
CHAPTER 11 HEALTH IMPACTS &

CHAPTER 12 CUMULATIVE EFFECT, CONCLUSIONS AND COMMITMENTS

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11. HEALTH IMPACT ASSESSMENT

11.1 Health Issues and Potential Impacts

The key health issues associated with this project have been identified and include the following:

- Transport related impacts.
- Noise;
- Air pollution;
- Wastewater management;
- Control of biological hazards; and

11.1.1 Transport Related Impacts

Transport of logs and products to and from the site will result in changed traffic movements and an increase in traffic in some areas, therefore the noise level in areas within the route. It was concluded (refer to Chapter 4) that the noise level generated by additional day-time traffic will be acceptable provided that mitigation measures are undertaken including:

- Treatment of wood fibre transport bins to minimise drumming noises when empty;
- Minimise the number of fleet vehicles;
- Reduce transport vehicle speed;
- Keep the trucks well maintained; and
- Use electro-magnetic rather than engine exhaust braking.

The transport related safety issues involve consideration of the roads, the vehicles, and the drivers, to ensure that the overall transport operation unit is safe, and follows best practice.

The upgrade of roads will comply with DIER's standards for the operation of high performance vehicles (HPV) and will ensure the following:

- Construction and capacity of the roads and bridges are suitable;

- Construction of roads that have suitable turn-out lanes;
- Provision of adequate line of sight; and
- Provision of adequate shoulders on roads.

Vehicles will be required to be maintained and kept in good mechanical condition, and carry an appropriate notice stating that the vehicle has been approved under the relevant Tasmanian traffic regulations and the National Heavy Vehicle Accreditation Scheme for operation on the route.

Drivers will be given specific training with respect to operation on the route. They will take special precaution on sections of road where the line of sight is limited; and be particularly careful when operating in the vicinity of schools (scheduling of operation should be such that operation past schools during school start and finish times is avoided).

It is considered that the transport impact on the community are capable of being satisfactorily managed and an agreed range of remedial work undertaken within the community.

11.1.2 Noise

Detailed assessments of the potential noise impacts (that have the potential to be heard beyond the site boundaries) for each Wood Centre facility, and the proposed mitigation measures are provided in Sections 5.7.5, 6.4, 7.4, 8.4, 9.4 and 10.4 (Appendix N).

The most significant noises for operators and visitors on-site are those generated by the breakdown of wood, movement of logs between operating units, vehicle noises, and operating machinery. Of these, the chipper at the wood fibre plant is considered the loudest.

Operation within enclosed facilities will confine the potential noise impact for off-site receptors, with no off-site impacts anticipated. Operators and visitors to the site will be required to wear ear plugs when entering processing facilities, thereby minimising noise impacts.

Outside noises associated with trucks and the movement of logs are significant within the site, but will not have an effect on residential areas, since the site is located over six kilometres from the nearest house and topography will have a reducing affect on noise travel. It is predicted that no unacceptable noise impacts will occur.

11.1.3 Air Pollution

Due to the climatic conditions of the region, temperature inversion can occur. This is most likely to occur in the wintertime, when dense cloud formations trap air emissions within the site. This inversion layer can range from 50 - 100 m above ground.

The most significant air emissions will originate from the power plant boiler. Location of the 40 m boiler stack at higher ground should reduce the risk of discharging the emissions within the inversion layer. Refer to Chapter 10 for discussion of the potential impacts of air emissions and the mitigation measures to be implemented.

Poorly controlled burning usually results in incomplete combustion, hence the generation and release of fine particulate matter, CO, NO_x, and organic compounds. An example of this is the burning of biomass fuel in open air.

Open-air regeneration burns in Tasmania normally take place within a restricted time frame during early autumn. As a consequence, the emissions are concentrated, and thus increase the risk of impact on the population. Open-air vegetation fires increase the risk of acute respiratory infections, due to the fine airborne particles (<2.5 micrometres) that can potentially penetrate deep into the lungs and cause respiratory diseases.

In an average age-standardised hospital admission rates study conducted between 1994-98, it was found that the average incidence of hospital admission rates related to respiratory diseases and infections within the Huon Valley was lower than that observed for Tasmania as a whole. However, this was not considered statistically significant, as their 95% confidence intervals overlap. These medical conditions include asthma, pneumonia and influenza, pulmonary diseases, and other diseases of the respiratory system. This excludes the occurrence of acute respiratory infections, as it has been shown that residents of the Huon Valley are significantly less affected by such conditions.

In light of this information, appropriate measures need to be taken to ensure that the Wood Centre development does not have a significantly adverse health impact on the residents within the surrounding environment. The Wood Centre development reduces the open-air regeneration burning by burning the forest residues within its own boundaries, under controlled conditions. Further advantages include:

- Particulate emissions are reduced due to filtration of the combustion gases;
- Dispersion of emissions is better controlled since there is only one point source;
- Better combustion control results in lower levels of CO, NO_x, and VOC; and

- Year-round burning results in a much greater dilution of these emissions.

The emissions released into the air from the burning of wood are mostly combustion products, which include wood particulates, dioxins, CO_x, NO_x, and a small amount of volatile organic compounds (VOC). Dioxins, specifically, are generally formed during the combustion of chlorine and organic compounds.

Dioxins form more readily at temperatures between 300 – 700 °C, which typically occurs when a fire is smouldering, or soon after a heavy load of fuel is introduced. At temperatures above 700°C, dioxin formation is minimised due to its instability and thermal degradation at these high temperatures. A well-controlled boiler ensures that the combustion temperature is maintained above 700°C, with the fire-box temperature normally around 1000°C. Clean hardwood has negligible levels of chlorine entrained, further reducing the likelihood of dioxin formation.

The processing of secondary combustion air in the furnace reduces the hazard potential of more harmful wastes such as carbon monoxides and VOC produced by incomplete combustion.

Provided that the above mitigation measures are applied, the human health impact of these emissions is not considered to be significant.

The generation of very fine particulates (e.g. mineral dust) is inevitable. Outdoor water sprays will be used to prevent mineral dust being blown around the site.

The health impacts associated with outdoor vehicular emissions have been considered, and is believed to be insignificant relative to the combined vehicle emissions within the Huon Valley. However, it is worth noting that indoor use, or the use of vehicles within enclosed spaces, is a potential health risk to operators due to the more elevated concentrations generated within a confined space. Facilities where this is likely to occur will be designed to operate in accordance with contemporary workplace guidelines to minimise the impact on indoor air quality.

11.1.4 Wastewater Management

Wastewater generated during the processing on site will contain mainly soil and wood particulates. Precautions taken to control the release of wastewater from the site include the use of a sump and associated separator/interceptor system within all facilities to contain, treat and reuse the wastewater within each facility. The on-site storage ponds will collect the wastewater from each facility, which will then be re-used for processing purposes within the site.

Domestic sewage is to be treated in an on-site package treatment plant, and irrigated in accordance with an irrigation management plan. No significant health impact is likely to occur if these management measures are implemented.

11.1.5 Control of Biological Hazards

Due to the recent outbreaks of Legionnaire's disease, some concern has been raised for the control and prevention of this potential biological health hazard. The *Legionella* bacteria tends to flourish in warm, sunny, humid environments such as those provided by humidifiers and cooling towers. The following lists recommended measures to be incorporated in the design of the power station's cooling tower to prevent the potential risks associated with *Legionella*:

- Exclusion of sunlight;
- Maintain the correct bleed rates to prevent bacterial accumulation;
- Stainless steel cooling tower construction;
- Disposable fill material to ensure minimal build-up of bacteria;
- Efficient drift eliminators to prevent large moisture droplets from being carried across to other areas within the site;
- Locate towers away from any type of disturbance and fresh air intake vents;
- Minimise the tower basin volume to prevent the occurrence of a large warm water reservoir should the cooling tower cease running; and
- Steps be taken to prevent the standby tower from harbouring warm water when not in operation.

The cooling tower will comply with the relevant sections of the *Public Health Act 1997* in particular Part 5: Premises, Division 4: Public Health Risk Activities and Part 6: Water. It will be registered and maintenance will be performed on a regular basis. The major aspects of the cooling tower maintenance will include:

- at least monthly inspection of the cooling tower;
- regular water treatment;
- complete cleaning and disinfection of the tower every three to six months;
- cleaning of the tower prior to start-up, following seasonal shut down;
- microbiological testing at least monthly of tower water to provide good practice; and
- maintain records.

The cooling tower maintenance will also be conducted in accordance with the *Legionella* Guidelines provided by the Public and Environmental Health Service.

The presence of three storage ponds within the Wood Centre development site has the potential to become a breeding ground for mosquitoes and other insects. With this comes the risk of diseases caused by arboviruses, organisms that utilise insects as their carrier, and infect humans and/or animals. There is a potential that Ross River virus may be transmitted in temperate climates.

The climatic conditions at the Wood Centre are not ideal for mosquito breeding. However, to further minimise this risk, it is proposed that continuous monitoring of the ponds will be carried out to check for mosquito larvae, at critical times of the year. Additionally, the construction of the storage dams will be at a reasonable grade to avoid the development of shallow swampy lands when water recedes.

Klebsiella pneumoniae is an important bacterial pathogen, which may be associated with timber processing wastewater. *K.pneumoniae* infections are common in hospitals and may cause pneumonia and urinary tract infections. However like all pathogens does not survive for long periods in the natural environment. It is carried in the intestinal tract of 30-40 % of humans and animals, and may survive in the environment for short periods in industrial wastewater such as textile finishing and pulp and paper mill wastewater. As the domestic wastewater at the Wood Centre is collected and managed in a separate reticulation system, to the process wastewater, the potential for contamination of the storage ponds is considered to be low. However, in accordance with normal occupational health and safety practices, personnel on site will be made aware of the potential health issue, and appropriate hygienic practices implemented.

11.1.6 Health Impact Summary

There are five main aspects of the proposed operation that have the potential to impact on human health both within the site boundaries and off-site. The detailed assessment of each of these aspects has concluded that provided contemporary occupational health and safety practices and procedures are implemented and the proposed environmental management and mitigation measures are in place that adverse health impacts will be minimised.

