Gunns LIMITED
ABN 29 009 478 148

Bell Bay Pulp Mill
Environmental Impact Management Plan (EIMP)
Module C: Mill site bulk earthworks

Prepared for the
Commonwealth Minister for the Environment, Heritage and the Arts
in accordance with approval EPBC 2007/3385

14 March, 2008

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1. OVERVIEW

1a. A description of the proposal and associated infrastructure

A description of the project has been provided in Module A.

The activity to which this Module C relates is the bulk earthworks for the pulp mill. The bulk earthworks are to be carried out within the mill site boundary shown as the hatched area on the map in Appendix D "Area of bulk earthworks relevant to this EIMP module".

Note that this area does not include all the area formally defined in the EPBC 2007/3385 approval for the pulp mill project. The approval defines "pulp mill site" to be the site on the Tamar River at Bell Bay, adjacent to the existing Tamar woodchip facility, upon which the pulp mill, chemical plant, local water reservoir, quarry and solid waste facility will be constructed (and "project area" means the pulp mill site, the effluent and water supply pipelines, and the workers accommodation facility). Of these areas, this module relates only to the area upon which the pulp mill (incorporating the wharf access) and the chemical plant will be constructed.

The area relevant to this module is currently transected by several easements including the Esk Water pipeline, a railway line, powerlines and is also dissected by numerous tracks.

There is no vegetation clearing associated with this Module C. Vegetation clearance was described in EIMP Module B, and involved the removal of all vegetation within the delineated area, as a preliminary to the bulk earthworks that will establish the earth platforms for the pulp mill's construction. Many of the environmental considerations relevant to this Module C were also addressed in Module B.

A subsequent module, EIMP Module C1 Mill Construction, will address the following components of the mill construction:

- Detailed excavation and drainage
- Concrete foundations
- Structural steel and buildings
- Mechanical and pipework
- Electrical and Instrumentation.

The bulk earthworks to which the present Module C relates involves the stripping of topsoil, excavation (cut) of clay and rock materials and the placement of these materials (fill) to create five major platforms at differing elevations (75 m, 69.5 m, 64.5 m, 64.5 m and 57.5 m) on the main mill site. Depths of cut and fill of up to 10 m are required. In addition, four more platforms will be created for the effluent treatment plant further to the north.

The total area involved in the bulk earthworks is 92 ha and the volume of cut to fill is approximately 1.3 million cubic metres.

The site consists of a range of materials:

- fresh rock 10%
- moderately weathered rock 10%
- extremely weathered rock 5%
- stiff to very stiff clays 75%.

The expected duration of the bulk earthworks is approximately 12 months but the platforms for the mill are required to be prepared within 8 months, allowing mill construction to be undertaken in parallel to the completion of the earthworks for the effluent treatment plant. The access to the wharf site will be included in the initial works in order to allow wharf construction to commence as early as possible.

Workers will travel to and depart from the site each day using light vehicles.

The work will be carried out by six crews. Each crew will consist of one 75 tonne excavator and 2 to 3 articulated dump trucks. Compaction equipment will consist of water carts and 18 tonne rollers.

The cut to fill operation will be supported by bulldozers ripping and pushing to the excavators and graders and water carts involved in haul road maintenance.

The fresh and moderately weathered rock will require drilling and blasting and will yield rock for general fill, local reservoir embankment rip rap and rock protection for the wharf groynes and the ocean outfall. Benches will range in height from 2.5 m to 10 m.

The mill site platforms and the wharf access will need to be completed in 8 months, working six days per week and achieving an average daily production rate of 2,000 cubic metres per crew.

Higher quality materials for the road pavements will be sourced from local quarries. During construction, the road pavements will be built up with crushed rock with a crossfall to divert stormwater to drains. This run-off will be collected in sedimentation ponds. Pavements will be sealed with a two-coat bitumen seal at the completion of site works. This timing is to avoid damage to the seal that would be caused by construction equipment if sealing was undertaken before completion of site works.

The equipment that is likely to be used for the bulk earthworks is described in Table 1; photographs have been included in Appendix E.

Table 1: Equipment likely to be used for the bulk earthworks

Equipment	Number
75 tonne excavator	6
40 tonne articulated dump trucks	20
D10 bulldozer	4
D8 bulldozer	2
D6 bulldozer	4
14G grader	6
18t rollers	10
Water carts	10
Rock drill rigs	2

The heavy machinery will be floated in at the beginning of the clearing operations and then floated out at completion. During the operations, all heavy equipment movements will be internal to the site, apart from vehicles transporting road base materials to site.

Rock and clay material ultimately will be carted off site to the landfill and dam sites, and rock ultimately will also be carted to the ocean outfall site. However, this movement of material will not occur until the EIMP modules relevant to those stages of the project have been approved. The material will be stockpiled on the pulp mill site within the bulk earthworks area pending those approvals. This Module C does not cover environmental management measures associated with the movement of material to those other areas of the project. Those measures will be described in EIMP Modules H: Ocean outfall construction (GNS-PLN-1000-1400-0013), I: Solid waste disposal construction (GNS-PLN-1000-1400-0014) and J: Local reservoir construction (GNS-PLN-1000-1400-0015).

1a.1 Purpose

On 4 October 2007, the Commonwealth Minister for the Environment and Water Resources approved the taking of an action under the *Environment Protection and Biodiversity Conservation Act 1999*, namely "to construct and operate a bleached Kraft pulp mill at Bell Bay, Tasmania, and associated infrastructure" (EPBC 2007/3385).

Condition 2 of the approval requires Gunns to develop and submit an Environmental Impact Management Plan (EIMP), the objective of which is to ensure that there are no adverse impacts on matters of national environmental significance as a result of the action.

The purpose of the EIMP, and the further investigations that are required in order to prepare some of its components, is to ensure that matters of national environmental significance are protected during the construction and operation of the pulp mill project.

The EIMP and those investigations are not a continuation or extension of the project's approval assessment process. The approval process concluded with the issue of approval EPBC 2007/3385 on 4 October 2007. The EIMP is designed to ensure that the conditions of the EPBC approval are satisfied.

This module of the EIMP addresses those conditions of the approval that are relevant to the bulk earthworks on the pulp mill site.

1a.2 Scope

The EIMP deals only with matters relevant to the EPBC approval. It does not deal with the much wider range of matters relevant to the State approval conditions other than those that are also relevant to the EPBC approval.

The staging of the project will be different for different elements of the project. For example, construction work on the mill site itself will commence more than 12 months before the construction of the ocean outfall commences.

Hence, in accordance with conditions 7 and 8, which recognise a sectional and staged approach, the EIMP development and approval necessarily has a modular structure.

A separate EIMP Module A: Overview (GNS-PLN-1000-1400-0006) provides an overarching context and structure for the EIMP. EIMP Module B: Mill site clearing (GNS-PLN-1000-1400-0007) described the environmental management of the vegetation clearing.

This EIMP mill site bulk earthworks module presents those elements of the EIMP that are relevant to the bulk earthworks on the pulp mill site, and should be read in conjunction with the EIMP Overview module and the EIMP Mill site vegetation clearing module.

