

CHAPTER 9 WOOD FIBRE MILL

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9. WOOD FIBRE MILL - ENVIRONMENTAL MANAGEMENT PLAN

9.1 Wood Fibre Mill Process Description

The Wood Fibre Mill will occupy approximately 4 hectares in the middle of the Wood Centre (Figure 5). The mill has direct access to the internal ring road network and is located immediately south of the Sawlog Stockpile. A typical process flow diagram for the mill is shown in Figure 33 and Figure 34 outlines the wood flow through the Wood Fibre Mill. The activities conducted in the Wood Fibre Mill will comply with the current best practice environmental management conditions operating throughout Australia.

9.1.1 *Description of Operation and Equipment*

The Wood Fibre Mill operations conducted in enclosed space will include:

- wood fibre processing;
- screening; and
- maintenance works.

Operations conducted in the open will be limited to log, residue and processed wood fibre storage/stockpiles. Refer to Table 71 for details on building dimensions and construction materials.

Log Receiving and Stockpiling

Wood fibre is generated from logs that are not suitable for higher value-adding processing. After washing, incoming log trucks carrying pulpwood only will travel via the weighbridge, to the Wood Fibre Mill for processing. Additional logs will be transported from the merchandising yard and shorts stockpile after sorting of mixed loads as described in Chapter 6.

At the Wood Fibre Mill logs can then be relayed directly from the truck to the Wood Fibre Mill line, most likely using a Wagner L 90 mobile loader or equivalent. A stockpile will accommodate all pulp logs not capable of being directly loaded onto the infeed deck. In such situations, mobile loaders will conduct unloading, stockpiling and transfer of logs to the wood fibre processing line. A second unit in the form of a Komatsu WA 500 (or equivalent) would be utilised as a secondary off loader during L90 down time of the primary loading equipment. A servicing facility for the loaders is provided in the workshop building at the Merchandising Yard.

Log Feeder Deck and Sorting

The feeder deck will be 14 metres long and 9 metres wide. Logs will be manually moved along a feeder deck by the loader and will pass through a log wash if determined necessary by the operator.

Logs will then pass by a knuckle boom loader positioned next to the wood fibre infeed conveyor (Plate 9). This loader will enable positioning and sorting of logs to facilitate even wood supply to the wood fibre machine line and to enable non-conforming products to be removed from the line. Rejected logs will be transferred to the fuelwood processor on the Merchandising Yard site.

Plate 9 Log infeed deck



Log Processing and Screening

The wood fibre machine will be a 2.84 metre diameter unit, the disc fitted with twelve knives and driven by a 2,000 kW motor. This unit will be positioned within a specially designed enclosure for noise control.

Air will be supplied by an air compressor located in the workshop or the wood fibre processor building. The compressor will operate intermittently as a continuous flow is not required. Some condensation will occur during air compression.

Wood fibre will be transported by conveyor belt to two fibre size classifiers (screens). The screening/sorting process will separate undersized and oversized fibre from fibre suitable for export. Undersized fibre will fall onto a conveyor belt that will lead to an overhead bin and be transported to the Merchandising Yard. Oversized fibre will be processed by a second wood fibre machine (i.e. re-chipped) to achieve the desired export size and fed back for rescreening.

All export size wood fibre will then be transported by conveyor belt and loaded into one of two receiving, enclosed, elevated wood fibre bins or onto a 2,000 tonne ground wood fibre stockpile when production exceeds transport and capacity. If necessary, a wheeled loader will be used to transport wood fibre back from the storage to the conveyor to be loaded via the enclosed elevated wood fibre bins. Trucks will be loaded directly from the enclosed overhead wood fibre bins (Plate 10).

Plate 10 Typical Overhead wood fibre bin



Wood by-product including wood fines and undersized wood fibre will be conveyed to an enclosed elevated hopper for later covered conveyance or trucking to the merchandising yard for use as fuelwood.

Treated wastewater will be drawn from the storage pond system for the irrigation of:

- Log washing;
- Irrigation of the Wood Fibre Mill rotary screws; and

- Use on selected conveyors for dust suppression.

Reticulated clean water will be utilised within administration and workshop areas, but little or no clean water will be required for use within process areas.

Knife Sharpening and Setting

On-site facilities for sharpening and mounting knives into knife blocks will be provided in the workshop. Knives are set in the blocks using Babbit metal that contains a range of low melting point metals including some lead. Babbit metal is used in a closed cycle environment where the used Babbit metal is wholly recycled to prevent loss. Babbit metal is melted from the used knife blocks in a small gas-fired furnace. The molten metal is collected in a ladle and poured into the newly set knife blocks where it solidifies.

Principal Items of Equipment and Operation

Principal items of equipment to facilitate wood fibre operations and the likely hours of operation are listed in Table 70.

Table 70 Details of the Main Wood Fibre Operations Equipment

Equipment	Function	Power/Fuel	Hrs Use/Day
a) Mobile log handling units a) L90 b) WA500	Unloading, sorting and transfer to infeed deck	Diesel	24 hrs
Log wash	Removes dirt from whole logs	-	24 hrs
Knuckleboom loader / Prentice Crane	Positioning and sorting to achieve even wood supply to the Wood Fibre Mill	Diesel	24 hrs
Wood Fibre Mill Drive Motors	Power and drive the wood fibre mills	Electricity	24 hrs
Wood Fibre Mills	Produces wood fibre from whole logs and oversized wood fibre	Electricity	24 hrs
Conveyors / belts	Transfer wood fibre and wood by-product to appropriate destinations	Electricity	24 hrs
20 hp Air compressor	Cleaning and control air	Electricity	5-8 hrs
Flat Screen	Separates undersized and oversized wood fibre from wood fibre suitable for export	Electricity	24 hrs