12. CUMULATIVE EFFECT, CONCLUSIONS AND COMMITMENTS

12.1 Introduction

This chapter draws on previous sections to describe the cumulative potential impact of the Wood Centre, and in doing so, summarises the potential impacts on the existing environment of its constituent wood processing facilities that are to be developed and operated on the site. Conclusions are drawn with regard to the net environmental effects of the project by considering the mitigative measures committed to in the previous sections. The mitigative measures that will assist in reducing the cumulative effect of the development are presented as commitments in tabular form at the end of this chapter.

12.2 Cumulative Effect of the Development

12.2.1 Wood Supply and Production

The Wood Centre is designed to act as a central catchment point for timber that is harvested in Southern Tasmania. The integration of the different wood processing operations on the Wood Centre site will enable greater recovery of wood resources and beneficial use of wood by-products.

There will be no changes to the harvesting arrangements under the Regional Forest Agreement as a result of the development.

The timber harvesting plans that are already established for the Huon District over the next 10 years will result in about 2000 ha of State forest being harvested and regenerated each year.

12.2.2 Planning Issues

The Wood Centre site and surrounding area is State forest, owned by the Crown.

The site is currently zoned Rural under the *Huon Planning Scheme 1979*. Not all facilities which make up the proposed Wood Centre development concur with the intent of the current Rural Zone. In the Rural zone a Timber Mill is discretionary and Light and General Industry are not permitted.

In accordance with Section 43A of the *Land Use Planning and Approvals Act 1993* a request has been made to amend the *Huon Planning Scheme* to introduce a specific zone for the subject site to permit the proposed current and future uses.

12.2.3 Social and Economic Issues

The proposed project will deliver significant economic and social benefits to Tasmania and the Huon Valley in particular.

The Huon Valley has a long history as a resource based economy from its early beginnings with fruit and vegetables production, and forestry related industry, primarily timber getting. The Wood Centre will further develop the existing forestry based industry in the region.

Employment resulting from the proposed development will include stability for the existing 15 to 20 harvesting contractors, currently employing some 100 to 150 operational staff in the area. A further 200 to 250 people will be directly employed at the Wood Centre. There are identifiable negative impacts on employment opportunities in existing industries from the Wood Centre development as all existing wood supply contracts to local mills will be retained.

This employment will contribute about \$9 million a year in wages and salaries to the economy. The construction period will also create around 200 direct jobs over a period of 12 months. The flow on effects will mean that at least the same number of jobs (200) will be created indirectly.

There will be additional benefits to existing sawmillers including:

- Improved inventory control with reduced log holding capacity required by the sawmiller;
- Improved safety for forest workers preparing logs;
- Improved log specification and quality control as a result of improved log grading and preparation within the Merchandising Yard; and
- Improved delivery lead times as a result of improved transport efficiencies and stockholding.

There will be a greater volume of timber recovered to solid wood products locally.

Modifications in traffic flows should have positive social benefits by reducing log traffic through several major population centres. Further, by moving processing facilities closer to the forest, most of the wood that is moved away from the site will be in enclosed vehicles. Redirection of the traffic flow will impact on some smaller centres.

Electricity generation on site will assist in increasing the reliability of power supply south of Huonville. Additional generating capacity at the end of the transmission

network provides an attractive method of improving reliability of the network as a whole.

The Wood Centre will make a significant contribution to the Huon Valley Municipality rate base.

The Huon Valley has a growing tourism industry that in part depends on the forests. FT is seeking to enhance this tourism appeal through provision of interpretation in the forest and establishment of tourist-centred facilities such as the Tahune Forest AirWalk. Forestry and tourism have developed side-by-side over the past 100 years. Various tourist operators benefit from using infrastructure developed by FT to provide access to forest pursuits in State forest. These and new operations will continue to benefit from infrastructure improvements that are occurring. In addition, the public will be able to view the hardwood and special timber processing in the Wood Centre as a showcase.

A community advisory committee has been established and will be maintained, to ensure that along with local government input, there is a direct opportunity for the community to have ongoing input to the project.

In support of this positive social and economic development, the proposed Wood Centre will cause a minimal impact to the visual integrity of the forests while increasing productivity and maximising use of residues.

12.2.4 Transport and Roads

The potential impacts of traffic movements to and from the Wood Centre include:

- Noise, dust and vibration associated with truck movement;
- Increased traffic;
- Deterioration of road surfaces due to heavy vehicle movements;
- Incompatibility with the present design standard of the roads; and
- Interference with schools and/or other sensitive activities along the transport route.

These potential impacts have been assessed in detail along the proposed transport routes to and from the Wood Centre. An assessment of the indirect transport costs (in terms of environmental noise, greenhouse emissions, local air pollution, water pollution, road construction and maintenance, and road accidents) of the existing transport arrangements when compared to those proposed for the Wood Centre, identified that there would be a decrease in these costs of about 40% for the preferred

transport option.

A wide range of mitigation measures will be undertaken to minimise the potential transport impacts. These include:

- Upgrading of transport routes to DIER and AUSTRROADS standards;
- Stormwater Management during construction to Soil and Water Management Guideline Standards (June 1999);
- Use of a modern, well maintained transport fleet;
- Training of drivers for operations on the transport routes;
- Development and implementation of a comprehensive Traffic Management Plan, covering all aspects of the transport operation; and
- Regular monitoring and enforcement of the transport operation.

While the transport associated with the Wood Centre will result in the redirection of the traffic flow through some smaller population centres, it will result in an overall reduction in log traffic through several major population centres. It is considered that the transport impacts on the community are capable of being satisfactorily managed once an agreed range of remedial work, identified with the community to ameliorate these impacts, are implemented.

12.2.5 Environmental Management Issues

The proposed development will be constructed and operated in accordance with the principles of best practice environmental management as defined in the *Environmental Management and Pollution Control Act 1994*.

12.2.5.1 Terrestrial Issues

The development is to be established in an area on the top of a low ridge, which has no significant land constraints. Excavations will be undertaken to provide a level base for the establishment of facilities.

The fluvio-glacial terrace escarpment encircling the ridge is vulnerable to degradation if disturbed by specific activities and will be impacted in some areas. This layer has been disturbed in some areas of the site by previous site uses (Sharples 1994). The element will be mapped and records kept where excavations are likely to intercept this layer (refer to Chapter 3).

The potential for erosion and sedimentation will be managed both during construction and operation and should be of low potential impact as the result of the mitigation

measures.

12.2.5.2 Atmospheric Emissions

Diffuse and Point Source Emissions

Management measures are to be implemented within each wood processing facility to minimise potential dust emissions from vehicular movements, storage and handling of wood materials and emission of particulates. The implementation of the proposed measures (described in the management measures sections of each facilities EMP) will ensure a low potential for nuisance and/or environmental impact by diffuse particulate emissions.

The main point source atmospheric emissions to be associated with the operation of the Wood Centre are stack emissions from the wood fired combustion facilities at the power station, sawmill and rotary peeled veneer mill (refer to Figure 20). The effective design and operation of these facilities will ensure that emissions meet regulatory standards. Air quality modelling using a standard meteorological data file and the Ausplume model has been undertaken (Appendix U). The results of the modelling indicate that all predicted peak Ground Level Concentrations (GLCs) for the target receptors are below the National Environmental Pollution Measures (NEPM) objectives in all cases. FT will undertake further air quality modelling using meteorological data that will be collected from a weather station on the site this ensable results with a 99.9% confidence level.

Greenhouse Gases

The Wood Centre development will impact on the global greenhouse environment as follows:

- In the Tasmanian context, the release of CO₂ will effectively remain the same, as the same amount of CO₂ will be released whether the wood is burnt in the Power Station, or on the forest floor as a seed bed for the establishment of new forests.
- By reducing fuel used for transport, less CO₂ will be emitted from this source.

In summary, the CO₂ production of the power industry will remain the same, while the CO₂ produced by forestry activities will be reduced. Refer to Chapter 5 for further discussion of greenhouse issues.

12.2.5.3 Hydrology, Water Supply and Wastewater Emissions

The proposed maximum extraction of 5 megalitres a day from the Huon River for use within the Wood Centre operations represents 1% of the minimum flow conditions, or

0.07% of average flows. At this low rate of extraction no adverse impact is expected to the existing ecology of the Huon River.

Contaminated stormwater and process wastewater from the wood processing facilities will be provided with preliminary treatment on each wood processing site, and reused within that facility. Excess wastewater will be directed to site-wide storage ponds for reuse within the Wood Centre operations. No wastewater will be directly discharged to the Huon River except in the case of extreme rainfall events (1 in 10 year, 72 hour rainfall event).

The wastewater management approach proposed for the site will provide a multi-level protection system for any on-site spills or accidents, thereby minimising the opportunity for off-site environmental harm.

The water requirements of the Wood Centre have been significantly reduced through wood processing facilities:

- Establishing re-circulating systems; and
- Using wastewater from the on-site storage ponds in preference to a clean water supply.

Domestic wastewater will be directed from each wood processing site to a communal package treatment plant and application of treated wastewater to land. This facility will be designed and operated to meet statutory requirements.

An extensive water monitoring program will be implemented. Monitoring will include process water streams from each of the facilities, recycled wastewater, ground water at the irrigation site, river water quality upstream and downstream from the site.

The issue of irrigation will be fully assessed and documented in an Irrigation Management Plan to be submitted separately from this DPEMP.

Publication of results via a regularly maintained Forestry Tasmania Wood Centre website will be provided on the Forestry Tasmania site (www.forestrytas.com.au).

12.2.5.4 Noise Emissions

The sound pressure level, for the site as a whole, was derived from the following summary (Table 87) of calculated noise emissions for wood processing facilities and associated main noise sources. Refer to Figure 20 for location of noise emissions from the Wood Centre.

The calculated noise level at the nearest residence, 6 kilometres from the Wood Centre is Leq 28.4 dB(A) compared to a background noise level of Leq 38-44 dB(A).

Due to the location of the proposed development and the management measures proposed for implementation, noise from the operation is considered to have a very low potential for nuisance to any residence.

