

Bell Bay Pulp Mill

Environmental Impact Management Plan (EIMP)

Module E: Accommodation Facility Construction

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

GNS-PLN-1000-1400-0010-C-00

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Appendix A: Integrated summary of relationships

Appendix B: Approval conditions, actions, outcomes, management measures

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Revision Status

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C	18 April 2008	Revised for submission to Minister for approval	IW	JD	CF

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 relates is the construction of the workers accommodation facility. The workers accommodation facility is ancillary to the pulp mill and is to be located on the south side of George Town and bounded by Main Road, Pembroke Road, South Street and Agnes Street. The site is zoned General Industrial use under the *George Town Planning Scheme 1991*.

The facility is to accommodate the influx of construction workers for the estimated 2 year construction period for the pulp mill.

The accommodation facility will accommodate up to 800 workers and consist of sleeping quarters, a dining area, kitchen, car parks and security. Workers will travel to and from the pulp mill site to the workers accommodation facility each day using light vehicles and shuttle buses.

The workers accommodation facility will be temporary. Its life will be limited to the duration of the construction and commissioning of the pulp mill, after which the site will revert to General Industrial use in accordance with the zoning under the planning scheme.

The development site for the workers accommodation facility is approximately 14 ha, which was a subdivision from the 17.58 ha lot described as Lot 1 on Plan 128887 (PID: 1882295, Volume 128887, Folio 1). Figure 1 shows the location and boundaries of the development site.

The lot is generally level and has been predominately cleared of vegetation apart from some light scrub. The site also has a significant weed infestation. Residual native vegetation is highly degraded and fragmented. A total of 9.8 ha of this native vegetation will be cleared.

The only vegetation on the lot of significant ecological value is an area (0.6 ha) of *Melaleuca ericifolia* swamp scrub, which is a State listed threatened vegetation community and which will not be cleared. Other than this community type, no species of national or state significance have been recorded at the site.

The northern corner of the lot is occupied by Supa Vinyl Products (SVP) Industries, a plastic products manufacturing business.

A former landfill is located in the western corner of the existing lot. This landfill ceased operation in the early 1960s. Due to the potential for contaminants to migrate from the former landfill area into the site, a site investigation was undertaken to identify any risks to human health or the environment arising from the development. The initial report is available on the Gunns pulp mill web site (www.gunnspulpmill.com.au). An updated report has been submitted to the Tasmanian Director of Environmental Management for approval under a State permit requirement. The investigation did not reveal any contamination on the site that would present a risk to human health or the environment during the construction, operation or decommissioning of the workers accommodation facility.

The subdivision to create the new lot for the accommodation facility excluded both the manufacturing business and landfill area, both of which remain in other ownership.



Gunns Pulpmill: Proposed Location of Temporary Accommodation Facility

Legend

 Title Boundary

0 500 1,000
Meters



Basemap supplied by TASMAR.
Base data supplied by the List- www.thelist.tas.gov.au
Map Produced by Gunns Ltd, 6th March 2008



Figure 1: Location and boundaries of the accommodation facility property

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 construction of the Workers Accommodation Facility, ancillary to 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.

This EIMP module for the workers accommodation facility presents those elements of the EIMP that are relevant to the construction of the accommodation facility, and should be read in conjunction with the EIMP Overview module.

Other EIMP modules will be prepared and submitted in accordance with the timing of the various stages of the project.

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 1 that Gunns will adopt for EIMP preparation. Table 1 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 1 will be presented in each module of the EIMP.

Table 1: Modular elements of the EIMP and their anticipated submission 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-May-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 labelled sequentially for convenience, as shown by the anticipated submission dates they will not be submitted in strict sequential order.

The detailed EIMP requirements are described in the separate EIMP Overview module. This EIMP accommodation facility module should be read together with the EIMP Overview module. This EIMP module will also reference other previously approved modules where appropriate.

The EPBC 2007/3385 conditions addressed by each EIMP module are shown in Table 2.

Table 2: 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	

This module follows the outline required by Schedule 2 of the conditions of approval. While the Schedule, and consequently Table 2, notionally divides activities into preconstruction and construction, many activities are common to both phases. Measures addressed in the preconstruction phase may also be relevant to the construction phase. In this module, such activities include monitoring for wedge tailed eagles, protection of vegetation outside the construction area, and minimisation of impacts on listed flora species. Management measures for these common activities are described in the preconstruction chapter of this module and, where appropriate, the construction chapter refers to these descriptions.

