

# Environmental Assessment for a Major Project

November 2009

Willmott Timbers Pty Ltd



Expansion of Bombala Integrated Sawmilling and Value-Adding Facility

# ENVIRONMENTAL ASSESSMENT FOR A MAJOR PROJECT EXPANSION OF BOMBALA INTEGRATED SAWMILLING AND VALUE-ADDING FACILITY

# **Prepared For:**

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- Appendix B Letters from Utility Providers
- Appendix C Past Development Consents
- Appendix D Soil, Groundwater and Surface Water Management Plan
- Appendix E Traffic Assessment
- Appendix F Noise Assessment
- Appendix G Estimation of Discharges to Atmosphere
- Appendix H AUSPLUME Air Dispersion Modelling Results
- Appendix I Preliminary Hazard Assessment
- Appendix J Greenhouse Gas Emissions Calculations
- Appendix K Flora and Fauna Assessment
- Appendix L Heritage Assessments

#### **EXECUTIVE SUMMARY**

Willmott Timbers Pty Ltd (Willmott) operates a sawmilling and pole production facility in Bombala, New South Wales. Willmott has executed a wood supply agreement with the NSW Government for the long term supply of plantation-grown softwood sawlogs from the Monaro region. Having secured these resources, Willmott now seeks Project Approval under Part 3A of the *Environmental Planning and Assessment Act* 1979 (the EPA Act) to expand the timber processing operations from 106,000 tpa to 400,000 tpa of log input.

The mill will rely on the continued use of some existing facilities, equipment and infrastructure (as described in Section 5 on page 31) under existing approvals as well as the new equipment required for the upgrade (as described in Section 6 on page 47). There will be a transition period of about four years which will see a number of the structures in the existing mill used temporarily and then demolished to make way for the new structures. The specific timing of the transition will depend on market and technical constraints, and is described in Section 6.5 on page 53.

The Project will require replacement of many of the existing mill's major components, such as new facilities to saw timber and process it. The timber drying areas will be augmented with new boilers and kilns. In addition to on-site production facilities, new roads within the site will be constructed, and there will be a new intersection onto Delegate Road. A new office block and car park are also included in the development. The existing facilities will continue to operate as the new facilities are constructed, enabling a continuation of production.

The environmental performance of the existing mill will be greatly improved through the establishment of new, best practice environmental management of surface water and groundwater, and treatment chemicals. Also, the impacts off-site have been evaluated and mitigated where necessary. This includes traffic; the number of additional trucks generated by the project will be lower than the proportional production increase, which has been made possible through more efficient product loading.

The proposed expansion would augment the facility's existing socio-economic advantages, increasing the local jobs provided from 89 currently to 179, and inject an estimated \$20 million into the local economy each year. Approximately 102 construction jobs will be created at the peak of the expansion activity. The expansion will also further enhance the regional training opportunities, and the maintenance of services such as medical and retail. The investment has been justified by a detailed feasibility study which assessed the markets, resource requirements, benefits and growth opportunities.

The proponent, Willmott Timbers Pty Ltd, is 50:50 joint venture between Willmott Forests Limited and Dongwha Australia Holdings Pty Ltd. Willmott's current sawmill and timber processing operations are located in Bombala and focus on the production of landscape and outdoor timber products for the Australian market.

The site currently operates under an Environment Protection Licence, and this would need to be modified in light of the expanded nature of the facility.

While further development is contemplated for the site in the future (with options including a particleboard plant and biofuel production facilities), these are not part of this application, but will be assessed separately at the appropriate time. The estimated cost of the expansion described in this EA is \$65 million.

## **Project Need and Objectives**

There is an acknowledged opportunity to establish a world-scale timber processing facility in the Bombala Region, based on its growing softwood plantation resource. However, for various reasons, no such development has been achieved to date. Willmott has secured a long-term wood supply agreement with Forests NSW for their softwood plantation resource in the region.

The primary objective of the development is to expand the existing sawmill in Bombala, so that the softwood plantation resource can be fully-processed, providing ongoing employment and associated benefits to the community.

#### **The Planning Context**

The EPA Act is the key planning legislation in NSW, and defines the mechanism by which to obtain development consent for a project. The State Environment Planning Policy (SEPP) (Major Development) 2005 defines developments that are considered to be Major Projects and for which Part 3A of the EPA Act applies.

As the expansion of operations at the Bombala site will have a capital investment of more than \$30 million, the project is therefore captured under Schedule 1, Group 1, Section 4 (b) of the SEPP (Major Development) 2005 as a Major Project. In view of this, Part 3A of the EPA Act applies. The Director General advised on 8 October 2007 that the project will be assessed as a Major Project under Part 3A of the EPA Act.

## Consultation

Willmott's consultation with stakeholders including regulatory agencies and the local community has been on-going throughout project development for the proposed mill expansion. The consultation process has included meetings, site visits, discussions and community mill visits.

Consultation and/or briefings were undertaken with the following parties during the preparation of this EA:

- The local community;
- NSW Department of Premier & Cabinet;
- NSW Department of Planning;
- NSW Department of State and Regional Development;
- NSW Department of Environment, Climate Change and Water;
- Forests NSW
- Country Energy;
- NSW Roads & Traffic Authority;
- Bombala Shire Council; and
- Representative members of Parliament (Federal and NSW).

## **Existing Timber Processing Operations**

The Sandy Lane site has a 30 year history of timber processing, starting in 1979, with a number of owners. The existing mill operations comprise log merchandising and pole production, sawmill processing operations, kiln and steam autoclave drying of timber and timber preservation. The softwood timber products produced include treated landscape, sleepers and fencing products to service domestic timber markets throughout NSW, the ACT and Victoria.

#### Proposed Mill Expansion

The development will increase the timber processing capacity at the site to 400,000 tpa of softwood log input. The key functions of the proposed mill will be sawmilling and pole production, and will build on the existing capacities of the current sawmill and pole production.

The existing operations will continue and will be phased out of production as the new sawmill and associated processing operations are commissioned and expanded to full production capacity. The transition process will ensure that environmental issues associated with the existing site are addressed.

The proposed mill will comprise a primary sawing plant, timber drying, planing and treatment facilities and associated site infrastructure to produce value-added softwood timber products.

#### **Key Potential Environmental Issues**

#### Traffic and Transport

The mill expansion will result in an increase in the traffic on local and regional roads. However, the traffic impact assessment performed has shown that the mill expansion does not trigger the need for an upgrade to the surrounding roads. The network is currently sufficient to handle the present and increased traffic volume, although some intersection and bridge sections could be improved to handle these flows. Some minor upgrades attributable to the proposed mill expansion are summarised from the traffic impact assessment.

#### Noise

The results of the noise assessment performed for the EA have shown that the proposed mill will be in compliance with the project specific noise levels for the site. This compliance is achieved through the inclusion by Willmott of acoustic barriers and berms in the development, along two site boundaries. The potential impact of traffic noise resulting from the mill expansion is not considered to be extensive or excessive.

The noise levels during construction are in compliance at all receptors, with the exception of one residence to the north-east of the site, where the noise level is predicted to be slightly above the noise limits. Ameliorative measures will be implemented during construction to ensure that the noise levels do not adversely impact on this residence and that the noise limits are achieved.

#### <u>Air</u>

An air quality assessment, including dispersion modelling of the emissions to air from the proposed expansion, has been performed for the EA. The assessment has demonstrated that emissions to air from the new sources at the proposed mill are expected to be in compliance with the Protection of the Environment Operations (Clean Air) Regulation 2002. The results of dispersion modelling of the emissions to air have demonstrated that expanded operations will comply with NSW impact assessment criteria for air emissions at ground level.

The potential for off-site odour impacts from the mill will be mitigated by the proposed management measures and re-designed surface water management system. In addition, the dust control measures proposed for the mill will significantly improve dust impacts compared to current levels.

Monitoring of the wood fired boiler will be undertaken during commissioning to validate the assessment undertaken as part of the EA.

## Surface Water and Wastewater

Additional fresh water will be required for the mill expansion and the water will be sourced from the Bombala water main. The review of surface water (wastewater and stormwater) management has shown that the existing site system is insufficient for the current site and the expansion. Willmott has developed a new surface water management system which will allow for the treatment and disposal of wastewater generated at the expanded site, and which will maximise water re-use at the site.

#### Waste Management

The current operations at the Willmott facility involve recycling, reusing or selling as much of the waste generated on site as possible, and this will continue at the proposed mill. There will be an increase in wood residues, waste oil and general solid waste as a result of the mill expansion, but a decrease in the quantity of steel waste and hazardous waste. Willmott will continue to investigate beneficial reuse opportunities for all residues and wastes from the mill.

#### Hazard

A Preliminary Hazard Analysis (PHA) was undertaken to assess the hazards potentially associated with the proposed development. All risks identified in the PHA with high cumulative, consequence and likelihood scores were assessed and have demonstrated effective technical and management controls to ensure the ongoing safety of the proposed mill. None of the other hazard scenarios identified had the potential of presenting an unacceptable risk to the surrounding land users.

#### **Environmental Management and Monitoring**

Willmott proposes a detailed environmental management and monitoring program for the proposed mill, covering all environmental aspects including air, water and soil. Further site assessment will be undertaken for the development of the final stormwater and wastewater management system, along with the implementation of an environmental action plan to address the existing site legacy issues.

# STATEMENT OF COMPLETENESS

This Environmental Assessment has been prepared in accordance with the requirements set out by the Director-General of the Department of Planning.

The Director-General's requirements for the mill expansion and the sections of the EA in which they are discussed are outlined in Table 1. The Director-General's requirements are provided in Appendix A.

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Requirements	EA Section(s)
Executive Summary	Executive Summary
A detailed description of all existing operations at the site	5
Project description, including construction, operation and staging	6
Consideration of relevant statutory provisions	3
• Assessment of environmental impacts with particular focus on the	7 to 18
key assessment requirements	
Justification for undertaking the proposal	2.4, 2.4.2.3, and 2.7
Draft Statement of Commitments	21
Conclusions	22
Transport assessment	8
Assessment of noise impacts during construction and operation	9
Air quality assessment	10
• Assessment of soil and water management, including the potential	5.3.1, 5.3.2, 5.3.3, 6.9,
contamination of these elements	6.10, 6.11 and 11
• Description of waste generation, management and minimisation	5.3.4, 6.10 and 12
measures	
Hazard and risk analysis	13
Greenhouse gas assessment	14
Assessment of potential flora and fauna impacts	15
Visual assessment	16
Heritage assessment	17

# LIST OF ABBREVIATIONS

ACQ	Alkaline Copper Quaternary
Сарех	Capital Expenditure
CCA	Copper Chrome Arsenate
CEMP	Construction Environmental Management Plan
СО	Carbon Monoxide
dB(A)	Decibel (A weighted)
DCP	Development Control Plan
DEC	NSW Department of Environment and Conservation
DECC	NSW Department of Environment and Climate Change
DECCW	NSW Department of Environment, Climate Change and Water
Dongwha Australia	Dongwha (Australia) Holdings Pty Ltd
DoP	Department of Planning
DTI	Department of Transport and Infrastructure
EA	Environmental Assessment
EC	Electrical Conductivity
EET	Emissions Estimation Technique
EF	Emissions Factor
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environment Protection Authority
EPA Act	Environmental Planning and Assessment Act 1979
EPA Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPL	Environment Protection Licence
g/s	grams per second
GHG	Greenhouse Gas

GL	Gigalitre
GLC	Ground Level Concentration
GOS	Green off-sawn
ha	Hectares
kWh	Kilowatt Hour
LEP	Local Environment Plan
m/s	meters per second
mg/m <sup>3</sup>	milligrams per cubic metre
mg/L	milligrams per litre
mg/kg	milligrams per kilometre
ng/s	nanograms per second
MW	Megawatt
NGA	National Greenhouse Accounts
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NPI	National Pollutant Inventory
OEMP	Operational Environmental Management Plan
РАН	Polycyclic Aromatic Hydrocarbon
PHA	Preliminary Hazard Analysis
PJ	Petajoule
POEO Act	Protection of the Environment Operations Act 1997
POEO (Clean Air) Regulation	Protection of the Environment Operations (Clean Air) Regulation 2002
POEO (UPSS) Regulation	Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008
PM <sub>2.5</sub>	Particulate matter, ≤2.5 µm
PM <sub>10</sub>	Particulate matter, ≤10 µm
RAP	Remedial Action Plan
REP	Regional Environment Plan
RTA	Roads and Traffic Authority, now DTI
SEPP	State Environment Planning Policy

SO <sub>2</sub>	Sulfur Dioxide
TEQ	Toxic Equivalent
ТОС	Total Organic Carbon
tpa	Tonnes per annum
TVOC	Total Volatile Organic Compound
t/yr	Tonnes per year
UPSS	Underground Petroleum Storage System
VOC	Volatile Organic Compound
Willmott	Willmott Timbers Pty Ltd

## 1. INTRODUCTION

Willmott Timbers Pty Ltd (Willmott) proposes to expand its timber production and valueadding facilities by constructing a world-scale sawmill at Sandy Lane, Bombala. The development will increase the timber processing capacity at the site to approximately 400,000 tpa of softwood log input. The expansion is driven by Willmott's execution of a wood supply agreement with the NSW Government for the long-term supply of plantationgrown softwood sawlogs from the Monaro region. It will also provide a local processing point for sawlogs from plantations managed by Willmott Forests Limited, with wood flows from these plantations increasing later in the life of the development, and providing longterm sustainable resource input.

The Department of Planning (DoP) has determined that the project be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*, as a result of the scale and capital investment value of the project. This Environmental Assessment (EA) has been prepared in accordance with the requirements issued by the Director-General of the DoP.

## Project Snapshot

Construction of a large-scale, fully-integrated plantation softwood timber processing mill near Bombala, NSW. Project to be completed over a ramp up period of around 4 years and will comprise an expansion of existing facilities and construction of a primary sawmill, automated timber handling systems, advanced kiln-drying facilities, preservative treatment plant and associated woodyard and staff facilities.

Capital Investment:	\$65 million
Capacity (input of logs):	Up to 400,000 tpa
Direct On-site Employment (operations):	94
Total Direct Employment Effect:	179
Production Value:	\$70-74 million per year
Construction works to Commence:	Proposed 2010
In Production by:	2011
Revenue to NSW Government in log sales:	Over \$300 million

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## 2. PROJECT BACKGROUND

#### 2.1 The Proponent

The proponent, Willmott Timbers Pty Ltd, is a 50:50 joint venture between Willmott Forests Limited and Dongwha Australia Holdings Pty Ltd (Dongwha Australia). Willmott's current sawmill and timber processing operations are located in Bombala and focus on the production of landscape and outdoor timber products for the Australian market. The operation comprises three main facets of milling operations; processing, refinement and treatment. The softwood timber products produced include treated landscape, sleepers and fencing products to service the domestic timber markets throughout NSW, the ACT and Victoria.

An outline of each joint venture partner's corporate activities is given below.

#### 2.1.1 Willmott Forests

Willmott Forests is a fully integrated, quality endorsed, company that establishes, manages, harvests, processes and supplies timber products from plantation grown resources on behalf of its growers and shareholders. Willmott Forests is listed on the Australian Stock Exchange (ASX Code: WFL) and had total assets in excess of \$360 million as at 30 June 2009. Over its long history, Willmott Forests has continued to grow and remains an industry leader with an exemplary reputation in establishing and providing ongoing management of mainly *Pinus radiata* plantations. Willmott Forests currently operates in north-east NSW and south-east NSW, predominantly in the Bombala and Murray Valley regions, southern Queensland and throughout the major softwood growing regions of Victoria. The company oversees over 140 people and manages in excess of 53,000 ha of softwood plantations, ranging from new plantings to mature trees.

## 2.1.2 Dongwha Australia Holdings

Dongwha Australia has operated a sawmilling facility at Geelong, Victoria since 1996 under the "Tasco" brand, where it produces higher value treated softwood timbers. Its parent company, Dongwha, had a global turnover of approximately US\$800 million in 2008 and is a global manufacturer of wood materials with timber processing and marketing operations in Korea, Hong Kong, New Zealand, Malaysia, Vietnam, U.A.E., Japan, United States and Australia.

## 2.2 Project Overview

The proposed mill will comprise a primary sawing plant, timber dry mill, processing and treatment facilities and associated site infrastructure to produce value-added softwood timber products. In addition to landscape and fencing products, other products including treated softwood decking will also be sold to domestic and export markets.

The development will require approximately \$65 million of new investment, with the plant proposed to be integrated with the existing Willmott facility on its Sandy Lane site near Bombala.

The proposed increase in timber production capacity will be achieved by expansion of the mill facilities on the existing Willmott site at Sandy Lane, Bombala. This site offers the advantage of being a currently operating sawmill and wood-yard, while having a large capacity for expansion within the existing property – comprising some 19 ha of land owned by the proponent, with the capacity to expand onto an adjacent further 18 ha. The site use is not constrained significantly by the possible impacts of the operations on near neighbours, and it has ready transport access being adjacent to the intersection of the Monaro Highway and the Bombala-Delegate Road.

The project will utilise some components of the existing mill, with others being decommissioned and replaced with new items on the expansion site. Table 2 gives an overview of the major mill components and their utility in the plan for the proposed mill.

Existing	Current Approved	Upgrade	New Operating
Plant	<b>Operating Regime</b>		Regime
Bark-on log	Capacity: 3 000 tpa	Existing storage decommissioned,	Capacity: up to
storage	Unsealed	new storage (sealed) to be	12,000 tpa
		constructed on expansion site	
Debarker and	None <sup>1</sup>	New facility to be constructed on	Capacity: up to
log sorter		expansion site	400,000 tpa
Green mill	Capacity:	Existing mill decommissioned, new	Capacity:
(including	106,000 tpa	mill constructed on expansion site	400,000 tpa
poles)			
Treatment	Capacity:	Existing plant decommissioned, new	Capacity:
plant	30,000 m³ pa	plant to be constructed on expansion	140,000 m³ pa
		site	

Table 2 Existing and Proposed Mill Components

3

Existing	Current Approved	Upgrade	New Operating
Plant	Operating Regime		Regime
Boiler and	Capacity: 2.5 MW	Installation of three new gas boilers	Capacity: 26 MW
kiln plant, and		and retention of the existing wood-	operated at 70% <sup>2</sup>
dry storage		fired boiler	capacity
		Retention of two kilns and installation	
		of eight new kilns	
Dry mill	Throughput:	Existing mill to be decommissioned,	Throughput:
	30 lineal m per	new mill to be constructed on	150 lineal m per
	minute	expansion site	minute
Chip and	Open air storage	Existing stockpiles to be removed	Capacity:
sawdust	(stockpiles)	New storage to be concrete bunkers	maximum 3 000 t
storage			

Note: <sup>1</sup> The company is currently seeking modification of the existing mill approval (Bombala Council Approval) to enable the installation of an interim debarker to allow waste and residues to be sold from the current mill. <sup>2</sup> Boilers operate at less than 70% on average; full capacity is only used during start-up.

# 2.3 Operations Strategy and Timeframe

As various components of the proposed mill enter production, corresponding components of the existing mill will be decommissioned, if applicable. It should be noted that the exact timing of implementation of the site transition is subject to market penetration and sales from the specific product outputs of the proposed mill, and other external financial constraints. In this context, this transition plan is indicative of the "best case" transition between the existing approved operation and the new, consolidated site operations.

Key components of the transition will include:

- Phase out of existing operating plant as the components of the proposed mill are commissioned and production ramped up; and
- Commitments to manage environmental legacy issues arising from historical operations on the existing site.

It is proposed that the existing operations will continue and will be phased out of production as the new sawmill and associated processing operations are commissioned and expanded to full production capacity. The transition will allow components of the existing mill to be closed down during the first two full years of commercial production of the proposed mill.

The proposed project development timeline is shown in Table 3.

Table 3	Project Development Timeline
---------	------------------------------

Project Development Phase	Indicative
	Commencement
Clear existing chip storage area in the south-east corner of the site	Stage 1
Clear existing site	Stage 2
Develop existing eastern portion of the site for dry mill and treatment	Stage 3
plant	
Develop new western portion of site	Stage 4
Develop the remainder of the eastern portion of the site	Stage 5
Develop new expanded plant	All stages, over
	four years

## 2.3.1 Phase Out of Existing Operations

Timing for mill construction and phase out of existing operations by major mill components are described Section 6.5.

## 2.4 Project Need and Alternatives

The Bombala Region's softwood plantation resource is able to support a world-scale timber processing facility. This project will enable such a facility to develop because it is the first proposal which meets the crucial elements of resource supply, markets, and cost competitiveness.

Willmott has secured a long-term wood supply agreement with Forests NSW for its plantation softwood resource in the region. The agreement underpins this project. The combined scale of the Bombala softwood plantation resource – comprising Forests NSW and Willmott Forests' estates – offers an immediate opportunity for value-adding of the type envisaged by this proposal. Importantly, the proposal allows the resource to be fully-processed within the Bombala Region, providing ongoing employment and associated benefits to the community.

A comprehensive sales and marketing strategy has been developed by Willmott. It sets out detailed approaches to product, customer and geographic focus for Willmott. It also reviews the state of the timber market and identifies major competitors. The strategy includes a management structure for implementation and proposed marketing budget. This ensures that the project will face minimal market risk.

The project will also help to address Australia's current trade imbalance of some \$1.6 billion per year in wood-based products by providing import replacement products for the domestic market, with the option to consider exporting as the expanded sawmill matures to full production levels. This is discussed further in Section 18 addressing the socio-economic impacts of the project.

Willmott has an established route to market and operates the existing sawmill and timber processing facility on the site. It currently processes some 106,000 tpa of softwood logs into value-added timber products and markets them Australia-wide. Market studies confirm there is a significant opportunity to expand production to supply current markets and add other complementary products. The project's joint venture arrangement ensures the ability of this project to serve its intended markets. The project will service and expand supply to the existing markets currently supplied by the existing Bombala sawmill and by the Geelong processing facility operated by Dongwha.

The cost competitiveness of sawmilling in Bombala is the key driver for this project, and as such, was the subject of extensive analysis prior to the project being committed to by the joint venture. The feasibility study found that the configuration described in this EA will allow for an economically sustainable development over its intended lifespan.

## 2.4.1 Resource Supply

The mill design will enable it to process the full sawlog production of the softwood plantations within the Bombala Region. Currently, both Willmott Forests and Forests NSW manage and sell softwood logs, and an integrated approach to the management of both estates is considered the most efficient approach.

The mill will utilise close to the capacity of the nearby plantations. These supplies are shown in Table 4. Sources and timings of annualised resource flow are illustrated on the accompanying map (Figure D1). The actual annual volumes utilised in any year or period will be subject to prevailing market conditions, and to harvesting or other site limitations such as, for example, prolonged wet weather or fire.

	Sawlog Require	ments for New	Sawlog Requirements for New		
	Mill during Ramp-Up Period		Mill at Full Production		
Locality	From Willmott	From Forests	From Willmott	From Forests	
	Forests (m <sup>3</sup> pa)	NSW (m³ pa)	Forests	NSW (m³ pa)	
			(m³ pa)		
Bombala			45,000		
Coolangubra		125,000		50,000	
Bondi		125,000		170,000	
Delegate			45,000		
Bendoc	10,000		10,000		
Pericoe / WOG				26,000	
Northern			22,000	4,000	
Approximate total	10,000	250,000	122,000	250,000	
(m <sup>3</sup> per annum)					
Approximate total	10,600	270,000	130,000	270,000	
(tonnes per annum)					

 Table 4
 Sawlog Resource Locations, Estimated Volumes and Owners Over Time

At the commencement of operations in the new mill, almost all of the sawlog volumes will come from Forests NSW plantations, with only 10,000 m<sup>3</sup> coming from Willmott Forests' Bendoc region. All of the Forests NSW supply (250,000 m<sup>3</sup> pa) delivered at the commencement of the new mill during the ramp-up will come from the Coolangubra and Bondi plantation areas because this is where Forests NSW's mature forests are concentrated.

The volumes detailed in the map shown in Figure D1 relate to full mill production. Table 4 shows harvested sawlog volumes at the commencement of the new mill and at full production. These plantations will also yield pulpwood resources, some of which will be harvested at the same time as the sawlogs (that is as "integrated" harvesting). The pulpwood from such harvesting operations will be destined for a range of other customers and markets, including the Willmott sawmill.

The long term wood supply agreement between Forests NSW and Willmott provides secure contractual terms for sale and delivery by Forests NSW of the relevant sawlog volumes indicated in Table 4. The specific terms of that wood supply agreement are commercially confidential. However, for the purposes of public information on the mill's ongoing resource supply certainty, its general terms are summarised in Table 5.

Information
28 April 2008
Forestry Commission of New South Wales ("Forests NSW"), and
Willmott Timbers Pty Ltd
20 years
Delivered sale
Radiata Pine
Sawlogs (of various classes)
250,000 m <sup>3</sup> per year
Stumpage and delivery

## Table 5 General Terms of Wood Supply Agreement

Supply and sale of sawlogs to the mill from the relevant Willmott Forests' plantations will be subject to long-term contractual arrangements between it and Willmott.

## 2.4.2 Markets

There is an expanding domestic market for treated sawn and round wood softwood timbers for specialty applications – particularly for outdoors where timber treatment offers protection against termites and timber decay. The principal markets for the plant's products will be Sydney, Brisbane, Canberra and Melbourne. Willmott will seek to expand the markets to other domestic and overseas locations as part of its detailed marketing plan.

The proximity of the site to the Eden multi-purpose wharf also offers the opportunity for efficient export of timber and other products from the facility. When fully operational, the sawmill enterprise will produce products with a market value in excess of \$70 million each year.

The outputs of the proposed Bombala mill are not as vulnerable to market swings as the large structural timber (framing) mills because of the importance of renovations as a driver of sales of treated timber products.

# 2.4.2.1 Sales Volume

The sales and marketing plan puts in place strategies for sales of the total volume of output from the new Bombala mill. Sales volume builds from 100,000 m<sup>3</sup> (106,000 t) based on annual log input of around 190,000 m<sup>3</sup> (200,000 t) early in the operation. It has the capacity to expand to 158,000 m<sup>3</sup>, based on log input of 280,000 m<sup>3</sup> (300,000 t) after Year 3. Once markets are established for the products, demand will drive future expansion to the full log input level of 372,000 m<sup>3</sup> (400,000 t). Figure 1 illustrates the projected increase in production over this initial period.



Figure 1 Indicative Production Per Year from Expanded Willmott Timbers Sawmill

# 2.4.2.2 Product Focus

The increase in sales volume will comprise a range of products. The sales and marketing strategy identifies the key products on which future operations will be based:

- Decking
- Treated appearance grade
- Treated structural grade
- Sleepers
- Palings
- Poles
- Untreated kiln dried appearance and structural
- Other (including case)

The strategy identifies that the existing poles business is dependent on obtaining volume beyond expiry of the current log supply contract for poles in 2013. However, it is the intention of Willmott to maintain this business in the long term. Marketing of poles will focus specifically on placing products into the retail markets surrounding the mill (within a radius of 500 kilometres).

