



Bell Bay Pulp Mill

Environmental Impact Management Plan (EIMP)

Module A: Overview

Prepared for the
Commonwealth Minister for Sustainability, Environment, Water,
Population and Communities
in accordance with approval EPBC 2007/3385

GNS-PLN-1000-1400-0006

4th March 2011

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Appendix A Integrated EIMP progress update

Appendix B EIMP Schedule 2 components and the EIMP modules that address them

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Revision Status

Revision	Date	Revision Description	Prepared	Reviewed	Approved
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B	15 November 2007	Revised and resubmitted to DEW for approval following DEW comment on revision A	IW	JD	CF
C	3 December 2007	Revised and resubmitted to DEW for approval following discussion with DEW on revision B	IW	JD	CF
D	5 December 2007	Revised and resubmitted to DEW for approval following discussion with DEW on revision C (including reformatting requirement)	JD	JD	CF
E	20 December 2007	Revised and resubmitted to DEWHA for approval following comments from DEW on revision D	IW	JD	CF
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F	14 January, 2008	Revised and resubmitted to DEWHA for approval following comments from DEW on revision D	JD	JD	CF
G	4 th March, 2011	Revised and resubmitted to SEWPaC to reflect development of complete EIMP.	CD	LH	TP

A. Description of the proposal and associated infrastructure

A.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.

A.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.

Conditions 7 and 8 of the approval allow the EIMP to be submitted and approved in sections, reflecting the different stages of construction.

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.

This **EIMP Overview** document is the first component of the EIMP and provides an overarching context and structure for the EIMP and a listing of its modules. Subsequent EIMP modules were prepared and submitted in accordance with the timing of the various stages of the project.

This EIMP Overview will be updated and resubmitted if there are any significant changes to the modular breakup over the course of the project or as otherwise required to maintain an up to date overview.

A.3 Background

A.3.1 Pulp mill project approvals

The pulp mill project has been approved at the State and Commonwealth levels.

At the State level, the approval was through the *Pulp Mill Assessment Act 2007* and associated Pulp Mill Permit dated 21 August 2007, which passed through both Houses of Parliament on 30 August 2007.

At the Commonwealth level, the approval was under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as EPBC 2007/3385 dated 4 October 2007.

Each approval has conditions that must be met. These conditions include (but are not limited to):

- design requirements
- restrictions on actions that may be taken
- actions that must be taken
- investigations and studies that must be undertaken
- reports and plans that must be prepared
- notifications that must be made.

Some of the requirements imposed by these conditions require methodologies, investigations, reports and responses and the like to be submitted for approval.

In the case of the State permit, the authority to which the submissions must be made is most commonly the Director of the Environment Protection Authority, (formally the Director of Environmental Management) although the permit covers a total of 22 statutory regulatory authorities. In some instances submissions must be accompanied by an independent auditor's report.

In the case of the Commonwealth EPBC approval, the authority to which the submissions must be made is the (now) Minister for Sustainability, Environment, Water, Population and Communities or the (now) Department of Sustainability, Environment, Water, Population and Communities (the Department¹). In the case of the EIMP, the Minister's consideration of it will be informed by an Independent Expert Group (IEG) convened by the Minister for that purpose.

The Minister's setting of the EPBC approval conditions for the project was informed by:

- a recommendation report from the (then) Department of the Environment and Water Resources: *Recommendation report prepared for EPBC Project 2007/3385 under section 95C of the Environment Protection and Biodiversity Conservation Act 1999, August 2007;*
- an advisory report from the Chief Scientist, commissioned by the Minister: *Chief Scientist's Report on the scientific aspects of the Department of the Environment and Water Resources Recommendation report, relevant supporting documentation and public comments on the Gunns Limited pulp mill proposal (EPBC 2007/3385), September 2007.*

These documents are available on the EPBC web site: www.environment.gov.au/epbc.

¹ The Department is also termed 'SEWPac' in some instances.

In addition to specific requirements that will be addressed by the EIMP, the EPBC approval:

- defines (in its Schedule 1) the geographic area to which the approval relates;
- terminates the approval if substantial commencement of the project has not commenced within 5 years of the approval decision;
- requires the Department to be notified of any breach or anticipated breach of the conditions; and
- provides for Gunns to be liable to penalties under the EPBC Act if any approval conditions are breached.

A.3.2 Management plans

The environmental management of the project will be implemented through a number of management plans. Broadly, these comprise:

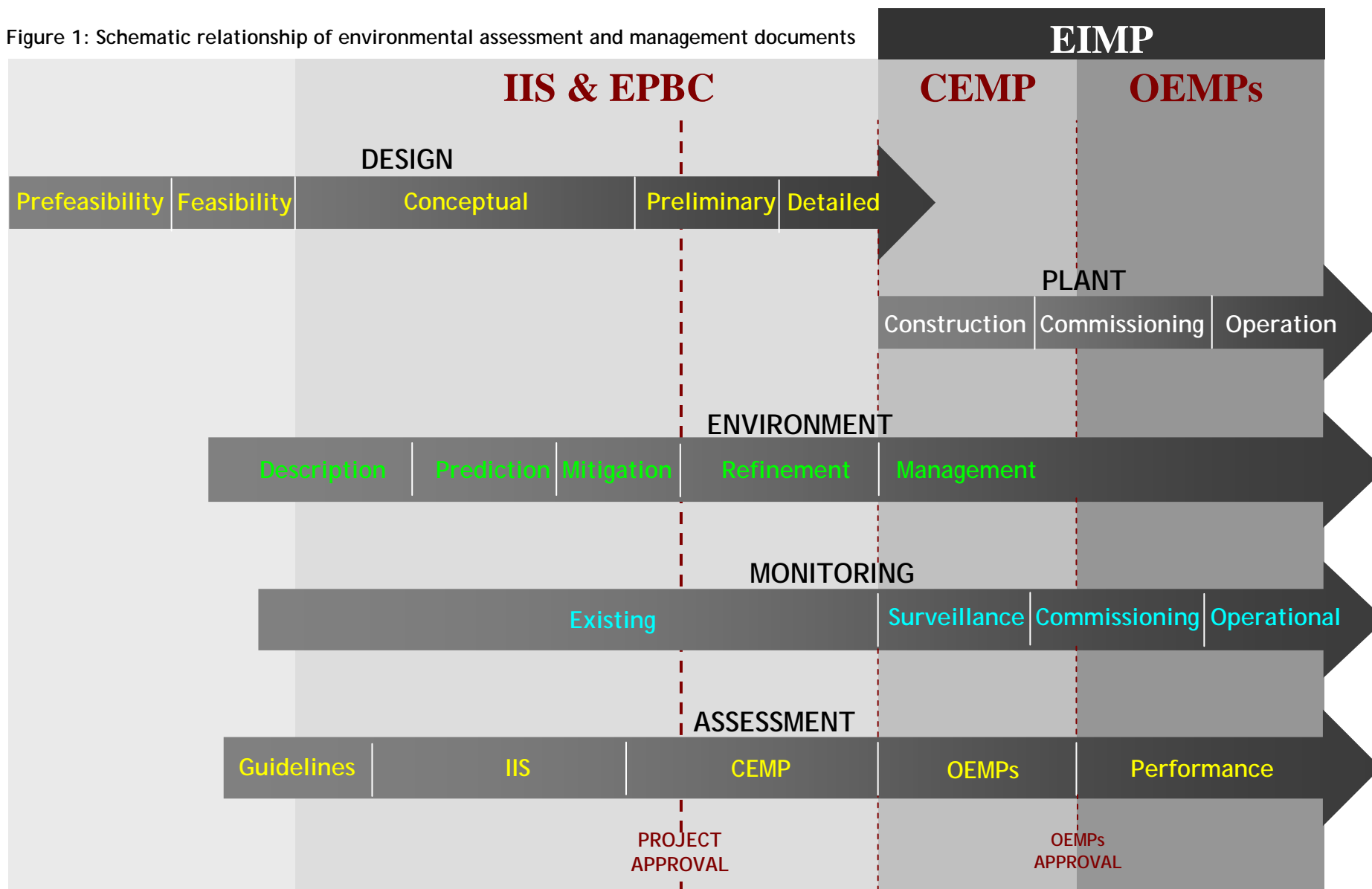
- Integrated Impact Statement (IIS) at the State level and the EPBC referral (including Preliminary Documentation) at the Commonwealth level, and associated documents - these describe the project and how Gunns will mitigate and manage impacts.
- Construction Environmental Management Plan (CEMP) - this describes how Gunns will manage environmental impacts during construction.
- Operational Environmental Management Plans (OEMPs) - these describe how Gunns will manage environmental impacts during operations.

The EIMP modules will include elements of the CEMP and the OEMPs for those matters that are of relevance to the Commonwealth.

Where a module of the EIMP refers to any management action (however described) as being included in, or forming part of (however described) the CEMP or an OEMP, then the relevant parts of the CEMP or OEMP are taken to form part of the EIMP and Gunns commits to implementing those actions according to their terms. In the event of any conflict between the text of the CEMP or OEMP, as set out in the EIMP, and the text in the CEMP or OEMP itself, the text of the EIMP prevails.

The scope of these plans and their relationship to the various stages of the project are shown in Figure 1.

Figure 1: Schematic relationship of environmental assessment and management documents



APPROVAL OF
GENERIC
CEMP
COMPONENTS

APPROVAL OF
SITE-SPECIFIC
CEMP
COMPONENTS

A.3.3 Matters relevant to the EIMP

In the first instance, matters relevant to the EIMP are those relevant to the EPBC Act, being the environment of Commonwealth land and matters of national environmental significance.

Matters of national environmental significance are:

- World Heritage properties
- National heritage places
- Wetlands of international importance (Ramsar wetlands)
- **Threatened species and ecological communities**
- **Migratory species**
- **Commonwealth marine areas**
- Nuclear actions (including uranium mining).

The Commonwealth Minister has assessed those of the above matters that are relevant to the pulp mill project, determined controlling provisions for the project (indicated above in **bold**), and approved the project to proceed subject to conditions set out in the 4 October 2007 EPBC 2007/3385 approval.

The EIMP's relevance is to a number of those conditions.

