

Rio Tinto Alcan Weipa
123 Albert St
Brisbane
Queensland 4000
Australia

T +61 (0) 7 3625 3000
F +61 (0) 7 3625 3001

Manel Samarakoon
Assistant Director, Approvals Monitoring North Section
Environment Assessment and Compliance Division
Department of Environment
GPO Box 787
CANBERRA ACT 2601

23 December 2014

Dear Ms Samarakoon,

Re: South of Embley Project (EPBC 2010/5642) – Feral Pig Management Offset Strategy

Condition 28 of EPBC approval 2010/5642 requires RTA Weipa to submit for approval a Feral pig Management Offset Strategy for the South of Embley Project.

Please find enclosed the Feral pig Management Offset Strategy, together with a copy of the independent peer review prepared by the approved reviewer, Dr Andrew Bengsen, in accordance with Condition 60. The changes made by RTA Weipa in response to the peer review are set out in the table attached to this letter.

I seek approval of the Feral pig Management Offset Strategy.

Please contact Alan Irving on 07 3625 4147 or alan.irving@riotinto.com if you have any queries regarding the plan.

Yours sincerely

p.p. 

David Yeoman
General Manager – South of Embley Project

cc. Julia Wilkins, Manager Government Relations Queensland, Rio Tinto Services

Rio Tinto Alcan Weipa
123 Albert St
Brisbane
Queensland 4000
Australia

T +61 (0) 7 3625 3000
F +61 (0) 7 3625 3001

Independent peer review of South of Embley Project Feral Pig Management Offset Strategy

Review criteria - Independent peer review comment	RTA Response
1. The Strategy provides measures to be implemented to reduce the annual level of feral pig predation on listed turtle species nests	
Surveys in 2013 did not find conclusive evidence of the latter two species nesting in the project area (Guinea 2014). However, only one rapid survey was conducted during the main breeding season of the loggerhead (Oct - Mar, Limpus and Fien 2009) and leatherback (Dec - Feb, Limpus and Fien 2009) turtles, so the presence of these species cannot be discounted.	<p>Loggerhead sea turtles have not been recorded as nesting on the beaches of the Gulf of Carpentaria (Limpus (2008) <i>A Biological Review of Australian Marine Turtles 1. Loggerhead turtle (Caretta caretta Linnaeus)</i>). This species for the most part nests on beaches in the region of the Tropic of Capricorn in eastern and Western Australia. Sporadic low density nesting in WA has been recorded as far north as Ashmore Reef. At more southern latitudes it nests during the summer months. There has been no nesting in winter months reported for this species to date. Previous studies at Crab Island and along the coast north of Weipa and of the beaches in the South of Embley lease have failed to record Loggerheads nesting.</p> <p>Leatherback turtles likewise are not reported as nesting in the Gulf of Carpentaria (Limpus (2009) <i>A Biological Review of Australian Marine Turtles 6. Leatherback Turtle (Dermochelys coriacea) Vandelli</i>). In Australia, Leatherbacks are recorded nesting in southern Queensland and northern New South Wales from the mid-1970s to the mid-1990s but have not been reported nesting since 1996. In that region they nested in the summer months. The other known nesting area for Leatherbacks is in Arnhem Land and Coburg Peninsula where the species still nests but in the winter months.</p> <p>Both Loggerheads and Leatherbacks occur in the Gulf of Carpentaria as foraging species but have not been reported ashore.</p> <p>This information has been added to Section 3.1.</p>

Review criteria - Independent peer review comment	RTA Response
<p>The Strategy states that an implementation plan has not yet been developed and more work is needed to assess the different control methods in a project-specific context, engage Traditional Owners and coordinate activities with other organisations that have applied for funding under the <i>Nest to Ocean Turtle Protection Program</i> and are awaiting funding announcements. These are valid reasons.</p>	<p>Noted</p>
<p>Given that a detailed implementation plan specifying how feral pig predation on turtle nests will be reduced has not yet been developed, it is difficult to assess the expected outcomes of the Strategy with respect to reduced predation on turtle nests by feral pigs. However, the Strategy does provide a list of actions that will be used to develop an implementation plan with the objective of an initial feral pig cull before the next expected peak nesting season in August 2015.</p>	<p>Noted</p>
<p>The Strategy also notes that an adaptive management approach will be used to refine the plan in light of experience, and that the focus of monitoring will be detecting changes in nest predation rates. This is appropriate, but there is little detail on how monitoring data will be used to inform management. Adaptive management programs should aim to quantify relationships between investment in management actions, intensity of management actions, and the effects of management on both pests and vulnerable resources (e.g. Walsh <i>et al.</i> 2012). Further detail should be provided. This should not require an established pig control implementation plan because monitoring for adaptive management should be independent of control activities.</p>	<p>Section 5 has been emended to include the following additional text: <i>Monitoring information shall be used to contribute to adaptive management. Monitoring options include:</i></p> <ul style="list-style-type: none"> • <i>Beach monitoring using ground surveys of turtle and feral pig around the peak turtle nesting season;</i> • <i>Camera traps set up at nesting sites to identify and help to quantify predating animals and high predation zones;</i> • <i>If helicopter shooting is used, high pig activity areas can be identified by firstly mapping the location of shot or seen animals and secondly using photographic analysis of the extent and location of diggings;</i> • <i>Permanent free feeding stations with associated cameras can be used to quantify the feral pig population over time and identify higher population areas.</i>