# 2.4.2.3 Customer Focus

Willmott's strategy is a segmented domestic market approach, based on penetration and location. Additionally, export markets will be pursued in a number of different regions to provide a hedge against fluctuations in the Australian market. The existing facilities at Geelong and Bombala currently export timber to Asia and Pacific countries. The new facility will look to build these markets as well as pursue opportunities in new markets such as the Middle East and Africa from where requests are now regularly being received.

## 2.4.2.4 Strategy Implementation

The new Willmott Timbers' "Tasco" logo was formally launched in October 2008. The next steps in the sales and marketing plan comprise:

- A transitional marketing strategy, the key components of which are:
  - Adoption of Tasco as a trading name for Willmott Timbers;
  - Adoption of the new brand across all company products and material;
  - Assessment of existing customer accounts;
  - An advertising and marketing campaign;
  - Development of a single interactive internet site; and
- A future marketing strategy intended to leverage off the transitional marketing plan to provide the strategic marketing direction for the business beyond 2010.

## 2.4.2.5 Management

Willmott has fully resourced the sales, business development and management positions required for the current and expanded production.

## 2.4.3 Economic Feasibility

The shareholders of Willmott, both publicly listed companies, commissioned a full feasibility study prior to committing shareholder funds to the project to ensure its viability and cost competitiveness, taking into account the financial demands of the project and modelled outcomes.

The feasibility assessment has focussed on the following matters:

**Machinery options** for the new sawmill and associated capital expenditure (capex) requirements. The options considered by the proponent included saw lines from four established global suppliers which provided technical scopes and specifications that were examined as part of the feasibility. In addition, separate systems for log handling and sorting, timber handling and sorting, and residue handling have been further developed. The preferred options were selected on the basis of their capex and their ability to meet the requirements of the project. Criteria included speed, range of logs able to be processed, recovery levels, maintenance costs, safety, timing of supply and technology. The preferred sawmill configuration was selected on the basis that it:

- Represents the lowest capex costs without significant recovery losses compared to other options;
- Offers operating cost advantages though increased line speed allowing the sawmill to operate on a single shift basis; and
- Provides the potential for pole processing in the same line which negates the requirement for additional processing plant.

**Options for pole processing** – options considered for pole processing include development of a new separate pole line, incorporating poles into the saw line and upgrading the existing pole operation.

**Financial performance** of the sawmill configuration was analysed through the development of a detailed financial model based on the preferred option. The model included sensitivity testing and a range of scenarios which were developed to test robustness of the projected performance. Sensitivities tested included:

- Production volumes target log input for the sawmill, type of log input (sawlog and super pulp log), log input ramp up;
- Sales volumes the volume processed in the first year reflects that required to service the existing markets of Willmott, given that the existing sawmill will stop production once the new mill commences;
- Gearing level;
- Sawlog costs;
- Timber and pole sales prices a number of alternative scenarios were considered for output sales prices ranging from historic prices representing a stronger market, to average prices over a recent period representing mixed market conditions, and to prices which represented the bottom of the market;
- Residue prices income from sales of bark and sawdust were excluded from the model. Discussions with a number of parties have indicated a willingness to pay for softwood chip for export; and
- Freight costs freight costs for finished products have been estimated at a realistic range.

All figures in the financial model were based on current values with no allowance for any inflation impact. The model provided quantitative outputs on a number of parameters relevant to the project's feasibility, including:

- Net profit after tax;
- Free cash flow; and
- Return on equity.

**Timelines** for progression of the recommended investment have been estimated.

**Risk analysis and management strategies** - key project risks and approaches to be adopted for their management have been identified. These are expanded in the following section.

## 2.4.3.1 Risk Management Strategies

The key risks associated with the proposed investment are divided into:

- Market risks the main risks being the need to expand markets for additional volumes produced over time and the potential for end product prices to fall. There is also market risk associated with ensuring that existing customers are supplied adequately while the new mill is being constructed.
- Technical risks key technical risks relate to the potential for capex to exceed budget due to technical problems in installing or commissioning the sawmill machinery. The mill will utilise proven technology and will incorporate turnkey contracts to minimise technical risk during implementation.
- Sovereign risk unreasonable environmental protection impositions could adversely
  impact on the project but the chance of this occurring appears to be low.
- Management risk associated with efficient project delivery through the feasibility, design, construction, commissioning and operating stages of the project. Oversight of the project has been the responsibility of senior staff within the joint venture, with the roles of Project Director, Statutory Planning, and Project Manager being carried out by specialist consultancies.

The following diagram shows the structure of the project team during its detailed design phase, which has allowed the project to proceed to detailed design and ready for construction.



Table 6 provides an analysis of the market risks associated with the project, and the management strategies to minimise these risks.

Table 6	Risk Analysis for Project		
Issue	Nature of Risk	Risk	Management Strategies
		Rating	
Market risk			
Sales and marketing	May find it difficult to sell additional volumes	LOW	• Combined established route to market of the NSW and Victorian sawmills under the Tasco brand.
growth	of output		<ul><li>Servicing existing customers in the first instance which can readily absorb additional volumes.</li><li>Sales will be ramped up over three years.</li></ul>
			• Willmott is expanding its products range for the domestic market and building export markets to augment domestic sales.
End product	Market conditions	MEDIUM	Keep sawmill production focussed on high value treated appearance products as price variation for these products is considerably less than for structural timber
p	to lower end product		<ul> <li>Domestic timber market conditions are forecast to improve over the next 3-4 years.</li> </ul>
	prices		Financial modelling prices conservative.
Maintaining	Supplies to existing	MEDIUM	Manage construction of new mill to avoid disruption to production from existing mill.
current	markets and		<ul> <li>Separate project management for new mill from ongoing business operations.</li> </ul>
markets/	customers are		
customers	disrupted during		
	transition period		
Technical r	isk		
Capex	Capex requirements	LOW	Current costs based on firm quotes from machinery suppliers.
	exceed budget over		Turnkey project delivery contracts sought at additional cost to minimise risk.
	construction period		Appoint Project Manager / Engineer.

Nature of Risk	Risk	Management Strategies
	Rating	
Takes longer than	LOW	Care in specifying contracts for machinery supply and in preparing specifications.
planned for mill to		Proven technologies used in mill.
become operational		Contingency allowed in capital estimates.
k		
Regulatory	LOW	Have commenced environmental approval processes early.
requirements create		
roadblock for project		
Skilled labour	LOW -	<ul> <li>Labour requirements are in line with the current labour pool.</li> </ul>
unavailable	MEDIUM	
risk		
The project team is	LOW	Use of specialist consultants for various roles in the team.
not able to design the		Development of a proven project organisation structure for the different stages of the project.
project to meet its		<ul> <li>Established meeting protocols and lines of communication ensure team is optimised.</li> </ul>
objectives		
The management	LOW	• Project team lead by senior executive (deputy CEO of Willmott Forests) with a track record of
does not provide a		delivering similar projects successfully.
cohesive and effective		Close and regular communication with directors ensures continuing support for the project.
team		
	Nature of Risk Takes longer than planned for mill to become operational K Regulatory requirements create roadblock for project Skilled labour unavailable risk The project team is not able to design the project to meet its objectives The management does not provide a cohesive and effective team	Nature of RiskRisk RatingTakes longer than planned for mill to become operationalLOWRegulatory requirements create roadblock for projectLOWSkilled labour unavailableLOW - MEDIUMThe project team is not able to design the project to meet its objectivesLOWThe management cohesive and effective teamLOW

#### 2.4.4 Alternatives Considered

Should the existing mill not be expanded, it will likely close because it cannot operate at an economically sustainable scale. This would result in the loss of the current 71 jobs on site, a reduction in job opportunities in the timber supply and transport sectors, and flow-on job reductions in the community. This would have a major negative economic impact on Bombala and the immediate region. It would also mean that the resource at Bombala will either not be utilised or be utilised outside the region. If it is not utilised, it will fail to provide employment in the forest and income to the region and to the forest owners (both Forests NSW and Willmott Forests). Exporting the resource to other regions is unlikely to be economically sustainable due to high transport costs.

Different sawmill expansion development options for the site were assessed in the project feasibility study. The study examined a range of market opportunities, resource mixes and sawmilling/plant configurations. These options were rejected because they were assessed to be economically unsustainable.

Option 1 involved the upgrading of the current Willmott mill facility and its augmentation with existing mill equipment transported from a site in Victoria.

Option 2 comprised completely new "greenmill" and pole processing facilities, incorporating an upgrade to the dry mill and treatment plant. It would see the total facility optimised to be able to handle a roundwood (sawlog and pole) input of up to 400,000 tpa. This option requires significant additional capital than Option 1. However, it was estimated to produce the best financial outcome, reflecting its ability to optimise sawn timber output through a single line. It would also allow for incremental increases in sawn timber production as market opportunities develop post-commissioning.

The result of this consideration of alternatives was that Option 2 was adopted as the preferred configuration, as outlined in this assessment.

#### 2.5 Benefits of the Proposal

There are major additional benefits to establishing the new sawmilling facility in Bombala. Those benefits will accrue not only to the local community and businesses, but also to the wider region, to NSW and the nation. Some of the more tangible benefits of the proposal are:

 Immediate timber sales income to Forests NSW (a NSW Government agency) will exceed \$300 million over the project lifetime;
- Long-term economic flows to Forests NSW, the local community and the wider economy;
- Provision of long-term sustainable jobs in Bombala in both the mill operations and in upstream and downstream servicing;
- Capital investment in regional NSW and construction jobs;
- Long-term security for local timber harvesting and haulage contractors;
- Local production of value-added timber products supplants imported timber and helps overcome the trade imbalance in Australia's forest products; and
- Provides a platform for attracting further investment in timber processing and related industries.

Some of the reasons for the likely success of this development are:

- There is a high degree of existing commitment and investment capability of the joint venture partners (Willmott Forests and Dongwha Australia), which combined have a proven track record of performance and expertise in all facets of the plantation timber industry – from growing to processing to marketing, and research and development.
- There is strong support for the project from within the Bombala Region's community due to the opportunity for the project to provide social and economic stability and growth opportunities. This project provides a large number of sustainable local jobs.
- It provides the best value option for the Bombala plantation timber resource being processed and value-added locally. This maximises productivity, minimises transport of raw materials, and provides a local incentive for more upstream investment in plantations.

The socio-economic benefits of the proposal are discussed in further detail in Section 18.

# 2.6 Growth Opportunities

The current proposal is for the establishment of a value-adding sawmill capable of processing 400,000 tpa of logs. The mill facilities could, however, be scaled to increase the log intake level over time, as and when the regional plantation resource expands.

Further, Willmott has considered opportunities for complementary developments in a range of other forest product sectors. In particular, the production of particleboard and/or biofuel (ethanol) could be envisaged for Bombala. Willmott is committed to exploring all possibilities for efficient utilisation of all products for the region's plantations, especially the mill and forest residues. Such investment could have significant capital investment in the site and employment generation, indicated to be of the order of:

- Particleboard mill \$85 million investment, 105 direct employees; and
- Biofuel facility \$40 million investment, 17 direct employees.

This application is for approval for the sawmilling expansion. While the further development outlined above is contemplated in the future, these components are not part of this application, but will be assessed separately at the appropriate time.

# 2.7 Consequences of Not Proceeding

Currently, the scale of production at the mill – being approximately 106,000 tpa of log input – is at the lower margin of cost competitiveness compared with similar mills elsewhere in Australia and overseas. Accordingly, if the mill did not expand its scale significantly, it would likely close due to a lack of economic sustainability.

Willmott is the largest employer in the Bombala Local Government Area. The closure of the mill would result in the loss of all 89 direct jobs within and outside of the mill. Additionally, flow-on employment losses of the associated jobs in the Region's plantations and servicing would total around 150. It would also diminish training and education opportunities and support for small businesses in the town.

# 3. STATUTORY REQUIREMENTS

Willmott's proposal requires planning approval in accordance with NSW planning legislation. The EPA Act, which is administered by the DoP, is the key legislation. Planning approval is also required to take into consideration any applicable SEPPs, and the development cannot be prohibited by any applicable regional environmental plan (REP) or local environmental plan (LEP). In addition to state planning and environmental legislation, Willmott's approval will have to comply with applicable Commonwealth environmental legislation.

Environmental protection in NSW is dealt with by the *Protection of the Environment Operations Act 1997* (POEO Act), which is administered by the Department of Environment, Climate Change and Water (DECCW), previously known as the Department of Environment and Climate Change. The proposed development must also be considered with regard to this Act.

# 3.1 Site Development History and Transition of Consents

The Sandy Lane sawmill site has a 30 year history of timber processing, starting in 1979, with a number of owners. It has also been the subject of a number of approval instruments granted by Bombala Shire Council. Copies of the relevant current approval documents for the existing mill are included in Appendix C.

Several components of the existing mill will be retained for use in production as the mill expansion project proceeds towards full integration. When full integration is reached, some aspects of the current mill will remain in the expanded mill. All other structures referred to in past approval documentation will be progressively demolished and will be fully removed when the mill expansion is complete. The current site layout (Figure D2) shows the existing structures on the site and which ones will be retained.

Table 7 below shows the existing consents relating to the site.

	•	0
Date	Number	Description
1/5/79	79/7 (10/79)	Machinery shed
24/5/79	8/79	Proposed post processing plant
19/10/79	17/79	Timber post treating facility including peeler shed, treatment plant, machinery shed, office, storage areas and ancillary access roads
19/10/79	8/79	Grazing and post peeling and drying

Table 7 Operation of Existing Consents

Date	Number	Description
15/6/84	82/18 (22/82)	Woodworking / manufacturing shed
31/8/84	84/51 (52/84)	Office extension
6/11/86	24/86	New building for completion of treated pine products
14/3/88	5/88	Extension of buildings: office, peeler shed, new boiler house, new
		drying shed, new manufactured products shed, new residence
12/12/88	88/71 (69/88)	Pole framed store shed
9/3/95	46/94-95	Amenities block and meal room
24/6/95	64/94-95	Storage shed (incl. drip pad)
20/3/96	45/95-96	New steel shed to relocate existing manufacturing facility (incl.
		rounder & moulder)
6/3/98	36/97-98	New steel shed to relocate existing sawmill facility
30/6/98	51/97098	New steel shed to replace existing timber frame shed
23/10/00	13/00-01	Construction of machinery storage shed and renew shed for
		merchandiser operations
13/3/01	25/00-01	Shed to house boiler, burner and chip bin
26/2/02	29/01-02	Shed extension for timber drying
26/2/02	30/01-02	(a) Construction of shed for storage of kiln-dried timber
	(16-0102)	(b) Construction of timber drying kiln
23/12/02	27/02-03	(a) Construction of a vehicle weighbridge
	(02-1001)	(b) Covered extension to shed for green chain
17/9/03	04-0010	Replacement of existing wood chipper and new shed over machinery
3/8/05	DA.5.52	(a) Install new timber drying kiln and alterations to timber drying shed
		(b) Upgrade existing pressurised timber treatment plant
2006	DA.07.0006	Relocate amenities block

It is Willmott's intention to surrender all consents which are not required as part of the expanded mill. The precise operation of the consents will be determined as part of the project's assessment.

# 3.2 State Legislation

The key NSW legislation for Willmott's proposal is the EPA Act and subordinate regulations. The State legislation includes.

## 3.2.1 Environmental Planning and Assessment Act 1979

On 8 October 2008 the Director-General of the DoP, as delegate of the Minister for Planning, formed the opinion that Willmott's proposal is a Major Project. Therefore Part 3A of the EPA Act applies, which specifies that the Minister for Planning will be the consent authority for the proposal. This is discussed further in Section 3.3.1.

Under Part 3A of the EPA Act an application for development approval of a Major Project is to be lodged with the Director-General (Section 75E). This lodgement is to include an EA for which requirements are to be requested from, and provided by, the Director-General.

In addition, Part 3A of the EPA Act provides that the development and environmental assessment processes under Part 4 and Part 5 of the Act do not apply in respect of an approved project. Further, under Part 3A environmental planning instruments (other than SEPPs) do not apply to an approved project. However, the project cannot be approved if the development is prohibited under any environmental planning instrument.

# 3.2.2 Environmental Planning and Assessment Regulation 2000

The EPA Regulation provides further detail on the process to obtain development consent for a Major Project. This includes statutory timeframes, information to be made available to the public and applicable fees and charges. As the proposed expansion is subject to the provisions of the EPA Act, the EPA Regulation applies.

# 3.2.3 Protection of the Environment Operations Act 1997

The POEO Act is the key piece of environmental protection legislation administered by the DECCW. Willmott has an existing Environment Protection Licence (Number 11205) under the POEO Act to authorise the carrying out of a scheduled activity at the Bombala premises. Willmott's operation is considered to be a scheduled activity under Schedule 1 in the categories of *Wood or timber milling or processing works* and *Wood preservation*. The licence will apply to the new development, and be updated following further discussions with the EPA.

## 3.2.4 Protection of the Environment Operations (Clean Air) Regulation 2002

The facility is considered as general activities and plant under Schedule 4 of the POEO (Clean Air) Regulation. The existing operations are required to comply with Group 4 emission limits under Schedule 4 and the new plant expanded mill will be required to meet Group 6 emission limits under the same Schedule.

The existing wood fired boiler was installed during the establishment of the original sawmill, and will be retained in the expanded mill. Pollution control equipment will be installed to mitigate the particulate emissions and ensure compliance with the Group 4 limits. This is further discussed in Section 10.2.5.1.

# 3.2.5 Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008

The POEO (Underground Petroleum Storage Systems) (UPSS) Regulation defined the requirements for the management, decommissioning and removal of UPSSs. A validation report must be provided to the local authority no later than 60 days after a UPSS has been removed. If remediation of the site is required, a validation report must be submitted no later than 60 days after the remediation has been completed.

Diesel and petrol underground storage tanks are situated at the existing site and will be removed as part of the proposed project. The removal of the UPSS will be undertaken in accordance with the POEO (UPSS) Regulation, and Willmott will submit a validation report to Council upon completion of the removal works.

# 3.2.6 Contaminated Land Management Act 1997

The Contaminated Land Management (CLM) Act establishes the process for investigating and potentially remediating land that is considered to be significantly contaminated and therefore requires regulation. The site owner or other person responsible for contaminated land has a Duty to Report the contamination to DECCW in certain circumstances. These circumstances are outlined in the DECCW *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act* 1997 (DECC 2009).

As outlined in Section 5.3, there is some soil and groundwater contamination present at the site, and further investigation and soil remediation is proposed as part of the mill expansion works. Based on the past assessments and sampling at the site, this contamination is not considered meet the circumstances which trigger a notification to DECCW (refer to Section 5.3).

## 3.3 State Environmental Planning Policies

SEPPs are legislative environmental planning instruments administered under the EPA Act. SEPPs deal with issues considered to be significant to the state and people of NSW. The SEPPs applicable to Willmott's proposed development include:

- SEPP (Major Development) 2005;
- SEPP (Infrastructure) 2007;

- SEPP No. 33 Hazardous and Offensive Development (SEPP 33); and
- SEPP No. 55 Remediation of Land (SEPP 55).
- 3.3.1 State Environmental Planning Policy (Major Development) 2005

The SEPP (Major Development) 2005 defines developments that are considered to be Major Projects and for which Part 3A of the EPA Act applies. The Policy establishes the Minister for Planning as the approval authority for any development classified as a 'Major Project'. Clause 6 (1) of the Major Project SEPP identifies projects under Part 3A as development that, in the opinion of the Minister for Planning, is development of a kind listed in either Schedule 1, 2, 3 or 5 of the Policy.

This project fits within Schedule 1, Group 1:

4. Timber milling, timber processing, paper or pulp processing Development that employs 100 or more people or has a capital investment value of more than \$30 million for the purpose of:

- a) milling plants, sawmills, wood-chipping or particle board manufacture, or
- b) manufacture of paper, pulp, cardboard or newsprint, or
- c) paper recycling, or
- d) wood preservation, or
- e) charcoal plants,

but not including development for the purpose of plantations (unless it is ancillary to other development).

## 3.3.2 State Environmental Planning Policy (Infrastructure) 2007

This policy is directed at ensuring the effective delivery of infrastructure across NSW. Under division 17, Clause 104 the NSW Department of Transport and Infrastructure (DTI) is to be made aware of, and be given an opportunity to make representations in respect of proposed developments that meet certain threshold criteria. Willmott's proposed expansion is captured under Schedule 3 as a traffic generating development due to the area of the site to be developed. Accordingly, Willmott was required to consult with the DTI during the preparation of this EA.

## 3.3.3 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

SEPP 33 provides definitions for hazardous and offensive industries and hazardous and offensive storage establishments. SEPP 33 also defines proposals that are potentially hazardous and potentially offensive and requires specific matters to be considered in the proposal. This includes the requirement to conduct a preliminary hazard analysis (PHA) to support the development and to advertise the development for public comment.

Guidelines published by the DoP provide guidance on PHA, and in particular the DoP 1994 *Applying SEPP 33, Hazardous and Offensive Development Application Guidelines* outlines the risk screening method to determine if a PHA is required. This risk screening and preparation of a PHA has been undertaken for Willmott's proposed expansion (refer to Section 13).

#### 3.3.4 State Environmental Planning Policy No. 55 – Remediation of Land

The SEPP 55 states that land must not be developed if it is unsuitable for a proposed use due to contamination. The Bombala site was rural/pastoral land prior to development of the existing facility. Section 5.3 provides an assessment of the current condition of the site and Section 11 examines the potential for the site of the proposed expansion to be contaminated.

#### 3.4 Regional Environmental Plans

REPs are legislative environmental planning instruments made under the EPA Act. REPs deal with issues such as urban growth, commercial centres, extractive industries, recreational needs, rural lands and heritage and conservation. REPs do not apply to a project approved under Part 3A of the EPA Act. However, a project cannot be approved under Part 3A of the EPA Act if the development is prohibited by an applicable REP. There are no REPs applicable to Willmott's proposed expansion.

# 3.5 Local Environmental Plans

LEPs are legislative environmental planning instruments administered under the EPA Act. LEPs are prepared by local Councils and guide planning decisions for local government areas. Similarly to the REPs, LEPs do not apply to a project approved under Part 3A of the EPA Act, but a project cannot be approved under Part 3A of the EPA Act if the development is prohibited by an applicable LEP. Willmott's proposal falls within the Bombala Shire Council local government area. The applicable LEP is the Bombala Local Environmental Plan 1990.

# 3.5.1 Bombala Local Environmental Plan 1990

The proposed development site is located on land zoned 1(a) (Rural Zone) under the Bombala Local Environmental Plan 1990 (Bombala LEP). The proposed development is defined under the Bombala LEP as a sawmill and is permissible with development consent as an innominate use in the 1(a) (Rural) zoning.

The objectives of this zoning are:

- to enable the continuation of traditional forms of rural land use and occupation and the development of new or changed forms of agricultural enterprise;
- to enable other forms of development which are associated with rural activity that require an isolated or rural location; and
- to ensure that the development is appropriately located in terms of the characteristics of the land, the rural environment, protection of agricultural activity, and the cost of providing public services and amenities.

Clauses 10 (development principles) and 22 (development on main roads) of the Bombala LEP also apply to the proposed development. Clause 10 requires the consent authority to consider the effect of the proposed development in relation to: potential restriction or inhibition of agricultural use of land; availability of water; provision of services; natural hazards; creation of ribbon development; and potential alteration of landscape. Clause 22 may require the consent authority to consider the effect of the proposed development on the operation of the main road adjacent to the property.

## 3.6 Development Control Plans

Local Councils also prepare development control plans (DCPs) that provide more specific and comprehensive guidelines for development proposals. DCPs do not apply to a project approved under Part 3A of the EPA Act. There are no DCPs applicable to Willmott's proposed expansion.

## 3.7 Commonwealth Legislation

Commonwealth planning and environmental legislation that could be relevant to projects such as this includes the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

### 3.7.1 Environment Protection and Biodiversity Conservation Act 1999

There are three triggers under the EPBC Act whereby a Commonwealth Environmental Impact Assessment (EIA) may be required. These include actions that would or are likely to have a significant impact on matters of national environmental significance, actions that would or are likely to have a significant impact on Commonwealth land and actions by the Commonwealth or its agencies that would or are likely to have a significant impact on the environment inside or outside Australia. Matters of national environmental significance include World Heritage properties, RAMSAR wetlands, threatened species or ecological communities listed in the EPBC Act, migratory species listed in the EPBC Act, the environment in a Commonwealth marine area and nuclear actions.

The proposal for a mill at Bombala does not fall into any category that would require an EIA. Therefore, the statutory requirements outlined in EPBC Act have not been considered further.

# 4. CONSULTATION

The Director-General's Requirements issued to Willmott for the mill expansion at Bombala specify that the company must undertake consultation with relevant government authorities, service providers and community groups. The following parties were consulted in the preparation of the EA:

- The local community;
- NSW Department of Premier and Cabinet;
- NSW Department of Planning;
- NSW Department of State and Regional Development;
- NSW DECCW;
- Forests NSW
- Country Energy;
- NSW DTI;
- Bombala Shire Council; and
- Representative members of Parliament (Federal and NSW);

Initial discussions were held with the DoP to determine the appropriate development approvals pathway.

# 4.1 Bombala Shire Council

The proponent has maintained regular contact with Bombala Shire Council on progress with the development plans. A formal briefing of Council was given by senior company representatives on 15 August 2007. A copy of the letter from Council regarding the availability of water for the mill expansion is provided in Appendix B.

## 4.2 NSW Departments

4.2.1 Department of Premier and Cabinet and Department of State and Regional Development

The Bombala LGA has been recognised by the NSW Government as being an area of special need, with respect to economic development opportunities. Accordingly, the NSW Departments of Premier and Cabinet and State and Regional Development have been consulted to ensure Government priorities are addressed.

## 4.2.2 NSW DTI

In addition to the DTI's attendance at the Planning Focus Meeting on 4 June 2008, two additional consultation meetings were held with the DTI in its Wollongong office. These occurred on 20 February 2009 and on 17 July 2009. Both meetings were attended by the proponent and its traffic consultant, Aecom, and senior representatives from the DTI and the NSW Premier's Department. These consultations led to clarification of the DTI's requirements for assessment related to the project, and in particular the following matters:

- The Monaro Road / Delegate Road intersection should be analysed, preferably with a swept path analysis and sketch. This analysis was completed by Aecom and features in the Traffic Impact Assessment.
- The impact of road access to the mill off Delegate Road should be assessed with works required to be investigated, including widening.
- The Parsonage Creek Bridge on Delegate Road works are required to bring this specific element of the transport network to a level of acceptable safety, which is not changed by the traffic impact of the mill project.

The matters raised by the DTI have all been incorporated into the Traffic Impact Assessment which is discussed in Section 8 of this EA.

## 4.3 Forests NSW

Ongoing liaison has occurred with Forests NSW officers in relation to this development, including:

- Participation at the Planning Focus discussions;
- Communication regarding milestones under the Wood Supply Agreement; and
- On-site discussions regarding future timber deliveries.

### 4.4 Country Energy

Country Energy is the utility supplier for both electricity and gas to the site. Discussions have been held with representatives over the last three year planning and design stages of the project.

