

Appendix B

Approval conditions, actions, outcomes, management

EPBC 2007/3385 approval conditions addressed by this module, actions taken by Gunns to prepare management measures, action outcomes and resultant environmental management measures

Condition	Issue	Approval requirement addressed by this module	Actions taken to prepare management measures	Findings	Management measures adopted to ensure approval condition is met
14	Wedge-tailed eagle (<i>Aquila audax fleayi</i>)	<p>To minimise impacts on the Wedge-tailed Eagle - Tasmanian (<i>Aquila audax fleayi</i>) Gunns Limited must put in place and implement, as part of the EIMP, measures including:</p> <p>a) Not carrying out construction during the breeding season within the exclusion buffers of 500 m or a 1 km line of sight from any active nest.</p> <p>b) If a new active nest is found within 500 m or a 1 km line of sight of clearing or construction activities, construction during the breeding season within the exclusion buffers must cease immediately. Gunns Limited must immediately notify the Department if a new active nest is found.</p> <p>c) The breeding season buffer must be applied from 1 August to 31 January inclusive.</p>	<p>In addition to the surveys undertaken by Gunns for the Draft Integrated Impact Statement (Weeding, S. (2005) <i>Eagle nest search proposed pulp mill and associated infrastructure survey report</i>), Mark Wapstra has also undertaken a detailed survey of the pulp mill footprint, looking for other wedge-tailed eagle or white-bellied sea eagle. The results are reported in: Environmental Consulting Options Tasmania (September 2007) <i>Assessment of proposed pulp mill footprint for nests of the wedge-tailed eagle and white-bellied sea-eagle</i>. Report prepared for Gunns Limited and submitted with module B.</p> <p>No new nests of wedge-tailed eagles (or white-bellied sea-eagles) were located. Physically, the study area itself presents little potential nesting habitat because of gentle slopes and broad flats with only a few short sections of sheltered slopes and gullies. Any sheltered areas tend to support regrowth forest (lacking a significant number of mature trees with suitable structure for nesting i.e. a large fork) or non-eucalypt forest (e.g. along Williams Creek). More mature forest is present but it mainly occurs on broad flats associated with stream systems. All large trees were thoroughly examined and no eagle nests were detected.</p>	<p>The only nest in the vicinity of the project footprint is the already known nest #130. This is not in line of sight to the wharf, and is outside the buffer distance.</p> <p>Nevertheless, this module includes measures to implement this approval condition's requirements.</p>	<p>During the period between 1 August and 1 February construction activities must not occur within:</p> <p>(a) 1000 metres of an active Wedge-tailed Eagle or a White-bellied Sea-eagle nest if the construction activities or maintenance activities are in line-of-sight of the nest site; or</p> <p>(b) 500 metres of an active Wedge-tailed Eagle or a White-bellied Sea-eagle nest site.</p> <p>Previously unrecorded eagle nest sites, noted during clearing and/or construction activities will be reported to DEWHA. If a new active nest is located within 500 m or 1 km line of site of clearing or construction activities during the breeding season (1 August to 31 January) work within that buffer will cease immediately and the DEWHA will be notified.</p>

(Continued): EPBC 2007/3385 approval conditions addressed by this module, actions taken by Gunns to prepare management measures, action outcomes and resultant environmental management measures