Table 87 Summary Of Main Noise Sources At Wood Processing Facilities

(Terts, 2001)

Facility / Activity	Noise Level dB(A) from 6 km	
	Lmax	Leq
<i>Merchandising Yard</i>		
• Log drops (mean)	19.6	
• Log loader		14.3
• Chainsaw		8.9
• Fuelwood Processor		19.1
<i>Sawmill</i>		
• General		10.3
• Log drops (mean)	19.6	
• Log loader		14.3
• Chainsaw		8.9
<i>Rotary Peeled Veneer Mill</i>		
• General (machine hall noise)		0.5
• Log drops (mean)	19.6	
• Log loader		14.3
• Chain saw		8.9
<i>Wood Fibre Generation</i>		
• General		25.8
• Discrete noise events	32 - 37.5	
<i>Wood Fired Power Station</i>		
• Power station (General)		20.1
• Transformer		0.0
<i>Wastewater / Reuse Facility</i>		9.3
<i>LOGARITHMIC TOTAL</i>	37.7	28.4

The wood fibre processor is the main noise source on the Wood Centre site. This facility will be fully enclosed in a sound absorbing structure, oriented so that its opening is not directed towards off-site residences. In addition, where possible fuelwood processors (hoggers and/or tub grinders) will be situated behind other

buildings so that the buildings provide additional noise barriers in the direction of residences. The proposed location of potential noise producing equipment is shown in Figure 20.

The calculated noise level at the nearest residence, 6 kilometres from the Wood Centre is Leq 28.4 dB(A) compared to a background noise level of Leq 38-44 dB(A).

Due to the isolated nature of the proposed development and the management measures proposed for implementation, noise from the operation is considered to have a very low potential for nuisance to any residence.

These noise emissions relate to the emissions from the site whereas noise that may affect the health of employees on site is considered as a component of the Health Impact Assessment.

12.2.5.5 *Solid Waste Generation and Disposal*

Solid wastes generated on-site will be managed in accordance with the waste management hierarchy of waste avoidance and minimisation, resource recovery and disposal. The establishment of the wood processing operations on the Wood Centre site will enable maximum recovery of wood and reuse of the wood by-products generated, predominantly as fuelwood in the wood fired power station and heat plants (Figure 6). The environmental impact of solid waste generation will be minimal.

General refuse, packaging wastes, office waste, rock and wood by-product rubble that cannot be used as fuelwood will be disposed of off-site at an approved landfill on a regular basis. Table 88 identifies the solid waste generated by each facility and the disposal alternatives.

Solid wastes from wastewater management systems will be directed to beneficial reuse options where possible in preference to disposal to landfill. No disposal of waste will occur on-site, so no adverse impact is likely to occur.

Table 88 Solid Waste Disposal Summary

Facility	Composition of Solid Waste	Volume (Tpa)	Disposal Mechanism and Location
Merchandising Yard	Wood fines, sawdust, off-cuts, slivers, dockings, bark and out of specification wood.	6,000 T	Power Station
	Mud, rocks and screenings	4,000 T	Returned to forest floor or disposal at a landfill by truck
	General Refuse		Landfill
Sawmill	Wood fines, sawdust, off-cuts and shavings	1,000T	Power Station and Sawmill Heat Plant

Facility	Composition of Solid Waste	Volume (Tpa)	Disposal Mechanism and Location
	Mud, rocks and screenings	220 T	Returned to forest floor or disposal at a landfill by truck
	Ash	1,000 T	Returned to forest floor
	Solid waste from Boiler water treatment system		Reuse or dispose in an approved manner
	General refuse		Landfill
RPV Mill	Wood fines, sawdust, off-cuts and off specification veneer	1,000 T	Power Station or RPV Heat Plant
	Mud, rocks and screenings	750 T	Returned to forest floor or disposal at a landfill by truck
	Ash	1,000 T	Returned to forest floor
	Solid waste from Boiler water treatment system		Reuse or dispose in an approved manner
	General refuse		Landfill
Wood Fibre Mill	Wood fines, sawdust, and undersize chips	1,000 T	Power Station
	Mud, rocks and screenings	1,500 T	Returned to forest floor or disposal at a landfill by truck
	General refuse		Landfill
Wood-Fired Power Station	Mud, rocks and screenings	1,500 T	Returned to forest floor or disposal at a landfill by truck
	Boiler ash (coarse and flyash)	4,000 T	Returned to forest floor or disposal at a landfill by truck
	Solid waste from Boiler water treatment system		Reuse or dispose in an approved manner
	General refuse		Landfill
Sewage Treatment Plant	Sludge and Screenings		Reuse where approved options are identified or disposal at municipal landfill
Site Wide	Mud and rocks	1,000 T	Returned to forest floor or disposal at a landfill by truck
	General refuse		Landfill
Total		23,970 T	Per annum solid waste reuse/disposal

12.2.5.6 Hazardous Materials

The main type of hazardous materials to be stored and handled on the Wood Centre site are petroleum hydrocarbons (e.g. diesel) in relatively small volumes. Minor quantities of other materials such as LPG, water and wastewater treatment chemicals,

herbicides, and paints will also be stored on-site. There is a low potential for spillage of these materials during storage, as secure stores and bunds will be provided in accordance with relevant Australian Standards and statutory requirements. For storage locations, refer to Figure 20.

In the event of spillage, contingency measures will be in place on each wood processing site for the containment and clean-up of materials, including:

- Standard response procedures and training of site personnel in response;
- Maintenance of spill kits on-site;
- Establishment of bunds where necessary;
- Ability to collect and recover spillages in wastewater collection pits; and
- Implementation of incident reporting procedures.

The Environmental Pollution Control Act (1994) provides penalties for companies and individuals for breaches of the Act.

12.2.5.7 Health Impact Assessment

The key health issues associated with this project have been identified and include:

- Noise;
- Air pollution;
- Wastewater management;
- Control of biological hazards; and
- Transport related impacts.

The most significant noises that may effect the health of employees on-site are those generated by the breakdown of wood, movement of logs between operating units, vehicle noises, and operating machinery. Of these, the chipper at the wood fibre plant is considered the loudest. The operation of this equipment within enclosed facilities will confine the potential noise impact for off-site receptors, with no off-site impacts anticipated.

The most significant air emissions will originate from the power plant boiler. Location of the 40 m boiler stack on higher ground and the use of environmental best practice pollution control measures will reduce the risk of off-site impacts.

The Wood Centre development reduces the open-air regeneration burning, the forest residues are transported to the Power Station for energy generation on-site, under controlled conditions. Further advantages include:

- Particulate emissions are reduced due to filtration of the combustion gases;
- Dispersion of emissions is better controlled since there is only one point source;
- Better combustion process and control resulting in lower levels of emissions; and

Provided that the mitigation measures proposed are applied, the human health impact of air emissions will be negligible compared to existing levels.

Wastewater of two forms will be produced at the Wood Centre: processing wastewater and domestic wastewater. Wastewater generated during the processing on-site will be reused on-site with only occasional discharge during periods of defined high rainfall.

Wastewater in the form of domestic sewage is to be treated in an on-site package treatment plant, and irrigated in accordance with an irrigation management plan. No significant health impact is likely to occur if these management measures are implemented.

A number of measures will be incorporated in the design of the power station's cooling tower to prevent the potential risks associated with *Legionella*, including the following:

- Exclusion of sunlight;
- Stainless steel cooling tower construction;
- Monitoring and dosing the water; and
- Locate towers away from any type of disturbance and fresh air intake vents; and

To minimise the risk associated with mosquitoes in the on-site storage ponds, it is proposed that regular monitoring of the ponds will be carried out to check for mosquito larvae, at critical times of the year.

Occupational health and safety standards will be followed at each facility. The procedures and measures to be taken by operators will be defined in the facility standard operating procedures prior to commissioning.

Transport of logs and products to and from the site will result in changed traffic movements and an increase in traffic an associated noise in some areas along the route but decreased noise in other areas. A wide range of mitigation measures will be undertaken in consultation with the community including:

- Treatment of wood fibre transport bins to minimise drumming noises when empty;
- Minimise the number of fleet vehicles;
- Reduce transport vehicle speed;
- Keeping the trucks well maintained; and
- Use electro-magnetic rather than engine exhaust braking.

The transport related safety issues involve consideration of the roads, the vehicles, and the drivers, to ensure that the overall transport operations are safe, and follow best practice.

It is considered that the transport impacts on the community are capable of being satisfactorily managed.

In summary, the detailed assessment of each of the potential health issues has concluded that, provided contemporary occupational health and safety practices and procedures are implemented, and the proposed environmental management and mitigation measures are in place, adverse health impacts will be minimised.

12.2.5.8 Hazard Analysis and Risk Assessment

A preliminary hazard identification and risk assessment was conducted on the power station as required by the DPMP Guidelines (Appendix A). The study was done in accordance with AS/NZS 4360, 1999 Risk Management Standards.

The potential hazards were systematically identified using a preliminary Hazard Analysis and Operability Study (HAZOP) (Perry, R.H. 1998) in conjunction with the schematic process flow diagram for the power station. The identified hazards are detailed under each specific operational area, together with relevant actions and recommendations on solutions for prevention. The methodology of the HAZOP is detailed in Appendix T.

The HAZOP study identified the following areas of the power station as having the potential to kill, injure, or cause significant engineering and environmental damage, resulting from abnormal operating conditions or accident based activities:

- Fuel Stockpile;

- Boiler;
- Steam Lines;
- Turbine;
- Cooling Tower;
- Particulate Filter System;
- Air circulation system; and
- Chemical Storage.

Each of these identified areas has been assessed under the Rapid Environmental Risk Assessment Checklist (RERAC) method.

The Hazard Identification above was then used to assess the risk of the most critical hazards present within the power plant site. The RERAC methodology was used to quantify the likelihood and severity of an incident or hazard. This resulted in a ranking of each hazard in terms of total assessed risk (TAS). Events which are ranked the greatest TAS should be given the highest priority in terms of preventative action.

$$\text{Total Assessed Risk (TAS)} = \text{Likelihood} \times \text{Severity}$$

There were no Category One hazards (requiring immediate action) identified. The vast majority of all RERAC assessments fell under a TAS ranking of 5, the recommended level for industry operations.

Only one hazard fell under Category Two (requiring medium term action) and that was the hazard associated with ruptures of lines containing high pressure steam. Whilst deemed hazardous, it is generally not a catastrophic event. There are no direct environmental effects associated with this hazard.

This preliminary RERAC study has not identified any catastrophic environmental hazard event scenarios. Based upon the HAZOP and RERAC studies, it is concluded that if the actions and recommendations outlined in *Preliminary Hazard Analysis and Risk Assessment for the Wood Centre Development* (Appendix T) are acted upon, then there is little risk associated with hazards, which have significant environmental consequences.