### Electricity

Willmott has been corresponding with Country Energy regarding the electricity connection over the course of the last two and a half years. The mill expansion will require an upgrade to the existing infrastructure, comprising a duplication of the existing high voltage line from the substation in Bombala, and a transformer at the Willmott site. The infrastructure upgrade will occur before commencement of production at the new mill. The details of the upgrade are yet to be finalised, as Country Energy is considering the optimum upgrade for Willmott and for augmenting the longer term electricity demands of the town.

## Gas

There is a major gas pipeline which runs down the middle of the Willmott site, which will be accessed for the mill expansion. Willmott is currently in discussion with Country Energy regarding the provision of the required natural gas supply (primarily to fuel the new boilers).

# 4.5 Site Visits

Site visits were arranged for NSW Government authorities and the Bombala Shire Council on two occasions to review the existing development and identify site issues regarding infrastructure and layout.

### 4.6 Planning Focus Meetings

One of the site visits (4 June 2008) was followed by a planning focus meeting, held at an off-site location in Bombala. The following organisations were represented at the meeting:

- NSW DECCW;
- NSW Department of State and Regional Development;
- NSW DTI;
- Country Energy;
- Country Energy (Gas);
- Forests NSW;
- NSW Department of Premier and Cabinet;
- Bombala Shire Council;
- Willmott Timbers' Joint Venture;
- Willmott Forests;
- Tasco/Dongwha;
- Peter J Ramsay & Associates Pty Ltd; and
- The Fifth Estate.

Issues discussed at the planning focus meeting, which have been comprehended during the EA preparation, included:

- Housing and social infrastructure;
- Traffic movements on local road;
- Water supply and management;
- Air, noise and waste management;
- Cultural heritage;
- Fauna and flora;
- Site contamination; and
- Gas and electricity connection.

In addition to this meeting, Willmott has met separately with representatives of key Government agencies at various times prior to and during the preparation of the EA.

# 4.7 Letterbox Drop

In August 2008, a Bombala Shire-wide letterbox drop was conducted to inform the community of progress with the project proposal and to elicit early feedback on the proposal. Importantly, the community was advised there would be another opportunity for comment at the time of display of the EA, and at any other time.

A feedback email address and GPO Box address were established to receive feedback.

In total, eight written responses were received, which have been comprehended in the final preparation of the EA. Most respondents were supportive of the project and its potential to improve the township and region. The following table summarises feedback received on specific topics and how it has been incorporated into this EA.

Co	omment	Action Taken	EA
			Section(s)
٠	Concerns regarding noise,	Comprehensive noise impact assessment	9
	especially at night	undertaken that includes recommended	
		management actions. Management is	
		incorporated into mill design.	
•	Concerns regarding	Road upgrades suggested are outlined in	8
	increased traffic, especially	traffic report.	
	trucks		

#### Table 8 Incorporation of Community Feedback

Comment	Action Taken	EA
		Section(s)
Consultation – regular	Willmott will keep the community up to date	21
updates requested	with significant progress of the project via a	
	number of channels, including local media	
	and further letterbox drops.	
Traffic – bypass of town	Contemplated in the traffic impact	8
requested	assessment and deemed to not be required	
	for the volumes expected.	
Water runoff – controls	Willmott has invested significant resources	11
requested	into designing appropriate management	
	measures for surface and groundwater.	
Community and tourist	Willmott currently does not have the budget	NA
attraction for the mill and	or time resources available to devote to this	
wider timber industry should	task. Once the facility is operational, this	
be established	concept will be revisited.	

# 4.8 Community Mill Visits

The existing sawmilling facility receives regular visits from the community, including schools, where the operation is explained and community education opportunities are taken up. This has provided an ongoing vehicle for open communication between the site management and the community.

## 4.9 Director-General's Requirements

The Director-General's requirements for the Environmental Assessment have been complied with. The Statement of Completeness (see page vi) indicates which section of this report addresses the assessment requirements.

## 5. EXISTING SITE OPERATIONS

#### 5.1 Site Details

The project site is in Bombala in south-east NSW (refer to the locality map shown in Figure D3).

#### 5.1.1 Location and Surrounding Land Use

The land the subject of this development proposal is located between Sandy Lane, Delegate Road and Wedmore Road. The map coordinates of this location are approximately 36° 55' 40" South and 149° 12' 52" East. The site is shown in the aerial photograph in Figure D4. This shows the existing operation, and the adjacent undeveloped block which is the proposed expansion site. The expanded operations will also utilise the existing site.

The existing land use at the site is softwood sawmilling and value-adding processing. The surrounding land use is mixed rural, comprising grazing, cultivation and plantation forestry.

The existing mill is approximately 2 km from the built-up margin of the township of Bombala. An aerial photograph showing the township of Bombala in relation to the site is shown in Figure D5. The existing nearby sensitive receiver is a residence, The Parsonage, which is situated approximately 700 m to the north-east of the new sawmill site and approximately 275 m from the mill site boundary, atop a knoll.

Stormwater run-off from the site is separated into two catchments. Stormwater from the northern portion of the site would naturally drain into Parsonage Creek, which is located approximately 120 m to the north of the site. Stormwater from the southern portion of the site would naturally collect in a drainage line that ultimately flows into Saucy Creek, which is located approximately 650 m west of the site.

Under the existing hydrological regime, stormwater from the southern portion of the existing site drains into a large pond, which is known as the Southern Pond. Surface water runoff from the existing northern portion of the site is collected in a pond known as the Northern Pond. An aerial photograph showing the regional geography, topography and surface water drainage is provided in Figure D6.

Due to the proposed mill expansion, the neighbouring residence to the south-west of the site, called Trevanion will be the closest sensitive receiver. This residence is located approximately 600 m from the expansion site, and approximately 175 m from the site boundary.

The surrounding land is cultivated and/or disturbed farmland, with only a few instances of native trees (regrowth). A map showing the nearest neighbours and their distances from the mill expansion site is provided in Figure D7.

# 5.1.2 Title Details and Zoning

The land subject to this project application is owned by Willmott, and its title details are:

- Lot 2 DP-1016573 in the Parish of Bombala, County of Wellesley; and
- Lot 27 DP-1061792 at Lords Hill in the Parish of Bombala, County of Wellesley.

All lots are in the Bombala Local Government Area.

The subject land is zoned 1(a) Rural Zone under the Bombala Local Environmental Plan 1990. The objects of this zoning are:

- a) to enable the continuation of traditional forms of rural land use and occupation and the development of new or changed forms of agricultural enterprise,
- b) to enable other forms of development which are associated with rural activity, which require an isolated or rural location, or which support tourism, and
- c) to ensure that the type and intensity of development is appropriate in relation to the characteristics of the land, the rural environment, the need to protect agricultural activity from the effects of other development and the costs of providing public services and amenities.

The development is permitted under the LEP, with consent. However, as noted earlier, the project will be assessed under Part 3A of the EPA Act.

## 5.2 Existing Operations

5.2.1 Mill Facilities

The major components of the existing mill are outlined in Table 9. The current site layout is shown in Figure D8.

The existing mill operations comprise log merchandising and pole production, greenmill processing operations, kiln or steam autoclave drying of timber and timber preservation. The timber preservation uses copper chrome arsenate (CCA) solution, applied under vacuum in the pressure vessel housed at the treatment area. Only milled and planed timber is treated at the site, and no treated timber is subject to milling. The timber processed at the mill is radiata pine.

Facility	Description of Operation
Log merchandiser	Sorts logs entering the site into suitable sizes
Gibson sawmill with	Logs are fed into the sawmill where they are sawn into appropriate
infeed and green chain	sizes
Paling mill	Logs are sawn into fence palings
Rounder machines x 3	Logs are processed to produce round poles
Profile moulder	Sawn timber is processed into planned profiled timber
Slab moulder	Rounded poles are processed into slab products
Morrow wood fired boiler	Boiler produces heat and steam used to dry timber
Windsor kiln x 2	Kilns take untreated timber to remove excess water
Steaming cylinder x 2	Boiler steam used to explode timber cells to aid in the CCA treatment
	process
Treatment plant	Preservative chemical (usually CCA) applied to timber under
	pressure. Timber is left so that the chemical can "fix" within the
	timber, then it is transferred to the product despatch preparation area
Maintenance shed	Houses maintenance machinery, spare parts and workshops
Packing shed	Shed where finished product is wrapped and prepared for transport
	to customers
Offices	Offices primarily consist of demountable buildings
Amenities block	Washroom facilities
Weighbridge	Weighs trucks entering and exiting the site to determine their load
Fire ring main (including	Provides site operators with the equipment to fight fires on site.
two water storage tanks)	Further information provided in the Fire Management Plan for the
	site (refer to Section 20).
Diesel and petrol	Fuel storage tanks for onsite vehicles
underground storage	
tanks	

### Table 9 List of Existing Mill Facilities and Operations

#### 5.2.2 Utilities

Electricity on site is delivered via the main electricity grid. The mill currently uses around 7.8 MWh per year. A wood-fired boiler provides some thermal energy.

Water is purchased from the Bombala town mains system. The mill currently uses around 24 ML per year.

The main stormwater infrastructure is the two ponds: the southern and northern ponds, as shown on the site plan in Figure D9. The southern pond captures the stormwater runoff from the site, whereas the northern pond captures runoff from the finished product stockyard. Water from the northern pond is also re-used in the treatment process.

# 5.2.3 Environment Protection Licence

The current mill operations are covered by an Environment Protection Licence (EPL) under Section 55 of the POEO Act. Key details of the EPL are shown below.

Licence Details
Number: 11205
Anniversary Date: 3 May
Review Due Date: 24 December 2008 (but deferred pending this application)

Scheduled Activity Waste Activities Wood Preservation Works Wood or Timber Milling or Processing Works

Fee Based Activity Scale		
Wood or Timber Milling (86)	> 50 000 - 100 000 m <sup>3</sup> processed	
Wood Preservation (87)	> 10 000 - 30 000 m <sup>3</sup> produced	
Hazardous, Industrial or Group	A Waste Generation or Storage (73):	0 - 10 tonnes

Various environmental controls are in place for the site, including:

- Soil monitoring;
- Water quality monitoring;
- Groundwater quality monitoring;
- Waste disposal restrictions;
- Noise limits; and
- Regular chemical "fixation" tests (to ensure the treatment chemical is contained in the timber before leaving the plant).

Water and land monitoring requirements include testing of the following chemicals at various locations, either quarterly or annually:

• Arsenic;

- Chromium (hexavalent);
- Chromium (total);
- Copper; and
- Total copper.

The existing controls are currently being reviewed by the DECCW, and as part of this process the mill expansion is also being discussed. The next stage of this process will be to confirm the monitoring and reporting requirements for the proposed mill, consistent with the detailed information in Section 20.3 of this EA on environmental monitoring.

A new EPL will be required, which will encompass the whole site. Specific provision will be made in the EPL for transitional management of existing site environmental issues.

## 5.3 Environmental Management and Monitoring

Under the conditions of the EPL for the site, Willmott is required to undertake soil, groundwater and surface water monitoring at specified locations. The results of the monitoring are provided to DECCW for their review in the Annual Return. More detailed assessments of the soil and groundwater at the site were also undertaken in 2001 and 2002. Peter J Ramsay & Associates also performed surface water monitoring at the site in May 2009. These assessments and the monitoring results are discussed in the following sections.

Willmott also generates wastewater and a number of other waste and by-product streams at the site. These are managed on-site or disposed of off-site in accordance with the site waste procedures, as discussed in Section 12.

### 5.3.1 Soil

Soil sampling was first undertaken at the existing site in November 2001 to identify potential soil contamination issues. Soil samples were retrieved from 53 sample locations across the site and the samples were analysed for arsenic, chromium and copper. The results of the soil sampling program identified elevated arsenic concentrations above the relevant health-based guidelines for an industrial land use in the near surface soil in the vicinity of the CCA treatment area in the central portion of the site. The contaminant concentrations in the soil in the remaining areas of the site were below the relevant health-based criteria for an industrial land use.

A supplementary environmental site assessment was subsequently performed at the site in July 2002. This involved soil sampling from seven borehole locations positioned across the site, including two locations in the vicinity of the CCA treatment area. The analytical results for the soil samples were generally consistent with the results of the previous assessment, which confirmed that the soil contamination was localised to the vicinity of the CCA treatment area in the central portion of the site.

Soil sampling has not been performed in the vicinity of the diesel and petrol underground storage tanks at the site. As well, a small area in the west of the site has historically, and prior to Willmott's occupation of the site, been used as a rubbish dump. Sections of a concrete tank are partially exposed at this landfill location.

Soil monitoring has subsequently been undertaken at the site on a quarterly basis since January 2002 in accordance with the EPL. The soil sampling is undertaken from four locations in the vicinity of the CCA treatment area in the central portion of the site. The arsenic, chromium and copper soil concentrations are generally of a similar magnitude to those measured during the November 2001 sampling program, although the results do show significant seasonal fluctuations.

The analytical data from the 2007 monitoring period show that the contaminant levels in the near surface soil are low and below the health-based investigation levels. This indicates that the contaminants are likely to have leached deeper into the soil profile. In view of the low levels in the near surface soil, exposure to the contamination is unlikely to occur for an industrial land use. Therefore, there is considered that there would be no Duty to Report the contamination to DECCW in accordance with the CLM Act.

## 5.3.2 Groundwater

A total of 11 groundwater monitoring wells have been installed at the site, including seven groundwater monitoring wells which were installed in June 2002 and four additional wells installed in August 2003. These were positioned at various locations across the site, including four groundwater monitoring wells in the immediate vicinity of the CCA treatment area in the central portion of the site. The groundwater monitoring wells were surveyed for their surface elevation to determine the groundwater flow direction. The groundwater was inferred to be flowing in both northerly and southerly directions from the ridge where the main CCA treatment area is located. This groundwater flow regime is consistent with the surface topography.

The initial groundwater monitoring episode of October 2002 identified elevated arsenic, chromium (VI), chromium (III) and copper concentrations in the groundwater monitoring wells located in the vicinity of the CCA treatment area. The arsenic, chromium and copper concentrations in the remaining groundwater wells at the site were either below detection limit or below the relevant guideline values for the protection of aquatic ecosystems. Variably elevated levels of zinc and nickel were also identified in the groundwater. However, as these are not identified contaminants of the site these were considered to be related to elevated natural background conditions.

Since October 2002 groundwater monitoring of the contaminant plume has been undertaken on an approximate annual basis in accordance with EPL 11205. The groundwater monitoring results show that the arsenic, chromium and copper contaminant plume is migrating from the central portion of the site toward both the north and the south. The chromium (VI) contamination is localised to the general vicinity of the CCA treatment area in the central portion of the site. The chromium (VI) concentrations have generally shown a decrease in concentration overtime, although elevated levels were measured during the July 2006 monitoring episode.

The down-gradient monitoring wells indicate that the plume has reached the northern boundary of the site at levels above the guideline values for the protection of aquatic ecosystems; however, it is noted that these guidelines apply at the point of discharge into the nearest receiving environment. It is also noted that chromium (VI) was not detected in the down-gradient wells, which indicates that the chromium (VI) is being reduced in the natural environment to the less toxic chromium (III).

In July 2002 Coffey Geosciences performed an evaluation of the potential for a significant risk of harm to occur to human health and other aspects of the environment in accordance with the *Contaminant Land Management Act 1997*. Based on Coffey's evaluation it was considered that the soil and groundwater contamination would not present a significant risk of harm under the present land use scenario. There is, however, potential for a significant risk of harm to occur should the land use change to a more sensitive use, such as residential use, which is not proposed by Willmott.

In view of this, it is also considered that there would be no Duty to Report the contamination to DECCW in accordance with the CLM Act.

#### 5.3.3 Wastewater and Surface Water Management

Wastewater is produced from the following sources at the existing Bombala site:

- Run off from the northern end of the site comprises stormwater from the finished product storage areas and other non-processing areas at the mill. The water flows through an intercept pond to remove sediment before being discharged to the on-site northern pond. In dry weather water from this pond is used to control dust in the mill yard and roadways. It is also sometimes used to top-up the timber treatment process water.
- Wastewater from the boiler and kiln area, from the sawmill (where small volumes of water are used for coolant), from the log yard and from the residue stockpile area – this is collected in the drainage system on the southern end of the site. This water carries leachate and condensate from the steamers and kilns and can from time to time contain high levels of organic matter together with solid particles from the log yard and stockpile area. The collected wastewater is led to the southern pond which also accepts water from the surrounding catchment area.

The current mill Wastewater Management Plan outlines the potential impacts and measures taken to prevent contamination of the soil and groundwater at the site, including from wastewater. All elements of the plan are intended to comply with EPL for the site.

The southern storage pond has a storage capacity of 6 300 m<sup>3</sup>. A water level indicator is installed and the volume of water is managed if necessary. No evidence of leachate or other contaminants have been detected in the downstream gullies or ponds.

Surface water monitoring is performed on a quarterly basis at five locations in the northern portion of the site, in accordance with the EPL. These include the sedimentation pond and associated inlets and outlet, and the northern pond. It is noted the monitoring has not been historically undertaken at the southern pond which collects and stores wastewater, although the monitoring was undertaken at the southern pond in May 2009.

The analytical results for the samples retrieved from the northern pond show that variably elevated arsenic, chromium and copper concentrations above the guidelines for the protection of aquatic ecosystems have been measured in all of the surface samples from this location. Chromium (VI) has also been detected on several occasions in the sedimentation pond. Apart from chromium (VI), the surface water concentrations are higher than those measured in the groundwater. The highest arsenic, total chromium and copper concentrations typically occur in the sedimentation pond. The south-eastern inlet to the pond, which receives surface water from the central portion of the site, also shows elevated metal concentrations. The lowest concentrations have been measured in the northern pond, which receives runoff from the sedimentation pond and surrounding area. These results are consistent with those from Peter J Ramsay & Associates' monitoring undertaken in May 2009.

During the May 2009 surface water monitoring episode performed by Peter J Ramsay & Associates, surface water samples were retrieved from four locations in the southern pond, three locations in the northern pond, and one sample of steamer/kiln condensate. All of the surface water samples were impacted by CCA contamination. The presence of CCA in the northern and southern ponds is attributed to surface water runoff from existing areas of CCA contamination. Although the CCA concentrations were above the guideline values for the protection of aquatic ecosystems, it was noted that all surface water runoff is currently contained on-site and therefore there is negligible potential for off-site impacts.

The steamer/kiln condensate, which ultimately is discharged into the southern pond, was characterised by elevated TDS and organic carbon concentrations, and a slightly acidic pH. The steamer/kiln condensate also contains CCA contamination which is understood to be associated with the redrying of CCA treated timber in the kilns.

The surface water from the southern pond was also characterised by a high organic carbon content, which is attributed to the inflow of organic laden steamer/kiln condensate and surface water runoff from the stockpiles of wood chips. The southern pond is also characterised by high iron, ammonia and methane concentrations, which are a function of the strongly reducing conditions in the pond. Apart from elevated CCA concentrations, the northern pond is uncontaminated with organic carbon.

The southern pond and pipework/channel drainage system which drains the wastewater to the pond, was constructed by the previous site occupant. The drainage system is not ideal, as it channels the wastewater through the sawdust stockpiles, adding to the organic load in the pond. The pond can also be odorous at close proximity and downwind. These issues will be rectified during the proposed expansion of the facility.

#### 5.3.4 Waste and By-product Management

As part of the overall environmental management of the Sandy Lane site, Willmott has recognised the need to separate and manage the solid timber that is generated on-site. The company's approach to the processing of raw materials has allowed the development of a viable and strong residue stream market that sees the majority of untreated timber and bark processed into a manageable and marketable product.

A number of waste and by-product streams are generated by the existing mill operations and are summarised in Table 10. The handling and disposal of these streams is detailed in two draft waste management procedures; the Waste/By-product Streams Procedure and the Solid Timber Waste Procedure. These procedures will be updated to include the changes resulting from the proposed mill.

Classification	Waste/By-product	Waste Description/Source
	Streams	
Liquid Waste	Waste oil	Waste gear and engine oils
		generated by maintenance operations
	Process effluent	Steamer/kiln condensate from pole
		preparation
General Solid Wastes	General garbage	General domestic waste
(Putrescible)		
Hazardous waste	Hazardous wastes	Mixture of sawdust, soil and CCA
		from the timber treatment operations
	Damaged treated timber	Treated pine from treatment
		operations
General Solid Wastes	Untreated timber off cuts	Untreated pine from greenmill and
(Non-Putrescible)	and damaged boards	kilns
	Residue materials	Bark, pole waste, sawdust and chip
	Used steel strap	Steel packaging strap from finished
		product
	Rounder waste (shavings)	Pine shavings from rounding process

Table 10 Summary of Wastes Generated by Existing Mill

The hazardous wastes, waste oil and steel scrap are collected for disposal by external waste contractors. The remaining waste streams/by-products are handled by Willmott.

The by-product streams generated at the existing site are the stockpiles of wood chipped sub-specification untreated timber product, bark and other residue materials. These materials are the key visible waste/by-product streams at the site, and are stored in the southern half of the existing site. These materials are progressively being further processed and removed from the site for reuse as garden mulch and other products. This will be discussed in detail in Section 12.6.

Details on the management of the waste and by-product streams that will be generated at the proposed mill operations are provided in Section 12.

## 6. PROPOSED MILL EXPANSION

#### 6.1 Key Strategic Issues

Two key strategic issues affect the project site; these are resource location and traffic routes.

#### 6.1.1 Resource Location

The main softwood plantation areas which will provide raw timber for the proposed mill are south of the mill. The plantations and the main traffic routes to the mill are shown in Figure D1.

### 6.1.2 Main Traffic Routes

With the main sources of timber lying to the south of the mill, the number of log trucks needing to pass through the town of Bombala will be minimised.

Finished products will be transported to markets in all States along the length of the eastern seaboard, and the Australian Capital Territory. Further detail on the anticipated truck movements is provided in Section 8.

### 6.2 Products

The key goal of the expansion is to utilise the resource more effectively by maximising production of high-value-added products.

In addition to an overall increase in products, from 106,000 tpa of log inputs to 400,000 tpa, another advantage of the proposal is that it allows for expansion into a broader range of value-added products, thus ensuring the profitability and sustainability of the venture. The planned key products are:

- Decking;
- Treated appearance grade;
- Treated structural grade;
- Sleepers;
- Palings;
- Poles;
- Untreated kiln dried appearance and structural; and
- Other (including case).

### 6.3 Proposed Mill Components

The key functions of the proposed mill are sawmilling and pole production. This will build on the existing capacities of the current operations on the site. The mill's expansion will be undertaken with the existing mill operating during the construction of the expanded section.

For the proposed mill, power will continue to be delivered via the main electricity grid. The expansion will also use natural gas from the main pipeline which runs between the existing and proposed sites. Water will continue to be taken from the mains system.

The following descriptions relate to the proposed mill components shown in Figure D9.

#### 6.3.1 Bark-on Log Storage

The storage area of around 1 ha provides for the delivery of logs to the mill by trucks. Delivered logs are pre-sorted for quality into log classes and length in the forest. These logs are stored on hard-stand areas prior to being separated into individual logs (singulated), scanned and sorted for further processing.

## 6.3.2 Debarker and Log Sorter

The debarker and log sorter takes up around 2.2 ha of the site, and is where logs are sorted and stored before being processed in the green mill. Logs are loaded by wheeled loader from the bark-on log storage area onto a log deck from which they will be singulated and dimensionally 3D scanned for diameter, sweep and length. Debarking and log sorting operations are undertaken on a concreted area, and the debarking operations are undertaken in a fully-enclosed building. Following scanning, the singulated logs are then conveyed to either of the following sections:

- Suitably dimensioned logs can be processed directly through a log debarking system to remove the bark and subject to log quality reduce "butt flare" and or other dimensional abnormalities from which they are conveyed directly to the green saw line; or
- Logs can be directed complete with bark on into a sorting system comprising up to 14 sorting bins where they are batch sorted for both grade and dimension. Accumulated logs are removed by wheeled loader from the sorting bins and placed into storage rows for re-entry into the debarking and sawline facility, when required. The scanning and sorting process also identifies and rejects logs not suitable for processing (outside the wood supply agreement specification).

#### 6.3.3 Greenmill

Following the debarking process, logs are then processed through the greenmill where they are again 3D scanned and are passed through a number of chipping and sawing processes. The logs are sawn into a number of predetermined timber sectional dimensions and product classes to maximize the value of output. Following the sawing process, the "green sawn" boards are singulated, scanned for dimension and grade with each board being optimised for maximum value. They then pass through a length trimmer consisting of up to 21 saws at 300 mm centres where they are trimmed as required.

Following trimming, boards are sorted into bins according to either dimensional or grade properties where they are accumulated to a preset number according to the required finished pack size. Once the piece counts have been achieved, the boards are then lowered from and out of the bins onto takeaway chains where they are again singulated, positioned into layers and automatically stacked according to a pre determined pack size into either block or stickered packs subject to the necessity to kiln dry. The stacks are then removed by forklift and placed into "green storage" awaiting further processing.

The sawmill also produces bark, woodchips and sawdust that are conveyed and directed into a separate and partially enclosed storage area adjacent to the sawline, from here it is removed by wheeled loader into trucks for dispatch off-site for sale.

### 6.3.4 Treatment Plant

Timber will be treated with CCA solution or Alkaline Copper Quaternary (ACQ) solution within the two treatment vessels in the treatment plant. The southern portion of the treatment plant includes an undercover and bunded concrete area for assembly of timber prior to and after treatment, storage tanks for chemicals and water, and the treatment vessels. The undercover section of the treatment plant is designed with a slope to enable water and chemicals to run into the sumps for recycling back into the treatment process.

The entire treatment facility is contained within a bunded area to prevent any chemicals leaving the area. Chemicals stored at the northern end of the treatment plant include: four 65,000 L CCA tanks, two 65,000 L ACQ tank, one 22,500 L ACQ tank and one 17,000 L chemical tank. The chemical tanks supply chemical directly to the treatment vessels. The treatment vessels are large pressure plants in which the timber is placed and treatment is applied under vacuum.

Once the treatment process has been completed, the finished packs are then stored within the treatment plant area until the chemical fixation process is complete and free from residual matter. Following this the treated timber is transferred to the after treatment storage area ready for redrying. Decking, treated appearance grade and treated structural grade products are redried in the redrying kilns after the treatment process until the target moisture content is achieved. The treated timber product is then blocked and packed ready for dispatch. Paling, sleeper and pole products are packed for storage and dispatch after the treatment process for sale off-site, and no redrying is necessary.

#### 6.3.5 Boiler and Kiln Plant, Steamers and Dry Storage Building

The boiler and kiln is where green timber and treated timber are dried in kilns to lower its moisture content. The proposed expansion will include two heat plants (each comprising a number of kilns and boilers), a GOS heat plant on the new site for green timber and a redry heat plant on the existing site for treated timber. They generate steam and hot water used to provide heat to the kilns.

The proposed number, type and location of the boilers and kilns is shown in Table 11. The steam/hot water generated by the boilers is then delivered to the kilns via pipes that are placed in front of large fans which distribute the heat throughout the kiln in which the timber is placed. There will be up to 10 kilns which are insulated buildings capable of holding around 40-50 m<sup>3</sup> of timber.