The area of bulk earthworks to which this EIMP module relates is shown as the hatched area in Appendix D.

To protect potential habitats for the listed threatened species a network of reserves totalling at least 150 ha will be set aside, as described in EIMP Module B. Some of this area is adjacent to the pulp mill site. Construction activities, including the bulk earthworks relevant to this EIMP module, will be managed to maintain the integrity of these reserves.

Other EIMP modules will be prepared and submitted in accordance with the timing of the various stages of the project. These modules will deal with any associated earthworks at the site to which they relate.

Further information about the environmental management measures that will be implemented for the pulp mill project is available at www.gunnspulpmill.com.au.

1a.3 EIMP Structure

Schedule 2 of the EPBC 2007/3385 approval provides an outline for the EIMP (although the Schedule does not address all the permit conditions relating to the EIMP). The EIMP must set out specific issues and specific measures at each of the key preliminary phases of the project, these being:

- Preconstruction
- Construction
- Precommissioning.

The EIMP must also describe environmental management measures that will be implemented once the mill is operational, including:

- Ongoing monitoring
- Remedial and response strategies if trigger levels are likely to be exceeded or maximum target levels reached.

The Department of Environment, Water, Heritage and the Arts (DEWHA) has specified that the EIMP structure must reflect the structure of Schedule 2 of the EPBC 2007/3385 approval.

These structural requirements overlay the project's staging, leading to the modular breakup shown in Table 2 that Gunns will adopt for EIMP preparation. Table 2 also shows the anticipated construction start dates for each module's activity. If these dates vary, DEWHA will be advised accordingly. As a matter of course, an updated Table 2 will be presented in each module of the EIMP.

Table 2: Modular elements of the EIMP and anticipated construction start dates

	Module	Estimated construction start	Gunns document number
	Overview		
A	EIMP Overview	-	GNS-PLN-1000-1400-0006
	Preconstruction and construction		
B	Vegetation clearing - mill site and wharf access	14-Apr-08	GNS-PLN-1000-1400-0007
C	Bulk earthworks mill site	26-Jun-08	GNS-PLN-1000-1400-0008
C1	Mill construction	21-Sep-08	GNS-PLN-1000-1400-0022
D	Wharf construction	29-July-08	GNS-PLN-1000-1400-0009
E	Accommodation facility construction	1-Jun-08	GNS-PLN-1000-1400-0010
F	Water supply pipeline construction	4-Aug-08	GNS-PLN-1000-1400-0011
G	Dune crossing	1-Jul-08	GNS-PLN-1000-1400-0012
H	Ocean outfall construction	1-Sep-08	GNS-PLN-1000-1400-0013
I	Solid waste disposal construction	1-Nov-08	GNS-PLN-1000-1400-0014
J	Local reservoir construction	1-Nov-08	GNS-PLN-1000-1400-0015
K	Effluent pipeline construction	5-Jan-09	GNS-PLN-1000-1400-0016
	Precommissioning		
L	Precommissioning management	-	GNS-PLN-1000-1400-0017
	Ongoing monitoring		
M	Monitoring program*	-	GNS-PLN-1000-1400-0018
	Remedial and response strategies		
N	Remedial and response strategies	-	GNS-PLN-1000-1400-0019
	Habitat measures		
O	Habitat offsets & reserves	-	GNS-PLN-1000-1400-0020

*Construction modules B to K will include construction surveillance monitoring

Note that although the modules are numbered sequentially for convenience, as shown by the anticipated construction start dates they will not be submitted in strict sequential order.

The detailed EIMP requirements are described in the separate EIMP Overview module. This EIMP mill site bulk earthworks module should be read together with the EIMP Overview module.

The EPBC 2007/3385 conditions addressed by each EIMP module are shown in Table 3.

Table 3: Modular elements of the EIMP and the EPBC 2007/3385 conditions they address

	Module	Conditions addressed	
	Overview		
A	EIMP Overview	1, 2, 6, 7, 8, 9, 10, 11, 12, 13, 20, 44, 45, 46, 47, 48	
	Preconstruction and construction	Preconstruction	Construction
B	Vegetation clearing - mill site and wharf access	15, 17, 18, 20, 23, 25, 26	14, 15, 17, 18, 20, 23, 25, 26
C	Bulk earthworks mill site	14, 17, 18, 20, 23, 25, 26	17, 18, 20, 23, 25, 26
C1	Mill Construction	14, 17, 18, 20, 23, 25, 26	17, 18, 20, 23, 25, 26
D	Wharf construction	14, 20, 27, 28, 29, 30	20, 27, 28, 29, 30
E	Accommodation facility construction	14, 20, 23, 25	20, 23, 25
F	Water supply pipeline construction	14, 20, 21, 22, 23, 25	19, 20, 21, 23, 25
G	Dune crossing	14, 20, 23, 25	20, 23, 24, 25
H	Ocean outfall construction	14, 20, 27, 28, 30, 38 39	20, 27, 28, 30
I	Solid waste disposal construction	14, 20, 23, 25	20, 23, 25
J	Local reservoir construction	14, 20, 23, 25	20, 23, 25
K	Effluent pipeline construction	14, 20, 21, 23, 24, 25	19, 20, 21, 22, 23, 24, 25
	Precommissioning		
L	Precommissioning management	3, 4, 9, 31, 33, 34, 35, 36, 38	
	Ongoing monitoring		
M	Monitoring program	3, 4, 15, 32, 37, 40, 41, 42, 43	
	Remedial and response strategies		
N	Remedial and response strategies	3, 4, 5, 31, 39	
	Habitat measures		
O	Habitat offsets & reserves	16, 17, 18	

The EIMP Overview module A provides additional detail that demonstrates relationships between approval conditions, project elements, EIMP modules and EIMP components from various perspectives.

Appendix A provides an integrated summary of all those perspectives.

Appendix B sets out in tabular form the approval conditions addressed by this Module and the actions that Gunns has taken or will take to comply with the conditions, including management measures. In the event of any inconsistency between the text in these tables and the text in the body of the EIMP, the latter prevails.

1a.4 Relevant environmental commitments

Gunns' environmental commitments for the project as they relate to matters of Commonwealth interest are described in documents submitted to the Minister under the EPBC Act approval process:

- Preliminary documentation: Gunns Limited Bell Bay Pulp Mill Project Impact Assessment under the *Environment Protection Biodiversity Conservation Act 1999*; and
- Response to public submissions: Gunns Limited Bell Bay Pulp Mill Project Response to Submissions under the *Environment Protection Biodiversity Conservation Act 1999*.

