

PRELIMINARY REPORT

Independent Review of Gunns Limited Bleached Kraft Pulp Mill IIS - Wood Flow Assumptions

Prepared for

Resource Planning and Development Commission

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The Tasmanian Resource Planning and Development Commission (“RPDC”) has engaged URS Forestry (“URS”) to provide independent advice on aspects of a draft Integrated Impact Statement (“Draft IIS”) prepared by Gunns Limited (“Gunns”) for a proposed bleached kraft pulp mill within the Bell Bay Industrial Zone, northern Tasmania.

URS has been requested to peer review section 6.2 and Appendix 38 of Gunns’ Draft IIS, which describe modelled wood flows to the proposed mill from eucalypt and pine plantations, and natural forests by broad geographic regions within Tasmania. The review is to focus on the adequacy of the responses in the Draft IIS to subsections 4 and 9, 10, 11, 12 and 13 of Section 4.2.1 of the Final Scope Guidelines for the Integrated Impact Statement, RPDC, 2005 (“the Guidelines”). The Guidelines address:

- Potential intensification of forestry operations;
- The quantity of pulpwood required;
- The relative supply proportions of young and old pulpwood;
- Security of supply;
- The potential impact of variations to the security of supply; and
- Evidence of a sustainable pulpwood supply.

For each of the Guidelines, URS has been asked to advise on:

- The adequacy of the Draft IIS;
- The validity of the methodology and findings;
- Whether the proponent’s conclusions are reasonable and scientifically based; and
- Identify any major / critical errors or omissions in the Draft IIS and how these could be addressed.

The engagement is proposed to be a two stage process, whereby URS firstly identifies the additional information required for URS to provide a final opinion to the RPDC, then URS receives this information and completes its analysis.

This report details our preliminary findings in this first stage, and we comment in relation to each of the Guidelines under review.

It should be noted that no material difference has been identified between Section 6.2 and Appendix 38 of the Draft IIS during the course of our initial review and therefore only Section 6.2 is referenced throughout this report.

Subsection 4 of Section 4.2.1 of the Guidelines requests that the Draft IIS include:

“Details of any intensification of forestry operations in Tasmania (including conversion of native forest and the establishment of plantations on agricultural land (hardwood or softwood) and silviculture practices) for the supply of pulpwood of all types (from now until the end of the projected life of the mill), the likely environmental, social, economic and community issues and effects of any such intensification, and how those effects will be addressed.”

2.1 Adequacy of the Draft IIS

URS notes that there are several business aspects that may be interpreted as an intensification of activities, which may have environmental, social, economic or community impacts. These include:

- The rate of native forest conversion to plantation in order to achieve a proposed plantation estate of 150,000 ha;
- The rate of plantation expansion on agricultural land in order to achieve a proposed plantation estate of 150,000 ha;
- Changes to harvesting and transport operations relative to the base case of ongoing woodchip exports; and
- Changes in regional harvest plans as a result of the pulp mill proposal.

Section 6.2.5 of the Draft IIS states that ‘all wood for the pulp mill will be sourced from wood that will otherwise have been exported as woodchips’ and that ‘the pulp mill is not dependent on changes to the manner in which forestry activities are carried out...within Tasmania’. Gunns believe that these statements can be supported by figures that indicate the estimated pulp mill log input of 3.2 to 4.0 million green metric tonnes per annum (GMT pa) is substantially less than the 5.3 to 6.7 million GMT pa that is forecast to be available from all sources over the life of the pulp mill. Gunns concludes that therefore ‘the pulp mill...(will not)...intensify timber operations within Tasmania’ and ‘as there will not be any significant change in the extent or nature of current levels of forestry operations in Tasmania, there are no relevant environmental, social, economic or community impacts to be assessed and / or mitigated’.

Potential environmental and community impacts related to log transportation on local roads, appear to be well documented in Volume 1, Section 6.2.8, Volume 2, Sections 2.12 and 4.12, and Appendix 43 of the Draft IIS.

2.2 Validity of the methodology and findings

In URS’ opinion, assessments of whether forestry operations are likely to intensify should be based on a proposed scenario that includes supply of pulpwood to both the pulp mill and to other markets, such as export woodchips. The argument presented by Gunns (i.e. that there will be no intensification of operations) appears to be based on an implicit assumption that one market will completely substitute for

the other. Forecasts in Figure 6-3 of the Draft IIS suggest that there will continue to be pulpwood available in excess of the requirements of the pulp mill and that some level of woodchip export will continue, however there is no description of a market strategy that would integrate the two operations.

