be published on the RTA website within one month of it being approved by the Minister.</i>

ANNEX 1: RECOMMENDED RESTRUCTURE OF TABLE 2

1. Table 2 of the Plan - Action Plan, provides a reasonable starting point for addressing the 4th Review Criteria, however it does require further development including:
 - a) having a separate Action Plan for each of the construction, operation and decommissioning phases,
 - b) adding missing potential impacts and related missing benchmarks, desired outcomes/goals, performance indicators etc; and
 - c) adding impact avoidance, mitigation & monitoring measures for each impact, and aligning the benchmarks, desired outcomes/goals, performance indicators etc against each of these.
2. Based on this, a proposed more complete structure for the Action Plan is provided below, for the construction phase. Additions and comments are shown in **[red text]**. Similar would apply to the separate Action Plans to be developed for the operational and decommissioning phases.
3. Comments on the benchmarks, desired outcomes/goals, performance indicators etc are inserted in **[red text]**.

ACTION PLAN - CONSTRUCTION PHASE

Potential Impact	Impact Avoidance Measure	Impact Mitigation Measure	Impact Monitoring Measure	Benchmarks/Baseline	Desired Outcomes/Goals	Performance Indicators	Timeframes for implementation	Corrective actions and contingency	Responsibility	RTA Response
Disturbance of turtle nesting habitat, by: <ul style="list-style-type: none"> [add dot points as to how such disturbance might be caused during the construction phase] 	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	Design of Temporary Barge Facility [this is a questionable baseline – the baseline for disturbance should be the natural setting prior to the barge facility being constructed]	No active turtle nests disturbed by construction of facility.	Number of turtle nests disturbed by construction of facility.	Nest survey within the footprint of the facility conducted 10 days prior to commencement of construction. [refer comments in Table 1 of this review on this and need for survey right up to start of construction and throughout construction. Also needs to go beyond just the immediate footprint]	If there are nests that have not been predated by feral pigs within the footprint of the facility, RTAW shall either move the location of the matting or consult with EHP to evaluate options for the relocation of nests to a distance outside the potential zone of impact. [refer comments in Table 1 of this review on this]	Project Manager – Early Works	<p>Dot points added on approximate disturbance footprint.</p> <p>Impact avoidance, mitigation and monitoring measures columns have not been added but rather identified in other columns.</p> <p>This is a “benchmark” ie the design as proposed.</p> <p>Survey timeframes have been updated in the construction action plan to include within 100m of the centreline and daily surveys up until matting is installed.</p> <p>Relocation of nests to at least 100m outside the zone of impact has been added</p>
				No Recreational Beach Access	No access to Temporary Barge Facility site and surrounds by construction workforce for recreation.	Number of workers accessing Temporary Barge Facility site and surrounds outside of working hours. [what about during working hours? How will this be monitored?]	Induction program for all workforce prior to commencement of work. [needs to be implemented throughout entire construction period]	Breaches to be investigated and appropriate disciplinary action undertaken.	General Manager Construction	<p>This means outside the workers “working hours”</p> <p>Individuals will have an induction prior to commencement of work on a job</p>
				Design of matting	Concrete matting limited to approximately	Area of turtle nesting habitat disturbed by	To be implemented during	Bunting placed either side of concrete	Area Manager – Marine	Performance indicator reworded to

*Rio Tinto Alcan - South of Embley Project - Temporary Barge Plan
Independent Review - FINAL - 14 Dec 2014*