Schedule 2 of the EPBC 2007/3385 approval requires the EIMP to:

- reflect commitments made by Gunns in its preliminary documentation prepared pursuant to section 95 of the EPBC Act;
- reflect commitments made by Gunns in its response to public comments prepared pursuant to section 95B of the EPBC Act;
- address issues and concerns raised by DEW in its Recommendation Report;
- address issues and concerns raised by the Chief Scientist in his report to the Minister on the aspects of the proposal.

Under condition 44 of EPBC 2007/3385, if the Minister believes that it is necessary or desirable for the better protection of relevant listed threatened species and ecological communities, listed migratory species or the marine environment, the Minister may request that Gunns makes specified revisions to the EIMP. Gunns will comply with any such request as soon as practicable but at least within 20 business days, unless otherwise agreed by the Minister.

If the Minister approves a revised EIMP pursuant to this condition, Gunns will implement that EIMP instead of that previously approved.

A.3.4 Independent Expert Group (IEG)

Condition 6 of EPBC 2007/3385 describes an Independent Expert Group (IEG) of national and international scientists to be appointed by the Minister.

The role of the IEG is to advise the Minister and the Department in the design, implementation and approval of the EIMP. Gunns is required to consult with the IEG when preparing the EIMP.

The IEG is separate to the Expert Panel that the Minister convened under the direction of the Chief Scientist to provide advice during the project assessment process.

A.3.5 Site Supervisor

In accordance with condition 10 of EPBC 2007/3385, an independent site supervisor (“the Independent Supervisor”) will be appointed by the Minister to verify that the project is implemented in accordance with the approved EIMP.

A.3.6 Training

In accordance with condition 13 of EPBC 2007/3385, Gunns will ensure that all relevant staff and contractors and any other persons working on the project receive appropriate training in relation to the requirements of the EPBC 2007/3385 approval and that they comply with all the EIMP requirements relevant to their duties.

A.3.7 Reporting against the EIMP

In accordance with condition 11 of EPBC 2007/3385, Gunns will prepare annual reports of its performance against the approved EIMP as soon as practicable after 30 June in each year.

The reports will identify any requirements of the EIMP that have not been satisfied and describe appropriate strategies for meeting those requirements. The annual reports will be independently audited by an appropriately qualified person agreed to by the Department.

The annual report will be published by Gunns within ten business days of the completion of the independent audit.

Gunns will comply with any requirements of the Minister in relation to the rectification of any performance failures identified in the annual reports (condition 12).

In addition to the annual report and its audit, the Department may direct Gunns to commission an independent audit of compliance with the conditions of approval (condition 46).

A.3.8 Relationship with State approval

At the State level, approval of the project has been given through the *Pulp Mill Assessment Act 2007* Pulp Mill Permit dated 21 August 2007. The State permit includes many conditions (550 pages).

Although the State permit and EPBC 2007/3385 are separate instruments, both relate to the environmental management of the pulp mill project, and there is considerable overlap of approval conditions.

Gunns will take an integrated approach to addressing the approval conditions. For example, Gunns will not implement two separate monitoring systems but rather a single, integrated system that satisfies both the State and Commonwealth requirements. Similarly, the environmental management of the construction phase will be governed by a single, integrated Construction Environmental Management Plan that incorporates both State and Commonwealth requirements.

However, to the extent that the formal statutory separation between State and Commonwealth approvals demands, the submission of documents for approval will necessarily be separate. For example, those elements of the Construction Environmental Management Plan that are of relevance to the Commonwealth approval will be extracted and submitted for approval to the Commonwealth under the cover of the EIMP.

A.3.9 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 Section G of this EIMP module and will be included where relevant in the subsequent EIMP modules.

A.3.10 Construction Environmental Management Plan

As described in more detail in section D.2.1, Gunns has prepared a Construction Environmental Management Plan (CEMP) for the construction phase of the pulp mill project. The CEMP includes EIMP management measures relevant to construction and EIMP modules will incorporate those measures. Because the CEMP is a living document, it is possible that future changes to the CEMP lead to discrepancies between the CEMP and what has been incorporated into an EIMP module.

Where a module of the EIMP refers to any management action (however described) as being included in, or forming part of (however described) the CEMP, then the relevant parts of the CEMP are taken to form part of the EIMP and Gunns commits to implementing those actions according to their terms. In the event of any conflict between the text of the CEMP, as set out in the EIMP, and the text in the CEMP itself, the text of the EIMP prevails.

A.4 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.

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 either the dates for module submission or date of approval. As a matter of course, an updated Table 1 will be presented in each new or revised module of the EIMP.

The Department has specified that the EIMP structure must reflect the structure of Schedule 2 of the EPBC 2007/3385 approval.

Table 1: Modular elements of the EIMP and their submission (or approval) dates

Module	Date	Gunns document number
Overview		
A	EIMP Overview	Resubmitted 4-Mar-11
		GNS-PLN-1000-1400-0006
Preconstruction and construction		
B	Vegetation clearing - mill site and wharf access	Approved 01-Feb-08
C	Bulk earthworks mill site	Approved 31-Mar-08
C1	Mill construction	Approved 05-Jan-09
D	Wharf construction	Approved 05-Jan-09
E	Accommodation facility construction	Approved 23-May-08
F	Water supply pipeline construction	Approved 05-Jan-09
G	Shore crossing	Approved 05-Jan-09
H	Ocean outfall construction	Approved 05-Jan-09
I	Solid waste disposal construction	Approved 05-Jan-09
J	Local reservoir construction	Approved 05-Jan-09
K	Effluent pipeline construction	Approved 05-Jan-09
Precommissioning		
L	Precommissioning management	Submitted 22-Nov-10
Ongoing monitoring		
M	Monitoring program	Submitted 22-Nov-10
Remedial and response strategies		
N	Remedial and response strategies	Submitted 22-Nov-10
Habitat measures		
O	Habitat offsets & reserves	Approved 05-Jan-09

Note that although the modules are numbered sequentially for convenience, they may not necessarily be submitted or approved in strict sequential order.

Any module revisions will be re-submitted to the Minister for further approval. All modules have a revision record (inside front cover) to allow the history of module revisions to be tracked.

Schedule 2 of the EPBC 2007/3385 approval provides an outline for the EIMP. The EIMP must set out specific issues and specific measures at each of the key preliminary phases for each of the project's elements.

The structure of the approval and Schedule 2 does not lend itself to a neat sequential correspondence with the staging of the various elements of the project. Different project elements will commence at different times and a given Schedule 2 component will accordingly be relevant to different elements at different times.

The EIMP's modular breakup is therefore necessarily determined by the project's elements and their staging rather than by the simple sequential structure of Schedule 2. The relationships between approval conditions, project elements, EIMP modules and EIMP components are demonstrated in this document from various perspectives in the following formats:

- Table 2 outlines the EPBC 2007/3385 approval conditions that will be addressed by each identified EIMP module (a perspective where the module is the primary key);
- Appendix A provides an integrated summary including an interface with Table 1 in order to outline the EIMP module development. This Appendix is included in each module, updated to show the progress of module submissions.
- Appendix B outlines which EIMP modules address each identified Schedule 2 component (a perspective where the component is the primary key);

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	14, 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	14, 17, 18, 20, 23, 25, 26
C1	Mill construction	14, 17, 20, 23, 25, 26	14, 17, 20, 23, 25, 26
D	Wharf construction	14, 20, 27, 28, 29, 30	14, 20, 27, 28, 29, 30
E	Accommodation facility construction	14, 20, 23, 25	14, 20, 23, 25
F	Water supply pipeline construction	14, 20, 21, 22, 23, 25	14, 19, 20, 21, 23, 25
G	Dune crossing	14, 20, 23, 25, 27	14, 20, 23, 24, 25, 27
H	Ocean outfall construction	14, 20, 27, 28, 30, 38, 39	14, 20, 27, 28, 30
I	Solid waste disposal construction	14, 17, 20, 23, 25	14, 17, 20, 23, 25, 26
J	Local reservoir construction	14, 17, 20, 23, 25	14, 17, 20, 23, 25, 26
K	Effluent pipeline construction	14, 20, 21, 23, 24, 25	14, 19, 20, 21, 22, 23, 24, 25
Precommissioning			
L	Precommissioning management	3, 4, 9, 31, 33, 34, 35, 36, 37, 38, 39, 41, 42	
Ongoing monitoring			
M	Monitoring program	3, 4, 15, 31, 32, 33, 36, 37, 40, 41, 42, 43	
Remedial and response strategies			
N	Remedial and response strategies	3, 4, 5, 19, 26, 29, 30, 31, 32, 33, 39	
Habitat measures			
O	Habitat offsets & reserves	15, 16, 17, 18	

A.5 Description of proposal and associated infrastructure

In this EIMP Overview module of the EIMP, a general overall description of the project and its associated infrastructure is provided. More detailed descriptions of various elements will be provided in other modules if and as they may be relevant to the scope of those modules.

A complete description of the project is available at the Gunns pulp mill project web site www.gunnspulpmill.com.au.

A.5.1 The project

Gunns Limited (Gunns) is developing an elemental chlorine free (ECF-light) bleached Kraft pulp mill, and associated infrastructure, in north-east Tasmania. The pulp mill will be established on a site between the eastern bank of the Tamar River, across from the settlement of Rowella, and the East Tamar Highway. The pulp mill site is located within the Bell Bay major industrial zone, south of George Town (Figure 2). An aerial photo of the mill site and the solid waste landfill and reservoir areas is provided in Figure 3.