Notwithstanding the above, Gunns has argued in the Draft IIS that there will be no intensification of forestry operations when compared to a 'business as usual' case. However, no description or support for a business as usual case has been provided in the document. For example, there is anecdotal evidence to suggest that a business as usual scenario may not result in demand for 100% of the available pulpwood resource. For example the outgoing Forestry Tasmania chief executive is reported as saying an anti-Tasmanian campaign by international environmental groups has caused current sales of woodchips by Gunns to Japan to have fallen well below past year sales.

Further examples of insufficient supporting information include:

- Figure 6-14 of the Draft IIS, which shows anticipated contributions to the pulp mill by regional supply zone from 2008. Without an indication of current and historic log supplies by region it is not possible to determine whether or not logging is likely to intensify in any one region; and
- In relation to the overall plantation establishment, Gunns suggest that the expansion is consistent with previous and current business strategies, however no information is provided relating to such a strategy.

2.3 Validity of the conclusions

The validity of Gunns' conclusions cannot be evaluated in the absence of a base case (no mill) scenario.

2.4 Critical errors or omissions

URS recommends that the RPDC seek clarification on a number of factors that would help to establish a business as usual scenario and the assessment of any intensification of operations against this scenario:

- Past, present and planned future rates of native forest conversion on Gunns owned, crown and private property land;
- The availability of suitable cleared agricultural land for plantation establishment and the expected competition for this land from companies such as Forest Enterprises Australia and Great Southern Plantations over the period during which Gunns proposes to increase its plantation estate;
- The nature of land (conversion versus cleared pasture) to be acquired by Gunns as part of its program to increase the plantation estate;
- Regional supply of pulpwood under a business as usual scenario to augment forecast data presented in Figure 6-14 of the Draft IIS; and
- Anticipated market demand for hardwood woodchip exports in the absence of a pulp mill.

Subsection 9 of Section 4.2.1 of the Guidelines requests that the IIS include:

“The quantity of pulpwood (including the maximum ratio of softwood and hardwood to be used in manufacturing pulp in any one time) required for the project (thousands tonnes per annum).”

3.1 Adequacy of the Draft IIS

Pulp mill intake is directly related to the anticipated source of wood fibre and the expected pulp output capacity of the mill, in this case described as 0.82 million air dry metric tonnes per annum (ADMT pa) of pulp at start up, increasing to 1.1 million ADMT pa over the life of the project. The conversion of ADMT of pulp to GMT of pulpwood requires an understanding of a number of conversion processes throughout the processing cycle, including pulping efficiencies associated with different wood fibres; and fibre and moisture losses during the log harvest, transport, chipping and chip storage processes.

Section 6.2.11 of the Draft IIS states the pulp mill will use approximately 3.0 million GMT pa of pulpwood and 0.2 million GMT pa of sawmill residues at start-up, increasing to approximately 3.75 million GMT pa of pulpwood and 0.25 million GMT pa of sawmill residues over the life of the project.

Figure 6-19 of the Draft IIS outlines the likely ratio of softwood and hardwood feedstock over the modelled life of the project (2008-2032) for Gunns’ preferred strategy of a plantation and native forest resource mix.

3.2 Validity of the methodology and findings

The assumptions used to convert raw fibre (measured in GMT) to output of pulp (measured in ADMT) do not appear to have been provided in the Draft IIS. URS is unable to confirm the validity of the methodology used to determine the quantity of pulpwood required without further information on these conversion factors for the different sources of wood fibre to be used.

There is insufficient breakdown of the plantation area available (hardwood vs. softwood), the likely yields from plantation areas over time and competing markets to comment on validity of the ratios of softwood to hardwood. This is discussed further in Section 7 of this report.

3.3 Validity of the conclusions

There is insufficient information available in Section 6.2 of the Draft IIS to comment.

3.4 Critical errors or omissions

URS recommends that the RPDC seek clarification on:

- Key assumptions regarding conversion factors used in the production of pulp (measured in ADMT) from the different sources of wood fibre (measured in GMT);

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- Uncertainties associated with key conversion assumptions; and
 - The source of conversion assumptions and how they benchmark against similar processing facilities already in operation.