In the GOS kilns, when the target moisture content is reached, the timber is ready to be machined to its final dimensions. The dry storage building provides storage of the dried timber before being passed to the dry mill for further processing. The GOS heat plant will consist of two hot water boilers and six kilns.

Timber that has been treated and requires redrying is transferred to the redry kilns. Once the target moisture has been achieved, the treated timber will be blocked and packed ready for dispatch, no further planing of the dried treated timber will be undertaken. The redry heat plant will consist of two steam boilers and four kilns.

The steamers utilise pressure and temperature to condition the poles and sleepers by adding moisture to the wood prior to treatment. Only untreated poles and sleepers will be conditioned in the steamers.

## Table 11 Boilers and Kilns

	Type and size		Number and size
Boilers			
Boiler 1	Gas fired (new)		1 x 10 MW
Boiler 2	Gas fired (relocated)		1 x 3.5 MW
Boiler 3	Wood fired (existing)		1 x 2.5 MW
Boiler 4	Gas fired (new)		1 x 10 MW
Kilns			
Kiln 1, 3, 4, 5 and 6	Hot water (new)		5 x 50 m <sup>3</sup>
Kiln 2	Hot water (relocated)		1 x 50 m <sup>3</sup>
Kiln 7 and 8	Steam (existing)		2 x 50 m <sup>3</sup>
Kiln 9 and 10	Steam (relocated)		2 x 50 m <sup>3</sup>
Steamers			
Steamer 1	Steamer (existing)		1 x 34 m <sup>3</sup>
Steamer 2	Steamer (new	or	1 x 34 m <sup>3</sup>
	reconditioned)		

#### 6.3.6 Dry Mill (Planer Mill) and Sticking Plant

The dry mill building will be located on the eastern portion of the site and receives sawn kiln-dried timber. This is where some of the kiln dried sawn timber is processed into product ready for treatment and redrying. The dry mill houses a planer that profiles the timber into the exact dimensions ready for its application, for example structural, decking or lining timber, and only untreated timber is planed in the dry mill. After planing, the timber is either treated (if required), or packed for sale. If treated, it is returned to the sticking plant, and has spacing sticks inserted to aid in the kiln drying process. After drying, the timber is desticked, stacked, strapped and wrapped in this area ready for dispatch.

### 6.3.7 Pole Plant

Pole processing operation begins at log sorting in the log yard to separate into diameter classes, stored and then each diameter class is put through the mill as a batch. The poles then pass through the secondary infeed deck, through the debarker, and then through the sawline. Once cut and treated, the poles enter separate handling equipment for stacking and packing. The poles remain in the bundled form and are transferred to the steamer, and then into the treatment plant for preservation. Once the chemicals are fixed, the bundles are stored in dispatch and loaded.

## 6.3.8 Residue Bunkers

Butt reducer waste, pole waste, bark, chip and sawdust generated in the sawmill falls onto conveyors and is transported to separate external, semi-enclosed storage bunkers (six in total, two for chip). The storage bunkers allow for loading of trucks for transport to markets.

## 6.4 Site Infrastructure

The original mill development provides the essential infrastructure and services required for the expanded plant. These comprise, in particular, electricity, gas, water, communications and transport networks.

## 6.4.1 Site Layout and Access

Access to the site will be off the Delegate Bombala Road at Sandy Lane. Sandy Lane is sealed to the entrance of the mill. An entrance on Sandy Lane will be utilised for the proposed mill for staff (light) vehicles only. Willmott proposes to construct an additional access point onto the Delegate Bombala Road. The additional access point is designed such that heavy vehicles enter at one point and exit at another, which ensures trucks will not turn across the paths of other mill related trucks upon either entering or exiting. This provides inherent safety enhancement attributes for the trucks as well as non-mill related traffic. Further information on the intersection design is provided in the Traffic Impact Assessment (refer to Section 8).

#### 6.4.2 Utilities

The utility requirements for the site are as follows:

Detail
An upgrade to the mill power supply (including the existing mill site) is
required to supply the required 49 GWh per annum (approximately). The
infrastructure upgrade will take place under a separate approval.
The mill gas requirements of 519,000 GJ (max) can be supplied by Country
Energy from the existing gas pipeline that traverses the mill site.
Telecommunications are already available at the site (existing mill) via the
Telstra network. Augmentation of the on-site cable network will be required
to handle the additional traffic.
The existing septic systems will be replaced with a new septic tank and
black water dispersion recycling system.

Infrastructure	Detail
Component	
Water	Refer to Section 6.9

## 6.4.2.1 Electricity Connection

The current infrastructure to deliver power to the mill requires an upgrade to enable the site to receive sufficient electricity.

In addition, as part of its continuous improvement, Willmott will investigate the ability of renewable energy sources to augment its requirements. Options include cogeneration or slow pyrolysis technologies, both of which would utilise the sawmill residues on or near the site. Any further infrastructure would be the subject of further development approvals with the necessary authority.

## 6.5 Transition and Construction Works

As various components of the proposed mill enter production, corresponding components of the existing mill will be decommissioned, if applicable. It should be noted that the exact timing of implementation of the site transition may vary. In this context, this transition plan is indicative of the "best case" transition between the existing approved operation and the new, consolidated site operations.

Key components of the transition will include:

- Phase out of existing operating plant as the components of the new mill are commissioned and production ramped up; and
- Commitments to manage environmental legacy issues arising from historical operations on the existing site.

The existing operations include a sawmill, posts and pole rounder plant and associated treatment and drying plant. The new sawmill and associated processing operations will replace all of the existing operations. The sawline (green sawing) will be built on land adjacent to the existing operations. It will incorporate post and pole production within the sawline. The log yard for the new sawline will be constructed at one end of the sawmill on the land adjacent to the existing mill site. Six additional kilns with an associated boiler will also be built in the GOS area together with green sawn storage. An additional two kilns to be installed alongside the existing two kilns which will be retained in the redry area.

A dry mill will be built on the existing site and a new treatment plant will be constructed at a location close to the existing treatment plant. The existing demountable offices will be relocated and utilised at the new site, until new permanent facilities replace them, as shown on the final site layout.

The existing plant to be utilised as part of the new mill project includes a shed, the waste wood boiler, two kilns and one steamer tube.

# 6.5.1 Phase Out of Existing Operations

It is proposed that the existing operations will continue and will be phased out of production as the new sawmill and associated processing operations are commissioned and expanded to full production capacity. The transition will allow components of the existing mill to be closed down during the first two full years of commercial production of the new mill.

The proposed timing for mill construction and phase out of existing operations by major mill components is shown in Table 12.

Stage	Transitional Works	Proposed Activities
_	Commenced	
Year 1 -	Clear existing chip storage area in	Installation of an interim debarker
Stage 1	the south-east corner of the site	Relocation of the existing wood residue stockpiles and mulch for sale
		Construction of berm around southern pond and construction of Pond 2
Year 1 -	Clear existing site	Earthworks in north-eastern corner of site
Stage 2		Construction of acoustic barrier on Sandy Lane
		Relocation of offices, workshop and dispatch building
		Demolish diesel tank and GI shed
		<ul> <li>Power supply and commence water system works including sewerage works</li> </ul>
Year 1 -	Develop eastern portion (existing	Earthworks on the eastern portion (existing site)
Stage 3	site area) of the mill site for dry	Water piping on the eastern portion of the site
	mill and treatment plant	Installation of new power supply
		Relocation of dry mill from Geelong
		Demolition of existing treatment plant and construction of new treatment plant
		Commence operation of new dry mill and treatment plant
Year 1 -	Develop new western portion of	Earthworks on the western portion of the site
Stage 4	site	Construction of Pond 1
		Continue installation of power supply and installation of gas and water
		Continue water piping on the western portion of the site
		Construction of acoustic barrier in southern portion of site
		Construction of green mill and materials handling building
		Installation of new Boiler 1 and two kilns
		Road and paving works

# Table 12Proposed Transition Activities and Plan

Stage	Transitional Works	Proposed Activities
	Commenced	
Year 1 -	Develop the remainder of the	Construction of weighbridge and demolition of merchandising building
Stage 5	eastern portion of the site	<ul> <li>Installation of fuel feed system for Boiler 3 (existing), demolition of existing fuel feed for Boiler 3</li> </ul>
		<ul> <li>Installation of new Boiler 4, one kiln and replacement of existing steamers</li> </ul>
		Demolition of existing sawline equipment and section of the building
		Construct wetlands for surface water (wastewater and stormwater) system
		Continue road and paving works
Year 2	Develop new expanded plant	Relocation of Boiler 2 from Geelong and installation of two kilns
		Construction of kiln dried storage building
		Remediation of southern pond
Year 3	Develop new expanded plant	Installation of one kiln
		Construction of storage building and tilt hoist
Year 4	Develop new expanded plant	Installation of two kilns
		Demolition of existing offices and construction of new offices

## 6.5.1.1 Management of Legacy Environmental Issues

The transition process will ensure that environmental issues associated with the existing site are addressed. The soil, groundwater and surface water management strategies in Section 11 and the Draft Statement of Commitments (Section 21) will ensure that the existing site issues are addressed prior to and during the expansion. A construction management plan will be in place for the works to manage environmental as well as potential health and safety issues associated with the existing site condition and construction works.

The key environmental issues to be addressed at the existing site, include the remediation of contaminated soils at the current CCA treatment plant during construction of the new treatment plant and implementation of an improved surface water and wastewater management system (refer to Section 11).

#### 6.6 Operating Hours and Workforce

The required operating hours for the various mill components are shown in Table 13.

Area of plant	Proposed Operating Hours	
Log yard	6am – 10pm	6 days
Green mill	6am – 10pm	6 days
Planer and Sticking Mill	24 hours	6 days
Kilns and boilers	24 hours	7 days
Treatment Plant	24 hours	7 days
Dispatch of product	6am – 10pm	6 days
Dispatch of residues	24 hours	6 days

Table 13 Proposed Hours of Operation

After proposed mill expansion, the number of employees at the site (excluding harvest and transport) will increase from 71 people to 94 people at full production.

### 6.7 Traffic and Transportation

On average there are currently 35 two-way daily truck traffic movements generated by the Willmott facility. This includes delivery of logs and chemicals and dispatch of finished products, residues and waste.
The road network surrounding the site consists of Delegate Bombala Road to the north and Benlady Lane and Sandy Lane to the east. Bombala Delegate Road and Benlady Lane provide access to Monaro Highway, located to the east of the site. Heavy vehicles only access the wider road network via Sandy Lane and the Delegate Bombala Road.

The existing actual truck movements and the estimated truck movements at full production are presented in Table 14.

#### Table 14 Two Way Truck Movements – Existing Actual and Estimated

	Existing Actual	Estimated Full Production
Two Way Daily Truck Movements	35	92

An assessment of the traffic and transport issues associated with the expansion of the mill is given in Section 8.

## 6.8 Chemical Storage and Usage

The main chemicals stored on the Willmott site are used in the timber preservation treatment area. Due to the increased throughput of the mill's expansion, the quantity of chemicals which will be required in storage will increase.

Some very low quantities of chemicals will also be stored in the workshop, and one chemical in the boiler area.

A list of the chemicals used on site is provided in Table 15.

Substance	Un No.	CAS	Dangerous	A.r.o.o.	Average
Description	MSDS	Number	Goods Class	Alea	Stored
Sarmix Oxcell	2922	7778-39-4	8	Treatment	25,000 L @
		1333-82-0		Plant	60% conc.
		1317-38-0			60,000 L @
		7732-18-5			1.1% w/v
					60,000 L @
					1.8% w/v
ACQ Type D	2922	141-43-5	8	Treatment	12,000 L @
[check if still		7173-51-5		Plant	15% conc.
same]		7732-18-5			55,000 L @
		12069-69-1			0.7% w/v
Determite Timber	NA	64742-94-5	NA	Treatment	6 000 L
Framing Solution		82657-04-3		Plant	
		7732-18-5			
Kathon WT	2922	10377-60-3	N/A	Treatment	100 L
		55965-84-9		Store	
Spirax Sarco	2924	Refer MSDS	3	Boiler Area	30 L
Sigma 1					
(corrosion					
inhibitor)					
Methylated spirits	1170	Refer MSDS	3	Workshop	4 L
Mineral Turpentine	1300	Refer MSDS	3	Workshop	20 L
Plaskem solvent	1210	107-98-2	3	Workshop	250 mL
		64-17-5			
Valvoline G-05	N/A	107-21-1	N/A	Workshop	205 L
coolant					
WD 40	N/A	8052-41-3	N/A	Workshop	20 L
		64742-65-0			
LPG	1075	Refer MSDS	2 – 1	Workshop	60 kg
Diesel	1268	68334-30-5	3	Fuel Bund	10,000 L

Table 15 List of Chemicals

A Preliminary Hazard Analysis (PHA) was undertaken for the mill expansion project. This was undertaken at intermediate phases of the project design to enable the findings to be implemented.

The key elements of chemical storage design have been developed with hazard and risk attenuation in mind. These are:

- All chemical storage tanks will be based on a sealed (concrete) surface;
- Areas of treatment and storage of chemicals will be fully bunded to contain a spill, also taking into account additional height in case of a coincident storm event;
- Procedures relating to hazardous goods handling will be developed, and staff will be trained to follow them; and
- Cross-contamination from delivery trucks and onsite transport (such as forklifts) will be avoided with the implementation of a system of dedicated, quarantined vehicles in the bunded treatment plant area.

The chemical supply company, Osmose, has been involved in many timber treatment projects in Australia and overseas. Details of "best practice" chemical storage systems and processes provided by the supplier have formed the basis of the Willmott chemical storage design.

The site will update its Dangerous Goods Licence with WorkCover prior to the commissioning of the expansion.

# 6.9 Water Supply, Usage and Reuse

At present the site has a potable water requirement of approximately 24 ML/yr which is sourced from Bombala Council's town supply. In addition, approximately 3 ML/yr from the northern catchment pond are used around the yard for dust suppression.

The water requirements for the expanded mill have been evaluated by Willmott and its equipment suppliers, which are described in Table 16. The maximum total water requirement after Year 4 of the redevelopment is 96 ML/yr.

Water Requirement	Av	erage Yearly	Demand (M	L)
Water requirement	Year 1	Year 2	Year 3	Year 4
Green Mill	0.7	0.7	0.7	0.7
Treatment Plant	25.2	30.7	37.1	39.5
GOS Boilers	5.4	7.0	8.8	12.0
Redry Boilers	11.6	13.7	16.0	18.0
Potable Services	2.7	2.8	3.5	4.1
Dust Suppression	6.0	6.0	6.0	6.0
Contingency (20%)	10.3	12.2	14.4	16.0
Sub-Total Requirement	61.9	73.1	86.5	96.3
Less Stormwater Reuse <sup>1</sup>	31.4	31.4	31.4	31.4
Less Minimum Steamer/Kiln Condensate	2.5	3.1	3.7	3.9
(that can potentially be reused) <sup>2</sup>				
Total Water Requirement	28.0	38.6	51.4	61.0

#### Table 16 Water Usage Summary

Note:

Approximately 6ML of stormwater will be used for dust suppression and the remainder will be used in the treatment plant or discharged off-site subject to regular testing.

<sup>2</sup> At least 10% of the water required by the treatment plant can be sourced from steamer/kiln condensate. Potentially 100% of the steamer/kiln condensate (12.2 ML) can be used in the treatment plant. Willmott will trial reuse after commissioning to reduce the total water requirement.

Willmott will source its water primarily from Bombala's mains water supply. Willmott has secured written confirmation from the Council that the necessary quantity of average water per year is available from the mains (see Appendix B). This is available without impacts on domestic users or the hospital. Storage tanks on site have been designed so that they are able to fill overnight during off-peak periods so as to minimise any impact on other users' supply pressures. It was noted that in times of drought-related water shortages, essential human use would take precedence.

In addition, Willmott will continue to explore additional water saving techniques and options to augment the supply from the town mains. These measures are outlined as follows.

#### Maximising Reuse of Onsite Water

The key focus of Willmott's water usage minimisation strategy is to maximise reuse of the process water and harvesting of stormwater in the existing and proposed ponds. By employing maximum reuse, the actual water requirement could potentially be as low as 52.7 ML/yr after Year 4 of the proposed development. This is contingent on the technical feasibility of operating the treatment plant using 100% of the steamer/kilns condensate, which will account for up to 12.2 ML after Year 4 of the redevelopment. The supplier of the treatment chemicals for the treatment plant has confirmed that the treatment plant can safely use at least 10% of recycled water that is sourced from the steamer/kiln condensate (following activated carbon treatment, refer to Section 11.4.4.1) and potentially up to 100% of the steamer/kiln condensate. This will be determined during the initial pilot testing stages of the commissioning of the treatment plant. It is Willmott's objective to use as much recycled water as possible in the treatment plant to reduce demand on the mains water supply.

#### Water Efficiency Measures

In addition to maximising reuse of the condensate, Willmott will continuously investigate other water efficiency measures which will lead to a reduction in the water demand for the mill at an economic level. These could include investigating different site surfacing options which reduce the need for dust suppression, higher efficiency fittings for potable services and capture of vented steam from the kilns.

#### **Bore Water**

Groundwater resources exist in the local area of the mill. If required, Willmott will undertake a hydrological assessment of the area to investigate the nature and size of the aquifer/s, and any impact of harvesting groundwater on other licensed users.

#### Infrastructure Upgrades

Willmott has been advised that the Bombala Council is investigating infrastructure upgrades to augment the existing supply. Such upgrades could include upgrading the Bombala Sewerage Treatment Plant to enable water to be recycled and reused in the mill, raising the height of the Coolumbooka Weir, and dredging of the river. Willmott is supportive of initiatives of the Council to investigate such upgrades and will render assistance with supply specifications and engineering, if required.

In addition to the normal water usage, the alternative sources will be investigated for supplementing the mains supply in times of drought or high domestic use, such as using bore water and increasing the water storage capacity at the site for times where the required mains water cannot be supplied. Technology options will also be explored, including fast pyrolysis.

#### 6.10 Wastewater Generation

The pine wood sawmilling and treatment process at Willmott generate quantities of wastewater, predominantly comprising the steamer/kiln condensate. The water associated with the chemical treatment process will be all recycled and reused. Wastewater is also generated from the sewerage system. Stormwater runoff from the site will also be managed as wastewater to ensure that off-site impacts to the environment do not occur.

Willmott proposes to treat the steamer/kiln condensate and reuse it in the treatment process subject to operational constraints. Should it not be possible to reuse the treated condensate, it will be discharged into the future southern wetland system for further treatment prior to either reuse or off-site discharge (subject to monitoring and licensing). Additionally, stormwater run-off from the site will also be captured and used in the treatment process and for dust suppression. Black water from the sanitary sewer will be irrigated in a subsurface dispersion system. Wastewater management is discussed in detail in Section 11.

Overall, approximately 12.4 ML of surplus wastewater will be generated at the site after Year 4 of the proposed development. Potentially, only 4.1 ML will be generated (associated with sanitary sewer) if 100% of the steamer/kiln condensate (12.2 ML) can be used in the treatment plant instead of 3.9 ML as is currently proposed.

The surplus wastewater that is generated will predominantly be associated with excess water from the steamer/kiln that is not suitable for use in the treatment plant (8.3 ML) plus sewerage (4.1 ML). The sewage is proposed to be irrigated (refer to Section 11.4.3) and the excess steamer/kiln condensate will be discharged into the proposed future wetland system for further treatment (refer to Section 11.4.5).

There is potential to use the water that flowed through the future southern wetland elsewhere on the site as the annual water requirement after Year 4 of 96 ML is well above the surplus water of 8.3 ML that could potentially be reused. In view of this, there is expected to be no need to discharge water off-site. Nonetheless a detailed monitoring program will be implemented to ensure that any off-site discharge will meet licensing requirements and the DECCW's River Flow Objectives and Water Quality Objectives framework.

Wastewater Source		Average Vo	olume (ML/yı	-)
Wastewaler Jource	Year 1	Year 2	Year 3	Year 4
Sanitary sewer	2.7	2.8	3.5	4.1
Process water				
- Steamer / kiln Condensate <sup>1</sup>	8.0	9.0	10.2	12.2
- Blowdown Steam <sup>2</sup>	3.6	4.6	5.8	5.8
Stormwater (yearly average)	31.4	31.4	31.4	31.4
Sub-Total Wastewater Generation	45.7	47.8	50.9	53.5
Less Stormwater Reuse <sup>3</sup>	31.4	31.4	31.4	31.4
Less Minimum Steamer/Kiln Condensate	2.5	3.1	3.7	3.9
that can Potentially be Reused <sup>4</sup>				
Less Blowdown Steam Recirculation	3.6	4.6	5.8	5.8
Net Wastewater Generation⁵	8.2	8.7	10.0	12.4

#### Table 17 Wastewater Summary

Note: <sup>1</sup> Steamer/kiln condensate will be treated and reused, or discharged into future southern wetland for further treatment and potential reuse.

<sup>2</sup> Blowdown steam is uncontaminated and will be reused in steamers.

3 Assumes all stormwater will be reused.

<sup>4</sup> At least 10% of the water required by the treatment plant can be sourced from steamer/kiln condensate. Potentially 100% of the steamer/kiln condensate (12.2 ML) can be used in the treatment plant. This would reduce the total water requirement correspondingly.

Conservatively assumes that only 10% of water required by the treatment plant can be sourced from the steamer/kiln condensate.

#### 6.11 Water Storage

Surface water will be stored in three ponds at the site. These include the existing northern pond and two new storage ponds that will be constructed in the north-western (Pond 1) and south-western (Pond 2) portions of the site (see Figure D9).

The existing northern pond will receive runoff from the treated timber storage areas and could potentially have some minor CCA contamination. This water will be reused back in the treatment plant.

Pond 1 will receive drainage from the unsorted log storage area and the south-eastern pond will receive water from the green in-stick storage and kiln dried storage areas. The water in this pond is expected to be uncontaminated and is proposed to be reused for the new kilns and also for dust suppression.

Pond 2 will be constructed down-gradient of a future permanent wetland that will be constructed in the southern portion of the site to replace the existing southern pond. Prior to the remedial works for the southern pond (Year 1 of the redevelopment), Pond 2 will be used to store any excess stormwater discharge from the southern portion of the site, allowing the remedial works to be performed. Following the remedial works Pond 2 will capture water that has flowed through the southern wetland where it will be tested prior to either reuse (most likely) or off-site discharge. Further detail regarding the water storages is provided in Section 11.4.

#### 6.12 Environmental Management

Willmott is committed to the improvement of aspects of its existing environmental management practices, and the pursuit of best practice at its expanded operations. The existing mill was not designed or constructed by Willmott and hence some of the existing site issues were inherited directly or through design flaw from the previous owners of the mill. The existing issues specifically relate to soil, groundwater and surface water. Willmott has therefore developed a soil, groundwater and surface water (including wastewater) management plan for the site. A copy of the management plan is provided in Appendix D.

The objective of the management strategies is to rectify legacy soil and groundwater contamination that has been identified at the site, and to implement systems and procedures for the expansion of the plant that ensure that impacts to the soil, groundwater and surface water are managed in accordance with industry best practice. The specific management procedures to be adopted are discussed in Section 11 of this report. The management plan has been incorporated into the Draft Statement of Commitments in Section 21 of this EA.

## 7. ENVIRONMENTAL RISK ASSESSMENT

The potential environmental risks of the proposed expansion have been identified through an environmental risk analysis. In the analysis, the expansion has been evaluated and compared against the existing on-site operations, across a range of environmental aspects. This has enabled identification of the potential environmental impacts *prior to the implementation of any control measures*. Based on the potential impacts, an environmental risk rating (high, medium or low) has been applied to each aspect.

The environmental risk analysis is presented in Table 18. The environmental aspects are discussed further in the following sections. An assessment of the residual risk *following the installation of proposed control measures* outlined in this EA is provided in Section 19.

Environmental	Existing Mill	Expansion Activity	Environmental Impact (prior	Environmental	Environmental
Aspect			to control measures)	<b>Risk Rating</b>	Assessment
					Conducted
Noise	Current plant operates	Additional operational plant	Increase in noise levels from	High	Noise assessment
	within the statutory noise	and equipment at the site, and	operational plant and traffic,		
	limits.	increased traffic to and from	impacting on neighbours.		
		the site.			
Flora and	Some scattered native	Development footprint is not	No impact expected.	Low	Flora and fauna
Fauna	trees and possible native	expected to extend to the			study
	grasses on the northern	existing area of native trees			
	part of the site. No	and grasses at the site.			
	endangered species				
	identified to date.				
Heritage	Pre-European moveable	Development footprint will	Movement of items is expected,	Low	Heritage
	heritage items are present	extend to current site of known	with due consultation with the		assessment
	on the site.	heritage values.	Aboriginal community and the		
			NSW Department of Climate		
			Change.		
Air Emissions	No licensed discharges to	Timber treatment plant and	Potential increase in air	Medium	Air quality
	air at the existing mill.	drying operations with	emissions with potential health		assessment
		potential discharges to air.	impacts.		
Odour	No licensed odour	Odorous emissions may be	Potential increase in odorous	Medium	Air quality
	sources at the existing	generated by the expansion.	emissions with the potential for		assessment
	plant.		off-site impacts.		

 Table 18
 Potential Environmental Risks from the Proposed Development (Prior to the Implementation of Control Measures)

Environmental	Existing Mill	Expansion Activity	Environmental Impact (prior	Environmental	Environmental
Aspect			to control measures)	<b>Risk Rating</b>	Assessment
					Conducted
Traffic and	Current movements	Increases in the utilisation of	Increases in traffic movements	High	Traffic impact
Transport	include delivery of logs	raw materials, generation of	resulting in impacts on the road		assessment
	and chemicals to the site,	products and number of	network, road safety and		
	trucks distributing	employees at the site.	community disturbance.		
	products from the site,				
	and employee car travel to				
	and from the site.				
Chemical	Range of chemicals	Increases in the storage and	Chemical spill or leak during	Medium	Preliminary
Usage and	stored and used on-site	usage of the same chemicals.	transport or usage, impacting		hazard analysis
Storage	for timber treatment and		on soil, groundwater or		
	other purposes.		stormwater.		
Soil	Soil monitoring is	Timber processing and	Potential for soil contamination	Medium	Soil, Groundwater
	performed at the site as	treatment activities associated	and erosion from proposed mill		and Surface
	required by the EPL.	with the proposed mill and	activities and construction.		Water
		construction activities.			Management Plan
Surface Water	Surface water monitoring	Increased surface water runoff	Increased quantities of water to	Medium	Soil, Groundwater
	is performed at the site as	from mill expansion.	manage and potential for		and Surface
	required by the EPL.		contamination of water.		Water
					Management Plan
Water Usage	Water is currently sourced	Increase in water usage due to	Increased water demand and	Low	Review of water
	from the main and used	additional operational plant.	impact on southern pond.		requirements
	primarily for steam boilers.				

