



Bell Bay Pulp Mill - Summary of Supplementary Information

31 January 2007

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1 Background and Content

1.1 Commission's directions

Following the Directions Hearing held in Launceston on 25 October 2006, the panel acting as delegate of the Resource Planning and Development Commission (**Commission**) made three directions. Relevantly, Direction No.1 required Gunns to do one of the following two things by 15 December 2006:

- a) provide the Commission with:
 - (i) the additional information referred to in the Commission's letter to Gunns Limited dated 2 October 2006; and
 - (ii) such further or other information as it desires the Commission to consider; and
 - (iii) a document that summarises the information contained in subparagraphs (i) and (ii) hereof and that integrates and assimilates that information with the draft integrated impact statement (**draft IIS**) so as to ensure internal consistency and to clearly indicate how that information adds to, amends or otherwise varies the contents of the draft IIS (together called 'The Supplementary Information'); or
- b) alternatively, advise the Commission in writing when it will provide the Supplementary Information to the Commission.

On 15 December 2006, Gunns advised the Commission that the Supplementary Information would be provided to the Commission by 31 January 2007.

This document has been prepared by Gunns Limited (**Gunns**) to satisfy the requirements of Direction No. 1(a)(iii).

1.2 Structure of this summary document

This document has three parts.

Part 1:

- explains why Gunns has prepared the Supplementary Information;
- describes the Supplementary Information and some of the key matters that should be noted by the Commission and stakeholders when reviewing the Supplementary Information; and
- outlines how Gunns has responded to the Commission's letter of 2 October 2006.

Part 2 explains how some of the key issues raised in submissions on the draft IIS have been addressed by the Supplementary Information. This summary is included to provide context to the summary in Part 3 and to the Supplementary Information itself.

Part 3 summarises the documents referred to in Direction No. 1(a)(i) and (ii) in a table format, and explains the relationship between these documents and the draft IIS.

1.3 The currency of the supplementary information

Gunns prepared and published the draft IIS and placed it on public exhibition, for a ten week period, commencing in July 2006. The draft IIS remains the substantial source of consolidated information about the project and its impacts, and how those impacts are proposed to be mitigated.

Since publication of the draft IIS, a number of things have occurred:

- the Commission has asked Gunns to provide the information listed on page 2 of the Commission's letter to Gunns dated 2 October 2006;
- Gunns has continued to discuss the hydrodynamic modelling and marine monitoring program with Tasmanian government agencies;
- Gunns commissioned experts to undertake peer reviews of particular aspects of the draft IIS, and prepare reports and witness statements on the outcomes of their peer reviews;
- stakeholders lodged over 700 submissions on the draft IIS. Gunns and its experts have reviewed and considered the issues raised by those submissions; and
- the Commission has received advice from its consultants. Gunns and its experts have reviewed and considered the issues raised by this advice.

The Supplementary Information endeavours to integrate the opinions of Gunns' experts in relation to each of these matters. Consequently, the Supplementary Information contains the most current impact assessment information.

For this reason, Gunns recommends to the reader that:

- the principal point of reference for the most current impact assessment information on matters within the expertise of Gunns' experts is the Supplementary Information; and
- if there is an inconsistency between the Supplementary Information and the draft IIS, then the reader should assume that the Supplementary Information prevails.

The relationship between the Supplementary Information and the draft IIS is described at Part 3.

1.4 What does the Supplementary Information consist of?

(a) Overview

Gunns asked its experts to prepare witness statements in preparation for the panel hearing.

A witness statement is a written report prepared by a witness. It describes the witnesses' experience, qualifications and expertise, summarises their opinions, and describes the information which the expert considered or took into account in preparing their report. An expert witness statement forms the basis of the expert's evidence to the panel. An expert witness can only express opinions on matters that are within the witness's expertise.

With the exception of this summary document and a letter from Aquenal in response to the Commission's query regarding the marine monitoring plan, all of the Supplementary Information has been prepared in the form of witness statements.

Gunns' expert witnesses fall into the two categories described at Parts 1.4(b) and (c) below.

Important issues regarding some of the witness statements are highlighted in Part 2.

(b) Witnesses involved in the preparation of the draft IIS

These witnesses wrote or contributed to reports that were used by Gunns to prepare the draft IIS. These witness statements, which would have been required regardless of whether some or all of the events described as Part 1.3 occurred, generally do three things:

- the author of the witness statement adopts, and where relevant updates, the report that he or she prepared for the draft IIS;
- summarises the report appended to the draft IIS and, where relevant, the manner in which it was addressed in Volumes 1-4 of the draft IIS; and
- responds to the key issues raised by submitters on the draft IIS and by the Commission's expert advisors.

(c) Peer review and additional witnesses

These consultants were engaged by Gunns after publication of the draft IIS to either peer review certain aspects of the impact assessment or, in the case of Mr Bechberger, provide an explanation of Gunns' preferred chemical production technology.

Gunns engaged these consultants to review aspects of the draft IIS for three reasons:

- it expected a great deal of stakeholder interest in the project and its environmental, social and economic impacts, and felt that an independent peer review of certain aspects of the draft IIS would enhance stakeholder confidence in the assessment process;
- in the case of the marine impact assessment, Gunns considered that there were limitations in the marine impact assessment presented in the draft IIS. Consequently, it commissioned Dr. Roger Drew to assess the impacts of effluent discharges on the marine environment in Bass Strait, Mr David Balloch to undertake an estuarine and marine impact assessment that expressly addressed protected and threatened marine species, and Dr. Veronique Levy to substantiate the water quality objectives and parameters used by GHD in its hydrodynamic modelling; and
- in the case of Mr Bechberger, to describe and substantiate the process technology and environmental performance of the integrated chemical plant technology now proposed by Gunns.

The peer review and additional witnesses are:

Name of Witness	Area of Expertise
Mr Tim Offor	Social impact assessment ¹
Mr Brett Lane	Terrestrial fauna and marine and migratory avifauna
Mr Rob de Fegely	Pulpwood supply
Mr David Balloch	Estuarine and marine impact assessment
Dr Roger Drew	Marine toxicological risk assessment

¹ Gunns also commissioned a valuation report from Brothers and Newton, a Launceston firm of valuers. Mr Offor had regard to Brothers and Newton's report, which is Annexure G to Mr Offor's witness statement.

Dr Veronique Levy Water quality parameters and objectives for hydrodynamic modelling.

Mr Edward Bechberger Integrated chemical plant technology

1.5 Outline of Gunns' response to the Commission's letter of 2 October 2006

While a detailed summary of the witness' evidence is set out at Part 3 of this Summary Document, the following Table explains how Gunns has responded to the Commission's requests for information contained on page 2 of the Commission's letter of 2 October 2006.

Request	Response
Additional wood supply information.	Witness statement of Mr Rob de Fegely. Among other things, this statement appends a detailed and itemised response to the report prepared by URS Forestry for the Commission.
Impact assessment on marine environment, including avifauna.	Marine impact assessment – appendices 5 (construction impacts) and 6 (operational impacts) of Mr David Balloch's witness statement. Avifauna – Attachment 3 of Mr Brett Lane's witness statement.
The marine health risk assessment – similar to human health risk assessment report.	Marine toxological risk assessment report is at Attachment 2 of the witness statement prepared by Dr Roger Drew.
Review of Toxikos' air report in light of the supplementary air quality assessment of the proposed pulp mill, undertaken by Pacific Air and Environment (8 August 2006).	This is addressed by Dr Roger Drew at Part 4 of his witness statement.
Review of the Aquenal monitoring program – effluent composition and power analysis.	A letter which responds to this request from Mr Derek Shields from Aquenal is enclosed with the Supplementary Information.
Analysis of land and housing demand trends, impact on property values, impact on accommodation, impact of workforce on housing demand.	Witness statement of Mr Tim Offor, and the valuation report prepared by Brothers & Newton which is appended to Mr Offor's statement.
More thorough assessment of impacts on species listed under the EPBC Act and TSP Act, mitigation measures –	Marine impacts – witness statement of Mr David Balloch, Appendices 5 and 6. Impacts on terrestrial fauna and marine and migratory

Request	Response
management, etc.	<p>avifauna – witness statement of Mr Brett Lane at Attachments 2 and 3.</p> <p>Impacts on flora – witness statement of Dr Tim Wills.</p>
Election of preferred option for chemical preparation.	<p>Gunns' preferred option is the Erco R5 integrated chemical plant. A description of this technology, and an explanation of the operating data which describes the environmental performance of this technology, is included in the witness statement of Dr Edward Bechberger and summarised at Part 2.3 below.</p>
A fauna report in a readable form.	<p>Peer Review of Fauna Studies, Attachment 2 of Brett Lane's witness statement.</p>

2 Key issues

2.1 Air impact assessment

(a) Matters raised by submissions

The submissions on the draft IIS and the reports prepared by the Commission's consultants raised a number of issues regarding the air quality impact assessment. Broadly speaking the key issues included:

- the control of fugitive TRS emissions, especially in the evaporator plant, and the possible need for further redundancies to be built-in to the NCG destruction systems;
- the adequacy or appropriateness of the TAPM air quality model, and aspects of the way the modelling was conducted. In particular, the CSIRO sought clarification as to why background TRS levels were not modelled and the effect of multiple flues on the model predictions. Some submitters also queried how the TAPM can take account of temperature inversions;
- the Tasmanian government submissions queried the extent to which parameters other than those referred to in the 'Recommended environmental emission limit guidelines for any new bleached kraft pulp mill in Tasmania' (2004) comply with the Environmental Protection (Air Quality) Policy;
- the implications of the stack height not being 2.5 times higher than the height of nearby buildings;
- the impacts of air quality in Launceston and other parts of the Tamar Valley, especially for PM2.5;
- the effects of the mill on cloud properties and its potential to suppress rainfall;
- the relevance of the Air Toxics NEPM to operational air emissions and the Ambient Air NEPM to the construction air quality assessment;
- the effect of steam plumes on visibility and fog;
- the effects of truck movements on air quality in Launceston;

- the effects of air emissions, especially PM2.5 and fine particles, on human health; and
- the greenhouse gas implications of the project.

All of these matters, as well as others, are addressed in the Supplementary Information. While summaries of this information and its integration with the draft IIS can be found at Part 3, the following context may assist the reader understand the responses of Gunns' experts to these issues.

(b) Fugitive emissions

Beca AMEC raised a number of matters regarding the control of fugitive emissions from the pulp mill, especially in the evaporator area. They also sought a response to the possible need for additional redundancies in the NCG destruction systems, such as a flare.

Dr Esa Vakkilainen, an expert in pulp mill recovery systems, has considered and responded to these issues in his expert witness statement. Broadly speaking, Dr Vakkilainen:

- believes the proposed NCG recovery system is 'accepted modern technology' and sufficient to manage fugitive emission risk; and
- disagrees with aspects of the Beca AMEC report on this issue, including their criticisms of how it is proposed to manage and control fugitive emissions from the evaporator area.