Condition	Issue	Approval requirement addressed by this module	Actions taken to prepare management measures	Findings	Management measures adopted to ensure approval condition is met
27	Minimisation of impacts on listed threatened and migratory birds	<p>To minimise impacts during onshore effluent pipeline and wharf construction on listed threatened and migratory birds, Gunns Limited must, in accordance with the EIMP:</p> <p>a) Carry out a pre-construction survey of the shoreline for breeding shorebirds for a distance of 200 m on either side of the onshore effluent pipeline construction corridor.</p> <p>b) In the event that nests are located within this area, they will be clearly marked and construction activities managed in accordance with the agreed requirements of the EIMP.</p> <p>c) Restore the beach profile to its original shape within two months of completion of the onshore effluent pipeline construction;</p> <p>d) Within two months of completion of the onshore effluent pipeline construction commence rehabilitation of vegetation in the impacted areas of the pipeline construction corridor in accordance with the requirements of the EIMP</p> <p>e) Report on performance of effectiveness of these mitigation measures in the EIMP annual report.</p>	<p>Although the head of condition 27 refers to the wharf, none of the condition's clauses relate to the wharf. Nevertheless, Gunns has undertaken surveys in the vicinity of the wharf also.</p>	<p>The survey results have been reported in the DIIS and Preliminary Documentation.</p> <p>With specific reference to the wharf, the studies (which are available at http://www.gunnsplpml.com.au/iis/supp/brett_lane_att_3.pdf, section 7.2 page 34) concluded as follows:</p> <p><i>Construction of the wharf on the rocky shore adjacent to the new pulp mill site would create short-term disturbance of the surrounding estuary. Given that the shoreline at this point is almost entirely rocky and adjacent to a very deep part of the estuary, few migratory or marine birds are expected to use it. It is therefore unlikely that any significant impacts on populations of these species would result from this disturbance.</i></p> <p><i>The nearest habitats regularly used by shorebirds lie north of Georgetown, around the corner from and north of the proposed wharf. Additional habitats occur on the western side of the estuary over 1 kilometre away. This distance is considered sufficiently great that disturbance to birds here from the construction of the proposed wharf is highly unlikely.</i></p> <p><i>Ship movements will involve slow-moving vessels likely to create limited wake that is not expected to significantly increase wave action at the shoreline. It is understood that the net increase in shipping movements within this part of the estuary is likely to be small. Intertidal habitats in the estuary will therefore not be subject to significantly different levels of shipping wake from the current levels.</i></p> <p>Accordingly, no specific management measures are warranted under this module.</p>	<p>No specific management measures are warranted under this module.</p>

(Continued): EPBC 2007/3385 approval conditions addressed by this module, actions taken by Gunns to prepare management measures, action outcomes and resultant environmental management measures