Subsection 10 of Section 4.2.1 of the Guidelines requests that the IIS include:

“A broad indication of the proportion of young (less than 30 years old) to older wood (more than 30 years old) which is likely to form the feedstock for the mill. A projection of any changes to the proportion of younger and older wood used as feedstock over the life of the mill should also be provided.

(This information is required as the age of the wood will affect pulp yield and bleaching requirements, and, in consequence, emissions from the mill. In any case, the limits indicated in the Tasmanian Government 2004, Environmental emission limit guidelines for any new bleached eucalypt kraft pulp mill in Tasmania, are to be met.)”

4.1 Adequacy of the Draft IIS

Section 6.2.12 of the Draft IIS states that all (hardwood and softwood) plantations will be harvested at less than 30 years of age and that native forest will be harvested at greater than 30 years of age. Gunns therefore indicates that the proportion of plantation hardwood species to native forest species, presented in Figure 6-19 of the Draft IIS for 2008 to 2032, provides the best, broad indication of the proportion of young to older wood.

4.2 Validity of the methodology and findings

The majority of hardwood plantations in Tasmania are currently managed for pulpwood and sawlog production on a 10 to 25 year rotation. This rotation age is largely driven by the economics of production and the assumption that all hardwood plantations will be harvested at less than 30 years of age is therefore reasonable.

The majority of softwood plantations in Australia are currently managed for sawlog and pulpwood production on a 26 to 35 year rotation with one or more thinning operations typically undertaken between 14 and 24 years of age. Clearfell operations in softwood plantations typically produce between 20% and 45% pulpwood, which could be defined as “older” wood under the criteria set out in the Guidelines, and may make up a proportion of the 10% of total mill feedstock sourced from softwood plantations.

The majority of native forests in Australia are managed for sawlog production on a rotation in excess of 30 years, however thinning may take place earlier in the rotation. Gunns cite the publication *Towards a New Silviculture in Tasmania’s Public Oldgrowth Forests: Final Advice to the Tasmanian Government, April 2005* as part of its discussion on wood supply. One of the recommendations in Section 7 of that report is for an accelerated program of eucalypt regrowth thinning. It is understood that Forestry Tasmania intends to thin the bulk of its productive native forest at around age 25 to 35. Therefore the assumption that all pulpwood from native forest will be harvested at greater than 30 years of age may not be valid.

The validity of the actual proportions of hardwood plantation, softwood plantation and native forest intake is discussed in Section 7 of this report.

4.3 Validity of the conclusions

The assumption that all wood from hardwood plantations will be less than 30 years old appears reasonable.

Some feedstock derived from clearfell operation in mature softwood plantations could be defined as ‘older’ wood under the criteria set out in the Guidelines and may make up a proportion of the 10% of total mill feedstock sourced from pine plantations. Similarly, some feedstock from thinning operations in native forests could be defined as ‘young’ wood. The extent to which these factors may be material to the requirement under this guideline for a “broad indication” cannot be established without some further information.

4.4 Critical errors or omissions

URS recommends that the RPDC seek clarification on:

- The total mill feedstock derived from clearfelling operations in softwood plantations and the age of these clearfell operations; and
- The total mill feedstock from thinning of native forests and the age of these thinning operations.

Subsection 11 of Section 4.2.1 of the Guidelines requests that the IIS:

“Detail the arrangements which are or will be in place to secure a sufficient supply of pulpwood for the projected life of the mill.”

5.1 Adequacy of the Draft IIS

Resource security is generally provided for as part of a feasibility study for a major wood processing facility in three primary ways:

- Through ownership and control of the resource, with supply assumptions consistent with land tenure arrangements;
- Through long term supply contracts with third parties that are underpinned by robust inventory data of the supply resource; and
- By undertaking economic modelling of log inputs from unsecured resource using prices that are, at least, on parity with alternative markets for the same resource.

Figure 6-21 of the Draft IIS indicates that Gunns (owned and controlled resources), the Crown (Forestry Tasmania), private property and sawmill residues make up the total potential feedstock resource for the proposed mill.

Gunns owned or controlled supply

Figure 6-21 of the Draft IIS indicates that Gunns will initially supply approximately 0.8 million GMT pa (~25%) of the total proposed feedstock and that this will increase to approximately 2.5 million GMT pa (~66%) by 2017.

Section 6.2.2 of the Draft IIS states Gunns owns 75,000 net ha of plantations and 40,000 net ha of native forest, and leases or manages under joint ventures a further 37,000 ha of plantations. The area under lease or joint venture is equivalent to ~25% of the current, total productive forest area managed by Gunns.

