Gunns Limited

Bell Bay Pulp Mill
Draft Integrated Impact Statement

VOLUME 1
Introduction and Overview
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1. Introduction

Gunns Limited (Gunns) proposes to develop a bleached Kraft pulp mill, and ancillary and off-site infrastructure (the ‘project’). The pulp mill is proposed to be established at the Bell Bay Major Industrial Zone, south of George Town in northern Tasmania.

Pulp is a processed fibre derived from wood that can be used for making paper and other products. Wood is provided in raw form as woodchip. The wood source for this project will be primarily plantation grown hardwoods with additional native forest hardwoods, and a small proportion of plantation softwood species. In order to produce pulp, woodchips undergo a series of processes including screening, cooking, bleaching and drying to separate the wood fibre from the water and natural glues (lignin). Kraft is German for ‘strong’, and refers to the process used to break down the lignin, and is desirable in that it gives the pulp greater strength.

For the purposes of this study, a pulp mill is a manufacturing facility where these processes occur. The pulp mill will be designed to achieve environmental and technological best practice.

In addition to the pulp mill, the project includes ancillary infrastructure for the supply of water and energy, and for the storage, transport and disposal of waste and primary and final materials.

Overall, the project consists of eight major infrastructure components:

- A bleached Kraft pulp mill at Bell Bay;
- A wharf facility at Bell Bay;
- A landfill east of to the pulp mill;
- A quarry adjacent to the pulp mill;
- A water reservoir adjacent to the pulp mill;
- A water supply pipeline from Trevallyn Dam, near Launceston, to the pulp mill;
- An effluent pipeline from the pulp mill to Four Mile Beach, including an ocean outfall to Bass Strait; and
- A workers accommodation facility at George Town, subject to need.

The Draft IIS has been structured to meet the requirements of the December 2005 RPDC Final Scope Guidelines for the Integrated Impact Statement (Scope Guidelines). As a result of the size of the project, the document has been broken into a number of volumes to facilitate review. The position of this volume in the Draft IIS is shown below.
The pulp mill will produce approximately 820,000 air dry tonnes (ADt) of pulp in the initial ‘ramp-up’ stages of production, and will be capable of producing up to 1,100,000 ADt. The proposed pulp will be Kraft (strong) grade for domestic and international markets.

The pulp mill will contribute to the sustainability of Tasmania’s forestry industry and the economy of Tasmania and (therefore Australia) by introducing a value adding process that will otherwise be undertaken overseas.

The construction and operation of the project requires environmental and planning approvals from the Australian and Tasmanian governments. This Draft Integrated Impact Statement (IIS) has been prepared to form part of the development application, assessment and approvals process for the project.

GHD Pty Ltd (GHD), an independent Australian consultancy company, has been commissioned by Gunns to undertake an assessment of the potential environmental, economic and social impacts of the project. The Draft IIS considers the potential positive and negative, direct and indirect, permanent and temporary impacts of the project and recommends management measures to minimise identified impacts.

Jaakko Pöyry is an independent consultancy company based primarily in Finland and specialising in the design of pulp mills. It was commissioned by Gunns to prepare the concept design and pre-engineering reports for the pulp mill, including wastewater treatment methods.

Gunns will be responsible for the construction, commissioning and operation of the project. Subject to approval of the project, construction is anticipated to commence in...
the first half of 2007. The duration of construction works for the entire scope of works is estimated to be approximately 26 months, with commissioning of the mill occurring in early 2009.

1.1 Purpose of the Draft IIS

1.1.1 Scope

The proposed bleached Kraft pulp mill and associated infrastructure is a Project of State Significance (POSS) under the Tasmanian State Policies and Projects Act 1993. This Draft IIS has been prepared to fulfil the assessment requirements for a POSS by detailing the:

- Design and construction of the project;
- Existing social, natural and economic environments at a local, regional, state and national level;
- Potential environmental impacts from the project;
- Potential economic impacts from the project;
- Potential social and community impacts from the pulp mill and other off-site and ancillary infrastructure; and
- Proposed management measures to minimise or prevent adverse environmental, economic, social and community impacts on the surrounding area.

The Draft IIS has been prepared in accordance with the Scope Guidelines. The Scope Guidelines were prepared by the RPDC in consultation with Tasmanian and Australian Government agencies and independent consultant Beca AMEC Pty Ltd. A copy of the Scope Guidelines is provided in Appendix 3, Volume 5.

Recommended environment emissions are detailed in the 2004 Environmental emission guideline limits for any new bleached eucalypt Kraft pulp mill in Tasmania (Emission Guidelines) developed by the Tasmanian Government and, to the extent they are relevant, are addressed in this Draft IIS (refer to Appendix 4, Volume 5).

The Scope Guidelines, and cross-references to the sections of the Draft IIS that address them, are provided in Appendix 1, Volume 5.

The Australian Government Minister for the Environment and Heritage has declared the project to be a controlled action under the Environment Protection and Biodiversity Conservation Act 1999 and has accredited the assessment process for projects of State significance carried out in accordance with the Tasmanian State Policies and Projects Act 1993.

Culturally sensitive information has not been disclosed in the Draft IIS as agreed with indigenous groups. Such information will be provided to RPDC to allow consideration during the assessment process.
1.1.2 Draft IIS Structure

The Draft IIS comprises the following components:

- A stand alone project information bulletin, providing a brief outline of the assessment and approval process, an explanation of the function of the Draft IIS and an explanation of the process for public participation;

- An executive summary, which provides a detailed overview of the project and its environmental, economic and social and community implications for distribution to communities and interest groups; and

- The main Draft IIS report and specialist studies, which address the Scope Guidelines;

The main report consists of four principal volumes, together with nine volumes of appendices. The content of each volume is provided below:

Volume 1: Introduction and Overview - Provides an introduction to: the project and the assessment process; the need for and context of the project; description of the existing regional environment; consultation undertaken as part of the Draft IIS; the site selection process; and a technical description of the project.

Volume 2: Bell Bay Study Area (Pulp Mill, Wharf, Landfill, Quarry and Water Reservoir) - Provides a description of: the existing environment in the immediate area; impact assessment methodology applied; and potential impacts and management measures for the pulp mill, wharf facility, landfill, quarry and water reservoir.

Volume 3: Water Supply Pipeline, Effluent Pipeline and Workers Accommodation Facility - Provides a description of: the existing environment in the immediate area; impact assessment methodology applied; and potential impacts and management measures for the water supply pipeline, effluent pipeline and workers accommodation facility.

Volume 4: Management Plans and Conclusions - Provides management plans for the environment, health and safety, monitoring and environmental management systems. The plans detail objectives, persons responsible, actions, monitoring requirements and corrective actions. Conclusions of the Draft IIS are also presented and commitments made by Gunns are outlined.

Volumes 5 to 18: Appendices – Provides specialist technical reports prepared as part of the Draft IIS process. Both Gunns and GHD engaged specialist consultants to undertake technical investigations which form part of the Draft IIS.

The content of reports contained in the appendices has been summarised in the main report of the Draft IIS in the appropriate sections.

1.1.3 Draft IIS Distribution

Copies of the Draft IIS Executive Summary and main report and appendices are available for public viewing at the locations listed in the Project Information Bulletin.
Gunns is able to provide copies of the Project Information Bulletin and Executive Summary at no cost. Electronic and hard copies of the complete Draft IIS can be purchased as described in the Project Information Bulletin.

1.2 Project Outline

1.2.1 Proponent Information

The proponent for this project is Gunns. Contact details for the project are:

Gunns Limited
ABN 29 009 478 148, ACN 009 478 148

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Company History and Current Operations

Gunns is a Tasmanian company established in 1875. The company is listed on the Australian stock exchange, with a market capitalisation in excess of $1.0 billion dollars (as at January 2006) and currently employs approximately 1,700 people across all sectors of its business in Australia and New Zealand. Gunns will be responsible for securing finance, and developing and operating the proposed bleached Kraft pulp mill.

