BELL BAY
WOOD PROCESSING PLANT
DPEMP SUPPLEMENT

DRAFT 1
August 2012
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<td>Department of Infrastructure, Energy and Resources (State)</td>
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<td>EPA</td>
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</tr>
</tbody>
</table>
INTRODUCTION

Artec Pty. Ltd. have operated a woodchip mill at Bell Bay for eleven years producing wood chip for export contributing significantly to regional development; the woodchip mill has been operating under a 400,000 tonnes per annum permit.

The Bell Bay wood processing plant is located on a 9.7 hectare area of land at Bell Bay in Northern Tasmania. The woodchip mill will produce a maximum of 600,000 tonnes of woodchip per annum at full capacity and employ 18 people on the processing site consisting of 16 permanent employees and two casual employees; the increase in production would require an additional three permanent employees.

The company proposes a progressive change in product processed to include a larger quantity of plantation timber as a proactive strategy to change operations to reflect changes in resource availability.

The project includes the development of a static woodchip machine, the expansion of the operation to 600,000 tonnes of woodchips produced per annum and the construction of a Dangerous Goods Store.

The location of the wood processing plant will not change and the area presently utilised for wood processing and storage will also not change, however, new processing equipment and infrastructure will be added.

PUBLIC COMMENT PERIOD

The DPEMP was advertised for public comment by George Town Council with ten representations received. The issues raised in the public consultation period are summarised by theme below.

NOISE

Issues identified through public comment:

- The quality of life in Beauty Point has been ruined due to industrial development in Bell Bay. There is continual loud noise with the current wood chipper.
- Concerned over impacts of a second chipper. Will need to move home, and are too old to cope with such a move, no-one will want to buy in the area.
- Other people in the area feel the same
- Any increase in the already unwelcome level of noise pollution in Clarence Point area will have a detrimental effect.
- Moved to area due to peaceful atmosphere now cannot sleep without windows close with heavy curtains and have relocated to bedroom at back of the house.
- Noise carries unabated across the water and undiminished level of sound reached Clarence point seems to peak around 3 am
- The existing chipper makes a roaring noise in Beauty Point.
- A second chipper must make it worse. The proposal will ruin peace and quiet, extra noise will be unbearable.
- Second chipper should be in a sound proof structure as the site is open and sound travels directly across the Tamar.
• Noise will impact on community and tourism industry (noise).
• Proponent could look at alternative site where noise will not be an issue.
• DPEMP needs more scrutiny to protect social well being of surrounding area.
• Section 4.1.3 of DPEMP includes additional controls for 3 items of machinery: if these are in fact major noise sources then appropriate mitigation should be a requirement prior to operations.
• Current noise emission limit is 40 dB(A) this is excessive and should be lowered to reduce impact beyond the boundary.
• Operating hours currently permitted 24 hours six days a week, this would be unacceptable if these hours were worked.
• Development should not be allowed to put at risk all the good qualities that make the area attractive to residents
• The permit should impose stringent conditions for noise and other environmental impacts and severest penalties for non compliance.
• In 2009 residents in Beauty Point complained of the negative impact of noise.
• Surveys undertaken demonstrated that:
  • Artec was named as a possible source of noise, some noise pollution reports occurred when Smartfibre chippers were not in operation.
  • Noise was worse at early morning especially on still or foggy days with no wind, or when wind from the north, north-east
  • Very loud, even with double glazing roaring sounds were heard
  • Residents felt their views were irrelevant and that rights of the company were given priority over rights of residents
  • Despite efforts made by FEA, there is still considerable noise disturbance for quite a few homes on the Western side of the Tamar, mostly in Beauty Point.
  • It is likely that various industries are contributing to this; as they seek to vary their operating licenses, operators should be encouraged to take positive actions that eliminate and reduce the noise emitted from their premises.
• The aim of the DPEMP should be expanded to include and to ensure the operations eliminate the negative effects of noise pollution on residents of Beauty Point, Clarence Point, Kelso’s and Beaconsfield. There should be no increase in any noise levels or duration emanating from Bell Bayas a result of the installation of a second chipper. Design, material use, location of plant and equipment as a first step and then minimisation of noise leaving the premises.
• The Noise Management Plan should be expanded to include... to undertake all actions necessary to not only meet but exceed community expectations regarding best practice management of noise pollution by eliminating noise impacts.
• Modelling has been undertaken for worst case scenario, however, the DPEMP has failed to explain what the worst case is and what operating response will to be such conditions.
• The majority of work occurs 0500 – 1700. Noise in the early morning was identified by residents as having a major negative impact on their lives. Permit should restrict the capacity of the processing plants operating hours to daytime only starting at 06.30 until it can be
demonstrated to affected residents that the measures undertaken to eliminate noise have proven to be effective.

- Do not want repeat of Smartfibre noise that so impaired lifestyle in Beauty Point. Only after 100’s of complaints did Smartfibre implement measures.
- Avoidance of this should be ensured (eg an enclosed chipper).
- Response to complaints should be closely looked at.
- As a Beauty Point resident makes a strong objection to the installation of any machine that will further exacerbate noise intrusion on the area.
- Beauty Point is not an industrial area but suffers noise and air pollution from Bell Bay.
- Should ensure that the new installation will not impact on the community.
- The DPEMP needs to spell out in simpler language and greater detail what plant and equipment will be used to eliminate noise, phrases such as ‘screening infrastructure and shielding’ provide no comfort to residents.
- Noise and visual pollution of wood chipping operations in Bell Bay have negatively impinged on the lifestyle and well being of residents in Beauty Point, Clarence Point, Kelso, Rowella and environs for many years.
- Noise especially north/north-easterly winds, over cast days, early morning, river basin amplifies the noise.
- The 0500 start time is unreasonably early; a later start eg 06.30 should be specified so that sleep is not disturbed.
- Baseline noise surveys (only 2 days) were insufficient to provide a true picture of existing levels.
- Permanent monitors need to be installed to measure fluctuations and volume.
- Every person should have the right to enjoy their property and lifestyle.
- Proposal should be refused.
- Beauty Point, Clarence Point, Rowella, Kelso, and Beaconsfield area have lived with horrendous noise from current wood chippers and other industries for years.
- Noise starts early in the morning and continues all day; this impacts on mental health.
- Noise continues since intervention of Tim Morris but much less.
- Others in the community feel the same but do not have time to make submissions
- Traffic needs to be considered and whether there should be a limit on the times at which product on trucks can be delivered.

Response by Artec Pty Ltd:
The Bell Bay Industrial zone has been established for many years and is specifically identified in the George Town Planning Scheme 1991 as its own zone – identified for the main purpose of establishing and operating industrial plants and operations.

George Town Council describe the Bell Bay Industrial Zone as –

‘The Bell Bay Major and Heavy and George Town General Industrial Areas provide a variety of low cost appropriately zoned land and buildings. George Town’s strategic location and existing infrastructure makes it an ideally suited manufacturing, transport and distribution hub for local, national and international companies. Bell Bay is a production site for several

Issues about noise from the Bell Bay industrial estate generally should not be sole responsibility of one industrial operator to address and resolve.

Artec Pty Ltd is not opposed to the creation of a Working Group to identify, address and monitor noise sources within the Bell Bay Industrial Estate. The Working Group could possibly be the current Advisory Committee, or some form of it, established under clause 5.97 of the George Town Planning Scheme 1991. If such a noise working group or similar was established by the GTC or EPA then Artec Pty Ltd would be a willing participant in discussions to address noise across the whole industrial estate.

In terms of the expanded development the same commitments are made in relation to noise as per the DPEMP.

**FORESTRY**

Issues identified through public comment:

- Anti wood-chipping statements
- Supports the transition out of native forest logging to existing plantations to allow protection of native forests in the state.
- DPEMP states the proposal will allow for future plantation wood chip processing; however, it is not clear that this is guaranteed. Concerned that mill could be used to support further native forest wood chipping.
- Requests that EPA include a condition in any permit for this facility it be used only for plantation sourced wood.
- Proposal includes that 84% of woodchips would be sourced from native timber, in view of rep resentor this is unacceptable.

Response by Artec Pty Ltd:

The development will include the wood chipping of plantation (pine and hardwood) and native forest sourced timber. The wood chipping of native forest sourced timber is lawful in Tasmania. Forest practices that harvest timber from both plantation and native forest sources are tightly regulated through the *Forest Practices Act* 1985 and *Forest Practices Code* 2000.

While Artec Pty Ltd will place an emphasis on expanding the use of plantation sourced timber there will continue to be an international demand for Tasmanian native forest sourced wood products which includes woodchips.