Figure 2: Pulp mill location map

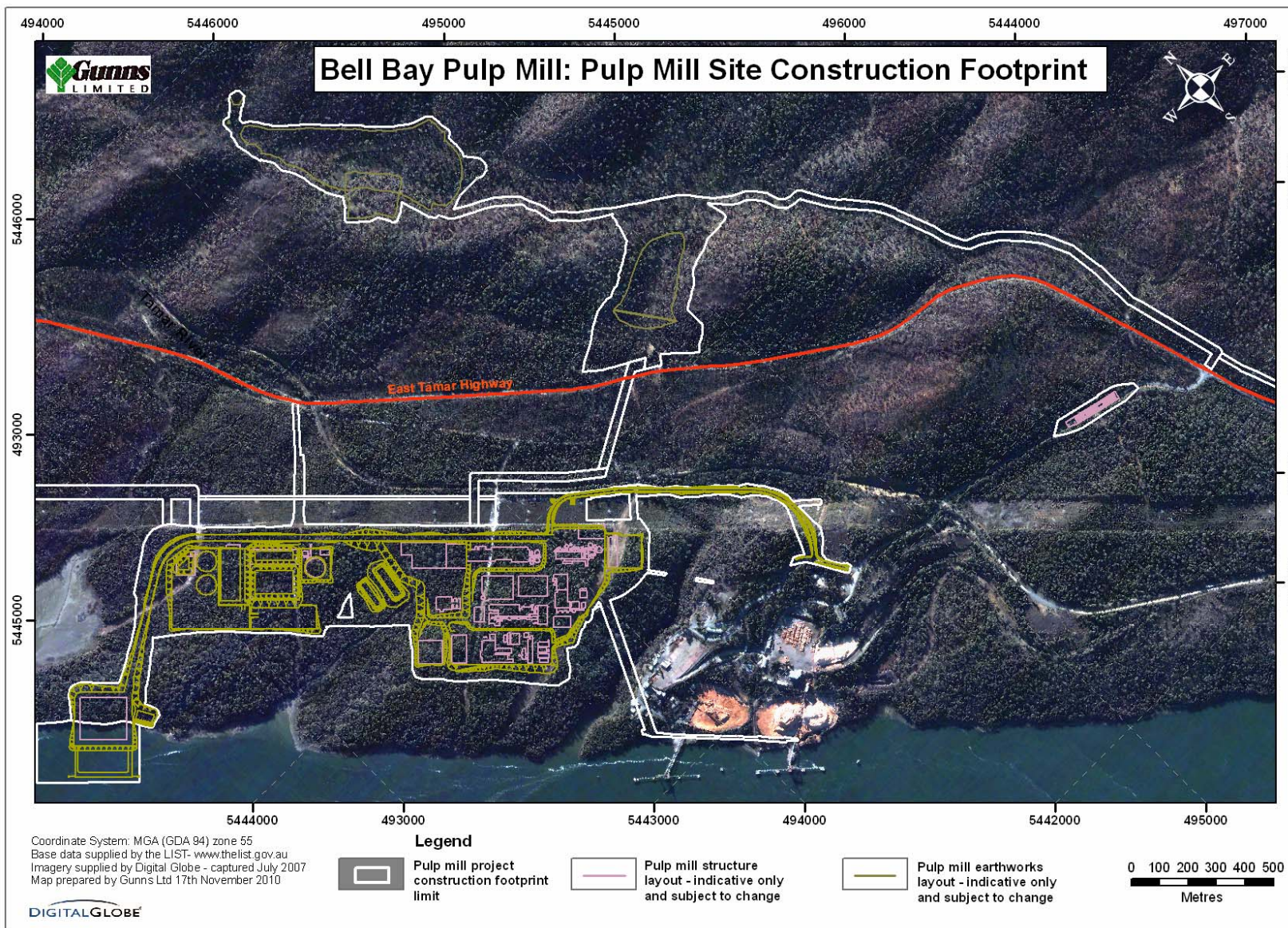


Figure 3: Satellite Image of pulp mill site, landfill and reservoir areas and initial sections of pipeline corridors

Key features of the project include:

- a wharf for the delivery of chemicals and materials and the export of pulp by sea vessel;
- a waste disposal facility, water storage dam and possible quarry on the eastern side of the East Tamar Highway, opposite from the pulp mill;
- an effluent pipeline, outfall and diffuser which will dispose of treated effluent offshore of Five Mile Bluff;
- a worker's accommodation facility in George Town; and
- a water supply pipeline from Lake Trevallyn, near Launceston, to the local water storage reservoir.

Industries currently operating in the vicinity of the Pulp Mill Site include:

- the aluminium smelter operated by Rio Tinto;
- the TEMCO metallurgical plant;
- the Tamar Valley gas fired power station;
- the ECKA Granules aluminium powder plant;
- the Gunns sawmilling facility;
- the Smartfibre woodchip mill and export facility;
- the Artec woodchip mill and export facility;
- the Gunns woodchip export facilities.

The pulp mill site is Gunns freehold land. The area of the land is approximately 624 ha.

The waste disposal facility, water storage dam and quarry (if required) are proposed to be developed on land to the east of the East Tamar Highway, across from the pulp mill site.

The capital cost of the project is approximately \$2.3 billion. The mill will incorporate best available technology and set new world standards for pulp mill design.

Pulp is a processed fibre produced from wood that can be used for making paper and other products. The wood source for this project will be plantation-grown eucalypts. Although the mill has been configured to process plantation grown pine as well, there are no immediate plans to utilise this specific resource. No wood sourced from native forests will be used by the Bell Bay pulp mill.

Gunns Limited made a public commitment to furnish the Bell Bay pulp mill with 100% plantation grown timber on the 6th of January 2010. This commitment was made possible through the acquisition of sufficient plantation resource through a general plantation forest industry restructure that occurred at that time.

One hundred per cent plantation fibre offers many benefits to the project overall. These benefits include; the potential to use 'ECF-light' bleaching technology over conventional ECF (discussed in detail below) and consistent fibre quality. Consistent fibre quality provides many indirect environmental benefits. This is due to manufacturing process stability, where the aim is always to minimise process 'excursions'. Process excursions generally result in increased emission rates of pollutants for a period that could manifest itself in the waste water stream or gaseous emissions. Process stability is a significant factor in maintenance of an efficient waste water treatment plant, particularly one which uses an activated sludge (biological) treatment process as is planned for this mill.

The mill will have to be of world scale for it to be financially viable, so the nominal output of the mill will need to be at least 1,100,000 ADT of pulp per annum. The required output can be achieved based on the existing area of eucalypt plantation in Australia.

A.5.2 Mill technology

The mill will use the Kraft process for producing pulp. The Kraft process is a very efficient process, as the wood residues removed from the wood fibres are burnt in a recovery boiler to generate the mill's steam and power requirements. This process also regenerates the chemicals used in the pulping process so they can be reused. As a result, the mill only requires small quantities of make-up pulping chemicals.

The bleaching process will be Elemental Chlorine Free Light (ECF-Light). The bleaching chemicals will be sodium hydroxide, oxygen, sulphuric acid, chlorine dioxide and hydrogen peroxide.

Adoption of ECF Light bleaching sequence

As described in the Preliminary Documentation, including the detailed reports that support the Draft Integrated Impact Statement (DIIS), the mill will use an Elemental Chlorine Free (ECF) bleaching process.

In the DIIS and all subsequent environmental impact assessments, including those undertaken to fulfil the Commonwealth's approval requirements to finalise this EIMP module, the assumed bleaching sequence was the conventional ECF sequence, described in simplified form as:

A/D₀-EOP-D₁-D₂.

In this sequence, A is acid wash to remove metals, D is chlorine dioxide delignification and brightening (D₀, D₁ and D₂ are variations), E is extraction of dissolved colour with sodium hydroxide, O is oxygen delignification and brightening and P is hydrogen peroxide brightening.

This conventional sequence leads to very low residual toxicants in the final effluent. As has now been conclusively demonstrated by the further hydrodynamic modelling and effluent studies undertaken to satisfy the approval requirements (summarised in module L), this conventional sequence will satisfy all the environmental performance standards committed to by Gunns and imposed by the State and Commonwealth approval and State permit.

Gunns has recently committed to furnish the mill with 100% plantation stock and this allows a further performance improvement through the introduction of what is known as the ECF Light bleaching sequence. In the ECF Light sequence, the final chlorine dioxide stage (D₂) is replaced with a hydrogen peroxide stage (P), as follows:

A/D₀-EOP-D₁-P.

The ECF Light process also involves improved brown stock washing.

The enhanced performance of ECF Light over conventional ECF is demonstrated by the chlorate levels in the final effluent. The Commonwealth's approval limit for chlorate (condition 32) was set at 3.7 mg/L. This limit can be achieved with conventional ECF.

However, the adoption of ECF Light means that Gunns is now proposing through the current version of module L to reduce that maximum limit to 2.0 mg/L.

ECF Light is a more expensive bleaching sequence than conventional ECF (because it uses more hydrogen peroxide) but its adoption is a further initiative by Gunns to demonstrate its unequivocal commitment to the best possible environmental performance by the Bell Bay mill and this enhancement is a result of engagement with the community and taking on their concerns surrounding the project. This alteration to the bleaching process is achievable due to the change in feedstock to 100% plantation based from the outset of operations.

Mill Components

The main components of the pulp mill are:

- wood yard and chip handling;
- fibre line (all departments for cooking, de-knotting, washing, oxygen delignification, screening, bleaching and drying of the pulp);
- chemical recovery department (including evaporation, recovery boiler, recausticising, lime kiln);
- power plant (including power boiler, and power generation);
- chemical plant;
- odorous gas collection and destruction system, water treatment system; and
- effluent treatment system.

A simplified process flow diagram is provided in Figure 4.