These commitments are described in EIMP Module A. Commitments relevant to this module (mill site bulk earthworks) are:

- Prevent accidental loss or damage to native vegetation, through clear indication (ie flagging) of the areas to be cleared.
- Allowing fauna access to vegetated areas of the site, through site selection of fencing location aimed at maintaining fauna habitat corridors.
- Open trenches will be constructed with trench ramps and trench plugs to enable fauna to escape. Trenches will be checked for fauna at intervals during the day and first thing in the morning. Trapped fauna will be removed from the trench by trained personnel.
- Preventing the spread and reducing the impact of *Phytophthora cinnamomi* through application of State Guidelines for *Phytophthora cinnamomi* management
- If an eagle's nest is located during clearing or construction activities operations within 500 m or 1 km line of sight will stop, with breeding season exclusion buffers applied, between August and January inclusive, and appropriate nest management prescriptions applied in consultation with relative authorities.
- Minimisation of light emissions, through directional lighting, use of light shields or baffles and utilisation of the lowest level of lighting acceptable.
- Provision of a network of reserves totalling 150 ha across the Pulp Mill Site (pulp mill, chemical plant, local water reservoir, quarry and solid waste facility).

Management measures to ensure delivery of these commitments are integrated within this EIMP Module.

1a.5 Relevant approval conditions and management measures

Descriptions of the EPBC 2007/3385 approval conditions 14, 17, 18, 20, 23, 25 and 26 that are relevant to this EIMP module are provided in Appendix B together with actions that have been taken by Gunns to prepare this module. The outcomes of those actions and any resultant environmental management measures are also shown in that table. These management measures will ensure that the requirements of the approval conditions are met.

Schedule 2 of EPBC 2007/3385 requires the EIMP to reflect commitments made by Gunns in its preliminary documentation and also in its response to public submissions. Schedule 2 also requires the EIMP to address issues and concerns raised by the (then) Department of the Environment and Water Resources in its Recommendation Report and also matters raised in the Chief Scientist's report to the Minister. The EIMP satisfies those requirements also.

1b. Identification of clear environmental objectives

Overarching environmental objectives for the project to ensure that no adverse impacts occur on matters of national environmental significance have been outlined in Module A – Section B.

Specific environmental objectives relevant to this EIMP module are to:

- Minimise impacts on the Wedge-tailed Eagle – Tasmanian (*Aquila audax fleayi*)
- Minimise disturbance of vegetation at the mill site by confining activities to the mill disturbance footprint
- Minimise impacts on the central north burrowing crayfish (*Engaeus granulatus*)

- Minimise the risks of native fauna becoming trapped in excavations, particularly trenches
- Manage the risks to listed threatened species associated with roadkill
- Protect the network of reserves across the pulp mill site
- Minimise light emissions associated with construction activity
- Prevent the spread and reducing the impact of *Phytopthora cinnamami*.

1c. Identification of environmental indicators, and translation of objectives into agreed targets and performance measures

Performance measures relating to the above objectives are:

- No abandonment of the Wedge-tailed Eagle – Tasmanian (*Aquila audax fleayi*) nest #130
- No disturbance of vegetation outside this module's pulp mill disturbance footprint (shown in Appendix D)
- No impacts on the central north burrowing crayfish (*Engaeus granulatus*) or Mt Arthur burrowing crayfish (*Engaeus orramakunna*)
- No animals trapped in excavations
- Implementation of agreed roadkill response measures
- No disturbance to the network of reserves across the pulp mill site
- No light emissions directed towards native vegetation
- No spread of *Phytopthora cinnamami* as a result of the bulk earthwork activities.

1d. Design and implementation of an appropriate monitoring program

Given the nature of the above environmental indicators, the relevant monitoring activities will be through inspections.

1e. Identification of, and commitment to, agreed trigger or response levels for key indicators

Of the approval conditions relevant to this module, only condition 26 involves trigger or response levels:

- Condition 26(b) requires response strategies to be implemented should roadkill trigger levels be exceeded.

1f. Identification of specific remedial management responses to be undertaken when trigger point levels are exceeded

Of the approval conditions relevant to this module, only condition 26 involves trigger or response levels:

Condition 26(b): Response strategies for the event that roadkill trigger levels are exceeded are addressed in this Module C (for the pulp mill construction phase) and Module N (for the pulp mill operational phase).

As described in section 3b of this module, Gunns has adopted an effective trigger level of zero for roadkill on the site access road, and will implement response measures from the commencement of any construction activities, including vegetation clearing. The initial construction of the property perimeter fence will not cause an appreciable increase in traffic and the measures will not be implemented until after that work.

2. PRECONSTRUCTION

2a. Management of impacts on the wedge-tailed eagle – Tasmanian

Condition 14 of the approval is relevant to this issue, along with previous commitments made by Gunns in its Preliminary Documentation as described in section 1a.4 of this EIMP module. Previous commitments made are captured within condition 14.

2a.1 Condition 14 of EPBC 2007/3385

To minimise impacts on the wedge-tailed eagle – Tasmanian (*Aquila audax fleayi*) Gunns Limited must put in place and implement, as part of the EIMP, measures including:

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.

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 DEWHA if a new active nest is found.

c) The breeding season buffer must be applied from 1 August to 31 January inclusive.

Actions taken to prepare management measures

In addition to the surveys undertaken by Gunns for the Draft Integrated Impact Statement (Weeding, S. (2005) *Eagle nest search proposed pulp mill and associated infrastructure survey report*), 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) *Assessment of proposed pulp mill footprint for nests of the wedge-tailed eagle and white-bellied sea-eagle*. Report prepared for Gunns Limited. A copy of that report was submitted with EIMP Module B (as Appendix I, report 1).

No new nests of wedge-tailed eagles (or white-bellied sea-eagles) were located. Physically, the pulp mill site 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.

Findings

The only nest in the vicinity of the project footprint is the already known nest #130. This is 900 m from the closest disturbance area of the project as a whole but not in line of sight. For the project as a whole, it is therefore outside the relevant 500 m buffer distance specified by the approval condition. For the disturbance area relevant to this Module C, the closest distance to the nest is 1800 m. This is outside both buffer distances specified by the approval condition.

Nevertheless, this module includes measures to address this approval condition's restrictions.

Management measures adopted to ensure approval condition is met

Commitments adopted for this EIMP module are provided below:

- *Eagles nests (condition 14(a)):* During the period between 1 August and 1 February construction activities must not occur within:

  (a) 1000 metres of an active Wedge-tailed Eagle or a White-bellied Sea-eagle nest if the construction activities activities are in line-of-sight of the nest site; or

  (b) 500 metres of an active Wedge-tailed Eagle or a White-bellied Sea-eagle nest site.

- *Identify previously unknown eagle nest sites (condition 14(b))*: Previously unrecorded eagle nest sites, noted during clearing and/or 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 clearing or construction activities during the breeding season (1 August to 31 January) work within that buffer must cease immediately and DEWHA will be notified.

2b. Management of risks to listed flora from plant pathogens

There is no specific condition relevant to this issue for bulk earthworks, which will be occurring within an area from which vegetation will have been removed. Nevertheless, plant disease hygiene measures established for the vegetation clearing stage (EIMP Module B) will continue to be implemented during the bulk earthworks covered by this Module C.

Phytophthora cinnamomi is an aggressive, microscopic, lethal pathogen that causes the roots of susceptible species to rot. Introduction and spread can be accelerated in a number of ways, including the introduction of infected soil.

Best practice guidelines will be adopted, with application of the *Phytophthora cinnamomi* Management Guidelines produced by Tasmanian Department of Primary Industries and Water. These Management Guidelines include a series of measures to prevent the introduction and minimise the spread of this pathogen, including vehicle washdown hygiene procedures to ensure no relocation of potentially infected soil.