There are no references in Section 6.2 of the Draft IIS that describe the terms of lease and joint venture arrangements, including expiry dates, renewal options for subsequent rotations and associated wood flow modelling assumptions. There is no reference to the preferred land tenure associated with the proposed 45,000 ha plantation expansion programme described in Section 6.2.5 of the Draft IIS.

Forestry Tasmania supply

The Regional Forest Agreement (RFA) provides for Forestry Tasmania to make available 300,000 m³ of high quality hardwood sawlog each year to 2017. The level of cut is reviewed every five years through a review process with the next review due in 2007. The RFA does not specify a target harvest volume for

pulpwood production. Pulpwood production is considered a residual product arising from the harvest of sawlogs.

Section 6.2.2 of the Draft IIS states that native forest pulpwood is supplied by Forestry Tasmania ‘under various contractual arrangements’ and that timber from State Forests will initially be a significant source of supply under ‘existing and future contractual arrangements’. Gunns also states that current supplies of native forest pulpwood is administered under Forestry Tasmania’s rolling *Three Year Wood Production Plan*.

Section 6.2.13 of the Draft IIS states that Gunns has been provided data by Forestry Tasmania ‘as part of an intended long-term supply agreement with (Forestry Tasmania)’. There are no references in Section 6.2 of the Draft IIS that detail key obligations under current or intended contracts governing supplies beyond the current *Three Year Wood Production Plan*, including supply volumes, expiry dates and renewal or first right of refusal options.

Private Property supply

Section 6.2.13 of the Draft IIS states that Gunns will maintain supply from private forests ‘on an as needed basis’, indicating that Gunns has no wood supply agreements in place with private growers.

Sawmill residues

Section 6.2.11 of the Draft IIS states sawmill residue feedstock is anticipated to range from 0.2 to 0.25 million GMT per year. There is no detail in Section 6.2 of the Draft IIS indicating the contractual status of this supply. Sawmill residues make up ~6% of the total proposed input at start up and its contractual status is not considered material to the overall assessment of resource security.

5.2 Validity of the methodology and findings

Gunns own and control a proportion of the resource that is intended for supply to the pulp mill and this proportion increases over time. This will provide some security of supply as a result of the management control by Gunns, but two aspects of this supply that impact on security are unclear. Firstly, there is no detail on the current or proposed tenure of the plantation land. Secondly, there is no statement of the company’s philosophy with respect to supply to the pulp mill in the event that other markets are available that yield a superior return to the forest owner. It is also noted that Gunns manage some of the plantation estate on behalf of third party investors and these investors will no doubt be expecting the highest possible return.

Contractual arrangements with third party growers such as Forestry Tasmania and private forest managers are unclear from the information provided and so too is the basis for projections of resource availability. The production of pulpwood as a by-product from the production of sawlog could lead to pulpwood supply fluctuations depending on the choice of stands Forestry Tasmania allocates to its *Three Year Wood*

Production Plan. Figure 6-21 of the Draft IIS indicates that supplies could vary between 1.7 and 2.3 million GMT pa without changing the annual production of sawlogs.

Section 6.2.13 of the Draft IIS states that ‘as the wood requirement for the pulp mill is significantly less than the total harvest in Tasmania, any unforeseen reductions in wood availability from a particular source will readily be overcome by supply from another source’. Where there are competing markets for the wood supply (as there currently is from woodchip exports) such an assessment could be considered simplistic. Before any such conclusion can be drawn there needs to be a clear analysis of alternative markets and clear assumptions regarding the pulp mill’s capacity to pay for wood fibre.

5.3 Validity of the conclusions

In our opinion the Draft IIS does not sufficiently detail the arrangements that are, or will be, in place to secure a sufficient supply of pulpwood for the projected life of the mill. Security would normally be demonstrated through a combination of secure land tenure, contractual arrangements for wood supply, and a demonstrated capacity for the pulp mill to pay a price for third party owned wood fibre that is on parity with alternative markets.

5.4 Critical errors or omissions

URS recommends that the RPDC request:

- A summary of existing lease and joint venture arrangements for Gunns owned and managed land, including net planted areas, expiry dates and renewal options;
- A schedule of existing and intended wood supply contracts with third parties, including details of supply volumes, expiry dates and renewal or first right of refusal options;
- An indication of preferred land ownership arrangements for the proposed 45,000 ha plantation expansion programme;
- Output from a wood supply model indicating the likely levels of contractually secured and unsecured feedstock; and
- Assumptions regarding the future prices in alternative markets and the capacity of the pulp mill to compete for wood fibre at these prices.