Condition	Issue	Approval requirement addressed by this module	Actions taken to prepare management measures	Findings	Management measures adopted to ensure approval condition is met
28	Minimise impacts during onshore effluent pipeline and wharf construction on the Whitebellied Sea-eagle (<i>Haliaeetus leucogaster</i>)	<p>To minimise impacts during onshore effluent pipeline and wharf construction on the Whitebellied Sea-eagle (<i>Haliaeetus leucogaster</i>) Gunns Limited must put in place and implement, as part of the EIMP, measures including:</p> <p>a) Conducting pre-construction surveys, by a suitably qualified person, agreed to by the Department;</p> <p>b) Not carrying out construction during the breeding season within the exclusion buffers of 500 m or a 1 km line of sight from any recorded nest except in accordance with this condition.</p> <p>c) If a new active nest is found within 500 m or a 1 km line of sight of clearing or construction activities, construction within exclusion buffers during the breeding season must cease immediately.</p> <p>d) Gunns Limited must immediately notify the Department if a new active nest is found.</p> <p>e) Applying a breeding season buffer from 1 August to 31 January inclusive.</p>	<p>Surveys for whitebellied sea-eagle nests have been undertaken and were reported in Module B as report 1 of Appendix I.</p>	<p>No nests occur in the vicinity of the wharf. Nevertheless, the following measures address this approval condition's requirements.</p>	<p>Commitments adopted for this EIMP module are:</p> <p><i>Eagles nests (condition 28(b))</i>: During the period between 1 August and 1 February construction activities must not occur within:</p> <p>(a) 1000 metres of an active White-bellied Sea-eagle nest if the construction activities are in line-of-sight of the nest site; or</p> <p>(b) 500 metres of an active White-bellied Sea-eagle nest site.</p> <p><i>Identify previously unknown eagle nest sites (condition 28(d))</i>: Previously unrecorded eagle nest sites, noted during construction activities will be reported to the Environmental Manager who will inform DEWHA and NPWS. If a new active nest is located within 500 m or 1 km line of site of construction activities during the breeding season (1 August to 31 January) work within that buffer must cease immediately and DEWHA will be notified.</p>
29	Underwater noise impacts on the Australian Grayling	<p>To minimise impacts on the Australian Grayling (<i>Prototroctes maraena</i>) Gunns Limited must put in place and implement, as part of the EIMP, measures including:</p> <p>a) Prior to wharf construction, a desktop study must be conducted by a suitably qualified person, agreed to by the Department, to estimate the likely upper limits of the sound impacts at various distances from wharf construction site.</p> <p>b) The sound fields of the pile-driving activities should be monitored in accordance with the EIMP to re-evaluate the findings of the desktop study.</p> <p>c) If necessary, bubble curtains or other agreed response strategies must be implemented if trigger levels in the EIMP are exceeded.</p> <p>d) No night construction or under-water blasting is permitted.</p>	<p>A preconstruction noise modelling study (Pile Driving Underwater Noise Assessment, Proposed Bell Bay Pulp Mill Wharf Development June 2008) has been undertaken for Gunns by R. D. McCauley and C.P. Salgado Kent of the Centre for Marine Science and Technology at Curtin University. A copy of this report is provided as Appendix C.</p>	<p>In relation to fish, the study concluded that:</p> <ul style="list-style-type: none"> • For a single pile strike most fish will need to be within perhaps 10 m from the pile to suffer any serious physiological trauma resulting in injury. • For a worst scenarios of continual pile hammering (three hours of continual hammering at a 4 s hammer rate), stationary fish within 120 m of the pile will experience a cumulative sound loading equivalent to that from a single strike believed to cause serious physical trauma. Thus fish within 120 m may suffer some physical injury if exposed to three hours of continual hammering. • For a typical pile hammering scenario (30 minutes of continual hammering at a 3 second hammer rate), stationary fish within 80 m of the pile will experience a cumulative sound loading equivalent to that from a single strike believed to cause serious physical trauma. Thus stationary fish within 80 m of piling may suffer some physical injury if exposed to thirty minutes of continual hammering. • For fish swimming steadily past the wharf during pile hammering episodes at slack water, cumulative sound loadings equivalent to that at which a single strike is believed to cause serious physical trauma may occur for fish passing within 50 m of the wharf. Thus fish steadily swimming up or downstream at slack water within 50 m of piling may suffer some physical injury if exposed to continual hammering. 	<p>Underwater noise will be monitored during the initial piling driving to validate the model predictions of the study. If measured values deviate significantly from the predictions, further advice will be taken from the study authors.</p> <p>A trigger level of CSEL = 195 dB re 1 $\mu\text{Pa}^2\cdot\text{sec}$ at 500 m from piling activities will be adopted, where $\text{CSEL} = \text{RL} + 10\log_{10}N$, RL = the measured typical level of underwater noise from a single pile strike measured at 500 m; and N = the number of pile strikes in a typical 30 minute period of pile driving activity.</p> <p>Before continuous pile driving commences, a small number of trial strikes will be undertaken to obtain a measure of RL, the noise level caused by a single pile strike at the trigger level distance of 500 m. This value of RL will then be used in the above equation to determine N, the maximum number of pile strikes per 30 minute period that can be made in the absence of bubble curtains without exceeding the trigger level cumulative sound exposure level (CSEL) of 195 dB at the 500 m distance.</p> <p>For operation purposes, the actual hammer rate limit will be set at 10% below this maximum allowable rate to provide a conservative margin. During the initial hammering, monitoring of the operational hammering will also be conducted to confirm the calculated CSEL at this rate.</p>