Gunns is one of Australia’s oldest companies and has experienced continued growth. The company currently owns more than 190,000 ha of freehold land in Tasmania and manages more than 110,000 ha of plantations. It is Australia’s largest hardwood producer, operating five modern sawmills throughout Tasmania. These sawmills produce seasoned framing timbers, rough sawn kiln dried hardwood and hardwood products such as laminated beams, tongue and groove flooring, mosaic and block parquetry, mouldings and furniture components.

Gunns also operates Tasmania’s two veneer factories and a veneer factory in Christchurch, New Zealand. The veneer operations complement the existing timber operations and make the company the largest producer of sliced veneer in Australia and New Zealand.

Gunns operates four woodchip export ports in Tasmania, exporting up to 5 million tonnes of hardwood woodchips produced from sawmilling residues and integrated harvesting operations.

In addition to its timber operations, the company has continued to operate Gunns’ Mitre 10 hardware and building supplies, now significantly expanded and operating through
six major stores in northern Tasmania. These stores provide a complete range of building and handyman supplies, timber, homewares and electrical goods.

Gunns Plantations Limited, a wholly owned subsidiary of Gunns, offers investment in timber plantations to the public. In addition to plantations developed using funds raised from the public, Gunns establishes plantations in its own right (100% funded) and in joint ventures with several of its major Japanese customers.

Gunns exports extensively to overseas markets, selling a wide range of timber products and is recognised worldwide as an important participant in the timber products industry.

Tamar Ridge Wines became a wholly owned subsidiary of Gunns Limited in April 2003. Gunns intends to continue growing this business, and to provide prospective investors the opportunity to invest directly in the expansion of vineyards.
Corporate Structure

The Gunns corporate structure as it relates to the pulp mill project is detailed below.
Gunns’ Environmental Framework and Record

Environmental Policy

Gunns’ Environmental Policy (dated February 2005) is:

Gunns is committed to pursuing industry best practice in environmental performance. As an international resources-based company, we acknowledge that our shareholders, employees and the community at large expect responsible environmental practice by Gunns businesses.

Gunns embraces the principle of sustainable development, i.e. development which meets the needs of the present without compromising the ability of future generations to meet their own needs. We believe this principle is fundamental to Gunns continued success and growth.

Specifically Gunns is committed to:

• complying with environmental legislation, regulations, standards and codes of practice relevant to the particular business as the absolute minimum requirement in each of the communities in which we operate.
• open and transparent communication with principal stakeholders to ensure long term sustainability of Gunns in Tasmania.
• conducting our operations to minimise and, wherever practicable, eliminate negative environmental impacts.
• continual improvement of our environmental performance including regular review and the setting of rigorous environmental objectives and quantified targets (particularly with regard to the efficient use of energy and materials, the minimisation of waste and the prevention of pollution).
• conducting business with suppliers and contractors who also have a commitment to a responsible environmental policy.
• remediating our contaminated sites to standards internationally acceptable for the site purpose.

To support this commitment, Gunns will progressively implement and maintain environmental management systems for its businesses based on the international standard ISO 14001 (“Environmental management systems – specifications with guidance for use”) or its equivalent, and will also concurrently implement the Gunns Safety, Health and Environment (SHE) Best Practice Elements.

Environmental Management Systems and Australian Forestry Standard Accreditation form part of SHE Best Practice. Refer to Volume 4, section 2.1 for more details on Gunns’ SHE Best Practice.

Through communication and training, all employees and contractors will be encouraged and assisted to enhance Gunns environmental awareness and performance.
The environmental policy applies to all of Gunns’ operations. It has applied, and will continue to apply, to the project.

**Environmental Management**

To implement its environmental policy, Gunns has developed a number of Environmental Management Systems. The Environmental Management Systems have received ISO 14001 accreditation and cover Gunns’ forest, harvesting, transport, and shipping operations, and the operation of its woodchip mills.

The Environmental Management System for the project will be developed in accordance with ISO14001. Gunns aims to achieve ISO 14001 certification for this Environmental Management System during the first year of the pulp mill’s operation.

**Australian Forestry Standard Accreditation**

Gunns’ forest operations have been accredited under the Australian Forestry Standard (AS4708). To be accredited under the Australian Forestry Standard, Gunns has adopted forest management performance criteria and requirements that promote sustainable wood production in Australia’s forests.

The Australian Forestry Standard is internationally recognised under the Programme for the Endorsement of Forest Certification Schemes, resulting in Gunns being internationally recognised for its commitment to sustainable wood production (Gunns Limited, 2004).

**Recent Environmental Performance**

Since 1 July 2001, Gunns has not been prosecuted under the *Environmental Management and Pollution Act 1994* or any other environmental protection or nature conservation legislation.

However, since 2001, Gunns has received two infringement notices for breaching the noise emission aspects of its Environmental Protection Notice at its Lindsay Street mill. (pers comm R Fawkes July 2005). Significant engineering work has subsequently been undertaken at the mill to resolve noise issues.

Further, during 2002/03 Gunns was fined under the *Forest Practices Act 1985*:

- $50,000 for breaches relating to road works carried out on Maingons Road, Tasman Peninsula.
- $15,000 for breaches relating to inadequate road drainage and for operating too close to a small stream on private land at Middleton, south of Hobart.
- $5,000 for failing to mark a section of buffer along a boundary adjoining the Hellyer Gorge Reserve.

Recently, Gunns was a party to a Federal Court application for review of the Australian Minister for the Environment and Heritage’s decision that the project was a controlled...
action under the *Environment Protection and Biodiversity Conservation Act 1999*. This application was, however, withdrawn by the applicant, the Wilderness Society.

### 1.2.2 Objectives of the Project

The need for the project is discussed in Chapter 3 of this Volume. It describes the project in context of the international pulp markets, benefits, costs and balance of trade.

Gunns’ primary objective for the project is to develop and to operate a downstream process to maximise the value of a renewable resource to improve the commercial sustainability of the Tasmanian forestry industry. That is, the pulp mill will use woodchips presently available that will otherwise be exported. It will not result in any changes to forest access or intensification of forestry operations.

To realise this primary objective, secondary objectives have been established:

- to build a cost-effective, state-of-the-art single line pulp mill; and
- to provide a bleached Kraft pulp mill using the best available technology and best environment practice on the largest economic scale.

The rationale and the need for the project are:

- to continue to meet current and future demands of the national and international Kraft pulp market; and
- to provide infrastructure to contribute to future growth in the forestry industry.

### 1.2.3 Project History

In 2001, Gunns completed the acquisition of the former North Forest Products having already acquired Boral’s woodchipping business. This brought the three major woodchipping export businesses in Tasmania under the one ownership and thus created a world-class wood supply on which to establish a state-of-the-art pulp mill. On 25 June 2004, Gunns announced that it had commissioned the pulp mill feasibility study as part of its continuing effort to carry out value adding to raw materials in Tasmania.

On 28 October 2004, Gunns announced that the feasibility study confirmed the viability of the pulp mill and that an IIS will be undertaken. GHD commenced the IIS in January 2005 and Jaakko Pöyry carried out pre-engineering for the pulp mill from January to June 2005. Jaakko Pöyry then continued with preparatory engineering from August 2005. This phase of the project includes the main tender enquiries.

A referral under the EPBC Act was submitted to the Australian Department of Environment and Heritage in December 2004.

In late 2004 and early 2005, Gunns considered possible sites for the pulp mill. The options included Bell Bay and Hampshire. Site selection considered the potential infrastructure requirements, benefit cost ratio, and potential opportunities and
constraints. Details of the site selection assessment are provided in Section 10 of this volume. Based on this assessment, Gunns announced the pulp mill site location to be Bell Bay on 24 February 2005.

On 12 August 2005, a photomontage was released providing an indication/illustration of the likely appearance of the pulp mill in the event it is built.