12.2.5.9 Fire Fighting and Emergency Services

The temporary storage and processing of stockpiles of wood material on the Wood Centre site is a potential source of fuel in the event of a fire. Other potential fire hazards include the:

-
- Storage of fuels for loaders and equipment used on-site;
 - Conducting of vehicle and equipment maintenance, and possibly oxy-acetylene activities within workshop areas; and
 - Location of the site within bushland.

A number of management measures will be implemented on-site including:

- Storage of fuels in approved facilities and wood materials will not be stored in close proximity to fuels;
- Maintenance of site fire main and adequate numbers of appropriate fire extinguishers on-site;
- Buildings will typically be constructed with cladding exteriors; and
- All vehicle and equipment maintenance and oxy-acetylene activities will be undertaken within confined areas with appropriate separation to stored flammable materials (e.g. workshop areas).

A fire service system will be installed at the site in accordance with the requirements of the Tasmania Fire Service and the relevant Australian Standards, including the Building Code of Australia.

In addition, a Fire Management Plan and an Emergency Response Plan will be developed for the site by the Site Manager to meet the requirements of the Tasmanian Fire Service and the State Emergency Service, which will contain more specific plans for the respective facilities.

12.2.5.10 Flora and Fauna

No plant species of local, state-wide or national conservation significance were located on the site during surveys of the site and review of literature and databases regarding flora in the region. However, *Westringia angustifolia* was identified in the riparian zone on the south side of the Huon River therefore any activities that may impact the riparian zone will be preceded by a vegetation survey of the riparian zone.

The proposed development will result in some loss of heathland communities and the some of the copses of *Eucalyptus amygdalina* woodland community. This impact is not considered to be significant as this forest type is considered to be sufficiently protected under the RFA (pers. comm. Stephen Casey 2001).

Seven faunal species of conservation significance are known, or are likely, to occur in the area of the proposed development. Seven faunal species of conservation significance are known, or are likely, to occur in the area of the proposed

development. The proposed development will, however, only have potential to directly impact on one of these species, the Mt Mangana Stag Beetle. This impact is due to the necessity for clearing of some areas of wet *Eucalyptus obliqua* forest vegetation situated around the periphery of the site that is potential habitat for the stag beetle. A survey will be undertaken prior to construction to determine if the stag beetle is present within the wet *E.obliqua* forest around the periphery of the site. The areas, if found, will be delineated in order to protect the species. Where this is not possible, a permit to relocate due to damage to the area will be sought from DPIWE.

Management measures will be implemented to limit the extent of disturbance during construction and any disturbed areas will be rehabilitated as defined in the landscape master plan.

The project was referred to the Federal Minister for Environment under the *Environmental Protection and Biodiversity Conservation Act* determined that there were no controlled actions.

12.2.5.11 ***Aboriginal and Cultural Heritage***

The Wood Centre development will not impact on European heritage sites, as no sites are known to occur on, or within six kilometres of the site.

No Aboriginal cultural heritage sites were located on the Wood Centre site during a site investigation, nor records of known sites located on the Tasmanian Aboriginal Site Index. Although no Aboriginal sites were located, clearing of the site in preparation for development may uncover relics or features that were not previously evident due to the presence of thick vegetation.

As a precaution, an additional investigation of representative areas will be undertaken during the construction period to determine if any Aboriginal cultural heritage features are present. In addition, management measures will be implemented for the protection of any Aboriginal sites located during construction activities (refer to Chapter 5).

12.2.5.12 ***Visual Impact***

The site is situated on top of a low ridge within State forest, and has been partially modified in several areas by quarrying activities and associated vehicle tracks and a new major road. No readily accessible vantage points are situated within the vicinity of the site which are accessible by vehicles.

Potential areas that may overlook the site are as follows:

- Top of Barn Back from Forestry Tasmania road;
- 200 m section of Bermuda Road (Forestry Tasmania section of road);

- Hartz Mountain looking north; and
- Edwards Road (Forestry Tasmania road).

In general, the views provided from these areas are restricted and distant from the site. The site may be viewed during flights in the vicinity of the Wood Centre.

Given this and the measures to be used to mitigate any potential visual impacts including, use of similar architecture of the main buildings, the use of building and roof colours to minimise contrast with the surrounding vegetation, and the development of a landscape plan for the site, the visual impact of the Wood Centre will be minimal.

12.2.5.13 Energy Use

Electrical power demand for the site is estimated to be up to 10 MW. In addition to electrical power, the RPV mill and Sawmill will require thermal power for drying and conditioning.

The establishment of the power station for power and thermal generation on the site means that, on the whole, the site will be a net exporter of energy.

The following management measures will be implemented:

- Overall energy use will be minimised by selecting where possible motors, lighting and drying equipment that is efficient with respect to power usage;
- The detailed process design will maximise the potential to recover process heat and considerable use will be made of regenerative heat exchangers to achieve the aim; and
- The heat plants will include flue gas economisers for heat recovery.

12.2.5.14 Monitoring

The effectiveness of management measures associated with the development and operation of the Wood Centre and its wood processing components will be monitored to ensure impact on the environment is minimised, statutory requirements are met, and environmental management commitments are implemented. In summary, monitoring of site operations will include:

- Construction operations;
- Water quantity extracted from the Huon River and comparison to flow data;
- Discharge of wastewater from wood processing sites to the site-wide

management system (for internal management purposes);

- Discharge into and from the storage ponds;
- Water quality in the Huon River and Kings Creek;
- Soil and groundwater at the irrigation sites;
- Ambient noise monitoring;
- Obscuration monitoring of combustion plant discharges;
- Recording of noise level emissions associated with noisy equipment (as necessary);
- Monitoring of surface waters in the vicinity of the wastewater irrigation site(s);
- Observation of dust generation from highly trafficked areas (for internal management purposes);
- Maintenance of solid waste records (for internal management purposes);
- Maintenance of hazardous materials records for each wood processing operation (for internal management purposes);
- Complaints and incident reporting investigation and rectification; and
- Quantity of raw materials being used.

In addition, a site environmental committee will be established to oversee environmental management issues on-site.

12.3 Conclusions

This DPEMP has described all aspects of the proposed Wood Centre including the critical environmental effects both positive and negative.

This project meets the commitment by FT to promote sustainable work and innovative practices. By initiating a project that involves the manufacture of value added wood products on a central site within the forests, FT is allowing for local employment opportunities and improved transport efficiencies.

The Wood Centre development focuses on maximising overall returns and achieving greater resource recovery from existing levels of timber supply in the Southern Forests without significant impact on the natural environment.

The proposed Power Station will result in the reduction of forest residue being burnt in re-establishment burns. Instead, the excess residue will be utilised as fuelwood to produce power from a renewable resource for the site as well as the local community. The fuel load within the coupe is thus greatly reduced and will account for the reduction in burn intensity and levels of smoke emission.

The proposed Wood Centre site in the Southern Forests is suitable as a future wood processing centre because it has:

- A significant buffer from conflicting landuses;
- A strategic location in relation to the wood resource and for transportation purposes; and
- Suitable environmental conditions.

The site, after thorough investigation and assessment of potential impacts, has been found to be suitable for establishment and operation of the proposed developments. The site has no conflicting adjacent zoning and land use; provides significant buffers in relation to incompatible land uses; and is suitable in terms of the identified need for employment and technologically advanced resource development in the region. The site has good access to the wood fibre source and with some road improvements will have a suitable transport route to export facilities.

Provided operating standards set down in the legislation, and commitments described in this DPMP are maintained, the proposed development is not expected to adversely affect adjacent land-uses or the quality of the environment in the area.

The potential benefits and operational efficiencies can be realised without having to harvest any more trees than current levels. The Wood Centre development focuses on maximising overall returns and achieving greater resource recovery from existing levels of timber supply in the Southern Forests without significant impact on the natural environment.

The site has been selected and the proposed development will be in accordance with best practice environmental management techniques and procedures and the *Environmental Management and Pollution Control Act 1994*. These techniques have included:

- A detailed site selection process;
- The provision of a buffer zone around the site;
- The proposed development of the site;

- The proposed minimisation of waste production;
- Detailed environmental management and site operations;
- The progressive and final site rehabilitation; and
- The proposed monitoring and reporting procedures.

12.4 Summary of Environmental Commitments

Forestry Tasmania (FT) is committed to operating the Wood Centre responsibly with respect to the environment. This includes not only meeting the specific regulatory requirements of the relevant agencies, but where possible and appropriate, achieving best practice environmental management.

In the preceding Sections, the potential environmental impacts that may arise from the Wood Centre operation have been detailed and where appropriate actions and procedures, which will be instigated to prevent and or minimise these impacts, have been provided.

The environmental commitments made by FT throughout the DPEMP are summarised in Table 89 below. This table summarises each commitment according to operational site and identifies the timing to carry out the commitment. The table also includes reference to the page number of the DPEMP where additional information can be obtained regarding each commitment.