Figure 33 Wood Fibre Mill Process Flow Diagram

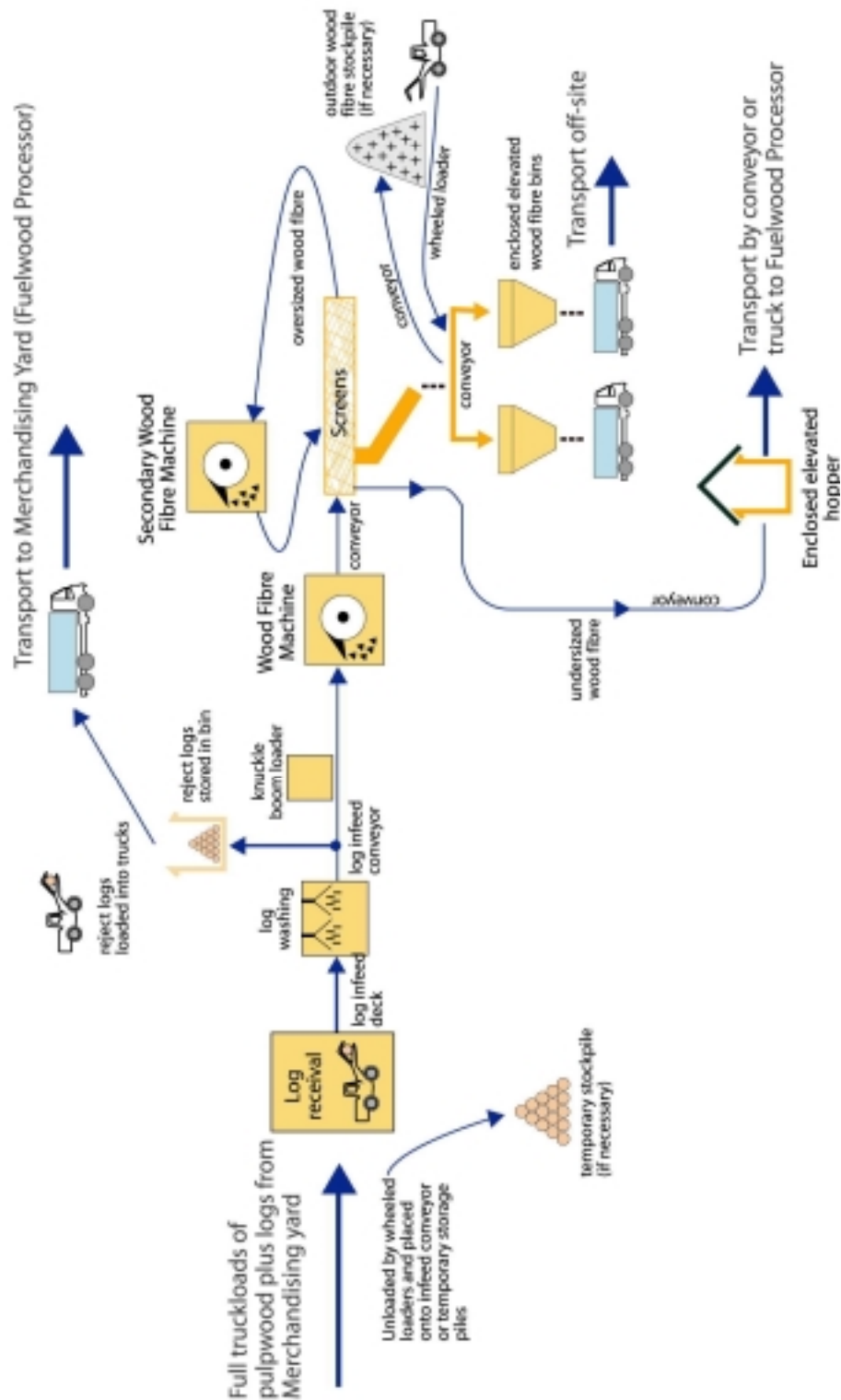
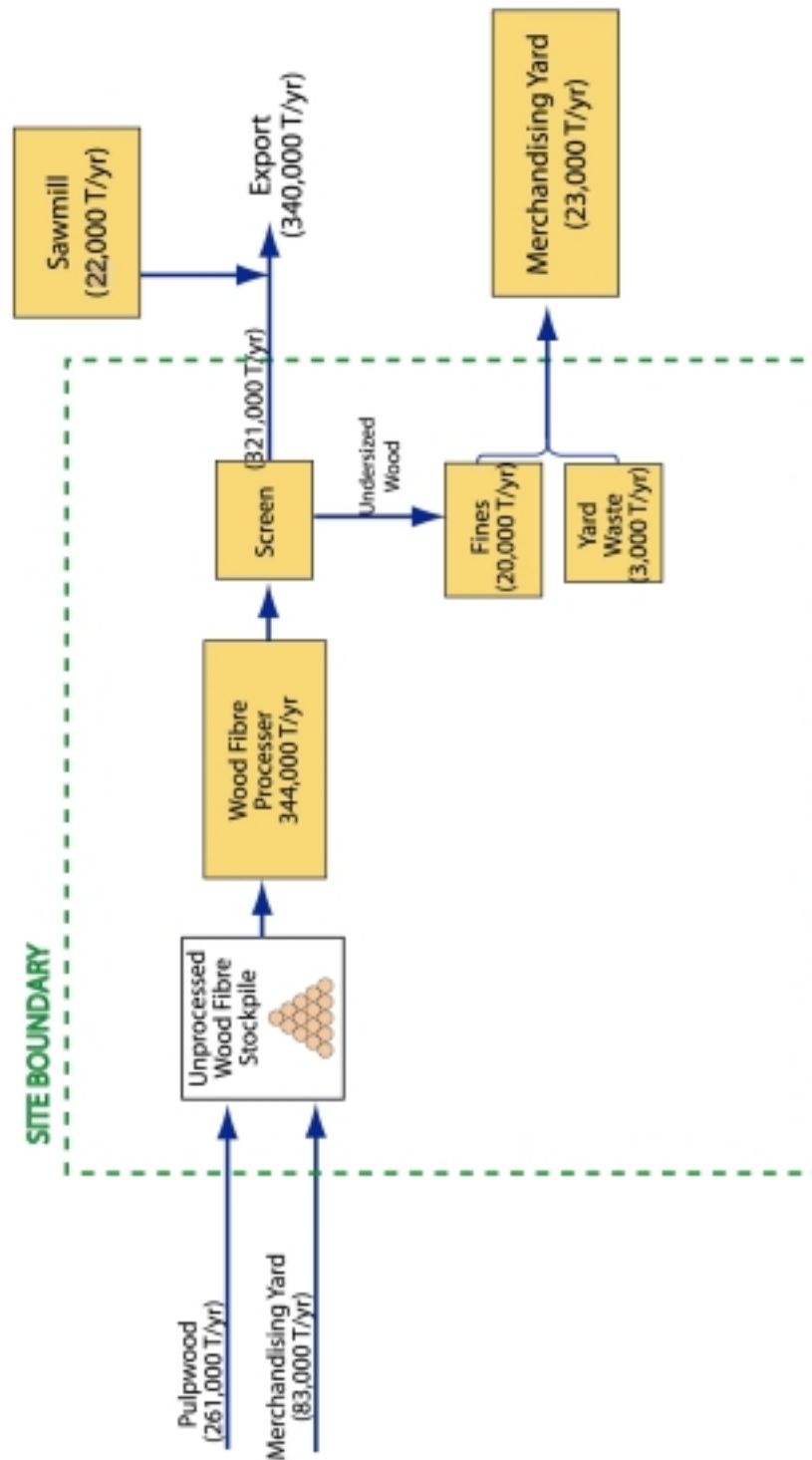


Figure 34 Wood Fibre Mill Wood Flow Diagram



9.1.2 Description of Buildings and Associated Infrastructure

The Wood Fibre Mill is located in the middle of the Wood Centre, on the inside of the ring road and adjacent to the south side of the Sawlog Stockpile. There are four buildings on the Wood Fibre Mill site. The dimensions and construction materials of the buildings and open areas on the Wood Fibre Mill site are briefly described in Table 71.