Subsection 12 of Section 4.2.1 of the Guidelines requests that the IIS:

“Specify if and how the pulpwood supply including the security of supply might vary through the life of the project, and the likely effect of such variations in terms of the issues identified in the preceding paragraphs of this clause.”

6.1 Adequacy of the Draft IIS

Section 6.2.14 of the Draft IIS specifically addresses potential variations to the security of feedstock over the life of the project. In this section Gunns proposes that since there are no constraints on the supply of wood from private landowners and Forestry Tasmania, ‘there are no expected variances in security’ over feedstock.

Gunns owned or controlled supply

The Draft IIS does not provide details of the source of supply over time from different land tenures managed by Gunns or contractual terms governing land use on current and potential future areas that are under lease or joint venture. There is no discussion of obligations that Gunns may have to market wood that is managed for third party investors such as those in a Managed Investment Schemes or other third party investors.

Forestry Tasmania supply

Section 6.2.1 of the Draft IIS describes the RFA framework including its key objectives of maintaining an ecologically sustainable and internationally competitive wood production and wood products industry. The Draft IIS also notes the five yearly review process, the outcomes of the 2002 review and subsequent Supplementary Agreement signed in 2005.

Private Property supply

Section 6.2.13 of the Draft IIS states that Gunns will maintain supply from private forests ‘on an as needed basis’. This infers that Gunns has no wood supply agreements in place and it is assumed (although it is not clear) that this situation will continue.

Sawmill residues

Sawmill residues make up ~6% of the total proposed input at start up and are not considered to be material to the overall assessment of resource security.

6.2 Validity of the methodology and findings

It is common practice to undertake a sensitivity analysis during a feasibility study for the purpose of quantifying potential contractual and market based risks to a development associated with key raw material inputs, in this case pulpwood. The Draft IIS did not indicate such an analysis has been undertaken.

As discussed in Section 5.2 of this report, the lack of detail on land tenure makes it difficult to assess the impact of potential variations to the security of supply sourced from land managed by Gunns.

While the RFA will theoretically provide some protection for the State with respect to its supply objectives, it does not provide any guarantees regarding the supply of this wood fibre to Gunns. It should also be noted that the Supplementary Agreement, while generally maintaining wood supply, it did include the removal of 141,000 ha of State Forest and freehold land from potential timber production, and noted a the need for industry re-structuring. The Draft IIS does not list future RFA reviews as a potential sovereign risk despite the precedent set in 2005 in Tasmania and similar precedents in Western Australia and New South Wales.

As discussed in Section 5.1 of this report, the Draft IIS is also silent on the wood supply contract terms between Forestry Tasmania and Gunns, including supply volumes, expiry dates and renewal or first right of refusal options. This lack of detail makes it difficult to assess the impact of potential variations to the security of supply sourced from land managed by Forestry Tasmania.

6.3 Validity of the conclusions

Broad references within the Draft IIS to the lack of constraints on the supply of feedstock from private landowners and Forestry Tasmania, and to the RFA framework do not sufficiently describe how the security of supply might vary over the life of the project and the risks associated with any such security.

6.4 Critical errors or omissions

In addition to information requested in Section 5.4 of this report, URS recommends that the RPDC request:

- An assessment of the sovereign risk associated with further changes to the RFA; and
- Outputs from a wood supply model indicating the sensitivities associated with key contractual and market based risks.

Subsection 13 of Section 4.2.1 of the Guidelines requests:

“A demonstration of how the supply of pulpwood of all types and age classes and from all Tasmanian sources is to be maintained on a sustainable yield basis.

Note: This should include a discussion on the use of pulpwood from Tasmanian plantations on a sustainable yield basis for the mill, which indicates possible scenarios for the use of plantation wood in the mill and canvasses the feasibility and environmental issues associated with an “all plantation” sustainable yield wood supply strategy. Provide details of the calculations and assumptions upon which the sustainable yield for the supply of pulpwood of all types and age classes to the mill over the projected life of the mill has been determined.”

7.1 Adequacy of the Draft IIS

Section 6.2.15 of the Draft IIS provides an overview of how pulpwood supply will be maintained on a sustainable yield basis. The section references evidence of sustainable management, including Gunns’ Sustainable Management Policy, commitment to regeneration of forests as per the *Forest Practices Act 1985*, the RFA, Private Forestry Tasmania surveys of private landowner intent, and modelling of the Gunns resource on a non-declining¹ basis.