Environmental	Existing Mill	Expansion Activity	Environmental Impact (prior	Environmental	Environmental
Aspect			to control measures)	<b>Risk Rating</b>	Assessment
					Conducted
Energy and	Energy consumption	Increased energy demand	Impacts on energy supply and	Medium	Energy and
Greenhouse	includes electricity to	from additional operational	increased greenhouse gas		greenhouse gas
Gas Emissions	power the current plant,	plant.	emissions.		assessment
	resulting in greenhouse				
	gas emissions.				
Wastewater	Generation of wastewater	Increase in the generation of	Additional load on kilns and	Medium	Evaluation of
	from on-site operations.	wastewater due to additional	storage dams, and potential		wastewater
		operational plant onsite.	impact on soil, groundwater and		generation and
			stormwater.		management
Solid Waste	Solid wastes currently	Increase in the generation of	Impact on local landfill capacity.	Medium	Evaluation of solid
	generated include chips,	solid wastes due to increased			waste generation
	sawdust and bark. These	production capacity.			and management
	are mainly sold, with very	Decrease in the generation of			
	small volumes landfilled.	wood residues due to better			
	Wood residues are stored	wood utilisation and sale.			
	in stockpiles.				
Socio Economic	Existing employment	Increased employment	Impacts on community	Low	Discussion on
	opportunities.	opportunities and possibly	infrastructure, social values,		socio-economic
	••	additional population to the	housing and property prices in		impacts
		local area.	the local area.		

Environmental	Existing Mill	Expansion Activity	Environmental Impact (prior	Environmental	Environmental
Aspect			to control measures)	<b>Risk Rating</b>	Assessment
					Conducted
Visual Amenity	No current visual amenity	Construction of mill expansion	Potential visual amenity	Low	Review of
	issues		impacts from mill expansion		potential visual
					amenity impacts

## 7.1 High Environmental Risks

The environmental risk analysis has identified that the following aspects associated with the expansion pose a high risk prior to the implementation of control measures:

- Noise emissions from additional plant, equipment and traffic disturbance to nearby neighbours. The project may impact on surrounding residents and without control or management measures in place to ensure compliance with noise limits. Therefore a noise assessment has been conducted for the mill expansion to determine the expected noise levels appropriate control measures. This assessment is discussed in Section 9.
- Traffic and transport impacts on road network, road safety and community disturbance from increased traffic associated with the mill expansion. A traffic assessment has been conducted for the mill expansion to assess the impacts of increased traffic movements and the need for any potential improvements or upgrades to the road network to minimise impacts. This assessment is outlined in Section 8.

## 7.2 Medium Environmental Risks

The environmental risk analysis has indicated that six aspects associated with the site expansion pose a medium environmental risk prior to the implementation of control measures. These are:

- Air emissions from additional combustion sources and treatment areas potential health impacts. Without control measures in place to ensure efficient combustion and management of other potential emissions, impacts could occur. Therefore an air quality assessment has been conducted for the mill expansion to assess the impacts of emissions to air. This assessment is outlined in Section 10.
- Odour emissions potential for odorous emissions. An assessment for potential offensive emissions from the proposed mill has been undertaken, and is presented in Section 10.
- Chemical use and storage risk of spills, leaks or explosions. A PHA has been conducted for the mill expansion to assess the impacts of installing additional equipment and increased chemical use and storage. This assessment is discussed in Section 13.
- Soil potential for contamination of soil and erosion. The timber processing and treatment activities associated with the proposed mill and the construction activities, could result in soil impacts if not appropriately managed. Soil management measures are discussed in Section 11.2.
- Surface water increased quantities of water to manage and potential for contamination of water. Surface water management measures are discussed in Section 11.3.

- Increase in production requiring additional energy from fossil fuels greenhouse gas emissions. A greenhouse gas assessment has been conducted for the mill expansion to assess the impacts of the development. This assessment is outlined in Section 14.
- Wastewater generation increase in wastewater generated. Without management of wastewater, impacts to soil, groundwater and surface water bodies could occur. An assessment of wastewater management is outlined in Section 11.4.4.
- Increased generation of solid wastes due to increased production capacity and potential impact on local landfill space. Solid waste generation is discussed in Section 12.

# 7.3 Low Environmental Risks

The remaining four environmental aspects associated with the expansion pose a low risk based on the environmental risk analysis. These aspects are:

- Flora and fauna there are some scattered native trees and grasses on the site; however, the footprint of the expansion will not extend to the existing flora. No endangered species have been identified on the site to date, therefore the expansion is not expected to have any impact on fauna.
- Heritage pre-European heritage items have been identified on the site. Willmott will develop an appropriate management strategy for these artefacts in consultation with the local Aboriginal community and the NSW DECCW. There is one decrepit post-European building near the road, outside of the proposed development area, and a potentially related filled-in well which may contain heritage value, which will be retained. The expansion therefore will not have any impact on the heritage value of the site.
- Water usage water consumption at the site will increase as a result of the expansion.
   Water is sourced from the Bombala water main, so the environmental risk associated with the increased usage is low.
- Socio-economic impacts the expansion of the site will provide on-going employment opportunities and possibly add to the local population. Although this may have some impact on social values, community infrastructure, housing availability and property prices in the local area, the risk associated with this is rated low.
- Visual amenity new buildings will be constructed for the proposed mill and the potential for impacts on the visual amenity of the area needs to be managed; however, there is a low risk of impact.

Due to the low risk posed, detailed assessments of these environmental aspects were not necessary. They are, however, discussed further in Sections 6.9, 15, 16, 17, and 18.

## 8. TRAFFIC AND TRANSPORT

#### 8.1 Traffic Movements

Traffic and transport movements associated with the existing Willmott site comprise:

- Delivery of logs to the site by truck;
- Delivery of raw materials (chemicals) to the site by truck;
- Dispatch of products from the site by truck; and
- Car travel by employees to and from the site.

Although the types of traffic movements will not change as a result of the expansion, the increased production capacity will require greater numbers of truck movements at the site. Car travel to and from the site will also increase due to the additional employees that will be involved with the expanded site.

Summaries of the current estimated total outgoing truck movements for each product are provided in Table 19. Comparisons of the current and predicted daily truck movements are provided in Table 20 and Table 21. A 200 day year has been assumed as this is the current operating regime given weekends, planned shut downs, unplanned maintenance and holiday periods.

	2007/2008 Period		2008/2009 Period	
	Quantity (m <sup>3</sup> )	Truck	Quantity (m <sup>3</sup> )	Truck
		Movements		Movements
In				
Logs	107,777	3 992	102,973	3 814
Chemicals	-	24.2	-	25
Out				
Product	41,868	1 745	46,041	1 918
Residue	74,190	742	68,359	684
Mulch	52,448	524	50,571	506
Total	168,506	7 027	164,971	6 946
Total Trucks per		35		35
day <sup>1</sup>				

## Table 19 Current Truck Movements of Product

Note: <sup>1</sup> Assuming a 200 day year

	Current Mill	Year 1 <sup>1</sup>	Year 2	Year 3	Year 4 (Full production)
In					
Logs	19.5	23.6	29.6	35.2	46
Chemicals <sup>2</sup>	0.1	0.1	0.1	0.14	0.14
Out					
Product	9.2	8.9	10.8	12.6	16
(total)					
Waste (total)	6.1	14.2	18.1	22.2	29.5
Total	35	47	59	70	92

#### Table 20 Current and Predicted Daily Truck Movements by Product

Note: <sup>1</sup> Year 1, 50:50 semis and B-doubles <sup>2</sup> Very small increase for expanded mill is due to taking concentrate rather than fully diluted product

	Assumed Current	Full production
Monaro Highway (North of Bombala)	19	43.5
Delegate Bombala Road west	4	4.5
Cann Valley Highway (South of Bombala)	10.5	35
Bucky Springs Road	0	8
Mount Darragh Road	1.5	1
Total movements/day (two way)	35	92

#### Table 21 Current and Predicted Daily Truck Movements by Route

These estimates show that there is approximately a two-fold increase in the number of daily truck movements for a four-fold increase in manufacturing throughput. This high efficiency rate has been achieved due to the use of higher capacity vehicles, such as B doubles, and increasing loading efficiencies.

The traffic flows on the Monaro Highway in the area have declined over recent years. This analysis could assume no change in the background flows over the immediate future years. The net effect of this assessment is that the daily number of additional vehicles is not large. The base flow or background volume is also low. The peak times for traffic associated with the mill are different to the peak times of the surrounding roads, other than Sandy Lane. However, because the base flows are low, the small increase in number due to the mill expansion could be perceptible to the local community.

A full traffic study has been performed by a traffic specialist for the EA to comprehensively assess the impact of the predicted traffic increase. This has identified the implications associated with the expected increases in traffic movements, with regard to the road networks and traffic safety on those roads. As some mill traffic travels through the township of Bombala, the traffic study has also assessed the potential community disturbance as a result of the expansion.

## 8.2 Traffic Assessment

The existing and increased traffic flow resulting from the proposed sawmill expansion has been assessed by specialist traffic consultants, Maunsell Aecom, who prepared a full Traffic Impact Assessment. The full report is attached in Appendix E.

The key conclusion of the assessment was:

The purpose of this report is to review the impacts of the proposed expansion on the local transport network. Within its existing constraints, the surrounding road network is generally operating satisfactorily in terms of capacity and safety, with considerable spare capacity. Some intersection geometry could be improved and the bridge over Parsonage Creek is narrow although it is difficult to directly attribute the cost of rectification of the current deficiencies to this development.

The report also made the following findings:

## **Existing Traffic Volumes**

Traffic volumes in the area are relatively low and generally consistent with the current infrastructure and the rural nature of the area.

## **Road Safety**

Within the immediate area there have been three recorded crashes over the past five years: two car accidents and one heavy vehicle accident. Each involved a single vehicle only. These crash types do not indicate major issues with the infrastructure.

#### **Road Network**

The major highway network utilises the main street of Bombala with full commercial and residential frontages. The roads in and near the township which will be utilised in the expansion are classified as B double routes. The minor rural network also utilizes local residential streets. One of these minor streets, Burton Street, has barely sufficient sealed pavement area and some heavy vehicle tracking in the grassed swales is occurring. Bucky Springs Road would also benefit from some widening and resurfacing in places.

The Traffic Impact Assessment showed that the increase in truck movements resulting from the development will mean that mill-generated truck traffic on Delegate Bombala Road would amount to about 21% of the total traffic on that road. Although significant and likely to be constant, this is not a high number at only 9 - 10 per hour over a ten hour working day. This proportion would dissipate once the trucks reached the Monaro Highway where the truck movement splits. There are likely to be some variations to the truck intensity depending on the timing of logging in different forest regions, however the assessment showed the network is capable of sustaining the flows anticipated.

Car volumes are expected to increase due to a higher number of employees at the expanded mill. However, the increase in car movements is small considering the small increase in overall staff levels. The current morning peak traffic is 35 vehicles per hour with a total workforce of 71 up to 80 persons. Predictions as to daily staff parking assume around 10% carpooling. Factoring these figures up, the peak hour volume of cars could increase by 12 from 35 to 47 in both the morning and evening peak hours. The peak arrivals and departures from the mill are not concurrent with the peak traffic flows on Delegate Bombala Road. There is considerable spare capacity on Delegate Bombala Road, even during the peak times. The car volumes are not significant on the network, especially in relation to capacity.

#### **Road Intersections**

Although none of the intersections have been analysed for peak performance utilising the SIDRA3 analytical package, it is apparent that volume capacity is not an issue. Progressively over the years, various intersections within the network have been modified to accommodate semi-trailer and B-Double traffic. This has been essentially an intersection geometry exercise to improve the layout to accommodate the swept path of these longer heavy vehicles. Most of the infrastructure constraints have been addressed over time. One exception is the intersection of Maybe Street and Burton Street. This intersection is currently showing indications that there is insufficient pavement width for turning heavy vehicles. The resolution of this existing issue should not be attributed to the small daily

increase in heavy vehicles through this intersection resulting from the proposed expansion of the mill.

# Bridges

The bridges in the nearby network used by heavy traffic generated by the mill are generally not mass restricted for normal mass complying heavy vehicles. The bridge over Parsonage Creek on the Delegate Bombala Road has a pavement width of 6.05 metres between kerbs over a length of approximately 27 metres on three spans. There is no shoulder provision on the bridge. There is a guard rail on the approaches but no complying vehicle barrier on the bridge. There is a pedestrian hand railing on the bridge. A new bridge built to the bridge code at this location, would require a wider pavement and vehicle barriers on the bridge.

Based on the current vehicle flows of 662 ADT on the Delegate Bombala Road, the pavement width on a new bridge needs to be increased beyond the current width on either side by 1 000 mm. This increase in width is required for daily traffic flows in the range from 500 to 5 000 vehicles per day which is considered medium volume. As the additional traffic generated by the mill will not take the flow out of the medium volume category, no additional width should be attributed to this development.

Alternate solutions to potentially improve safety on this bridge include:

- The installation of a priority controlled one way system with a Give Way sign together with appropriate delineation; or
- The installation of narrow bridge warning signs together with appropriate delineation.

# **Required Upgrades**

The Traffic Impact Assessment concluded that the road network is capable of supporting the increase in light vehicle and truck movements anticipated. Some road features, however, were highlighted as requiring improvement. These are summarised below.

- The development will require a new intersection to be constructed onto Delegate Bombala Road. Willmott has undertaken an engineering design of the intersection in consultation with the DTI, and will construct it in accordance with any relevant guidelines
- The development will also require an upgrade of the existing intersection on Delegate Bombala Road and Sandy Lane, to allow for overtaking of vehicles turning into the site.
   Willmott has again undertaken an engineering design of the intersection in consultation with the DTI, and will construct it in accordance with any relevant guidelines

- The Parsonage Creek Bridge on Delegate Bombala Road is not adequate. The Council-owned bridge is on an authorised B double route, however it is not wide enough for the current two-way traffic configuration. It is recommended that either:
  - The bridge be widened to accommodate B doubles, or
  - A one-way arrangement is introduced including signage

Willmott would be prepared to fund the one-way arrangement. Should the Council decide to widen the bridge, Willmott will work with the Council if required to assist it to source external funding such as through the Local Infrastructure Support Fund, for which an application is currently being prepared

- The Maybe Street / Burton Street intersection owned by the Council is currently inadequate and some widening is recommended
- Parts of Bucky Springs Road would benefit from widening and some resurfacing
- Monaro Highway / Delegate Bombala Road intersection requires widening of the pavement for left-turning heavy vehicles south to Delegate Bombala Road. Willmott has prepared swept path analyses for this intersection in conjunction with the DTI, and a full discussion of this intersection is provided in the appendix
- Sandy Lane provides the current site entry, and will continue to be used to access the main entry in the expanded mill. The road will have minor upgrades implemented by Willmott to improve safety of vehicles passing in each lane over a blind hill. More of its length will also be sealed to prevent dust impacts

## 8.3 Conclusions

The mill expansion will result in an increase in the traffic on local and regional roads. However, the traffic assessment performed has shown that the increase can be accommodated without any significant change to these roads, which will remain generally acceptable after the fully proposed mill is commissioned. The bridge over Parsonage Creek was determined to not currently meet traffic safety requirements; however, this is unrelated to Willmott's expansion plans.

# 9. NOISE

The existing operations at the site include items of equipment and plant that have the potential to cause noise impacts off-site. The proposed expansion may result in an increase in the total noise emissions from the site, due to the operation of plant such as the logging yard, sawmill and kilns. The increased traffic movements to and from the site will also increase the noise impact on the surrounding land.

## 9.1 Noise Assessment

The impact of the expanded operational plant and traffic on noise levels at the site has been assessed by Marshall Day Acoustics (MDA). An assessment of the potential impacts from construction noise was also performed. The assessment included the determination of the expected noise levels (operational and during construction) and prediction of the impact on neighbouring receptors. A copy of the assessment is provided in Appendix F.

Four neighbouring receptors were considered in the noise assessment including The Parsonage located north east of the site, Benlady Park located south east of the site, Trevanion located south-west of the site and a residence located west of the site. The location of the neighbouring receptors is shown in Figure D7.

Operational noise from the existing and proposed mill was estimated using a computer simulation model, and accounts for meteorological effects, atmospheric conditions, ground effects and screening provided by on-site buildings.

## 9.1.1 Noise Criteria

The current plant is required to operate within the statutory noise limits imposed via the existing development consent. These limits (shown in DA.05.0052, 3/8/05) indicate the maximum noise emissions from the existing site. The noise limits will be the same for the proposed expanded site, and these project specific noise levels are derived in the MDA noise assessment. The noise limits for proposed works are shown in Table 22.

Location	Day	Evening	Night	Night
	dBA L <sub>eq, 15 minute</sub>			
Residential premises	35	35	35	45

Table 22	Noise Limits for Exi	sting Operations
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The noise assessment also indicates noise limits for construction works, traffic and sleep disturbance for the proposed expanded facility. These noise limits are shown in Table 23.

 Construction	Sleep	Traffic - Day	Traffic - Night
dBA L <sub>10</sub>	Disturbance	dBA L <sub>eq, 1 hour</sub>	dBA L <sub>eq, 1 hour</sub>
	dBA L <sub>max</sub>	(7 am – 10 pm)	(10 pm – 7 am)

#### Table 23 Noise Limits for Construction, Traffic and Sleep Disturbance

## 9.1.2 Background Noise Survey

A survey of the background noise level, called the Rating Background Level, was conducted by MDA during the period of 2 July 2008 to 10 July 2008. The noise assessment indicated that the measured background noise levels are typical of what would be encountered in a rural noise environment. The results of the background noise level survey are shown in Table 24.

#### Table 24 Monitored Background Noise Levels

	Day	Evening	Night
	dBA L <sub>eq, 15 minute</sub>	dBA L <sub>eq, 15</sub> minute	dBA L <sub>eq, 15</sub> minute
Noise level	42	40	35

## 9.1.3 Noise Sources

The existing noise generating activities on-site include the operations at the saw mill, the moulder, the treatment plant, the boilers and kilns, the steamers, the dry/planer mill, the chipping operations and the loaders. A summary of the measured noise levels of the existing equipment items conducted by MDA on 2 July 2008 is shown in Table 25.

Noise Source	Measured Noise Level (dBA Leq)
Moulder (running not cutting)	95
Moulder (cutting)	104
Log drop	97
Rounder	105
Paling	106
Extract fan	100
Small chipper	110
Fan/blower	98
Sawmill	107
Chipper shed	100
Chipper belt drop	111

 Table 25
 Measured Noise Levels for Existing Equipment Items

In addition to the measured noise levels, MDA also used estimated sound power levels in the noise model. A summary of the sound power and pressure levels used in the noise assessment is shown in Table 26.

Noise Source	Estimated Noise Level	
Truck movement	96 dBA L <sub>eq</sub>	
Yard loader	101 dBA L <sub>eq</sub>	
Planer	100 dBA L <sub>eq</sub>	
Steam vent	101 dBA L <sub>max</sub>	
Front end loader	114 dBA L <sub>max</sub>	
Treatment plant pumps	91 dBA L <sub>eq</sub>	
Reversing beeper	111 dBA L <sub>max</sub>	
Kiln	76 dBA L <sub>prev</sub>	
Boiler	90 dBA L <sub>prev</sub>	

Table 26 Estimated Noise Levels for Existing Equipment Items

#### 9.1.3.1 Noise Modelling

The estimated existing noise levels at the nearest noise sensitive receivers are based on the operation of the existing facility, and the results were compared with measured noise levels from MDA's site visit for consistency. The estimated proposed noise levels at the nearest noise sensitive receivers are based on the normal operation of the proposed development, after full transition to newly commissioned and existing mill equipment. The noise levels for the proposed equipment items used in the noise modelling were based on measured and estimated noise levels, as discussed in Section 9.1.3.

As outlined in the assessment report, the basis of this compliance is the construction by Willmott of acoustic barriers along the southern and eastern boundaries of the site (refer to the noise assessment in Appendix F). Willmott is committed to the construction of these barriers, which may be earthen or of other suitable acoustic shielding materials. Willmott will construct two acoustic barriers as part of the proposed works, a 3.5 m barrier in the eastern boundary of the site along the Sandy Lane entrance and a 2 m barrier in the southern end of the processing operations. The location of the acoustic barriers is shown in Figure D9.

## 9.1.3.2 Operational Noise and Sleep Disturbance

The assessment indicates that the existing site is not currently in compliance with the noise limits for the operations, but that the proposed mill expansion will comply. The assessment also included estimated noise levels compared with the sleep disturbance criteria at all of the neighbouring receptors. The equipment items that will operate 24 hours on-site are include kilns, boilers, treatment plant, dry mill (including planer mill and de-stick/re-stick and re-saw line) and residues handling (including loader and forklifts), and as a result some operation of the front-end loader and forklifts will also be necessary during the night. A summary of the predicted noise levels for the proposed mill expansion is shown in Table 27.

Time Period	Predicted Noise Level	Noise Criteria
	(dBA L <sub>eq, 15 min</sub> )	(dBA L <sub>eq, 15 min</sub> )
Residence 1 - Benlady Park		
Day	26	35
Evening	26	35
Night	24	35
Sleep disturbance (dBA L <sub>max</sub> )	36 <sup>1</sup>	45
Residence 2 - Trevanion		
Day	33	35
Evening	33	35
Night	30	35
Sleep disturbance (dBA $L_{max}$ )	41 <sup>1</sup>	45
Residence 3 – The Parsonage		
Day	34	35
Evening	34	35
Night	31	35
Sleep disturbance (dBA $L_{max}$ )	<b>46</b> <sup>1</sup>	45
Residence 4 – Residence to South		
Day	24	35
Evening	24	35
Night	22	35
Sleep disturbance (dBA $L_{max}$ )	44 <sup>1</sup>	45

Table 27	Predicted No	se Levels	for Proposed	Mill Operations
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Note: Values highlighted in bold exceed noise criteria.

<sup>1</sup> Noise level is for noisiest equipment item in the time period, the reverse beeper.

The estimated noise levels for the proposed works are in compliance with all their relevant noise criteria, except for the sleep disturbance criteria at The Parsonage. In order to minimise noise impact and comply with the sleep disturbance criteria, mobile machinery will be fitted with an alternative to the reverse beepers such as a 'quacker' or reversing indicators. Therefore, all noise levels are expected to be in compliance with their relevant noise criterions.

# 9.1.3.3 Construction Noise

Noise levels predicted at the nearest sensitive receptors during construction were also considered. Noise levels for the proposed construction works were estimated by consideration of construction activities of a similar nature. Noise sources from construction activities include excavators, delivery and concrete trucks, hoist, concrete cutter, jackhammer, hammer drill, compressor and concrete pump.

The results indicate compliance with the construction noise limit at all receptors except for at The Parsonage residence, located to the north-east of the site. The predicted cumulative noise level at The Parsonage during construction is 2 dBA above the construction noise limit. The predicted cumulative noise impacts are shown in Table 28.

Units	Receiver 1 -	Receiver 2 -	Receiver 3 -	Receiver 4 -	Construction
	Benlady	Trevanion	The	Residence	Limit
	Park		Parsonage	to South	
	25	40	12	20	40

## Table 28 Predicted Noise Levels for Construction

Note: Values highlighted in bold exceed noise criteria.

The major contribution to the overall noise level at The Parsonage is the excavator and the front end loader. Recommendations are made in the assessment report for measures to be implemented during construction to reduce this noise and ensure compliance with the limit. Willmott is committed to compliance with the limits and will comply with these measures. These are shown in Table 29.

Table 29 R	ecommended Noise	<b>Reduction Measures</b>
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Description	Possible remedies	Possible alternatives
Front end loader	Install exhaust silencer (typically	Research quieter model
	10dB extra attenuation)	
Excavator	Install exhaust silencer (typically	Research quieter model
	10dB extra attenuation)	

Other construction noise mitigation measures that will be implemented during the construction works include the following:

- Limiting the hours during which site activities are likely to create high levels of noise; •
- Establishing clear communication channels with contractors, local authority and neighbouring residents; and
- Appointing a site representative responsible for matters relating noise.

## 9.1.3.4 Traffic Movements

The traffic noise levels were estimated on the assumption that all heavy vehicles and staff cars use the same route for Delegate Bombala Road, Monaro Highway and Sandy Lane. For the smaller Bucky Springs Road it was assumed that up to 50% of traffic may use the same route. In reality this is unlikely to occur and therefore represents a worst case assessment. For the assessment of traffic noise levels, an additional receiver located 10 m from the edge of Bucky Springs Road was included in the modelling. The modelling results indicated that no adverse noise impacts will result from the current or proposed development.

Noise Receiver	Current	2010	2020
	(dBA L <sub>eq, 1 hour</sub> )	(dBA L <sub>eq, 1 hour</sub> )	(dBA L <sub>eq, 1 hour</sub> )
Receiver 1 - Benlady Park	41	42	42
Receiver 2 - Trevanion	34	35	36
Receiver 3 - The Parsonage	45	45	46
Receiver 4 - Residence to	36	37	37
South			
10 m from Bucky Springs Rd	46	47	48
Day Traffic Noise Limit	55	55	55
(7 am - 10 pm)	55	55	55
Night Traffic Noise Limit	50	50	50
(10 pm - 7 am)	50	50	50

	Table 30	Predicted Traffic Noise Levels for Projected Traffic Movements
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## 9.1.3.5 Meteorological Effects

The noise assessment included analysis of meteorological conditions that may enhance noise propagation. The meteorological parameters used in the assessment include Class D 'neutral', Class F 'inversion' and Class B 'unstable'. The assessment was conducted using the CONCAWE algorithm to include the maximum possible impact assuming the applicable default meteorological conditions to account for the equipment that operates during the night time period.

In accordance with the *Industrial Noise Policy,* where predicted noise levels estimated using default meteorological parameters increase noise levels by 3 dBA or more, further analysis is required to determine the meteorological conditions applicable to the site. A summary of the predicted noise levels based on meteorological parameters is shown in Table 31.

Noise Receiver	Predicted	Predicted	Predicted	Noise Criteria
	Noise Level	Noise Level	Noise Level	
	Class D	Class F	Class B	
	'neutral'	'inversion'	'unstable'	
	dBA L <sub>eq, 15 min</sub>	$dBA \; L_{eq,\; 15\; min}$	$dBA \ L_{eq, \ 15 \ min}$	$dBA \; L_{eq,\; 15\; min}$
Residence 1 -				
Benlady Park				
Day	27	NA	31	35
Evening	27	31	31	35
Night	23	27	27	35
Residence 2 -				
Trevanion				
Day	33	NA	37	35
Evening	33	37	37	35
Night	31	34	34	35
Residence 3 - The				
Parsonage				
Day	35	NA	39	35
Evening	35	39	39	35
Night	32	35	35	35
Residence 4 –				
Residence to South				
Day	22	NA	27	35
Evening	22	27	27	35
Night	20	25	25	35

Table 31 Predicted Noise Levels Based on Meteorological Parameters

Note: Values highlighted in bold exceed noise criteria by 3 dBA.

The results indicate that noise levels at all receptors due to meteorological enhancement are in compliance with the exception of The Parsonage during day time periods for Class B and evening time periods for Class F and Class B.

An analysis of weather conditions at Bombala has indicated that Class F inversions occur for approximately 7% of the time during winter months, and the frequency of Class F and Class G inversions is 18%. As the frequency of temperature inversions during the winter months is less than 30% of the total night time no additional noise predictions are needed.