Table 71 Building Dimensions and Construction Materials

Building	Area (m ²)	Height (m)	Construction Material		
			Floor	Walls	Roof
Wood Fibre Processor	6000	15	Concrete slab	Steel Cladding	Steel sheet (Colourbond Trimdek clad)
Workshop	600	5-6	Concrete slab	Brick	Steel sheet (Colourbond Trimdek clad)
Office	196	5-6	Concrete slab	Brick	Steel sheet (Colourbond Trimdek clad)
Amenities	360	5-6	Concrete slab	Brick	Steel sheet (Colourbond Trimdek clad)
Enclosed Elevated Hopper	-	15	Steel	Steel	Steel

Office

The administration office building will house computing, accounting and sales staff. It will be painted to suit its environs with a colourbond roof. Building heating will be provided by a reticulated steam or electric heating system.

Amenities

Amenities for the Wood Fibre Mill will be provided in a separate building of the same construction as the office. Amenities will comprise a lunchroom, showers and toilets. The buildings will be heated either from a reticulated steam system, or by an electric heating system.

Car Parking

A hardstand car park of approximately 680 m² will be provided for 24 personnel, service vehicles, and visitors.

Workshop

The workshop will be located adjacent to the office. It will house the knife sharpening equipment.

Minor quantities of oils and lubricants will be stored within the workshop over AS1940 approved mobile bunds, or within a secure store with floor bund.

Wood Fibre Stockpile

The wood fibre stockpile is located on the west side of the Wood Fibre Mill. It is a hardstand open area with the stockpile in the centre and space for loader movement around the stockpile. Drainage of the stockpile will be provided by earthen stormwater drains and directed to the site screening/interceptor system.

9.1.3 Source of Wood and Quantity of Production

Pulpwood principally will come from the Huon Valley forest resource. Small amounts of pulpwood will be entrained in the peeler billet wood that will be transported from the Derwent Valley to make up the required volumes of rotary peeled veneer material.

At the coupe landing pulpwood loads will be loaded and transported directly to the Wood Fibre Mill. All other timber will be loaded for transport to the Merchandising Yard where it will be sorted and segregated for appropriate distribution to sites in the Wood Centre. A proportion of pulpwood will eventuate in the sorting of mixed loads. This pulpwood will be stockpiled and transported to the Wood Fibre Processor.

Annual estimated green wood inflow and product (wood fibre) outflow is represented in Table 72. The reason why product outflow is greater than wood inflow is attributable to excess wood by-products from the sawmill being transferred to the Wood Fibre Mill for wood fibre processing. Such an approach is consistent with the project objectives of achieving maximum value recovery from all timber delivered to the site. All wood by-products, if not suitable for wood fibre production, will be transferred to the fuelwood processor in the Merchandising Yard and onto the Power Station for electricity generation or to heat plants that require supplementary fuelwood.

Table 72 Estimated Annual Wood and Product Flow - Wood Fibre Mill

Green wood inflow (pa)		Estimated product outflow (pa)	
Pulpwood	261,000 t	Wood fibre	340,000 t
Other on-site wood by-product	83,000 t	Wood fines to merchandising yard	23,000 t

9.1.4 Emission Sources

Atmospheric Emissions

The main potential sources of emissions to atmosphere associated with the Wood Fibre mill include:

- Wood fibre stockpile activities;
- Wood fibre particulate from wood fibre processing;
- Dust from vehicular activities on-site (e.g. log loader and truck); and
- Fumes from Babbit metal melting

The breakdown of emissions from wood fibre processing and vehicular activities is outlined in Table 73.

Table 73 Wood Fibre Mill Atmospheric Emissions

Emission	Emission Factor* (kg/tonne)	Quantity (tonnes)	Estimated Total Emissions (kg/yr)
PM 10	0.001	340,000	340
TSP	0.002	340,000	680

*USEPA 1995

Water Emissions

Wastewater emissions will comprise stormwater and wastewater streams, as described below and illustrated by the water flow diagram (Figure 35).

Stormwater

- Contaminated stormwater run-off collected from paved and unpaved

operational areas (including oil and fuel spillages from trucks and loaders). Refer to discussion of site-wide wastewater management in Chapter 5, as stormwater quantities have been calculated on a site-wide, rather than individual facility basis.

- Clean stormwater collected from roof areas that are relatively free of wood contamination.

Wastewater

- Process wastewater collected from processing of pulp logs (i.e. lubrication of knives and log wash). It is estimated that approximately 40 ML/year of process wastewater will be generated.

Wastewater contaminants are likely to include wood products such as wood fines, dust and tannins.