**PLANNING**

Issues identified through public comment:

- Concerned that George Town Council’s decision has impacts on the residents of West Tamar Council region.
- The industrial zone has impacts on residences owing to proximity to residential areas. Council should limit further development in this zone.
- Impact of chip piles; should be screened from public view.
• Log truck traffic increase is a major concern, particularly between West Tamar highway and Batman Bridge a route used for commuting and school transport. Accident waiting to happen.

Response by Artec Pty Ltd:

The advertising of a Level 2 activity (as defined under EMPCA 1994) is regulated and requires the issuing of documentation for the public to access and comment on the proposed development.

The public comment period is open to all regardless of where they live in Tasmania, even if it is outside the area within which the development is proposed to occur.

An assessment of potential changes to visual amenity was made from Beauty Point and surrounds (see Figure 1, Appendix C). As the stockpile is formed it is shielded from view by the trees that fringe the coastal zone. It is only near full supply level for the woodchip pile that the top of the piles can be seen from locations such as Beauty Point (see images A1, B1 and C1 in Appendix C). Once at full supply level the stockpiles are short-lived as a ship is imminent and then the pile is transported onto the ship for a new pile to be created. Images A2, B2 and C2 illustrate the impact on the view field by the creation of a second stockpile at the site through the expanded development.

Please note that the stockpiles to the right of the images are those owned and operated by the Smartfibre mill.

The operation of log trucks on DIER controlled roads and highways are already regulated by DIER and road load limits so no additional commitments are made in relation to traffic.

COMMUNITY CONSULTATION

Issues identified through public comment:

• A working group should be established as soon as practical: EPA, George Town Council, Artec and local residents. Should meet regularly to discuss and review the effectiveness of noise management plan and issues (including first survey following completion of the upgrade).

• Section 1.4 of the DPEMP states that there has been extensive consultation carried out. The proposal has not been widely advertised in media- Heard about the proposal from word of mouth. Requests extension of time to allow other persons to make comment. Feels that poor publicity means that affected parties will not have had time to make representations.

• 2.1.3: Based on projections of truck movements production increase will actually be 811,200 tpa not 600,000 tpa. Proposed increase and associated impacts need to be clearly and consistently stated throughout the DPEMP.

• 2.3.3 states that community opinion on the proposal is difficult to gauge- this contradicts statement in section 1.4 that extensive consultation has been undertaken.

• Community consultation with GTC, WTC EPA and Artec so noise complaints can be properly dealt with.

Response by Artec Pty Ltd:

Issues about noise from the industrial estate generally should not be sole responsibility of one industrial operator to address and resolve.

Artec Pty Ltd is not opposed to the creation of a Working Group to identify, address and monitor noise sources within the Bell Bay Industrial Estate. The Working Group could indeed be the current Advisory Committee, or some form of it, established under clause 5.97 of the George Town Planning Scheme 1991.

The 600,000 tonnes of woodchip per annum is the requested new level of production at the Bell Bay facility as presented in the DPEMP. The figure of 811,200 tonnes per annum has simply been
calculated from - 52 weeks x 6 days per week x 2,600 tonnes per day = 811,200. The site does not always operate 6 days per week nor does it operate for 52 weeks each and every year. It is possible to have a situation where community opinion is difficult to gauge despite having conducted reasonable and extensive consultation.

**METEROLOGY**

Issues identified through public comment:

- More work needs to be done on meteorological data, the DPEMP provides only general information regarding wind direction in Tasmania namely the ‘roaring 40’s’.

Response by Artec Pty Ltd:

The climate of the site and adjacent surrounds has been described in of the DPEMP (section 2.2.6) to the extent necessary to integrate the relationship of climate to potential impacts from the expanded development (eg prevailing wind direction and potential sources of noise and/or dust).

**SHIPPING**

Issues identified through public comment:

- Questions number of ships: current level of 210,000 tpa is 1 ship per month then why is 600,000 2 ships per month (clause 3.4.3) and 811,200 would be 4 (3.6).

Response by Artec Pty Ltd:

The current permit allows for the production of 400,000 tonnes per annum, which requires about 12 ships per year (or about 1 per calendar month) to export subject to the size of the ship and quantity of woodchips for the order. In some months there are no ships as there are no available ships or client orders so hence there may be no ships loaded at the facility. At the time the DPEMP was written production had fallen to 210,000 tonnes per annum which is reflected in DPEMP section 3.6. The statement under 3.4.3 is reflective of ship movements under a 400,000 tonnes per annum production level.

The maximum number of ships per year for a 600,00 tonnes per annum production level would be 24 per annum. The upgraded operation will not produce and export more than 600,000 tonnes per annum.
COUNCIL REQUIREMENTS

Issues identified through public comment:

- Provide a Traffic Impact Assessment (TIA) by a suitably qualified practitioner in accordance with DIER’s “Traffic Impact Assessment Guidelines” (September 2007), to include the impact on the round-a-bout on junction of Bell Bay Road and East Tamar Highway through to Mobil Road.

Response by Artec Pty Ltd:

A Traffic Impact Assessment was conducted by Midson Traffic Pty Ltd for the area required by the George Town Council. The TIA is included in Appendix A of this DPEMP Supplement.

Key findings of the TIA are:

- The traffic generated by the proposed development will not have any significant adverse impacts on the surrounding road network, including the Bell Bay Road roundabout, in terms of traffic efficiency or road safety.
- The site access extends Mobil Road such that movements into and out of the site are of a ‘through’ nature, providing safe and efficient access to the site.
- The existing informal parking arrangement is considered adequate given the relatively low staff and contractor vehicle generation of the proposed development.
- Based on the findings of this report, the proposed development is supported on traffic grounds.

In light of the TIA, Artec Pty Ltd is of the view that no additional surveys, assessments or commitments are necessary to address traffic management for the development.
EPA REQUIREMENTS
Issues identified through public comment:

- Provide a Traffic Impact Assessment (TIA) by a suitably qualified practitioner in accordance
- Clarify the current and future quantity of wood chip received at the site from other sources.
- Clarify that no soft wood is processed/stored on site at present and discuss implications for water management of future processing of softwood (ie Resin Acids)
- Clarify the distance to nearest residence (DPEMP page 17 states 500 metres, page 64 states 2.1 km)
- Commitments:
  - Clarify whether # 29 relates to internal roads
  - Clarify water management commitments #'s 9, 24, 10, 25, 30, 11, 26 are somewhat repetitive/contradictory.

Response by Artec Pty Ltd:
A Traffic Impact Assessment was prepared by Midson Traffic (Appendix A). In light of the TIA, Artec Pty Ltd is of the view that no additional surveys, assessments or commitments are necessary to address traffic management for the development.

As indicated in the DPEMP:

Timber for processing into woodchip is sourced from private land and crown land across the State of Tasmania; recent percentages (November 2010) of resource source are as follows (R. Maher pers. comm.):
- public forests 84.1%;
- sawmill residue (sawmill residue comes from four sawmills, two of which are owned by Artec-presently average of 1,250 cubic metres per week) 13.4% and
- private property forests 2.5%

The type of trees taken will vary from plantation timber to native forest depending on the area of operation at the time and also depending on the timeline for the cessation of native forest logging. Royalties are paid for the timber to the owner/s.

The company considers there is an opportunity to expand its operations to encompass a wider scope of product to include hardwood and softwood plantation pulpwood sales; this change would be progressive and the proposed second static woodchip infrastructure would initially be utilised for the present operations and be available for processing the plantation woodchip and any other different product that will require a separate processing unit and storage area. The actual percentages of timber types, for example plantation versus native forest trees and hardwood/softwood percentages are unknown at this stage and would depend on resource availability, market demand and a number of other factors including social and economic forces.

With the current upheaval in the timber industry in Tasmania, and the likely loss of substantial areas of publicly owned production forestry to conservation reserves, the end result may translate into larger timber volumes being accessed from private land. The wood chipping of native forest sourced timber remains lawful in Tasmania. Forest practices that harvest timber from both plantation and native forest sources are tightly regulated through the Forest Practices Act 1985 and Forest Practices Code 2000.
Pine woodchip will at some stage be produced at the site because there is a growing demand for this product on international markets. Resin acid generation from the chipping of pine has been addressed in the Stormwater Management Plan (Appendix B) which also contains background information to the resin acid generation and management issue.

The Plan states:

Stormwater run-off from log yards and stockpile operations may be contaminated with organic debris as well as wood waste/finished product leachate which can be toxic to the receiving environment. The toxicity of the leachate is dependant on several factors including the tree species, components of the tree used in the forestry operation (eg components such as bark, heartwood etc.) and the characteristics of the receiving environment (eg levels of dissolved oxygen, temperature and pH).

The potential effects of leachate from a pine woodchip stockpile at the Bell Bay site are considered against the receiving environment using parameters such as background water quality and that of the run-off generating natural environment.