In addition to Dr Vakkilainen's witness statement, Gunns will provide an itemised response to all of the issues raised in the Beca AMEC report, including these issues, at least 14 days prior to the commencement of the hearing as specified in the Commission's letter dated 2 October 2006.

(c) Air quality assessment

The air pollutant dispersion modelling and assessment was undertaken by GHD and presented in its air quality assessment report at Appendix 16, Volume 9, of the draft IIS. A peer review of that report was undertaken by Mr Robin Ormerod, a Director of Pacific Air and Environment, whose report is at Appendix 19, Volume 9, of the draft IIS.

The perceived limitation of this air assessment was that the dispersion modelling could not be validated by actual air quality data collected from an air quality monitoring station. Gunns installed an air quality monitoring station (**AQMS**) at Rowella in mid-2005, and a summary of 12 months data from this AQMS was included in the draft IIS at section 2.5.3 of volume 2A. However, it was not possible to rerun the dispersion model by reference to 12 months data collected from the Rowella monitoring station before the draft IIS was published.

Consequently, the report titled 'Supplementary Air Quality Assessment of Proposed Pulp Mill', prepared by Pacific Air and Environment and dated 8 August 2006, was provided to the Commission and to the public after the draft IIS was published.

Mr Ormerod has prepared an expert witness statement which is included in the Supplementary Information. Among other things, this statement:

- adopts the August 2006 report;
- responds to the submissions and comments from the CSIRO in its report to the Commission;
- attaches GHD's response to instructions on certain matters raised by the CSIRO and the Tasmanian Government on their reports at Appendices 16 and 17²; and
- responds to each of the operational air emission and TAP modelling issues identified at Part 2.1(a) above.

Mr Ormerod's general conclusions are:

- emissions from the pulp mill will have a very small impact on the air quality indicators that are currently measured at Ti Tree Bend and Rowella;

² These GHD documents can be found at Attachments 3 and 5 of Mr Ormerod's statement.

- the assimilative capacity of the Tamar Valley airshed will not be compromised by emissions from the pulp mill;
- the effects of the pulp mill emissions on airborne particle (and other pollutant) levels in Launceston will be very small; and
- odorous emissions will meet the stringent TRS guidelines contained in the 'Recommended environmental emission limit guidelines for any new bleached kraft pulp mill in Tasmania' (2004), especially in populated areas. Exceedances are only expected very rarely (between 11 and 50 years), mainly over the Tamar estuary and the hills to the east of the pulp mill site.

(d) Human health risk assessment

A number of submissions have raised concerns about the impacts of air emissions on human health. The Commission also sought advice from Uni Quest Pty Limited on the human health risk assessment of with air emissions at Appendix 21 of the draft IIS.

Dr Drew's witness statement:

- adopts the Toxikos report at Appendix 21; and
- responds, at Part 4 of the witness statement, to key human health issues raised by submissions and by the Uni Quest report, in particular on the lack of emissions data for some parameters from existing Bell Bay industries and health issues associated with ultrafine particles.

(e) Greenhouse gas emissions

Part 7.13 of the scope guidelines for the draft IIS sets out the requirements for assessing the greenhouse gas implications of the project. This assessment is at section 4.21 of Volume 2A of the draft IIS, which is in turn based on the calculation of greenhouse gas emissions undertaken by GHD and set out at Appendix 20 of the draft IIS. Those calculations were undertaken on the basis of the World Business Council for Sustainable and World Resources Institute *GHG Protocol 2004* and the Australian Greenhouse Office *Factors and Methods Workbook*. Under the *GHG Protocol* and *Factors and Methods Workbook*, the calculation of certain indirect greenhouse gas emissions, called 'scope 3' emissions, are discretionary. Accordingly, certain scope 3 greenhouse gas emissions were not included in GHD's calculations.

Since the draft IIS was published, the NSW Land and Environment Court delivered its judgement in *Gray v The Minister for Planning & Ors* [2006] NSWLEC 720. The Court found that in the circumstances of that case, which concerned the assessment of greenhouse gas emissions from burning coal extracted from the proposed Anvil Hill coal mine in NSW, 'scope 3' emissions should have been addressed in the environmental assessment of that project even though such assessment is discretionary under the GHG Protocol. In light of the decision and the updated chemical transport data produced by Keith Midson and addressed in his statement, Gunns asked Pacific Air and Environment to review and, where relevant, re-calculate greenhouse gas emissions.

Beca Amec also identified the need to consider the greenhouse gas implications of NO_x, CH₄ and chlorofluorocarbons.

Accordingly, Gunns instructed Pacific Air & Environment to undertake a new greenhouse gas assessment which addresses these issues. This assessment is at Attachment 2 of Mr Robin Ormerod's witness statement.

2.2 Marine and estuarine impact assessment

(a) Issues

Many issues were raised in submissions regarding the marine impact assessment in the draft IIS. These issues included the reliability of the water quality parameters and objectives used in the hydrodynamic modelling, the flushing effect in Bass Strait and its effect on plume dispersion, the bioaccumulation and biomagnification potential of effluent constituents in marine species, and the effect of construction and turbidity on the marine environment.

These matters are addressed by four witnesses – Dr Roger Drew, Dr Veronique Levy, Mr David Balloch and Mr Ross Fryar. Mr Balloch also assessed the effects of certain aspects of the project on the Tamar River. A brief overview of the work done by these experts is set out below.

(b) Assessment of effluent impacts

A Marine Toxicological Risk Assessment report has been prepared by Dr Roger Drew of Toxikos, and this is Attachment 2 of his witness statement.

In addition, Dr Drew prepared two marine reports that were appended to the draft IIS and are adopted in his witness statement:

- Human Health Risk Assessment Bell Bay Pulp Mill – Effluent, which is at Appendix 22, Volume 10, of the draft IIS. This is a human health risk assessment of treated effluent that is proposed to be discharged into Bass Strait; and
- a supplementary report on the effects of effluent on nearby seal colonies. This report is at Appendix 23, Volume 10, of the draft IIS.

Dr Drew concludes:

- risks to human health from chemical constituents in effluent to be discharged to Bass Strait will be negligible;
- the viability of the seal colony at Tenth Island will not be adversely affected by effluent from the pulp mill;
- the proposed discharge of effluent into Bass Strait will not adversely affect the survival, breeding and migration of fish, marine mammals, birds or other organisms in Tasmanian or Commonwealth waters. There will be no significant impacts on threatened or protected species under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* and the *Threatened Species Protection Act 1995 (Tas)*; and
- the existing primary productivity of the ecosystem in the receiving marine environment will be unaltered. This, together with the lack of direct toxicity to organisms, indicates that ecological community structures and species diversity are unlikely to be adversely changed by the discharge effluent.

These conclusions are based upon extensive research and investigation, and in so doing respond to the submissions on the draft IIS which raised marine issues, in particular the Tasmanian Government Agency submission and the report prepared for the Commission by Beca AMEC and Uni Quest.

(c) Hydrodynamic modelling

There are two elements to this work.

The first element is the definition of interim water quality parameters and objectives that should be used in defining the mixing zone for effluent discharges into Bass Strait.

Any water quality parameters and objectives are ‘interim’ until determined by the Board of Environmental Management and Pollution in accordance with the State Policy on Water Quality Management (1997). The draft IIS used parameters and objectives that Gunns’ consultants discussed, and thought they had agreed, with the then Department of Primary Industries, Water and Environment.

In light of reservations about some of the parameters expressed in the Tasmanian Government Agency submission, Gunns engaged Dr Veronique Levy from GHD to investigate and report on appropriate interim parameters and objectives for defining the mixing zone. Dr Levy’s statement and accompanying report is summarised at Part 3 of this Summary Document and forms part of the enclosed Supplementary Information.

The second element is the hydrodynamic modelling. Mr Ross Fryar from GHD, who was involved in the preparation of the hydrodynamic modelling report for the ocean outfall at Appendix 63 of the draft IIS and the hydrodynamic report for the wharf facility at Appendix 64, has prepared a witness statement that forms part of Gunns’ Supplementary Information. In his statement, Mr Fryar explains and synthesises the following:

- his reports at Appendices 63 and 64 of the draft IIS;
- a subsequent, three dimensional hydrodynamic modelling report dated August 2006 (**August Addendum**). This report was prepared in response to comments from the then Department of Primary Industries, Water and Environment; and
- a further report dated January 2007, which is based upon the expert advice from Dr Veronique Levy and Dr Roger Drew, and addresses the comments of submitters and the Commission's consultants (**January Addendum**). It also includes dispersion maps which have been relied upon by Dr Drew and Mr Balloch in their impact assessments.

In Part 3.3 of the Summary Document, the relationship between the draft IIS (including the Appendix 63 report) and the August Addendum is explained.

The January Addendum contains the most current and up-to-date hydrodynamic modelling assessment.

(d) Marine and estuarine impact assessment

Gunns engaged Mr David Balloch to undertake a peer review of the marine and estuarine impact assessment contained in the draft IIS. In broad terms, Mr Balloch found that there were a number of limitations in the way some of these impacts were assessed. As a result, Mr Balloch prepared the following reports:

- Appendix 2 of his witness statement, which assesses the residual impacts of constructing the water supply pipeline crossing of the River Tamar;
- Appendix 3 of his witness statement, which assesses the residual impact of constructing and operating the proposed wharf facility;
- Appendix 4 of his witness statement, which assesses the residual impacts of constructing the effluent pipeline crossing at Donovans Bay;
- Appendix 5 of his witness statement, which assesses the residual impacts of constructing the effluent outfall pipeline on the marine environment; and
- Appendix 6 of his witness statement, which assesses the residual impacts of effluent discharged from the effluent outfall pipeline on the marine environment. This report expressly addresses impacts on marine ecology within the mixing zone, impacts on marine species protected by the *Threatened Species Protection Act 1995* (Tas) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth), and impacts on Commonwealth marine waters.

Mr Balloch's Appendix 6 report is based on his own investigations, experience and expertise as well as the marine reports prepared by Dr Drew, Dr Levy and Mr Fryar. In addition, Mr Balloch proposes additional mitigation measures which are outlined in his reports and Appendices 2-6 and summarised in his witness statement.

2.3 Integrated chemical plant

The draft IIS proposes two alternative ClO₂ production technologies³:

- base case and merchant option 'Alternative 1' are based on a type of technology called an integrated chemical plant. This proposed technology would use HCl manufactured at the alkaline plant as the reactant with chlorate to produce a ClO₂ gas, which would then be chilled before the Cl₂ is stripped from the ClO₂ solution in an absorption column. Volume 6 of the draft IIS also notes the potential to reduce the Cl₂ levels by adding hydrogen peroxide to the ClO₂ solution⁴; and
- merchant option Alternative 2 is a 'non-integrated' chemical plant which would propose to use imported H₂SO₄ as the acidifier, imported hydrogen peroxide as the reactant, and sodium chlorate. The sodium chlorate would be manufactured at the

³ Section 3.8.3 of Volume 6, pages 64-70 and section 6.3.4 of Volume 1B, pages 6-311 – 6-318

⁴ See page 66 of Volume 6

chlorate plant. The 'Development of new environmental emission limit guidelines for any new bleached kraft eucalypt pulp mill in Tasmania' (2004) describes this technology as a 'hydrogen peroxide' process, and accepts this as accepted modern technology⁵.