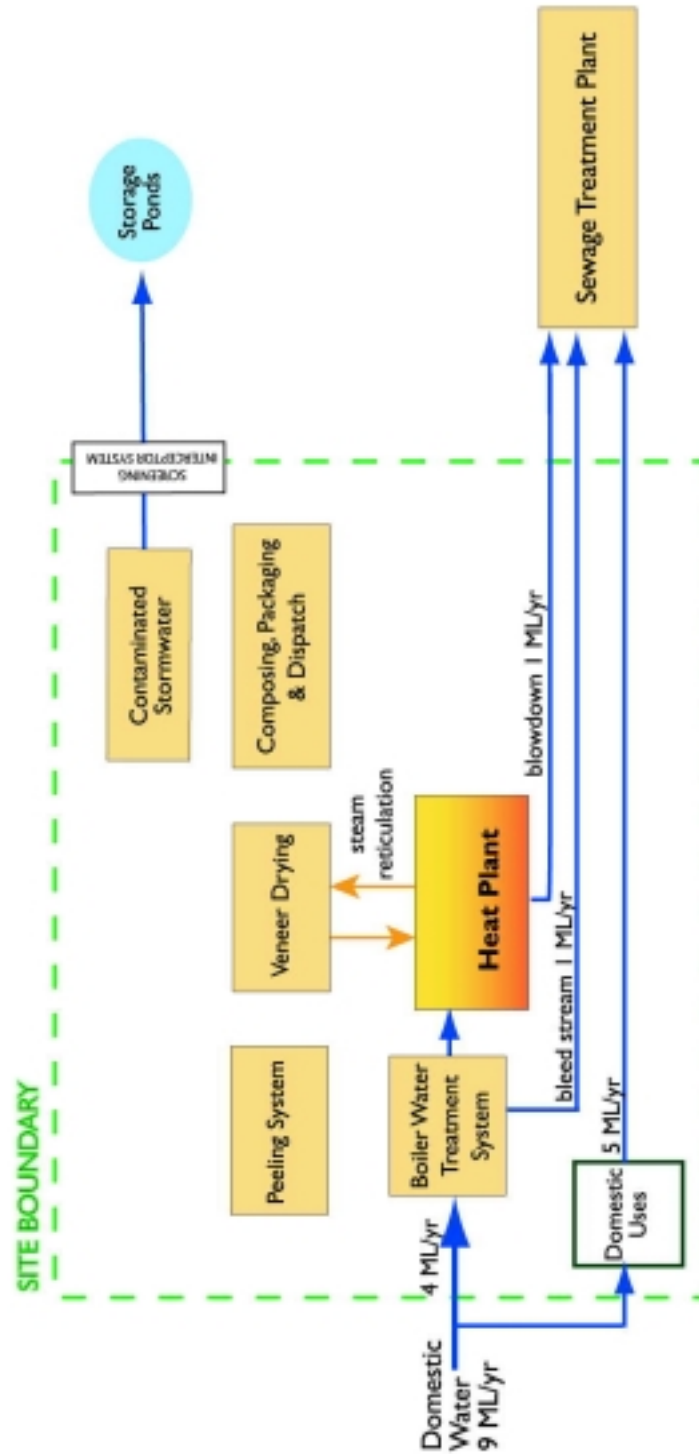
- Domestic wastewater sewer and grey water generated by site personnel. Approximately 1,500 L/day of domestic wastewater will be generated on the Wood Fibre Mill site (based on the following assumptions; 150 L/day per person and up to 10 employees).

Noise Emissions

Noise emissions from the Wood Fibre Mill are judged to represent one of the most significant potential impacts arising from the Wood Centre proposal. The main sources of noise associated with the wood fibre operation are likely to include:

- Wood Fibre Mill infeed/throat (including conveying and vibration from the uncut section of a log during the chipping process);
- Wood fibre processing enclosure (i.e. chipping);
- Wood fibre screening; and
- Pulpwood and fibre transport and handling by truck and log loader.

Figure 35 Wood Fibre Mill Water Flow Diagram



Solid Waste

Although the logs will have been sorted and prepared (to some extent) in the merchandising yard, a significant quantity of wood by-product will still be generated as part of Wood Fibre Mill operation, including:

- Log yard debris such as soils, rot and slivers (approximately 3,000 tonnes per annum);
- Screened solids, comprised of a mixture of fine, washed woody particles and soil (approximately 300 tonnes per annum); and
- Undersized wood fibre, wood fines and sawdust (approximately 20,000 tonnes per annum).

As with log yard debris and screen solids, these products will be transferred to the adjacent composting area off-site to reuse or to an approved refuse disposal site. Undersized wood fibre will be transferred to the fuelwood processor.

Other solid wastes generated on-site will include:

- Workshop wastes (e.g. blade sharpening room residues including lead, metal shavings and babbitt metal); and
- Relatively small quantities of general refuse that will be generated by the office and amenities (e.g. domestic wastes, paper and plastics).

9.1.5 Projected Hours of Operation and Employment

Operation at the Wood Fibre Mill will be 312 days a year with the potential to operate 24 hours a day 6 days per week.

It is predicted that 10 to 14 personnel will be employed by the Wood Fibre Mill operation in three shifts of 4 people and 2 non-shift workers. This includes log unloading and site vehicle drivers.

9.2 Atmospheric Emissions

9.2.1 Potential Impact

Three potential sources of atmospheric emissions will exist on the Wood Fibre Mill site (Figure 20). The first source concerns fugitive sawdust escaping from the wood fibre conveyors and hoppers. If a wood fibre stockpile is used it will be a potential source of fugitive wood fibre but will not contribute to atmospheric emissions. Another possible source of air emissions may result from log truck and log loader activities in operational areas.

9.2.2 Management Measures

The following management measures will mitigate the potential impacts of the wood fibre mill on air quality.

Wood fibre conveyors will be covered to reduce fugitive sawdust emissions to negligible levels¹. In addition, all hoppers will be fitted with lids. Generally, stockpiles are not a source of fugitive sawdust or chips but the transport transition phases are the source of atmospheric emissions. If a stockpile is used wood fibre will be transferred from the stockpile to the processor by covered conveyors.

There are no buildings downstream of the prevailing wind therefore building wake effects are not expected to create fugitive wood fibre build-up.

Spraying high traffic unpaved areas during adverse dry and windy weather conditions will be used to reduce dust emissions generated by vehicular movements². In the event that dust from unpaved areas cannot be effectively controlled by water spraying such areas will be sealed³. As a result of paving and sweeping, the amount of dust generated by log truck and log loader movements will be significantly reduced.

¹ Commitment: Conveyors and hoppers will be covered to reduce fugitive sawdust emissions.

² Commitment: Dust suppression of highly trafficked unpaved areas by watering.

³ Commitment: Seal high traffic areas of Wood Fibre Mill area and use street sweeper to clean up wood fibre and sawdust.

These management measures are anticipated to be effective measures to minimise potential air emissions, however, atmospheric monitoring will determine whether these measures are sufficient to ensure no dust leaves the site⁴.

The Babbit metal furnace and ladling area will be provided with a fume extraction system that effectively ventilates the work-space⁵.

9.3 Wastewater Emissions

Wastewater emissions from each of the facilities at the Wood Centre will be collected, treated and reused in a combined system for the site as a whole. This system is described in detail in Chapter 5. In the following section the wastewater generated by the Wood Fibre Process is briefly described.

9.3.1 Potential Impact

Process Wastewater and Contaminated Stormwater

Activities to be undertaken within the Wood Fibre Mill that have the potential to result in stormwater contamination and/or the generation of contaminated process wastewater include:

- Vehicular and log movements;
- Log storage, temporary wood by-product and wood fibre storage;
- Log cutting and docking; and
- Wood fibre processing (rotary screw air compressors, if used, will discharge water condensate).

The wood fibre processing lubrication will contribute two litres per second of lubrication water to the log wash recycle flow, this will reduce the amount of water required as make-up water for the logwash. As described in Chapter 9, this wastewater has potential to contain contaminants associated with wood processing and vehicular activities on-site. Mobile and fixed equipment has the potential to release grease and oil that may find its way into surface and stormwater drains if not removed by absorbent materials. If untreated and emitted to the environment this

⁴ Commitment: Ensure no dust leaves the site.