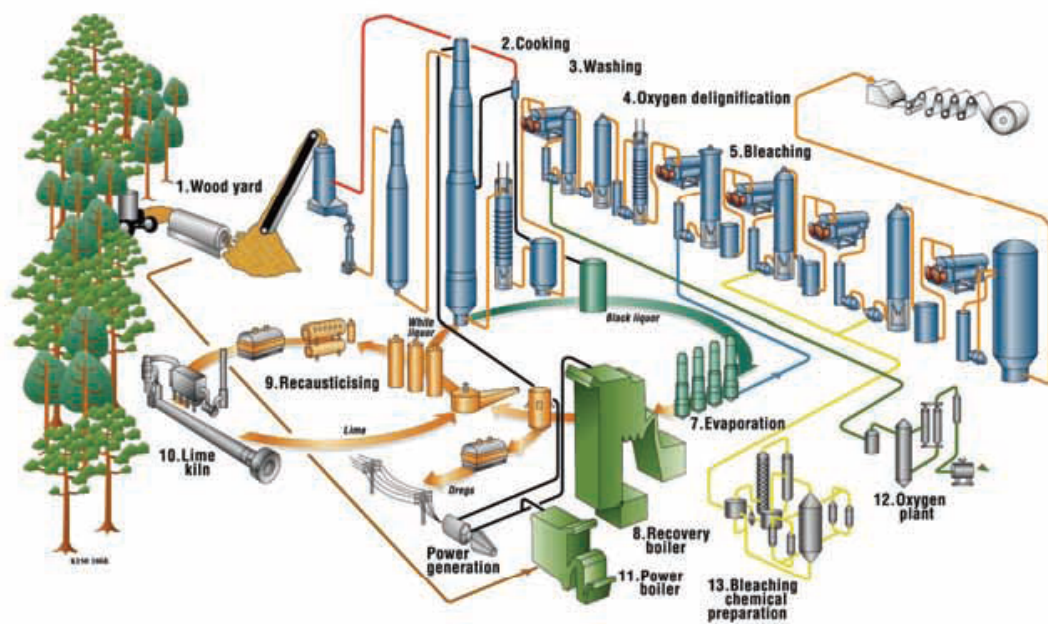


Figure 4: Process flow diagram

A.5.3 Chemical usage and storage

Gunns intends to outsource the ownership and operation of the chemical plant to an organisation with the appropriate experience and expertise in operating such plants. This plant will comply with relevant Tasmanian dangerous goods and hazard minimisation requirements of such a facility.

Table 3 provides a summary of the major chemicals and other raw material deliveries expected. Table 4 shows the major chemicals produced on site for subsequent use in the pulping and bleaching processes (excluding the liquor recovery cycle chemicals) and also expected maximum storage volumes. Data are also provided for the expected production and sales of merchant sodium chlorate.

Table 3: Major chemical and raw material purchases

Material	Tonnes/annum	Source
Salt	44,000	Ship from SA or WA
Sodium hydroxide	70,000 (50% conc.)	Ship to mill berth
Sand	3,000	Local by truck
Sulphuric acid	23,000	Ship to mill berth
Limestone	25,000	Local by truck
Burnt lime	7,000	Local by truck
Magnesium sulphate	1,500	Ship to Bell Bay, truck to site
Urea	1,550	Ship to Bell Bay, truck to site
Aluminium sulphate	1,100	Ship to Bell Bay, truck to site

Table 4: Major chemicals produced on site for pulp mill use and/or maximum storage quantities

Material	Production (tonnes/annum)	Maximum storage (tonnes)
Salt		30,000
Chlorine dioxide	10,000	20
Sodium hydroxide		10,000
Sulphuric acid		5,000
Hydrogen peroxide	15,000	400
Oxygen	60,000	60
Sodium chlorate	60,000 (70% exported)	4,000

A.5.4 Solid waste management

The pulp mill will produce up to an estimated 48,000 tonnes of process waste per year and approximately 760 tonnes of putrescible (domestic) waste (Table 5).

Table 5: Waste types and volumes

Waste type	Waste classification	Approximate maximum quantity per year
Solid waste - domestic type	Putrescible	760 t/y (5,040 m ³ /y)
Solid waste - boiler ash	Controlled waste	8,500t/y (11,000m ³ /y)
Solid waste - green liquor process dregs, slaker sands and lime kiln electrostatic precipitator dust	Controlled waste	40,000 t/y (40,000 m ³ /y)
TOTAL:		49,000 t/y (56,000 m³/y)

All hazardous waste (lubrication and hydraulic oils, used electrical equipment and various maintenance chemicals and materials) will be transported to an established landfill approved for that purpose.

A landfill will be constructed in the northeast corner of the site, east of the East Tamar Highway for the disposal of process waste that is not able to be sold or used for beneficial purposes. The location for the new landfill was selected after a review of a number of alternative locations. The selected site has previously been identified by the (then) Department of Environment and Land Management as a potential major industrial landfill.

Gunns will continue to research and review opportunities for beneficial reuse of process waste (as fertiliser and/or soil conditioner on plantations or as a raw material for cement production), and, as a fundamental principle, will maximise reuse to the extent that economic and environmental benefits and costs allow.

A.5.5 Effluent treatment

The mill will be designed to minimise effluent discharge and maximise the use of recycled water. Due to the recycling focus, the mill will utilise significantly less water per tonne of pulp produced, in the order of 13.5 giganlitres per year, than existing mills. Significant sections of the bleach plant water system will be partially closed, with bleach plant filtrate from various bleaching stages recycled back through the fibre line and the recovery process. This will reduce the volume of water that will be required to operate the plant, and impurities carried in these streams will be burnt in the recovery boiler.

Effluent will be treated in the effluent treatment plant before being discharged into Bass Strait through the proposed effluent disposal pipeline. On an average monthly basis, 64 ML/day of treated effluent from the operation of the pulp mill will be discharged approximately 2.7 km off-shore, near Five Mile Bluff.

The plant will consist of a modern primary and secondary treatment facility, with the biological treatment featuring an extended aeration activated sludge process, following an integrated anoxic chlorate removal stage which effectively converts the chlorate to harmless chloride.

A completely closed cycle Kraft mill, and even a closed cycle bleach plant, are not yet technically proven or economically viable technologies.

A.5.6 Water supply

The pulp mill will require approximately 26 GL of water per annum.

Water will be supplied to the pulp mill site through a water supply pipeline from Lake Trevallyn near Launceston. The water will be supplied by Hydro Tasmania from the South Esk, Great Lake System from volumes that would otherwise have been used by Hydro Tasmania in producing power through the Trevallyn Power Station, and is not an additional allocation. The mill water off-take will have no impact on the environmental flows through the Launceston Cataract Gorge. The off take will represent approximately 1% of the flow into Lake Trevallyn.

Hydro Tasmania currently generates 0.9 megawatts of electrical power with this water flow whereas the pulp mill on average will generate 180 megawatts, of which it will use 90 and supply 90 into the national electricity grid. The surplus of electricity supplied into the grid is more than enough for both industry and domestic use for the greater Launceston area (as defined by post codes 7248, 7249, and 7250).

The water off take will be metered and charged to Gunns on a per unit basis which will provide the appropriate incentive for conservation.

The water supply infrastructure will include the construction and operation of a raw water pump station near Lake Trevallyn and a pipeline from the pump station to the local water reservoir on the pulp mill site.

Most of the water supply pipeline will be located within road reserves and on private property. The pipeline will cross the Tamar River and a number of other creeks and road intersections.

Gunns also plans to construct a local water reservoir to the east of the pulp mill site, with sufficient capacity to store at least three days' water supply.

More water will be recycled than is normal practice for pulp mills globally. On average, pulp mills consume 40 m³ of fresh water per tonne of pulp produced. The Bell Bay pulp mill, because of its recycling focus, will use only 23.5 m³ per tonne. This represents a saving of over 40% (or 13.5 gigalitres per year) compared with existing mills.

The bleaching plant will be designed so that filtrate from the EOP stage (oxygen and peroxide added at the alkali extraction bleaching stage) can, in the future if research and developments progress successfully, be recycled back to the recovery cycle.

A.5.7 Energy supply

Modern kraft pulp mills source their major energy requirements from the lignin and extractives in the pulpwood raw material. This is burnt in the recovery boiler to produce steam and then, by utilising some of the steam energy, electricity is produced. Kraft pulp mills are generally self sufficient in respect to energy requirements. Gunns' pulp mill will take the electricity generation phase even further by utilising significant volumes of supplementary biomass to fuel a power boiler producing additional steam for electricity generation.

The mill's recovery and power boilers will provide steam to drive a turbine to power the mill, with surplus being sold into the Tasmanian electricity grid. The pulp mill on average will generate 180 MW, with an expected average of 90 MW surplus to mill requirements and available for sale. The mill is expected to be eligible for Renewable Energy Certificates (RECs) because it will be using biomass, including waste wood, for steam generation, and would therefore conform to the Commonwealth's Renewable Energy Act 2000.

A.5.8 Construction

Clearing and construction for the water supply and effluent pipelines will have localised impacts and create a noticeable visual impact in some areas. These will be short term as the pipeline will be buried and all easements will be rehabilitated consistent with the surrounding land uses.

Lake Trevallyn will need to be lowered for a week to install the pump suction but this will be coordinated with the regular cleaning of the power station trash racks. The pipeline will cross, via underground tunnel, the West Tamar Highway and the Trevallyn power station. This avoids closing the roads and interfering with private property. The Tamar River crossing pipeline will be installed either by using horizontal direction drilling (HDD) technology or by a jetting method, which causes a short term suspended sediment plume in the river as the mud surrounding the pipeline is fluidised. There are a number of road crossings by the pipelines which may require temporary road closure and excavation.

The water supply pipeline crosses a range of vegetation communities, including native vegetation and pasture, as well as existing easements. Exact areas of vegetation communities affected will depend on the final route and micrositing of the pipeline.

Clearing and construction at the pulp mill site will have restricted visual impact, due to screening native vegetation present along the East Tamar Highway. Visual impact may be most applicable from sites on the Tamar River and from the western shore of the Tamar River, due to the elevated nature of the site and the wharf facility. Construction activities will have localised and permanent impacts on vegetation.

A.5.9 Transport

The transport volumes associated with the pulp mill are largely associated with the intake of the main raw material, pulpwood, in the form of logs and woodchip. However as the Gunns' existing export pulpwood facility at Bell Bay has in the past already been exporting similar volumes to the resource that will be processed into pulp the increase in transport activity is much less significant than would otherwise have been the case. The products produced by the mill and the major chemical inputs will be transported by ship via the wharf facility and will have no impact on road transport activity.

The projected annual supply capacity of the collective wood resource available to Gunns within each notional forest management region confirms that the available eucalypt plantation pulpwood resource will satisfy pulp mill requirements into the future.

Gunns' preference, based on the relative economics of the various options, is to use rail wherever possible for the transport of wood to the Bell Bay mill that is sourced from areas outside the traditional northeast catchment. Changes in freight movements arising from Gunns' preferred operational strategy to utilise the rail network for some long-haul freight of wood from outside the northeastern catchment (the 'anticipated strategy') will not have any substantial adverse impacts on Tasmania's road network. In fact, the adoption of the preferred operational strategy will result in an overall decrease in log truck movements across Tasmania. On some roads, there will be limited localised increases that are well within road design specifications. The use of the rail network will be dependent on the success of negotiations between government agencies and the rail operator to ensure that the associated infrastructure is capable of being utilised.