Due to the implementation of hygiene procedures, consistent with best practice guidelines, no impacts are expected from *Phytophthora cinnamomi.*

A key component of the hygiene measures will be an equipment hygiene certification system, which was also described in Appendix F of Module B and extracted to Table 4 below.

Table 4: Equipment cleaning provisions for hygiene certification

Subject	Guidance
Basis	Interim *Phytophthora cinnamomi management guidelines* and *Tasmanian washdown guidelines for weed and disease control (machinery, vehicles and equipment*)
Intent	Cleaning procedures should remove all soil or organic matter from the surface of vehicles, equipment and portable infrastructure.
Wash down facility	A long-term vehicle wash down facility should consist of a holding pit dug into the ground over which a steel grate has been built. An overflow drainage system should be designed into the facility as follows: 1. A 40 mm pipe placed underneath the support beams 2. The end of the drainage pipe should be covered with a sock/filter system to collect coarse seed and soil particles 3. The grate should be supported by steel support beams and constructed of steel battens 4. It needs to be structurally sound and of adequate size to contain/support large and heavy construction machinery
Wash down media	Temporary washdown is to be facilitated via the use of high pressure water/steam or air. High pressure air cleaners are recommended when site conditions are dry. Water/steam should only be used when site conditions are already wet or air cleaning is not satisfactorily removing soil and plant material.
Clean inside and out	All construction personnel should thoroughly clean their vehicles regularly both inside and out. Cleaning should ensure that all mud and vegetative material is cleaned from the undercarriage, running gear and around wheel arches of the vehicle. Mud and grass seeds should be removed from interior mats and footrests.
Disinfection	A chemical such as Phytoclean should be used to disinfect potentially contaminated vehicles and machinery. Vehicle baths or spray packs for the application of disease control agents may be required.
Inspections	Inspections should be undertaken at the same time as the initial safety inspection and clean vehicles should be issued with confirming certification.
Certified	All vehicles must be certified and registered as clean before being permitted access to the easement construction zone. Certified vehicles utilising constructed roads that have not passed through bare soil areas will not require wash down.
Wash and control points	Washdown and hygiene control points should be identified based on the weeds present, the vegetation type (native, exotic pasture) and the sensitivity to certain pathogens (*Phytophthora cinnamomi*).
Certification system	A certification system for managing and monitoring the implementation of hygiene and washdown requirements will be developed. This will follow the identification of washdown areas based on weed and disease surveys to be conducted prior to construction. The system will entail the use of guidelines outlining specific hygiene requirements for specific infested areas, a washdown register to record machinery and vehicle movements, and colour coded stickers to assist in the identification of vehicles and machinery involved.
Pre and post construction	Preconstruction hygiene and during/post construction hygiene measures will be managed separately. Specific forms for both stages will be developed to manage and record hygiene and washdown requirements. Hygiene Form A will cover preconstruction hygiene and Hygiene Form B will cover hygiene during construction.
Emergencies (eg. fire fighting)	To the extent practicable, these measures should also be applied during emergencies such as fire fighting but only to the extent that urgency and safety considerations allow

2c. Management of risks and uncertainties associated with the non-detection of listed flora

Conditions 20 and 25 (specifically 25(e)) of the approval are relevant to this issue, along with previous commitments made by Gunns in its Preliminary Documentation as described in section 1a.4 of this EIMP module.

2c.1 Condition 20 of EPBC 2007/3385

Disturbance of vegetation at the site must be confined to the construction corridors of the pipelines and the pulp mill site and associated infrastructure and in accordance with the EIMP, including:

a) No disturbance must occur until such time as the relevant pre-construction and construction requirements of the EIMP have been approved by the Minister;

b) All areas to be cleared must be clearly marked to prevent damage to listed species outside the project area;

c) Access to project areas must be via established roads or access tracks located on areas that have been subject to flora and fauna surveys as required in the EIMP and described in the preliminary documentation.

Actions taken to prepare management measures

Construction work will be confined within vegetation disturbance limits identified in Module B.

Findings

The disturbance limit for the bulk earthworks is the same as the disturbance limit for vegetation clearing described in Module B, and is shown in Appendix D.

Management measures adopted to ensure approval condition is met

Gunns will implement measures including, but not limited to, the following:

- *Delineate all construction areas (condition 20(b)):* Inspect the project footprint and identify all construction areas, access tracks, car parks and other infrastructure and delineate them with flagging tape (other flagging options will include delineator rope or electric fencing tape)
- *Identify sensitive areas:* Identify from available documentation and plans, all construction areas and their respective land use and significance (i.e. pasture or native vegetation, archaeological and cultural significance)
- *Delineate sensitive areas (condition 20(b)):* Delineate all sensitive areas with proximity to construction areas with flagging tape (other flagging options will include delineator rope or electric fencing tape)
- *Remain within construction boundaries (condition 20):* All construction activities and materials must remain within the construction boundaries
- *Existing tracks (condition 20(c)):* All vehicle access will be confined to existing roads and tracks that have been subject to flora and fauna surveys. Permanent access tracks located in native vegetation areas must be as narrow as practicable in order to minimise the clearance of native vegetation.

- Regular monitoring inspections and audits will be undertaken to ensure that disturbance is confined to the delineated work areas. Inspection will involve daily checks, recording of any non-conformance by date.

2c.2 Condition 25 of EPBC 2007/3385

To minimise the risk of non-detection of listed flora, Gunns Limited must:

a) Conduct pre-construction surveys for *Prasophyllum secutum*, *Caladenia caudata*, *Epacris exserta* and *Glycine latrobeana* within the area of potential habitat for these species at appropriate times.

b) Conduct these surveys at all construction sites associated with the pulp mill and at 'comparative sites', where populations are known to occur.

c) Record both positive and negative search outcomes. An estimate should then be provided of the confidence in detection of these species. Methods for this estimation should follow those described by Keith (2000)*.

d) If populations are detected at construction sites associated with the action, then their population size and area of occupancy should be measured as described by Keith (2000)* and the management procedures included in the EIMP.

e) Disturbance of vegetation at the site must be confined to the construction corridors of the pipelines and the pulp mill site and associated infrastructure. All areas to be cleared must be clearly marked to prevent damage to listed species outside the project area. Access to project areas must be via established roads or access tracks located on areas that have been subject to surveys.

*Keith DA (2000). Sampling Designs, field techniques and analytical methods for systematic plant population surveys. Ecological Management and Restoration, 1, 125-139.

Actions taken to prepare management measures

Clauses 25(a) to 25(d) were addressed in EIMP Module B, which described the surveys undertaken for the referenced species.

The survey report was included in Appendix I (report 2) of Module B.

Findings

None of the species relevant to condition 25 were found within the mill site bulk earthworks area, which is encompassed by the vegetation clearing area addressed by Module B.

For this Module C, the relevant clause of condition 25 is 25(e), which requires disturbance to be confined to the designated bulk earthworks area.