The treatment of runoff and leachate generated from the proposed pine woodchip stockpile is to be separated from the general site stormwater management pond.

Based on the type of material and species to be stockpiled a biological process associated with the traditional detention pond will provide significant reductions in the expected resin acid leachate generated.

The Plan describes additional works at the site to manage the resin acid issue, and includes:

**Stockpile Area**

Provide a concrete hardstand pad with screened grated pits for drainage. The pad shall be set at a height such that the surrounding yard does not direct surface runoff into the area.

Drainage from the pad and areas associated with the pine product chipping and storage shall be separated from the main site drainage and directed to the dedicated treatment pond. Standard practices to prevent pollutants such as oil and grease from maintenance operations entering the pond shall be included.

**Treatment Pond**

A standard unlined treatment pond with nominal surface area of 400m² and average depth of 1.5 m will provide storage volume to hold and treat the 5 day 99th percentile rain event over the stockpile area. It is taken for design purposes that the treatment volume is fully developed due to saturated stockpile conditions.

Considering the five day accumulation allows for treatment reductions to be fully developed at a temperature of 12°C as noted in Section 2.2.3 of the SMP. The pond volume is also of sufficient size to fully buffer the ARI 20 year 72 hour peak event.

The reduction in previous catchment area this new pond provides (by intercepting and treating the new stockpile footprint) effectively increases the efficiency of the existing settlement pond.

The new pond shall be provided with a grated inlet discharge weir or pit to capture floatable woody debris. The inlet shall be designed to spread and distribute the inflow so as not to provide scouring velocities for any sediments retained, as the initial removal of resin acids occurs within sediments.

The outlet of the new pond shall discharge to the existing settlement pond where additional detention and biological reduction will occur. The discharge to the existing pond will also be designed so as to not mobilise sediments.

**Existing Pond**
The overflow spillway should be formalised to provide a long term durable structure. Detailed design will be required to ensure discharge entering the pond from the site drainage system and the new treatment pond overflow does not mobilise sediments with scouring velocities. A return line and pump may easily be installed to recirculate water for further treatment in response to changes in operations or inputs of timber products.

The nearest residence to the location of the new stockpile is approximately 1.9km, located in a low density rural-residential style housing development at Gerzalia Drive (Deceitful Cove; Plate 3 of the DPEMP pg 23) which is the north-west of the Bell Bay Artec Pty Ltd operation.

Water management related commitments made in the DPEMP are reviewed below:

<table>
<thead>
<tr>
<th>Commitment Number</th>
<th>DPEMP wording</th>
<th>Revised Wording or Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>Improved road conditions to minimise dust emissions</td>
<td>Reword: Improved internal road conditions to minimise dust emissions</td>
</tr>
<tr>
<td>9</td>
<td>Rehabilitate and revegetate any areas disturbed during the wood processing plant general operations and monitor six monthly to prevent sediment loss to water quality control systems.</td>
<td>Delete: covered by commitment 24</td>
</tr>
<tr>
<td>24</td>
<td>Rehabilitate and revegetate any areas disturbed during the wood processing plant general operations and monitor six monthly.</td>
<td>Retain</td>
</tr>
<tr>
<td>10</td>
<td>Direct stormwater runoff into water quality control pond on the site to slow the water flow rate to prevent erosion of the landform.</td>
<td>Delete: covered by commitment 25</td>
</tr>
<tr>
<td>25</td>
<td>Direct stormwater runoff into water quality control pond on the site to slow the water flow rate to prevent erosion of the landform.</td>
<td>Retain</td>
</tr>
<tr>
<td>30</td>
<td>Stormwater from impacted sites at the wood processing plant area will be directed to the water quality control pond on the site which will slow water movement and retain a percentage of runoff volume.</td>
<td>Delete: covered by commitment 25</td>
</tr>
<tr>
<td>11</td>
<td>Sediment and pollutant barriers (interceptors) on drainage line from wood processing area to water quality control pond to slow water flow velocity and to trap sediment prior to discharge to the water quality control pond.</td>
<td>Delete: covered by commitment 26</td>
</tr>
<tr>
<td>26</td>
<td>Sediment and pollutant barriers (interceptors) on drainage line from wood processing area to water quality control pond to slow water flow velocity</td>
<td>Retain</td>
</tr>
</tbody>
</table>
and to trap sediment.

| New | - | Implement works for the Stockpile Area, Treatment Pond and Existing Pond as per the Stormwater Management Plan May 2012 |
A complete revised list of commitments is provided below to replace the list in the DPEMP:

<table>
<thead>
<tr>
<th>No.</th>
<th>Commitment</th>
<th>Potential Impact</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>An environmental noise survey of the Artec Bell Bay Wood Processing Plant will be undertaken.</td>
<td>Noise</td>
<td>Within 12 months of the completion of the proposed plant upgrade.</td>
</tr>
<tr>
<td>2</td>
<td>Construction activities will be limited to 0800-1630 hours</td>
<td>Noise</td>
<td>Construction phase</td>
</tr>
<tr>
<td>3</td>
<td>If any significant changes to operations occur, noise modelling will be undertaken.</td>
<td>Noise</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>5</td>
<td>On site machinery will be fitted with high performance environmental noise control of fully enclosed engines, double muffled exhausts and engine cooling air inlet silencers.</td>
<td>Noise</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>6</td>
<td>Telephone sirens or claxons will not be used or installed on site.</td>
<td>Noise</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>7</td>
<td>All drainage lines between the wood chipping area and water quality control pond will be directed through interceptors to capture contaminants and sediments.</td>
<td>Surface Water quality, site contamination</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>8</td>
<td>Sediments will be removed from interceptors when the accumulation reaches 15% of the storage volume, every three months or every third ship loaded, whichever occurs first.</td>
<td>Surface water quality, soil contamination</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>9</td>
<td>Drainage at the site is directed through interceptors to collect contaminants and sediments.</td>
<td>Surface water quality, soil contamination</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>10</td>
<td>Hydrocarbons stored on site in fully bunded and covered area.</td>
<td>Surface and ground water quality, soil contamination</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>11</td>
<td>Spill kits available on site at all times.</td>
<td>Surface and ground water quality, soil contamination</td>
<td>Ongoing.</td>
</tr>
<tr>
<td>12</td>
<td>Regular monitoring and removal by licensed contractor of septic tank contents.</td>
<td>Surface and ground water quality, soil contamination</td>
<td>Monitor six monthly in line with overall monitoring activities.</td>
</tr>
<tr>
<td>13</td>
<td>Consider materials used as hard surfacing or any other use on site potential for leaching pollutants to</td>
<td>Surface and ground water quality, soil contamination</td>
<td>Ongoing.</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Impacted Environmental Parameters</td>
<td>Periodicity</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td>Monitor surface waters from neighbouring properties that impact on the site</td>
<td>Surface water quality, soil contamination</td>
<td>Ongoing</td>
</tr>
<tr>
<td>15</td>
<td>Treatment of stormwater runoff to the standard necessary to enable safe and environmentally sustainable use and discharge to inland waterways.</td>
<td>Surface and ground water quality, soil contamination</td>
<td>Ongoing</td>
</tr>
<tr>
<td>16</td>
<td>Regular maintenance of the whole water quality control system to maximise water treatment prior to discharge.</td>
<td>Surface and ground water quality, soil contamination</td>
<td>Monitor six monthly on a formal basis but monitor daily and respond immediately to any infrastructure or maintenance issues.</td>
</tr>
<tr>
<td>17</td>
<td>Regular sampling of water quality and testing by accredited laboratory and reporting to EPA within 30 days of receipt of results.</td>
<td>Surface water quality, soil contamination</td>
<td>Six monthly or as directed by the EPA.</td>
</tr>
<tr>
<td>18</td>
<td>All hazardous chemicals will be stored in the Dangerous Goods Store on the site.</td>
<td>Groundwater quality, soil contamination</td>
<td>Ongoing</td>
</tr>
<tr>
<td>19</td>
<td>Implement works for the Stockpile Area, Treatment Pond and Existing Pond as per the Stormwater Management Plan May 2012</td>
<td>Groundwater quality, soil contamination</td>
<td>Ongoing</td>
</tr>
<tr>
<td>20</td>
<td>Sampling of three shallow aquifer groundwater bores as directed by the EPA, testing by accredited laboratory and reported to EPA within 30 days of receipt of results.</td>
<td>Groundwater quality, soil contamination</td>
<td>Collection of representative samples upon written notice by the Director and to be analysed for the parameters specified in the written notice.</td>
</tr>
<tr>
<td>21</td>
<td>Maintain three shallow aquifer groundwater bores casings and caps in good order to exclude rainwater and surface water from infiltrating bores.</td>
<td>Groundwater quality, soil contamination</td>
<td>Check three groundwater bores six monthly in line with overall monitoring activities.</td>
</tr>
<tr>
<td>22</td>
<td>Rehabilitate and revegetate any areas disturbed during the wood processing plant general operations and monitor six monthly.</td>
<td>Erosion</td>
<td>Ongoing</td>
</tr>
<tr>
<td>23</td>
<td>Direct stormwater runoff into the water quality control pond on the site to slow the water flow rate to prevent erosion of the landform.</td>
<td>Erosion</td>
<td>Ongoing</td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>Issue</td>
<td>Status</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>24</td>
<td>Sediment and pollutant barriers (interceptors) on drainage line from wood processing area to water quality control pond to slow water flow velocity and to trap sediment.</td>
<td>Erosion</td>
<td>Ongoing</td>
</tr>
<tr>
<td>25</td>
<td>Loaded trucks leaving the site with loads of fines will have their load either covered or moistened to prevent fines loss during transportation.</td>
<td>Dust emissions off site from truck and car movements/Air emissions</td>
<td>Ongoing</td>
</tr>
<tr>
<td>26</td>
<td>Dampening of internal access roads during dry and windy conditions.</td>
<td>Dust emissions off site from truck and car movements</td>
<td>Ongoing</td>
</tr>
<tr>
<td>27</td>
<td>Improved internal road conditions to minimise dust emissions</td>
<td>Dust emissions off site from truck and car movements</td>
<td>Ongoing</td>
</tr>
<tr>
<td>28</td>
<td>Actively suppress fires on site to protect life and property on the wood processing plant site and also to protect life and property on neighbouring properties.</td>
<td>Fire</td>
<td>Ongoing</td>
</tr>
<tr>
<td>29</td>
<td>No fires will be lit on the wood processing plant site by staff or contractors.</td>
<td>Fire</td>
<td>Ongoing</td>
</tr>
<tr>
<td>30</td>
<td>Water quality control pond and town water supply available as a source of fire fighting water.</td>
<td>Fire</td>
<td>Ongoing</td>
</tr>
<tr>
<td>31</td>
<td>Fire pump and fire hydrants will be available and regularly maintained and operated.</td>
<td>Fire</td>
<td>Ongoing</td>
</tr>
<tr>
<td>32</td>
<td>Minimum disturbance to remnant vegetation to west of site and riparian corridor on outflow from water quality control pond to Tamar river.</td>
<td>Biodiversity and nature conservation values</td>
<td>Ongoing</td>
</tr>
<tr>
<td>33</td>
<td>Wash down procedures followed and implemented for management of <em>Phytophthora cinnamomi.</em></td>
<td>Biodiversity and nature conservation values</td>
<td>Ongoing</td>
</tr>
<tr>
<td>34</td>
<td>Structured and vigilant weed monitoring schedule coupled with active management.</td>
<td>Biodiversity and nature conservation values</td>
<td>Ongoing</td>
</tr>
<tr>
<td>35</td>
<td>Reuse of by-products of fines and wood/bark.</td>
<td>Waste/by-products</td>
<td>Ongoing</td>
</tr>
<tr>
<td>36</td>
<td>Continue to periodically accept sawmill residue.</td>
<td>Waste/by-products</td>
<td>Ongoing</td>
</tr>
<tr>
<td>37</td>
<td>Provision of bins with lids, removed on a weekly basis and disposed of at the Council refuse site.</td>
<td>Waste/by-products</td>
<td>Ongoing</td>
</tr>
<tr>
<td>38</td>
<td>Internal speed limit of 15 km/h.</td>
<td>Air emissions</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Category</td>
<td>Status</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>39</td>
<td>Retaining the native vegetation on the western side of the site to provide a backdrop to the Beauty Point area.</td>
<td>Visual considerations</td>
<td>Ongoing</td>
</tr>
<tr>
<td>40</td>
<td>An assessment was made by Aboriginal Heritage Tasmania that an Aboriginal Heritage investigation was not required for the wood processing plant expansion proposal. Any sites of Aboriginal heritage seen or suspected during operations will result in an immediate cessation of works and Aboriginal Heritage Tasmania will be contacted.</td>
<td>Sites of scientific or cultural value</td>
<td>Ongoing</td>
</tr>
<tr>
<td>41</td>
<td>The wood processing plant is not entered on the Tasmanian Heritage Register. Any site of archaeological significance will be treated in the same way as Aboriginal heritage and any unexpected archaeological features and/or deposits revealed during works, works will cease and the incident will be reported immediately to the Heritage Council.</td>
<td>Sites of scientific or cultural value</td>
<td>Ongoing</td>
</tr>
<tr>
<td>42</td>
<td>Decommissioning of wood processing plant upon closure.</td>
<td>Wood processing plant closure and rehabilitation</td>
<td>Closure of processing plant</td>
</tr>
<tr>
<td>43</td>
<td>Implement Plan of Works upon wood processing plant closure.</td>
<td>Wood processing plant closure and rehabilitation</td>
<td>Closure of processing plant</td>
</tr>
</tbody>
</table>
APPENDIX A
Traffic Impact Assessment – 135 Mobil Road Bell Bay
Artec Pty Ltd
Bell Bay Wood Processing Plant
135 Mobil Road, Bell Bay
Traffic Impact Assessment

October 2011
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1. Introduction

1.1 Background
Midson Traffic were engaged by Artec Pty Ltd to undertake a Traffic Impact Assessment (TIA) for an expansion of operations at the existing Bell Bay Wood Processing Plant at 135 Mobil Road, Bell Bay.

1.2 Traffic Impact Assessment (TIA)
A traffic impact assessment (TIA) is a process of compiling and analysing information on the impacts that a specific development proposal is likely to have on the operation of roads and transport networks. A TIA should not only include general impacts relating to traffic management, but should also consider specific impacts on all road users, including on-road public transport, pedestrians, cyclists and heavy vehicles.

This TIA has been prepared in accordance with the Department of Infrastructure, Energy and Resources (DIER) publication, *A Framework for Undertaking Traffic Impact Assessments*, 2007. This TIA has also been prepared with reference to the Austroads publication, *Guide to Traffic Management, Part 12: Traffic Impacts of Developments*, 2009.

DIER recognises that most land use developments generate traffic, and generally attract more private transport movements rather than trips utilising public transport. DIER seeks to move towards a more sustainable transport system through improved transport considerations at a development level. It is, therefore, necessary to address the impact of motor vehicles and road traffic effects on the environment.

The effects of development proposals should be responsibly assessed, giving consideration to expected future traffic movements. DIER relies on the preparation of a TIA in order to adequately assess traffic impacts on the surrounding transport network for each development.

A TIA is not a promotional exercise undertaken on behalf of a developer; a TIA must provide an impartial and objective description of the impacts and traffic effects of a proposed development. A full and detailed assessment of how vehicle and person movements to and from a development site might affect existing road and pedestrian networks is required. An objective consideration of the traffic impact of a proposal is vital to enable planning decisions to be based upon the principles of sustainable development.

This TIA is a requirement of the Development Proposal and Environmental Management Plan (DPEMP) associated with the proposed expansion of the Artec Bell Bay wood processing plant. This TIA forms part of the documentation associated with the DPEMP.

1.3 Project Scope
Preparation of a TIA examining the traffic impacts associated with the proposed development in accordance with DIER and Council requirements as follows:
Review of the existing road environment in the vicinity of the site and the traffic conditions on the road network;

- Provision of information on the proposed development with regards to traffic movements and activity;
- Identification of the traffic generation potential of the proposal with respect to the surrounding road network in terms of road network capacity;
- Review of internal road network layout, traffic management and vehicle manoeuvring within the site; and
- Traffic implications of the proposal with respect to the external road network in terms of traffic efficiency and road safety.

1.4 Subject Site

The subject site is the existing Bell Bay Wood Processing Plant located at 135 Mobil Road, Bell Bay. The site is accessed via a driveway extending Mobil Road, which connects via Bell Bay Road to the East Tamar Highway.

The subject site and surrounding road network is shown in Figure 1.

Figure 1 Subject Site (Source: LIST Database, DPIPWE)
1.5 Information and Data Sources
The following organisations were contacted during the preparation of this report:

- Department of Infrastructure, Energy and Resources (DIER) – Crash data, forestry freight data, and traffic data;
- George Town Council – Planning Scheme;
- Van Diemen Consulting Pty Ltd – Truck movements and general project information; and
- Artec Pty Ltd – General project information.