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 (workers accommodation facility) are:

- Prevent accidental loss or damage to native vegetation, through clear indication (ie flagging) of the areas to be cleared.
- Preventing the spread and reducing the impact of *Phytophthora cinnamomi* through application of State Guidelines for *Phytophthora cinnamomi* management.
- 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.
- If an eagle 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.

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, 20, 23 and 25 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 are 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*)
- Ensure effective monitoring of impacts on the Wedge-tailed Eagle - Tasmanian (*Aquila audax fleayi*)
- Minimise disturbance of vegetation at the accommodation facility site by confining activities to the facility disturbance footprint
- Minimise impacts on the central north burrowing crayfish (*Engaeus granulatus*) and the Mt Arthur burrowing crayfish (*Engaeus orramakunna*)
- Minimise the risks of native fauna becoming trapped in excavations, particularly trenches
- Minimise light emissions associated with construction activity
- Prevent the spread and reducing the impact of *Phytophthora 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
- Annual (second weeks of September and November) monitoring of the Wedge-tailed Eagle - Tasmanian (*Aquila audax fleayi*) nest #130)
- No disturbance of vegetation outside this module's accommodation facility disturbance footprint (shown in Appendix B). The area containing *Melaleuca ericifolia* forest is to be clearly delineated and protected from all impacts.
- No impacts on the central north burrowing crayfish (*Engaeus granulatus*) and the Mt Arthur burrowing crayfish (*Engaeus orramakunna*)
- No animals trapped in excavations
- Implementation of agreed roadkill management measures described in Module C
- No light emissions directed towards native vegetation
- No spread of *Phytophthora cinnamami* as a result of the clearing 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, no conditions involve trigger or response levels.

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

Of the approval conditions relevant to this module, no conditions involve trigger or response levels.

2. PRECONSTRUCTION

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

Condition 14 of the approval is relevant to this item, 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 outside the 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 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

Phytophthora cinnamomi is an aggressive, microscopic, lethal pathogen that causes the roots of susceptible species to rot. *Xanthorrhoea aff. bracteata* is highly susceptible to infection by *Phytophthora cinnamomi*. 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 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 is extracted to Table 3 below.

Table 3: Equipment cleaning provisions for hygiene certification

Subject	Guidance
Basis	Interim <i>Phytophthora cinnamomi</i> management guidelines and <i>Tasmanian washdown guidelines for weed and disease control (machinery, vehicles and equipment)</i>
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: <ol style="list-style-type: none"> 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 (<i>Phytophthora cinnamomi</i>).
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 of the approval are relevant to this item, 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.

Findings

The vegetation disturbance limit will encompass 9.8 ha of native vegetation within the accommodation facility site.

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 accommodation facility site. Confining disturbance to the site will ensure that there is no risk to threatened species outside the site.

Management measures adopted to ensure approval condition is met

The measures described above for condition 20 also satisfy this condition.

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 accommodation facility site. This issue is therefore not relevant to this EIMP module. It will be addressed in Module G. Module G relates to the effluent pipeline dune crossing area, where the species is present.

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

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

2i. Establishment of baseline surveys for roadkill

Condition 26(a) is relevant to this item.

A 3-month baseline monitoring program has been completed, and was reported in Module C.

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

This issue relates to shoreline impacts. It 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. It 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. It 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. It 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

Condition 16 requires management strategies to rehabilitate an area of at least 200 ha of potential habitat to be developed in the EIMP within 12 months of the date of the approval. This will be done and included in EIMP Module O, which relates to habitat offsets and reserves.

The 9.8 ha of native vegetation to be cleared for the construction of the accommodation facility form part of the project's overall vegetation clearance requirement for which the habitat offsets compensate.

2o. Establishing measures for habitat protection

This issue relates to 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.

This issue also relates to the establishment of a reserve of at least 34 ha of swift parrot foraging habitat 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.

3. CONSTRUCTION

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

This issue relates to the pipeline corridors. It 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 item.

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

Response measures have been agreed to between DEWHA and Gunns and will be implemented prior to the commencement of vegetation clearing on the mill site (and hence prior to the start of accommodation facility construction). Workers from the accommodation facility will enter the mill's construction site via the mill site's access roads, which are covered by the agreed roadkill response measures described in Module C. The measures are therefore not relevant to the accommodation facility EIMP module.

3c. Management of pile-driving noise

This issue relates to the construction of the wharf and ocean outfall respectively. It 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. It 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. It 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. It 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 item.

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. The report concluded that the pulp mill's disturbance footprint (including the accommodation facility) does not lie within the habitat range of these species.

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 accommodation facility area. No management measures are necessary.

If a contrary finding arises during vegetation clearance, 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 4 below.

None of the trigger levels or their associated remedial and response strategies are relevant to this module.

Table 4: 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