Review criteria - Independent peer review comment	RTA Response
	<i>These monitoring tools can generate data suitable for GIS analysis and able to be used in adaptive planning to target control measures for maximum effectiveness.</i>
As an aside, section 6.2 notes that camera traps will be used to record predation by different species on turtle nests. This may underestimate predation by goannas because cameras using passive infra-red triggers rely on movement of bodies with heat signatures that contrast with surrounding temperature.	Section 6.2 Feral Pig Monitoring is specific to feral pigs and the text has been amended to indicate that camera traps are targeting pigs and recordings of other predators would be incidental.
2. The Strategy provides for implementation in the specified geographic area	
The specified aim of the Strategy is to reduce feral pig predation on marine turtle nests between Winda Winda Creek and Ina Creek, which is consistent with the specified area.	Noted
However, until a detailed implementation plan is developed, it is not yet possible to assess the extent to which this will likely be achieved.	Section 5 has been amended to note that the revised Strategy incorporating the implementation plan shall be subject to further independent peer review under Condition 60 prior to submission to the Minister for approval.
The Strategy indicates that feral pig control efforts will be concentrated along beaches, rather than extending inland along major riparian zones as originally proposed in Figure 7-23 of the Environmental Impact Statement. The reason given for this is expert opinion and results from a study conducted at a nearby area (Whytlaw <i>et al.</i> 2013), which suggest that pigs are unlikely to move large distances from inland locations, within the peak nesting season, to feed on turtle nests. However, it is not clear whether the control zone will be continuous along the coast (as originally proposed) or clustered to target hypothesized problem pigs feeding in discrete zones. If a clustered approach	A spatially clustered priority control zone approach will only be considered if the initial monitoring suggests such an approach is warranted. Any clustering approach will be based on the management of impact clusters (if they exist), ie identified areas of high predation levels and/or areas of high pig activity. The predation levels along all nesting beaches from Winda Winda Creek to Ina Creek will be monitored; however the management effort may be clustered into the priority control zones. Such zones would not be based on geographical elements but based on impact clusters identified by consideration of the relationship of feral pig and turtle nesting

Review criteria - Independent peer review comment	RTA Response
<p>is eventually settled on, it will be necessary to test the hypothesis that most pig damage occurs in geographic clusters and that targeted control within these clusters effectively reduces nest predation to acceptable levels across the project area.</p>	<p>activity. Regular monitoring will enable the management effort to adapt to changing predation levels and any concentration of predation.</p>
<p>3. The Strategy provides for surveying to develop significantly robust baseline data for listed turtle species nesting in the SoE project area</p>	
<p>The Strategy specifies intensive annual surveys during the expected peak nesting season (August-September), following methods that have proven robust and effective within the study area (Guinea 2014). This approach, combined with data from Guinea's (2014) surveys can be expected to provide reliable and robust data to assess trends in critical variables such as nest survival and predation in Flatback, Olive Ridley, Hawksbill and Green turtles. However, different turtle species likely have different peak nesting seasons, and a single survey during the overall peak nesting season may miss the bulk of nesting activity by some species, particularly Loggerhead and Leatherback turtles, which may be most likely to nest between October and March (Limpus and Fien 2009), if they nest in the area. Consideration should be given to less intensive but more frequent surveys as an alternative to an annual snapshot.</p>	<p>Both Loggerheads and Leatherbacks occur in the Gulf of Carpentaria as foraging species but have not been reported as nesting. This information has been added to Section 3.1. The August-September detailed annual survey shall detect the peak for Flatback, Olive Ridley, Hawksbill and Green turtles.</p> <p>See response under Review Criteria #1 above.</p>
<p>The Strategy notes that the monitoring process may be adapted to improve efficiency or effectiveness in subsequent years. It will be important to ensure that any changes aimed at improving efficiency do not reduce the survey's ability to make inferences about the population across the project area. For example, Guinea's (2014) surveys found substantial variation in nest density and species composition across different sections of the project area, and it will be important for future surveys to account for this. Similarly, if pig control activity is concentrated in discrete zones of beach then nest surveys must be conducted much more widely to ensure that the sampled nests are</p>	<p>Section 6.1 Turtle Monitoring has been amended to clearly state that the whole length of turtle nesting beach between Winda Winda Creek and Ina Creek will be monitored regardless of whether various feral pig control measures may be concentrated in discrete zones.</p>