1.6 Planning Scheme
The Municipality of George Town Planning Scheme 1991 outlines the traffic, access and parking requirements for developments in the George Town municipality and will henceforth is referred to as the Planning Scheme throughout this report.
2. Existing Conditions

2.1 Transport Network

For the purpose of this assessment, the transport network consists of the following roads:

- East Tamar Highway,
- Bell Bay Road, and
- Mobil Road.

Other roads, such as Temco Road, were considered during the preparation of this report but were not examined in detail.

2.1.1 East Tamar Highway

Under the Planning Scheme, the East Tamar Highway is classified as a *Category 1* road. Its function is

‘A principal long distance and urban arterial road which facilitates the high speed inter and intra-regional movement of goods and people.’

The East Tamar Highway is also part of the DIER owned, State Road Network. It is classified as a ‘Category 1 – Trunk Road’ under the DIER publication, *Tasmanian State Road Hierarchy*, 2007. The function of Category 1 roads is as follows:

- Trunk Roads are the State’s major highways and are crucial to the effective functioning of Tasmanian industry, commerce and the community. They carry large numbers of heavy freight and passenger vehicles and are the key links supporting future economic development in Tasmania.

- Trunk Roads facilitate:
  - inter-regional freight movement;
  - inter-regional passenger vehicle movement; and
  - business interaction.

The Trunk Roads connect the largest population centres, major sea and air ports, and key industrial locations.

Near the subject site, the East Tamar Highway is a two-lane, two-way road with wide, sealed shoulders. It intersects Bell Bay Road at a large diameter roundabout and traffic calming in the form of pavement markings to slow vehicles down on approach to the intersection on the Highway approaches. The posted speed limit on East Tamar Highway near Bell Bay Road is 80-km/h.

Traffic volumes on East Tamar Highway are approximately 4,994 vehicles per day\(^1\) between Bell Bay Road and Bridport Road and 4,186 vehicles per day between Bell Bay Road and George Town. The East

\(^1\) From DIER 2010 estimates
Tamar Highway also carries a significant amount of heavy vehicle traffic with approximately 726 trucks per day south of Bell Bay Road and 240 trucks per day north of Bell Bay Road (representing 14.5% and 4.8% south and north of the intersection respectively).

2.1.2 Bell Bay Road
Under the Planning Scheme, Bell Bay Road is classified as a Category 3 road. Its function is ‘Secondary arterial roads which complement the principal and major arterial network by linking that network with outlying areas of the Municipality and provide safe and efficient traffic movement.’

Bell Bay Road is a straight, two-lane, two-way road connecting to the East Tamar Highway and providing access to the Bell Bay industrial area and Bell Bay Port. The intersection of Bell Bay Road with East Tamar Highway is a large, three-leg roundabout. Directly adjacent to the Mobil Road intersection, Bell Bay Road has two lanes travelling in the northern direction, merging just north of the junction.

Based on turning movement surveys conducted in October, 2011, Bell Bay Road carries approximately 3,000 vehicles per day. A high proportion of this traffic is heavy vehicles.

Bell Bay Road looking north from the Temco Road junction is shown in Figure 2.

**Figure 2 Bell Bay Road**

2.1.3 Mobil Road
Under the Planning Scheme, Mobil Road is classified as a Category 5 road. Its function is to ‘Service and provide access to abutting lands.’ It provides access to a number of industrial developments including the subject site.
It is a wide, sealed, unmarked road with limited pedestrian and on-street parking provision, particularly in the vicinity of the subject site.

Mobil Road looking to the northeast towards Bell Bay Road is shown in Figure 3.

**Figure 3  Mobil Road**

---

**2.2  DIER Forestry Freight Modelling**

DIER maintain a comprehensive TransCAD freight model of the Tasmanian transport network. TransCAD is a Geographic Information System (GIS) designed specifically for transportation analysis. The forestry freight data contained within the model is currently in its second iteration, built on 2002 dataset from all forestry operators. Consultation was undertaken with Mr Simon Lynch, DIER Project Manager, to determine the existing modelled forestry freight movements on East Tamar Highway and Bell Bay Road.

The modelling indicated that that for the period 2008-2012, 4.67M tonnes of forestry freight is forecast for Bell Bay Road, and 6.2M tonnes of forestry freight is forecast to be transported on East Tamar Highway, south of Bell Bay Road.

Averaging these figures to a yearly rate equates to 1.2M tonnes and 1.6M tonnes of forestry product per year for Bell Bay Road and East Tamar Highway respectively. Assuming an average truck loading of 34 tonnes and 300 operational days per year, then this equates to approximately 118 and 157 forestry product trucks per day for Bell Bay Road and East Tamar Highway respectively.
2.3 Road Safety Performance

Crash data can provide valuable information on the road safety performance of a road network over time. This information can be utilised as a tool to assist in the identification of possible road safety deficiencies associated with a transport network.

Crash data was obtained from DIER for the most recent 5½ year time period (1 January 2006 to 10 October 2011) for Mobil Road, Bell Bay Road and East Tamar Highway, Bell Bay.

The crash data is summarised as follows:

- There were a total of 30 crashes during this time. Of these, 3 resulted in serious injury, 10 in minor injury and the remaining 17 crashes involved property damage only.
- The majority of crashes occurred on the East Tamar Highway with 22 mid-block, 4 at the Bell Bay Road roundabout and 1 at the Bridport Road intersection. The remaining crashes were 1 mid-block on Bell Bay Road and 2 at the Temco Road/ Bell Bay Road intersection.
- The most common crash types represented in the data were off path on curve crashes, with 10 occurrences, and off path on curve crashes with 7 occurrences. There were also 5 adjacent approach type crashes, 4 head on collisions, 2 on path crashes and 2 miscellaneous crash types.
- All head on collisions occurred on the East Tamar Highway. Two of these resulted in minor injury and 2 in property damage only.
- There were 4 crashes that involved a heavy vehicle. Two of these crashes ‘cross traffic’ intersection collisions with a light vehicle, one involved a heavy vehicle losing control and leaving the carriageway, and one stuck an object on the carriageway.

The crash history is typical of a rural highway and does not indicate that there are any specific road safety deficiencies in the vicinity of the subject site. The majority of crashes occurred on the East Tamar Highway which carries a higher traffic volume, in the order of 5,000 vehicles per day, and the crash rates within the Bell Bay area were relatively low.
3. Proposed Development

3.1 Wood Processing Plant

It is proposed to increase the maximum production capacity of the existing Bell Bay Wood Processing Plant from its current permitted production of 400,000 dry tonnes per annum to 600,000 dry tonnes per annum gradually over the next 4 financial years. This increase in output will result in increased transport movements.

The increased output requires the construction of a second, static woodchip machine with its own system of screens and conveyors for the sizing and transporting of wood chips to the stockpile area. Plans of the proposed development are shown in Figure 4.
Figure 4  Proposed Development
It is expected that the operating capacity of the Plant will fluctuate throughout the year; however, in general the hours of operation will be between 5:00 am and 5:00 pm as previously approved.

3.2 Traffic Generation

Traffic generation rates for the Wood Processing Plant have been sourced from Artec Pty Ltd and are summarised in Table 1. Note that vehicle movements are one-way and will generally consist of both entry and exit manoeuvres.

Table 1 Projected average vehicle movements (one-way)

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonnes)</th>
<th>Average log truck movements</th>
<th>Trucks delivering sawmill woodchips</th>
<th>Waste fines/ bark movements</th>
<th>Staff and contractor vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yearly</td>
<td>Daily</td>
<td>Yearly</td>
<td>Daily</td>
<td>Yearly</td>
</tr>
<tr>
<td>2011</td>
<td>400,000</td>
<td>11,700</td>
<td>39</td>
<td>2,400</td>
<td>8</td>
</tr>
<tr>
<td>2012</td>
<td>500,000</td>
<td>14,700</td>
<td>49</td>
<td>2,400</td>
<td>8</td>
</tr>
<tr>
<td>2013</td>
<td>500,000</td>
<td>14,700</td>
<td>49</td>
<td>2,400</td>
<td>8</td>
</tr>
<tr>
<td>2014</td>
<td>600,000</td>
<td>17,700</td>
<td>59</td>
<td>2,400</td>
<td>8</td>
</tr>
</tbody>
</table>

When operating at full capacity, the peak total vehicle movements per day will be higher than the average movements shown in Table 1. Peak movements are estimated to be 77 log trucks, 8 trucks delivering sawmill woodchips, 2 waste fines/ bark removals and 30 staff and contractor vehicles per day.