On 16 August 2005, a revised referral under the EPBC Act was submitted. This provided an overview of the amended project scope. The project scope was amended to take into consideration additional infrastructure (including a new wharf facility), changes to the proposed water supply, and operational changes including the potential for use of softwood as well as hardwood. The need for these changes was identified as part of the pre-engineering and initial environmental investigations.

Numerous studies have been conducted with specific reference to the project, and are referenced throughout the Draft IIS. A number of these studies are included as appendices to this Draft IIS.

1.2.4 Principal Project Components

The principal project components include the construction and operation of:

- A bleached Kraft pulp mill on land adjacent to Gunns’ existing woodchip mill at the Bell Bay Major Industrial Zone south of George Town;
- A wharf facility on the Tamar River adjacent to the pulp mill site;
- A landfill, quarry and water reservoir east of the pulp mill site;
- A water supply pipeline from Trevallyn Dam, near Launceston, to the pulp mill;
- An effluent pipeline from the pulp mill to Four Mile Beach on the north coast of Tasmania; and
- A workers accommodation facility at George Town, subject to need.

A description of these components is provided below. The location of the major components is shown in Figure 1-1 and Figure 1-2. Photographs of the Bell Bay site are shown in Photographic sheets 1-1 to 1-5. A detailed description of the mill components are provided in Sections 6 and 7.

The pulp mill configuration and technology described in this section is based on a conceptual design and is subject to permits/consents and detailed design.

**Pulp Mill**

Gunns proposes to construct an elemental chlorine free (ECF) bleached hardwood and softwood Kraft pulp mill adjacent to existing woodchip mills at Bell Bay. The current chipping operations utilise a mixture of plantation and native forest hardwood timber and it is proposed that this supply, supplemented with additional hardwood and a small amount of plantation softwood, will be utilised in the pulp mill.
FIGURE 4.3
Bell Bay Pulp Mill

Integrated Impact Statement

Date: 16/06/06
Projection: Map Grid of Australia
Zone 55, GDA94

Source: Base data sourced from supplied by the LIST-
www.thelist.tas.gov.au, all other infrastructure supplied
by Gunns Pty Ltd
File: M:\41\14346\gis\map\final\vol_1\fig1_3_general_mill_layout.mxd
Figure 1-4

Computer generated image of the proposed mill looking from the South. The existing chip mill is shown to the right of frame. The salmon farm can be seen protruding into the Tamar River on left of frame. The Bell Bay Power Station can be seen just above the pulp mill wharf facility. Layout subject to detailed design.
Looking over the pulp mill site to Bell Bay. The Bell Bay Power Station can be seen centre back, with the Port of Launceston in the centre background. The transmission line easement can be clearly seen to the east of the pulp mill site.

Photosheet 1
Looking from above the site towards Rowella area.

Photosheet 2
Overview of Port of Launceston, George Town and Low Head

Photosheet 3
In the initial stages of operation, approximately 3.2 million tonnes of wood per year will be processed to produce an estimated 820,000 ADt of bleached hardwood Kraft pulp. The pulp will be sold to markets in Australia and overseas. Maximum production at the pulp mill will ultimately be up to 1.1 million ADt. The overall capacity of the pulp mill is based on utilisation of plantation raw material and at full engineering design, potentially in the latter part of the project life around 2025-2030.

The main components of the pulp mill are:

- wood yard and chip handling;
- fibrel ine (all departments for cooking, de-knotting, washing, oxygen de-lignification, screening, bleaching and drying of the pulp);
- chemical recovery department (including evaporation, recovery boiler, re-causticising, 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 (Figure 1-3).

The treatment plant is located at the northern end of the pulp mill site. 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 and a selector part (2-3 selectors in series).

Jaakko Pöyry has designed the pulp mill to meet environmental and technological best practices as outlined in the Tasmanian Government’s “Development of new environmental Emission Limit Guidelines for any new bleached eucalypt Kraft pulp mill in Tasmania” Volume 1 section 2.3. Environmental and technological best practice is addressed in Section 6.4 of this volume.

A computer-generated image of the pulp mill is shown in Figure 1-4.

**Wharf Facility**

After baling, pulp is loaded on trailers and is shuttled between the pulp mill and the port warehouse using trailers with fixed canopies to protect the pulp from rain and dirt. Two truck and trailer units will be used in continuous day round operation to transfer the produced pulp from the pulp mill to the wharf warehouse.

At the wharf warehouse, the trailers will be unloaded and pulp units piled into stacks. The total floor area of the pulp warehouse is designed to be 20,000 m². Under normal operating conditions, the warehouse could store approximately 50,000 t of pulp. An additional 20,000 t could be placed under cover using the warehouse aisles if required.

The dimensioning of the pulp warehouse is based on an assumption that a pulp ship will call at the port every 8 days and transport approximately 25,000 t of pulp on each
occasion. The size and stocking capability of the pulp warehouse will allow two vessels to arrive in immediate succession.

Pulp is primarily transported using purpose built Open Hatch Bulk Carriers (OHBC). These vessels have been specifically designed for handling unitised pulp. The vessels have box type cargo holds and typically two gantry cranes for cargo handling. A modern OHBC can carry up to 56,000 t of pulp. The typical cargo handling equipment of an OHBC consists of two 40 t gantries, although the latest and most modern vessels have two 68-ton gantry cranes. In addition, OHBC vessels carrying mainly pulp have been designed and dimensioned for container cargo.

A typical OHBC vessel is 200 m long and the cargo section of the vessel is approximately 160 m in length. The vessel is not moved during loading and as such, the tractor-trailer should have clear access under the two gantries and the loading wharf should be about 200 m to 230 m long. The width of the wharf should allow trailers to pass each other without going under the crane cantilevers. This results in a wharf width of about 20 m.

In addition the wharf will be used for importing salt and other commodities and equipment required for pulp mill construction and operation.

**Landfill, Quarry and Water Reservoir**

A landfill, quarry and water reservoir are proposed east of the East Tamar Highway. The three components are situated in close proximity and are in the general area of the pulp mill and wharf facility. The location of each facility is shown in Figure 1-5.

**Landfill**

The pulp mill is estimated to produce approximately 49,000 t of non-hazardous waste per year, comprising approximately 48,000 t of process waste and approximately 760 t of putrescible (domestic) waste (refer Table 1-1). A landfill is proposed to be constructed in the north-east corner of the site, east of the East Tamar Highway, to cater for the disposal of this waste (Figure 1-5). A new landfill facility is required as the closest existing municipal landfill at George Town is too small and facing closure. An existing municipal landfill at Launceston was considered, but rejected due to the prohibitive costs of transport and the significant burden the project will place on the Launceston landfill.

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 has nominated a landfill design life of 20 years, and a maximum (worst case) volume of solid wastes destined for landfill disposal of approximately 54,000 m³ per year. The landfill will receive waste from the pulp mill only, and will not accept waste from the public, other industry or municipalities.
For design purposes, it has been assumed that the landfill must be capable of accepting all solid wastes generated from the pulp mill. The assumed design capacity of the landfill is therefore 1.1 million cubic metres.

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.

While the concept design of the landfill is based on a 20-year life, there is sufficient additional capacity at the site for another 30 years of landfill space (giving a total available capacity of 50 years) even if reuse is not undertaken.