Table 89 Summary of Environmental Commitments

(CM: Road Construction Manager; SM: Wood Centre Site Manager; FM: Facility Manager; FT: Forestry Tasmania)

Note: Timing (Year) 1: Includes construction

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
TRANSPORT ISSUES					
1	Construction traffic will generally be restricted to daylight hours.	CM	✓		98
2	Speed restrictions for construction traffic will be imposed in sensitive areas.	CM	✓		98
3	Drivers will be given training with respect to operation on sensitive sections of the route during construction.	CM	✓		98
4	Erosion control measures detailed in the Forest Practices Code will be implemented during the construction program.	CM	✓		98
5	Conduct preliminary survey to identify vertebrate roadkill 'hotspots' prior to construction and apply appropriate mitigative measures where necessary.	CM/FT	✓		98
6	Seal those road sections where dust is a problem to residents on sections of Denison Road	CM	✓		102
7	Monitor road kill on Weld and Denison Road during first two years operation.				102
8	Truck operating times will be reviewed and amended with the Community Consultative Committee.	SM	✓		103
9	Ensure that upgrading work to meet the operating requirements of all road users is completed before production commences at the Wood Centre.	CM	✓		120
10	Standard planning and development application process will be followed for any new road construction.	CM	✓		120
11	No commitment, Terts reference.				129
12	Utilise HPVs for wood fibre transport if accepted by the community.	SM		✓	136

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
13	Design HPVs and other product transport vehicles to minimise noise generation.	SM	✓	✓	136
14	Schedule trucks to avoid school bus operating times.	SM		✓	136
15	Schedule trucks in accordance with the limitations of the Central Scheduling and Traffic Management Plan.	SM		✓	136
16	Enforce speed restrictions in consultation with community.	SM		✓	137
17	Reduce braking and acceleration of vehicles.	SM		✓	137
18	Minimise size of transport fleet.	SM		✓	137
19	Use of trained drivers.	SM		✓	137
20	Use modern well maintained vehicles.	SM		✓	137
21	HPV and Log truck trailers will be provided with air bag suspension systems.	SM		✓	137
22	Prepare Traffic Management Plan	SM	✓		138
23	Apply appropriate sealing finishes near residential areas.	CM	✓	✓	138
24	Seal sections of gravel road adjacent to residences if dust is identified as a problem.	CM	✓	✓	140
25	Seal and upgrade North Huon Road.	CM	✓		140
26	Improve road route prior to commencement of HPV transport.	CM	✓		142
27	Vehicles will carry appropriate State Road Traffic Act Regulation and National HVAS notice.	SM		✓	144
28	Fit vehicles with Road Friendly Suspension and carry appropriate certification.	SM	✓	✓	145
29	Drivers will be dedicated to the operation.	SM		✓	145
30	Drivers will take special precaution on road sections where the line of sight is limited.	SM		✓	145
31	Drivers will take particular care in the vicinity of school bus routes.	SM	✓	✓	145

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
32	Trucks will not operate past the Showground on Huon Valley Show Day.	SM	✓	✓	146
33	Develop a new playground to meet Australian Standards at a location agreed with the community.	SM	✓		147
34	Implement erosion control measures for road works in accordance with the Forest Practices Code.	CM	✓	✓	148
35	Monitor transport at representative locations after 12 months operation, and provision of a report to DPIWE.	SM	✓		148
WOOD CENTRE (SITE WIDE) ISSUES					
	<i>Construction</i>				
1	Establish a temporary boundary prior to construction to limit construction disturbance.	SM	✓		153
2	Erect sediment control fences to contain sediment to designated areas.	SM	✓		153
3	Monitor soil retaining measures daily.	SM	✓		153
4	Divert uncontaminated runoff to storage ponds via earthen drainages during construction.	SM	✓		154
5	Provide an effective system for managing sewage during construction.	SM	✓		154
6	Develop a Construction Environmental Management Plan to control soil disturbance during the construction phase.	SM	✓		154
7	Implement rehabilitation and/or stabilisation works during construction to limit erosion.	SM	✓		154
8	Prepare a dust minimisation strategy for the construction phase.	SM	✓		156
9	Monitor dust generation daily, and implement suppression measures as required.	SM	✓		156
10	Ensure visible dust is effectively suppressed so that none leaves the site during construction.	SM	✓		156
	<i>Emergency Measures</i>				
11	Implement management measures to minimise fire hazards on-site.	SM	✓	✓	159

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
12	Install a suitable ring main and adequate fire hydrants	SM	✓		159
13	Maintain fire breaks around the site.	SM	✓	✓	160
14	Develop and implement an emergency response plan.	SM	✓	✓	161
15	Implement energy management measures to comply with BPEM conditions.	SM	✓	✓	165
16	Liaise with DPIWE to develop management measures for water extraction during periods of low water flow.	SM	✓	✓	170
17	Develop a water budget once technical specifications are available.	SM	✓		172
	<i>Terrestrial</i>				
18	A capacity of 65 ML will be maintained at all times for a 72 hour, 1 in 10 year storm event.	SM		✓	173
19	Assess storage dam capacities as component of detailed design stage of the development.	SM	✓		174
20	Document and record the glacio-fluvial terrace system where it is to be disturbed.	SM	✓		182
21	Establish boundaries during construction and operation to limit surface disturbance by vehicular activities.	SM	✓		182
22	Cut and fill batters will be less than 1.5 horizontal to vertical.	SM	✓		183
23	Minimise areas exposed to excavation.	SM	✓		183
24	Plant and mulch areas as soon as possible.	SM	✓		183
25	Construct a stormwater management system during the construction period to prevent erosion.	SM	✓		183
26	Collect and treat all stormwater from the site during construction.	SM	✓		184

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
	<i>Atmospheric Emissions and Greenhouse Effect</i>				
27	Seal the internal ring road.	SM	✓		191
28	Undertake good housekeeping to prevent build up of soil, woodchips and dust on roads.	SM	✓	✓	191
29	Revegetate disturbed areas to prevent generation of windblown soil and dust.	SM	✓	✓	191
30	Cover stockpiles and truck cargoes with tarpaulins during construction	SM		✓	191
31	Install and monitor weather station on the site to provide data for air quality modelling prior to commissioning.	SM	✓	✓	192
32	Implement management measures to reduce the potential for nuisance odour generation.	SM		✓	192
33	Erect and maintain signage with a contact number for notification of problems.	SM	✓	✓	193
34	Investigate and record odour complaints.	SM		✓	193
	<i>Water Supply</i>				
35	Create additional water storage on-site if water extraction from the Huon River during low flow periods has to be reduced.	SM	✓	✓	193
36	Predict optimal abstraction timing using DPIWE ongoing monitoring data.	SM		✓	194
37	Ensure optimal use of water.	SM		✓	194
	<i>Wastewater Emissions</i>				
38	Direct stormwater from rooves to screening/interceptor system and onto site-wide storage ponds.	SM		✓	197
39	Drainage from undeveloped areas will continue to flow in natural drainage lines.	SM		✓	197
40	Provide on-site wastewater treatment at each facility.	SM		✓	197

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
41	Manage stormwater on-site.	SM		✓	197
42	No stormwater overflow will occur during non-storm conditions.	SM		✓	198
43	Monitor vegetation sprayed with treated water for signs of contamination or damage due to application.	SM		✓	198
44	Remove sludge from stormwater settling ponds when it has reached 10% of the total storage or as determined necessary, and beneficially reuse where possible. The sludge maintenance program and desludging protocol will be implemented within 12 months of operation.	SM		✓	198
45	Ensure the sewage treatment plant is designed to manage boiler water treatment chemicals.	SM	✓		199
46	Direct all sewage from all facilities to the on-site sewage treatment plant.	SM		✓	199
47	Utilise portable toilets during construction with regular disposal by contractor.	SM	✓		199
48	Collect and direct domestic wastewater to appropriately designed on-site treatment plant.	SM		✓	199
49	Monitor water quality to determine if other methods of treatment need to be implemented.	SM		✓	199
50	Line storage ponds with impermeable clay liner.	SM	✓		200
51	Design, construct and maintain wastewater reticulation piping in accordance with industry best practice.	SM	✓	✓	200
52	Develop Irrigation Management Plan prior to irrigation program implementation. Address the potential for groundwater contamination at the irrigation site in the plan.	SM	✓		200
<i>Noise Emissions</i>					
53	Select and maintain machinery to minimise noise emissions.	SM	✓	✓	203

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE No.
			1	ON-GOING	
54	A noise level survey will be undertaken prior site commissioning.	SM	✓		203
55	Investigate and record noise complaints.	SM		✓	203
56	House water supply pump station in building with soundproofing.	SM	✓	✓	204
	<i>Solid Waste Generation</i>				
57	Regular removal of solid waste and screenings from the site-wide wastewater management system.	SM		✓	204
58	Store solid waste in a lidded hopper and disposed of by a licensed waste contractor.	SM		✓	204
	<i>Hazardous Waste</i>				
59	Site Manager will ensure safe operation of communal diesel facility.	SM		✓	207
60	Store hazardous substances in accordance with AS-1940.	SM		✓	207
61	Store hazardous substances in a secure safe building or bund with material safety data sheets and signage in storage locations.	SM		✓	207
62	Maintain a spill-kit on-site and contain spills.	SM		✓	207
63	Employ licensed clean-up crew when required.	SM		✓	207
64	Maintain an inventory of hazardous substances on-site.	SM		✓	208
65	Emergency spill response procedures and staff training to be implemented at each facility	SM/FM		✓	208
66	Report all significant hazardous material incidents that have the potential to cause environmental harm to DPIWE within 24 hrs.	SM		✓	208

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
<i>Flora and Fauna</i>					
67	Conduct survey of riparian zone for <i>Westringia angustifolia</i> prior to conducting activities which have potential to disturb vegetation in the riparian zone.	SM	✓		209
68	Investigate the possible existence of the Mt Mangana Stag Beetle within wet <i>E. obliqua</i> forest and delineate appropriately.	SM	✓		210
<i>Aboriginal Heritage and Culture</i>					
69	Undertake an Aboriginal heritage survey upon clearing the site in preparation for development.	SM	✓		211
70	Aboriginal sites encountered will be protected and/or managed in an approved manner.	SM	✓	✓	211
<i>Decommissioning and Rehabilitation</i>					
71	Maintain a riparian buffer of 120 m between the Wood Centre and the Huon River.	SM	✓	✓	212
72	Develop and adhere to a landscaping master plan.	SM	✓	✓	212
73	Retain native vegetation within the 10 metre prescribed planning set back from the site boundary adjacent to Weld Road.	SM	✓	✓	212
74	Submit a decommissioning and rehabilitation plan to DPIWE in the event of closure.	SM	✓		214
<i>Site-Wide Monitoring</i>					
75	Appoint a Site Manager with responsibility for common use services.	FT	✓		214
76	Establish an environment committee for the implementation and management of site-wide environmental issues.	FT	✓		214
77	Site Manager will ensure disturbance does not exceed site boundaries.	SM	✓	✓	215