Based on the existing production (2011), the proposed development will generate additional traffic onto the external road network during peak production times as follows:

- 26 log trucks per day,
- 1 Waste fines/ bark removal trucks per day, and
- 6 staff and contractor vehicles per day.
3.3 Traffic Distribution

For the purpose of assessing the impacts of the proposed development on the surrounding road network, the following traffic distributions have been assumed:

- All log trucks and waste removal trucks access the site from East Tamar Highway (east);
- All staff and contractor vehicles access the site from East Tamar Highway (west);
- Approximately half of all truck movements are during peak hours:
  - 25% during morning peak
  - 25% during evening peak
4. Traffic Impacts

4.1 Surrounding Road Network Impacts

The proposed development will generate an additional 33 vehicles onto the surrounding road network per day during peak production periods. Of these, 27 are trucks and the remaining 6 are light vehicles belonging to staff or contractors.

There is sufficient capacity in Mobil Road and Bell Bay Road to cater for the increased traffic due to the proposed development. A turning movement count was undertaken for the East Tamar Highway/ Bell Bay Road roundabout on 18th and 19th October, 2011 for morning peak (7:30 am – 8:30 am) and evening peak (4:00 pm – 5:00 pm).

The results of the survey, with forecast traffic growth (2.0% p.a.) and the traffic generation from the proposed development superimposed, are shown in Table 2 and Table 3 below.

<table>
<thead>
<tr>
<th>Movement</th>
<th>Base 2011</th>
<th>Base 2021</th>
<th>Proposed 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
<td>AM Peak</td>
</tr>
<tr>
<td>East Tamar Hwy (E)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>L</td>
<td>112</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>149</td>
<td>161</td>
</tr>
<tr>
<td>Bell Bay Rd (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>L</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td>46</td>
<td>56</td>
</tr>
<tr>
<td>East Tamar Hwy (W)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>T</td>
<td>134</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td>58</td>
<td>71</td>
</tr>
</tbody>
</table>
Table 3  Bell Bay Road intersection turning movements (trucks only)

<table>
<thead>
<tr>
<th>Movement</th>
<th>Base 2011</th>
<th>Base 2021</th>
<th>Proposed 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
<td>AM Peak</td>
</tr>
<tr>
<td>East Tamar Hwy (E) Approach</td>
<td>L</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Bell Bay Rd (S) Approach</td>
<td>L</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>East Tamar Hwy (W) Approach</td>
<td>T</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

SIDRA Intersection 5.1 (Akcelik and Associates) was used to model the Bell Bay Road/ East Tamar Highway intersection based on the turning movement data listed in Table 2 and Table 3.

SIDRA utilises complex analytical traffic models coupled with iterative approximation technique to provide estimates of capacity and performance of intersections. SIDRA is endorsed as a modelling tool by Austroads.

One of the key SIDRA outputs is an indication of level of service (LOS) at intersections. The LOS concept describes the quality of traffic service in terms of 6 levels, with level of service A (LOS A) representing the best operating condition (i.e. at or close to free flow) and level of service F (LOS F) representing the worst (i.e. forced flow).

The results of the SIDRA Analysis are summarised in Table 4.
Table 4 Bell Bay Road intersection SIDRA results

<table>
<thead>
<tr>
<th>Approach</th>
<th>Level of Service</th>
<th>Average Delay (s)</th>
<th>95% Queue Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base 2021</td>
<td>Proposed</td>
<td>Base 2021</td>
</tr>
<tr>
<td>Morning Peak (7:30 – 8:30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Tamar Hwy (E)</td>
<td>LOS A</td>
<td>13.2</td>
<td>10.0</td>
</tr>
<tr>
<td>Bell Bay Rd (S)</td>
<td>LOS B</td>
<td>11.2</td>
<td>4.3</td>
</tr>
<tr>
<td>East Tamar Hwy (W)</td>
<td>LOS A</td>
<td>5.5</td>
<td>6.4</td>
</tr>
<tr>
<td>All Vehicles</td>
<td>LOS A</td>
<td>5.3</td>
<td>10.0</td>
</tr>
<tr>
<td>Evening Peak (4:00 – 5:00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Tamar Hwy (E)</td>
<td>LOS A</td>
<td>3.2</td>
<td>7.8</td>
</tr>
<tr>
<td>Bell Bay Rd (S)</td>
<td>LOS A</td>
<td>9.8</td>
<td>15.8</td>
</tr>
<tr>
<td>East Tamar Hwy (W)</td>
<td>LOS A</td>
<td>4.3</td>
<td>9.2</td>
</tr>
<tr>
<td>All Vehicles</td>
<td>LOS A</td>
<td>6.6</td>
<td>15.8</td>
</tr>
</tbody>
</table>

From the SIDRA analysis, the proposed development will have a negligible impact on the Bell Bay Road/ East Tamar Highway roundabout. There will be no loss in level of service and the average delay for all vehicles will increase by approximately 0.3 seconds during morning peak hour and 0.1 seconds during evening peak hour.

Movement diagrams for the 2021 proposed scenario containing further detail are shown in Appendix A.

4.2 Access Impacts

The site is to be accessed via the existing access on Mobil Road. The access extends Mobil Road such that entry and exit manoeuvres are of a ‘through’ nature and, as such, the access is considered safe and efficient for the proposed use.

The internal road network consists of a long driveway with a loop at the northern end, allowing vehicles to turn. There are several log storage areas along the driveway. Given the existing use of the proposed development, the internal road network is considered sufficient.
4.3 Road Safety Impacts

No significant detrimental road safety impacts are foreseen for the proposed development. This is based on the following:

- The surrounding road network, including the Bell Bay Road roundabout, can safely absorb the traffic generation due to the proposed development.
- The site access is existing and extends Mobil Road such that movements into and out of the site are of a through nature, providing a safe access.
- The existing road safety performance in the surrounding road network does not indicate that there are any current road safety deficiencies that might be exacerbated by the proposed development.

4.4 Car Parking Assessment

The Bell Bay Wood Processing Plant provides a gravel car parking area at the south-eastern end of the site adjacent to the site access and weighbridge and near the office. Given the informal nature of parking at this location and the relatively low staff and contractor vehicle generation of the proposed development, the car parking arrangement is considered acceptable based on existing use.
5. Conclusions

This Traffic Impact Assessment (TIA) investigated the expansion of operations at the Bell Bay Wood Processing Plant, 135 Mobil Road, Bell Bay. It is proposed to increase the maximum capacity of the Plant from 400,000 tonnes per annum to 600,000 tonnes per annum over a four year period.

This TIA has been carried out following a review of available traffic data and information, Austroads Guidelines, Australian Standards, Planning Scheme and other supplementary traffic data and information.

They key findings of the report are as follows:

- The traffic generated by the proposed development will not have any significant adverse impacts on the surrounding road network, including the Bell Bay Road roundabout, in terms of traffic efficiency or road safety.
- The site access extends Mobil Road such that movements into and out of the site are of a ‘through’ nature, providing safe and efficient access to the site.
- The existing informal parking arrangement is considered adequate given the relatively low staff and contractor vehicle generation of the proposed development.

Based on the findings of this report, the proposed development is supported on traffic grounds.
Appendix A

Bell Bay Road SIDRA Movement Diagrams
Average Delay (s) – AM Peak Hour

Average Delay (s) – PM Peak Hour
Midson Traffic Pty Ltd  ABN: 26 133 583 025
Room 5, Level 1, Bank Arcade
64 Liverpool Street, Hobart
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Document Status

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<td>Mark Petrusma</td>
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Stormwater Management Plan May 2012
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1. EXECUTIVE SUMMARY

1.1 Summary

This report is prepared as a supplementary document to the 2011 DPEMP submission for the Bell Bay Wood Processing Plant. Specifically this report addresses the stormwater run-off and treatment from new operations associated with the stockpiling of debarked and chipped Pinus radiata.

Stormwater run-off from logyards and stockpile operations may be contaminated with organic debris as well as wood waste/finished product leachate which can be toxic to the receiving environment. The toxicity of the leachate is dependant on several factors including the tree species, components of the tree used in the forestry operation (eg components such as bark, heartwood etc.) and the characteristics of the receiving environment (eg levels of dissolved oxygen, temperature and pH).

The potential effects of leachate from a pine woodchip stockpile at the Bell Bay site are considered against the receiving environment using parameters such as background water quality and that of the run-off generating natural environment.

The treatment of runoff and leachate generated from the proposed pine woodchip stockpile is to be separated from the general site stormwater management pond.

Based on the type of material and species to be stockpiled a biological process associated with the traditional detention pond will provide significant reductions in the expected resin acid leachate generated.
2. SCOPE OF DOCUMENT

2.1 General

This report is prepared as a supplementary document to the 2011 DPEMP submission for the Bell Bay Wood Processing Plant.

This report will review the current adequacy of stormwater management measures to accommodate the new facility, with recommendations for improvements or additions.