Management measures adopted to ensure approval condition is met

- *Minimising vegetation disturbance (condition 25)*: The vegetation disturbance limit for the mill site was described in Module B. This limit is also the limit of the bulk earthworks described by this module. Vegetation disturbance will be confined to the approved footprint. Access will be via existing roads and tracks.

  Other EIMP modules relating to construction activities will have similar provisions.

2d. Management of risks associated with the decline of difficult-to-detect listed flora

2d.1 Condition 20 of EPBC 2007/3385

Condition 20 of the approval is relevant to this issue.

- *Minimising vegetation disturbance (condition 20)*: See discussion under issue (2c.1).

2e. Management of risks associated with the decline of *Xanthorrhoea aff. bracteata*

Xanthorrhoea aff. bracteata is not present on the mill site. This issue is therefore not relevant to this EIMP module. It will be addressed in Modules G and K. Module G relates to the dune crossing area. Module K relates to the effluent pipeline. The species is found in proximity to the pipeline corridor as it approaches the dune crossing area.

2f. Management of risks associated with the amphibian chytrid fungus *Batrachochytrium dendrobatidis*

This issue relates to pipeline corridors and is therefore not relevant to this EIMP module. It will be addressed in Modules F and K. Those modules relate to the water supply and effluent pipelines respectively.

2g. Management of risks associated with trenching

This issue relates to the pipeline corridor and is therefore not relevant to this EIMP module. It will be addressed in Modules F and K. Those modules relate to the water supply and effluent pipelines respectively.

2h. Mitigation of impacts on the pipeline corridors

This issue relates to the pipeline corridor and is therefore not relevant to this EIMP module. The pipeline modules are Modules F and K. Those modules relate to the water supply and effluent pipelines respectively.

2i. Establishment of baseline surveys for roadkill

Condition 26 is relevant to this EIMP module.

2i.1 Condition 26 of EPBC 2007/3385

To manage the risks to listed threatened species associated with roadkill, Gunns Limited must, in accordance with the EIMP:

a) Immediately following the date of this approval, establish baseline monitoring of roadkill along the East Tamar highway and other major access routes for construction.

b) Monitor roadkill and implement response strategies, as necessary, in accordance with the EIMP if the number of road killed mammals exceeds the trigger levels in the EIMP.

Actions taken to prepare management measures

A consulting firm, Genames, was commissioned to undertake a 3-month baseline survey of roadkill on the East Tamar Highway. A report (Genames (February 2008) *Baseline Roadkill Monitoring Programme for Bell Bay Alliance. Report prepared for Gunns Ltd*) has been provided to DEWHA and is attached to this module as Appendix F.

Monitoring and response strategies are described in section 3b.

2j. Undertaking appropriate surveys and establishing mitigation measures for impacts on listed migratory birds

This issue relates to shoreline impacts and is therefore not relevant to this EIMP module. It will be addressed in Modules D (wharf construction) and H (ocean outfall construction).

2k. Undertaking appropriate examination of likely impacts of pile-driving noise associated with the wharf construction

This issue relates to wharf construction and is therefore not relevant to this EIMP module. It will be addressed in Module D, which relates to wharf construction.

2l. Establishing baseline levels of vessel strike in the region

This issue relates to vessel movements and is therefore not relevant to this EIMP module. It will be addressed in Modules D (wharf construction) and H (ocean outfall construction).

2m. Monitoring the baseline levels of contaminants in listed species

This issue relates to marine species and is therefore not relevant to this EIMP module. It will be addressed in Module M, which relates to the monitoring program.

2n. Developing rehabilitation and offset plans for listed threatened species

This issue relates to management strategies to rehabilitate an area of at least 200 ha of potential habitat. This will be addressed in EIMP Module O, which relates to habitat offsets and reserves.

This issue also relates to rehabilitation of pipeline corridors, which will be addressed in Modules F (water supply pipeline) and K (effluent pipeline).

2o. Establishing measures for habitat protection

Conditions 17 and 18 are relevant to this issue, along with previous commitments made by Gunns in its Preliminary Documentation as described in Section 1a.4 of this EIMP module.

- Condition 17 requires the establishment of a network of reserves totalling at least 150 ha within the pulp mill site within 12 months of the date of this approval. This will be done and included in EIMP Module O, which relates to habitat offsets and reserves.

However, the establishment and ongoing protection of reserves have already been identified and committed to. Gunns will ensure that no degradation of the reserves network will occur as a result of the mill site bulk earthworks. The reserves are delineated on the map in Appendix C.

The plant disease hygiene control measures described in section 2b are relevant to this issue. Those controls will protect the reserves from the introduction of plant diseases.

The reserve areas will also be protected from vegetation disturbance and from erosion and sedimentation impacts.

During construction, the reserve areas will be delineated for protection. Construction area and sensitive areas will also be delineated and work will be restricted to within the construction area boundaries.

Gunns will implement management measures including, but not limited to, the following:

- Identify sensitive areas: Identify from available documentation and plans, all construction areas and their respective land use and significance (i.e. pasture or native vegetation, archaeological and cultural significance)
- Delineate sensitive areas (condition 20(b)): Delineate all sensitive areas with proximity to construction areas with flagging tape (other flagging options will include delineator rope or electric fencing tape)
- Remain within construction boundaries (condition 20): All construction activities and materials must remain within the construction boundaries
- Existing tracks (condition 20(c)): All vehicle access will be confined to existing roads and tracks that have been subject to flora and fauna surveys. Permanent access tracks located in native vegetation areas must be as narrow as practicable in order to minimise the clearance of native vegetation.
- Minimise erosion and control stormwater (with particular emphasis on bare and disturbed areas) to direct stormwater away from the reserve areas. Stormwater controls will include:
    - Stormwater will be directed to sedimentation basins, away from the reserves. The stormwater management strategy will involve total containment of runoff from construction areas in a system of diversion drains, sediment fences and sedimentation ponds.
    - Sedimentation ponds will be designed to hold either a 1 in 20 year design rainfall event (in the case of long term temporary sedimentation ponds with an expected life of over 1 year) or a 1 in 2 year design rainfall event (in the case of short term temporary sedimentation ponds with an expected life of up to 1 year).
    - Where earthworks activities intercept groundwater aquifers any water flows will be diverted by way of temporary drains to sedimentation ponds. Interception of groundwater will be avoided in the design of the earthworks platforms as far as is practical.
    - The water trapped in these ponds will be reused for dust suppression, compaction or watering of rehabilitation areas or mulched areas with water trucks and sprinkler systems. Once all diversion drains and sedimentation ponds are in place no surface waters will outfall into the existing streams on the mill site other than in storm events that exceed the design capacity.

- Locating, designing and managing of roads, drainage and sediment controls (both temporary and permanent)
- Undertaking temporary and longer term stabilization of disturbed surfaces and stockpiles
- Undertaking monitoring of runoff and sediment loads
- Undertaking appropriate induction and training of staff and contractors.

3. CONSTRUCTION

3a. Management of risks associated with the amphibian chytrid fungus

This issue relates to the pipeline corridors and is therefore not relevant to this EIMP module. It will be addressed in Module F (water supply pipeline construction) and Module K (effluent pipeline construction).