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29 (continued)	Underwater noise impacts on the Australian Grayling (continued)			<p>The range for the equivalent sound loading will decrease for current assisted fish or fish larger than 250 mm (the maximum size at which cumulative sound loadings were calculated). Fish within 60 m of a single pile strike may be exposed to a peak-peak intensity sufficient to cause temporary hearing loss. Stationary fish within 200 m of continual piling may be exposed to a cumulative energy loading sufficient to cause temporary hearing loss.</p> <ul style="list-style-type: none"> • Fish swimming steadily past the wharf during pile hammering episodes at slack water within 100-300 m closest range to the wharf may receive sufficient sound loadings to cause temporary hearing loss. The degree or presence of any temporary threshold shifts will depend on the fish species, swim speed and proximity to the wharf. • Pile driving events will be audible to animals with reasonable hearing capability in the river for several km up and downstream of the wharf construction. • Fish are likely to show strong behavioural responses to pile driving noise all the way across the river and for at least 500 m up or downstream. Such responses could include avoidance or huddling near the seabed. <p>Caged fish in a nearby aquaculture farm opposite the proposed wharf are unlikely to be exposed to single or cumulative sound loadings sufficient to cause any physical trauma or hearing damage. But the sound exposures received at the aquaculture farm will be within the bounds at which observable behavioural responses have been detected in caged fish.</p>	<p>If the maximum allowable hammer rate needs to be exceeded due to the required pile driving program, bubble curtains will be installed and the above monitoring and calculations will be repeated to recalibrate the maximum allowable hammer rate. This new rate will be the maximum hammer rate that will not be exceeded in the presence of bubble curtains.</p> <p>If the pattern or method of pile driving changes significantly, the field measurements and CSEL calculations will be repeated. To account for potential changes in underwater noise transmission due to seasonal water conditions (eg. salinity and temperature), calibration measurements and calculations will be repeated once a month during the pile driving period.</p> <p>Because of the very low likelihood of the Australian grayling being within 200 m of the vicinity of the wharf (the closest distance at which harm to fish might occur), the expert study report's generic recommendation about using an underwater alarm before commencing piling is not considered warranted for this species. At the start of each continuous pile driving period there will be gradual build-up in the hammering rate over at least a 10 minute period so that fish have time to leave and/or avoid the area before the full hammering rate is reached.</p> <p>Any dead fish found floating or washed up in the vicinity of the pile driving area will be collected, photographed and recorded by the Site Environmental Officer. If any of such fish are Australian grayling, the specimens will be sent to the State government's Animal Health Laboratory for determination of probable cause of death. If the probable cause of death is determined to be trauma potentially related to pile driving, the maximum allowable hammer rate will be reduced by 30% until a review of the trigger levels and management measures has been completed to the satisfaction of DEWHA.</p>