During the construction and operation of the pulp mill, a range of waste types will be generated. Waste types include:

**Table 1-1 Waste Types**

<table>
<thead>
<tr>
<th>Waste type</th>
<th>Waste classification*</th>
<th>Approximate quantity per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid waste – domestic type</td>
<td>Putrescible</td>
<td>760 t/y (5,040 m$^3$/y)</td>
</tr>
<tr>
<td>Solid waste – boiler ash</td>
<td>Controlled waste</td>
<td>8,500 t/y (11,000 m$^3$/y)</td>
</tr>
<tr>
<td>Solid waste - green liquor process dregs, slaker sands and lime kiln</td>
<td>Controlled waste</td>
<td>40,000 t/y (40,000 m$^3$/y)</td>
</tr>
<tr>
<td>Electrostatic precipitator dust</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>49,000 t/year (56,000 m$^3$/year),</td>
</tr>
</tbody>
</table>


In addition, approximately 220 t of hazardous waste will be generated annually. This will consist of used lubrication and hydraulic oils, used electrical equipment and various maintenance chemicals and materials. No hazardous waste will be disposed of to the pulp mill landfill. All hazardous waste will be transported to an established landfill approved for that purpose. Depending on the waste, the likely landfill for hazardous waste will be Dulverton or Port Latta.

Full leachate control, collection and monitoring systems for the landfill will be incorporated in the design. A detailed description of the landfill is provided in Volume 2, Section 12.2.

**Quarry**

Gunns propose to establish a quarry adjacent to Williams Creek to provide construction material and road bases, road sheeting and crushed stone for the development of the pulp mill site.
The Williams Creek Quarry will be located north of the East Tamar Highway adjacent to the proposed landfill and water reservoir components of the project (Figure 1-5). The total reserve is estimated to be 180,000 m$^3$ of dolerite.

The proposed rock extraction method is drill and blast. Production is estimated to be 100,000 cubic metres in the first year and approximately 20,000 cubic metres for the subsequent four years.

Rehabilitation of the quarry site will be undertaken in accordance with the Quarry Code of Practice (DPIW, June 1999).
Looking from the north-west at the proposed pulp mill site. Existing Chip mill far right

The existing Gunns Tamar woodchip mills.

Photosheet 1-4
Bell Bay Power Station with Port of Launceston in the background

The location for the proposed landfill, quarry and water supply reservoir

Photosheet 1-5
**Water Reservoir**

A water reservoir is proposed to store up to seven days supply of water which is approximately 670 ML storage. The water reservoir will comprise an earth embankment constructed across a valley in the Tippogoree Hills, immediately to the east of the pulp mill site and will involve the following:

**Table 1-2 Summary of the Pulp Mill Site Water Reservoir**

<table>
<thead>
<tr>
<th>Item</th>
<th>Design Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embankment Level</td>
<td>To an elevation (reduced level (RL)) of 92.0 m maximum (to avoid overtopping to the east of the saddle)</td>
</tr>
<tr>
<td>Dam Top Water Level</td>
<td>RL 90 m – providing 2.0 m freeboard</td>
</tr>
<tr>
<td>Lowest Operating Levels</td>
<td>RL 85 m</td>
</tr>
<tr>
<td>Embankment Crest Length</td>
<td>460 m East and 370 m West</td>
</tr>
<tr>
<td>Embankment Crest Width</td>
<td>5.0 m</td>
</tr>
<tr>
<td>Maximum Wall Height</td>
<td>17.0 m (toe level at RL 75 m)</td>
</tr>
<tr>
<td>Upstream Wall Batter</td>
<td>1 vertical to 3 horizontal</td>
</tr>
<tr>
<td>Downstream Wall Batter</td>
<td>1 vertical to 2.5 horizontal</td>
</tr>
<tr>
<td>Construction Method</td>
<td>Earth/rockfill embankment with 5.0 m wide central clay core</td>
</tr>
<tr>
<td>Storage Capacity</td>
<td>Up to 670 ML</td>
</tr>
<tr>
<td>Embankment Volume</td>
<td>200,000 m³</td>
</tr>
<tr>
<td>Spillway Invert Level</td>
<td>RL 90 m</td>
</tr>
<tr>
<td>Spillway Width</td>
<td>5 m</td>
</tr>
<tr>
<td>Design Flow</td>
<td>6.325 m³/s (0.8 m head)</td>
</tr>
</tbody>
</table>

Source: GHD, 2005e

A detailed geotechnical investigation of the area will be undertaken to assist in the detailed design of the dam, in particular to identify the sources of clay and rock material.

**Water Supply Pipeline from Trevallyn Dam**

The required raw water supply required for the pulp mill when operating at its full capacity of 1,100,000 ADt/yr is approximately 26 GL/yr. This water supply is not available using existing infrastructure and services.

The pulp mill water supply scheme from Lake Trevallyn will comprise the following key components:
A raw water pump station located between the eastern abutment of the dam and Hydro Tasmania's intake tunnel;

A pipeline generally following the Hydro power station intake tunnel route to the edge of the Tamar River;

A 3 ML balance/control tank at the top of the hills near the Reatta Water Treatment Plant;

A pipeline across the Tamar River to the East Tamar Highway;

A pipeline in the vicinity of the East Tamar Highway and Esk Water pipeline to the pulp mill site; and

A storage dam above the pulp mill site of up to 670 ML, including pipe connection.

The proposed water supply pipeline alignment is illustrated in Figure 1-1.

The pump station and pipeline will be designed to accommodate future industrial growth in the area or along the pipe corridor with staging incorporated where practical. The pumps will be designed for a design flow of 26 GL/yr with provision for expansion by adding additional pumps. The pipeline will be sized for a nominal flow of 40 GL/yr.

Potable water in the pulp mill offices and amenities buildings will be sourced from the existing Esk Water potable water supply.

There are two significant vertical features of the proposed pipe corridor – the high point adjacent to Reatta Point WTP (RL 210 m approx) and the high point approximately 500 m north of the Magazine Road Junction (RL 155 m approx). These determine the hydraulic grade line of the pumping system for most design scenarios for realistic pipe sizes. Photographs of Trevallyn Dam are shown in Photographic Sheet 1-6.

A detailed assessment of the water supply scheme is provided in Volume 3 of the Draft IIS.

Effluent Pipeline to Four Mile Beach and Ocean Outfall

An effluent pipeline is required to allow the safe disposal of treated liquid effluent produced during the pulping process including effluent from biologically treated sanitary sewage and landfill leachate.

Gunns proposes to construct and operate an underground effluent pipeline from the effluent treatment plant at the pulp mill to an ocean outfall in Bass Strait.

The effluent pipeline will be approximately 22 kilometres long, 904 mm in diameter and will extend from the pulp mill effluent treatment plant to an outfall, approximately 3 km offshore of Four Mile Beach, on the northern coast of Tasmania.

It is proposed that the effluent pipeline primarily follow the route of existing infrastructure including the Alinta Gas Pipeline, East Tamar Highway, railway line, electricity transmission line and road corridors. The pipeline will also traverse private land for short distances.
The offshore pipeline will extend approximately 3 kilometres offshore into Bass Strait to a depth of approximately 25 m at the discharge point. A multi-port diffuser system will be provided to disperse effluent effectively in the water and allow it to mix and dilute (Jaakko Pöyry, 2005). Subject to detailed design, the diffuser will consist of a 200m section of pipes with ports spaced at 10 m intervals, angled at 75 degrees (vertical angle) and 90 (horizontal angle) either side of the vertical. Port diameter will be 150mm. To reduce the risk of snagging from fishing nets or anchors, standpipes will not be used.

The offshore component of the pipeline will be constructed using an open cut trenching method, followed by towing out prefabricated concrete coated steel pipeline string sections. Photographs of the effluent pipeline easement and Four Mile Beach are shown in Photographic Sheet 1-7 and Photographic Sheet 1-8. A detailed assessment of the effluent pipeline component is provided in Volume 3 of the Draft IIS.

Workers Accommodation Facility

Jaakko Pöyry estimates that during the peak period of construction, approximately 2,900 workers will be employed. This number will fluctuate depending on the construction activities occurring throughout the construction phase. Previous estimates of 4,000 have been superseded by more recent reports.

To assist in accommodating construction workers, Gunns proposes, subject to need, to establish a workers accommodation facility for up to 800 personnel at George Town.