The noise assessment also shows that source-to-receiver wind of 3 m/s or below is not a feature of the area, and therefore was not included in the predicted noise levels.

## 9.1.4 Noise Monitoring

The noise assessment recommended that noise monitoring at the Willmott facility should be undertaken once the expanded facility is fully operational. Monitoring should be conducted at positions representative of the nearby residential receivers and during the period of greatest potential impact. The periods of greatest potential impact include the following:

- During the night time period;
- During source to receiver wind flow of 3 m/s at 10 m height; and
- During the night time winter months.

Willmott will undertake noise monitoring during Year 1 of the operation of the proposed mill, as well as during Year 4.

## 9.2 Conclusions

The results of the noise assessment performed for the EA have shown that the proposed mill will be in compliance with the project specific noise levels for the site. This compliance is achieved through the inclusion by Willmott of two acoustic barriers and berms in the development. It is noted that should Willmott enter into a suitable purchase arrangement with the owners of The Parsonage, noise mitigation measures such as the 3.5 metre barrier will not be necessary.

The potential impact of traffic noise resulting from the mill expansion is not considered to be extensive or excessive. Additionally, alternative reverse beepers will be installed on mobile machinery to comply with the sleep disturbance criterion. The receptor most affected by the proposed development is The Parsonage. However, the potential noise impacts of the proposed development will be controlled by the mitigation measures proposed.

The noise levels during construction are in compliance at all receptors, with the exception of one residence to the north-east of the site, where the noise level is predicted to be slightly above the noise limits. Ameliorative measures will be implemented during construction to ensure that the noise levels do not adversely impact on this residence and that the noise limits are achieved, including exhaust silencer on the front end loader and excavator. Willmott will also undertake noise monitoring once the proposed mill is fully operational.

#### 10. AIR QUALITY

The existing Willmott sawmill at Bombala has a number of fixed plant components that discharge directly to atmosphere. These include:

- A wood fired steam boiler;
- Two steamer autoclaves; and
- Two medium temperature drying kilns.

However, there are no licensed discharge points for emissions to atmosphere under the current EPL. Further, the EPL does not require any monitoring of discharges to air. Dust emissions from unsealed areas are also controlled through the application of on-site water. Therefore the current plant is not considered to have an impact on air quality.

The proposed mill has the potential to generate additional emissions to atmosphere, primarily from timber treatment and the drying operations. Dust emissions may also increase as a result of larger unsealed areas being used. With control and management, these emissions are not expected to be significant or have any adverse impacts on the community.

#### **10.1 Statutory Requirements**

The existing mill falls within Group 4 of the POEO (Clean Air) Regulation as it commenced operation after 1 July 1986 and before 1 August 2007. The new mill expansion components will need to meet the Group 6 limits in the Regulations.

#### 10.2 Emissions to Atmosphere

The sources of emissions to atmosphere from the proposed mill are described in Section 10.2.1. The concentrations of the emissions to air from the current operations and the proposed operations have been established using knowledge of the proposed new equipment and emission estimation techniques. The emissions are described in Section 10.2. The detailed calculations of the emissions to air are provided in Appendix G.

#### 10.2.1 Potential Sources of Emissions

One existing discharge point at the site serves the existing wood waste boiler (DP3) which serves the existing two kilns. Three additional boiler discharge points will be created at the site as a result of the mill expansion. As well, a number of kilns will be added to the site. The increase in kilns and boilers will gradually occur over a four year period. The number of kilns on site will increase to five in Year 1 served by three boilers, and by Year 4 when the site is at full production the number of kilns and boilers will increase to ten and four respectively.

The potential emission sources at the proposed mill are summarised in Table 32. A site plan showing the locations of the proposed boiler discharge points (four in total, DP 1 to DP 4) is presented in Figure D10.

Table 32	Summary of Potential Sources of Emissions to Atmosphere
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Discharge Point	Source of Potential Emissions	Potential Emissions
DP1-4	Natural Gas and Wood Boilers	SO <sub>2</sub> , CO, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> ,
		TVOC, PAH
-	Treatment Plant	Arsenic, copper, chromium and
		ammonia
-	GOS Kilns (six)	Heat, water vapour and odour
-	Redry Kilns (four)	Heat, water vapour, odour,
		arsenic, copper, chromium and
		ammonia

#### 10.2.2 GOS Kilns

Potential adverse impacts on local air quality from the operation of the GOS kilns should not result, as steam, heat and some odorous (pine) emissions will be the only discharges from these sources. These emissions will pose no risk to the community. These sources are therefore not considered further with regard to potential air toxics. The potential for odorous emissions from the kilns is considered in Section 10.5.

#### 10.2.3 Treatment Plant

The United States Environmental Protection Agency (USEPA) AP 42 *Compilation of Air Pollutant Emission Factors*, Volume 1 (1995, fifth edition) (USEPA AP 42), states that emissions from waterborne preservatives, such as CCA and ACQ, from wood treatment processes are generally not significant.

A study by the USEPA (USEPA 1994) indicated that the key potential emission to air generated during ACQ treatment is ammonia, with potential trace quantities only of copper compounds. The study considered the potential emissions from an occupation health and safety (OH&S) perspective. The results demonstrated that ammonia exposure to personnel from ACQ treatment is generally below applicable US Occupational Safety and Health Administration permissible exposure limits, or that any exposure is reduced with appropriate respiratory protection. Since any emissions are localised in the area of the treatment plant only, they are of most concern at the worker OH&S level. With dilution in the air, such emissions would not pose a risk to the off-site, local air quality. Therefore, ammonia emissions from the treatment facility are not considered further in the following sections.

The USEPA 1994 study also indicated that CCA treatment may emit trace amounts of copper and chromium compounds. Additionally, the quantity of arsenic emitted from CCA treatment plants is generally very low. Management of these potential emissions is again around the OH&S of workers rather than off-site impacts on air quality. Hence, potential air emissions from the CCA treatment process are not considered further in the EA.

#### 10.2.4 Redry Kilns

The potential emissions to air from the redrying of ACQ treated timber include ammonia and copper. However, copper fumes are unlikely to be emitted during the redry process due to the relatively low temperature of the kilns (90°C to 130°C) and the high boiling point of copper. Potential ammonia emissions from the kiln vents are expected to be low during the redry process as any unfixed ammonia that is likely to be released into the air would have been emitted during the treatment process. The majority of the ACQ from the treated wood is expected to be retained in the condensate stream.

CCA emissions from the redry process were estimated by using emission factors outlined in a study on air emissions from the drying and redrying of CCA treated timber (McDonald et al, 2004). The emission factors for arsenic, chromium and copper were 120, 8 and 1030  $\mu$ g per m<sup>3</sup> of wood redried, respectively. These emission factors were derived from measuring the concentration of the species within the kiln at various times during a redry process.

The capacity of the redry kilns is 50 m<sup>3</sup> of wood per kiln, and the average time required to redry the timber is approximately 25 hours. The temperature within the kilns is controlled by modulating fans and vents. The worst case scenario is when the vents are open and the air within the kiln is being released to atmosphere. The vents are, however, only opened occasionally during the redrying cycle. An open vent velocity of 1 m/s was assumed in order to calculate the concentration of air emissions from the kiln. Each kiln has ten modulating vents, five to draw in air and five for air release, and the average diameter of each vent is 0.46 m.

Based on this, the estimated concentrations and the impact assessment criteria for the species that are discharged to atmosphere from one proposed redry kiln are summarised in Table 33. The impact assessment criteria are outlined in the NSW DECCW's *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005). Whilst the impact assessment criteria apply to the ambient air environment at the boundary of a site or at the nearest sensitive receptor, rather than directly at the discharge point of a source, if the concentrations are below the criteria at the source then compliance following air dispersion modelling to consider ambient concentrations would be expected.

The detailed calculations of the emissions to air are provided in Appendix G.

Substance	Estimated Concentration (mg/m <sup>3</sup> )	DECCW Impact Assessment Criteria (mg/m <sup>3</sup> )
Arsenic	2.01E-05	0.00009
Chromium	1.34E-06	0.00009
Copper	1.72E-04	0.0037

 Table 33
 Summary of Emissions from a Proposed Redry Kiln

Note: <sup>1</sup> Criterion is for chromium (VI)

<sup>2</sup> Criteria is for copper fumes

The estimated concentrations of all species are well below the impact assessment criteria for the species outlined in DEC 2005. As well, based on the very low concentrations estimated, the combined emissions from the total of four proposed redry kilns will also be below the criteria. In addition, the estimated concentration assumes that all the CCA is emitted from the kilns in the air stream, and none in the condensate stream. Hence the actual concentration of CCA emitted will be less than the estimated concentration as condensate with CCA contamination is known to be discharged from redry kilns. Therefore, the emissions from all four of the redry kilns are expected to be below the impact assessment criteria and are not considered further in this EA.

#### 10.2.5 Natural Gas and Wood Boilers

Two new natural gas boilers will be installed at the site and a natural gas boiler will be relocated from the Tasco timber facility in Geelong to the Bombala site. The existing wood fired boiler at the site will also be utilised. The potential emission sources at the proposed mill are summarised in Table 34.

Discharge Point	Source of Potential Emissions	Potential Emissions
DP1	10 MW New Natural Gas Boiler	SO <sub>2</sub> , CO, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> ,
	(Boiler 1)	TVOC, PAH
DP2	3.5 MW Relocated Natural Gas	SO <sub>2</sub> , CO, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> ,
	Boiler (Boiler 2)	TVOC, PAH
DP3	2.5 MW Existing Wood Waste Boiler	SO <sub>2</sub> , CO, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> ,
	(Boiler 3)	TVOC, PAH
DP4	10 MW New Natural Gas Boiler	SO <sub>2</sub> , CO, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> ,
	(Boiler 4)	TVOC, PAH

Table 34 Summary of Potential Sources of Emissions to Atmosphere

## 10.2.5.1 Emission Controls

As the proposed natural gas boilers will only generate small quantities of products of combustion, no emission controls were considered necessary for the proposed boilers.

The existing wood fired boiler was installed during the establishment of the original sawmill. Due to the quantity of wood consumed by the existing boiler and the nature and the age of the boiler, the existing boiler is currently above the Group 4 solid particle standard of concentration limit specified in the POEO (Clean Air) Regulation (refer to Table 36).

New pollution control equipment should comply with Group 6 standard of concentration limits; however, due to the age of the existing wood fired boiler advanced pollution control equipment would be required to achieve compliance. This is not economically feasible and may not be technically possible.

Willmott therefore proposes to install multitube cyclones (multiclones) without fly ash reinjection to control the quantity of particulates emitted from the wood fired boiler. The installation of multiclones will allow the existing boiler to comply with the POEO (Clean Air) Regulation Group 4 standard of concentration limit. Additionally, the ground level concentration for particulates will also comply with the ground level impact assessment criteria (refer to Section 10.4). In view of this and based on advice from DECCW, that compliance with the Group 4 limit with the multiclones will be sufficient and compliance with Group 6 limits will not be necessary.

#### 10.2.5.2 Estimation of Emissions

No supplier or other representative emissions monitoring data were available for the potential emissions to atmosphere from the four boilers. Therefore the emissions have been estimated using the methodology outlined in the National Pollutant Inventory (NPI) Emission Estimation Technique (EET) Manual for Combustion in Boilers (version 3.1 June 2008) (NPI 2008).

Willmott propose to gradually phase out the existing mill upon construction of the new proposed mill. In order to obtain a conservative estimation of the air emissions from the proposed site, calculations are based on full operation of the proposed mill and the boilers running at 70% capacity. The boiler suppliers advised that the boilers will only operate at 100% capacity during startup, the normal operating capacity of the boilers is 70%.

The EET Manual describes the recommended procedures for estimating emissions from the combustion of fuel in boilers. The approach considered most appropriate for the Willmott boilers was the use of emission factors. An emission factor (EF) relates the quantity of a substance emitted from a source to the activities associated with that emission. The basic formula for the EF technique is:

#### Quantity emitted = rate of fuel used x EF x Control Efficiency

The rate of fuel used by the natural gas boilers was calculated from the capacity of the boiler, the energy content of natural gas (39.7 MJ/m<sup>3</sup>) and the weight to volume of natural gas (0.74 kg/m<sup>3</sup>). The rate has been estimated as 25.2 GJ/hr for boiler 1 and boiler 4, and 8.8 GJ/hr for boiler 2. Appropriate EFs were obtained from Table 20 of the EET Manual, based on the fuel used (natural gas), the type of boiler ("tangential fired") and the control technology employed ("uncontrolled"). The boilers were assumed to have 0% control efficiencies for all the species emitted.

The rate of wood waste consumed by the wood waste fired boiler is approximately 0.93 tonnes/hr. Appropriate EFs were obtained from Table 28 of the EET Manual, based on the fuel used (wood/bark fired) and the control technology employed ("multiclone w/o fly ash reinjection"). The boilers were assumed to have 0% control efficiencies for all the species emitted, as the efficiency of a multiclone has been factored into the EF provided.

These data have been used to estimate the emissions from the boilers. Detailed calculations are provided in Appendix G. The stack parameters and emission rates for DP1 and DP4 are shown in Table 35.
Parameter	Discharge Points				
	DP1	DP2	DP3	DP4	
	Boiler 1	Boiler 2	Boiler 2	Boiler 4	
	(10 MW)	(3.5 MW)	(2.5 MW)	(10 MW)	
Stack height (m)	13	10	12	13	
Stack diameter (m)	0.87	0.55	0.58	0.87	
Discharge temperature	140	225	255	140	
(°C)					
Discharge Velocity (m/s)	10.0	10.3	7.0	10.0	
Emissions to					
atmosphere					
PM <sub>10</sub> (g/s)	0.021	0.0073	0.22	0.021	
PM <sub>2.5</sub> (g/s)	0.021	0.0073	0.11	0.021	
NO <sub>x</sub> (g/s)	0.48	0.17	-	0.48	
SO <sub>2</sub> (g/s)	0.0046	0.0016	0.044	0.0046	
PAH (g/s)	0.0000018	0.0000063	0.00046	0.0000018	
CO (g/s)	0.068	0.024	-	0.068	
TVOC (g/s)	0.016	0.0054	-	0.016	
Arsenic & compounds	0.00000056	0.0000020	0.000011	0.0000056	
(g/s)					
Beryllium &	0.000000034	0.000000012	0.00000042	0.000000034	
compounds (g/s)					
Cadmium &	0.0000031	0.0000011	0.0000027	0.000031	
compounds (g/s)					
Chromium (III) &	0.0000040	0.0000014	0.000020	0.0000040	
compounds (g/s)					
Chromium (VI) &	-	-	0.0000059	-	
compounds (g/s)					
Cobalt & compounds	0.0000023	0.00000080	-	0.0000023	
(g/s)					
Copper & compounds	0.0000024	0.0000084	0.000048	0.0000024	
(g/s)					
Lead & compounds	0.0000014	0.00000049	0.000058	0.0000014	
(g/s)					
Manganese &	0.0000011	0.0000038	-	0.0000011	
compounds (g/s)					
Mercury & compounds	0.0000073	0.0000026	0.0000067	0.0000073	
(g/s)					

# Table 35Discharge Point Parameters – Boilers 1, 2, 3 and 4

Parameter	Discharge Points				
-	DP1	DP2	DP3	DP4	
	Boiler 1	Boiler 2	Boiler 2	Boiler 4	
	(10 MW)	(3.5 MW)	(2.5 MW)	(10 MW)	
Nickel & compounds	0.0000059	0.0000021	0.000089	0.0000059	
(g/s)					
Selenium &	0.0000059	0.0000021	-	0.0000059	
compounds (g/s)					
Zinc & compounds	0.000081	0.000028	-	0.000081	
(g/s)					
Polychlorinated	0.014	0.0049	3.7	0.014	
dioxins and furans					
(ng/s)					

# 10.3 Comparison with Regulatory Limits

The POEO (Clean Air) Regulation specifies limits for the standard of concentration of emissions to atmosphere from premises such as industrial facilities. The limits apply to a range of substances, including sulfur, halogens, nitrogen oxides, various hazardous substances and solid particles. Based on the activities performed at the mill, the category of the general standards of concentration (Schedule 4) are the relevant requirements set out in the POEO (Clean Air) Regulation.

As discussed in Section 10.2.5.1, the existing wood fired boiler falls within Group 4 of the POEO (Clean Air) Regulation. As the new mill components of the Willmott facility will commence operation after 1 August 2007, the appropriate limits set out in the Regulation for these are for Group 6.

Table 36 provides a summary of the estimated emissions from each discharge point compared with their standard of concentration limit. All emissions are shown to be in compliance with the limits specified in the POEO (Clean Air) Regulation. It should be noted that in accordance with the Regulations, demonstration of compliance with either the CO or the VOC regulatory limit (but not both) is necessary, as shown in Table 36.

Parameter (mg/m <sup>3</sup> )	meter (mg/m <sup>3</sup> ) Discharge Points				Standard of Concentration Limits	
					(m <u>ç</u>	g/m³)
	DP1	DP2	DP3	DP4	Group 4	Group 6
	Boiler 1	Boiler 2	Boiler 3	Boiler 4		
	(10MW)	(3.5MW)	(2.5MW)	(10MW)		
PM <sub>10</sub>	5.3	5.4	232	5.3	250 <sup>1</sup>	50 <sup>1</sup>
PM <sub>2.5</sub>	5.3	5.4	116	5.3	250 <sup>1</sup>	50 <sup>1</sup>
NO <sub>x</sub> (as NO <sub>2</sub> )	122	125	-	122	2 500	350
SO <sub>2</sub>	1.2	1.2	46	1.2	-	-
PAH	0.00046	0.00047	0.48	0.00046	-	-
СО	17	18	-	17	-	125
TVOC	3.9	4.1	-	3.9	-	40 <sup>2</sup>
Arsenic & compounds	0.00014	0.00015	0.012	0.00014	-	-
Beryllium & compounds	0.0000086	0.0000089	0.000044	0.0000086	-	-
Cadmium & compounds	0.00079	0.00081	0.0029	0.00079	3	0.2
Chromium (III) & compounds	0.0010	0.0010	0.021	0.0010	-	-
Chromium (IV) & compounds	-	-	0.0062	-	-	-
Cobalt & compounds	0.000058	0.000060	-	0.000058	-	-
Copper & compounds	0.00061	0.00063	0.051	0.00061	-	-
Lead & compounds	0.00036	0.00037	0.060	0.00036	-	-
Manganese & compounds	0.00027	0.00028	-	0.00027	-	-
Mercury & compounds	0.00019	0.00019	0.00070	0.00019	3	0.2
Nickel & compounds	0.0015	0.0015	0.0093	0.0015	-	-
Selenium & compounds	0.0015	0.0015	-	0.0015	-	-

# Table 36 Estimated Emissions and Standard of Concentration Limit

Parameter (mg/m <sup>3</sup> )	Discharge Points				Standard of Concentration Limits	
						g/m³)
	DP1	DP2	DP3	DP4	Group 4	Group 6
	Boiler 1	Boiler 2	Boiler 3	Boiler 4		
	(10MW)	(3.5MW)	(2.5MW)	(10MW)		
Zinc & compounds	0.021	0.021	-	0.021	-	-
Type 1 and Type 2 substances <sup>3</sup>	0.0058	0.0060	-	0.0058	-	1
Type 1 substances <sup>4</sup>	-	-	0.075	-	10	-
Polychlorinated dioxins and furans	0.0035	0.0036	3.9	0.0035	-	-
(ng/m <sup>3</sup> )						

Note: All concentrations are at the reference conditions of dry, 273 K and 101.3 kPa. <sup>1</sup> Limit is for solid particles (total). <sup>2</sup> Limit is for VOCs as n-propane. <sup>3</sup> Type 1 and Type 2 substances (in aggregate) comprise antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, selenium, tin and vanadium. <sup>4</sup> Type 1 substances (in aggregate) comprise antimony, arsenic, cadmium, lead and mercury.

#### 10.4 Air Dispersion Modelling

The use of computer based modelling techniques allows the impact of discharges to air from the proposed mill on the ambient environment to be predicted under a range of meteorological conditions.

The dispersion of contaminants from the proposed mill have been modelled in accordance with the NSW DECCW's Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DEC 2005) (Modelling Guidelines). In order to demonstrate that the discharges to air from the mill comply with the Modelling Guidelines, the regulatory computer model AUSPLUME (Version 6.0) has been used to generate predictions of maximum concentrations resulting from waste discharges to air from the mill. The emissions to air from the mill are provided in Appendix G.

#### 10.4.1 Impact Assessment Criteria

Table 37 provides a summary of the impact assessment criteria for the species that are discharged to atmosphere from the mill. As the calculated metals emissions are extremely low and compliance with the Modelling Guidelines is expected, these emissions have not been modelled and are not considered further in the report.

I	I I	5 1
Substance	Averaging Time	Impact Assessment Criteria (mg/m <sup>3</sup> )
PM <sub>10</sub>	24-hour	0.050
PM <sub>2.5</sub>	24-hour	0.050 <sup>1</sup>
NO <sub>2</sub>	1-hour	0.246
SO <sub>2</sub>	1-hour	0.570
PAH	1-hour	0.0004
CO	1-hour	30
TVOC	1-hour	3.2 <sup>2</sup>
Dioxins and furan	1-hour	2.0E-9

Table 37 Impact Assessment Criteria – Species Discharged to Atmosphere

Note: <sup>1</sup> PM<sub>2.5</sub> criterion taken as PM<sub>10</sub>. <sup>2</sup> TVOC modelled as n-hexane.

The NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and CO assessment criteria are applied at the nearest existing or likely future off-site sensitive receptor. For PAH, TVOC and dioxins and furans, the modelled values considered are at and beyond the site boundary of the site. Therefore, the maximum predicted concentrations are taken at the nearest existing or likely future off-site sensitive receptor, or at and beyond the boundary of the mill.

# 10.4.2 AUSPLUME Input Parameters

A full listing of all input parameters used in the computer modelling simulations is provided in Appendix G, and the parameters are summarised Table 38 and Table 39. The emission rates used are based on the technical specifications and are therefore considered to be representative inputs for the dispersion modelling, as discussed in Section 10.2.5.2.

Parameter	Discharge Point					
	DP1	DP2	DP3	DP4		
Stack height (m)	13	10	12	13		
Stack diameter (m)	0.87	0.55	0.58	0.87		
Discharge temperature (°C)	140	225	255	140		
Discharge velocity (m/s)	10.0	10.3	7.0	10.0		
X co-ordinate (m)	-227.2	-225.1	7.2	19.6		
Y co-ordinate (m)	573.1	587.6	443.0	437.8		

Table 38 Summary of Inputs for Dispersion Modelling Simulations – General Parameters

Table 39	Summary of	Inputs for	Dispersion	Modelling	Simulations -	<ul> <li>Discharge Rates</li> </ul>
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Substance	Discharge Rate					
	DP1	DP2	DP3	DP4		
PM <sub>10</sub> (g/s)	0.021	0.0073	0.22	0.021		
PM <sub>2.5</sub> (g/s)	0.021	0.0073	0.11	0.021		
NO <sub>2</sub> <sup>1</sup> (g/s)	0.48	0.17	-	0.48		
SO <sub>2</sub> (g/s)	0.0046	0.0016	0.044	0.0046		
PAH (g/s)	0.0000018	0.0000063	0.00046	0.0000018		
CO (g/s)	0.068	0.024	-	0.068		
TVOC (g/s)	0.016	0.0054	-	0.016		
Dioxins and furans (ng/s)	0.014	0.0049	3.7	0.014		

Note:  $^{1}NO_{x}$  assumed as all NO<sub>2</sub>.

# 10.4.3 AUSPLUME Simulations

The AUSPLUME simulations are designed such that receptors are positioned so that the maximum concentrations predicted at their location are representative of the likely concentrations of contaminants resulting from industrial emission sources. This is normally achieved by arranging grid points in a regular pattern around the emission points. A 2 km x 2 km grid was used with the origin of the grid at the south-eastern corner of the site. Receptors were placed 50 m apart.

As mentioned in Section 5.1.1, the closest sensitive receptor from the boundary of the site is Trevanion. The x co-ordinate for Trevanion is -649 and the y co-ordinate is 50.

The meteorological data from the Bombala meteorological monitoring station is of insufficient quality for dispersion modelling purposes. Therefore, the Air Assessment unit of DECCW advised that TAPM generated meteorological data could be used for the modelling of air emissions from the Willmott facility.

TAPM (Version 3) 2001 meteorological data set was used to generate meteorological data for the Bombala region. Meteorology was estimated at 25 vertical levels, and four horizontal grids were used, 30 km, 10 km, 3 km and 1 km. Soil moisture content was set to represent monthly average moisture content, drier in summer and wetter in winter. The land use, vegetation and soil type for the meteorological data was supplied by TAPM. The vegetation type was classified as grassland (mid-density tussock) and the soil type as duplex (sandy clay loam).

The averaging time for the model simulations was 1-hour or 24-hour for all species. At the receptor locations, maximum concentrations for each species have been estimated for every hour or every 24 hours of a year using TAPM generated meteorological data for Bombala and statistically analysed to indicate the maximum predicted concentration occurring at each receptor.

The terrain effects of the area modelled have been taken into account by using Geoscience Australia topographic map data (Geoscience 2009). The terrain elevation was plotted in a 3D surface mapping computer program, Surfer8, and converted in AUSPLUME to a format suitable for modelling.

To determine which structures could impact on plume dispersion the building wake utility program BPI was utilised. The BPIP data were then used in AUSPLUME to allow the effect of the building wake on the plume dispersion to be determined using the PRIME building wake algorithm. In order to account for the phase out of the existing mill, the existing buildings on-site was also taken in account.

In accordance with the Modelling Guidelines for a Level 2 impact assessment the maximum predicted concentration for PAH, TVOC and dioxins and furans has been taken to be the 99.9<sup>th</sup> percentile predicted concentration. The 99.9<sup>th</sup> percentile value is regarded as the most reliable estimate of the maximum. Following the plume calculation procedure, for a 1 hour average using a full year of meteorological data the ninth highest predicted concentration. Predicted concentration is selected as the maximum 1 hour average concentration. Predicted concentrations at and beyond the site boundary are considered to determine the ninth highest concentration.

For PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, SO<sub>2</sub> and CO the predicted total impact concentrations are taken to be the 100th percentile predicted concentration at the nearest sensitive receptor.

# 10.4.4 Results of AUSPLUME Simulations and Interpretation

The maximum predicted concentrations for each species modelled at ground level are compared with their respective assessment criteria specified in the Modelling Guidelines in Table 40. The AUSPLUME output printouts are provided in Appendix H.

Emission	Maximum Predicted Concentration (mg/m <sup>3</sup> )	Impact Assessment Criteria (mg/m³)
PM <sub>10</sub>	0.00202	0.050
PM <sub>2.5</sub>	0.00116	0.050 <sup>1</sup>
NO <sub>2</sub>	0.0331	0.246 <sup>2</sup>
SO <sub>2</sub>	0.00181	0.570
PAH	0.000150	0.0004
CO	0.0047	30
TVOC	0.00452	3.2 <sup>3</sup>
Dioxins and furans	1.11E-09	2.0E-9

Note: <sup>1</sup> PM<sub>2.5</sub> criterion taken as PM<sub>10</sub>. <sup>3</sup> TVOC modelled as n-hexane.