Previous assessment of the sediment and stormwater control pond undertaken as part of the initial DP&EMP will not be reviewed or restated here as it is felt to be an appropriate analysis.

This report will cover:

- background information on resin acid generation, effects and treatment;
- site meteorology – comparison of BOM stations with SILO patched data set;
- site layout and collection of run off from existing and proposed stockpiles with concrete base and screened pit and pipe collection;
- new stockpile and features – proposed concrete slab, fall to pits & piped network. Perhaps separation;
- pollutant generation and proposed treatment for the proposed stockpile; and
- site treatment capacity for sediment control & reduction in pollutants – settling, BOD / nutrient reduction.

2.2 Resin Acids

2.2.1 Generation

‘Resin acid’ is a common term applied to a group of hydrophobic non-volatile compounds that have a relatively high affinity for solids which over time can result in substantial contamination of bottom sediments. The persistence in sediments is much greater than in the water column.

Resin acids are released from the wood and bark of coniferous trees, the quantities of which vary considerably between species and the tree component (bark, sapwood, heartwood).

Pine trees (Pinus species) have the highest resin acid content of commonly used Canadian softwoods hence they produce the most toxic effluent compared with fir, spruce and cedar. However when comparing the resin acid content of the components it was found that fingerling rainbow trout survived indefinitely in a 1:30
solution (by weight) of water and ground heartwood compared against a 1:30 solution of bark extract which killed them in a few hours (Roseheart et al 1974).

The process is also important, with simple chipping producing significantly less leachate than debarking, which again produces/releases much less than pulping processes.

Sampling of stormwater runoff from a log handling and chipping facility in New Zealand following storm events indicated a mean total resin level of 1.03mg/l, which is within the acutely toxic range. Sampling and testing in the receiving tidal waters directly adjacent to the wharf outfall at low and high tide returned total resin levels of 0.2ug/l and below detectable limits respectively (Tian et al 1997).

Resin acids are readily degraded by a number of fungal and bacterial species, and are normally broken down in treatment facilities and receiving waters.

Biological treatment has been shown to be highly effective, whether via attached biological growth on suspended media, aerated lagoons or naturally occurring microflora in river water.

2.2.2 Toxicity

Dehydroabietic Acid (DHAA) is not the most toxic of the resin acids but it is the most persistent and dominant of the six typically found. However when individual acid forms are tested for lethal toxicity to fish, a narrow range is observed of between 0.5 and 1.5mg/l (at 96 hour LC50) around a neutral pH.

The toxicity of a resin acid effluent will depend mostly on the concentration of resin acids as a whole rather than the concentration of individual forms. Acute toxicity of pulp mill wastes is highly pH dependant, with toxicity declining exponentially with pH (McLeay et al 1979). DHAA is 30 times more toxic at pH 6.5 than pH 9.

The Ontario Ministry of the Environment in its ‘Resin Acids Criteria Development Document’ notes the dependence on several factors when considering permissible levels of resin acids – lack of chronic toxicity data, pH dependency, dissolved oxygen levels etc. An application factor of 0.05 for bio-accumulating elements is generally applied, resulting in a guideline concentration for surface waters of 0.052mg/l total resin acids or 0.013mg/l DHAA at pH 8.0.

Sampling of surface waters in the Tamar River adjacent to the Bell Bay site at Donovan’s Bay indicates a pH range of between 7.9 - 8.04.

Very few studies of chronic resin acid toxicity have been performed. Field trials (Oikari et al 1983) with pulp mill effluent assessing toxicity to fish are inconclusive with regard to the chronic effects of low concentrations of resin acids due to the wide range of other pollutants such as fatty acids and chlorinated compounds present in pulp mill effluent.

2.2.3 Degradation and Removal

Testing of biological methods for removal of resin acids and other associated pollutants (BOD, TSS etc) has been undertaken on a laboratory and batch scale (Woodhouse 2000, Zenaitis et al 2001, Zhang 1997).
Isolation of wood-inhabiting bacteria along with naturally occurring microflora in river streams has been done to assess the suitability of particular species (Hemingway et al 1973).

Simple biological treatment via detention in a pond has been shown to reduce BOD, COD and tannins and lignins by 99%, 80% and 90% respectively, with acute toxicity decreasing from EC$_{50}$ of 1.83% to 50.4% after 48 hours of treatment (Zenaitis et al 2001).

Laboratory scale testing with a range of bacteria species as well as grab samples of ordinary river water (Yarra River, Vic and North Pine River, Qld, Hemingway et al 1973) on a 40mg/l resin acid concentration solution showed degradation to below detectable limits after 40 hours at 27°C and after 100-140 hours at 12°C.

Laboratory scale testing of attached growth media treatment (Woodhouse 2000) as found in trickling bed filters showed significant reductions in the pollutant parameters BOD, COD and tannins and lignins of 98%, 90% and 95% respectively after 24 hours.

The research conducted thus far on resin acid degradation indicates that simple treatment via biological reduction and screening and settlement will reduce the resin acid concentrations significantly. The expected low initial concentrations of total resin acids generated from a pine woodchip stockpile (where the trees are not debarked on the site) are well below the concentrations trialled.

2.3 **Best Practice Stormwater Management**

There is a significant body of research into the presence of resin acids in effluent discharges from pulp and paper mills, but little information is available with respect to run off from timber (woodchip, seasoned timber or veneer) storage yards.

2.3.1 **Australian Practice**

A review of Australian practice for specific parameters applicable to resin acids in discharge indicates no standard approach.

At a State level there are a variety of Best Practice stormwater management guidelines, for example the QLD EPA Best Practice Urban Stormwater Management Guideline provides guidance for best practice management, but this document is largely focussed on urban areas. There are no guidelines available for industrial sites at present in Queensland, Victoria and Tasmania.

The Department of Water in Western Australia released a Water Quality Note in October 2006 detailing best practice for general and heavy industry near sensitive waters (WQPN20). WQPN20 notes that stormwater management of uncontaminated discharges to natural waterways or wetlands should include a settling and skimming basin sized for the ARI 2 year 72 hour storm.

The NSW Department of Environment, Climate Change and Water refers to the Landcom publication Managing Urban Stormwater: Soils and Construction when considering design capacity, with an ARI 10 year 96 hour event often sought. These parameters are not strictly applicable to this application as they typically relate to sediment, but have been applied by the department when assessing levels of protection from pollutants e.g. tannins in run-off.
2.3.2 *International Practice*

Jurisdictions with a large timber processing industry (particularly pine) such as Canada, the United States and Scandinavian countries have undertaken considerable research into the make-up and toxicity of resin acids among other pollutants in waste streams from mills and pulping processes.

The state of understanding with regards to contaminated run off from logyards is not as well developed, with Best Management Practice (BMP) focussed on the relationship between toxic pollutants and other indicators such as BOD/COD, TSS and pH.

A linear relationship has been found between volatile suspended solids (VSS) and total resin acids (Tian et al 1997), hence effective BMP focus on reducing the VSS concentration (bark & chip particles) in order to reduce the total resin acid level of the runoff.

2.4 *Rainfall data*

Rainfall analysis has been derived from *Australian Rainfall and Runoff, Volume 2* (Institute of Engineers, 1987) and statistical analysis of the historical rainfall record at the Gladstone Airport (Australian Bureau of Meteorology Station 039326, SILO patched point data set).

The Patched Point Dataset uses original Bureau of Meteorology measurements for a particular meteorological station, but with interpolated data used to fill ("patch") any gaps in the observation record.
3. SITE DESCRIPTION

3.1 Site Hydrology

A very long rainfall data record exists for the region within 10km north and south of the site, with two stations (91001 Beaconsfield and 91057 Low Head) operating from the beginning of the 20th century that provide over 100 years of measurements.

A comparison between the four Bureau of Meteorology (BOM) stations at near distance to the site (within a 10km radius):

- 91262 TEMCO 1990 – 2012
- 91193 George Town 1968 – 1979
- 91057 Low Head 1895 – 2002
- 91001 Beaconsfield 1908 - 2012

and the SILO derived patched point data set at the Bell Bay site shows no meaningful difference in rainfall. For the purposes of this report the patched point daily figures for rainfall and evaporation and the rainfall Intensity-Frequency-Duration (IFD) derivation for the site directly from the Australian Rainfall & Runoff parameters will be used, refer to the figures in Tables 1, 2 and 3 below.