The accommodation facility is proposed to be established at the southern approaches to the town on the East Tamar Highway (Figure 1-2).

The 800 residents will be housed in clustered layouts with ensuite accommodation, complete with site-contained services and amenities and emergency and most operational services. Details of the proposed accommodation facility are provided in Volume 3 of the Draft IIS.

The accommodation facility will be dismantled once the pulp mill has been constructed.

1.2.5 Other Components

Woodchip Mill Upgrade

Due to the natural increase in the maturation of plantations within north-eastern Tasmania and market quality requirements for both the pulp mill and potential woodchip export, an increased component of the available statewide resource may be available for chipping at Tamar. The ultimate chipping capacity of the Gunns’ Tamar woodchip mills, including a new chipper, will be 5 million tonnes a year. Operational hours will extend to 24 hours, seven days a week.

As a result, the chipping capacity of the Tamar woodchip mills needs to increase. Further, the types of chippers need to be considered in light of the increase plantation
source. Other plant will also need to be modified to enable integration of the chip and pulp mill operations. The proposed changes to the existing woodchip mill infrastructure are shown in Figure 1-6 and discussed in greater detail in Section 6.5. Changes include:

- A new chipper;
- A new woodchip stockpile;
- A new reclaimer;
- A new refuelling station;
- Relocated maintenance workshop;
- A new chip truck unloading station;
- Realignment of the existing rail spur;
- North mill refuse conveyor relocation;
- Installation of screenhouse bypasses;
- Construction of the pulp mill main chip conveyors; and
- A new air compressor.
Trevallyn Dam

The Hydro Tasmania Trevallyn Tunnel inlet opposite the dam wall

Photosheet 1-6
Port of Launceston and existing major industries at Bell Bay

A section of the effluent pipeline corridor along Aerodrome Road showing typical land uses in this area
Photosheet 1-7
Landward side of Five Mile Bluff. Earthworks were from the Basslink project.

Five Mile Bluff at the centre of photo with the smaller Four Mile Bluff visible towards right of frame. The proposed shore crossing is located closer to Four Mile Bluff to minimise vegetation impacts.

Photosheet 1-8
Car Park

During the construction phase, a significant car parking area will be required for shuttle buses and private vehicles to cater for worker parking. A car and bus parking area will be constructed within the already cleared Transend transmission line easement to the east of the pulp mill site.

An area of 2.7 ha located on the top of a ridgeline has been selected and will be graded and treated with a trafficable gravel surface. Access will be via the main pulp mill entrance. The car park area will be rehabilitated once construction is completed.

Precast Area

An area east of the effluent treatment plant will be constructed for use as a prefabrication and batching area (Figure 1-5). A level area of approximately 6 ha will be constructed using soil and weathered rocks removed from the pulp mill footprint during initial earthworks.

This area will be used for a range of activities to support construction and operations, including gravel and aggregate stockpiling, equipment laydown, manufacture of precast concrete elements, rock crushing for aggregate, material storage for the production of concrete, one or more concrete batching plants, a small dam for rock crushing water clarification (water to be sourced from the Esk Water pipeline) and the storage of mobile plant.

The area will remain after completion of construction activities and will be utilised for plant storage, storage of process input materials and intermittent product storage. There will be no permanent plant located in this area.

Laydown areas

Three laydown areas will be constructed (Figure 1-5).

A laydown area of approximately 1.8 ha will be constructed west of the effluent treatment plant.

A second laydown area will be located west of the white liquor plant and will be approximately 2.4 ha.

The third, south of the recovery boiler, will be approximately 1.4 ha.

Construction Access Roads

A temporary access road may be constructed linking the precast area to the East Tamar Highway to provide access to the site for any plant transported by road from the Bell Bay Port that cannot fit under the railway bridges over the Highway. The access road would be closed after construction has been completed. If the road is to be constructed, a permit will be required from DIER while the traffic on the Highway is
temporarily halted. There would be a limited number of trucks with high loads that use this entrance.

A second, temporary access point at existing Comalco Gate 26 on the East Tamar Highway will also be constructed. This access point will be required for initial site preparation, for a period of approximately 4 months, while permanent access to the site is established.
1.2.6 Development Timeframe

Design and Operation Life

The operational life of a pulp mill or a pulp mill project is in part determined by the extent of maintenance and retrofits undertaken after operations commence. There are two pulp mills in Finland which commenced operations in the late 19th and early 20th centuries, namely the:

- UPM-Kymmene Kymi mill, which was a sulphite mill from 1886 to 1977 and from 1964 has operated as a sulphate pulp mill; and the
- UPM-Kymmene Tervasaari mill, which was a sulphite mill in the first phase.

Such pulp and paper mills have been rebuilt and retrofitted or expanded a number of times during that period.

As a general principle, with proper maintenance and retrofits, a reasonable lifetime for any pulp mill project is 30 years. Beyond 30 years, it is difficult to assess changes in technology, economic aspects or other factors which will affect the viability of an operation. During this 30-year project lifetime, there will typically be a number of minor retrofits implemented because of technical developments, corrosion and wear. With proper retrofits and regular maintenance, the pulp mill will maintain operation at design capacity, or in most cases above design capacity but within the operation permits allocated, for at least the 30-year period.

For the purposes of the Draft IIS, the infrastructure design life is therefore 30 years. However, the infrastructure and operational life is generally expected to last beyond the design life. The pulp mill and wharf facility has been designed for at least a 30 year life. The economics of the project have, however, been modelled on the basis of an inherently conservative 20 years of operation.

Gunns nominated a landfill design life of 20 years and a maximum volume of solid wastes destined for landfill disposal of 56,000m³ per year (Pitt and Sherry, 2006a) if no beneficial reuse occurred. There is however sufficient capacity within the designated landfill site to store 50 years waste generation without reuse. The concept design for the landfill is for 20 years and the need for additional landfill life will depend on the amount of waste that can be beneficially reused. This will be monitored during operations, and any necessary extension beyond 20 years will be designed if and as necessary, well in advance of it being required. The landfill design is based on progressive construction of cells only as they are required, meaning disturbance will be kept to the minimum if necessary.

The quarry has the capacity to provide in the order of 180,000m³ of dolerite. This is currently proposed to be extracted over a five-year period if required for the establishment of the project. Consequently, a rock supply is not required for the nominated 30-year design life. Following construction, the quarry will be decommissioned and rehabilitated.
The water reservoir has been designed for an operational life greater than 50 years.

The water supply pipeline components have a design life of:

- Pumps: 20 years;
- Electrical and control: 10 to 15 years;
- Concrete works: 50 years; and
- Pipeline: at least 50 years.

Gunns will replace pumps and electrical and control equipment to meet the pulp mill operational life of 30 years.

The effluent pipeline has a design life of 50 years.

**Construction Timeframe**

Pending approval of the project, Gunns plans to commence earthworks in the first half of 2007. The duration of construction works for the entire scope of works is estimated to be 26 months. Commissioning of the pulp mill will then occur in early 2009.

The proposed timetable from construction to the start-up phase is summarised in Table 1-3. Annexure XV of Appendix 7, Volume 6 provides a list of primary tasks and an estimated time schedule.

<table>
<thead>
<tr>
<th>Gunns’ Gunns Board investment decision</th>
<th>Within 1 month of irrevocable approval of the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start of earthworks</td>
<td>Subsequent to Gunns’ Gunns Board approval.</td>
</tr>
<tr>
<td>Start constructing the pulp mill/infrastructure</td>
<td>Within 6 to 8 months of approval.</td>
</tr>
<tr>
<td>Start-up</td>
<td>Following the 26-month construction period.</td>
</tr>
<tr>
<td>Commissioning</td>
<td>An 18 month period following completion of start-up</td>
</tr>
</tbody>
</table>

**1.2.7 Total Investment Costs**

It is anticipated that the total direct investment costs will be up to A$1.5 billion (2005 dollars) which will include infrastructure, such as roads and rail connections, wharf, effluent pipeline, electricity transmission and water supply. This cost is also inclusive of land acquisition requirements (Allens, 2006). Other more indirect impacts have not been specifically costed. A breakdown of investments costs is provided in Volume 2, Chapter 6.