The maximum predicted concentrations for all species from the dispersion model when compared against the impact assessment criteria, shows them to be at or well below the criteria. In particular, most species are one or more orders of magnitude below the respective impact assessment criterion.

The predicted concentrates of PM10, NO2, SO2 and CO should be combined with the relative background levels prior to comparison with assessment criteria, in accordance with the Modelling Guidelines. However, no Variable Background Emission files for PM<sub>10</sub>, NO<sub>2</sub>, SO<sub>2</sub> and CO were available for the Bombala region. The predicted incremental impact for PM<sub>10</sub>, NO<sub>2</sub>, SO<sub>2</sub> and CO is well below the impact assessment criteria. Therefore, the total impact (incremental impact plus background concentration) for PM<sub>10</sub>, NO<sub>2</sub>, SO<sub>2</sub> and CO is expected to be in compliance with the assessment criteria.

The dispersion modelling has shown that the maximum predicted concentrations which will occur as a result of emissions from the Willmott facility, incorporating the proposed expansion, are expected to be in compliance with the impact assessment criteria. As a worst case scenario has been adopted, the actual maximum concentrations at ground level are expected to be much lower than the predicted ground level maxima presented here.

#### 10.5 Odour

Currently there are no licensed discharges of odour at the site under EPL 11205. The EPL also does not require any monitoring of odorous emissions from the existing operations. A quantitative assessment of odorous emissions from the Willmott facility was not considered necessary due to the limited potential sources and low intensity of any possible odorous emissions.

There is the potential for the heating of timber in the kilns to result in odorous emissions. However, these are natural pine odours and are typically of a very mild nature. There are no odorous emission data available for the drying of timber as the emissions are generally low and are likely to dissipate quickly. Therefore, odorous emissions from the kilns are not expected to be significant beyond the boundary of the site, and no impact on local air quality is expected.

Willmott has never received any complaints regarding odorous emissions from the Bombala facility. However; in the event that Willmott is alerted to the generation of odorous emissions of natural pine odours from the kilns, Willmott will immediately act to identify the source and rectify the issue as appropriate. The appropriate management measures will be implemented to eliminate the source of the odorous emission, and if necessary the equipment responsible for the odorous emissions may be shutdown until the issue has been rectified. The criteria for such actions will be included in the odorur management plan.

Additionally, Willmott will conduct an odour survey along the boundaries of the site, to ensure that the odour no longer detectable at any boundary following rectification or management works. The odour survey will consist of a Willmott employee undertaking a walk around the boundary of the site to ensure that no odorous emissions can be detected, and completing a form on the odour survey. Any potential odours will be mitigated through this management process. Should an on-going issue with odorous emissions from the site occur, Willmott will engage an external specialist to conduct a detailed odour assessment and identify the source of the odour and resolve the issue.

The only other potential source of odour at the site is the existing southern wastewater pond. This pond can emit a mild organic odour, which can occasionally be detected at close proximity to the pond. No odour from this pond has been detected by Willmott at the site boundary, nor reported off-site.

The existing southern pond and the site wastewater management system are inadequate for the proposed mill operations. A new surface water (stormwater and wastewater) management system will be implemented at the proposed mill (refer to Section 11.4) and the southern pond will be decommissioned and filled in the initial stages of the proposed project (to be completed in Year 2 of the project works). Discharges to the pond in Year 1 of the works staging will comprise process water which has been treated to remove the organics. Therefore, odorous emissions from the southern pond will be eliminated as part of the proposed works.

#### 10.6 Dust

Management of dust and particulates at the Willmott site will continue through construction and into operation. It will reflect the level and type of use of the various elements of the site as they are progressively developed and commissioned. The majority of the processing areas will be sealed with concrete, and other areas of the site will either be hardstand or paved. In addition, Willmott will utilise dust suppression strategies for high dust and particulate generating areas and stockpiles.

The potential dust and particulate generating areas and activities at the Bombala facility are summarised in Table 41 and the proposed mitigation measures are identified. A plan showing the areas of the site to be sealed with concrete, hardstand and paving is presented in Figure D11. Hardstand areas comprise 300 mm of compacted road base, and cover the majority of the site. The access roads on site are paved.

Area/Phase	Potential Dust and Particulate	Risk Rating Proposed Mitigation Measures		Risk Rating
	Generating Activity			Post Mitigation
				Measures
Construction phase	Construction activities	High	Water spray suppression by	Medium
			water truck where necessary	
Log storage and sorting area	Handling of timber	Low	Hardstand area	Low
Road entering from the Sandy	Vehicle movement	Medium	Paving	Low
Lane and running along the			One way traffic to reduce the	
southern boundary of the mill			number of vehicles	
			movements on the road	
Internal road which incorporates	Vehicle movement	Medium	Paving	Low
the two weighbridges adjoining			One way traffic to reduce the	
Delegate Road and Sandy Lane			number of vehicles	
			movements on the road	
Green mill (including poles)	Saw milling operations	Medium	Semi-enclosed building	Low
			Concreted area	
			Watered by water truck during	
			summer months	
Treatment plant	Handling of sawn timber	Low	Sealed and bunded area to	Low
			minimise contaminants	
			entering other parts of the site	

# Table 41 Summary of Dust and Particulate Generating Areas

Area/Phase	Potential Dust and Particulate	Risk Rating	Proposed Mitigation Measures	Risk Rating
	Generating Activity			Post Mitigation
				Measures
Boiler and kiln plant, steamers and	Handling of timber	Low	Concreted area	Low
dry storage			Boilers, kilns and steamers	
			are within enclosed buildings	
			Dry storage is in an roofed	
			area	
			Watered by water truck during	
			summer months	
Dry/planer mill	Planing of timber to size	Medium	Concreted area	Low
			Semi-enclosed building	
Wood chips and sawdust storage	Stockpiles	High	Existing stockpiles to be	Medium
area			removed over a two-year	
			period	
			New storage will be within	
			concrete bunkers	
General site	General site activities (e.g. forklift	Low	Water spray suppression by	Low
	movement)		water truck where necessary	
			during summer months	
			Majority of the site is	
			hardstand areas	

Dust suppression by water sprayer will utilise the uncontaminated stormwater captured onsite in ponds (refer to Section 11.4). During the period in which the existing residue stockpiles are progressively removed, the stockpiles at the back of the existing site may continue to generate some dust in certain weather conditions which may blow onto a neighbouring property. Willmott has implemented a procedure to manage the remediation of any dust-related impacts off-site (see Section 12.6).

A dust management plan will be developed prior to construction to detail the procedures which will be employed to minimise dust generation from the site.

Willmott has experienced some dust and particulates problems at the Bombala facility during dry weather conditions. These are, however, routinely managed with water cart applications. The key dust issue at the Bombala facility is the management of the residue stockpiles. As discussed in Section 12.6, the proposed measures for the existing and proposed stockpiles will result in better management of the stockpiles and significantly reduce the quantity of residual material stored at the site.

## 10.7 Conclusions

The air assessment indicates that the emissions to air for the expanded mill will meet the POEO (Clean Air) Regulation standard of concentration limits and the DECCW impact assessment criteria. Therefore, there is no risk to human health posed by the emissions.

Monitoring of the wood fired boiler emissions will be undertaken during the commissioning of the proposed mill to confirm the POEO compliance of these discharges to air, in view of the installation of multiclones.

No odour impacts beyond the boundary of the site are expected. The surface water system redesign which eliminates the southern pond will remove a potential key source of odorous emissions at the site. In addition, the dust control measures proposed for the expanded mill are expected to mitigate potential dust impacts compared to current levels.

#### 11. SOIL, GROUNDWATER, SURFACE WATER AND WASTEWATER

A soil, groundwater and surface water (including wastewater and stormwater) management plan has been developed for the site and is included in Appendix D. The management plan outlines the strategies that will be adopted by Willmott during their proposed expansion of the existing integrated sawmilling and value-adding facility. The objective of the management strategies is to rectify legacy soil and groundwater contamination that has been identified at the site, and to implement systems and procedures for the expansion of the plant that ensure that impacts to the soil, groundwater and surface water are managed in accordance with industry best practice.

#### **11.1 Construction Management**

A specific Construction Management Plan will also be prepared prior to construction works commencing. This will provide specific procedures that will be followed during the construction phase to ensure that environmental impacts are minimised. In addition, an Operational Environmental Management Plan (OEMP) will be implemented post development to ensure that the site is appropriately managed during the future operation of the plant.

A proposed implementation timetable for the soil, groundwater and surface water management strategies, related to the specific construction stages of the development is provided in Table 42. Specific details regarding each of the management strategies are outlined in the following sections.

Stage of Development	Management Strategy	Duration (from start of construction works)
Year 1		
Stage 1 - Clear existing chip	Dust Suppression - cease using water from existing southern and northern	Immediate
storage area in the south-	ponds for dust suppression.	
east corner of the site	Stockpile Management:	2-3 years (total)
	1. Relocate/deplete existing wood chip stockpiles	Ongoing
	2. Construct berm to divert stormwater from southern pond	1-2 months
	3. Construct Pond 2 in south-western portion of site	1-2 months
	Further soil and groundwater sampling program	2-3 months
Stage 2 - Clear existing site	New sewerage system	4 weeks
	Remediation of existing diesel underground petroleum storage system (UPSS)	2-3 weeks initial, up to 6 months
Stage 3 - Develop eastern	Wastewater management measures for new treatment plant:	
portion (existing site area) of	1. Steamer/kiln condensate – pre-treatment to using activated carbon	2 months for trial, then 2 months to
the mill site for dry mill and		implement final system
treatment plant	2. Construction of new CCA/ACQ treatment area and demolition of existing	1-2 months to construct
	CCA plant	
	Remediation of CCA impacted soil	2-3 months

# Table 42 Proposed Implementation Timetable for Soil, Groundwater and Surface Water Management Strategies

Stage of Development	Management Strategy	Duration (from start of construction works)
Stage 4 - Develop new western portion of site	Construction Pond 1 in north-western portion of the site	1-2 months
Stage 5 - Develop the remainder of the eastern portion of site		
Year 2	Southern pond remedial works:	6-12 months (total)
	<ol> <li>Construction of wetland</li> <li>Pilot trial</li> <li>Contingency period (if necessary)</li> </ol>	1-2 months 1-2 months 1-2 months
	<ol> <li>Removal of contaminated sediments from pond</li> <li>Reinstatement of drainage line</li> </ol>	4-6 weeks 1-2 months

#### 11.2 Soil Management

The objective of the soil management measures is to identify and rectify all legacy contamination issues at the site. In addition, the proposed expansion of the existing facility has been designed to minimise impacts to the soil in accordance with industry best practice.

General land management strategies proposed by Willmott for the expanded site include bunding of the treatment plant, sealing of the trafficked areas of the site with either concrete and/or bitumen or stabilised crushed rock, designated roads for traffic movement and waste management practices. The proposed land management measures will reduce the risk of dust issues, and soil or groundwater contamination as a result of the operations of the proposed mill. In addition, the proposed measures will prevent further contribution to the existing site contamination issues.

Prior to the clearance of the existing site for the redevelopment works, a soil sampling program will be undertaken to verify the previous soil assessment results, in light of the time which has passed since the last assessment, and to provide updated information on the site condition. The program will focus on those areas that have not been previously assessed but where there is the potential for soil contamination to have occurred. This will include sampling in the vicinity of the existing CCA treatment plant, former waste disposal area and treated timber storage areas.

Any areas with significant contamination for an ongoing commercial/industrial land use will be remediated during Stage 3 of the development. This is expected to include in the vicinity of the existing CCA plant. A Remedial Action Plan (RAP) will need to be developed to document the proposed remedial strategy and validation sampling program necessary to confirm the efficacy of the remedial works. This will need to include an assessment of the feasibility of various remedial options, including on-site treatment and reuse of the treated soil.

It is likely that the most appropriate remedial approach will involve the immobilisation of the contaminants with cement (stabilisation) in order to mitigate any potential environmental impacts. Pilot testing of the soil treatment method would need to be undertaken to confirm that this method is suitable and to optimise the treatment method. The treated soil could then be used to backfill the remedial excavation, or utilised as a cement stabilised roadbase or subbase for pavements.

The existing diesel UPSS will also be removed in accordance with *POEO (Underground Petroleum Storage Systems) Regulation* during Stage 2 of the redevelopment work. Any petroleum hydrocarbon impacted soil will also be excavated and either disposed of off-site or treated on-site. The most appropriate remedial strategy for any hydrocarbon impacted soil is likely to involve on-site treatment using bioremediation. It is expected that only a small area in the north-eastern portion of the site will be needed to undertake the bioremediation.

Following the successful completion of the remedial works, as confirmed by soil sampling, the soil will be reused at the site. The remedial acceptance criteria would be that the contaminant levels in the soil are below the guidelines applicable for a commercial/industrial land use and that the contaminants are not likely to cause impacts to groundwater.

#### 11.3 Groundwater Management

Further groundwater assessment will be performed to determine the magnitude and extent of the contamination present at the site and the need for any active remediation of groundwater. This will include an initial groundwater monitoring episode involving sampling from all existing wells at the site. Additional groundwater monitoring wells will be installed and monitored following the initial groundwater monitoring episode to delineate the extent of the groundwater plume.

The contaminant concentrations in the groundwater will be compared to the water quality objectives for the relevant environmental values of the groundwater. This will enable the risks to the relevant environmental values of the groundwater to be assessed and the need for remediation to be determined.

Should the need for active groundwater remediation be identified, then a RAP will be developed. This will include an evaluation of the feasibility of potential remedial options for the contaminant plume based on technical, logistical and financial considerations. The assessment will be completed over the next 12 months, and prior to the completion of construction of the proposed mill components.

The outcomes of the groundwater assessment will be incorporated into a groundwater management plan for the site. In addition, following the groundwater assessment, groundwater monitoring will be undertaken at the site on a six-monthly basis from the existing groundwater monitoring wells located at the site.

Should additional wells be installed at the site, then these would also be incorporated into the groundwater monitoring program. It is expected that at least five additional groundwater monitoring wells will need to be installed at the site. These include locations in the north-western and south-western portions of the site, and locations to delineate the extent of the groundwater contaminant plume. The locations of the existing and proposed groundwater monitoring wells are shown in Figure D12. The proposed monitoring program is detailed Section 20.3.5.

#### 11.4 Surface Water / Wastewater Management

The objective of the surface water management strategies is to rectify the legacy CCA issues predominantly associated with the southern pond. In addition, a key focus for the new plant is the ability to treat and/or reuse wastewater from the future plant so as to minimise the amount of mains water required to operate the plant. It is proposed that all wastewater generated at the plant be reused or treated, so that there is minimal off-site surface water discharge from the site.

Willmott has designed a new surface water (stormwater and wastewater) system for the treatment and disposal of the surface water on site, including rectification of the contamination present in the southern pond. The surface water management plan also includes provision for the segregation of potentially contaminated stormwater from clean stormwater and treatment strategies for each of these potentially contaminated streams. The new surface water system is shown in Figure D13.

# 11.4.1 Stockpile Relocation and Management

A key component of improving the surface water quality at the site is improved woodchip stockpile management measures. The area of woodchip stockpiles located in the southern portion of the site is currently being relocated. In addition, Willmott has an agreement in place which will see the woodchip stockpiles moved off-site for reuse by another firm. The removal of the stockpiles will take approximately two to three years to complete. Initially the relocation efforts will be focussed on the areas in the immediate vicinity of the southern pond, which will help to reduce the organic load to this water body overtime.

Whilst the stockpiles are being removed, a vegetated berm will be constructed between the southern pond and the stockpiles. This will be designed to reduce runoff from the stockpiles into the wastewater system and also to reduce the organic load of the runoff into the southern pond. The berm will have seepage drains at its base to allow surface water runoff to seep into the ground through the berm. This will assist to reduce the volume and improve the quality of the water that ultimately enters the southern pond. Any surplus drainage from the vegetated berm will be directed to Pond 2 which will be constructed in the southwestern portion of the site during Stage 1 of the redevelopment works (see Section 11.4.2).

#### 11.4.2 Construction of New Ponds

New ponds are proposed to be constructed in the north-western (Pond 1) and southwestern (Pond 2) portions of the site. Pond 2 is proposed to be constructed at the same time that the berm is constructed in Stage 1 and prior to the remediation of the southern pond. Prior to the remedial works, Pond 2 will store any excess stormwater discharge from the site and ensure that all runoff from the site is captured and tested prior to either reuse, off-site discharge or recirculation back into the southern pond for later treatment.

During the southern pond remedial works in Year 2 of the redevelopment, treated water from the southern pond will be stored temporarily in the southern pond until it can be tested and then either reused or discharged off-site.

Pond 1 will be constructed during Stage 4 to receive stormwater from the north-western portion of the site. The north-western pond (Pond 1) will receive drainage from the unsorted log storage area and the south-eastern pond will receive water from the green in-stick storage and kiln dried storage areas. A filter will be included in the inlet to the ponds to remove any coarse organic material.

It is expected that the water collected in Pond 1 will be largely uncontaminated as the contaminant sources will have been removed by this stage of the development. It is proposed that the water from this pond can be used in the new GOS kilns that will be constructed in the western portion of the site. These are estimated by Willmott to use approximately 12 ML/year in Year 4 of the proposed expansion. This water could also potentially be used for dust suppression.

#### 11.4.3 New Sewerage System

The new sewerage system will involve a septic tank and black water dispersion system. Black water from the septic tank will be pumped to a separate holding tank located in the north-eastern portion of the site, before being gravity fed into the series of dispersion trenches located in that area.

# 11.4.4 Wastewater Management Measures

The objective of the wastewater management measures is to capture all surface water, including wastewater, at the site and treat the wastewater (where necessary) so that it can be reused at the site (where possible). The wastewater streams that are/will be present at the site are:

- Condensate from the steamers and kilns which contains CCA and organic carbon;
- Spillages and excess CCA/ACQ associated with the treatment and drip down areas; and
- Stormwater runoff from the timber storage areas of the site.

# 11.4.4.1 Steamer/Kiln Condensate

The condensate sample retrieved from the existing plant indicates that the condensate is contaminated with CCA and organic carbon, and has a slightly acidic pH. It is proposed that the water will be pre-treated using activated carbon to remove the organic carbon contamination, and then reused where possible in the CCA process. Willmott has advised that at least 10% of the water required by the treatment plant can be sourced from steamer/kiln condensate after Year 4 of the proposed development.

Should it not be possible to reuse all the treated steamer/kiln condensate in the treatment plant depending on operational constraints, the water will be discharged into the future southern wetland system, where the water will be further treated and then reused elsewhere on the site, or although unlikely, discharged off-site (subject to monitoring and licensing).

The steamer/kiln condensate will initially be pumped into a holding tank where it will be cooled to below 49C, which is the minimum temperature required for activated carbon n treatment. The water will then be pumped into an activated carbon vessel situated in the vicinity of the boilers. This will remove organic carbon from the water. The removal of organic carbon is predominantly to ensure that the wastewater does not become reducing, which can lead to amenity impacts through the production of hydrogen sulfide gas and to prevent the high organic load from causing the clogging of pipework due to the generation of biomass. The water can then be reused or discharged into the future southern wetland system as discussed above.

# 11.4.4.2 CCA/ACQ Treatment Area

The CCA and ACQ treatment and drip down areas will be fully sealed, bunded and covered. This will minimise as far as practical the migration of CCA spillages from this area. An internal bund will separate the CCA and ACQ treatment areas. Any wastewater that

accumulates within the CCA and ACQ treatment and drip down areas will be collected in sumps and reused in the CCA/ACQ treatment processes respectively. That is, the areas of the site that will involve CCA/ACQ will be fully contained and therefore there will be no CCA/ACQ migration from this area. A dedicated forklift will be used in this area to prevent the migration of contamination on the wheels of vehicles from this area. The design of the CCA/ACQ treatment areas is in accordance with industry best practice for plants of this nature.

#### 11.4.4.3 Stormwater Runoff from Timber Storage Areas

Surface water from the treated timber storage areas will be captured in the existing northern pond. There is the potential that this water will be contaminated with low levels of CCA depending on the efficacy of the CCA/ACQ fixation process. The water that collects in the northern pond will be pumped back to the CCA/ACQ treatment plant and reused in the process to augment the supply of reticulated water. That is, it is expected that there will be no need to treat the surface water runoff from the CCA/ACQ treatment area.

The northern pond will also be upgraded so that it contains sufficient volume to ensure that any contamination present in the northern pond cannot migrate off-site during flood events. In addition, Pond 1, which is located down-slope to the north-west of the northern pond, will act as a failsafe for the capture of water from the northern pond during very significant flood events.

Parsonage Creek is the receiving body for stormwater run-off from the north of the northern pond. This water is not expected to be contaminated as there are no processing operations to the north of the northern pond.

### 11.4.5 Southern Pond Remedial Works

In view of the contamination present in the southern pond, remediation will be undertaken during the redevelopment works. This will be performed during Year 2 of the proposed redevelopment when the woodchip stockpiles have been relocated and the berm constructed, the CCA impacted soil remediated and the new treatment procedures for the steamer/kiln condensate have been implemented. It is necessary to remove the sources of contamination to the southern pond prior to the remedial works so that the remedial works for the southern pond effectively deal with the contamination and to ensure that the contamination does not occur in the future.

The most appropriate remedial strategy for the southern pond was chosen for the site based on technical, logistical and financial considerations, and estimated timeframes. This is proposed to involve treatment of the water from the southern pond in a wetland system. The treated water will then be reused at the site or discharged off-site discharge along the existing drainage line to the east of the site. This will allow the southern pond to be drained, remediated and replaced with a permanent wetland system.

The natural wetland system will be constructed down-stream of the existing southern pond. The objective of the wetland system is to provide primary treatment to the wastewater through aeration. The first step will involve a surface flow distribution and dispersal system which will promote the rapid oxygenation of the water by flowing the water through a series of concrete baffles. The second step will comprise a rock lined wetland where further oxygenation and precipitation will occur. Water will flow through the wetland using the natural land gradient. The wetland has been designed to ensure that the water is agitated as it flows through the wetland, and does not have the opportunity to pool, such that it can become anaerobic.

The aeration of the water in the wetland is expected to cause some of the dissolved iron in the southern pond to precipitate, which is also expected to remove (scavenge) the arsenic, and also potentially chromium, from solution. It is noted that the copper concentrations in the southern pond are very low as copper has precipitated, presumably within the sediments of the southern pond. The resultant water from the wetland is expected to have much lower total organic carbon (TOC), arsenic, chromium and iron contents. Aeration of the water is also expected to prevent the formation of hydrogen sulfide gas, reducing potential odour issues.

The natural wetland system is expected to reduce the contaminant concentrations in the water to below the water quality objectives for the protection of aquatic ecosystems (freshwater), should the water be discharged off-site. This is consistent with the NSW River Flow Objectives and Water Quality Objectives framework. However, the affectiveness of the remedial system will be verified with a pilot trial and ongoing monitoring program. It is noted that there is a low potential that there will be a need to discharge wastewater offsite as the water demand is expected to be much greater than the surplus wastewater.

#### 11.4.5.1 Pilot Trial

In order to confirm the efficacy of the remedial approach a trial will be undertaken. Water will initially be pumped through the wetland and held in Pond 2 where it will be analysed to confirm its composition. The frequency of monitoring is discussed further in Section 20.3.4.

If the water quality meets the water quality objectives for the protection of aquatic ecosystems (freshwater) as specified in ANZECC 2000, the water will be firstly reused onsite in the CCA/ACQ treatment process to augment the supply of mains water to the site, or secondly if necessary, discharged off-site.

The water quality criteria for the wetland system are outlined in Table 43. These are for the contaminants of concern at the site and are to protect off-site ecosystems should the water be discharged off-site. It is noted that surface water sampling will be performed in Saucy Creek, which is the nearest receiving surface water body, prior to any off-site discharge to verify background conditions in the creek and ensure that no off-site impacts occur.

Should the water from the wetland not meet the water quality standards for reuse (to be confirmed during the commissioning phase for the treatment plant) or off-site discharge (as outlined in Table 43), the water that has migrated through the wetland will be re-circulated into the southern pond and a series of contingencies will be implemented to increase the effectiveness of the wetland system (refer to Section 11.4.5.2).

Analyte	Guideline Value (mg/L)*
 Arsenic	0.013 (a)
Chromium (III)	0.0033 (b)
Chromium (VI)	0.001
Copper	0.0014
рН	6.5 - 8.0
ТОС	To be determined (c)
Ammonia	0.90
Iron	0.3 (b)
Nitrate (as N)	0.159
Aesthetic considerations	The water should not have an
	objectionable odour or colour.

Table 43 Acceptable Water Quality Limits for Off-Site Discharge

Notes:

\* ANZECC 2000 criteria for freshwater ecosystems, 95% level of protection

(a) ANZECC 95% trigger value for arsenic as arsenic V.

(b) ANZECC 2000 low reliability trigger value adopted in the absence of ANZECC 95% trigger values.

(c) To be set at the natural background level in Saucy Creek.

#### 11.4.5.2 Contingencies

#### **Activated Carbon Pre-Treatment**

Should the wetland not achieve its intended performance during the pilot trial, several contingencies are proposed to be implemented. The first contingency will involve pretreating the water from the southern pond with activated carbon to remove the organic carbon. This would be expected to increase the potential for the water to become rapidly oxidised in the wetland. Following the installation of the activated carbon filter, the pilot trial will be run for an additional 1-2 months.

#### **Above Ground Irrigation**

In the unlikely event that the water is still not of sufficient quality for reuse or offsite discharge following the installation of an activated carbon pre-treatment, the water is proposed to be reused to irrigate an adjacent pine plantation. This will involve pumping the water from a small pond on the down-stream end of the wetland, to a holding tank that will be installed near the southern boundary of the site, in the south-eastern portion of the site. This will allow the pre-treated wastewater to be irrigated by a series of drippers which will distribute water across the tree lot from a manifold. The area that will be subject to the proposed irrigation is occupied by a *Pinus radiata* plantation.

The dispersion system considered in the feasibility assessment by Van Leeuwen, Stoddard and Legler is designed to irrigate water at a rate of approximately 10 mm/day taking into account local rainfall and evapotranspiration. The calculations used to derive the average volume of water that can be safely irrigated are based on a series of very conservative assumptions. In addition, it is noted that the near surface soils at the site are very sandy and are expected to have a high water absorption capacity.

There is the potential that during very high rainfall events the volume of water that can be irrigated will need to be reduced. The holding tank to be located in the south-eastern portion of the site will be of sufficient quantity such that surplus water can be temporarily stored during high rainfall events. It is also noted that Pond 2 will be located down-gradient of the dispersion trenches to collect any surplus water during high rainfall events.