A.5.10 Wharf facility

Pulp will be shipped from a new wharf facility to be constructed adjacent to the pulp mill in the Tamar River. The berth will have a depth of approximately 12 metres. The preferred design comprises a complete suspended structure on piles, connected to the shore by trestle structures.

The wharf has been designed to reduce impacts on river flows, so that hydrodynamic conditions resulting from wharf emplacement are unlikely to cause erosion and scour of the estuarine bed upstream and downstream of the wharf.

B. Identification of clear environmental objectives

The environmental objectives of the EIMP are to:

Ensure that no adverse impacts on matters of national environmental significance occur, those matters being:

- World Heritage properties
- National heritage places
- Wetlands of international importance (Ramsar wetlands)
- **Threatened species and ecological communities**
- **Migratory species**
- Commonwealth marine areas
- Nuclear actions (including uranium mining).

Matters relevant to the project are shown above in **bold**.

- Ensure compliance with EPBC 2007/3385 approval conditions.
- The EIMP must reflect the various commitments made by Gunns Limited both in its preliminary documentation prepared pursuant to section 95 of the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) as well as its response to public comments prepared pursuant to section 95B of the EPBC Act. Refer to Section G of this EIMP module
- The EIMP must also address issues and concerns raised by the (then) Department of the Environment and Water Resources in its Recommendation Report on the proposed action prepared pursuant to section 95C of the EPBC Act as well as those matters raised by the Chief Scientist of Australia in his report to the Minister for the Environment and Water Resources on the scientific aspects of the proposal

Gunns presented environmental management objectives for the project in its Preliminary Documentation (Gunns Limited Bell Bay Pulp Mill Project Impact Assessment under the *Environment Protection Biodiversity Conservation Act 1999*):

The environmental management objectives in order of priority are:

- Develop a culture where safety, good housekeeping, caring for our environment is second nature;
- Develop an organisation structure for construction phase and later operations identifying roles, responsibilities, and key performance objectives which must include safety, health and environmental measures;
- Systematically identify hazards and potential impacts and consequences;
- Evaluate the risks from identified hazards against screening criteria, taking into account the likelihood of occurrence and severity of the consequences. Compare these to targets set for the project;
- Implement management measures to eliminate the risk or reduce it to acceptable levels. Measures can include reducing the probability of occurrence and/or the consequences of the hazard;
- Establish recovery preparedness measures (including emergency procedures) as well as restoration and compensation procedures;
- Develop a comprehensive training system; and
- Carry out regular auditing to confirm 'that we are doing what we say' and ensure that any deficiencies are closed in a timely manner.

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

Schedule 2 of the EPBC 2007/3385 Approval requires the EIMP to reflect commitments made by Gunns in its preliminary documentation and also in its response to public submissions.

For this Overview Module, the following points are relevant.

- Gunns is committed to implementing a project that uses world's best technology and practice.
- Gunns has designed the mill to achieve world's best practice environmental performance.
- The State and Commonwealth permit and approval conditions set the world's most stringent environmental performance standards for such a mill.

Detailed environmental commitments are described in section G. These commitments will ensure that the project's objectives are achieved.

Specific environmental indicators, targets and performance measures will vary from issue to issue and will therefore be described under specific items in relevant EIMP modules, where management measures are necessary for a particular issue.

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 modules will satisfy those requirements also.

D. Design and implementation of an appropriate monitoring program

D.1 Environmental Management System

As for the environmental indicators, specific environmental monitoring will vary from issue to issue and will therefore be described under specific items in the various modules, where management measures are necessary for a particular issue.

For this Overview Module, reference to the project's AS/NZS ISO14001:2004 Environmental Management System (EMS) is relevant. It provides an Overview that will be used by Gunns to ensure that the pulp mill project is designed in a way that minimises its environmental impacts and maximises worker and contractor safety and health. The EIMP is an integral part of this system.

An EMS integrates business functions and processes with environmental management and facilitates continuous and verifiable achievement of environmental objectives, with review and improvement measures to identify and remedy any deficiencies. Performance monitoring, auditing and reporting is a key element of an EMS.

The AS/NZS ISO14001 Environmental Management System is an accreditation standard that provides formal recognition that an organisation's EMS satisfies all the requirements necessary to ensure sustained high performance.

The Bell Bay pulp mill project will be constructed and operated under an Integrated Management System² (IMS) consistent with AS/NZS ISO14001:2004 and other relevant standards.

D.2 Construction

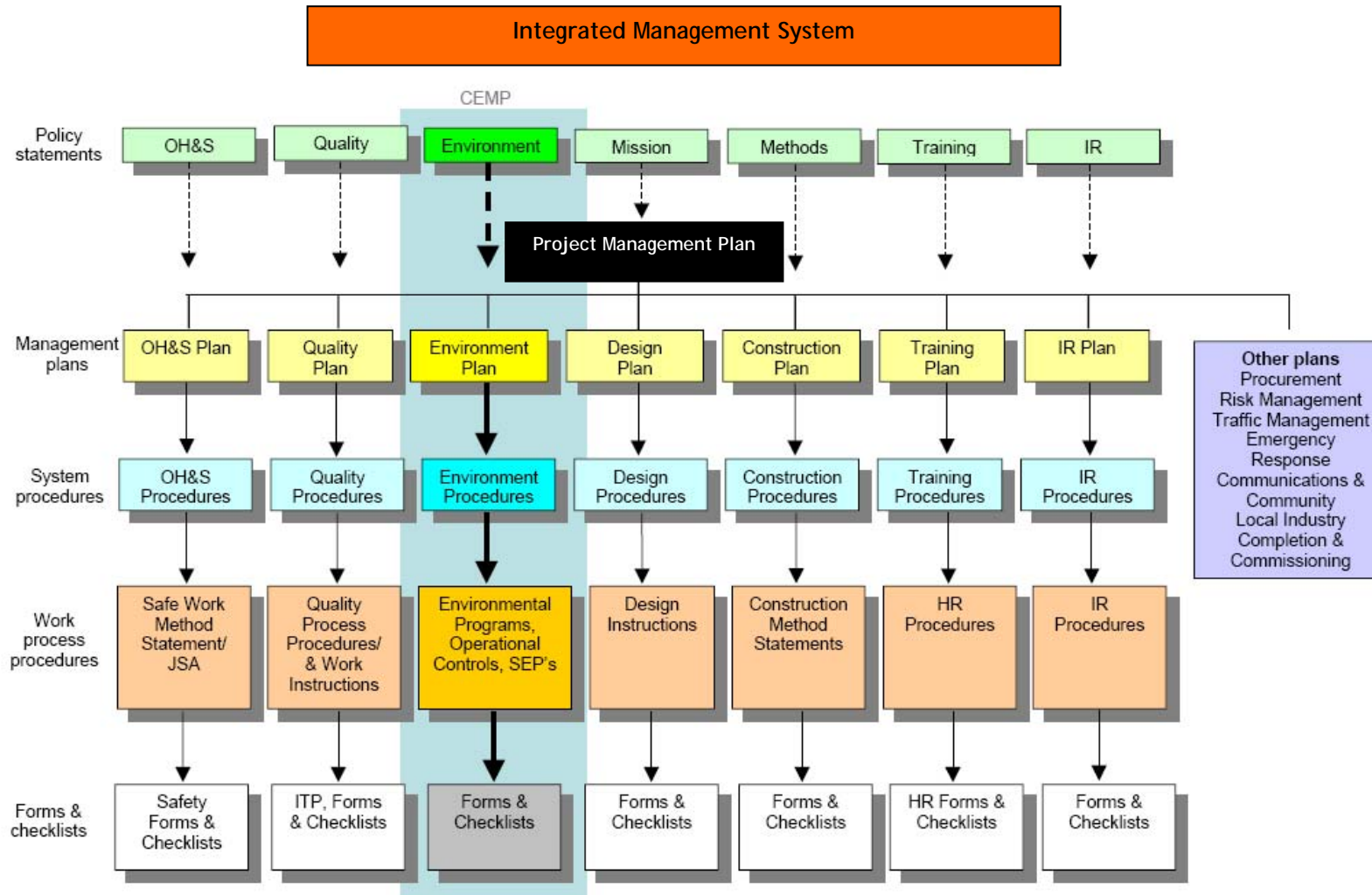
The project will undertake its construction activities under an Integrated Management System (IMS), implemented through a Construction Environmental Management Plan (CEMP).

Under this system, environmental management is one of many parts, as shown in Figure 5. Those elements that contribute to the project's CEMP are highlighted.

The Project Director has delegated authority for the implementation of the CEMP to the Project Environmental Manager who will co-ordinate all environmentally related activities with the Stakeholder Relations Manager.

² Integrating an EMS with similar occupational health, safety and quality management systems.

Figure 5: Integrated management system



D.2.1 Construction Environmental Management Plan (CEMP)

Gunns has prepared a Construction Environmental Management Plan (CEMP) for the construction phase of the pulp mill project.

The preparation of the CEMP is a formal requirement under the State's permit approval conditions.

The structure of the CEMP is shown in Figure 6.