Gunns will arrange finance for the project.
1.2.8 Likely Markets for Bleached Kraft Pulp

Bleached Kraft pulp is a well-established commodity product traded on world markets, and comprises 70% of total pulp produced worldwide (Gunns Ltd cited in RPDC, 2005). There is a significant demand and market growth for this grade of pulp, which is used mainly for making printing and writing grades of paper, such as photocopy paper.

In 2003, the market consumption of bleached hardwood Kraft pulp (BHKP) was an estimated 19.2 million tonnes (Jaakko Pöyry company research). The total consumption for the Asia Pacific countries is in the order of 7.1 million tonnes (Figure 1-7).

(source: Jaakko Pöyry)

![Figure 1-7 Market Consumption of BHKP by Region and Asia Pacific Country](image)

The majority of the pulp to be produced by Gunns will be exported. Export sales will be mainly into China, Japan and South Korea. Australia currently exports no pulp.

Ten percent of the pulp is earmarked for sale within Australia, with potential to increase sales of pulp and paper in Australia (see Section 1.2.10).

1.2.9 Pulpwood Supply

A secure and competitive wood supply is essential for the viability of the pulp mill project. The pulp mill is anticipated to process approximately 3.2 to 4.0 million green metric tonnes (GMT) of pulpwood per year. Gunns’ woodchip exports over the past five years have ranged up to 5 million GMT per annum.

The pulp mill will use woodchips presently available that would otherwise be exported. It will not result in any changes to forest access or intensification of forestry operations.

A mixture of wood from native forests, softwood and hardwood plantations will be used. No old growth pulpwood, as defined by the Tasmania Regional Forest
Agreement (RFA), will be used in the mill. It is likely that wood will be sourced from Forestry Tasmania, private forest owners and Gunns’ owned or managed land. Forestry Tasmania is a Government Business Enterprise wholly owned by the Tasmanian Government. Most of the logs will be processed into woodchips at Gunns’ existing Tamar woodchip export facility.

The availability of timber sourced from plantations is forecast to increase over time as the existing plantation estate matures. The amount of plantation forest resource available to Gunns is expected to increase from current levels of approximately 1 million GMt to at least 4 million GMt over the life of the project. Because of this increase in timber availability, the total amount of wood (both native forest and plantation) processed for woodchips is expected to increase regardless of the development of the pulp mill project. The Tamar woodchip facility will therefore need to be upgraded to accommodate the volume of log processing.

The wood supply for the pulp mill will be secured from forest managed in accordance with the RFA (for so long as that Agreement or any reviewed, extended or replacement Agreement or other instrument remains in force) and the *Forestry Practices Act 1985* (or any amending or replacement Act that regulates the forest industry in Tasmania).

More detailed information on the pulpwood supply is discussed in Section 6.2.

1.2.10 Potential Future Developments

While this section identifies the possibility of future developments that may be stimulated by this pulp mill, the Draft IIS considers only the current aspects of the pulp mill and infrastructure as described in Section 1.1.1.

Australia currently imports 900,000 tonnes per annum of printing and writing paper grades. The development of the pulp mill will create the potential to expand the production of printing and writing paper in Australia. World-class paper machines for either uncoated woodfree paper or coated woodfree paper are now typically being built with a capacity of approximately 400,000 tonne of paper per year, of which hardwood pulp can be used for 100% of the pulp supply. As some clay and fillers will be added in the paper making process, the estimated pulp consumption for 400,000 tonne per year of paper will be about 80 to 85% of that production (320,000 – 340,000 t), the rest being fillers and additives. Considering these pulp requirements, the Bell Bay pulp mill could potentially provide pulp for two paper machines.

Although the pulping and bleaching technologies proposed for Gunns are the best available technologies (BAT) today, there is no doubt that future technological developments can and will occur. Such developments on a major industrial scale can however take many years to be established from the research/pilot plant level until they can be implemented on a fully operational scale. An operating pulp mill can install these developments if the investment cost is not prohibitive. The plant and equipment layout proposed for Gunns is sufficient to accommodate additional equipment in the
future. Gunns has committed to adopting new BAT if it is economic to do so, and the plant proposed as part of this project will be capable of adaptation in the future.

1.3 Draft IIS Study Team Members and Their Roles

Australian multidisciplinary consultant GHD was engaged to prepare this Draft IIS and engineering works associated with the feasibility of the water supply infrastructure.

Gunns appointed Jaakko Pöyry Oy, a Finnish specialist pulp mill design consultancy, to undertake the majority of pre-engineering design and construction engineering aspects for the Pulp Mill.

Pitt and Sherry Pty Ltd were engaged by Gunns to prepare a concept design for a solid waste landfill, concept design for the workers accommodation facility and geomorphological assessment for the shoreline crossing.

Maunsell Australia Pty Ltd was engaged by Gunns to develop the design concept for the proposed wharf facility.

Atteris Pty Ltd was engaged by Gunns to develop the ocean outfall conceptual engineering design.

Hargrave Pipeline Group was engaged by Gunns for route selection and initial engineering for the effluent pipeline.

Both Gunns and GHD engaged specific consultants to undertake specialist investigations which form part of the Draft IIS. The following companies and key individuals contributed to the preparation of the Draft IIS.

1.3.1 Proponent

*Gunns*

John Gay    Executive Chairman
Les Baker    Project General Manager
Sven Lundgren   Engineering and Construction Manager
Greg Stanford   Infrastructure Manager
Richard Fawkes   Environmental Manager
Robin Coffey   Marketing Manager
Suzette Weeding   Forest Conservation Planner
Calton Frame   Resource Manager

In addition to those listed above, numerous Gunns’ staff assisted on various aspects of the project.
### 1.3.2 Consultants to Gunns Limited