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Condition	Issue	Approval requirement addressed by this module	Actions taken to prepare management measures	Findings	Management measures adopted to ensure approval condition is met
30	Minimise impacts on listed threatened and migratory marine species	<p>To minimise impacts on listed threatened and migratory marine species during construction of the wharf and the ocean outfall, Gunns Limited must put in place and implement, as part of the EIMP, measures, including:</p> <p>a) Prior to wharf or ocean outfall construction, a desktop study must be conducted by a suitably qualified person, agreed to by the Department, to estimate the likely upper limits of the sound impacts at various distances from the relevant construction site.</p> <p>b) The sound fields of the pile-driving activities should be monitored in accordance with the EIMP to re-evaluate the findings of the desktop study.</p> <p>c) If necessary, bubble curtains or other agreed response strategies must be implemented if trigger levels in the EIMP are exceeded.</p> <p>d) No night construction or under-water blasting is permitted.</p> <p>e) A suitably qualified person, agreed to by the Department, must visually monitor for marine mammals within the areas defined in the EIMP;</p> <p>f) Radius zones as follows must be implemented:</p> <p>i. A 2 km radius alert zone for whales, with a 1 km radius safety zone, within which noise-generating activities will be ceased if a whale approaches; and</p> <p>ii. A 1 km radius alert zone for seals and dolphins with a 0.5 km radius safety zone, within which noise-generating activities will cease if a seal or dolphin approaches.</p>	<p>A preconstruction noise modelling study (Pile Driving Underwater Noise Assessment, Proposed Bell Bay Pulp Mill Wharf Development June 2008) has been undertaken for Gunns by R. D. McCauley and C.P. Salgado Kent of the Centre for Marine Science and Technology at Curtin University. A copy of this report is provided as Appendix C.</p>	<p>In relation to marine mammals, the study concluded that:</p> <ul style="list-style-type: none"> • It is unlikely that dolphins or seals will be exposed to pile driving sound intensities sufficient to cause any serious physiological damage. • Marine mammals within 50 m of pile driving may receive a sufficient sound intensity to cause temporary hearing loss. Using an uncertainty margin of two we can assume a 100 m range for temporary threshold shift (TTS) onset. • Pile driving events will be audible to animals with reasonable hearing capability in the river for several km up and downstream of the wharf construction. • Marine mammals are unlikely to show overt responses to continual pile driving if they are more than a few hundred metres off, and may show some initial curiosity. <p>The study's recommendations for mitigation measures relating to marine mammals were:</p> <ul style="list-style-type: none"> • If it is believed that marine mammals will frequent the area during operations then operations should be monitored by dedicated observers (working from land based platforms) to determine if animals are within 100 m of the pile driving (a safety factor of 2 for TTS) • It is recommended that work should be suspended in the presence of marine (or endangered) mammals, which enter within a range of 100 m of pile driving operations. <p>These buffer distances are less than those required by condition 30. Compliance with the approval conditions' buffer distances will provide an additional level of protection for marine life.</p>	<p>Marine mammal observers (MMOs) will be people agreed to by the Department under condition 30(e) of the approval. Requests for these approvals will be separate to the module submission process. As a minimum the MMOs will have a demonstrable familiarity with the Australian Petroleum Production and Exploration Association (APPEA) CD-based identification and reporting package.</p> <p>At least one observer will be on duty at the wharf site at all times during pile driving and any other activity that could generate significant underwater noise.</p> <p>At the start of each continuous pile driving period there will be gradual build-up in the hammering rate over at least a 10 minute period so that marine mammals have time to leave and/or avoid the area before the full hammering rate is reached.</p> <p>MMOs will be equipped with appropriate equipment (e.g. range finder binoculars, camera and recording documents) and will be sited at strategic vantage points on the shore or on board vessels, as is most appropriate for the circumstances. The observer height and location will be whatever is necessary on a particular day (and time of day) to observe the entrance to Long Reach (the arm of the estuary within which the wharf is located) without obstruction or glare. Potential observer sites include on patrol vessels, the wharf site itself, the nearby power station, the observation point at Bell Bay, the wharf at Bell Bay and at Rowella.</p> <p>MMOs will be in direct or radio contact with the person overseeing construction activities to enable communications regarding any whale, dolphin or seal observations.</p> <p>When construction activities that generate underwater noise are occurring at the wharf, regular visual surveillance at 10 to 15 minute intervals within the alert zones will be conducted.</p> <p>When construction activities that generate underwater noise are occurring, continual visual surveillance will occur within the relevant safety zones when marine mammals are present in those zones.</p> <p>A trigger level of a single marine mammal entering the relevant safety zone set by approval condition 30(f) will be adopted.</p> <p>A 2km radius alert for whales will be implemented with a 1km radius safety zone, within which underwater noise generating activities will be ceased if a whale approaches. A 1 km radius alert for seals and dolphins will be implemented with a 0.5 km radius safety zone,</p>

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					within which underwater noise generating activities will be ceased if a seal or dolphin approaches.