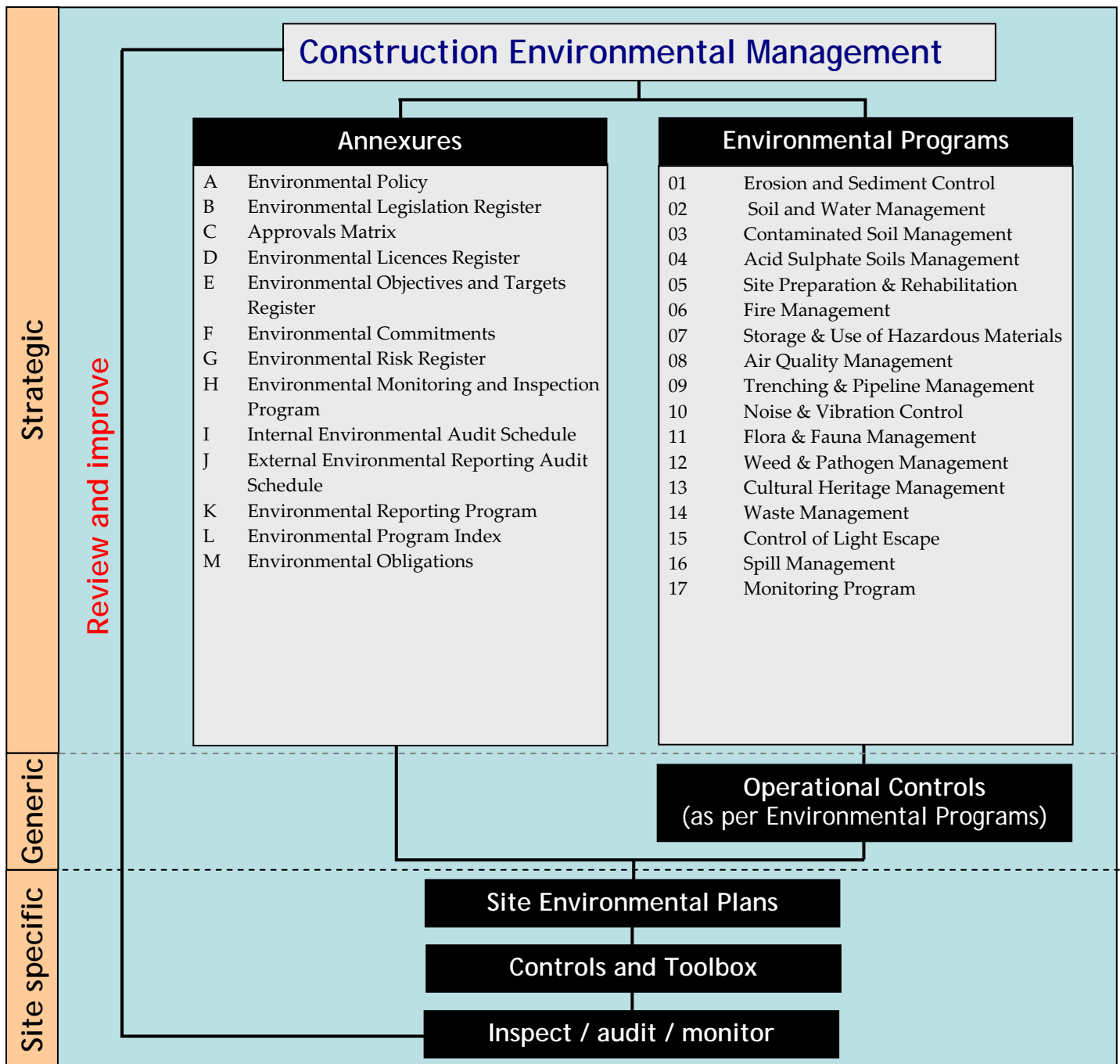


Figure 6: Structure of the Construction Environmental Management Plan

Commonwealth requirements for the EIMP that relate to construction are also included in the CEMP.

The CEMP has strategic, generic and specific components.

Strategic components are overarching policies, plans and programs that provide the context and systems for the CEMP.

Generic components are the operational controls that apply to all aspects of the project's construction. For example, the Operational Controls for fauna and flora describe measures that will be implemented in all construction areas.

Specific components are the controls that are specific to particular sites or for particular issues. For example, fauna and flora measures that are specific to the pulp mill site are described for that site separately to fauna and flora measures that apply to other sites, through a Site Environment Plan. Specific components include site plans and also information that is provided to site workers, such as through "tool box talks". An example of tool box material is provided in Figure 7.

The State permit approval includes conditions which prescribe the scope of the CEMP and which require the CEMP to be subject to an independent audit against the permit conditions prior to consideration by the Director of the Environment Protection Authority (formally Director of Environmental Management) for approval.

That audit has been undertaken by Golder Associates, and the CEMP has been revised and finalised in response to those audit comments and accepted by the Director of the Environment Protection Authority.

The CEMP as a whole is pertinent to the Commonwealth's interests and the construction elements of the EIMP. However, the Environmental Programs, Operational Controls, Checklists and Site Environmental Plans are the elements that are of most direct relevance.

The Environmental Programs, Operational Controls and Checklists are listed for information in Table 6 together with their document names under the Project's Document Management System.

The more detailed Site Environmental Plans will be prepared for each area of the project footprint according to the timing of the project's stages and will be submitted with relevant EIMP modules as they are prepared or revised from time to time.

The further EIMP modules described in Table 1 have been prepared and the most current formally approved version of those modules should be read in conjunction with this EIMP Overview.

Weeds & Pathogens

The Challenge

Weed control is an important part of any environmental works. With construction already commenced it is the management of sites and soil stockpiles that contain weed materials and propagules that is required to prevent the spread of weeds. *Phytophthora cinnamomii* (Dieback) is a pathogen which could destroy the biodiversity that has been maintained via 'no go zones'. It is therefore important to eliminate the possibility of contamination of this vegetation.

Issue – why does it matter?

- Destruction of native species results in lost biodiversity. Weeds are often highly competitive, most often outgrowing other plants and spreading rapidly.
- Some weeds such as Paterson's Curse and Ragwort are poisonous to grazing animals. Many species reduce the livestock carrying capacity of the farmland. Due to their ability to regenerate and seed they pose a threat to the surrounding farmland.
- It is our responsibility to maintain the Eastlink's road sites.
- Developing a weed free environment is essential due to the public scrutiny from the public and environmental groups which are already concerned about the impact of the freeway.

What can we do?

Plan

The Site Environmental Plan (SEP) will identify weedy areas and define the requirements for control measures of weeds and pathogens. Prior to working in a specific area environmental briefings will emphasise site-specific control requirements. All quarry products will be sourced from weed free sites and those free from infection of Dieback fungus. All earth moving equipment entering the site will be washed or cleaned at the last place of use to remove soil deposits, to reduce the risk of contamination from other sites. All vehicles and plant shall stay on approved access tracks and haul roads to minimise risk of weed spread. A Site Weed Management Strategy will be included on the SEP.

Sensitive Activities

- The most sensitive activities are:
- Clearing, grubbing and stripping
 - Topsoil stockpiling –storing soil stockpiles in close proximity to their original site to reduce spread of possible weeds.
 - Bulk excavation – possible contaminating from plant
 - Import of fill during earthworks
 - Haul roads and access tracks

Remember!

Is your vehicle and equipment free of contaminated soil?

Do

Wash earthmoving equipment entering the site to remove soil deposits. Remain on approved access tracks and haul roads. Be aware of identified weedy areas and follow Site Weed Management Strategies related to site specific requirements. Stockpile topsoil known to contain weeds away from native vegetation and protect the stockpile from erosion



Check

Before entering a new site that earthmoving equipment has been washed to remove all soil deposits. All equipment ie tools, boots and any other item with adhering dirt shall be cleaned before being moved from a high risk weed or pathogen area to a sensitive area. Determine the weed status of the area and the site requirements. Check for outbreaks of weeds on site, and report them to the Site Environmental Officer.



Act

Implement appropriate weed control as required including spraying and manual removal. Herbicides shall be administered only by appropriately licensed operators. Use only environmentally friendly herbicides as such as roundup aquatic near waterways. Ensure that herbicide does not impact on protected vegetation and no go zones.

Opportunities

To reduce the impact of existing weed and pathogen problems.

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Figure 7: Example of tool box information material

Table 6: Document list of CEMP Environmental Programs, Operational Controls and Checklists that are relevant to this EIMP Overview

Name	Environmental Programs	Operational Controls	Checklists
Erosion & Sediment Control	BBA-ENP-1000-1400-0001	BBA-OCO-1000-1400-0001	BBA-CKL-1000-1400-0001
Soil & Water Management	BBA-ENP-1000-1400-0002	BBA-OCO-1000-1400-0002	BBA-CKL-1000-1400-0002
Contaminated Soil Management	BBA-ENP-1000-1400-0003	BBA-OCO-1000-1400-0003	BBA-CKL-1000-1400-0003
Acid Sulphate Soils Management	BBA-ENP-1000-1400-0004	BBA-OCO-1000-1400-0004	BBA-CKL-1000-1400-0004
Site Preparation & Rehabilitation	BBA-ENP-1000-1400-0005	BBA-OCO-1000-1400-0005	BBA-CKL-1000-1400-0005
Fire Management	BBA-ENP-1000-1400-0006	BBA-OCO-1000-1400-0006	BBA-CKL-1000-1400-0006
Storage & Use of Hazardous Materials	BBA-ENP-1000-1400-0007	BBA-OCO-1000-1400-0007	BBA-CKL-1000-1400-0007
Air Quality Management	BBA-ENP-1000-1400-0008	BBA-OCO-1000-1400-0008	BBA-CKL-1000-1400-0008
Trenching & Pipeline Management	BBA-ENP-1000-1400-0009	BBA-OCO-1000-1400-0009	BBA-CKL-1000-1400-0009
Noise & Vibration Control	BBA-ENP-1000-1400-0010	BBA-OCO-1000-1400-0010	BBA-CKL-1000-1400-0010
Flora & Fauna Management	BBA-ENP-1000-1400-0011	BBA-OCO-1000-1400-0011	BBA-CKL-1000-1400-0011
Weed & Pathogen Management	BBA-ENP-1000-1400-0012	BBA-OCO-1000-1400-0012	BBA-CKL-1000-1400-0012
Cultural Heritage Management	BBA-ENP-1000-1400-0013	BBA-OCO-1000-1400-0013	BBA-CKL-1000-1400-0013
Waste Management	BBA-ENP-1000-1400-0014	BBA-OCO-1000-1400-0014	BBA-CKL-1000-1400-0014
Light Escape Control	BBA-ENP-1000-1400-0015	BBA-OCO-1000-1400-0015	BBA-CKL-1000-1400-0015
Spill Management	BBA-ENP-1000-1400-0016	BBA-OCO-1000-1400-0016	BBA-CKL-1000-1400-0016

D.2.2 Construction monitoring

Monitoring specific to construction covers the following areas:

- Daily turbidity and dissolved oxygen monitoring upstream and down stream of the following construction activities:
 - Water supply pipeline across the Tamar River
 - Wharf
 - Effluent pipeline across Donovan's Bay
 - Effluent outfall
- Assessment of potential nutrient and metal release into marine/estuarine waters during the above activities
- Utilisation of trained cetacean spotters during wharf and outfall construction activities and
- Biological assessments pre and post of the various construction activities outlined above to gauge recovery of the small impact zones.