Since publishing the draft IIS, Gunns has continued to evaluate the chemical plant technologies provided by a range of equipment suppliers. It has also considered the Commission's request to nominate a preferred chemical plant configuration.

In light of these developments Gunns advises that:

- it no longer wishes to proceed with the assessment of an integrated chemical plant which is based on the technology described in the draft IIS for the base case and merchant option 'Alternative 1'; and
- its preferred option is to use an integrated chemical plant adopting the ERCO Worldwide R5 technology. Mr Edward Bechberger from ERCO Worldwide has prepared a witness statement which describes and evaluates this technology and substantiates why it should be considered 'accepted modern technology'.

2.4 Clarification of project description

The conceptual design of a project of this magnitude is, of necessity, an iterative process. This process is informed by advice from experts engaged by the proponent and by submissions made by stakeholders.

In light of this, Gunns proposes the following clarifications to the project description in the draft IIS:

- the diffuser location be moved away from the original area of sandy seabed identified in the draft IIS at section 10.10 of Volume 3A to an area of low-profile reef approximately 200 metres landward of the original proposed diffuser location. The proposed modified location of the diffuser is shown in Attachment 2 of Mr Jas' witness statement; and
- the effluent pipeline is now proposed to be installed in a trench and backfilled over the entire 2.74 kilometre length of the offshore pipeline. The draft IIS had proposed a combination of this method and placement of the pipeline on the surface on the seabed, which is described at section 9.9.5 of Volume 3A.

Where relevant, the experts have had regard to these proposed clarifications in their expert witness statements.

⁵ 'Development of new environmental emission limit guidelines for any new bleached kraft eucalypt pulp mill in Tasmania' Volume 1 (2004), pages 26-27.

3 Summary of Supplementary Information

3.1 Introduction

Part 3 summarises the witness statements and explains their relationship with the draft IIS under the following categories:

- engineering processes;
- marine and estuarine issues;
- air and noise emissions;
- construction issues;
- terrestrial flora and fauna (including marine and migratory avifauna); and
- social, economic and resource issues.

A table summarises the statements for each category by reference to:

- the name and area of expertise of the expert in bold in the left column;
- a numbered summary of the issues addressed by the witness in the left column; and
- a numbered description of how the statement relates to the draft IIS in the right column.

The numbered entries in the left and right columns correspond with each other.

As explained earlier, the most current and up to date assessment information is contained in the witness statements. In the event of any inconsistency between the witness statements and the draft IIS, priority should be given to the information contained in the witness statements.

3.2 Engineering processes

Gunns' Supplementary Information includes witness statements from four experts on the pulp mill processes.

Summary of witness statement

Relationship with the draft IIS

Mr Kari Tuominen - Poyry

Overview of pulp mill processes

This witness statement:

1 Adopts Volumes 6 and 7 of the draft IIS as the basis of Mr Tuominen's evidence, and summarises the pulp mill processes in the powerpoint presentation at Attachment 2 of his statement.

2 Provides additional explanations at section 6.1 of his statement as to why ECF technology was selected instead of TCF technology.

3 At section 6.2 of his statement responds to submissions which query why the pulp mill does not utilise completely closed loop technology.

4 At section 6.3, substantiates the intended use of a Hot Acid stage to remove hexenuronic acid from the pulp.

5 At section 6.4, summarises the process differences between pulping hardwood only, and pulping hardwood and softwood.

Relationship with draft IIS:

1 Summarises the description of the pulp mill processes set out at sections 6.3-6.15 of Volume 1B and at Volumes 6 and 7 of the draft IIS.

2 Supplements and reinforces the explanations for selecting ECF technology at sections 6.2.17, 6.2.18 and 6.2.19 of Volume 1B and in the report at Annex XV, Volume 7, of the draft IIS titled 'Assessment and Selection of the Pulp Bleaching Process'.

3 Supplements the description of water balances in section 6.7.2 of Volume 1B, section 3.6 of Volume 6 and Annex III of Volume 7 of the draft IIS.

4 Supplements the description of the bleaching process at section 6.3.2 of Volume 1B and section 3.8.2 (pages 53-55) of Volume 6 of the draft IIS.

5 Supplements and gives context to the analysis of softwood bleaching in the report at Annex X, Volume 7, of the draft IIS.

Summary of witness statement**Relationship with the draft IIS****Dr Esa Vakkilainen - Poyry****Description of recovery systems**

This witness statement:

1 Adopts Volumes 6 and 7 of the draft IIS as the basis of Dr Vakkilainen's evidence, and summarises the operation of the proposed recovery system at sections 5.1 and 5.2 and in the powerpoint presentation at Attachment 2 of his statement.

Relationship with the draft IIS:

1 Summarises the description of the recovery processes set out at sections 6.3.5 – 6.3.11, and the recovery aspects of sections 6.4.1 and 6.10, of Volume 1B, and the equivalent sections in Volume 6 of the draft IIS (especially sections 3.8.4 – 3.8.11, and the recovery aspects of section 4.2).

2 At section 6.1, responds to submissions on the NCG destruction system. In particular, this section addresses Beca Amec's comments on:

- whether it is necessary or desirable to build further redundancy into the system by using a flare.
- the evaporator system as a potential source of fugitive TRS emissions.
- burning DNCG and auxiliary fuels in the lime kiln.

2 Supplements and reinforces the description and analysis of the NCG destruction system at section 6.3.11 of Volume 1B, and at 3.8.10 of Volume 6.

3 At section 6.2, responds to submissions on in-stack NOx concentrations in the pulp mill main stack⁶.

3 Supplements and reinforces the explanations and analysis of in-stack NOx emissions at sections 6.1.3 and 6.4.3 of Volume 1B, section 4.5.1 of Volume 6, and the detailed analysis of this issue in the paper titled 'NOx Issues' in Annex XV, Volume 7, of the draft IIS.

4 At section 6.3 and Attachment 3, provides a detailed explanation of how the air emissions from the pulp mill have been estimated, compares those figures with those contained in the draft IIS, and comments on fluctuations in emissions.

4 Updates the description of air emissions in section 4.5 of Volume 6 and Annex VI, titled 'Gaseous Emissions', in Volume 7 of the draft IIS.

5 At section 6.4 and Attachment 4, provides a description of the solid waste volumes and types and an explanation of how they have been estimated.

5 Supplements and reinforces the solid waste stream descriptions in section 6.9 of Volume 1B, sections 3.8.15 and 4.6 of Volume 6 and Annex VII of Volume 7 of the draft IIS.

6 At section 6.5, comments on the spill recovery system.

6 This supports and supplements the descriptions of the spill recovery system in section 6.4.5 of Volume 1B and section 4.8 of Volume 6 of the draft IIS.

7 At section 6.6 and Attachment 4, advises of the quantity and source of dioxins and furans in the solid waste stream and calculates the amount of dioxins and furans in landfill

7 The description of dioxins and furans in the solid waste stream are additions to the solid waste amounts in Annex VII, Volume 7, of the draft IIS. It should be noted however that Dr

⁶ Robin Ormerod in his witness statement also comments on the environmental emissions aspect of this issue at section 5.2 of his statement.

Summary of witness statement

Relationship with the draft IIS

leachate.

Vakkilainen's analysis of dioxins and furans in solid waste was used as the basis of the dioxin assessment in section 4.5(b) of Dr Woodward's witness statement.

Summary of witness statement**Relationship with the draft IIS****Mr Hannu Jappinen - Poyry****Effluent treatment and emissions**

This witness statement:

Relationship with draft IIS:

- | | |
|---|---|
| 1 Adopts Volumes 6 and 7 of the draft IIS as the basis of Mr Jappinen's evidence, and summarises the operation of the fresh water, cooling water, boiler feedwater and effluent treatment plant, and noise emissions and abatement at sections 5.1 – 5.10 and in the powerpoint presentation at Attachment 2 of his statement. | 1 This summarises the description of the pulp mill waste water treatment and cooling towers, feedwater treatment, and effluent treatment plant in sections 6.3.12 – 6.3.14, and noise emissions and abatement in section 6.4.4 of Volume 1B and sections 3.8.12, 3.8.13, 3.8.14 and 4.7 of Volume 6 of the draft IIS. |
| 2 At sections 6.1 and 6.4 of the statement, responds to submissions on raw and final effluent loads, in particular: <ul style="list-style-type: none"> • the main sources of liquid effluent. • control strategies. • variability of effluent during start-up and shut-down, including confirmation that the design is based on 'worst case scenario'. | 2 This supplements the description of sources of liquid effluent in Annex VIII in Volume 7, the description of the recovery of fibre, black liquor and other hazardous spills in section 4.8.2 of Volume 6 and the description of variability of effluent in Annex V of Volume 7 of the draft IIS. |
| 3 At section 6.2 of the statement, responds to submissions on the possibility of disposing of liquid effluent to land. | 3 This is new information not contained in the draft IIS, because this is not proposed. |
| 4 At section 6.3 of the witness statement and section 4.4 of Attachment 3, presents updated final effluent loads and compares the loads with the RPDC Emission Limit Guidelines and International BAT guidelines. | 4 This updates the effluent load figures presented in Tables 3-31 and 3-34 of Volume 6 and Table 6-19 of Volume 1B of the draft IIS. |
| 5 At section 6.5 of the witness statement and section 3.1.5 of Attachment 3, responds to Beca AMEC's request for clarification of the generation of chlorate in ECF bleaching and removal in the effluent treatment plant. | 5 The response relating to chlorate generation updates Annex III in Volume 7. The response relating to chlorate removal in the effluent treatment plant updates the secondary treatment discussion in section 3.8.14 of Volume 6 of the draft IIS. |
| 6 At section 6.6, responds to Beca AMEC's request for clarification of the overall material balances. | 6 This provides information which gives context to Annex IV of Volume 7. |
| 7 At section 6.7, responds to Beca AMEC's request for clarification of the mill wide water balances. | 7 This provides information which gives context to Annex III of Volume 7. |
| 8 At section 6.8, responds to Beca AMEC's request for clarification of the Environmental Emission Diagrams. | 8 This provides information which gives context to Annex VIII of Volume 7. |

Summary of witness statement**Relationship with the draft IIS**

Mr Edward Bechberger - ERCO Worldwide**Integrated chemical plant**

This witness statement:

- 1 Gives an overview of the ERCO R5 integrated chemical plant technology.
- 2 Analyses operating data from an existing ERCO R5 integrated chemical plant in Canada.
- 3 Briefly describes the atmospheric emissions from this technology.
- 4 Responds to the report prepared by Beca Amec for the Commission titled 'Appendix A Review of Section 6.3.4 – Bleaching Chemical Preparation of Gunns' Draft Integrated Impact Statement' dated October 2006.