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
78	Site Manager will ensure dust suppression.	SM	✓	✓	215
79	Site Manager will ensure success of rehabilitation treatment.	SM	✓	✓	215
80	Log and monitor river water abstraction rates.	SM		✓	216
81	Monitor water quality from the storage ponds.	SM		✓	216
82	Receive and maintain copies of wastewater quality from each facility.	SM		✓	216
83	Sample at storage ponds on a weekly basis for the first 6 months for internal management purposes and provide results on the Wood Centre web site.	SM	✓		216
84	Report water quality data for the process wastewater storage ponds to DPIWE quarterly for the first 12 months of operation.	SM	✓		217
85	Review frequency of sampling and analysis after 12 months and modify as appropriate.	SM	✓	✓	217
86	Undertake ongoing monitoring of wastewater quality within the WWTP for internal operational purposes.	SM		✓	218
87	Monitor domestic wastewater quality at the sewage treatment plant outlet monthly.	SM		✓	218
88	Ensure sustainability of the irrigation program by testing water quality parameters after the sewage treatment plant commissioning.	SM	✓		218
89	Forward results of water quality tests to DPIWE every 6 months.	SM		✓	219
90	Establish groundwater monitoring bores at the irrigation sites.	SM	✓		219
91	Monitor groundwater quarterly for the first year and six monthly or yearly thereafter depending on the results.	SM	✓	✓	219

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
92	Make water sampling results publicly available through a regularly updated web site.	SM		✓	220
93	Collect representative soil samples from each reuse area and monitor on an annual basis.	SM		✓	221
94	Test soil samples for heavy metals.	SM		✓	221
95	Report soil sample results to DPIWE annually and publish on web page.	SM		✓	221
96	Maintain a log of sludge removed from the sewage treatment plant and stormwater dams for disposal, including information regarding the method and site of disposal.	SM		✓	221
97	Monitor (visually) vegetation within reuse areas for <i>Phytophthora cinnamomi</i> infection symptoms.	SM		✓	222
98	Noise monitoring will be conducted to ensure statutory requirements and commitments are met.	SM	✓		222
99	Obscuration monitoring of combustion plant discharge will be conducted and reported to the Site Wide Manager.	SM		✓	222
100	Maintain a log of complaints regarding general site issues and record outcomes of the investigation(s).	SM		✓	222
101	Environmental Committee will create a Site Wide Management Plan for hazardous materials.	SM	✓		222
102	Develop an incident response and notification protocol for site wide issues.	SM	✓		223
103	Establish a Community Consultative Committee.	SM	✓		226
104	The Site Manager will convene regular meetings of the Community Consultative Committee.	SM		✓	226
105	The Site Manager will place minutes of meetings on a regularly updated web page.	SM		✓	226

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
106	Review EMP after 12 months of operation and as agreed with DPIWE thereafter.	SM	✓	✓	227
MERCHANDISING YARD AND FUELWOOD PROCESSOR					
<i>Atmospheric Emissions</i>					
1	Use of late model diesel engines, modern combustion systems and normal vehicle maintenance.	FM		✓	244
2	Sweep log sorting and fuelwood processor areas regularly to control fugitive sawdust and wood fibre.	FM		✓	244
3	Use covered conveyors.	FM		✓	244
4	Seal high traffic areas of the Merchandising Yard and use street sweeper to clean up wood fibre and sawdust if watering is an inadequate dust control measure.	FM		✓	244
5	Dust suppression of highly trafficked unpaved areas will be achieved by watering.	FM		✓	244
<i>Wastewater Emissions</i>					
6	Treated wastewater will be used for appropriate purposes in the Merchandising Yard.	FM		✓	246
7	Contaminated wastewater will pass through a screening/interceptor system prior to discharge to the site wide storage ponds.	FM		✓	246
8	Undertake controlled discharge of uncontaminated stormwater from external hazardous materials stores.	FM		✓	247
9	Test potentially contaminated bund water, organise for its approved disposal and maintain records.	FM		✓	247
<i>Noise Emissions</i>					
10	Select and maintain machinery to minimise noise emissions.	FM	✓	✓	250
11	Ensure forklifts and loaders are fitted with standard noise control equipment.	FM	✓	✓	250

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
12	Modify sound levels of alarms if found to be a cause of nuisance.	FM		✓	250
13	Control sound intensity of PA system speakers and shift sirens.	FM		✓	250
14	Orientate buildings openings away from nearest residence and utilise noise absorbent insulation in the roof and walls of buildings containing noisy machinery.	FM	✓		250
15	Locate the fuelwood processor adjacent to buildings that will provide a noise barrier.	FM	✓		251
16	A noise assessment will be undertaken following selection of equipment and provision of technical specifications.	FM	✓		251
	<i>Solid Waste Generation</i>				
17	Maximise use of all wood waste for power generation.	FM		✓	251
18	Ensure solid waste minimisation by following the waste management hierarchy and investigating all options for reuse upon commissioning.	FM		✓	252
19	No wood waste will be disposed of on-site.	FM		✓	252
20	Regularly dispose of screening/interceptor system solids and oils to beneficial reuse operations and/or approved landfill.	FM		✓	252
21	Solid waste will be stored in a lidded hopper and disposed of by a licensed waste contractor to a licensed landfill.	FM		✓	253
	<i>Hazardous Materials</i>				
22	Conduct vehicle maintenance only in workshops.	FM		✓	253
23	All hazardous substances will be stored with signage and fire control measures according to AS-1940.	FM		✓	255
24	Maintain an inventory of hazardous substances on-site.	FM		✓	255
25	Employ licensed clean-up crew when required.	FM		✓	255

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
26	Store hazardous substances in a secure safe building or bund with material safety data sheets and signage in storage locations.	FM		✓	255
27	Collection of waste oil in drum(s) for removal and recycling by waste contractor. Maintain record of waste oil quantities.	FM		✓	256
28	Design an emergency response plan for the Merchandising Yard and provide training.	FM	✓	✓	256
29	Report all hazardous material emission to DEM within 24 hours of becoming aware.	FM		✓	256
	<i>Monitoring and Review</i>				
30	Visually monitor dust emissions and control dust by watering.	FM		✓	256
31	Daily inspection and cleaning of the solids removal system.	FM		✓	257
32	Weekly inspection of wastewater screening/interceptor system to ensure effective operation. Review system after six months of operation.	FM		✓	257
33	Monitor water quality (BOD, TPHC and TSS) regularly and continuously monitor flow rate of screening/interceptor system at site outlet. Report results to the DEM annually.	FM		✓	257
34	Record noise emission complaints with details of investigations and actions.	FM		✓	257
35	Monitoring data will be submitted to the DEM annually. In the case of an emergency emission full details will be submitted within 5 days.	FM		✓	258
36	The facility manager will develop and implement an incident response and notification protocol.	FM	✓	✓	258
37	Maintenance of internal management records regarding hazardous materials storage and usage.	FM		✓	258

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
38	Review EMP after 12 months of operation and as agreed with DPIWE thereafter.	FM	✓	✓	261
SAWMILL					
	<i>Atmospheric Emissions</i>				
1	Use of late model diesel engines, modern combustion systems and normal vehicle maintenance.	FM		✓	279
2	Utilise and maintain appropriately designed ventilation system to manage dust and fugitive emissions.	FM		✓	279
3	No dust from on-site activities will leave the site.	FM		✓	280
4	Dust suppression of highly trafficked unpaved areas will be achieved by watering.	FM		✓	280
5	Seal high traffic areas of the Sawmill site and use street sweeper to clean-up wood fibre and sawdust if watering is an inadequate dust control measure.	FM	✓	✓	280
6	Conduct air quality modelling once engineering specifications and weather data for the site is available.	FM	✓		280
7	Open fires will not be permitted on the site.	FM		✓	280
	<i>Wastewater Emissions</i>				
8	Contaminated process wastewater and stormwater will pass through a screening/interceptor system prior to discharge to the site wide storage ponds.	FM		✓	282
9	Annual reporting of wastewater monitoring results to the DEM.	FM		✓	283
10	Undertake controlled disposal of contaminated water from bunds.	FM		✓	283
11	Test potentially contaminated bund water and organise for its approved disposal.	FM		✓	283
	<i>Noise Emissions</i>				

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
12	Select and maintain equipment to minimise noise emissions.	FM	✓	✓	285
13	Ensure forklifts and loaders are fitted with reversing alarm volume control and flashing lights where possible.	FM	✓	✓	286
14	Orientate building openings away from nearest residence and utilise noise absorbent insulation in roof and walls of buildings containing noisy machinery.	FM	✓		286
15	A noise assessment will be undertaken following selection of equipment and provision of technical specifications.	FM/SM	✓		286
	<i>Solid Waste Generation</i>				
16	Utilise all appropriate wood by-product for power generation.	FM		✓	287
17	Ensure solid waste minimisation by following the waste management hierarchy and investigating all options for reuse upon commissioning.	FM		✓	287
18	Reuse or dispose solid waste from boiler water treatment system in an approved manner.	FM		✓	288
19	Collect and store general refuse in a waste hopper for collection by a licensed waste contractor and disposal in an approved landfill.	FM		✓	288
	<i>Hazardous Materials</i>				
20	Design and construction of the diesel storage to meet appropriate standards and legislation.	FM	✓		291
21	All hazardous substances will be stored with signage and fire control measures according to AS-1940.	FM		✓	291
22	Store hazardous substances in a secure safe building or bund with material safety data sheets and signage in storage locations.	FM		✓	291
23	Design an emergency response plan for the Sawmill site and provide training.	FM	✓	✓	291

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
24	Maintain a spill-kit on-site and contain spills.	FM		✓	292
25	Employ licensed clean-up crew when required.	FM		✓	292
26	Maintain an inventory of hazardous substances on-site.	FM		✓	292
27	Collect waste oil in drum(s) for removal and recycling by waste contractor and maintain a record of quantities.	FM		✓	292
28	Report accidental emission to DEM within 24 hours of becoming aware of it.	FM		✓	292
	<i>Monitoring and Review</i>				
29	Visual dust monitoring and control dust by watering.	FM		✓	293
30	Atmospheric monitoring will be conducted if complaints are received.	FM		✓	293
31	Weekly inspection of wastewater screening/interceptor system to ensure effective operation. Review system after six months of operation.	FM	✓	✓	293
32	Monitor water quality (TPHC, BOD and TSS) regularly and continuously monitor flow rate of screening/interceptor system at site outlet. Report the results to the DEM annually.	FM		✓	293
33	Daily monitoring of blowdown and bleed streams from heat plant for TDS, pH and BOD.	FM		✓	293
34	Continuously monitor stack emissions with an obscuration meter and alarm system. In case of poor emissions, immediately adjust fuel-to-air ratio.	FM		✓	294
35	Annual reporting of heat plant stack monitoring results to the DEM.	FM		✓	294
36	Record noise emission complaints with details of investigations and actions.	FM		✓	294
37	Maintenance of internal management records regarding hazardous materials storage and use.	FM		✓	294