D.3 Operational monitoring

A comprehensive pre and post commencement of operations environmental monitoring program has been developed in consultation with State and Commonwealth regulators.

The monitoring program is designed to provide performance assurance by identifying potential problems early, which will allow implementation of appropriate process changes, improvements and/or associated mitigation strategies to protect the environment.

Monitoring programs that will be implemented are described in detail in Module M.

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

A number of the EPBC 2007/3385 approval conditions require the development of trigger levels that will be used to invoke response and remedial strategies to avoid approval conditions being breached and ensure that unacceptable environmental harm does not occur.

The EPBC 2007/3385 approval defines trigger levels to be: *“levels of specified parameters that, when reached, require the implementation of a response strategy within a specified timeframe as agreed by the Minister. Trigger levels will be below any maximum limits that are relevant to the trigger levels in question”*.

Approval conditions relating to trigger levels are shown in Table 7

Table 7 Approval conditions relating to trigger levels

Condition	Condition wording
3	The EIMP must include trigger points and maximum limits in relation to effluent discharge from the operation of the pulp mill as well as specific remedial management responses to be undertaken by Gunns Limited if trigger points are exceeded or maximum limits are reached.
	It shall be an operational objective of the pulp mill, and reflected in the EIMP, that trigger points, and maximum limits, are not to be reached.
5	If at any time during the taking of the action the trigger levels for effluent discharge in this approval, or in the EIMP, are exceeded, then Gunns Limited must immediately implement the response strategies in the EIMP, in accordance with stipulated timeframes.
19(d)	To minimise impacts during pipeline construction on the Tasmanian Devil, Spot-tailed quoll and Eastern Barred Bandicoot, and as part of the EIMP, Gunns Limited must: ... (d) If at any time the number of fauna found in the trenches, reaches or exceeds the trigger levels defined in the EIMP, then response strategies must be implemented within the stipulated timeframes.
26(b)	To manage the risks to listed threatened species associated with roadkill, Gunns Limited must, in accordance with the EIMP: ... (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.
29(c)	To minimise impacts on the Australian Grayling (<i>Prototroctes maraena</i>) Gunns Limited must put in place and implement, as part of the EIMP, measures including: ... (c) If necessary, bubble curtains or other agreed response strategies must be implemented if trigger levels in the EIMP are exceeded.
30(c)	To minimise impacts on listed threatened and migratory marine species during construction of the wharf and the ocean outfall, Gunns Limited must put in place and implement, as part of the EIMP, measures, including:

Condition	Condition wording
	(c) If necessary, bubble curtains or other agreed response strategies must be implemented if trigger levels in the EIMP are exceeded.
32	...Maximum limits and trigger levels on additional effluent contaminants (for example, nitrate, resin acid and colour) will also be developed in the EIMP in accordance with Schedule 2.
33	Prior to commissioning, trigger levels for effluent discharge for all phases of development must be included in the EIMP together with agreed response strategies and timeframes if trigger levels are exceeded or maximum limits reached.
39	In accordance with the EIMP, if the results of the modelling resulting from condition 38 indicate that effluent hydrodynamics and deposition will result in chemicals reaching trigger levels, Gunns Limited must implement approved response strategies, including, if necessary, changing the design and operation of the effluent pipeline and diffuser.
41(a)	<p>In accordance with the EIMP, Gunns Limited must prepare and have approved by the Minister, prior to commencement of mill commissioning, strategies for monitoring the impacts of the mill effluent on the marine environment. These strategies must include but not necessarily be limited to:</p> <p>(a) Appropriate early warning of reaching trigger levels in Commonwealth waters.</p>
	<p>In addition, the EIMP must detail the arrangements for environmental management once the pulp mill is operational. These include:</p> <p>a. Ongoing monitoring; and</p> <p>b. The development of remedial and response strategies if monitoring shows trigger levels are likely to be exceeded or maximum target levels are to be reached.</p> <p>The plan must include but not necessarily be limited to:</p> <p>...</p> <p>e. Identification of, and commitment to, agreed trigger or response levels for key indicators; and</p> <p>f. Identification of specific remedial management responses to be undertaken when trigger point levels are exceeded, so as to ensure environmental targets and objectives will be achieved.</p> <p>The EIMP must address the management of all issues associated with protection of the Commonwealth marine environment, including:</p>
Schedule 2	<p>...</p> <p>c. Establish both maximum limits and trigger levels of pollutants in effluent discharge, in the receiving environment and in sentinel biota;</p> <p>The EIMP must establish the design and measures to implement an appropriate monitoring program to ensure there are no unacceptable impacts on matters of national environmental significance as a result of the action. The monitoring program must also identify and measure agreed trigger or response levels for key indicators.</p> <p>The EIMP must identify specific remedial management responses to be undertaken when trigger levels are exceeded or maximum limits are reached, so as to ensure no unacceptable environmental impacts on matters of national environmental significance. If necessary, remedial changes could include retrofitting of new technology, for example tertiary treatment of the effluent.</p> <p>It must be an operational objective of the pulp mill that trigger points, and maximum limits, are not to be reached.</p>

In accordance with the approval requirements shown in Table 7, trigger levels and associated response strategies have been developed for those issues shown in Table 1. Table 8 also identifies the EIMP module(s) that describe each issue’s trigger levels and the approach that was taken in their development.

Table 8 : Issues for which trigger levels were developed, and the approach taken to develop them

Trigger	Module	Trigger development approach
Concentration of dioxins and furans, chlorate and total chloroacetic acids in effluent	L	These trigger levels are prescribed by condition 32 of the approval.
Additional effluent contaminants, including nitrate, resin acid and colour	L	These trigger levels were developed on the basis of existing assessments (including the preliminary documentation) supplementary toxicity testing and hydrodynamic modelling to undertaken prior to the commissioning of the plant.
Numbers of Tasmanian devils, quolls and Eastern barred bandicoots that may become trapped in excavation trenches	F,G,H, K	These trigger levels were developed as part of the water supply and effluent pipeline construction modules, and address residual risks remaining after the adoption of the Construction Environmental Management Plan’s trapping avoidance measures.
Numbers of listed threatened species that may be victims of roadkill	C	This module describes the roadkill monitoring program that has been established and which may be further developed in conjunction with any advice from the Independent Expert Group.
Underwater noise impacts on Australian grayling during pile driving for the construction of the wharf	D	These trigger levels were developed based on a desktop study undertaken by an expert on underwater acoustics.
Underwater noise impacts on listed threatened and migratory marine species during construction of the wharf and ocean outfall	D, F,G,H,K	These trigger levels were developed based on a desktop study undertaken by an expert on underwater acoustics.

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

As described in section E, a number of the EPBC 2007/3385 approval conditions required the development of trigger levels that will be used to invoke response and remedial strategies to avoid approval conditions being breached and ensure that unacceptable environmental harm does not occur. The issues for which trigger levels were to be developed are shown above in Table 8.

Remedial and response strategies have been developed for each of the matters for which the approval conditions require trigger levels to be developed and these have been described in their relevant EIMP modules as they were prepared. EIMP Module N consolidates all the remedial and response strategies into a single module.

G. 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 below. These commitments will be included in the relevant EIMP modules.

G.1 Terrestrial construction activities

All areas

- 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.
- Preventing the spread of chytridiomycosis in Tasmanian frogs through application of hygiene protocols developed by the NSW National Parks & Wildlife Service ("Threatened Species Management Information Circular No. 6 Hygiene Protocol for the Control of Frog Diseases").
- 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.
- Provision of offsets for state threatened vegetation communities to maintain potential foraging habitat for the swift parrot (*E. ovata* forest and woodland is a state listed threatened vegetation community). A three times offset is proposed for this vegetation community, ie 34.2 ha will be reserved and protected within the northern region.
- Where practicable and safe to do so large trees with hollows suitable for use by species such as the masked owl will be maintained adjacent to pipeline routes, with placement of the route to micro-sited avoid large trees.
- A pre-clearing check of trees with nesting hollows will be undertaken by suitably trained personnel for signs of use by species such as the masked owl. If an active nest is located the tree will be maintained and pipeline construction activities delayed until young have fledged.
- In the unlikely event that 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.

Pulp mill site

- Provision of a network of reserves totalling 150 ha across the Pulp Mill Site.

Water supply pipeline, effluent pipeline and outfall site

- To ensure no disturbance to breeding white bellied sea eagles at the recorded nest site. No construction activities on the water supply pipeline will be undertaken within 500 m or 1 km line of sight of the nest site during the breeding season (August to January inclusive), if the nest is active.
- A suitably qualified and/or trained person will mark out on the ground the location of the *Xanthorrhoea aff. bracteata* on the effluent pipeline route. This site will be protected from disturbance, through micro-siting of the pipeline.
- Micro-siting and tunnelling of the effluent pipeline at the outfall site will be undertaken to prevent impacts on *Xanthorrhoea aff. bracteata*.
- A suitably qualified and/or trained person will assess areas of potentially suitable habitat for the green and gold frog prior to clearing activities. Where practicable, micro-siting of the pipeline disturbance area will prevent impacts on areas of potentially suitable habitat.
- A pre-construction check of the shoreline at the effluent outfall site for breeding shorebirds will be undertaken for a distance of 200 m on either side of the construction zone. In the event that a nest is located they will be clearly marked and construction activities kept on the other side of the pipeline alignment from the breeding birds.
- The beach profile will be restored to its original shape after construction.
- With the exception of access tracks and roads, the pipeline alignments and effluent outfall area will be rehabilitated and revegetated with vegetation commensurate with the existing environment. Large trees or species with invasive root systems will, however, be excluded from the pipeline easements.