Relationship with the draft IIS:

- 1-4 Replaces the descriptions of the integrated chemical plant technology in section 6.3.4 (base case and merchant plant Alternative 1) of Volume 1B and in section 3.8.3 of Volume 6, and renders redundant the paper titled 'Integrated Chemical Plant Discussion Report' in Annex XV, Volume 7, of the draft IIS.
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3.3 Marine and estuarine issues

Five experts have prepared witness statements on these matters.

Summary of witness statement	Relationship with the draft IIS
Dr Veronique Levy - GHD	
Water quality parameters and objectives for use in defining the mixing zone	
This witness statement attaches a report (Attachment 2) which:	Relationship with the draft IIS:
<ol style="list-style-type: none"> 1 Describes the protected environmental values and summarises the effluent characteristics used for the purpose of defining the relevant water quality parameters and objectives to be used in defining the mixing zone (sections 2 and 3 of Attachment 2). 2 Reviews existing toxicity trigger values in guidelines, standards and publications used by environmental authorities in Australia and overseas (section 4 of Attachment 2). 3 Characterises ambient conditions and locally derived trigger values (section 5 of Attachment 2). 4 Provides a detailed explanation of the values that were selected for modelling the mixing zone for each parameter of interest (section 6 of Attachment 2). 5 Describes the highest dilution requirements for chlorate, colour, nutrients and AOX (section 7 of Attachment 2). 6 Comments on the potential for eutrophication to occur at the outfall location at section 8 of Attachment 2 for the purpose of Dr Drew's marine impact assessment. 	<ol style="list-style-type: none"> 1-5 This statement and the attached report replaces the discussion of water quality objectives and effluent characteristics in section 11.8.3 of Volume 3B of the draft IIS and section 3.10 of Appendix 63, Volume 18. 6 This is new work which was not included in the draft IIS. The analysis of the potential for eutrophication to occur has been used by Dr Drew in his marine toxicological assessment.
7 Responds to comments from the Department of Transport, Arts and Environment on a draft table of parameters and water quality objectives.	7 The response is in addition to the material already in the draft IIS.

Summary of witness statement

Relationship with the draft IIS

Mr Ross Fryar - GHD

Hydrodynamic modelling

This witness statement:

1 Adopts the findings of Appendix 64 'Hydrodynamic modelling associated with a proposed wharf facility in Bell Bay report' in Volume 18 of the draft IIS.

2 Adopts the findings of Appendix 63 'Hydrodynamic Modelling Report' in Volume 18 of the draft IIS and clarifies the data used in the Appendix 63 report in Table R1 (diffuser configuration), R2 (effluent loads and concentrations), R5 (assumed receiving water conditions) and Table R7 (proposed water quality objectives) of the witness statement.

3 At Attachment 2, attaches an addendum to the report in Appendix 63 of the draft IIS dated August 2006 (**August Addendum**). The August Addendum reflects a denser modelling grid in 3 dimensional mode. It addresses the revised effluent loads and concentrations provided by Jaakko Poyry and reported in the draft IIS at Table 6-19 of Volume 1B.

Relationship with the draft IIS:

1 This statement summarises the findings in Appendix 64 of Volume 18 and section 10.7.1 of Volume 2B of the draft IIS.

2 The witness statement replicates or clarifies the information used in the Appendix 63 report, which was incorrectly reported in other parts of the draft IIS:

- Table R1 is an extract from Table 12 in Appendix 63 and reflects the correct values for diffuser configuration. It replaces Table 11-7 in Volume 3B, because that Table includes an incorrect value for effluent salinity.
- Table R2 replicates the concentration and discharges of effluent in Table 10 of Appendix 63 and Table 11-9 of Volume 3B.
- Table R5 contains identical key values of water receiving conditions to Table 13 in Appendix 63 and reflects the correct values for water receiving conditions at the time the Appendix 63 report was written. It replaces Table 11-8 of Volume 3B because that Table includes an incorrect value for BOD.
- Table R7 is an extract from Table 11 and 14 of Appendix 63 and an unnamed table on page 6-419 of Volume 3B and reflects the correct water quality objectives at the time the Appendix 63 report was written. It replaces Table 7 of Appendix 63 because that Table included an incorrect value for BOD.

The Appendix 63 report concludes, based on the model inputs at that time, that the proposed mixing zone would be 500m x 275m.

The inputs and conclusions in the Appendix 63 report have been superseded by the inputs and conclusions in the January Addendum (see point 4 below).

3 The witness statement clarifies that the effluent loads and concentrations in Table R3 of the witness statement are an extract from Table 6-19 of Volume 1B and Table 3-34 of Volume 6 of the draft IIS and were used in the August Addendum.

The August Addendum concluded that the proposed mixing zone should be, based on the model inputs available at the time, 550m x 500m.

The inputs and conclusions in the August Addendum have been superseded by the inputs and conclusions in the January Addendum (see point 4 below).

Summary of witness statement**Relationship with the draft IIS**

- 4 At Attachment 3, attaches an addendum to the report in Appendix 63 of the draft IIS dated January 2007 (**January Addendum**). The January Addendum reflects a revised range of pollutants, background concentrations, effluent discharge concentrations and water quality objectives.

The January Addendum explains the model's simulation of the release of effluent to better represent the buoyancy effects of effluent. The data was revised following a review of effluent loads and concentrations by Mr Jappinen, and comment from the Department of Transport, Arts and the Environment on the range of pollutants and methodology for the calculation of background concentrations and water quality objectives. The January Addendum utilises water quality objectives and background concentrations for relevant parameters selected by Dr Levy, and effluent loads calculated by Mr Jappinen.

- 4 The witness statement summarises the data used in the January Addendum. The data used in the January Addendum is the most current data and, consequently, the data in the January Addendum replaces the following data in the draft IIS:

- Table R4 of the witness statement replaces Table 11-9 of Volume 3B of the draft IIS for the relevant effluent volumes and parameters.
- Table R6 of the witness statement replaces Table 11-8 of Volume 3B of the draft IIS for the relevant assumed water receiving conditions.
- Table R8 of the witness statement replaces the unnamed table on page 6-419 of Volume 3B of the draft IIS.
- the proposed mixing zone is minimum 500m x 500m to maximum 800m x 800m, replacing the proposed mixing zone in Section 11.8.3 of Volume 3B of the draft IIS.

Summary of witness statement

Relationship with the draft IIS

Dr Rick Krassoi - Ecotox

Toxicity sampling

This witness statement:

- | | |
|--|---|
| 1 Summarises and adopts the findings of the ecotoxicological tests undertaken by Dr Krassoi in the draft IIS at Appendices 58-60, Volume 17. | 1 Summarises the ecotoxicological reports at Appendices 58-60 of Volume 17, and sections 11.11.1 and 11.11.2 of Volume 3B of the draft IIS. |
| 2 Describes the results of two additional ecotoxicological tests of the effects of chlorate on the brown macroalgae <i>Hormosira banksii</i> , undertaken for the purpose of preparing Dr Drew's Marine Toxicological Risk Assessment. | 2 This is new work that was not contained in the draft IIS. Section 12 of the Marine Toxicological Risk Assessment addresses the results of these ecotoxicological tests. |
| 3 Responds to public submissions and the UniQuest – Part A Review of Volume 17 report relating to Dr Krassoi's work in the draft IIS. | 3 These responses are an addition to what is already contained in the draft IIS. |
-

Summary of witness statement**Relationship with the draft IIS****Dr Roger Drew - Toxikos****Marine impact and health risk assessment**

This witness statement:

- 1 Adopts and summarises the following reports as the basis of Dr Drew's statement:
- Human health risk and toxicological assessment of air emissions (July 2006).
 - Human health risk assessment – effluent (July 2006).
 - Comment on effluent and potential impact on nearby seal colonies (July 2006).
 - Marine Toxicological Risk Assessment (January 2007). The report concludes that the discharge of effluent will not adversely impact on the survival, breeding and migration of fish, marine mammals, birds or other organisms in Tasmanian or Commonwealth waters.

Relationship with the draft IIS

- 1 The draft IIS relates to these four reports as follows:
- the July 2006 human health risk assessment for air emissions report is at Appendix 21 of Volume 10 of the draft IIS.
 - the July 2006 human health risk assessment for effluent is at Appendix 22 of Volume 10 of the draft IIS.
 - the July 2006 commentary on seal colonies is at Appendix 23 of Volume 10 of the Draft IIS.
 - the January 2007 Marine Toxicological Risk Assessment is new work undertaken since the publication of the draft IIS.

Human health risk assessment – air emissions

The witness statement:

- 2 In section 4, responds to submissions on the human health risk assessment of air emissions relating to:
- the incomplete inventory of emissions from existing local industry.
 - the lack of formal consideration of ultrafine particulates.

Relationship with the draft IIS

- 2 The draft IIS relates to these responses as follows:
- the incomplete inventory was acknowledged in Dr Drew's report at sections 3.2, 4.1.1 and 7.1.4 of Appendix 21 in Volume 10 of the draft IIS. The response explains the inherent conservatism of the assessment, and that the assessment showed that negligible effects will arise from the mill emissions.
 - Dr Drew's opinions reflects the information contained in Mr Robin Ormerod's witness statement on the salt content of ultrafine particulate matter, which updates the information contained in Appendix 21 of Volume 10⁷.

Human health risk assessment – effluent and comment on seal colonies

The witness statement:

- 3 In section 5, responds to submissions on the human health risk assessment of effluent discharge into Bass Strait, in particular submissions from UniQuest and Beca AMEC relating to:

Relationship with draft IIS:

- 3 The response to submissions is new information not contained in the draft IIS.

⁷ See sections 4.2.1 (page 9), 4.3.1.3, 6.4.3 and 6.5.4 of Mr Ormerod's statement.

Summary of witness statement**Relationship with the draft IIS**

- the impact of nutrients.
- the natural constituents of northern and southern hemisphere woods.
- knowledge of effluent dilution.
- breakdown of infrastructure for effluent treatment.

4 In section 6 of the witness statement, responds to submissions that the assessment of bioaccumulation and biomagnification of dioxins through the food chain of seals was inadequately addressed in the draft IIS. The detailed analysis of this issue is contained in section 14 of the Marine Toxicological Risk Assessment, which is Attachment 2 to Dr Drew's witness statement. Based on this analysis, Dr Drew concludes that the viability of the seal colony at Tenth Island would not be adversely affected by the discharge of effluent.

4 Section 14 of the Marine Toxicological Risk Assessment contains additional work undertaken by Dr Drew on the impact of effluent on the Australian fur seal, which confirms the findings of section 11.11.3 of Volume 3B and Appendix 23 of Volume 10 of the draft IIS.