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
38	Monitoring data will be submitted to the DEM annually. In the case of an emergency emission full details will be submitted within 5 days.	FM		✓	294
39	The facility manager will develop and implement an incident response and notification protocol.	FM	✓	✓	295
40	Regular visual inspection of sawdust and wood fines handling systems and solids removal.	FM		✓	295
41	Review EMP after 12 months of operation and as agreed with DPIWE thereafter.	FM	✓	✓	297
ROTARY PEELED VENEER MILL					
	<i>Atmospheric Emissions</i>				
1	Dust suppression of highly trafficked unpaved areas will be achieved by watering.	FM		✓	316
2	Seal highly trafficked areas of the RPV site and use street sweeper if watering is an inadequate dust control measure.	FM	✓	✓	316
3	Ensure dust is confined to the site.	FM		✓	316
4	Design and operation of fuelwood transfer to minimise dust generation.	FM	✓	✓	317
5	Provide personnel with appropriate protection equipment.	FM		✓	317
6	Installation and on-going operation of an appropriately designed ventilation system in the main RPV production building.	FM	✓	✓	317
7	Conduct air quality modelling once engineering specifications and weather data for the site is available.	FM		✓	317
8	Open fires will not be permitted on-site.	FM		✓	318
9	Monitor heat plant particulate emissions with an obscuration and audible alarm and adjust fuel-to-air ratio as required.	FM		✓	319

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
10	Utilise modern vehicles with appropriate exhaust management equipment.	FM		✓	319
	<i>Wastewater Emissions</i>				
11	Collection of contaminated stormwater and screening prior to diversion to the site-wide storage pond.	FM		✓	320
12	Treat boiler water treatment system bleed stream and heat plant blowdown in sewage treatment plant.	FM		✓	321
13	Regular solids removal from wastewater screens.	FM		✓	321
14	Reuse or dispose solid waste from boiler water treatment system in an approved manner.	FM		✓	321
15	Undertake controlled discharge of uncontaminated stormwater from external hazardous materials stores.	FM		✓	321
16	Test potentially contaminated bund water, organise for its approved disposal and maintain records of disposal.	FM		✓	321
	<i>Noise Emissions</i>				
17	Select and maintain machinery to minimise noise emissions.	FM	✓	✓	323
18	Ensure forklifts and loaders are fitted with reversing alarm volume control and flashing lights where possible.	FM	✓	✓	323
19	Conduct veneer product loading operations within the RPV building where possible.	FM		✓	324
20	Modify sound levels of alarms if found to be cause of nuisance.	FM		✓	324
21	Control sound intensity of PA system speakers and shift sirens.	FM		✓	324
22	Investigate and record all noise complaints.	FM		✓	324
	<i>Solid Waste Generation</i>				
23	Wood by-products will be reused as fuelwood in the heat plant on-site.	FM		✓	325

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
24	Regularly dispose of screening/interceptor system solids and oils for beneficial reuse operations and/or approved landfill.	FM		✓	326
25	Collection and beneficial reuse of screened solids and ash.	FM		✓	326
26	Regular collection of general refuse for disposal at approved landfill by waste contractor.	FM		✓	327
27	Ensure solid waste minimisation by following the waste management hierarchy and investigating all options for reuse upon commissioning.	FM		✓	327
28	Empty glue containers will be disposed of to an approved landfill.	FM		✓	327
	<i>Hazardous Materials</i>				
29	Storage of minor quantities of hazardous materials over relocatable bunds or similar facility as required by AS-1940.	FM		✓	328
30	Design and construction of the diesel storage to meet appropriate standards and legislation.	FM	✓		328
31	Display of relevant material safety data sheets and signage in storage locations.	FM		✓	328
32	Design an emergency response plan for the RPV Mill site and provide training.	FM	✓	✓	330
33	Maintain a spill-kit on-site and contain spills.	FM		✓	330
34	Employ licensed clean-up crew when required.	FM		✓	330
35	Maintain an inventory of hazardous substances on-site.	FM		✓	330
36	Collection of waste oil in drums for removal and recycling by waste contractor.	FM		✓	330
37	Report accidental emission to DEM within 24 hours of becoming aware of it.	FM		✓	330

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
<i>Monitoring and Review</i>					
38	Undertake visual monitoring and water for dust suppression as necessary.	FM		✓	331
39	Weekly inspection of wastewater screening/interceptor system to ensure effective operation. Review system after six months of operation.	FM		✓	331
40	Monitor water quality (TPHC, BOD and TSS) regularly and flow rate from the screening/interceptor outlet continuously. Report results to the DEM annually.	FM		✓	331
41	Daily monitoring of blowdown and bleed streams from heat plant for TDS, pH and BOD.	FM		✓	332
42	Continuous obscuration monitoring of the heat plant stack emissions.	FM		✓	332
43	Annual reporting of heat plant stack monitoring results to the DEM.	FM		✓	332
44	Record noise emission complaints with details of investigations and actions.	FM		✓	332
45	Maintenance of internal management records regarding hazardous materials storage and use.	FM		✓	332
46	Notification of emissions that exceed statutory requirements and provision of a report to the DEM.	FM		✓	333
47	Develop and implement an incident response and notification protocol.	FM	✓	✓	333
48	Regular visual inspection of sawdust and wood fines handling systems and solids removal.	FM		✓	333
49	Review EMP after 12 months of operation and as agreed with DPIWE thereafter.	FM		✓	336
WOOD FIBRE MILL					
	<i>Atmospheric Emissions</i>				

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
1	Conveyors and hoppers will be covered to reduce fugitive sawdust emissions.	FM		✓	350
2	Dust suppression of highly trafficked unpaved areas watering.	FM		✓	350
3	Seal high traffic areas of Wood Fibre Mill area and use street sweeper to clean up wood fibre and sawdust.	FM		✓	350
4	Ensure no dust leaves the site	FM		✓	351
	<i>Wastewater Emissions</i>				
5	Fume extraction system will be provided in babbit metal work area.	FM		✓	351
6	Contaminated wastewater will pass through a screening/interceptor system prior to discharge to the site wide storage ponds.	FM		✓	352
7	Pass water through screening/interceptor system prior to discharge to storage ponds and regularly test for TPHC, BOD and TSS. Continuously monitor flow rate from the system.	FM		✓	352
8	All machine and vehicle maintenance will be undertaken in the workshop area where clean-up materials will be immediately available.	FM		✓	353
9	Collection of rotary screw condensate in a sump and regular disposal.	FM		✓	353
10	Undertake controlled disposal of contaminated water from bunds.	FM		✓	353
11	Test potentially contaminated bund water and organise for its approved disposal and maintain records.	FM		✓	353
	<i>Noise Emissions</i>				
12	Orientate building openings away from nearest residence and utilise noise absorbent insulation in roof and walls of buildings containing noisy machinery.	FM	✓		357

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
13	Enclose the Wood Fibre Mill in a building designed for acoustic suppression.	FM	✓		357
14	Undertake noise impact assessment once technical specifications for Wood Fibre Mill equipment are available.	FM	✓		357
15	Enclose re-chipper in a building designed for acoustic suppression.	FM	✓		358
16	Ensure forklifts and loaders are fitted with reversing alarm volume control and flashing lights where possible.	FM		✓	358
17	Application of standard practices in the case of discrete noise sources.	FM		✓	358
18	Investigate and implement remedial measures in response to noise complaints.	FM		✓	359
	<i>Solid Waste Generation</i>				
19	Utilise all wood waste for power generation.	FM		✓	359
20	No wood waste will be disposed of on-site.	FM		✓	359
21	Regularly dispose of screening/interceptor system solids and oils to beneficial reuse operations and/or approved landfill.	FM		✓	360
22	Dispatch blade sharpening waste to licensed landfill.	FM		✓	360
23	Solid waste will be stored in a lidded hopper and disposed of by a licensed waste contractor to an approved landfill.	FM		✓	360
24	Ensure solid waste minimisation by following the waste management hierarchy and investigating all options for reuse upon commissioning.	FM		✓	361
	<i>Hazardous Materials</i>				
25	All hazardous substances will be stored with signage and fire control measures according to AS-1940.	FM		✓	363

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
26	Store hazardous substances in a secure safe building or bund with material safety data sheets and signage in storage locations.	FM		✓	363
27	Bunds will be inspected daily for spilt material that will be promptly mopped up or treated with absorbent material and any leaks will be promptly repaired.	FM		✓	363
28	Design an emergency response plan for the Wood Fibre Mill site and provide training.	FM	✓	✓	363
29	Maintain a spill-kit on-site and contain spills.	FM		✓	363
30	Employ licensed clean-up crew when required.	FM		✓	363
31	Maintain an inventory of hazardous substances on-site.	FM		✓	364
32	Collection of waste oil in drum(s) for removal and recycling by a waste contractor. Maintain a record of quantities.	FM		✓	364
33	Report hazardous material emission to DEM within 24 hours.	FM		✓	364
<i>Monitoring and Review</i>					
34	Visually monitor dust emissions and effectiveness of control by watering.	FM		✓	364
35	Daily inspection and cleaning of solids removal system to ensure at least 25% capacity is available.	FM		✓	365
36	Weekly inspection of wastewater screening/interceptor system to ensure effective operation. Review system after six months of operation.	FM		✓	365
37	Monitor water quality (TPHC, BOD and TSS) regularly and flow rate from the screening/interceptor system outlet continuously. Report results to the DEM annually.	FM		✓	365
38	Record noise emission complaints with details of investigations and actions.	FM		✓	365