⁵ Commitment: Fume extraction system will be provided in babbit metal work area.

contamination has the potential to degrade the receiving environment (eg. result in reduced health of aquatic habitats if discharged to a watercourse, sedimentation of vegetation or impact on soil structure).

The greatest potential source of contaminated water is likely to be derived from uncovered storage area run-off that is likely to contain wood products such as tannins, dust and fines. The volume of run-off will be determined by rainfall but the number of times that the log yard area is sprayed to reduce dust emissions will be a contributing factor. Dust reduction spraying will occur during adverse dry and windy conditions.

Domestic Wastewater

The high biochemical oxygen demand, high solids, nutrients and bacteriological contamination of domestic wastewater has the potential to adversely impact on the environment if not treated appropriately prior to discharge.

Domestic sewage and grey water from the office and amenities facilities will be directed to an on-site communal wastewater treatment system and will therefore not be considered further in this chapter. Refer to Chapter 5.

9.3.2 Management Measures

Process Wastewater and Contaminated Stormwater

Process wastewater and contaminated stormwater will be collected by concrete or earthen stormwater drains from paved and hardstand areas, respectively, and passed through a screening/interceptor system on-site. This system will provide initial removal of coarse suspended solids (e.g. soil and wood fibre) as well as some oil and fuel residues that have been entrained in the wastewater stream. This wastewater will then be piped to the site-wide storage ponds for reuse⁶. The facility operator will regularly collect samples of wastewater from the screening/interceptor outlet point to the storage pond system. Analysis will be undertaken for TPHC, TSS, and BOD⁷. In addition, continuous flow rate from the site will be monitored to affect efficient use of water.

⁶ Commitment: Contaminated wastewater will pass through a screening/interceptor system prior to discharge to the site wide storage ponds.

⁷ Commitment: 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.

Maintenance servicing will only be conducted on-site in the workshop area with suitable clean-up materials available to prevent oil and grease from contaminating stormwater⁸. These measures will significantly reduce the opportunity for such deposits to enter water flows. Refer to Chapter 5 for site-wide hazardous material management.

Very small amounts of rotary screw condensate from the air compressor will be collected in a sump within the compressor and disposed of periodically⁹. There is no prevailing literature to suggest any necessary or prescribed treatment of this product therefore it can be safely included as process water directed to the storage ponds via the screening interceptor system.

Blade sharpening waste will be captured in a metalworking tray beneath the machinery and disposed of to an approved landfill. This solid waste will not effect water management.

Water Collected in External Hazardous Materials Bunds

Hazardous materials stored externally in bunds will be roofed to minimise stormwater collection within the bund. Any water collected in bunds as a result of combined wind and rain will be visually inspected prior to discharge to stormwater drain and the screening/interceptor system to ensure that it is suitable for discharge¹⁰.

Where bund water is considered likely to be unsuitable for discharge, testing will be undertaken and a licensed waste contractor organised to collect and dispose of the wastewater. Records will be maintained for internal management purposes¹¹.

9.4 Noise Emissions

Noise emissions from the Wood Fibre Mill have been assessed and mitigation measures are discussed below. Figure 20 shows the potential sources of noise from the Wood Fibre Mill.

⁸ Commitment: All machine and vehicle maintenance will be undertaken in the workshop area where clean-up materials will be immediately available.

⁹ Commitment: Collection of rotary screw condensate in a sump and regular disposal.

¹⁰ Commitment: Undertake controlled disposal of contaminated water from bunds.

¹¹ Commitment: Test potentially contaminated bund water, organise for its approved disposal and maintain records.

9.4.1 Potential Impact

In assessing the potential noise impacts of the Wood Centre operations, Terts (2001) has taken into consideration the following matters:

- The weather conditions at the time of measurement (i.e. no rain and little or no wind);
- The existing noise climate in the Wood Centre;
- The predicted operating noise levels at the residences in other ownership, 6 kilometres from the Wood Centre;
- Possible DPIWE permit conditions for noise;
- Assessment of the predicted noise levels against possible DPIWE noise limits; and
- Noise mitigation measures.

The methodology used to predict the noise levels likely to be encountered at 6 kilometres was as follows (Terts 2001).

Distant noise level data was obtained for existing operating facilities located in Tasmania (sewage treatment plant, merchandising yard, sawmill, veneer mill and wood fibre mill), and from a manufacturer (wood fired power station, and portable wood fibre plant).

The following formula was then used to determine the attenuation of sound over flat and gently undulating ground.

$$\text{Attenuation, dB(A)} = 6\text{dB(A)/dd} + 3\text{dB(A)/km}$$

Where dd=doubling of distance.

It should be noted that the calculations obtained by using this model, do not include the attenuation provided by topographical features such as hills, which are prevalent around the Wood Centre. As such the predicted noise levels at the nearest residence are extremely conservative, and represent the worst case.

The calculated noise levels are then compared to the existing ambient noise levels in the area. Whether the calculated noise levels are intrusive or not depends on the following factors:

- The level of the background noise;

-
- The level of the intruding noise;
 - Whether the noise has tonal components;
 - Whether the noise has impulsive components;
 - Whether the noise is regretfully inflicted or mindlessly caused; and
 - The time of day or night the noise occurs.

As noted previously, the main operations to be undertaken in the Wood Fibre Mill that have potential to generate noise nuisance include:

- Wood Fibre Mill infeed/throat (including conveying and vibration from the uncut section of a log during the chipping process);
- Wood fibre processing enclosure (i.e. chipping);
- Wood fibre screening; and
- Pulpwood and fibre transport and handling (e.g. log loader movements).

The proposed wood fibre processor for the Wood Centre, has a disc diameter of 2.84 metres, with 12 knives driven by a 2000 hp motor.

A much larger woodchip facility having a disc diameter of 3.66 metres, with 10 knives and driven by a 4000 hp motor has been the subject of detailed noise monitoring and assessment. It can therefore be considered to be a worst-case scenario for the Wood Centre site. The monitoring station was beyond the line of sight of the chipper, and was located in a valley. The land where the chipper and the monitoring station was located is somewhat similar in topography to that between the proposed chipper site and the nearest neighbour, i.e. tree covered intervening hills and valleys.

The mean noise levels obtained during 4 nights at a distance of 4,100 metres (beyond line of sight) from the larger existing plant were as follows (Terts, 2001):

- L10-36.4 dB(A) (30 minutes)
- L90-33 dB(A) (30 minutes)
- Leq-35.1 dB(A) (30 minutes)

In addition, there were discrete noise events associated with the operation of the chipping and debarking operations that could be heard on occasions from this site.