Marine Toxicological Risk Assessment – Attachment 2 of witness statement

The report:

Relationship with the draft IIS:

5 Reviews effluent ecological impacts (section 3).

5 This supplements the information contained in section 11.11.1 of Volume 3B of the draft IIS.

6 Provides a description of the existing habitat in the vicinity of the ocean outfall (section 4).

6 The description summarises information contained in the Marine Biological and Pollutant Survey at the proposed outfall site by Aquenal, which is located at Appendix 24 of Volume 11 of the draft IIS.

7 Summarises the effluent fate and dilution from the three hydrodynamic modelling reports prepared by Mr Ross Fryar of GHD (section 5).

7 The summary is Dr Drew's interpretation of the three hydrodynamic modelling reports prepared by Mr Ross Fryar of GHD. A description of the three reports and their relationship to the draft IIS is provided at section 3.3 above.

8 Describes the impact assessment methodology (section 6).

8 This is new information not contained in the draft IIS.

9 Compares the effluent constituents with guidelines values (sections 7 & 8).

9 This is new information not contained in the draft IIS.

10 Addresses the results of whole of effluent testing (section 9).

10 The discussion of whole of effluent testing supplements section 11.11.1 and 11.11.2 of Volume 3B of the draft IIS.

11 Describes predicted impacts of effluent (excluding dioxins) on potentially sensitive marine areas and listed and

11 This is new information not contained in the draft IIS.

Summary of witness statement**Relationship with the draft IIS**

threatened species (sections 10 & 11).	
12 Assesses the impact of chlorate in the effluent on sensitive marine flora and fauna within a 1km radius of the diffuser (section 12).	12 This assessment replaces the discussion of chlorate in section 11.11.1 of Volume 3B of the draft IIS.
13 Describes the methodology of the dioxin impact assessment (section 13).	13 This is new information not contained in the draft IIS.
14 Assesses the impact of dioxins on marine mammals and avifauna (section 14 & 15).	14 This is new information not contained in the draft IIS.
15 Assesses the impact of the effluent on endocrine disruption and reproduction effects on marine fauna (section 16).	15 This is new information not contained in the draft IIS.

Summary of witness statement

Relationship with the draft IIS

Mr David Balloch - EnviroGulf Consulting**Estuarine and marine impact assessment**

<p>1 This witness statement summarises:</p> <ul style="list-style-type: none"> • the findings of the peer review and assessments contained in the reports at Appendices 2 – 6; • recommended mitigation and management strategies; and • the impacts on marine and estuarine listed threatened and migratory species and Commonwealth waters under the <i>Environment Protection & Biodiversity Conservation Act</i> (1999) 	<p>1 Refer to the relationship to each Appendix of the witness statement set out below.</p>
<p>2 Appendix 2 to the witness statement peer reviews and assesses the impacts of installing the water supply pipeline in the Tamar river.</p>	<p>2 Replaces section 5.8.3 of Volume 3A.</p>
<p>3 Appendix 3 to the witness statement peer reviews and assesses the impacts of constructing and operating the wharf.</p>	<p>3 Replaces sections 10.7.2, 10.7.3, 10.7.4 and 10.7.5 of Volume 2B.</p>
<p>4 Appendix 4 to the witness statement peer reviews and assesses the impacts of installing the effluent pipeline in Donovan's Bay.</p>	<p>4 Replaces section 11.9 Volume 3B, and reviews and supplements the Donovan's Bay Assessment Report at Appendix 28, Volume 11.</p>
<p>5 Appendix 5 to the witness statement peer reviews and assesses the construction impacts of the effluent pipeline on the marine environment in Bass Strait.</p>	<p>5 Replaces section 11.10 of Volume 3B.</p>
<p>6 Appendix 6 to the witness statement peer reviews and assesses the operational impacts of discharges of effluent into the marine environment. The report specifically assesses impacts on marine ecology within the mixing zone, impacts on marine species protected by the <i>Threatened Species Protection Act</i> 1995 (Tas) and <i>Environment Protection and Biodiversity Conservation Act</i> 1999 (Cth), and impacts on Commonwealth marine waters.</p>	<p>6 Supplements and updates the information in section 11.11 of Volume 3B.</p>

3.4 Air and noise emissions

Three experts have prepared witness statements on these matters

Summary of witness statement

Relationship with the draft IIS

Mr Robin Ormerod - Pacific Air & Environment

Air quality assessment and greenhouse gas emissions

This witness statement:

- 1 Adopts and summarises the following two reports as the basis of Mr Ormerod's statement:
 - Review of Air Dispersion Modelling and Background Monitoring Data for the Proposed Bell Bay Pulp Mill (November 2005).
 - Supplementary Air Quality Assessment (August 2006).

Relationship with the draft IIS:

- 1 The draft IIS relates to these two reports in the following manner:
 - the November 2005 report is at Appendix 16, Volume 9, of the draft IIS.
 - the August 2006 report reinforces the general accuracy of the description of climate and meteorology in section 2.4.2 and air quality in section 2.5, and the reliability of the air quality impact assessment in section 4.5, of Volume 2A of the draft IIS. To the extent that the August 2006 TAPM model has been verified against 12 months of air quality data collected from Rowella AQMS, it is open to conclude that this model is, for this reason, more reliable than that presented in the draft IIS.

- 2 Explains why the TAPM model is an appropriate tool to predict the dispersion of air emissions. The capacity for the TAPM model to address temperature inversions and the reliability of the model results are expressly addressed (sections 6.5.2 and 6.5.3)

- 2 This is an addition to, but reinforces the accuracy and reliability of, the description of meteorology and the dispersion of air emissions as described in sections 2.4.2, 2.5 and 4.5 of Volume 2A, Volumes 16 and 19 of the draft IIS, and Pacific Air & Environment's report of 8 August 2006. It also supports and supplements GHD's justification for using TAPM in section 3 of their Air Quality report at Appendix 16, Volume 9.

- 3 Explains why background TRS was not, and did not need to be, modelled. This explanation is based on the fact that there are no known sources of TRS emissions in the vicinity of the proposed Bell Bay pulp mill, and that the TRS data recorded at the Rowella AQMS reveals 'zero or negligible' background TRS levels (section 4.3.2.2.2).

- 3 This is an addition to, but supports, the description of background air quality and supports the modelled predictions of TRS emissions: sections 2.4.2, 2.5 and 4.5.6 of Volume 2A; sections 7 and 8 of GHD's report at Appendix 16; section 7.1 of Pacific Air & Environment's report at Appendix 19; section 4 of Pacific Air & Environment's report dated 8 August 2006.

- 4 Evaluates the sensitivity of the TAPM model to modelling the multi-flue main stack as a single point source (section 6.1.1).

- 4 This supplements and supports the reliability of the modelled dispersion of emissions at: section 4.5 of Volume 2A of the draft IIS; section 9 of GHD's report at Appendix 16; sections 7.3 and 8 of Pacific Air & Environment's report at Appendix 19; section 4.4 of Pacific Air & Environment's report dated 8 August 2006.

- 5 Addresses the allegations of the Greens regarding the effect of ultra fine particles on precipitation (section 6.4.4).

- 5 This is an addition to the air quality impact assessment in section 4.5 of Volume 2A of the draft IIS and in Pacific Air & Environment's report of 8 August 2006.

Summary of witness statement**Relationship with the draft IIS**

6 Discusses the assumed relationships between PM10 and PM2.5, and explains why PM2.5 emissions were not modelled (sections 4.3.1.3, 6.4.3, 6.5.4).	6 This supplements the assessment of PM10 and PM2.5 in section 4.5.6 of Volume 2A of the draft IIS and sections 4.3.4, 4.4.1.3 and 5.3 of Pacific Air and Environment's report of 8 August 2006.
7 Assesses the implications of the pulp mill on air quality in Launceston, with specific attention given to PM, NO ₂ and odour (sections 6.5.1, 6.5.7 and 6.5.8).	7 This is an addition to the air quality impact assessment in section 4.5 of Volume 2A of the draft IIS and sections 4.4.1.3 and 5.3 of Pacific Air and Environment's report of 8 August 2006.
8 Assesses the pulp mill emissions (including Class 2 emissions such as CO, metals and PAHs) against the design criteria in the 'Recommended environmental emission limit guidelines for any new environmental emission limit guidelines for any new bleached kraft eucalypt pulp mill in Tasmania', the Environment Protection Policy (Air Quality) 2004, and the goals contained in the National Environment Protection (Ambient Air Quality) Measures (sections 5, 6.2.1, 6.2.4 and 6.2.5).	8 This is an addition to the compliance assessment in section 4.5.6 of Volume 2A of the draft IIS and to Pacific Air and Environment's report of 8 August 2006. Note that the raw data used by Mr Ormerod in this assessment was generated by GHD in their TAPM modelling undertaken in late 2005 for the purpose of enabling Dr Roger Drew to undertake the health risk assessment presented in the Toxikos report at Appendix 21 of the draft IIS.
9 Assesses of the effect of the mill's plumes on visibility and fog on nearby roads (section 6.3).	9 This is an addition to the air quality impact assessment in section 4.5 of Volume 2A.
10 Makes the following observations at section 5.1.3 on the air quality design criteria in the RPDC Emission Limit Guidelines; <ul style="list-style-type: none"> • that the criteria for SO₂ and NO₂ in the Emission Limit Guidelines are probably based on a unit conversion error. • rebuts comments made in the Tasmanian Government Agency submission regarding the criteria for inorganic chlorinated compounds. 	10 These comments are an addition to, and clarification of, the description of the air quality regulatory requirements in section 4.5.4 of Volume 2A of the draft IIS.
11 Assesses the impacts of additional truck movements associated with the pulp mill on air quality in Launceston (section 6.5.9).	11 This new work is an addition to the air quality impact assessment contained in section 4.5 of Volume 2B of the draft IIS.
12 Comments on why the main stack height is not 2.5 times higher than the height of nearby buildings (section 6.1.2).	12 This assessment is an addition to the air quality assessment in section 4.5 of Volume 2A of the draft IIS
13 Explains why contour plots were not included for some parameters, and sets out the maximum predictions for NO ₂ , SO ₂ , PM10, PM2.5, TRS, Cl ₂ , HCl and inorganic chlorinated compounds at discrete receptor points in the whole model domain (sections 6.2.2 and 6.2.3).	13 This information supplements the assessment at section 4.5 of Volume 2A and section 4.4 of Pacific Air & Environment's report of 8 August 2006.
14 Explains why it is inappropriate to base the assessment of	14 This explanation is new and an addition to section 4.5, in