Review criteria - Independent peer review comment	RTA Response
representative of the broader population.	
4. The Strategy identifies desired outcomes, benchmarks, readily measureable performance indicators and goals, timeframes for reporting and implementation and reporting, corrective actions and contingency measures, and, specify the person/s roles with responsibility for implementing actions	
The Strategy identifies the desired outcome of reduced annual feral pig predation on six listed marine turtle species. However, it does not currently identify any benchmarks, performance indicators, specific goals or timeframes for reporting. Performance indicators and goals can and should be identified prior to completion of the feral pig control implementation plan. As an example, prescribed action C.4.3 of the National Recovery Plan for Marine Turtles specifies the success criteria for minimising feral pig predation on Flatback turtle nests on Cape York as more than 70% of nests producing hatchlings (Anonymous 2003). Identification of clear, relevant and agreed goals or objectives is an essential precedent to the specification of management actions.	Section 5 has been amended to include an initial goal achieving 70% reduction in feral pig predation of nests, to be achieved within 3 years of commencement of controls.
Corrective actions and contingency measures cannot be established until performance indicators and the implementation plan have both been established.	Noted. Corrective actions and contingency measures shall be included in the implementation plan.
Actions for the development of an implementation plan to allow an initial pig cull before August 2015 have been specified. However, the person/s or roles responsible for carrying out the actions have not been identified.	Section 5 has been amended to state that the Manager Health, Safety Environment and Communities for the South of Embley Project shall be responsible for developing the implementation plan.
5. The Strategy details Traditional Owner employment opportunities, and mechanisms for reporting the number of local indigenous person/s actually employed in the implementation of the Feral Pig Management Offset Strategy (as per EPBC Approval Condition 42)	
Employment opportunities are expected to occur in turtle monitoring, and possibly pig control, although it will not be possible to detail specific employment opportunities until an implementation plan has been developed.	Noted
Numbers of Traditional Owners employed in the broader Land and Sea	Noted

Review criteria - Independent peer review comment	RTA Response
Management Programmes are reported quarterly to the Western Cape Communities Co-existence Agreement Coordinating Committee.	
6. The Strategy is consistent with the feral pig relevant management measures contained in the National Recovery Plan for Marine Turtles	
The Strategy aligns strongly with Objectives 1 and 3, and also has the potential to align strongly with Objectives 2, 4 and 5 depending on how the monitoring is conducted and how the resulting data and other information are made available as a public resource.	Noted. Section 7 states that all reports and related analysis of survey data required by this Strategy will be published annually on the RTA website in accordance with Condition 57 of the EPBC Act approval.
<p>The Recovery Plan identifies two prescribed actions that are specifically relevant to managing predation by feral pigs:</p> <ul style="list-style-type: none"> • C.4.1 Lead agencies, in consultation with landowners, to identify sites where predation is a problem and initiate or continue appropriate management actions • C.4.3 Minimise pig predation of flatback turtle nests on Cape York <p>The success criteria for both of these actions are that 70% of nests in affected populations produce hatchlings. Adoption of this success criterion would be consistent with the Recovery Plan, although the criterion does not allow for nest failure due to other causes, such as inundation or predation by other species.</p>	Section 5 has been amended to include an initial goal achieving 70% reduction in feral pig predation of nests, to be achieved within 3 years of commencement of controls. This goal is related to feral pigs since predation by other species such as goannas and nest failure for other reasons such as inundation is not manageable.
No actions specified in the Strategy are contrary to the Recovery Plan.	Noted
7. The Strategy adheres to the most current versions of the Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs and the Humane Pest Animal Control: Code of Practice and Standard Operating Procedures	
The Strategy is consistent with the current Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs (Braysher 2005), particularly Objectives 2 and 4.	Noted
RTA have committed to making survey information publicly available on their website for the duration of the project, in accordance with Condition 59 of the EPBC Act approval. Serious consideration should also be given to	RTA Weipa shall share all public reports and related analysis of survey data required by this Strategy with other entities on Cape York undertaking feral pig control measures. Consideration will be given to sharing public domain