3b. Management of risks associated with roadkill

Condition 26 of the approval is relevant to this issue.

Condition 26(a) relates to a baseline survey, which has been discussed in issue 2i.

Condition 26(b) relates to monitoring and response strategies if roadkill trigger levels are exceeded, and is addressed in this Module C for the pulp mill construction phase and will also be addressed in Module N (remedial and response strategies) for the pulp mill operational phase.

Gunns recognises that there will be a net increase in traffic as a result of the construction of the mill. Gunns notes its obligation to implement response strategies if the number of roadkilled mammals exceeds trigger levels to be established in the EIMP. Rather than delay the implementation of strategies until a statistical trigger level might be available, Gunns has developed and will implement response strategies as if there were a zero trigger level for roadkilled mammals. DEWHA has agreed to this conservative approach.

In EIMP Module B (mill site vegetation clearing), Gunns identified a number of response strategies that would be developed for implementation with Module C. Pending the finalisation of these, Gunns in Module B committed to strategies applicable to the vegetation clearing phase. Because vegetation clearing has not yet commenced at the time of the finalisation of the present Module C, those strategies are overtaken by the final response strategies described below, which were foreshadowed in Module B. These strategies will achieve a 36% reduction in construction worker vehicle entries over the duration of construction, as set out below.

Gunns will now implement these strategies for the full duration of the project's construction activities, including the yet to be commenced vegetation clearing of the mill site (but not including the preliminary activity of constructing the property perimeter fence, which will not cause any appreciable increase in traffic).

The adopted response strategies are as follows:

Commitment 1: Speed reductions on the site access road from the East Tamar Highway and internal site road networks – reduction from 60 km/hr to 40 km/hr on access road and a 20 km/hr limit on mill construction site internal networks.

Speed limit signs will be posted at relevant locations on the access road (40 km/hr) and internal road networks (20 km/hr). A notification of changed speed regime will be communicated to Transport Contractors for the existing chip mill operation.

Commitment 2: Monitoring of pulp mill access roads and removal of any roadkill carcasses to minimise risks of roadkill from carcass feeding.

Monitoring of road-killed mammals will occur on a daily basis by inspection of all pulp mill access roads. Any roadkilled fauna found will be removed from the road and placed in

adjacent native vegetation a minimum of 10 m from the roadside to remove the risk of secondary roadkill from carcass feeding. Prior to removal, located fauna will be recorded, GPS-located and photographed. Records relating to this monitoring will be kept and available on site for review by the Independent Site Supervisor, and will be reported to DEWHA on a quarterly basis.

Commitments 3: Worker traffic – implementation of a range of measures, including car pooling and bus transport, to minimise construction worker vehicle movements associated with construction of the mill.

Gunns will implement a range of measures, including car pooling and bus transport, to minimise construction worker vehicle movements associated with construction of the mill. During the construction period, Gunns will implement measures that will achieve a 36% reduction in the construction worker traffic levels proposed in the Preliminary Documentation (Draft Integrated Impact Statement – Transport and Traffic Impact Assessment), from which Commonwealth assessment of the project was conducted.

It should be noted that the Draft Integrated Impact Statement already assumed bus transport and car-pooling initiatives – the present commitment of a 36% reduction in construction worker vehicles further strengthens these initiatives to minimise construction worker traffic associated impacts.

In order to demonstrate compliance with this commitment, Gunns will monitor and report quarterly on the cumulative construction worker vehicle entries to the Pulp Mill construction site. Figure 1 shows the expected cumulative number of construction worker vehicle entries to the site as indicated in the Draft IIS and also the cumulative construction worker vehicle entries taking into account the 36% reduction commitment.

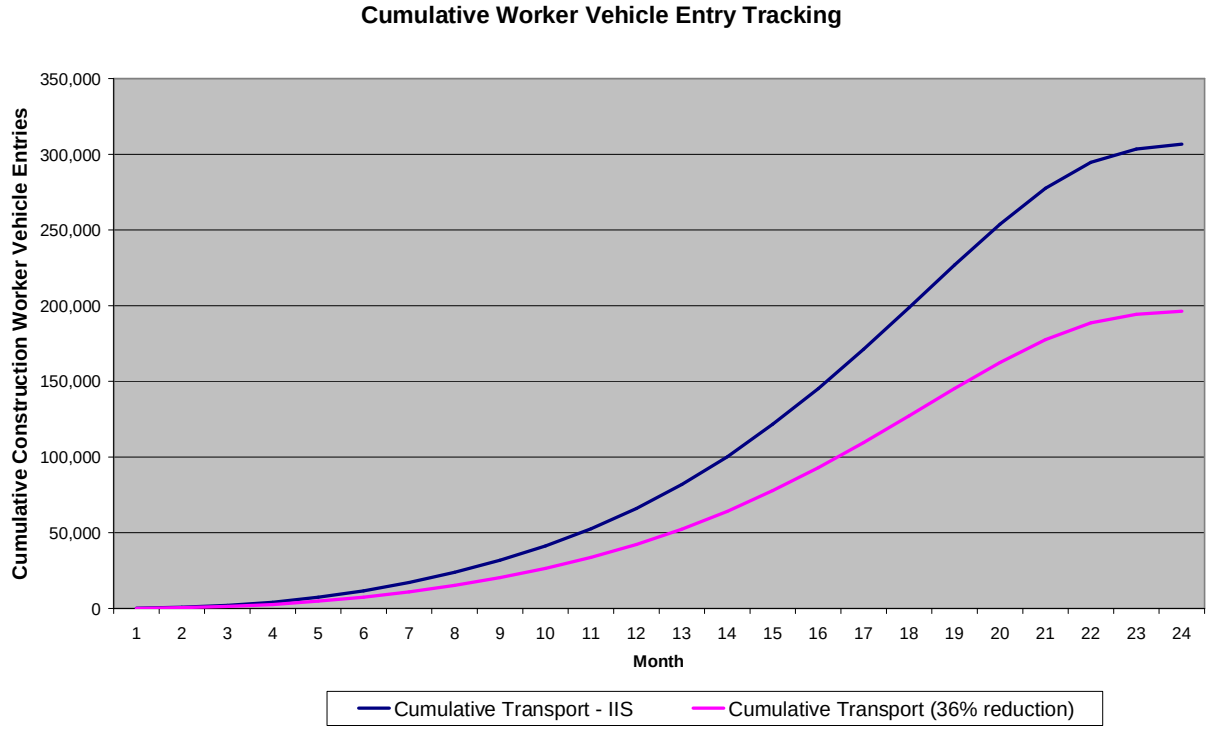

Figure 1: Expected cumulative number of construction worker vehicle entries to the pulp mill site with and without the 36% reduction commitment

Table 5 shows the expected quarterly cumulative totals for construction worker vehicle entries, based on Figure 1.