Section 6.2.8 of the Draft IIS indicates a possible scenario for the use of plantation feedstock only, noting that this is potentially possible from 2018 once the current plantation estate matures and is expanded by an additional 45,000 ha. Section 6.2.5 of the Draft IIS indicates that since a plantation only strategy can be achieved at current plantation expansion rates and under current legislative frameworks, there are no relevant environmental impacts to be assessed and/or mitigated.

Section 6.2.7 of the Draft IIS summarises the resource modelling process undertaken by Gunns to determine wood flows over time by ownership/tenure, species and supply region (operational catchment).

The Draft IIS references a review of model inputs undertaken by Jaako Poyry Consulting. URS is led to believe Gunns has advised RPDC that the review was carried out as part of internal financial due diligence processes. The review reportedly contains information commercial in confidence.

7.2 Validity of the methodology and findings

Gunns has used forest industry specific software, the Woodstock Forest Modelling System (Woodstock) to undertake the wood flow analysis of its own freehold and controlled resource. URS considers Woodstock to be one of the leading software tools available to undertake this type of analysis. Key Woodstock inputs typically used to describe a resource by forest type and ownership include:

¹ A wood flow modelling parameter that ensures the yield from a nominated resource in one year will be greater than the yield for the previous year.

- Location;
- Net productive area by age;
- Estimated harvest yield by product based on site-specific, inventory or regional yield data;
- Transport distances or costs; and
- Model constraints, including replanting, new land planting and market supply constraints.

The Draft IIS indicates that wood flow data for Forestry Tasmania and private property (through Private Forests Tasmania) were modelled internally by the respective third parties and supplied to Gunns for integration into wood flow summaries.

URS has reviewed the Draft IIS for evidence of each key wood flow modelling input by ownership (Table 7-1) and found in most cases that the Draft IIS does not adequately address this Guideline.

Table 7-1: Summary of key wood flow model inputs by forest type and ownership, as described in the Draft IIS

Model input	Gunns	Forestry Tasmania	Private property
Location	Resource split into 35 log transport catchments and summarised into the three regional areas of North-east, North-west and South-east		
Area by age	Only total net area quoted	Only total net area quoted	No data supplied
Yield by product	No data supplied	No data supplied	No data supplied
Yield source ¹	No data supplied	No data supplied	No data supplied
Yield assessment methodology ²	No data supplied	No data supplied	No data supplied
Model constraints ³	Non-declining yield constraint	No data supplied	No data supplied

1. Typical yield sources include professional estimate, site assessment, current inventory or grown forward inventory data.
2. Including site or inventory assessment methodologies, growth modelling assumptions, growth model sources, target or actual inventory error bounds, the conversion used to go from inventory data assessed in cubic metres to yields reported in the Draft IIS in GMT, harvest reconciliation data and genetic or silvicultural gain assumptions.
3. Typically include maximum and minimum harvest age, replanting assumptions, non-declining or smoothed yield constraints, minimum supply constraints and species mix constraints.

It is normal practice to undertake a sensitivity analysis during a feasibility study for the purpose of quantifying potential environmental and operational risks associated with key raw material inputs, in this case pulpwood. The Draft IIS does not indicate such an analysis has been undertaken.

In addition to contractual and market risks highlighted earlier in this report, there are a number of environmental and operational risks that could impact resource sustainability. URS notes that the Draft IIS is currently silent on key risks, including potential losses through:

- Fire;

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- Insects;
 - Browsing pressure;
 - Disease;
 - Frost, snow and hail;
 - Climate change, including mean annual rainfall and daytime temperature trends, and drought risk;
 - Inaccurate area statements;
 - Inaccurate inventory assessments; and
 - Inaccurate or inappropriate growth modelling data.

7.3 Validity of the conclusions

URS does not consider broad references to resource area and location as sufficient demonstration of the sustainability of wood supply. On the basis of available information, it is not possible for URS to comment on the validity of the ratio of softwood to hardwood intake (see Section 3 of this report) or on documented proportions of eucalypt plantation, pine plantation and native forest intake (see Section 4 of this report).