<table>
<thead>
<tr>
<th>Company</th>
<th>Personnel</th>
<th>Title / Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHD Pty Ltd</td>
<td>David Kinniburgh</td>
<td>State Manager, Tasmania</td>
</tr>
<tr>
<td></td>
<td>Bryce Skarratt</td>
<td>Principal Environmental Scientist</td>
</tr>
<tr>
<td></td>
<td>Lukas McVey</td>
<td>Senior Environmental Scientist</td>
</tr>
<tr>
<td></td>
<td>Robert Casimaty</td>
<td>Senior Civil Engineer</td>
</tr>
<tr>
<td></td>
<td>Shane Eberhardt</td>
<td>Senior Environmental Engineer</td>
</tr>
<tr>
<td></td>
<td>Andrew Lewis</td>
<td>Principal Environmental Engineer</td>
</tr>
<tr>
<td></td>
<td>Timothy Pollock</td>
<td>Principal Environmental Engineer</td>
</tr>
<tr>
<td></td>
<td>Greg Collins</td>
<td>Principal Environmental Scientist (Noise)</td>
</tr>
<tr>
<td></td>
<td>Timothy Wills</td>
<td>Senior Botanist</td>
</tr>
<tr>
<td></td>
<td>John Davies</td>
<td>Senior Botanist</td>
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<tr>
<td></td>
<td>Natasha Witting</td>
<td>Senior Ecologist</td>
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<td>Angus Fraser</td>
<td>Aquatic Ecologist</td>
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<td></td>
<td>Kylie Fitzpatrick</td>
<td>Environmental Scientist</td>
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<tr>
<td></td>
<td>Amy Hubbard</td>
<td>Social Scientist</td>
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<tr>
<td></td>
<td>Sally Chudleigh</td>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td></td>
<td>Carolyn Pappin</td>
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<tr>
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<td>Chris Griffon</td>
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<td>Ross Fryar</td>
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<td>Ivan Botev</td>
<td>Senior Hydrodynamic Modeller</td>
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<tr>
<td>Aquenal</td>
<td>Derek Shields</td>
<td>Director (Aquatic Sciences)</td>
</tr>
<tr>
<td>Jaakko Pöyry</td>
<td>Stefan Antell</td>
<td>Vice President</td>
</tr>
<tr>
<td></td>
<td>Tuomo Niemi</td>
<td>Vice President Pulp Technology Division</td>
</tr>
<tr>
<td></td>
<td>Kari Tuominen</td>
<td>Vice President Pulp Technology Division</td>
</tr>
<tr>
<td></td>
<td>Aimo Mustamäki</td>
<td>Manager Mechanical Engineering Pulp Technology Section</td>
</tr>
<tr>
<td></td>
<td>Anders Eriksson</td>
<td>Project Manager</td>
</tr>
<tr>
<td></td>
<td>Esa Vakkilainen</td>
<td>Project Manager Recovery, Environment, Energy</td>
</tr>
<tr>
<td></td>
<td>Hannu Jäppinen</td>
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</tr>
<tr>
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<td>Peter Ryder</td>
<td>Senior Consultant</td>
</tr>
<tr>
<td></td>
<td>Gunnar Von Schantz</td>
<td>Civil Engineer (Coordinator)</td>
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<td>Pitt and Sherry</td>
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<td>Atteris</td>
<td>Eric Jas</td>
<td>Effluent Pipeline Ocean Outfall Investigation</td>
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<td>David Allan</td>
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<td>Charles Black</td>
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<td>Orica Quarry Services</td>
<td>Angelo Labriola</td>
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<td>Hargrave Pipeline Group</td>
<td>Andrew Hargrave</td>
<td>Gas and on shore effluent pipeline studies</td>
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<td>Ecotox</td>
<td>Rick Krasso</td>
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<tr>
<td>Australian Laboratory Services</td>
<td>Ian Wallace</td>
<td>Chemical Analysis of effluent</td>
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<tr>
<td>BFP (formerly Barrett, Fuller and Partners)</td>
<td>Mike Maundrill</td>
<td>Pulp Mill site geotechnical investigations</td>
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<tr>
<td>Archaeological Services Tasmania</td>
<td>Parry Kostoglou</td>
<td>Historic Cultural Heritage Survey</td>
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<tr>
<td>Palawa Heritage Services – Aboriginal Heritage</td>
<td>Vernon Graham</td>
<td>Initial Aboriginal Heritage Survey</td>
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<td>Maunsell</td>
<td>Christian Alfred</td>
<td>Wharf Concept Design Study</td>
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<tr>
<td>Toxikos</td>
<td>Roger Drew</td>
<td>Health Risk Assessment</td>
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<tr>
<td>The Allens Consulting Group</td>
<td></td>
<td>Economic Assessment</td>
</tr>
</tbody>
</table>

In addition to those listed above, numerous GHD staff assisted on various aspects of the project.
1.4 Guideline Requirements not Addressed in the Draft IIS

Five requirements outlined in the Scope Guidelines have not been fully addressed in the Draft IIS. These aspects of the Scope Guidelines have not been fully addressed for a variety of reasons including:

- they relate to technologies or infrastructure not proposed as part of the project;
- the environmental investigations demonstrated that harm will be avoided and full analysis is not warranted;
- more detailed analysis was requested by government departments or is warranted in light of the environmental investigations that has been undertaken as part of this Draft IIS;
- they have been summarised in the Draft IIS with full analysis to follow in the next phase of the environmental assessment process.

In the case of the air quality assessment, Gunns considers that its assessment does conform with the Scope Guidelines. However, an explanation of the meteorological and air quality modelling and the rationale for installing the Rowella air quality monitoring station is nevertheless warranted and considered at Section 1.4.1 below.

Aspects of the Scope Guidelines which have not been fully addressed are detailed in the following section together with a justification as to their exclusion.

1.4.1 12 Months Air Quality Monitoring Data

The Scope Guidelines require that:

> Air quality modelling should be conducted by a consultant with wide experience in the use of prognostic models. The modelling should be based on meteorological data collected over a twelve month period as required by the Tasmanian Government 2004, Environmental emission limit guidelines for any new bleached eucalypt kraft pulp mill in Tasmania.

A summary of 12 months’ air quality data collected from the Rowella air quality monitoring station is provided in Section 2.5, Volume 2 of the Draft IIS. However, this data set was unavailable and therefore not utilised in the development of the meteorological and air quality modelling presented in that section of the Draft IIS. Instead, 12 months’ air quality data provided by Comalco was used in developing the model.

Gunns established an air quality monitoring station at Rowella in July 2005. To have used 12 months’ air quality data from Rowella in establishing and verifying the meteorological and air quality modelling would have resulted in a significant delay in preparing the Draft IIS, as modelling could not be commenced until June 2006. To address this issue, Gunns commissioned an independent air quality assessment of the modelling methodology and calibration against two months’ data from Rowella, in order to demonstrate that the model based on the Comalco data adequately represents the
meteorological conditions and air quality of the area. This justification is provided in Appendix 19, Volume 9.

The air quality modelling will be verified against 12 months’ data collected from the Rowella air quality monitoring station and presented to RPDC prior to, or as part of, the Panel Hearings.

1.4.2 Environmental Flows in Tamar River

The Scope Guidelines require the following to be addressed in relation to supply of water for the pulp mill:

The impact of the additional water abstraction from all direct and indirect sources on other users (existing industrial users, recreational fishing, recreational water uses, commercial fishing, water dependent species and ecosystems, habitat for listed EPBC Act species, irrigation, public drinking water, private supplies etc) should be reviewed. The proponent must consult with the relevant State and Australian Government authorities as necessary to identify the water regime considered necessary to protect water dependant ecosystems (including estuaries and riparian vegetation) downstream from the point of abstraction, and demonstrate how such flows will be maintained.

Any review of impacts on water dependant ecosystems associated with the supply of water to the mill should consider the ecological and conservation values associated with those ecosystems. Ecosystem values in the CFEVP (Conservation of Freshwater Ecosystems Values Project) should be used as an initial guide for the identification of relevant water dependant ecosystems with high management priority.

Any investigation into the water regime required to protect these ecosystems should consider these values and management priorities.

Gunns will utilise water sourced from Hydro Tasmania’s water allocation from Lake Trevallyn. Based on assessment of the proposed water extraction, flows down the Cataract Gorge will be reduced by less than 1%. The designated environmental flows currently in place for the Gorge will be retained. Total reductions in flows to the Tamar River will be approximately 1%.

The reductions in flow are considered by GHD to be minor and would not influence the aquatic ecology in the Gorge or Tamar Rivers. Both systems have adapted to a modified and regulated hydrological regime and are considered unlikely to be influenced by the above changes. As a consequence, it was not considered necessary to identify the water regime necessary to protect water dependant ecosystems as outlined in the Scope Guidelines.
1.4.3 Site Selection/options assessment

The Scope Guidelines require:

5.2 Site selection methodology

Describe the process, procedures and site selection methodology used to determine the mill site. This must include discussion of the following:

5.2.1 Environmental site selection criteria, including but not limited to:

1. the site suitability criteria listed in the Tasmanian Government 2004, Environmental emission limit guidelines for any new bleached eucalypt kraft pulp mill in Tasmania;
2. public health and community safety (risk) criteria;
3. proximity to land, water and marine uses which might be incompatible with the mill and its associated infrastructure;
4. proximity to natural areas of conservation - significance covering both terrestrial and marine;
5. proximity to areas, including marine, of cultural, historic significance or Aboriginal heritage;
6. proximity to listed threatened species and ecological communities under the Tasmanian Threatened Species Protection Act 1995;
7. proximity to listed threatened species and ecological communities under the relevant Schedules of the EPBC Act, including the Spotted-tailed Quoll (Dasyurus maculatus maculatus), Eastern Barred Bandicoot (Perameles gunnii gunnii), Tailed Spider-Orchid (Caladenia caudata), the Tasmanian subspecies of Wedge-tailed Eagle (Aquila audax fleayi), Swift Parrot (Lathamus discolor), South Esk Heath (Epacris exserta), Shiny Grass Tree (Xanthorrhoea bracteata), Tasmanian Giant Freshwater Lobster (Astacopsis gouldii), Australian Grayling (Prototroctes maraena), Green and Gold Frog (Litoria raniformis) and listed marine species;

Note: Reference to particular listed species does not exclude additional species. Any listed species that may be impacted by the proposal must be considered.