Summary of witness statement**Relationship with the draft IIS**

<p>air emissions against the National Environment Protection (Air Toxics) Measure as suggested in the Tasmanian Government Agency submission (section 6.2.5).</p>	<p>particular section 4.5.6, of Volume 2A of the draft IIS.</p>
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<p>15 Attaches GHD's response to comments made by the Tasmanian Government Agency submission on construction air quality issues, and the alleged relevance of the Ambient Air NEPM to this assessment (Attachment 4). Mr Ormerod also responds to comments in the Tasmanian Government Agency submissions regarding the assessment of air emissions against the Ambient Air NEPM at section 5.1.1</p>	<p>15 This explanation is new and supplements section 4.5.1 (for construction air quality) and 4.5.6 (Ambient Air NEPM) of Volume 2A of the draft IIS.</p>
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<p>16 Calculates scope 1, 2 and 3 greenhouse gas emissions associated with the Bell Bay pulp mill (Attachment 2). The transport assumptions used in this assessment are based either on data contained in the draft IIS or on updated modelling data for log trucks and boiler fuel and chemical transportation. This updated data is presented in the witness statement of Mr Keith Midson.</p>	<p>16 This assessment replaces the calculation of annual greenhouse gas emissions at section 4.21.4 of Volume 2A and Appendix 20 of the draft IIS.</p>
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Summary of witness statement**Relationship with the draft IIS****Mr Greg Collins - GHD****Noise**

This witness statement:

Relationship with the draft IIS:

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|--|---|
| 1 Adopts Appendix 18, Volume 9, of the draft IIS as the basis of Mr Collin's evidence. | 1 Summarises the description of ambient noise conditions in section 2.15, and the noise impact assessment in section 4.15, of Volume 2A of the draft IIS. It also summarises the key aspects of Appendix 18 of the draft IIS. |
| 2 Sections 3 and 4 of this statement explain the modelling process and methodology undertaken in preparing the Noise Assessment Report at Appendix 18 of the draft IIS. | 2 This summarises Parts 1, 3 and 5 of Appendix 18 of the draft IIS. |
| 3 Sections 4.4 and 6 of this statement explain the construction plans relied on for the noise modelling and sections 4.4 and 4.5 of this statement summarise Mr Collins' opinions on construction and operational noise at the pulp mill site. | 3 This summarises and supplements section 4.15.4 of Volume 2A and sections 5.2, 5.4 and 7 of Appendix 18 of the draft IIS. |
| 4 Section 4.6 of this statement summarises Mr Collins' opinions on managing and mitigating noise emissions. . | 4 This summarises the mitigation measures in section 4.15.13 of Volume 2A and section 6 of Appendix 18 of the draft IIS. |
| 5 Responds to the submission of the Tasmanian government on noise issues (section 4.7). | 5 This is an addition to, but essentially reinforces, the noise assessment and recommended noise mitigation and management measures in sections 2.15 and 4.15 of Volume 2A and Appendix 18 of the draft IIS by responding to the key noise aspects of the Tasmanian Government Agency Submission. |
| 6 Section 5 of this statement is based on Mr Collins' inspection undertaken after publication of the draft IIS, and provides a brief, first principles, evaluation of noise issues associated with pipeline construction, the pump station, landfill and quarry, and workers accommodation facility. | 6 This complements and reinforces the description of ambient noise levels and noise impact assessment in sections 3.13 and 5.14 of Volume 3A for the water supply pipeline and pump station, and the description of ambient air quality for the effluent outfall pipeline at section 10.17 of Volume 3A. It is an addition to Part 11 of Volume 3B, in so far that the draft IIS did not assess the noise implications of effluent pipeline construction.

It supports the noise assessments presented at sections 15.11 and 16.12 of Volume 3B (workers accommodation facility), sections 10.12 and 10.13 of Volume 2B (wharf) and section 12.11 (landfill and quarry) of Volume 2B. |

Summary of witness statement**Relationship with the draft IIS****Dr Roger Drew – Toxikos****Health risk assessment**

The witness statement:

- 1 In section 4, responds to submissions on the human health risk assessment of air emissions relating to:
- the incomplete inventory of emissions from existing local industry.
 - the lack of formal consideration of ultrafine particulates.

Relationship with the draft IIS:

- 1 The draft IIS relates to these responses as follows:
- the incomplete inventory was acknowledged in Dr Drew's report at sections 3.2, 4.1.1 and 7.1.4 of Appendix 21 in Volume 10 of the draft IIS. The response explains the inherent conservatism of the assessment, and that the assessment showed that negligible effects will arise from the mill emissions on their own.
 - Dr Drew's opinions reflects the information contained in Mr Robin Ormerod's witness statement on the salt content of ultrafine particulate matter, which updates the information contained in Appendix 21 of Volume 10⁸.

⁸ This summary of Dr Drew's health risk assessment of air emissions is identical to the summary contained in Part 3.3 of Summary Document, but is repeated here for ease of reference.

3.5 Construction issues

Summary of witness statement

Relationship with the draft IIS

Mr Eric Jas - Atteris

Effluent outfall design and installation

This witness statement:

1 Adopts and summarises the Atteris Ocean Outfall Conceptual Design Study (March 2006).

Relationship with the draft IIS:

1 This report is at Appendix 52, Volume 16, of the draft IIS.

2 Section 4.1 and 4.2 of this statement summarise the various options and alternatives for undertaking the shore crossing and installing the effluent outfall pipeline offshore, and explains the basis for Mr Jas' recommendation to:

- use open-cut trenching methods for the shore crossing.
- install the pipeline in a trench of which the offshore section has been dredged using a pontoon-mounted backhoe dredge. The use of explosives to pre-fragment rock to allow dredging will only be used as a last resort, if the backhoe dredger fitted with a rock breaker is ineffective.

2 This information is set out in sections 9.5-9.9 of Volume 3A and sections 11.4-11.12 of Volume 3B of the draft IIS. Mr Jas' statement at Attachment 2 depicts the revised location for the diffuser. The explanation for Gunns' proposal to move the diffuser 200m inland is described in Section 4.1 and Attachment 2 of Mr Jas' statement and at Part 2.4 of this Summary Document.

Summary of witness statement**Relationship with the draft IIS****Dr Michael Pollington - Pitt & Sherry****Shore crossing management and rehabilitation**

The witness statement:

1 Adopts the Pitt & Sherry Four Mile Beach Dune Crossing Remediation and Revegetation Report (March 2006).

Relationship with the draft IIS

1 This report:

- was exhibited in Appendix 50, Volume 16 of the draft IIS.
- was summarised in sections 11.12.5 of Volume 3B and 3.7 of Volume 4 of the draft IIS.
- utilises vegetation mapping of the crossing area that is summarised in section 10.13 of Volume 3A of the draft IIS.

2 Adopts and summarises the Pitt & Sherry Geomorphological Assessment Proposed Shoreline Crossing Area Effluent Pipeline Report (March 2006).

2 This report was exhibited in Appendix 51, Volume 16, of the draft IIS. Parts of this report are summarised at sections 9.5 and 10.5 of Volume 3A of the draft IIS.

3 Adopts the Pitt & Sherry Four Mile Beach Dune Crossing Geological Setting Report (March 2006).

3 This report was exhibited in Appendix 53, Volume 16, of the draft IIS. Parts of this report are summarised in section 10.5 of Volume 3A of the draft IIS.

4 Annexes a report in Attachment 2 titled 'Gunns Bell Bay Pulp Mill – Groundwater Assessment' (November 2006).

4 This additional work:

- provides supplementary information on groundwater at the pulp mill and landfill sites, and has been referenced in sections 4.4 of Dr Ian Woodward's statement of evidence.
- adds to the description of groundwater characteristics at this locality in section 2.7.1 of Volume 2A and Volume 12.6.1 of Volume 2B of the draft IIS.
- adds to the groundwater monitoring program outlined in section 4.4.7 of Volume 4 of the draft IIS.

Summary of witness statement**Relationship with the draft IIS****Dr Ian Woodward - Pitt & Sherry****Landfill and Tamar river crossing****Landfill**

This witness statement:

- 1 Summarises the key aspects of the solid waste landfill conceptual design report at Appendix 55, Volume 16, of the draft IIS including:
 - cell construction and layout (section 4.1).
 - landfill liner and drainage system (section 4.2).
 - groundwater management (section 4.3).
 - leachate management and impacts (sections 4.4 and 4.5). Dr Woodward has regard to groundwater surveys undertaken after the draft IIS was published, and which are appended to the witness statement of Mr Michael Pollington.
 - responds to the Beca AMEC report (section 4.6).
 - summarises alternatives (section 6.1).
 - summarises landfill management recommendations (section 7.1).

Landfill

Relationship with the draft IIS:

- 1 The statement:
 - Summarises the solid waste landfill conceptual design report at Appendix 55, Volume 16, and the related sections in Parts 11 and 12 of Volume 2B of the draft IIS.
 - Provides the following minor clarifications and updates:
 - section 4.3 of the statement clarifies his descriptions of groundwater depth on pages 24, 32 and 64 of Appendix 55.
 - section 4.5 acknowledges that the protected environmental values for the Tamar and North Esk catchments, which at the time of Appendix 55 were still in draft form, have now been formalised.
 - section 4.6 acknowledges a calculation error relating to leachate volumes identified by Beca AMEC. The error has no consequence due to a counterbalancing conservative assumption.

- 2 Addresses the residual impacts of dioxins in waste disposal to landfill (section 4.5(b)).

- 2 This is an addition to section 4.14 of Volume 2A, section 12.13 of Volume 2B and Appendix 55, Volume 16, of the draft IIS.

Tamar River crossing

This witness statement:

- 3 Summarises the key aspects of the Tamar River water supply pipeline crossing report at Appendix 56, Volume 16, of the draft IIS including:
 - a description of the five river crossing options that were considered, and their relative merits and limitations (section 5.1).
 - a description of the outcome of the two dimensional modelling of siltation associated with the pipeline installation, and the recommended management measures (sections 5.2 and 5.3).
 - responds to the Beca AMEC report (section 5.4).

Tamar River crossing

- 3 Summarises the Tamar River crossing report at Appendix 56, Volume 16, and the section 5.8.3 of Volume 3A of the draft IIS.

3.6 Terrestrial Flora and fauna (including marine and migratory avifauna)

Two experts have prepared witness statements on these matters.

Summary of witness statement

Relationship with the draft IIS

Dr Tim Wills - GHD

Flora

This witness statement:

1 Summarises the report titled 'Proposed Bleached Kraft Pulp Mill in Northern Tasmania – Flora Assessment' (May 2006) (section 4.1).

Relationship with the draft IIS:

1 This report is at Appendix 29, Volume 12, of the draft IIS.

2 Explains the process and methodology used in the flora assessment report and outlines the assumptions and limitation of the report (section 3).

2 This summarises and supplements the information contained in Appendix 29, Volume 12, of the draft IIS.

3 Updates (at section 5.1) the extent of interference with vegetation based upon the following alterations to the project footprint after Dr Wills' report at Appendix 29 had been completed:

- the leachate pipeline and landfill road.
- the preferred water supply pipeline alignment and Tamar River crossing.
- finalisation of the effluent pipeline alignment.