Table 5: Expected quarterly cumulative totals of construction worker vehicle entries to the mill site

End of Quarter	Project Assessed Expected Cumulative Total Draft IIS Construction worker vehicle entries	Committed Expected Cumulative Total 36% Reduction Construction worker vehicle entries
Quarter 1	**2,042**	**1,307**
Quarter 2	**11,669**	**7,468**
Quarter 3	**31,798**	**20,351**
Quarter 4	**65,930**	**42,195**
Quarter 5	**121,649**	**77,855**
Quarter 6	**198,761**	**127,207**
Quarter 7	**277,527**	**177,617**
Quarter 8	**306,699**	**196,288**
End of Construction	**306,699**	**196,288**

The 36% reduction commitment reduces the total number of construction worker vehicle entries allowed over the life of the construction project to 196,288.

Due to a range of reasons (predominantly the scheduling of the construction process) there will be positive and negative deviations from the expected cumulative data proposed. The curves are provided only as a guide to the cumulative growth of traffic numbers towards the commitment cap.

In order to track progress against this cap, monthly averages and total cumulative data will be available for on-site review by the Independent Site Supervisor at any time, with cumulative data provided to DEWHA each quarter. Explanations will be provided to DEWHA for scheduling related variances, with significant non-scheduling related variations from the expected quarterly cumulative totals in Table 5 to be addressed as necessary. Gunns will develop corrective measures and action plans to bring any such over-accumulation 'back in line' with the expected cumulative total, to ensure that the cap is not exceeded over the life of the construction project.

Construction worker vehicle entries will be monitored using established procedures (a traffic counter on the pulp mill access road and construction worker site records) and reported as per Commitment 8 below.

To maximize car pooling, a car pool notice board will be established at a suitable location on-site to facilitate easy contact between construction workers. The notice board will facilitate display of basic details such as telephone numbers, travel times and suggested meeting points.

Commitment 4: Worker traffic – with specific reference to bus transport for construction worker traffic, Gunns will ensure that a daily bus service from George Town or Launceston (or both) is employed when construction workers travelling from either of those locations exceeds 50.

Daily records of bus usage by origin area (Launceston/George Town) will be collated (refer Commitment 8 below) and kept available for inspection by the Independent Site Supervisor at any time.

Commitment 5: Other traffic - construction related heavy vehicle (ie. non-employee movement) traffic will be scheduled to minimise traffic during crepuscular periods (dawn and dusk) to minimise fauna roadkill.

Construction officers who are accountable for procurement of materials or equipment to site will be informed of the general avoidance strategy and reminder posters will be located in site offices. An annual timetable will be included on the posters defining the crepuscular period for each month (half an hour either side of sunrise and sunset).

Commitment 6: Cross-river feasibility study

Gunns will prepare a feasibility study into the possibility of a cross-river ferry service for transportation of workers from the West Tamar to the site.

This will be completed prior to 200 construction workers being present on site (envisaged to be approximately 6 months into the project schedule) and will include but not be limited to details such as:

- The profile of workers projected to come from the West Tamar (which will be better known at that stage);
- The capacity of infrastructure to service a ferry service at loading and discharge;
- The availability of suitable operators for such a service; and
- Consideration of weather events that may make transport untenable.

Commitment 7: Site induction for all employees will include alerting them to the impact of roadkill and the need for care.

Site induction for employees and contractors will include information on:

- The likelihood of encountering native fauna on roads;
- What fauna species may be encountered at what times of day, ie. nocturnal vs diurnal species;
- Avoidance strategies including strict adherence to site speed limits and physical avoidance through vigilance and evasive action (where safe to do so);
- Reporting roadkilled fauna to security to enable removal. Site induction processes will include the requirement of employees to notify the entry security booth of any roadkilled fauna. These fauna will be removed from the road as soon as practicable.
- Bus timetables to and from site and how to advertise on the car pool notice board.

Commitment 8: Monitoring compliance with the above measures

Two traffic classifier/counter devices will be installed at suitable locations on the access roads at:

- The access road to the overall site including pulp mill and Gunns' existing operations; and
- The existing operations, being Gunns Forest Products - Tamar, comprising the Tamar North and South Chip Mills and the associated North East Tasmania forestry business units.
- Note - the contribution of chip mill operations can be gauged by the difference between the pulp mill road data and the main access road counts.

The traffic classifier counters will be configured to report vehicle movements (inward and outward) at both sites according to the AustRoads 1994 Vehicle Classification System.

Periodic (weekly to fortnightly) interrogation of the recorded data will examine:

- Speed statistics in 10 km/h bins by vehicle class for both locations for inbound and outbound vehicle movements; and
- Daily vehicle counts by hourly time bins.

Information obtained by this process will be used for:

- Monitoring adherence to speed limits (refer Commitment 1);
- Management feedback for temporal controls (e.g. diversion of traffic movements from crepuscular periods);
- Dissemination of actual performance against targets in relation to condition 26 (roadkill) will be provided on a regular basis to the construction workforce as a means of reinforcing our objectives and commitments for this issue; and
- Preparation of quarterly reports to DEWHA including:
    - Directional class/speed matrix;
    - Total number of worker days (for construction activities) for the reporting period;
    - Monitoring of construction worker vehicle entries (refer commitment 3)
    - Daily mean individuals transported by bus for the period from Launceston and George Town (refer Commitments 3 and 4) ; and
    - Actual versus projected cumulative vehicle movements to the site (with passenger(s) relating to construction).

The traffic counter selected for the project is able to deliver both speed and vehicle classification, with an expected >95% accuracy. Vehicle speeds will be calculated from actuation time of parallel pressure sensors located 1.00 (±0.01) metre apart to an accuracy of ±1 millisecond. (Resolution can be impeded in some circumstances. For example, simultaneous actuation of sensors by vehicles travelling in opposite directions can inhibit the instrument's ability to accurately classify the vehicle(s) class in all cases.)

Three key AustRoads vehicle categories (classes 1, 3 and 4) to be managed by this system relate to passenger vehicles. It may therefore be necessary to manually adjust or supplement automated totals by manual records that are able to discriminate vehicles within a class based on their load. For example, class 3 and 4 vehicles have axle/wheelbase patterns that are common to both buses and trucks. In addition, vehicles carrying passengers (eg. visitors) that are not involved in construction activities will need to be excluded from vehicle movement reports relating to movement numbers.

3c. Management of pile-driving noise

This issue relates to the construction of the wharf and ocean outfall respectively. This issue is therefore not relevant to this EIMP module. It will be addressed in Module D (wharf construction) and Module H (ocean outfall construction).

3d. Development of strategies to minimise vessel strike

This issue relates to vessel movements and is therefore not relevant to this EIMP module. It will be addressed in Module D (wharf construction) and Module H (ocean outfall construction).

3e. Appropriate strategies to minimise impacts on listed migratory birds

This issue relates to shoreline impacts and is therefore not relevant to this EIMP module. It will be addressed in Module D (wharf construction) and Module H (ocean outfall construction).

As described in Section 1a.4 of this EIMP Module, an additional Gunns commitment relevant to this issue is the sensitive directional use of lighting during construction work.

Gunns will implement management measures including, but not limited to, the following:

- Light-sensitive areas or migratory pathways will be identified
- Where a listed migratory species route is identified, working hours will be restricted to daylight hours, as far as practicable.
- Temporary lighting will be directed away from light-sensitive areas. Light shades and low lighting will be applied to construction and operational areas located adjacent to remnant native vegetation.