Review criteria - Independent peer review comment	RTA Response
providing an enduring publicly accessible repository for important reports or data relating to Objective 4, or publishing information in a widely available format.	information via media like feral.org.au and the Invasive Animals CRC.
No parts of the Strategy are contrary to the Threat Abatement Plan.	Noted
The Strategy is consistent with the codes of practice and standard operating procedures for humane pest animal control (Sharp and Saunders 2005) in that it has committed to adhering to these guidelines. However, it is impossible to judge the extent to which specific control actions are consistent with the guidelines as control actions have not yet been specified in an implementation plan.	Section 5 has been amended to note that the revised Strategy incorporating the implementation plan shall be subject to further independent peer review under Condition 60 prior to submission to the Minister for approval. Consistency of specific control actions with standard operating procedures for humane pest animal control shall be subject to the further independent peer review.
8. The Strategy identifies the relationship of this strategy with other Commonwealth, State or Local programs on feral pig management to minimise duplication or conflicting outcomes	
The Strategy specifies that RTA will coordinate with the organisers of other feral pig control programs in the region, particularly those receiving funding under the Nest to Ocean Turtle Protection Program. However, it does not detail how it fits with other feral pig management programs. Ideally, the document should briefly show how the Strategy fits with the Cook Shire Council Pest Management Plan and the Queensland Feral Pig Management Strategy.	Section 5 has been amended to state that the Strategy is consistent with the Queensland Feral Pig Management Strategy (2004). The Cook Shire Pest Management Plan 2012-2106 has a general goal to reduce the number of feral pigs in the shire. The Plan sets out actions for the Shire, not for landholders.
9. The Strategy states whether the Strategy will be developed to either build on existing programs or be independent of any other programs for the nominated area	
The Strategy does not explicitly state whether it builds on existing programs for the nominated area or is independent. No mention is made of existing feral pig management programs within the project area, although commitment is made to coordinate activities with programs conducted by neighbouring landholders where and when this is possible.	Section 4 has been amended to state that lessons from other feral pig control programs on Cape York (e.g. Cape York Natural Resource Management, APN Cape York, Balkanu) shall be used to optimize the effectiveness of controls for the South of Embley coastal area.

Review criteria - Independent peer review comment	RTA Response
10. The Strategy states that the findings from the Feral Pig Management Offset Strategy will be used to inform the Marine and Shipping Management Plan on an ongoing basis	
Section 8 of the Strategy states that the findings from the Strategy will be used to inform the Marine and Shipping Management Plan on an ongoing basis.	Noted
11. The Strategy adequately identifies publication requirements as per EPBC approval condition 59	
Section 7 of the Strategy states the Strategy document will be published on the RTA website in accord with condition 59, and provides an address where the document will be available. The Strategy also commits to publishing relevant reports, including analysis of survey data. However, it does not currently commit to publishing the Strategy's implementation plan or any other approved programs, plans or strategies.	Section 7 has been amended to state that the Strategy and any subsequent revisions will be published on the RTA website in accordance with Condition 59 of the EPBC Act approval. Section 5 has been amended to explicitly state implementation plan shall be incorporated into the revised Strategy.
Conclusions	
Given the lack of an implementation plan that details how, where and when specific actions will be taken to reduce feral pig predation on turtle nests, it is difficult to estimate the extent to which the Strategy will be able to achieve its stated objectives. However, the Strategy does commit to developing an implementation plan through an appropriate process by an appropriate deadline. The main shortcoming of the current Strategy, which could be easily addressed, is the absence of clear and relevant objectives and performance criteria. Identification and publication of objectives and performance criteria should precede development of the implementation plan.	Section 5 has been amended to include an initial goal achieving 70% reduction in feral pig predation of nests, to be achieved within 3 years of commencement of controls. Section 5 has been amended to note that the revised Strategy incorporating the implementation plan shall be subject to further independent peer review under Condition 60 prior to submission to the Minister for approval. See responses under Review Criteria #2, 4 and 6 above.
The processes by which operational and performance monitoring results will be used for adaptive management should be made clear and published.	Section 5 has been emended to include the additional text concerning use of monitoring results in adaptive management. See response under Review Criteria #1 above.

Review criteria - Independent peer review comment	RTA Response
If the plan adopts a spatially-clustered approach to feral pig control, it should detail how the hypothesis that such an approach is appropriate for reducing the sum of predation across the project area will be tested.	A spatially clustered priority control zone approach will only be considered if the initial monitoring suggests such an approach is warranted. See response under Review Criteria #2 above.
The current intent to use a single snapshot turtle nesting survey should be explained in terms of its ability to obtain reliable information relative to other monitoring options.	Both Loggerheads and Leatherbacks occur in the Gulf of Carpentaria as foraging species but have not been reported as nesting. The August-September detailed annual survey shall detect the peak for Flatback, Olive Ridley, Hawksbill and Green turtles. See response under Review Criteria #1 above.