3 Section 5.1 of Dr Wills' statement updates the flora impact assessment at:

- Section 12.7 of Volume 2B and section 7.4 and Table 7.5 of Appendix 29, Volume 12 (landfill).
- Section 5.9 of Volume 3A and section 7.6 and Table 7.7 of Appendix 29, Volume 12 (water supply pipeline).
- Section 11.12 of Volume 3B and section 7.7 and Table 7.8 of Appendix 29, Volume 12 (effluent pipeline).

4 Describes loss of or damage to species listed under the EPBC Act (section 4.1.2) and addresses the May 2006 Significant Impact Guidelines (section 5.2).

4 The summary of impacts at section 4.1.2 provides:

- minor updates to the flora assessment at Appendix 29 of Volume 12.
- a new assessment against the Significant Impact Guidelines.

5 Describes loss of or damage to species listed under the TSP Act (section 4.1.3).

5 The summary of impacts at section 4.1.3 updates the flora assessment report at Appendix 29 of Volume 12 and in particular Tables 7.3 – 7.8.

6 Assesses other risks to native vegetation, such as fragmentation, introduction of and spread of weeds and *Phytophthora cinnamoni*, and altered fire, hydrology and grazing regimes (sections 4.1.4 - 4.1.9).

6 These matters summarise and supplement the consideration of these issues at sections:

- 4.9.3 of Volume 2A (pulp mill), 10.8 of Volume 2B (wharf), and 12.7 of Volume 2B (landfill, quarry and reservoir).
- 5.9.1 of Volume 3A (water supply pipeline).
- 11.12.1 of Volume 3B (effluent pipeline).

Summary of witness statement

Relationship with the draft IIS

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| | <ul style="list-style-type: none"> • 16.8.1 of Volume 3B (workers accommodation facility). |
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| <p>7 Summarises his management recommendations contained in Part 7 of Appendix 29 (section 4.2).</p> | <p>7 This section summarises and supplements section 7.2.2, 7.3.2, 7.4.2, 7.5.2, 7.6.2, 7.7.2 and 7.8.2 of the flora assessment at Appendix 29 of Volume 12, and the management and mitigation measures described at sections:</p> <ul style="list-style-type: none"> • 4.9.4, 4.9.5 and 4.9.6 of Volume 2A and 3.3.6 of Volume 4 (pulp mill site). • 10.8.1 and 10.8.2 of Volume 2B and 3.4.6 of Volume 4 (wharf). • 12.7.1, 12.7.2, 12.7.3 and 12.7.4 of Volume 2B and 3.5.6 of Volume 4 (landfill, quarry and reservoir). • 5.9.2, 5.9.3 and 5.9.4 of Volume 3A and 3.6.6 of Volume 4 (water supply pipeline). • 11.12.2, 11.12.3 and 11.2.4 of Volume 3B and 3.7.7 of Volume 4 (effluent pipeline). • 16.8.2, 16.8.3 and 16.8.4 of Volume 3B and 3.8.6 of Volume 4 (workers accommodation facility). |
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| <p>8 Responds to submissions on offsets, non-vascular plants and the South Esk River (Cataract) Gorge (section 4.3) and discusses the potential changes to the offset calculation (section 5.3).</p> | <p>8 The responses to submissions provide additions to the draft IIS in regard to non-vascular plants and the impact of water extraction on flora at the South Esk River Gorge.</p> <p>In relation to offsets, section 4.3.1 criticises the offset arrangements proposed by the draft IIS and section 5.3 notes that the calculation of proposed offsets in sections 7.2.3, 7.4.3, 7.5.3, 7.6.3 and 7.7.3 of Appendix 29 Volume 12, are likely to change.</p> |
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| <p>9 Updates the overall significance of impact ratings supplied in Appendix 29, Volume 12, of the draft IIS (section 5.4).</p> | <p>9 Tables 4-2 to 4-7 of Dr Wills' statement update the flora and fauna impact assessment at:</p> <ul style="list-style-type: none"> • Table 74 of Volume 2A and Table 7.3 of Appendix 29, Volume 12 (pulp mill). • Table 173 of Volume 2B and Table 7.4 of Appendix 29 Volume 12 (wharf). • Table 192 of Volume 2B and Table 7.5 of Appendix 29 Volume 12 (landfill, quarry and reservoir). • Table 7.6 of Appendix 29 Volume 12 (Long Reach woodchip mill). • Table 5-14 of Volume 3A and Table 7.7 of Appendix 29 Volume 12 (water supply pipeline). • Table 11-20 of Volume 3B and Table 7.8 of Appendix 29 Volume 12 (effluent pipeline). |
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Summary of witness statement**Relationship with the draft IIS****Mr Brett Lane - Brett Lane Consulting****Terrestrial fauna and avifauna**

This witness statement includes:

- 1 A peer review of the fauna report at Appendix 30, Volume 13, of the draft IIS.
- 2 A report assessing the impacts of the project on listed marine and migratory birds.

The relationship with the draft IIS:

- 1 Supplements the fauna assessment in the draft IIS (see below).
- 2 Adds to the description and assessment of seabirds and shorebirds, and marine ecology assessment, in the draft IIS (see below).

Peer review of terrestrial fauna studies (Attachment 2 of witness statement)

This report:

- 1 Peer reviews and interprets the fauna assessment undertaken by GHD at Appendix 30, Volume 13, of the draft IIS. The peer review identifies that key information was provided, however there were minor omissions and mistakes in the description of some species classifications under the EPBC Act and TSP Act and inadequacies in some of the targeted searches.
- 2 The statutory context and implications of the fauna assessment are at:
 - section 3.4.1 for EPBC Act-listed species.
 - section 3.4.2 for TSP Act-listed species.
 - section 3.4.3 for Tasmanian RFA-listed species.
- 3 Peer reviews the eagles nest search report at Appendix 35, Volume 13, of the draft IIS (section 4).
- 4 Peer reviews the masked owl report at Appendix 36, Volume 13, of the draft IIS (section 5).

Peer review of terrestrial fauna studies (Attachment 2 of witness statement)

Relationship with the draft IIS:

Items 1 - 4

While the field investigations described in the fauna report at Appendix 30, Volume 13, are generally supported by Mr Lane as being reasonable and form the basis of his assessment, neither that report nor the assessment of fauna issues in Appendix 35 and 36 lend themselves to an easy appreciation of the project's impacts on fauna.

The report should be read in conjunction with, but in the event of inconsistency preferred to:

- sections 2.10 and 4.10 of Volume 2A in regard to the pulp mill site.
- section 10.9 of Volume 2B in regard to the wharf.
- section 12.8 of Volume 2B in regard to the landfill, quarry and reservoir.
- sections 3.10 and 5.10 of Volume 3A in regard to the water supply pipeline.
- sections 10.14 of Volume 3A and 11.13 of Volume 3B in regard to the effluent pipeline.
- sections 15.8 and 16.9 of Volume 3B in regarding to the walkers accommodation facility.

- 5 Impacts and mitigations measures are discussed for:
 - species listed under the EPBC Act (section 3.5.1).
 - species listed under the TSP Act (section 3.5.2).
 - species of State conservation significance (section 3.5.3).

- 5 The mitigation recommendations supplement and support the measures described at:
 - sections 4.10.2, 4.10.3 and 4.10.4 of Volume 2A, and section 3.3.6 of Volume 4 of the draft IIS (pulp mill).
 - section 10.9 of Volume 2B and section 3.4.6 of Volume 4 for the wharf.
 - section 12.8 of Volume 2B and section 3.5.6 of Volume 4 for the landfill, quarry and reservoir.
 - sections 5.10.2 and 5.10.5 of Volume 3A and section 3.6.6 of Volume 4 for the water supply pipeline.
 - sections 11.13.2 and 11.13.5 of Volume 3B and section 3.7.7 of Volume 4 for the effluent pipeline.

Summary of witness statement**Relationship with the draft IIS**

- section 16.9.1 of Volume 3B and section 3.8.6 of Volume 4 for the workers accommodation facility

Marine and migratory avifauna assessment (Attachment 3 of witness statement)

This report:

- 1 Describes the methodology and defines a 'study area' for the assessment (section 3 and Figure 1).
- 2 Provides a brief overview of the statutory and policy context for the report (section 4).
- 3 Describes the significant marine and intertidal birds in the study area (section 5).
- 4 Describes the key bird habitats likely to be affected by the project (section 6).
- 5 Describes the impact of the project by reference to:
 - effluent discharge (section 7.1).
 - wharf construction (section 7.2).
 - the removal of sand and beach materials during construction of the effluent pipeline (section 7.3).
 - new light sources at night (section 7.4).
 - noise and activity levels during construction (section 7.5).
- 6 Recommends monitoring and mitigation measures (section 8).

Marine and migratory avifauna assessment (Attachment 3 of witness statement)

1-6 This Attachment is an:

- addition to, and update of, the description of seabirds and shorebirds at sections 10.11.7 and 10.11.8 of Volume 3A of the draft IIS.
- addition to the marine ecology impact assessment at section 11.11 of Volume 3B of the draft IIS.

The mitigation measures primarily relate to the construction and operation of the effluent pipeline, and therefore supplement the mitigation measures described at sections 3.7.7 and 3.7.8 of Volume 4.

3.7 Social, economic and resource issues

Five experts have prepared witness statements on these matters.

Summary of witness statement

Relationship with the draft IIS

Mr Tim Offor - OfforSharp

Social impact assessment and mitigation

This witness statement:

- 1 At section 5, peer reviews the social impact assessment of the project, in particular Part 7 of Volume 2B and Appendix 10, Volume 8, of the draft IIS.
- 2 Describes new issues raised through community interviews that were not addressed in the draft IIS (section 6.2 and Annexure E).
- 3 Describes the profile of the George Town community (section 6.3 and Annexure B).
- 4 Identifies social impacts for the planning, construction and operational phase of the project by reference to services, economic issues, social networks, personal issues, and biophysical changes. Each impact is analysed, and mitigation and management recommendations are made for those impacts (section 6.4). In considering the social impacts of accommodation availability and land prices, regard was had to a valuation report prepared by Brothers & Newton (Annexure G).
- 5 Responds to issues raised in submissions on the draft IIS and by the Farley Consulting Group (section 6.5).

Relationship with the draft IIS:

Items 1 – 3 : data

Some of the base data used in preparing the social impact assessment in the draft IIS has been relied upon by Mr Offor and has not been superseded, especially at sections 7.3-7.5 of Volume 2B.

This has been augmented by interviews conducted by OfforSharp with community members, service providers and the valuation report prepared by Brothers & Newton. This process not only produced additional data that could be relied upon by Mr Offor in preparing his assessment, but also identified social issues that were not identified by, or addressed in, the draft IIS.

Item 4 – Impact assessment and mitigation

(i) Impact assessment

The analysis of social impacts in Mr Offor's statement is more structured and comprehensive than sections 7.6-7.10 of Volume 2B. Mr Offor's statement is the primary reference point for evaluating and understanding the social impacts of the project.