G.2 Marine construction activities

- Construction of the effluent pipeline and diffuser has been designed to avoid significant impacts on Commonwealth marine areas and the ecosystem in the vicinity of the pipeline and diffuser. In particular:
 - the pontoon-mounted hydraulic backhoe dredge excavator selected as the preferred construction methodology generates the lowest amount of suspended silt and minimises the amount of seabed directly disturbed compared to conventional marine dredgers;
 - the hydraulic backhoe dredge excavator generates less underwater noise than conventional marine dredgers which reduces the size of the construction-imposed sound field;
 - minimum clearing of seabed habitat is required for the diffuser, which has been relocated from sandy seabed to low-profile reef to avoid impacts on the Tasmanian protected Gunns screw shell, and
 - high- and medium-profile reef will be avoided where possible to avoid direct impacts on the more diverse benthic algal and macroinvertebrate assemblages.
- If impact pile-driving operations for the wharf construction indicate that there is acoustic damage to fish, bubble curtains may be used to reduce underwater noise.

- For construction activities in the Tamar River visual monitoring will be implemented for marine mammals near the construction area to minimise any risk from underwater noise and vessel strike. A 2 km radius alert zone for whales will be implemented, with a 1 km radius safety zone, within which noise-generating activities will be ceased if a whale approaches. A reason for not halting construction activities for whales in the alert zone is that continuing construction noise may ensure whales move out of the area rather than encroaching the safety zone. If a whale approaches within 500 m of a construction vessel, the vessel will reduce speed or stop to avoid potential for collision.
- For construction activities in the Tamar River a 1 km radius alert zone for seals and dolphins will be implemented, with a 0.5 km radius safety zone, within which noise generating activities will be ceased if a seal or dolphin approaches.
- For construction activities at the ocean outfall site a visual monitoring will be implemented for marine mammals near the construction area to minimise any risk from underwater noise and vessel strike. A 1 km radius alert zone for whales will be implemented, with a 0.5 km radius safety zone, within which noise-generating activities will be ceased if a whale approaches. The 1 km radius alert zone is a reduced distance from the typical 3 km visual zone typically applied to marine seismic surveying, due to the more benign nature of the construction noise required for the project.

G.3 Operational activities

- No wood sourced from native forests will be used as feed stock for the pulp mill.
- Key constituent concentrations within the treated effluent will be measured and monitored in the effluent treatment plant prior to its disposal via the effluent pipeline and diffuser.
- Treated effluent dispersion monitoring, and monitoring of the long-term impacts of treated effluent on the marine environment will be undertaken.
- The effluent treatment plant will feature the following main operations:
 - pre-treatment, primary clarification and stabilisation of the raw effluent quality to remove coarse impurities, control effluent pH, remove suspended solids and level down the variability of raw effluent quality. These stages are necessary to safeguard the highest possible performance of the biological treatment process of the effluent;
 - an emergency basin to prevent the potential shock loads from jeopardizing biological effluent purification process in the secondary treatment stage;
 - a secondary treatment stage, where most of the dissolved organic matter and certain inorganic constituents in the raw effluent are removed by a sequence of an anoxic reactor (chlorate removal), selector basins and the final aeration basin (COD and residual toxicity removal); and
 - two secondary clarifiers, in which the final effluent is clarified before being discharged into a surge basin and pumped through the effluent outfall pipeline.
- The effluent treatment plant components are designed to cope with the daily variability of effluent loads, such that the final loads to Bass Strait are virtually constant and change only slowly as a function of longer term protection levels.
- Minimisation of light emissions, through directional lighting, use of light shields or baffles and utilisation of the lowest level of lighting acceptable.

Appendix A

Integrated EIMP progress update

		MODULE																
		A	B	C	C1	D	E	F	G	H	I	J	K	L	M	N	O	
Phase	EPBC 2007/3385 Schedule 2 Component	EIMP Overview	Vegetation clearing - mill site and wharf access	Mill site bulk earthworks	Mill construction	Wharf construction	Accommod- ation facility construction	Water supply pipeline construction	Shore crossing construction	Ocean outfall construction	Solid waste disposal facility construction	Local reservoir construction	Effluent pipeline construction	Pre- commission management	Monitoring program	Remedial and response strategies	Habitat offsets & reserves	
	1. Overview	a	A description of the proposal and associated infrastructure															
b		Identification of clear environmental objectives																
c		Identification of environmental indicators, and translation of objectives into agreed targets and performance measures																
d		Design and implementation of an appropriate monitoring program																
e		Identification of, and commitment to, agreed trigger or response levels for key indicators																
f		Identification of specific remedial management responses to be undertaken when trigger point levels are exceeded																
EPBC approval condition(s)		1,2,6,7,8,9,10, 11,12,13,20, 44,45,46,47,48	14,15,17, 18,20,23,25,26	14,17, 18,20,23,25,26	14,17, 20,23,25,26	14,27,28,29,30	14,20,23,25	14,19,20,21, 22,23,25	14,20,23,24, 25,27	14,20,26,27, 28,30,38,39	14,17, 20,23,25,26	14,17, 20,23,25,26	14,19,20,21, 22,23,24,25	3, 4, 9, 31, 32, 33, 34, 35, 37,38,39,41,42	3,4,31,32,33, 36,37,40,41, 42,43*	3,4,5,19,26,29, 30,31,32,33,39	15,16,17,18	

*For completeness Module M also reiterates monitoring described in other modules relevant to conditions 15, 16, 17, 18, 19, 20, 22, 25, 26, 27, 29, 30, 34, 35 and 38

Not applicable	Other modules	This module
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Appendix B

EIMP Schedule 2 components and the EIMP modules that address them

Phase		MODULE																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O		
EPBC 2007/3385 Schedule 2 Component		EIMP Overview	Vegetation clearing - mill site and wharf access	Bulk earthworks mill site	Wharf construction	Accommodatio n facility construction	Water supply pipeline construction	Dune crossing construction	Ocean outfall construction	Solid waste disposal construction	Local reservoir construction	Effluent pipeline construction	Pre- commissionin g management	Monitoring program	Remedial and response strategies	Habitat offsets & reserves		
Preconstruction	a	Management of impacts on the Wedge-tailed Eagle - Tasmanian																
	b	Management of risks to listed flora from plant pathogens																
	c	Management of risks and uncertainties associated with the non-detection of listed flora																
	d	Management of risks associated with the decline of difficult-to-detect listed flora																
	e	Management of risks associated with the decline of <i>Xanthorrhoea aff. bracteata</i>																
	f	Management of risks associated with the amphibian chytrid fungus <i>Batrachochytrium dendrobatidis</i>																
	g	Management of risks associated with trenching																
	h	Mitigation of impacts on the pipeline corridors																
	i	Establishment of baseline surveys for roadkill																
	j	Undertaking appropriate surveys and establishing mitigation measures for impacts on listed migratory birds																
	k	Undertaking appropriate examination of likely impacts of pile-driving noise associated with the wharf construction																
	l	Establishing baseline levels of vessel strike in the region																
	m	Monitoring the baseline levels of contaminants in listed species																
	n	Developing rehabilitation and offset plans for listed threatened species																
	o	Establishing measures for habitat protection																
EPBC approval condition(s)		1,2,6,7,8,9,10,11,12,13,20,44,45,46,47,48	14,15,17,18,20,23,25,26	14,17,18,20,23	14,20,27,28,29,30	14,20,23	14,19,20,21,22,23,25	14,20,23,24,25	14,20,27,28,30,38,39	14,20,23,25	14,20,23,25	14,19,20,21,22,23,24,25	3,4,9,31,33,34,35,36,38	3,4,15,32,37,40,41,42,43	3,4,5,31,39	16,17,18		

Not applicable

Previously submitted

This submission

Future submission (showing anticipated submission date)

		MODULE														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Phase	EPBC 2007/3385 Schedule 2 Component	EIMP Overview	Vegetation clearing - mill site and wharf access	Bulk earthworks mill site	Wharf construction	Accommodation facility construction	Water supply pipeline construction	Dune crossing construction	Ocean outfall construction	Solid waste disposal construction	Local reservoir construction	Effluent pipeline construction	Pre- commissioning management	Monitoring program	Remedial and response strategies	Habitat offsets & reserves
Construction	a															
	b															
	c															
	d															
	e															
	f															
	g															
Precommissioning	a															
	b															
	c															
	d															
	e															
	f															
	g															
EPBC approval condition(s)		1,2,6,7,8,9,10, 11,12,13,20, 44,45,46,47,48	14,15,17, 18,20,23,25,26	14,17,18,20,23	14,20, 27,28,29,30	14,20,23	14,19,20,21, 22,23,25	14,20,23,24,25	14,20,27,28, 30,38,39	14,20,23,25	14,20,23,25	14,19,20,21, 22,23,24,25	3,4,9,31,33,34,3 5,36,38	3,4,15,32,37, 40,41,42,43	3,4,5,31,39	16,17,18

Not applicable

Previously submitted

This submission

Future submission (showing anticipated submission date)

		MODULE														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Phase	EPBC 2007/3385 Schedule 2 Component	EIMP Overview	Vegetation clearing - mill site and wharf access	Bulk earthworks mill site	Wharf construction	Accommodati on facility construction	Water supply pipeline construction	Dune crossing construction	Ocean outfall construction	Solid waste disposal construction	Local reservoir construction	Effluent pipeline construction	Pre- commissionin g management	Monitoring program	Remedial and response strategies	Habitat offsets & reserves
Ongoing monitoring	a	Effluent monitoring														
	b	Continuous monitoring of the effluent plume and its dispersion														
	c	Sediment quality monitoring														
	d	Sentinel biota monitoring														
	e	Ecological surveys														
Remedial response	a	Remedial management responses to be undertaken when trigger levels are exceeded or maximum limits are reached														
EPBC approval condition(s)		1,2,6,7,8,9,10,11,12,13,20,44,45,46,47,48	14,15,17,18,20,23,25,26	14,17,18,20,23	14,20,27,28,29,30	14,20,23	14,19,20,21,22,23,25	14,20,23,24,25	14,20,27,28,30,38,39	14,20,23,25	14,20,23,25	14,19,20,21,22,23,24,25	3,4,9,31,33,34,35,36,38	3,4,15,32,37,40,41,42,43	3,4,5,31,39	16,17,18
		Not applicable	Previously submitted				This submission									Future submission (showing anticipated submission date)