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
39	Submit monitoring data to the Director of Environmental Management annually. In the case of an emergency emission full details will be submitted within 5 days.	FM		✓	366
40	Maintain internal management records for hazardous material storage and use.	FM		✓	366
41	Develop and implement an incident response and notification protocol.	FM	✓	✓	366
42	Conduct staff health monitoring of knife sharpening staff.	FM		✓	366
43	Review EMP after 12 months of operation and as agreed with DPIWE thereafter.	FM		✓	368
WOOD FIRED POWER STATION					
	<i>Atmospheric Emissions</i>				
1	Undertake air quality modelling for the Power Station and heat plant stack emissions once engineering specifications and site weather data are available.	FM	✓		386
2	Equipment will be designed and operated to comply with the four-tiered approach recommended by the Discussion Paper on Air Quality Management and Policy Development (January 2000).	FM	✓		387
3	Conveyors will be covered to control fugitive dust.	FM		✓	388
4	Ash will be wetted following discharge from the ash bin.	FM		✓	388
5	Seal highly trafficked areas of the Power Station and use street sweeper if watering is an inadequate dust control measure.	FM		✓	388
6	Water highly trafficked unpaved areas to suppress dust.	FM		✓	388
7	No dust will travel beyond the site boundary as an air emission.	FM		✓	388
8	Installation and maintenance of a coarse filter system and ESP will maintain the emissions below 80 mg/Nm ³ .	FM	✓	✓	389

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
9	Adjust fuel-to-air ratio immediately if stack emission opacity exceeds 20% and shut the Power Station down for repairs if opacity continues to exceed 20%.	FM		✓	389
	<i>Wastewater Emissions</i>				
10	Contaminated wastewater will pass through a screening/interceptor system prior to discharge to the site wide storage ponds.	FM		✓	390
11	Undertake controlled discharge of uncontaminated stormwater from external hazardous materials stores.	FM		✓	391
12	Test potentially contaminated bund water and organise for its approved disposal.	FM		✓	392
	<i>Noise Emissions</i>				
13	Safety valves will vent through a silencer and venting will only occur during day-time hours.	FM		✓	394
14	Utilise soundproofing and orientate openings toward the Wood Centre.	FM	✓		395
15	Install silencers on equipment as appropriate and select and maintain equipment to minimise noise emissions.	FM	✓	✓	395
16	Stack design will allow for tuning stubs to be installed if necessary.	FM	✓		395
17	Undertake noise modelling when final equipment selection has been made.	FM	✓		395
18	Investigate and apply appropriate mitigation measures if a noise complaint is received.	FM		✓	395
	<i>Solid Waste Generation</i>				
19	Ash and unusable solid waste will be removed from the site to a licensed landfill or for appropriate reuse.	FM		✓	396
20	Ensure solid waste minimisation by following the waste management hierarchy and investigating all options for reuse upon commissioning.	FM		✓	396
21	Regularly dispose of screening/interceptor solids and oils to beneficial reuse operations and/or approved landfill.	FM		✓	396

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
	<i>Hazardous Materials</i>				
22	All hazardous substances will be stored with signage and fire control measures according to AS-1940.	FM		✓	399
23	Store hazardous substances in a secure safe building or bund with material data safety sheets and signage in storage locations.	FM		✓	399
24	Maintain an inventory of hazardous substances on-site.	FM		✓	399
25	Collection of waste oil in drum(s) for removal and recycling by waste contractor. Maintain a record of quantities.	FM		✓	399
26	Design an emergency response plan for the Sawmill site and provide training.	FM	✓		400
27	Maintain a spill-kit on-site and contain spills.	FM		✓	400
28	Employ licensed clean-up crew when required.	FM		✓	400
29	Report significant hazardous material incidents with potential to cause environmental harm to DPIWE.	FM		✓	400
30	Report accidental emission to DEM within 24 hours.	FM		✓	400
31	Conduct a detailed HAZOP study prior to commencement of Power Station construction.	FM	✓		405
	<i>Monitoring and Review</i>				
32	Visually monitor dust emissions and control dust by watering.	FM		✓	405
33	Where practicable, daily inspection and removal of the solids from the solids removal system.	FM		✓	405
34	Weekly inspection of wastewater screening/interceptor system to ensure effective operation. Review system after six months of operation.	FM		✓	406

NO	DESCRIPTION	RESPONSIBILITY	TIMING (YEAR)		PAGE NO.
			1	ON-GOING	
35	Monitor water quality (TPHC, BOD and TSS) regularly and flow rate from the screening/interceptor system outlet continuously and report to the DEM annually.	FM		✓	406
36	Monitoring of boiler stack emissions and modification of boiler operation if opacity exceeds 20%.	FM		✓	406
37	Annual reporting of Power Station stack monitoring results to the DEM.	FM		✓	406
38	Record noise emission complaints with details of investigations and actions.	FM		✓	407
39	Submit monitoring data to the DEM annually. In the case of an emergency emission full details will be submitted within 5 days.	FM		✓	407
40	Develop and implement an incident response and notification protocol.	FM	✓		407
41	Review EMP after 12 months of operation and as agreed with DPIWE thereafter.	FM		✓	409

REFERENCES

- AGO 1998a. *Land Use and Change & Forestry – Workbook for Carbon Dioxide from the Biosphere*. Australian Greenhouse Office, Canberra.
- AGO 1998b. *Energy – Workbook for Fuel Combustion Activities (Stationary Sources)*. Australian Greenhouse Office, Canberra.
- Artec Pty. Ltd. (2000). *DPEMP Bell Bay Wood Processing Plant 2000*.
- AS/NZS 3666. 1995. *Air handling and water systems of buildings – microbial control*. Standards Australia, Sydney.
- Barnes, R (2001). *Revised Botanical Resources Survey of a Site Proposed for the Huon Integrated Processing Yard, Glen Huon, Southern Tasmania*. Biological Consultants. January 2001.
- Bobbi, C (1988). *Water Quality of Rivers in the Huon Catchment*. Department of Primary Industry and Fisheries, Land and Water Assessment Branch.
- Coffey (2000). *Preliminary Geotechnical Assessment Proposed Integrated Forest Products Yard, Huon District*. Coffey Geosciences Pty Ltd. August 2000.
- Davies, J.B (1988). *Land Systems of Tasmania Region 6: South, East and Midlands – A Resource Classification Survey*. Department of Agriculture, Tasmania.
- DELM (1994). *Guidelines for Acceptance of Liquid Waste to Sewer*. Department of Environment and Land Management.
- DELM (1996). *Environmental Assessment Manual – Version 1*. Department of Environment and Land Management. January 1996.
- DPIWE (2000a). *Draft Guidelines for the use of recycled water in Tasmania*. Department of Primary Industries Water and Environment.
- DPIWE (2000b). *Discussion Paper on Air Quality Management and Policy Development*. Department of Primary Industries Water and Environment.
- DPIWE (2000c). *Huon Estuary Study: Technical Report Environmental Research for Integrated Catchment Management and Aquaculture*. <http://www.marine.csiro.au/ResProj/CoasEnvMarPol/huonest/toc.html>. Department of Primary Industries Water and Environment, Tasmania.
- Environment Australia (1998). *Sources of Dioxins and Furans in Australia : Air Emissions*. AGPS 1998.

Environment Australia (1999). *Emissions Estimation Technique Manual for Aggregated Emissions from Prescribed Burning and Wildfires*. September 1999.

Environmental Scientific Services (1999). *Gunns Veneer Ltd. Somerset Environmental Management Plan*. Bob Chesterman, ESS, March 1999.

ETS (1999). *Tasmanian Board Mills Ltd. Killofaddy EMP*. E&TS Pty. Ltd., January 1999.

ETS (1996). *North Forest Products Hampshire EMP Rev. Report*. E&TS Pty. Ltd., July 1996.

ETS (1992). *APPM Tamar Woodchip Mill Long Reach EMP Final Draft*. E&TS Pty. Ltd., November 1992.

Forest Practices Board (2000). *Forest Practices Code*. Forest Practices Board, Hobart, Tasmania.

Forestry Tasmania (2001). *Social and Economic Report on the Huon Valley for the Planning Submission on Southwood Resources –Huon, The Wood Centre*. Forestry Tasmania, January 2001.

Forestry Tasmania (1999). *Huon Forest District – Forest Management Plan*. September, 1999.

Forestry Tasmania (1999). *1999-2000 to 2001-2002 Three Year Wood Production Plan*. Forestry Tasmania July 1999.

Forestry Tasmania (1998). *State of the Forests Report November 1998*. Forestry Tasmania.

Fox Design Pty Ltd (1999). *Cogeneration for Forestry Tasmania's Integrated Wood Processing Plant*. Fox Design Pty Ltd December 1999

GHD (1995). *Hokushin Co. Ltd. Final DPEMP Medium-Density Fibreboard Plan Bell Bay*. Gutteridge Haskins and Davey Pty. Ltd. July 1995.

Grant, J.C., Laffan, M.D., Hill, R.B. and Neilsen, W.A., 1995. *Forest Soils of Tasmania. A Handbook for Identification and Management*. Forestry Tasmania.

HCHRP (1997) *Huon Catchment Healthy Rivers Project - Catchment Management Plan*.

Luk, J and Thoresen, T (1996) *Review of Transport Cost Analysis for Department of Transport WA*. CR RE6022 Melbourne, ARRB Transport Research 1996

Mallick, S.A. (2000). *Huon Integrated Timber Processing Yard, Huon/Arve River Junction, Fauna Assessment*. August 2000.

Ministry of Transport (1996). *Land Transport Pricing Study- Environmental Externalities Discussion Paper*. New Zealand 1996

Ryan T, (1998). *Tasmania Log segregation and utilisation study*. Tom Ryan 1998.

SDAC (1996). *State of the Environment Tasmania, Volume 1 – Conditions and Trends, compiled by the State of Environment Unit, Land Information Services, Department of Environment and Land Management, Tasmania*. Sustainable Development Advisory Council.

SEMF (2001). *Draft Planning Report. The Wood Centre Development, Southwood Resources – Huon*. Geoff Davies February 2001.

SEMF (2001). *Power Station Air Quality Modelling*. July 2001.

Sharples, C (1994). *Geomorphic values Survey: Barnback Block, Huon Forest District, A Report to Forestry Tasmania (Huon Forest District)*.

Scottney, P (2001). *Aboriginal Cultural Heritage Survey: ITPS*. Peter Scottney, January 2001.

Terts, P. (2001). *Noise Issues – Southwood ITPS*. April 2001.

US EPA 1995. *Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Sources, Fifth Edition*. Research Triangle Park, NC, USA.

Weldon, B. (2001). *Hydrogeological Setting – Southwood ITPS*. July 2001.

PERSONAL COMMUNICATION

Tim Wardlaw, Forestry Tasmania, 2001

Tony d'Alessandro, developer, 2001.

Graham, Land and Water Resources, 2000

Stephen Mallick, Biologist, 2001

Stephen Casey, Private Forests Tasmania, 2001