(ii) Mitigation and management

Most of the mitigation measures described in Table 162 in section 7.10 of Volume 2B describe technical measures to minimise the environmental impacts of the mill. While there are social dimensions to such impacts, only six mitigation measures are proposed that relate to 'social and community'.

While Mr Offor's statement implicitly or explicitly supports most of the social, emergency response and health, safety and asset measures proposed at sections 3.3.10, 3.3.11 and 3.3.12 of Volume 4 of the draft IIS, the extensive list of measures to manage and mitigate social impacts in section 6.4 of Mr Offor's witness statement should now be considered the primary reference point for a consideration of these issues.

- 5 The responses, while important in evaluating the issues raised by submitters and Farley Consulting, do not of themselves add any new impact assessment or mitigation recommendations to what is already contained elsewhere in Mr Offor's statement.

Summary of witness statement

Relationship with the draft IIS

Mr Robert de Fegely
Pulpwood supply

This witness statement:

1 Comments on the pulpwood supply analysis in the draft IIS.

Relationship with the draft IIS:

1 Mr de Fegely's statement is a review of the pulpwood supply assessment at sections 6.2.1 – 6.2.16 of Volume 1B of the draft IIS. This work is based on Mr de Fegely's own investigations, his interviews with Gunns' forest managers and his review of Gunns' forest management systems and inventory, and interviews with Forestry Tasmania and Private Forests Tasmania.

2 Describes:

- a 'base case' of current timber harvesting trends and operations in Tasmania.
- the sources of wood fibre for the pulp mill by references to ownership (with the wood supply projections and assumptions for each class of owner) and sawmill residues.
- Gunns' wood supply model, including its forest management systems and inventory.
- possible factors that might affect the supply of wood for the pulp mill, such as changes in laws and policies which limit native forest harvesting, changes in tax breaks for managed investment schemes for plantations.
- supply risks, such as unsecured private forest resources, loss of native forest supply, fire risk, and pest and disease.
- and assesses whether the pulp mill will result in an intensification of available wood supply in Tasmania.
- describes the overseas markets for wood chips, and how this might affect the supply of wood to the pulp mill.

2 This analysis supplements and supports the outcomes of the wood supply analysis at sections 6.2.1 – 6.2.16 of Volume 1B of the draft IIS.

3 Responds to issues raised by submissions on the draft IIS and in the URS Forestry report.

3 The responses to the submissions and the URS Forestry report (at Attachment A2) augment and put into context the assessment of pulpwood supply in the draft IIS.

Summary of witness statement

Relationship with the draft IIS

Mr Keith Midson - GHD

Transport

The witness statement:

1 Adopts the Transport and Traffic Impact Assessment report (March 2006) and contains a summary of opinions and conclusions in that report.

Relationship with the draft IIS:

1 This report is:

- at Volume 15, Appendix 43 of the draft IIS.
- is consistent with the management strategies to mitigate impacts in section 5.2 in Volume 4, and with Gunns' commitments in section 6, Volume 4, of the draft IIS.

2 Clarifies that caustic soda is being delivered directly to the pulp mill berth and not to Hobart.

2 In relation to the transport of caustic, this clarification updates:

- Section 6.2 of Appendix 43, Volume 15.
- Table 13 of Appendix 43, Volume 15.
- Figure 16 of Appendix 43, Volume 15.
- Figure 17 of Appendix 43, Volume 15.

3 Clarifies an inconsistency regarding the number of trucks transporting boiler fuel.

3 Table 14 of Appendix 43, Volume 15 of the draft IIS indicates that 78 trucks per day will transport boiler residue to the pulp mill. This is not consistent with Figures 18 and 21 of Appendix 43, which indicate that a total of 67 trucks per day will undertake this task. The correct figure is in Table 14.

4 Clarifies an inconsistency regarding access to the pulp mill. Access is via the existing road to the wood chip mills that connects to the East Tamar Highway, approximately 3.5 km north of the Batman Highway junction.

4 Section 4.2.5 of Volume 2A and section 4.3 of Appendix 43 in Volume 15 of the draft IIS refer to the construction of two access roads. However, access to the pulp mill is proposed only via the existing road that connects to the East Tamar Highway, approximately 3.5 km north of the Batman Highway junction.

5 Confirms that Gunns operates two chip mills at the Tamar site.

5 Section 2.12.5 of Volume 2A of the draft IIS states that Gunns currently operates four woodchip mills in Tasmania from three sites. However, in section 2.3 (page 19) of Appendix 43 of the draft IIS it is stated that Gunns currently operates three wood chip mills in Tasmania. In fact, Gunns operates two chip mills at the Tamar site.

6 Clarifies that up-to-date Local Government roads data is provided in Table 9, section 3.4 of Appendix 43, Volume 15.

6 Table 26 in section 2.12.12 of Volume 2A of the draft IIS is an out of date table. The correct table is Table 9, section 3.4 of Appendix 43 in Volume 15.

7 Discusses the traffic impact assessment for the proposed landfill and quarry facilities.

7 The traffic impact assessment for the proposed landfill and quarry facilities was undertaken by Pitt and Sherry at Appendix 55, Volume 16, of the draft IIS. These issues are also addressed at sections 12.10 of Volume 2B of the draft IIS. Mr Midson's statement provides an opinion on the traffic impacts

Summary of witness statement**Relationship with the draft IIS**

	associated with these facilities which supports the draft IIS findings.
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8	Provides an opinion on the traffic impacts of the Traffic Impact Assessment prepared by Pitt and Sherry regarding the proposed workers accommodation facility in George Town.	8	This provides an opinion which generally supports the conclusions of the Pitt and Sherry report at Appendix 37, Volume 14, relating to the traffic impacts associated with the proposed workers accommodation facility in George Town. Mr Midson considers that the Pitt and Sherry report overestimates the traffic generation rates of the workers accommodation facility, and is therefore conservative. Mr Midson agrees that the traffic generation rates calculated by Pitt and Sherry will not have a significant adverse impact on road capacity or safety. These issues are also referenced at section 4.2 of Appendix 43, Volume 15 and are addressed at sections 15.10 and 16.11 of Volume 3B of the draft IIS.
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9	Provides additional analysis of unladen vehicle trips in relation to log trucks/ chemical transport trucks and unladen boiler fuel trucks exiting the pulp mill, as the previous analysis only considered truck volumes entering the mill.	9	This additional analysis supplements laden truck information in section 6.11 of Appendix 43 at page 91 and section 4.12.3 of Volume 2A of the draft IIS.
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10	Provides additional analysis based on chemical delivery information set out in Table 3-28 of Appendix 7, Volume 6 of the draft IIS.	10	This additional analysis is based on revised chemical delivery information and updates Table 13 of Appendix 43, Volume 15 and Table 6-28 of Volume 1B of the draft IIS.
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11	Responds to submissions on road safety implications and potential pavement damage and maintenance implications for pulp mill.	11	This information supplements the information in section 2.8 and 7.11 of Appendix 43, Volume 15 and section 2.12 of Volume 2A of the draft IIS.
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Summary of witness statement**Relationship with the draft IIS****Mr Jon Stanford - Insight Economics****Economic impact assessment**

This witness statement:

1 Adopts and summarises the final Economic Impact Assessment report (May 2006).

Relationship with the draft IIS:

1 This report:

- is at Volume 8, Appendix 15, of the draft IIS.
- is consistent with the assessment of economic issues at section 6, Volume 2B, of the draft IIS (save for the clarification that GST revenue collected in Tasmania is not the same as GST revenue distributed to Tasmania).
- is consistent with Gunns' commitments summarised in Table 13 of Volume 4 draft IIS.

2 Explains the process and methodology for the economic modelling used in preparing the report at Appendix 15 of the draft IIS and outlines the assumptions and limitations of the report (section 3).

2 This supplements Appendix 15 and clarifies that GST revenue collected in Tasmania is not the same as GST revenue distributed to Tasmania.

3 Confirms that additional review has occurred of information on property valuations and marine fisheries (section 3.5).

3 The consideration of marine fisheries and property values is new, but this has not altered Mr Stanford's conclusions in Appendix 15 of the draft IIS.

4 Comments on the likely economic impacts of the transport impacts arising as a consequence of the mill (section 3.5).

4 This additional information does not alter the economic impact estimates provided in Appendix 15.

5 Summarises the short and long term economic impacts of the pulp mill, and the economic impacts if the project does not proceed (section 4).

5 This summarises section 6 of Volume 2B and Appendix 15 of Volume 8 of the draft IIS.

6 Responds to key issues concerning economic impacts raised in submissions (section 5).

6 This is addition to, but essentially reinforces, the economic impact assessment in Section 6 of Volume 2B and Appendix 15 of the draft IIS and discusses the credibility of the economic model used, and the economic aspects of transport and tourism issues.

Summary of witness statement**Relationship with the draft IIS****Dr Tim Stone****Aboriginal heritage**

This witness statement:

- 1 Adopts and summarises Dr Stone's report at Appendix 14, Volume 8, of the draft IIS.
- 2 Describes the investigation and reporting process and methodology (section 3.2).
- 3 Summarises the TASI sites identified for the pulp mill site, landfill/quarry/reservoir (Survey Areas 1 and 2), effluent pipeline, water supply pipeline and workers accommodation facility (Tables 1 and 2).

Relationship with the draft IIS:

Items 1-3

This summarises and supplements the key issues described in the Aboriginal cultural heritage parts of the draft IIS:

- Pulp mill site - sections 2.18 and 4.18 of Volume 2A.
- Wharf - section 10.16 of Volume 2B.
- Landfill, quarry and reservoir – section 12.14 of Volume 2B.
- Water supply pipeline – sections 3.15 and 5.16 of Volume 3A.
- Effluent pipeline – sections 10.19.1 of volume 3A and 11.18.1 of Volume 3B.
- Workers accommodation facility – section 15.13 of Volume 3B.
- Appendix 14, Volume 8.

- 4 Comments on the reliability of TASI sites recorded previously by Mr Graham which were not found during the surveys conducted by Dr Stone and Mr Stanton (section 3.3).

- 4 This summarises and supplements Appendix 14, Volume 8, of the draft IIS.

- 5 Comments on the assumptions and limitations of Dr Stone's report at Appendix 14 of the draft IIS (section 3.4 and 3.4).

- 5 This summarises Appendix 14 of the draft IIS.

- 6 Summarises the recommendations for managing, mitigating or avoiding impacts on TASI sites, and outlines more general cultural heritage management strategies (section 4).

- 6 It provides specific commentary on the management and mitigation proposals contained in Volume 4:

- Pulp mill site – section 3.3.9.
- Wharf – section 3.4.10.
- Landfill, quarry and reservoir – section 3.5.9.
- Water supply pipeline – section 3.6.9.
- Effluent pipeline – section 3.7.11.
- Workers accommodation facility – section 3.8.9.

- 7 Responds to submissions on the draft IIS (section 5).

- 7 This is new but does not change any of Dr Stone's conclusions in the draft IIS. This section rebuts submissions which criticise the investigation process undertaken by Dr Stone.