The mean noise levels for these events during the 4 night monitoring period ranged from 40.3 dB(A) to 46.8 dB(A) (Terts,2001).

This noise survey was conducted during daytime and night time hours at:

- temperatures between 1.5 and 5.5 °C;
- relative humidity between 79 and 93%;
- air pressure between 982 and 997;
- wind speed between 0 and 2 m/s with a westerly direction when blowing; and
- cloud cover was always 0.8 octals.

Table 74 outlines the typical noise levels that the above Wood Fibre Mill produced at 4,100 m and the calculated noise level at 6,000 m.

Table 74 Typical Noise Levels Expected

(Terts 2001)

Source	L _{eq} at 4100 m dB(A)	L _{eq} at 6000 m dB(A)
Existing Wood fibre facility	35.1	25.8

The discrete noise events described above would in turn be reduced to between 32-38 dB(A) at 6 kilometres. Both the general plant noise level of 25.8 dB(A) and the discrete noise levels of up to 38 dB(A) are below the measured ambient noise level at the Wood Centre site of 41 dB(A) (Terts, 2001).

In summary, if the wood fibre operation described above were to be located at the Wood Centre it is unlikely to be heard at the nearest residence, 6 kilometres from the site. In addition, as noted above the wood fibre mill assessed is larger than the plant proposed, and so the noise emissions will be lower, providing a lower risk of potential noise impacts at the nearest residence.

9.4.2 Management Measures

A number of management measures will be implemented to ensure that noise emissions from the Wood Fibre Mill are not heard at the nearest residence and to ensure environmental best practice is achieved.

Orientation of the buildings is shown in Figure 5. Openings will be limited in number

and avoid the east ends of the buildings. Noise absorbing insulation will be used in the buildings. In addition, the natural topography provides noise buffers of the Wood Centre site¹².

The main concern in terms of a source of noise emissions from the Wood Fibre Mill is the wood fibre processor, therefore an enclosed room will be designed and built with appropriate acoustic suppression materials including sound absorbent curtains on the entrance and exit. In addition, openings in the wood fibre processor room walls and ceiling will be minimised. Where openings are required, control of noise escaping will be regulated by controlling access to buildings and not leaving doors open¹³.

As the Wood Fibre Mill will be the major source of noise emissions from the Wood Centre, a number of additional measures are proposed to achieve adequate suppression of noise emissions.

Wood Fibre Processor Throat and Chipping

Given that the primary noise emission point will be the wood fibre processor throat, suitable provision to alleviate the key frequency component(s) will be made. The provisions include the ability to fit appropriate suppression equipment such as three, quarter wave tuning stubs. The harmonics of the blade-passing frequency will be assessed to determine where the stubs are required. When technical specifications for key items of equipment in the Wood Fibre Mill have been finally selected, an assessment of the noise impact will be undertaken to verify the predicted noise levels¹⁴. At this stage there will be a focus on whether the fitting of suppression equipment is necessary and, if so, the design of the suppression installation to minimise intensity levels in critical frequency ranges.

Surrounding buildings and storage areas will also buffer the noise emissions from the Wood Fibre Mill. In addition, the mill will be oriented so that there are no openings in the direction of the nearest occupied residence at six kilometres

¹² Commitment: Orientate building openings away from nearest residence and utilise noise absorbent insulation in roof and walls of buildings containing noisy machinery.

¹³ Commitment: Enclose the Wood Fibre Mill in a building designed for acoustic suppression.

¹⁴ Commitment: Undertake noise impact assessment once technical specifications for Wood Fibre Mill equipment are available.

Screen Room

Of secondary, but still potentially significant importance in terms of noise output, is the Wood Fibre Mill screen room. The dominant component of screening is processing noise from the re-chipper. The re-chipper will be enclosed in a tilt slab enclosure that will greatly reduce any potential impacts with respect to site and beyond-boundary noise¹⁵.

Mobile Loaders

Noise from mobile log loaders is anticipated to be variable, with peak sound power output expected to be less than that emanating from the chipper and housings. Log loader noise is thus not expected to be of primary concern to beyond-boundary levels however, the mobile log loaders will be fitted with standard noise control equipment¹⁶. The operation of this equipment will be undertaken in compliance with appropriate occupational health and safety requirements.

Other Sources

Noise from other discrete sources such as water pumps and air compressors is expected to be relatively insignificant and standard practices will be applied¹⁷. Standard practices, in conjunction with noise control procedures to be adopted as appropriate at the design stage will include:

- Orientation of the mill in a direction away from the Wood Centre eastern boundary;
- Noise buffers such as stockpiles in the log sorting area and sawlog stockpiles; and
- Control of sound intensity from reversing signals on the log loaders and from PA system speakers and shift sirens.

In addition, any noise related complaints will be recorded and investigated by Site

¹⁵ Commitment: Enclose re-chipper in a building designed for acoustic suppression.

¹⁶ Commitment: Ensure forklifts and loaders are fitted with reversing alarm volume control and flashing lights where possible.

¹⁷ Commitment: Application of standard practices in the case of discrete noise sources.

Manager and remedial measures implemented¹⁸.

9.5 Solid Waste Generation and Disposal

9.5.1 Potential Impact

There is a potential for solid wood by-product from the milling process to contribute to fugitive air emissions and water contamination if allowed to accumulate in an uncontrolled manner on-site. Figure 34 outlines the wood flow on the Wood Fibre Mill site.

Another potential source of solid waste is blade sharpening. Further solid wastes such as office waste and packaging materials may cause litter related problems if not adequately managed.

9.5.2 Management Measures

Wood By-product Recovery and Reuse

As described at the beginning of this chapter and in Chapter 10 wood by-product will be used to generate energy in the Power Station or heat plants¹⁹. In this way, solid wood by-product will be used beneficially for the generation and export of 30-50 MW to the local grid and will eliminate the potential for contribution to fugitive air emissions or water contamination.

Minor quantities of muddy wood by-product and rocks will also be generated as part of Wood Fibre Mill operations. Depending on its composition, this material will either be sent for composting, returned to the forest or disposed of to an approved landfill along with the wastewater screened solids. No wood by-product will be stockpiled on-site or disposed of on-site²⁰.

Wastewater Screened Solids

As described in Chapter 9, the collection and treatment of surface run-off should minimise the potential impact of contaminated stormwater on the surrounding environment. Solid wood by-product will not be stored externally in stockpiles or

¹⁸ Commitment: Investigate and implement remedial measures in response to noise complaints.

¹⁹ Commitment: Utilise all wood by-product for energy generation.

²⁰ Commitment: No wood by-product will be disposed of on-site.

allowed to accumulate on-site thereby decreasing the potential for contaminated run-off.