3f. Strategies to ensure no increase in the levels of contaminants in listed species

This issue relates to marine species and is therefore not relevant to this EIMP module. Modules H (ocean outfall), N (remedial and response strategies) and M (monitoring program) are relevant.

3g. Management of risks associated with listed crayfish

Condition 23 is relevant to this issue.

3g.1 Condition 23 of EPBC 2007/3385

To minimise impacts on, the central north burrowing crayfish (*Engaeus granulatus*) and the Mt Arthur burrowing crayfish (*Engaeus orramakunna*) and as part of the EIMP, Gunns Limited must:

a) Conduct surveys, using a suitably qualified person, agreed to by DEWHA, prior to commencement of construction of each relevant stage of works;

b) If any of these species are identified during surveys, detailed management procedures must be included in the EIMP and approved prior to continuing relevant construction. Management procedures may include but not be limited to:

i) Micro-siting of the pipeline alignment to avoid populations;

ii) Exclusion zones around the pulp mill site as necessary; and

iii) Translocation of individuals.

Action taken to prepare management measures

Surveys for crayfish have been undertaken, and were described in Module B. The survey report was attached in Appendix I (report 3) of that module.

Findings

All specimens were identified as the non-threatened *Engaeus mairener*. No evidence of *E. granulatus* or *E. orramakunna* was found.

Management measures adopted to ensure approval condition is met

- *Management procedures (condition 23(b))*: Neither *Engaeus granulatus* nor *Engaeus orramakunna* occur within project footprint, including within the mill site vegetation clearing area. No management measures are necessary.

  If a contrary finding arises during mill site bulk earthworks, however, and these species are discovered, work in the immediate (100 m) vicinity will cease and advice from an

expert approved by DEWHA will be taken on appropriate management measures. These measures will be submitted to DEWHA for approval prior to them being implemented.

4. PRECOMMISSIONING

4a. Toxicity testing of Elemental Chlorine Free mill effluents

This issue is not relevant to this EIMP module. It will be addressed in Module L, which relates to precommissioning management.

4b. Studies to establish the properties affecting fate of fine particulate organic matter in effluent

This issue is not relevant to this EIMP module. It will be addressed in Module L, which relates to precommissioning management.

4c. Establish maximum limits and trigger levels of pollutants in effluent, receiving environment and sentinel biota

This issue is not relevant to this EIMP module. It will be addressed in Modules L (precommissioning management) and M (monitoring program).

4d. Measurement of background contaminants in sediments and biota

This issue is not relevant to this EIMP module. It will be addressed in Modules L (precommissioning management) and M (monitoring program).

4e. Background ecological surveys

This issue is not relevant to this EIMP module. It will be addressed in Modules L (precommissioning management), M (monitoring program) and N (remedial and response strategies).

4f. Improved modelling (hydrodynamic and sediment) of fate and impact of effluent

This issue is not relevant to this EIMP module. It will be addressed in Modules L (precommissioning management), M (monitoring program) and N (remedial and response strategies).

4g. Design of the monitoring program for marine effluent

This issue is not relevant to this EIMP module. It will be addressed in Modules L (precommissioning management), M (monitoring program) and N (remedial and response strategies).

5. ONGOING MONITORING

5a. Effluent monitoring

This issue is not relevant to this EIMP module. It will be addressed in Modules M (monitoring program) and N (remedial and response strategies).

5b. Continuous monitoring of the effluent plume and its dispersion

This issue is not relevant to this EIMP module. It will be addressed in Modules M (monitoring program) and N (remedial and response strategies).

5c. Sediment quality monitoring

This issue is not relevant to this EIMP module. It will be addressed in Modules M (monitoring program) and N (remedial and response strategies).

5d. Sentinel biota monitoring

This issue is not relevant to this EIMP module. It will be addressed in Modules M (monitoring program) and N (remedial and response strategies).

5e. Ecological surveys

This issue is not relevant to this EIMP module. It will be addressed in Modules M (monitoring program) and N (remedial and response strategies).

6. REMEDIAL AND RESPONSE STRATEGIES

Remedial and response strategies will be developed for each of the matters for which the approval conditions require trigger levels to be developed and these will be described in their relevant EIMP modules, which have been identified in Table 9 of the EIMP Module A Overview module, as shown in Table 6 below.

Table 6: Trigger levels and the EIMP modules that will deal with them and their associated remedial and response strategies

Trigger	Module
Concentration of dioxins and furans, chlorate and total chloroacetic acids in effluent	L
Additional effluent contaminants, including nitrate, resin acid and colour	L
Numbers of Tasmanian devils, quolls and Eastern barred bandicoots that may become trapped in pipeline excavation trenches	F, K
Numbers of listed threatened species that may be victims of roadkill	C
Underwater noise impacts on Australian grayling during pile driving for the construction of the wharf	D
Underwater noise impacts on listed threatened and migratory marine species during construction of the wharf and ocean outfall	D, H

Only the roadkill trigger levels and remedial and response strategies are relevant to this module.

However, one of the commitments relevant to this module is to minimise the risk of animals becoming trapped in excavations, which is related to the trigger requirement for pipeline trenches. Although not required by the permit, Gunns will adopt a trigger level for trapped animals during the bulk earthworks also.

For the bulk earthworks, the adopted trigger level for a response strategy will be a single Tasmanian devil, quoll or Eastern barred bandicoot becoming trapped in a mill site excavation. Gunns will implement management measures including, but not limited to, the following:

- Fauna protection during trenching: Trenches will be kept open for a minimal period to conduct works. Trench plugs and ramps will be placed at regular intervals to enable trapped fauna to escape from trenches. Pipe ends will be blocked off at night. All sections of open trench must be monitored daily for trapped animals. Only trained personnel may remove fauna from trenches.
- Trenches will be checked first thing in the morning, at regular intervals during the day, and in the evening once works have concluded for the day.
- Trenches will include trench ramps and plugs to enable fauna to escape of their own accord.
- When an animal is noted as trapped, work in the immediate vicinity (ie. 50 m) will stop immediately and the Site Supervisor will be notified.
- Fauna trapped in trenches will be removed as soon as possible. No operations will commence or continue until fauna have been removed. Surviving fauna will be relocated to a suitable habitat by an ecologist trained in fauna handling procedures.

Records will be kept of all live and dead fauna, including amphibians, removed from the trench.

- No untrained personnel will approach or unduly stress fauna.

Should a Tasmanian devil, quoll or Eastern barred bandicoot become trapped, despite the above preventative measures, Gunns will implement management measures including, but not limited to, the following:

- Animals will only be handled by trained personnel, or by untrained personnel under the direct visual supervision of a trained person.
- Trained personnel will encourage the animal to leave, or physically capture/trap the animal where required.
- Fauna will be relocated to a safe area of suitable habitat in the vicinity of the trap site.
- Injured fauna will be captured/trapped and taken to a veterinarian for assessment and treatment.
- Dead fauna will be removed and disposed of only by a trained person.
- Dead fauna will be recorded and buried in an appropriate location.

The preventative measures will be reviewed and enhanced if potential improvements are apparent.