Table 1: IFD Figures for Bell Bay, TAS

<table>
<thead>
<tr>
<th>Duration</th>
<th>Average Recurrence Interval (ARI)</th>
<th>Rainfall Intensity (mm/hr)</th>
</tr>
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<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5 mins</td>
<td>39.8</td>
<td>54.1</td>
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<tr>
<td>30 mins</td>
<td>18.8</td>
<td>24.9</td>
</tr>
<tr>
<td>1 hour</td>
<td>12.9</td>
<td>16.9</td>
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<td>6 hours</td>
<td>4.42</td>
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<td>12 hours</td>
<td>2.87</td>
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<td>24 hours</td>
<td>1.82</td>
<td>2.3</td>
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<tr>
<td>48 hours</td>
<td>1.11</td>
<td>1.42</td>
</tr>
<tr>
<td>72 hours</td>
<td>0.81</td>
<td>1.04</td>
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Cumulative depth of rainfall for multiple day events as derived from the IFD is presented in Table 2.

Table 2: Multi-Day Rainfall Accumulation (Depth mm) – IFD Derived

<table>
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<tr>
<th></th>
<th>24hr</th>
<th>48hr</th>
<th>72hr</th>
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<tbody>
<tr>
<td>ARI 1</td>
<td>44</td>
<td>53</td>
<td>58</td>
</tr>
<tr>
<td>ARI 5</td>
<td>65</td>
<td>82</td>
<td>90</td>
</tr>
<tr>
<td>ARI 20</td>
<td>81</td>
<td>104</td>
<td>116</td>
</tr>
<tr>
<td>ARI 100</td>
<td>106</td>
<td>138</td>
<td>155</td>
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A statistical analysis was carried out on the historical rainfall record for the Bell Bay patched data set.

When considering the whole of record daily rainfall as multi-day accumulations, an assessment of the percentiles provides a basis for selecting appropriate levels of protection and treatment. The annual series for deriving the Annual Exceedance Probability (AEP, crudely approximated by ARI or average recurrence interval) is based on ranking the largest rainfall event in each year for the record, whereas the percentiles indicate the value below which a certain percentage of all recorded results fall.

<table>
<thead>
<tr>
<th></th>
<th>24hr</th>
<th>48hr</th>
<th>72hr</th>
<th>96hr</th>
<th>120hr</th>
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<tr>
<td>90th percentile</td>
<td>13.3</td>
<td>19.4</td>
<td>24.5</td>
<td>28.7</td>
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<tr>
<td>95th percentile</td>
<td>19.1</td>
<td>27.0</td>
<td>32.9</td>
<td>38.5</td>
<td>43.0</td>
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<tr>
<td>99th percentile</td>
<td>32.4</td>
<td>45.0</td>
<td>53.6</td>
<td>62.0</td>
<td>65.2</td>
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Table 3 indicates that the great majority of rainfall events fall below the derived AEP level for the same duration. There are some 21,500 rain days across a 122 year record, ranging from typically 160 to 220 rain days per year. Figure 1 below graphically demonstrates the very infrequent larger events and the significant number of much smaller background events.

A simple review of the number of zero rain days and the annual rainfall totals for the historical record indicates a noticeable trend from the 1950’s of decreasing annual totals and increasing zero rain days. This provides added conservatism when designing the treatment pond discharges and volumes.
For the purposes of assessing the proposed treatment volume, accumulations up to the 120 hour 99th percentile will be used. For assessing individual short duration storm events for the purposes of weir and overflow detailed design the IFD figures should be used.

3.2 Existing Layout

The Artec processing site is located within the Bell Bay industrial precinct and comprises an unsealed log handling, set down and storage area, with a concrete pad for the current hardwood woodchip stockpile and workshop areas.
The site presently drains via surface flow and piped collection from the stockpile hardstand into a sediment settling pond. Collection pits are screened to prevent the inflow of woody debris into the settling pond. A perimeter pit and pipe collection system intercepts the existing stockpile and yard.

The existing sediment settling pond has a volume of approximately 4,200 cubic metres. This capacity is adequate for a site catchment area of some 6.5 hectares (including current stockpile) of erodible bare material when assessed using the NSW Landcom Blue Book methods for the 5 day 99th percentile rainfall depth. This method agrees very well with the figures presented in the DPEMP Appendices – Appendix 4 Water Quality Control Pond.

3.3 Current Performance

3.3.1 Contaminant Limits

Stormwater discharge from the site is monitored at a sampling point located downstream of the main overflow channel, before the run off makes its way into the Tamar Estuary through a 200m vegetated drain.

At present stormwater discharge is monitored for four parameters; pH, total suspended solids (TSS), biochemical oxygen demand (BOD) and oil & grease.

<table>
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<th>Limit</th>
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<td>pH</td>
<td>6.5 – 8.5</td>
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<tr>
<td>TSS</td>
<td>50 mg/l</td>
</tr>
<tr>
<td>BOD</td>
<td>20 mg/l</td>
</tr>
<tr>
<td>Oil &amp; Grease</td>
<td>10mg/l</td>
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Testing at 6 monthly intervals of the discharge water has confirmed compliance with the permitted parameters. No parameters are given for the target pollutants of this report, namely resin acids.

Observations of the settling pond and outfall suggest that the screening within the site collection system is effective at removing floating woody debris. The unsealed logyard surface does not appear to comprise dispersive clayey materials as the turbidity within the pond was quite low.

3.3.2 Pond Levels

The relatively consistent monthly rainfall figures combined with a catchment area some 10 times the size of the evaporating surface of the existing and proposed treatment ponds results in a permanent pool.

4. WORK PROPOSED

4.1 General

Leachate is generated when a small volume of liquid slowly percolates through a material and dissolves soluble compounds associated with it. Runoff is generated when a large volume of water is applied to a surface – such as heavy rainfall or
water used for dust control – and sweeps across the surface, collecting anything solid or soluble along the way. The main differences between runoff and leachate are the volumes of water and the speed of the flow.

Experience with similar facilities (South East Fibre Export, Eden NSW, SEMF 2011) has shown that a significant reduction in the quantity of leachate and improvement in the quality of leachate baseflow from a stockpile will be achieved by installing a sealed and drained hardstand pad. Water which percolates through the pile cannot pool at the bottom to continuously leach pollutants.

Biological treatment of the discharge from the proposed stockpile will be achieved by directing all runoff from the proposed development into a dedicated pond.

It is expected that the pond alone (coupled with overflow and pass-through discharge to the existing sediment settlement pond) will be more than sufficient to reduce the total resin acid concentrations to below detectable limits at the monitoring point. Provision of a trickling bed filter for initial reduction and to receive a return loop flow from either pond can be used to accommodate changes to operations which may result in a higher concentration of resin acids in the future than is expected from the proposed chipping process.

### 4.2 Specific Work Required

#### 4.2.1 Stockpile Area

Provide a concrete hardstand pad with screened grated pits for drainage. The pad shall be set at a height such that the surrounding yard does not direct surface runoff into the area.

Drainage from the pad and areas associated with the pine product chipping and storage shall be separated from the main site drainage and directed to the dedicated treatment pond. Standard practices to prevent pollutants such as oil and grease from maintenance operations entering the pond shall be included.

#### 4.2.2 Treatment Pond

A standard unlined treatment pond with nominal surface area of 400m$^2$ and average depth of 1.5 m will provide storage volume to hold and treat the 5 day 99th percentile rain event over the stockpile area. It is taken for design purposes that the treatment volume is fully developed due to saturated stockpile conditions.

Considering the five day accumulation allows for treatment reductions to be fully developed at a temperature of 12°C as noted in Section 2.2.3. The pond volume is also of sufficient size to fully buffer the ARI 20 year 72 hour peak event.

The reduction in previous catchment area this new pond provides (by intercepting and treating the new stockpile footprint) effectively increases the efficiency of the existing settlement pond.

The new pond shall be provided with a grated inlet discharge weir or pit to capture floatable woody debris. The inlet shall be designed to spread and distribute the
inflow so as not to provide scouring velocities for any sediments retained, as the
initial removal of resin acids occurs within sediments.

The outlet of the new pond shall discharge to the existing settlement pond where
additional detention and biological reduction will occur. The discharge to the
existing pond will also be designed so as to not mobilise sediments.

4.2.3 Existing Pond

The overflow spillway should be formalised to provide a long term durable
structure. Detailed design will be required to ensure discharge entering the pond
from the site drainage system and the new treatment pond overflow does not
mobilise sediments with scouring velocities.

A return line and pump may easily be installed to recirculate water for further
treatment in response to changes in operations or inputs of timber products.
### APPENDIX B – Site Photographs

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<td>Existing 4,200 cubic metre sediment settlement pond</td>
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<tr>
<td><img src="image2" alt="Settlement pond spillway" /></td>
<td>Settlement pond spillway</td>
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<td>Site stormwater discharge route – channel adjacent rail corridor collecting several upstream sites</td>
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APPENDIX C – References


APPENDIX C
Stockpile Landscape Assessment Images for Beauty Point