Solids (such as soil and wood fibre) collected within the screening/interceptor system on-site will be removed manually on a regular basis, or upon solids filling 15% of the system. This material will, where possible, be:

- Beneficially reused as a soil conditioner within plantation areas;
- Beneficially reused for other approved projects (e.g. composting); and/or
- Disposed of to an approved landfill²¹.

Oil, grease, petrol and oil contaminated material collected in this system will be removed off-site by a licensed waste transport operator.

Refer to section 9.7 regarding the monitoring of the screening/interceptor system on-site.

Blade Sharpening Wastes

Wastes from the blade sharpening room will be kept separate to prevent water contamination and dispatched to a licensed landfill depending on its composition²².

Miscellaneous Solid Wastes

General refuse generated by administration and packaging will be collected and stored in a waste hopper with a lid to minimise potential for leachate generation. Where possible, measures will be implemented for the minimisation of wastes generated, and reuse options investigated. General refuse requiring disposal will be collected regularly by a licensed waste contractor and disposed of to an approved landfill²³.

The amount of wastes cannot be estimated at this stage however, as mentioned above, every effort will be made to ensure that waste management is undertaken in

²¹ Commitment: Regularly dispose of screening/interceptor system solids and oils to beneficial reuse operations and/or approved landfill.

²² Commitment: Dispatch of blade sharpening waste to licensed landfill.

²³ Commitment: Solid waste will be stored in a lidded hopper and disposed of by a licensed waste contractor to an approved landfill.

accordance with the waste management hierarchy with reuse options investigated after commissioning of the Wood Fibre Mill²⁴.

9.6 Hazardous Materials

9.6.1 Potential Impact

As noted for the other proposed facilities for the Wood Centre development, other than fuel, there will be limited hazardous materials stored or used on-site as part of the operation of the Wood Fibre Mill site.

Hazardous materials stored or handled on-site during the operation of the Wood Fibre Mill will include materials as detailed in Table 75. The storage locations are shown in Figure 20.

There is a potential fire risk associated with production and storage of wood products with the above hazardous products. In addition, leakage of hazardous products into the environment can cause significant short and long-term contamination of soils, groundwater and/or indirect contamination of surface waters if allowed to enter the wastewater stream and released untreated.

²⁴ Commitment: Ensure solid waste minimisation by following the waste management hierarchy and investigating all options for reuse upon commissioning.

Table 75 Hazardous Materials Stored/Used On-Site - Wood Fibre Generation

Hazardous Materials	Active Ingredient	Dang. Goods Class & Subsidiary Risk (as appropriate)	Hazchem Code	Packaging Class	Container Size	Max. Quantity Stored on-site	Storage Type and Location
Automotive Oil	Petroleum distillate	3 [Y] E	3A1		20 L	400 L	Roofed and banded store in or adjacent to the workshop
Petrol	Petroleum	3 [Y] E	EPG		20 L	400 L	Roofed and banded store in or adjacent to the workshop
Grease	Petroleum	4			25 L	200 L	Underground Storage Tank
Oils	Petroleum	3 [Y]	-		25 L	200 L	Banded Store in workshop
Paint		3			25 L	50 L	Metal Container in workshop
Degreaser	Petroleum	9			25 L	50 L	Metal Container in workshop
Acetylene	Acetylene	2.1	2 [S] E		7.0 m ³	200 m ³	Sealed G cylinder in workshop
Oxygen	Oxygen	2.2	2 [S]		8.9 m ³	250 m ³	Sealed G cylinder in workshop

Note: Mobile bunds will be used when refuelling.

9.6.2 *Management Measures*

In order to limit diesel storage on each site, diesel will generally be stored in the communal diesel store (45,000 L) operated by the FT site manager. A small fuel storage will be provided for diesel on the Wood Fibre Mill site. It will have a bund with impervious base, locked valve and roof.

To reduce the risk of release to the environment or the potential for fire, all hazardous substances will be stored with signage and fire control measures according to the Dangerous Goods Act and Regulations and the Australian Standards (AS-1940)²⁵.

A secure fully banded hazardous materials store will be established for the storage of small quantities of oils and grease within the workshop.

Relocatable bunds will be used in this facility for the storage of minor chemicals, and the containment of potential spills. Material safety data sheets will be displayed where hazardous materials are stored and appropriate occupational health and safety equipment will be provided to meet appropriate standards and regulatory requirements²⁶.

Bunds will be inspected on a daily basis. Any spilt material will be promptly mopped up or treated with absorbent material. Any leaks will be promptly repaired²⁷.

As discussed in Chapter 5, an emergency response plan will be designed for the Wood Fibre Mill site and training of staff will be undertaken to ensure all are familiar with the plan and responsibilities²⁸. A component of the plan will be the location of and handling of the spill kit to be maintained at an appropriate location for containment and clean-up of materials in the event of spillage²⁹. Licensed waste contractors will be employed on an as needs basis to collect and dispose of spilled material that has been collected in bunds³⁰.

²⁵ Commitment: All hazardous substances will be stored with signage and fire control measures according to AS-1940.

²⁶ Commitment: Store hazardous substances in a secure safe building or bund with material safety data sheets and signage in storage locations.

²⁷ Commitment: 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.

²⁸ Commitment: Design an emergency response plan for the Wood Fibre Mill site and provide training.

²⁹ Commitment: Maintain a spill-kit on-site and contain spills.

³⁰ Commitment: Employ licensed clean-up crew when required.

An inventory will be kept of any hazardous materials stored and handled on-site, including the location of storage, their quantities, and their material safety data sheets³¹.

Any fluids released during machinery maintenance operations will be captured for reuse or appropriate disposal. Waste lubricating oils will be collected in one or more 205 L drums, to be held in the oil store, for return to recycling along with the oil recycled from the adjacent operations³².

In the event that a spillage occurs within the facility there are contingency measures in place to mitigate off-site affects. These measures are presented in Chapter 5.

All spillage accidents will be reported to DPIWE. Where an emergency or accidental emission exceeds a statutory requirement (according to either regulation or Permit conditions), notification will be given to the Director of Environmental Management (DEM) as soon as reasonably practicable and within 24 hours of becoming aware of the release of the pollutant in relation to that Wood Fibre Mill activity³³.

9.7 Monitoring and Review

9.7.1 Monitoring

To ensure the operation of the Wood Fibre Mill is in accordance with the EMP and best practice environmental management the following monitoring programs will be implemented.

Dust

High traffic areas within the Wood Fibre Mill will be monitored visually. If required the area will be watered as determined necessary to minimise dust generation the effectiveness of this will be monitored and additional action taken to address any residual problems.³⁴

Wastewater.