Potential Impact	Impact Avoidance Measure	Impact Mitigation Measure	Impact Monitoring Measure	Benchmarks/Baseline	Desired Outcomes/Goals	Performance Indicators	Timeframes for implementation	Corrective actions and contingency	Responsibility	RTA Response
					7.5m wide.	operation of facility. [should quantify maximum area that will be disturbed and set non-exceedance of this number as performance indicator]	construction of facility and maintained whilst facility is in use.	matting to indicate designated confined trafficable area. [this is not a "corrective" action – this is a "preventive" measure. Need to describe what will be done if non-compliance occurs]	[is this really a marine issue?]	include a width limit. Corrective action reworded. Responsibility changed to Area Manager – Early Works
				Decommissioning Plan for Temporary Barge Facility [this is not a benchmark / baseline. Also this should go in the separate Action Plan for the decommissioning phase]	All infrastructure from temporary barge facility removed. Disturbance footprint during decommissioning not greater than during construction. [area returned to pre-Facility natural condition would be a better desired outcome/goal]	Area of turtle nesting habitat disturbed by decommissioning of facility. [how will this be measured / monitored / reported?]	When no longer required (completion of initial construction phase at the latest). [an actual indicative time period should be given here – i.e. no. of months from dates of commencement]	If piles cannot be removed they shall be cut off below the surface [surface of the sea or surface of the seabed?]	Project Manager – Early Works [really? is decommissioning part of the "Early Works" ?]	Benchmark/baseline has been changed to the original land profile Return to original profile added to desired outcomes/goals and Performance Indicators Timeframe changed to within 6 months of no longer being used. No change to responsibility as this facility is temporary and part of early works
Disturbance of foraging habitat, by: [add dot points as to how such disturbance might be caused during the				Design of Temporary Barge Facility [this is a questionable baseline – the baseline should be the natural setting prior to the barge facility being constructed]	Zero direct disturbance of reef or seagrass habitat [excellent!]	Area of disturbance of reef or seagrass habitat. [how will this be measured / monitored / reported?]	Preferred location has been identified which avoids reef and seagrass habitat, to be implemented during construction.	If preferred location alters, identify alternate location that does not contain reef or seagrass habitat.	Area Manager – Marine	This is a benchmark – design as proposed Location is designed to be ways form seagrass and reef The location of the facility has already been agreed to by

*Rio Tinto Alcan - South of Embley Project - Temporary Barge Plan
Independent Review - FINAL - 14 Dec 2014*

Potential Impact	Impact Avoidance Measure	Impact Mitigation Measure	Impact Monitoring Measure	Benchmarks/Baseline	Desired Outcomes/Goals	Performance Indicators	Timeframes for implementation	Corrective actions and contingency	Responsibility	RTA Response
construction phase]								Location to be agreed to by Traditional Owners [and regulatory agencies].		the regulators
				Design of Temporary Barge Facility [as above]	No significant scouring occurring that may cause indirect disturbance to reef habitat	Area of scouring of the seabed [how will this be measured / monitored / reported?]	Surveys of the infrastructure to be conducted following severe storm or cyclone events with any damage identified and repaired as soon as safe to do so.	Extend the concrete matting under where the barge will enter and leave the facility or conduct localised repair work.	Project Manager – Early Works [scouring could occur throughout construction and operation due to prop-wash effects – not just during “Early Works”]	This is a benchmark – design as proposed Visual inspections added as a monitoring measure. This Manager will around during the use of this temporary facility
				Construction of Temporary Barge Facility [as above]	All piles associated with Temporary Barge Facility installed using vibratory piling.	Vibratory piling utilised where practicable.	To be implemented during construction of facility.	If pile driving is required, pile driving conditions specified in the EPBC Approval will be implemented. [refer comments in Table 1 of this review on this issue – inc. underwater noise monitoring]	Project Manager – Early Works	This is a benchmark – construction to design Corrective actions amended as per Table 1.
Light impacts on nesting & hatching turtles:	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	[to be added – all rows below]	Relevant information added.
Potential vessel strikes:										Relevant information added.

*Rio Tinto Alcan - South of Embley Project - Temporary Barge Plan
Independent Review - FINAL - 14 Dec 2014*

Potential Impact	Impact Avoidance Measure	Impact Mitigation Measure	Impact Monitoring Measure	Benchmarks/Baseline	Desired Outcomes/Goals	Performance Indicators	Timeframes for implementation	Corrective actions and contingency	Responsibility	RTA Response
Underwater noise (from pile driving & vessel ops):										Relevant information added.
Spills and discharges of oil & other pollutants & wastes:										Relevant information added.
Seabed sediment resuspension & turbidity 9from pile driving and vessl ops/prop-wash resuspension):										Relevant information added.