7.4 Critical errors or omissions

URS recommends that the RPDC request:

- A summary of key inputs to the wood supply models for each of Gunns, Forestry Tasmania and private property resources, including:
 - Area by species by age data;
 - Harvest yield by product data;
 - Yield source, i.e. professional estimate, site assessment, current inventory or grown forward inventory data;
 - Yield assessment methodology, including site or inventory assessment methodologies, growth modelling assumptions, growth model sources, target or actual inventory error bounds, the conversion used to go from inventory data assessed in cubic metres to yields reported in the Draft IIS in GMT, harvest reconciliation data and genetic or silvicultural gain assumptions; and

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- Model constraints, including maximum and minimum harvest age constraints, replanting assumptions, non-declining or smoothed yield constraints, minimum supply constraints and species mix constraints.
 - An assessment of key environmental or operational risks that may directly impact wood flows.

URS has summarised the potential critical errors or omissions in Table 8-1 as identified in this report. This additional information would assist URS in its provision of advice to the RPDC in accordance with the scope of our engagement.

Table 8-1: Summary of potential critical errors or omissions

Conclusions
<p><i>Item 4: Intensification of forestry operations, URS recommends that the RPDC seek clarification on:</i></p> <p>Past, present and planned future rates of native forest conversion on Gunns owned, crown and private property land</p> <p>The availability of suitable cleared agricultural land for plantation establishment and the expected competition for this land from companies such as Forest Enterprises Australia and Great Southern Plantations over the period during which Gunns proposes to increase its plantation estate</p> <p>The nature (conversion versus cleared pasture) of land to be acquired by Gunns as part of its program to increase its plantation estate</p> <p>Regional supply of pulpwood under a business as usual scenario to augment forecast data presented Figure 6-14 of the Draft IIS</p> <p>Anticipated market demand for hardwood woodchip exports in the absence of a pulp mill</p>
<p><i>Item 9: Quantity of pulpwood required, URS recommends that the RPDC seek clarification on:</i></p> <p>Key assumptions regarding conversion factors used in the production of pulp (measured in ADMT) from different sources of wood fibre (measured in GMT)</p> <p>Uncertainties associated with key conversion assumptions</p> <p>The source of conversion assumptions and how they benchmark against similar processing facilities already in operation</p>
<p><i>Item 10: Proportion of young and old wood, URS recommends that RPDC seek clarification on:</i></p> <p>The total mill feedstock derived from clearfelling operations in softwood plantations and the age of these clearfell operations</p> <p>The total mill feedstock from thinning of native forests and the age of these thinning operations</p>
<p><i>Item 11: Security of supply, URS recommends that the RPDC request:</i></p> <p>A summary of existing lease and joint venture arrangements for Gunns owned and managed land, including net planted areas, expiry dates and renewal options</p> <p>A schedule of existing and intended wood supply contracts with third parties, including details of supply volumes, expiry dates and renewal or first right of refusal options</p> <p>An indication of preferred land ownership arrangements for the proposed 45,000 net ha plantation expansion programme</p> <p>Output from a wood supply model indicating the likely levels of contractually secured and unsecured feedstock</p> <p>Assumptions regarding the future prices in alternative markets and the capacity of the pulp mill to compete for wood fibre at these prices</p>
<p><i>Item 12: Impacts of variations to the security of supply, URS recommends that the RPDC request:</i></p> <p>An assessment of the sovereign risk associated with further changes to the RFA</p> <p>Outputs from a wood supply model indicating the sensitivities associated with key contractual and market based risks</p>

Conclusions

Item 13: Evidence of a sustainable pulpwood supply, URS recommends that the RPDC request:

A summary of key inputs to the wood supply models for each of Gunns, Forestry Tasmania and private property resources, including:

Area by species by age data

Harvest yield by product data

Yield source, i.e. professional estimate, site assessment, current inventory or grown forward inventory data

Yield assessment methodology, including site or inventory assessment methodologies, growth modelling assumptions, growth model sources, target or actual inventory error bounds, the conversion used to go from inventory data assessed in cubic metres to yields reported in the Draft IIS in GMT, harvest reconciliation data and genetic or silvicultural gain assumptions

Model constraints, including maximum and minimum harvest age constraints, replanting assumptions, non-declining or smoothed yield constraints, minimum supply constraints and species mix constraints

An assessment of key environmental or operational risks that may directly impact wood flows

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The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. This report has been conducted at a desktop level only and no field inspection has been completed to review the information incorporated in the report. No indications were found during our desktop investigations that information contained in this report as provided to URS was false.

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