The collection and distribution of stormwater and process water from the site to the communal facility will be checked on a weekly basis to ensure the

³¹ Commitment: Maintain an inventory of hazardous substances on-site.

³² Commitment: Collection of waste oil in drum(s) for removal and recycling by a waste contractor. Maintain a record of quantities.

³³ Commitment: Report hazardous material emission to DEM within 24 hours.

³⁴ Commitment: Visually monitor dust emissions and effectiveness of control by watering.

screening/interceptor system is operating effectively. The solids removal system will be checked daily or on a more frequent basis to ensure that at least 25% of the system containment capacity is always available³⁵. The frequency of the inspections will be modified after 6 months of operation based on inspection results³⁶.

The wastewater flow from the site immediately passing through the screen/interceptor system will be sampled on a regular basis. If the results of the monitoring are consistent with on-site operational requirements the frequency of monitoring may be reduced to monthly. Monitoring will be undertaken for TPHC, TSS and BOD in accordance with standard industry practice³⁷. In addition, continuous flow rate from the site will be monitored to affect efficient use of water. Monitoring data for wastewater discharge from the site will be submitted to the Director of Environmental Management annually. Where TSS and BOD levels exceed performance criteria additional on-site treatment will be conducted prior to discharge to the communal wastewater system as described in Section 5.7.4 (contingency measures).

Noise

A record of noise emission complaints will be kept in a complaint register for the site, together with details of investigations and assessment of the effectiveness of remedial actions³⁸.

In addition, formal monitoring of noise emissions from the Wood Centre as a whole will be undertaken after 6 months of operation. The parameters that will be measured include sound intensity and frequency patterns. The monitoring will be undertaken in accordance with a program approved by DPIWE. A report will be submitted to the DEM within six months.

Other

Oil supplied and waste oil returned for re-use will be recorded.

Monitoring data for the wastewater will be reported to the DEM on an annual basis. Where a hazardous materials emission exceeds a statutory requirement (according to either regulation or Permit conditions), a special report will be submitted to the DEM

³⁵ Commitment: Daily inspection and cleaning of solids removal system to ensure at least 25% capacity is available.

³⁶ Commitment: Weekly inspection of wastewater screening/interceptor system to ensure effective operation. Review system after six months of operation.

³⁷ Commitment: Monitor water quality (TPHC, BOD and TSS) regularly and flow rate from the screening/interceptor system outlet continuously. Report results to the DEM annually.

³⁸ Commitment: Record noise emission complaints with details of investigations and actions.

within 5 days. The report will detail the extent of the emission, the likelihood of environmental harm, the cause of the event, procedures applied to minimise the environmental harm, monitoring results, and the system introduced to avoid any repetition³⁹. In addition, management records regarding hazardous material storage and use will be maintained⁴⁰.

A general incident response and notification protocol will be developed and implemented along with reporting procedures for the Wood Fibre Mill⁴¹.

Staff Health Monitoring

Monitoring measures such as the regular and ongoing urine sampling of knife sharpening staff, will be conducted to ensure that the fume extraction measures are effective⁴².

9.7.2 Reporting

The Wood Fibre Mill proponent will establish and maintain a procedure to monitor, measure and report key characteristics of its operations and activities that have potential to have a significant impact on the environment. Reports are to be forwarded to the Site Wide Manager. This will comprise the incident reporting protocol and will allow the Site Wide Manager to determine the effectiveness of environmental measures implemented in reducing impacts on the environment and/or to determine the extent of potential environmental harm. The measures ensure the management of the activity will achieve ongoing minimisation of the activity's environmental harm through cost effective measures.

Environmental harm is defined, for the purposes of the *Environmental Management and Pollution Control Act 1994*, as any adverse effect on the environment (of whatever degree or duration) and includes an environmental nuisance. The responsibilities for reporting environmental incidents are as follows:

- The person discovering a reportable environmental incident, as described below, on the proponent's site must report it to the proponent;
- The proponent may report the incident to external organisations that are needed to provide response support, e.g. State Emergency Services;

³⁹ Commitment: 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.

⁴⁰ Commitment: Maintain internal management records for hazardous material storage and use.

⁴¹ Commitment: Develop and implement an incident response and notification protocol.

⁴² Commitment: Conduct staff health monitoring of knife sharpening staff.

- The proponent gathers details about the incident and supplies them to the office of the Site Wide Manager and Environmental Committee; and
- The Site Wide Manager is responsible for reporting environmental incidents to relevant external organisations (e.g. DPIWE) who are not involved in immediate response.

The activities on the Wood Centre are Level 2 activities and therefore incidents must be reported to DEM as soon as reasonably practicable, but no later than 24 hours, after becoming aware of the release of a pollutant occurring as the result of an emergency, accident or malfunction in relation to that activity.

When an incident occurs so that serious or material environmental harm from pollution is caused or threatened in the course of an activity undertaken by a person, the person must, as soon as reasonably practicable, but no later than 24 hours, after becoming aware of the incident, notify DPIWE of the incident, its nature, the circumstances in which it occurred and the action taken to deal with it. A person is not required to notify DPIWE of such an incident if the person has reasonable grounds for believing that the incident has already come to the notice of DPIWE or any officer engaged in the administration or enforcement of the *Environmental Management and Pollution Control Act 1994*.

Good practices as outlined below will ensure that environmental incidents will be minimised.

The proponent's responsibilities include but are not limited to:

- Developing and implementing Environmental Action Plans (EAP);
- Developing clear communication arrangements, taking into account after hours and holiday periods;
- Clearly defining roles and responsibilities;
- Maintaining, modifying, reviewing and analysing all monitoring procedures, so that overall trends in environmental performance are assessed and recorded;
- Requesting that additional monitoring or testing be conducted to confirm or negate the original recordings;
- Determining if EAPs or amendments to Operating Procedures are required; and
- Ensuring the maintenance and calibration of monitoring equipment.

Monitoring defined in EAPs will address:

- Water quality and quantity;

- Visual observations;
- Noise; and
- Hazardous materials handling.

EAPs will also address:

- Triggers for implementing monitoring;
- Sampling and analysis;
- Interpretation and corrective action;
- Recording and maintaining monitoring data;
- Monitoring reviews;
- Control actions as a result of monitoring;
- Selecting monitoring equipment;
- Maintenance and calibration of monitoring equipment; and
- Calibration records.

By effectively implementing the Incident Reporting Protocol, the facility may be able to decrease its impact on the environment.

9.7.3 Review

An EMP review for the Wood Fibre Mill will be undertaken, as described in Chapter 5, within 12 months of the commencement of operations and at agreed intervals thereafter in accordance with the requirements of DPIWE⁴³.

⁴³ Commitment: Review EMP after 12 months of operation and as agreed with DPIWE thereafter.