8. fatal flaws, compliance thresholds, and severity of impact;
9. transport and route selection;
10. site and infrastructure security considerations; and
11. proximity of floodplains (1:100 AEP level flood inundation).

5.2.2 The proponent’s commercial criteria influencing site selection and the reasons for such influence, including but not limited to transport and route selection.

5.2.3 Criteria associated with the location or availability of raw materials (including water) and infrastructure.

5.2.4 Social - and amenity criteria.

5.2.5 The following strategic planning details must be included in the explanation of site selection:

1. accordance with any planning strategies or planning guidelines or proposed planning strategies for the area, including regional planning strategies;
2. accordance with relevant local government strategic plan and operational plan;
(3) accordance with the provisions of the relevant Planning Scheme, including the effect of zoning and any special area controls and overlay controls on use and development and any rezoning required;

(4) the effect of any Council by-law;

(5) Consistency with the objectives of the planning process contained in Part 1 and Part 2 of Schedule 1 of the Land Use Planning and Approvals Act 1993 (Appendix C);

(6) accordance with all State Policies.

5.3 Evaluation of site selection criteria

Potential mill sites should be identified and evaluated in terms of the above criteria. It should be clearly demonstrated which criteria have been critical in determining which site is favoured and why the alternative sites have been rejected. Sensitivity analysis by the weighting of the criteria should be undertaken to confirm any specific sensitivities on the preferred site.

The site selection/options assessment methodologies adopted for the pulp mill project by Gunns follows a broad philosophy of assessment of economic, environmental and social factors for options considered economically viable and feasible in engineering terms. Options that were identified as being significantly constrained by economic or engineering factors were not considered further in the assessment process.

The initial study considered the location of the pulp mill at two sites adjacent to existing woodchip mills owned and operated by Gunns: Bell Bay and Hampshire. Co-locating these facilities was considered very beneficial to the efficient operation of the pulp mill, reducing operating and construction costs, minimising transport and double handling, and minimising the overall project footprint and consequently associated impacts, particularly as there is a history of processing wood at these sites. The site selection review considered the project as it was at the time of the pulp mill site assessment, and, for example, included the Pipers River dam (subsequently discounted as a water supply option).

Subsequent to the site selection assessment, decision on the preferred pulp mill site and the commissioning of the Draft IIS, further assessment of infrastructure requirements and options was undertaken as part of the Draft IIS. Options assessments for key infrastructure components (water supply and effluent pipelines, ocean outfall, wharf, landfill, water reservoir) were undertaken through the initial phases of the Draft IIS with input from GHD Pty Ltd and other consultants commissioned directly by Gunns. Other than the water supply pipeline and reservoir, these assessments were conducted under consultancies commissioned directly by Gunns.

As both the pulp mill and infrastructure options assessment were undertaken either before the commencement of, or early in, the Draft IIS process, the assessment of individual criteria identified in the following section were in some cases subjective and qualitative, based on the professional judgement of those involved in the assessment process given the information available at the time of assessment. The site selection assessment in particular was not able to utilise any of the technical studies undertaken...
for the Draft IIS. Therefore, only that information available prior to the assessment for each element was considered as part of the site selection.

As a consequence of this background, not all elements identified in the Scope Guidelines, including the sensitivity analysis of criteria, were included in the assessment process.

Those elements not specifically addressed in the site selection assessment include:

- All the site suitability criteria listed in the Tasmanian Government 2004, *Environmental emission limit guidelines for any new bleached eucalypt kraft pulp mill in Tasmania*;
- fatal flaws, compliance thresholds, and severity of impact;
- site and infrastructure security considerations;
- proximity of floodplains (1:100 AEP level flood inundation);
- accordance with relevant local government strategic plan and operational plan;
- the effect of any Council by-law;
- Consistency with the objectives of the planning process contained in Part 1 and Part 2 of Schedule 1 of the Land Use Planning and Approvals Act 1993 (Appendix C);
- accordance with all State Policies; and
- preparation of a sensitivity analysis.

The outcome of the site selection process undertaken for the pulp mill is not considered to be affected by the absence of these considerations. The significant social, environmental and economic negative impacts associated with the Hampshire site will remain, regardless of the methodology employed in the site selection process. In particular, the impacts associated with the significant increase in log and pulp truck movements to and from the Hampshire site were considered unacceptable on social, economic and environment grounds.

Moreover, the project has been assessed against, and generally conforms with, the above elements. The conclusions from the Draft IIS have also verified the judgments made by Gunns about the environmental, social and economic features of the Bell Bay site. Accordingly, Gunns considers that the selected site is the better of the two options, and that the principal inquiry is now whether the preferred site is appropriate having regard to the likely social, environmental and economic effects of the project.

### 1.4.4 Hydrodynamic Modelling

The Scope Guidelines requires the following in relation to modelling of discharges at the ocean outfall.

\[(4) \text{ The initial dilution of the effluent and its subsequent dispersion and the fate of key pollutants must be predicted. The ability to comply with proposed mixing zones must be addressed. Predicted ambient levels} \]
of pollutants must be compared with required performance standards. Predictions must be based on modelling using adequate data as set out in the Tasmanian Government 2004, Environmental emission limit guidelines for any new bleached eucalypt kraft pulp mill in Tasmania. The maximum concentration level of each pollutant should be given (as required by the National Pollutant Inventory).

Hydrodynamic modelling of the ocean outfall is currently being undertaken at a higher grid resolution than that presented in the Draft IIS.

Modelling presented in the Draft IIS has been undertaken at a grid resolution of 250 m. Discussions of the results with Tasmanian government agencies concluded that a finer grid resolution was required to give confidence that the conclusions reached in the study are appropriate. To that end, modelling at a 50 m resolution and in three dimensions has commenced, and will be presented to RPDC prior to, or as part of, the Panel Hearings. It is considered that the revised modelling will only confirm the conclusions presented in the Draft IIS.

1.4.5 Suspended Solid Deposition

The Scope Guidelines require the following be addressed in considering impacts associated with the ocean outfall.

*the potential for the deposition of suspended solids and the accumulation of pollutants on the sea floor (deposition zones) or on river beds within the proposed mixing zone, zone of influence and the Tamar River estuary;*

Based on the final treated effluent characteristics, approximately 1.3 tonnes per day of total suspended solids will be discharged from the outfall.

These solids will consist primarily of fine organic material derived from pulpwood. The solids will be released from the diffuser as a component of a slightly saline effluent. The effluent will be buoyant in sea water, and will rise quickly to the surface. As a result, the solids will not quickly drop from suspension, but will be elevated in the water column and be subject to dispersion from current, wave and wind action. That proportion of solids which does drop from suspension will therefore be dispersed over a wide area, rather than concentrated around the outfall.

Based on the findings of toxicological studies and risk assessment, the organic matter is not considered to have any adverse environmental impacts. Potential impacts relate to smothering of marine benthic biota, however as discussed above, concentrated smothering will not occur given the small volumes involved and dispersive characteristics of the effluent. As a consequence, depositional modelling has not been undertaken as part of the Draft IIS. A more detailed discussion of suspended solid deposition is provided in Section 10.11 in Volume 3 of the Draft IIS.