An evaluation of the potential environmental impacts associated with the irrigation of water from Pond 2 indicates that reusing the water from the southern pond that has been pretreated in the wetland to irrigate plantation trees is unlikely to cause any impacts to the environment. In particular, the arsenic, chromium and copper concentrations in the southern pond are below the guideline values considered suitable for use as long-term irrigation water (up to 100 years) as specified in ANZECC 2000. In addition, the calculated electrical conductivity (EC) of the condensate is slightly lower than the EC of saline irrigation successfully applied to a *Pinus radiata* plantation in Wagga Wagga with no deleterious effects. Further, the sodium adsorption ratio for the condensate of 0.2 is low and well below the thresholds where the soil structure is likely to be affected (>20 for sandy soils), and the organic carbon content of the water is not expected to exceed DECCW's organic loading threshold of 1 500 kg/ha/month.

Therefore, irrigation is considered to be an appropriate reuse strategy for the wastewater from the southern pond and can therefore be implemented as a contingency during the remedial works on the southern pond in the unlikely event that the wetland is not fully effective.

#### 11.4.5.3 Removal of Contaminated Sediments and Reinstatement of Pond

Once the southern pond has been drained, the sediments will be excavated and stockpiled. This will be scheduled to be undertaken in summer when surface runoff is at a minimum and to increase the time it takes for the sediments to dry. In addition, surface water inflow to the pond will be further reduced by the berm which will divert water from the southern pond temporarily into Pond 2 during the remedial works.

The sediments will be stockpiled in a flat area of land adjacent to the southern pond and bunded to ensure there is no stormwater runoff from the stockpile. Following the stockpiling and drying of the sediments, the sediments are proposed to be tested to determine their composition and allow the remedial approach for the sediments to be determined. It is expected that the sediments will comprise a mixture of clay, silt, and organic matter contaminated with copper.

The most likely remedial method for the contaminated sediments is likely to involve on-site treatment using cement stabilisation, which is generally suitable for heavy metal contaminated soils. This is the same approach that is recommended for the treatment of the CCA impacted soil present in the vicinity of the existing CCA treatment plant (refer to Section 11.2).

#### 11.4.5.4 Reinstatement of Drainage Line and Final Wetland System

Following the successful remediation of the southern pond, the pond can be backfilled. A meandering wetland system will then be constructed in the drainage line, replacing the southern pond. This will form part of the wetland that was constructed for the remediation of the southern pond. The primary objective of the meandering wetland system is to prevent water from pooling and therefore potentially becoming anaerobic. The wetland system will help to oxygenate any surface water runoff that could potentially contain organic matter.

The wetland will be surrounded by trees which will assist to improve the quality of the water entering the wetland including removing any coarse organic material (e.g. woodchips) and sediment from unsealed areas.

Ultimately, the wetland system will receive some organic carbon laden stormwater runoff from the stockpiles in the southern portion of the site (until they have been removed) although this is likely to be significantly reduced as a result of the berm and associated seepage drains. The southern wetland will also receive runoff from the southern portion of the existing plant site.

The water quality in the future wetland system is expected to be considerably better than at present as a result of the improved stockpile management measures, treatment of steamer/kiln condensate prior to discharge into the future wetland system (refer to Section 11.4.4) and remedial works in the vicinity of the existing CCA treatment plant. In addition, the wetland is expected to cause a progressive decrease in the organic carbon content of the water as it migrates through the wetland such that it can ultimately be reused, irrigated or of sufficient quality that it could potentially be discharged off the site, subject to testing.

#### 11.5 Conclusions

The proposed mill will include measures to reduce the potential for the contamination of land, surface water and groundwater, including bunding and the re-design of the stormwater and wastewater systems. In addition, existing contamination issues, including soil contamination associated with the existing CCA treatment plant and contaminated water in the southern pond, will be assessed and rectified. Re-use of water will be maximised from clean pond storages or treated wastewater to reduce the consumption of mains water.

# 12. WASTE AND BY-PRODUCT MANAGEMENT

In accordance with the POEO Act, waste can be classified as general solid waste (putrescible), general solid waste (non-putrescible), restricted solid waste, liquid waste, hazardous waste and special waste. The waste generated at the Willmott facility are classified as general solid waste (putrescible), general solid waste (non-putrescible), liquid waste and hazardous waste.

The types of wastes and by-products generated at the mill will not change as a result of the proposed expansion. In fact, the proposed mill will benefit from the procedures and markets that have been developed and are now firmly in place due to the existing site operations. However, the volumes of wastes generated at the site are expected to be proportionally higher due to the increased sawlog intake and production capacity. The volumes and types of wastes and by-products which are predicted to be generated from the expanded plant are described in the following sections, along with the current and intended future management arrangements. The wastes and by-products are summarised in Table 44.

A draft Waste/By-product Streams Procedure and a draft Solid Timber Waste Procedure have been developed for the existing site to ensure the appropriate management of the wastes and by-products generated. These will be updated and finalised to reflect operations at the proposed mill.

### 12.1 Summary of Wastes Generated

A summary of the all waste generated at the Willmott facility is shown in Table 44.

Classification	Waste Type	Approximate Current Volume (tpa) (based on current intake of 106,000 tpa)	Approximate Expanded Volume (tpa) (based on intake of 400,000 tpa)
General solid	Steel waste	6	< 6
waste (non-	Wood residues including	74,800	186,900
putrescible)	bark, untreated timber		
	waste, woodchips,		
	sawdust, pole waste and		
	shavings		

Fable 44	Summary	of Waste	Generated

Classification	Waste Type	Approximate Current	Approximate
		Volume (tpa) (based	Expanded Volume
		on current intake of	(tpa) (based on
		106,000 tpa)	intake of
			400,000 tpa)
General solid	General waste	80	120
waste			
(putrescible)			
Hazardous waste	General hazardous waste	24	12 - 14
	Treated timber waste	50	110
Liquid waste	Waste oil	3 100 litres pa	6 000 litres pa

# 12.2 General Solid Wastes (Non-Putrescible)

A range of general solid wastes (non-putrescible) are generated at the Willmott mill, and these are described in detail in Sections 12.2.1 to 12.2.5.

# 12.2.1 Steel Waste

Waste steel is generated in the mill operations from the packing and repacking of materials and regular maintenance activities. The steel waste currently comprises approximately 6 tpa, and less than this is expected to be generated by the proposed mill operations. This will be reduced from 6 tpa to less than 6 tpa with the introduction of plastic strapping and the limiting of use on poles.

Steel straps are used to pack and repack various products. These steel straps are not recycled for reuse as strap because they have been tensioned for packaging and are therefore susceptible to failure, presenting a potentially serious occupational health and safety risk to Willmott personnel. This means they are not able to be reused. The used steel straps are currently stored in large bins in various areas of the site and are taken to the Bombala council landfill on a weekly basis for recycling. This practice will be continued but at a vastly reduced volume in the proposed mill.

The proposed plastic straps will replace the steel straps in the majority of the packing streams. The plastic straps are welded together on the overlapping ends by a hand held machine. Therefore, as a result no leftover plastic straps will be generated. Additionally, Willmott will investigate the use of quick release straps that can be reused for packing intermediate products between processes.

Scrap steel is also generated from plant maintenance activities at the site. The current management practice will be continued following the expansion, and involves the storage of scrap in 44 gallon drums at the mill workshop, with larger scraps stored adjacent to the workshop in a separate pile. Once sufficient quantities become available the site maintenance coordinator will contact various scrap metal merchants to arrange for disposal.

# 12.2.2 Wood Residues

Wood residues including bark, untreated timber and damaged boards, chips and sawdust, pole waste and shavings are generated by several operations at the existing and proposed sawmill. Wood residues generated at the proposed mill are continuously removed from the site, and wood residues, except for shavings, that are not removed immediately will be stored for approximately 3 000 tonnes in concrete bunkers. The concrete bunkers will be located in the western portion of the site adjacent to the proposed green mill.

The proposed management strategies of the existing stockpiles of wood residues and the wood residues generated by the proposed sawmill will be discussed in Section 12.6. A summary of the wood residues is provided in Table 45.

## 12.2.2.1 Bark Waste

Pine logs will be delivered to the site bark-on, and will be de-barked on site. This bark will be sold as mulch or boiler fuel, for which there is a ready market. The current generation of bark waste is 5 000 tpa, and 18,800 tpa is expected at the proposed mill.

# 12.2.2.2 Untreated Timber and Damaged Boards

Prior to the timber treatment process, timber off-cuts and damaged boards are generated at the facility from the handling of materials and during the trimming process. The treatment plant operators are the last quality control point in the production process. Any damaged products presented to the treatment plant will be sent back to their original production point to be replaced and damaged items sent to the chippers.

# 12.2.2.3 Chips and Sawdust

The uncontaminated chips and sawdust generated by the operations on-site are sold, and this will continue with the mill expansion. The material is currently sold to customers in NSW and Victoria. Approximately 143,300 tpa are expected to be generated at the proposed mill.

Some of the chips and sawdust in the stockpiles in the residue area from the existing mill have become cross contaminated with other materials in neighbouring stockpiles. These materials must be separated and are sold to other companies as boiler fuel for their boiler installations. A small portion will also be used as boiler fuel for the existing wood fired boiler, if it is retained.

# 12.2.3 Pole Waste

Pole waste is generated from the processing of poles to size, and currently approximately 22,000 tpa is generated at the mill. The proposed mill will chip the sides of the poles prior to processing, and therefore less pole waste will be generated as a result, reducing to 8 400 tpa.

## 12.2.4 Shavings

Shavings from the planer are disposed in a fully sealed system. An extraction system removes the shavings from the planer, and any dust is captured by a collector/filter. The shavings are then blown through a pipe fitted to the back door of a special-purpose semi-trailer. In order to fully seal the system, a return air pipe is fitted to the back door of the semi-trailer to draw positive air out. Up to four semi-trailers can be connected to the system, and when a semi-trailer is filled to capacity the trap door is automatically shut and the next semi-trailer will be used. Filled semi-trailers are continuously taken offsite for disposal. Shavings that are not immediately removed from the site will be stored in the semi-trailers within the dry mill building. There will be no shavings stored in open areas.

Approximately 16,400 tpa of shavings will be generated in the proposed mill, increasing from the 2 000 tpa currently generated. The proposed mill will produce a wider variety of products that require planing to specification, and therefore there will be a large increase shavings waste in the proposed mill compared to the current mill.

# 12.2.5 Wood Residues Summary

A summary of the wood residues generated at the Willmott facility is shown in Table 45, and the density of the wood residues is shown in Table 46.

Residue Type	Approximate Current Volume (tpa) (based on	Approximate Expanded Volume (tpa) (based on
	current intake of 106,000 tpa)	intake of 400,000 tpa)
Bark	5 000	18,800
Chips and sawdust (including	34,000	143,300
chipped untreated timber and		
damaged boards)		
Pole waste	22,000	8 400
Shavings	2 000	16,400
Total (tonnes per annum)	63,000	186,900
Total (m3 per annum)	~ 200,000	~740,000

# Table 45 Summary of Wood Residue Generated

There are differing bulk densities of residues generated by this project, which determines handling and storage of these materials onsite and during transportation. To clarify for the reader, the densities of the main materials associated with the project are shown below.

## Table 46 Density of Wood Residues

Product	Density	
	(tonnes/m³)	
Bark	0.29	
Chips and sawdust (including chipped untreated timber and	0.29	
damaged boards)		
Pole waste	0.67	
Shavings	0.10	

There is an approximately two and a half fold increase in wood residue generation on a tonne basis, despite the four fold increase in production. This is due to better plant design, upgrading of old equipment and more efficient operations and procedures.

# 12.3 General Solid Wastes (Putrescible)

#### 12.3.1 General Waste

General domestic waste generated at the site is stored in suitable containers in various areas of the site to ensure rubbish collected does not leave site and cause pollution to surrounding properties. General domestic waste is disposed of at the Bombala council landfill.

The introduction of plastic strapping and its disposal will not impact on the general waste volume. Approximately 120 tpa of general waste is expected to be generated and disposed of at the proposed mill.

# 12.4 Hazardous Waste

There are two types of hazardous wastes generated at the Willmott mill, and these are described in detail in Sections 12.4.1 and 12.4.2.

# 12.4.1 General Hazardous Waste

A general hazardous waste stream is generated from the bunded timber treatment operations. This waste consists of small quantities of sawdust and soil contaminated with dilute CCA solution. Approximately 24 tpa of this CCA sludge is currently generated at the mill. The contaminated material is contained within the treatment area drip pad, and a dedicated forklift is assigned to the treatment plant to ensure that these materials are kept within sealed and bunded areas.

This current management approach will be continued at the proposed mill, and this sludge waste is expected to reduce to 12-14 tpa. The reduction in sludge volume is due to significant improvements in the design and operational procedures at the treatment plant facility including better fixation, improved bunding, changes to the unloading of chemicals and dedicated vehicles in the treatment plant to avoid tracking in of contaminated material, and preventing the generation of hazardous sludge.

The DECCW has granted a general approval of the immobilisation of contaminants in CCA contaminated waste (NSW EPA 2001). The approval specifies the guidelines for management and disposal of CCA contaminated waste.

The contaminated material is stored in secure steel bins with fitted lids on the drip pad. The transfer of waste bins into trucks for disposal is carried out within the bunded drip area, and trucks within the bunded area are decontaminated by hosing down the wheels before proceeding to non-bunded and unsealed areas of the site. Willmott has engaged Cleanaway to remove all hazardous wastes from the site. This approach will be continued at the proposed mill.

# 12.4.2 Treated Timber Waste

Treated timber waste is generated from the handling of the treated timber after the treatment process. Damage to the treated timber may occur during this handling and the timber then cannot be sold as first grade product. The damaged timber is sorted and separated into waste material and lower grade timber product that can be sold. All sorted materials are stacked and packed for future use or for disposal. All waste timber is disposed of to an approved contaminated waste landfill. Approximately 50 tpa of treated wood waste is currently generated and this will increase to around 110 tpa at the proposed mill.

The previous timber waste that was on the site, and that was inherited from the previous mill owner/operator, has already been sorted and disposed of securely.

#### 12.5 Liquid Wastes

#### 12.5.1 Waste Oil

Waste oil is generated from the regular maintenance activities at the Willmott facility. The waste oil is currently decanted into two large bulky containers which are stored in the loader maintenance workshop. Approximately 3 100 litres is generated per annum at the existing site, and this will rise to 6 000 litres. The workshop is fully enclosed with a concrete floor. In the proposed mill this management approach will be continued.

Spill containment equipment such as absorbent material, brooms, shovels and spill containers are kept on hand to deal with any leaks and spills. Nationwide oil recyclers are engaged to handle and dispose of all waste oil generated by the site maintenance operations.

#### 12.6 Management of Wood Residues

A significant quantity of the existing wood residue stockpiles on the site was left behind by the previous occupiers of the site, and the remaining quantities were generated by the Willmott operations. A summary of the volume of wood residue currently on site is provided in Table 47.

Residue Type	Quantity (m <sup>3</sup> )
Pole Waste	64,440
Sawdust (from previous owner)	0
Sawdust (generated by Willmott)	100
Woodchip	12,700
Plantation Mulch	5,600
Boiler Fuel (mixture of pole waste, sawdust and wood chips)	0
Total	82,840

 Table 47
 Volume of Wood Residue Currently On Site (as at June 2009)

The Fire Management and Emergency Plan for the site indicates that individual stockpiles should be kept in volumes of 10,000-15,000 m3 for plantation mulch and pole waste, 4 000-6 000 m3 for woodchips and 3 000-5 000 m3 for sawdust. This is to prevent large stockpiles from self-combustion, as a result of moisture and heat build-up within the stockpiles. Although 82,840 m3 of wood residues are currently stored on site, the stockpiles are kept within the size limits to prevent self-combustion from taking place.

Willmott will implement the following measures to manage the wood residue issue in the immediate and longer term:

- Address current and future output of the major residue product groups (woodchips and boiler fuel) via long term supply agreements with key organisations within the industry; and
- 2. Address remaining residue stockpiles via a number of short term agreements designed to tackle one product group at a time, with a target to reducing the stock to nil.

Negotiations on two key residue supply arrangements were commenced in mid-2009 with two major NSW companies. Conclusion of these two supply agreements will ensure that Willmott not only reduces its stockpile of existing residue product within three years, but will also ensure it can manage its new production of woodchip and pole waste into the future without reoccurrence of legacy stockpile issues.

For the lower quality residue products, such as boiler fuel, commercial arrangements are in place to export the material off-site. This will continue until the existing stockpiles are removed within approximately 3 years from approval. In the case of woodchip, a separate contract has been negotiated for sale of as much product as can be supplied, potentially over the life of the Forests NSW Wood Supply Agreement.

These two key supply agreements are complemented by a number of other contractual arrangements to sell existing residue products to local producers in ACT, South Coast of NSW and Bairnsdale Victoria, all of which will enable all residue to be sold off-site, as well as the existing stock levels to be managed downwards over time.

# 12.7 Conclusions

The current operations at the Willmott facility involve recycling, reusing or selling as much of the waste generated on site as possible, and this will continue at the proposed mill. There will be an increase in treated timber waste, wood residue, waste oil and general solid waste as a result of the mill expansion; however, the quantity of steel waste and hazardous waste will decrease compared with the current mill operation.
# 13. PRELIMINARY HAZARD ANALYSIS

A range of chemicals are stored and used at the Willmott Bombala site. These include:

- Chromated Copper Arsenate
- Solvents and epoxy putty for workshop activities
- Water treatment chemicals for closed boiler water
- Bleach for treated timber storage
- Diesel and LPG

These substances are secured and stored in appropriate storage areas in and around the site. Copies of material safety data sheets relating to the substances listed above are filed in the main office. In addition a second copy is located in the site emergency information box at the main entry to the site. Strict procedures are in place via the Fire and Emergency Plan to manage hazardous materials and chemicals used at the site. This ensures that the environmental risks associated with chemical usage, such as spills impacting on soil and groundwater, are minimised.

The same range of substances is expected to be stored and used on-site for the proposed mill. However, the increased operations will require greater volumes of these chemicals to be handled and managed. There is therefore a moderate environmental risk associated with chemical usage and storage associated with the mill expansion.

The existing Fire and Emergency Plan will be amended as part of the EA process, to ensure that the Plan and associated procedures adequately address the increased volumes.

The project was screened in accordance with the requirements of the NSW State Environmental Planning Policy No. 33 (SEPP 33), to consider the level of risk posed to the community and environment by the mill expansion. Due to the nature and quantity of treatment chemicals stored on the site, the project triggered the requirement to undertake a PHA. This was undertaken by Advitech Pty Ltd, and is presented in Appendix I.

The PHA comprised the conduct of a risk assessment to identify and evaluate risks with the potential to create off-site impacts and a qualitative assessment of the risks. All risks identified during the risk assessment with high cumulative, consequence and likelihood scores were qualitatively assessed and have demonstrated effective technical and management controls to ensure the ongoing safety of the proposed development. A summary of the high risk scenarios and the proposed management measures is presented in Table 48.

Scenario Type	Activity/Plant	Potential	Proposed Management Measures
		Hazard	
High cumulative	Treatment Plant	Loss of	Training, adequate procedures, spill
risk		containment	kits and tanks are place on
			hardstand
	Log store,	Operational	Noise attenuation on machinery,
	debarker and	noise	building designs that minimise noise
	transport in		propagation and white noise
			beepers on vehicles
High	Log store,	On-site vehicle	Entry and exit designed to minimise
consequence	debarker,	collision	collision, adequate turning circles
risk	transport in, finish		and transport avenues, speed limits
	store and dispatch		and traffic management of
			procedures
	Sawmill, stacker,	Collection of dust	Training in housekeeping
	dry mill and planer	on hot machinery	procedures, building designed to
		resulting in fire or	minimise dust build up on hot
		explosion	surfaces and saw dust is generally
			damp and coarse
High likelihood	Finish store and	Noise from truck	Training of truck drivers in efficient
	dispatch	entering and	vehicle handling and no new traffic
		leaving the site	routes will be used

Table 48High Risk Scenarios

None of the other hazard scenarios identified had the potential to present an unacceptable risk to the surrounding land users. Additionally, the results of the transport route evaluation indicate that the transport screening thresholds for Classes 3 and 8 will not be exceeded, and other substances used and stored on site will be transported intermittently and in low quantities.

Willmott will adopt management procedures recommended in the PHA that incorporate practices to prevent risk scenarios occurring through:

- Appropriate engineering controls, process monitoring and, physical inspections of all components of the storage tanks;
- Emergency Response Plan; and
- Training and education of personnel with regard to emergency response and location of safety equipment in the new areas.

These recommendations represent standard practice for Willmott, and will be extended to encompass the proposed mill prior to its commissioning.

# 13.1 Conclusions

The PHA completed for the proposed mill has demonstrated that with the technical and management controls proposed for the mill there will be no unacceptable risk to the surrounding land users. Therefore the mill expansion is not considered a hazardous or offensive industry. Further, the proposed expansion is not considered to be potentially hazardous with respect to transport.

# 14. ENERGY AND GREENHOUSE GAS EMISSIONS

Energy is used at the existing Bombala site to power the stationary and mobile plant, and to fire the boilers. The energy is supplied as electricity from the main grid. Occasionally, this is supplemented with low levels of power generated in the wood-fired boiler. The consumption of energy also results in the generation of greenhouse gas emissions.

Various additional energy-consuming items will be installed at the site for the proposed expansion. The proposed plant will contribute to greenhouse gas emissions through energy use and activities such as transport and waste disposal. Annual emissions of greenhouse gases from the Willmott facility, including by the proposed plant have been estimated. The greenhouse gas emissions are described in the following sections.

## 14.1 The Greenhouse Effect

The mixture of gases present in the atmosphere regulates the earth's temperature by absorbing some of the heat released during the warming of the earth's surface by sunlight. This "natural greenhouse effect" is the term for the absorption of heat by the gases, which keeps the earth in a temperature range at which life can be sustained. The majority of the natural greenhouse effect is due to water vapour, and the remainder is due to gases such as carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>). Human activities are emitting additional greenhouse gases into the atmosphere, increasing the concentration of these gases. The result is termed an "enhanced greenhouse effect" or global warming where more heat is trapped increasing the earth's surface temperature.

# 14.2 Greenhouse Gases

The most significant greenhouse gas is water vapour; however, little impact is made on the level of this gas by human activities (CSIRO 2001). The greenhouse gases that are increased by human activities and their sources are presented in Table 49.

Greenhouse Gas	Major Sources								
CO <sub>2</sub>	Burning of fossil fuels (coal, oil and natural gas) and deforestation.								
CH <sub>4</sub>	Digestive processes of agricultural grazing animals such as cattle								
	and sheep, landfills, rice cultivation, wastewater treatment								
	coalmines and natural gas fields.								
Nitrous oxide (N <sub>2</sub> O)	Burning vegetation and fossil fuels, and agricultural activities.								
Hydrofluorocarbons (HFCs)	Air conditioning and refrigeration.								
Hydrofluoroethers (HFEs)	Use as cleaning solvents.								
Perfluorocarbons (PFCs)	Aluminium production.								
Sulfur hexafluoride (SF <sub>6</sub> )	Electricity transmission and distribution.								

Table 49 Greenhouse Gases

(Source: CSIRO 2001)

Of these gases,  $CO_2$ ,  $CH_4$  and nitrous oxide (N<sub>2</sub>O) are emitted in the greatest quantities in Australia.

# 14.2.1 Greenhouse Gas Global Warming Potentials

The greenhouse gases vary in terms of their ability to absorb heat and warm the earth's surface. This ability is indicated by the Global Warming Potential (GWP) of each gas, which is determined relative to  $CO_2$  (DCC 2009). These potentials allow all the greenhouse gases to be expressed as a  $CO_2$  equivalent ( $CO_2$ -e), such that a total greenhouse gas emissions value can be calculated. The GWPs for the greenhouse gases are provided in Table 50.

 Table 50
 Greenhouse Gas Global Warming Potentials

Gas	GWP					
CO <sub>2</sub>	1					
CH <sub>4</sub>	21					
N <sub>2</sub> O	310					
HFCs	140-11 700 (depending on species)					
HFEs	100-500 (depending on species)					
PFCs	6 500-9 200 (depending on species)					
SF <sub>6</sub>	23 900					

(Source: DCC 2009)

### 14.2.2 Greenhouse Gas Emission Categories

Greenhouse gas emissions may be categorised as Scope 1, 2 or 3 emissions depending on whether they are direct or indirect emissions. This is in accordance with the Department of Climate Change (DCC) *National Greenhouse Accounts (NGA) Factors,* June 2009. Scope 1 (direct) emissions are generated from sources within the boundary of an organisation and as a result of the activities performed by that organisation. Examples of Scope 1 greenhouse gas emissions are the combustion of natural gas in boilers, and the consumption of fuel in company-owned vehicles.

Scope 2 and 3 (indirect) greenhouse gas emissions are generated as a consequence of an organisation's activities, but are physically produced by other organisations. Scope 2 emissions are indirect emissions from the generation of electricity purchased and consumed by the organisation. Scope 3 emissions are emissions generated external to the facility as a result of the activities of the facility, excluding electricity consumption. Examples of Scope 3 emissions include the emissions from the extraction, production and transport of fossil fuels which are used on site.

Greenhouse gas emissions may also be categorised as either energy related or nonenergy related. Energy related emissions are generated by the combustion of fuel which is used to produce electricity, steam or heat.

## 14.3 Greenhouse Gas Emissions at Willmott

Greenhouse gas emissions will be generated at the Willmott site as a result of the expansion. Direct emissions will result from natural gas consumption and combustion of wood by the existing wood fired boiler. Indirect emissions will be produced as a result of electricity use, waste disposal to landfill and also the transportation of raw materials, products and wastes to and from the site. These activities are summarised in Table 51 and it can be seen that  $CO_2$  is the main greenhouse gas expected to be emitted as a result of the operation of the proposed plant.

Category	Activity	Gas Emitted
Natural gas consumption	Scope 1 and 3	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O
Combustion of wood	Scope 1	CH <sub>4</sub> , N <sub>2</sub> O
Electricity use	Scope 2 and 3	CO <sub>2</sub>
Transportation of raw materials, products and	Scope 1 and 3	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O
wastes		
Waste disposal to landfill	Scope 3	CH <sub>4</sub>

Table 51 Activities Lititung Oreenhouse Oases
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Estimates of greenhouse gas emissions generated by the Willmott facility including the proposed installation have been determined using the DCC Factors workbook, June 2009. This workbook provides the factors and methodologies to allow organisations to calculate their Scope 1, 2 and 3 emissions. The emissions calculated are expressed as CO2-e quantities. These were obtained by estimates of direct CO2 emissions, or by applying the GWP factors in Table 50 to the non-CO2 gases.

The estimates of greenhouse gas emissions that are expected to be generated directly and indirectly as a result of the proposed works are discussed in Sections 14.3.1 to 14.3.5. Detailed calculations are provided in Appendix J. The values presented are worst case estimates of the expected impact of the proposed expansion on the total greenhouse gas emissions from the site.

There are a number of existing sources of greenhouse gas emissions at the Willmott facility that will be affected by the proposed installation. Energy related emissions occur as a result of the consumption of natural gas, wood and electricity, as described in Section 14.3.1 and Section 14.3.3. Non-energy related emissions are generated as a result of transport fuel consumption and waste to landfill, as described in Sections 14.3.4 to 14.3.5.

## 14.3.1 Natural Gas Consumption

Natural gas will mainly be consumed by the three proposed gas fired boilers to serve the kilns at the Willmott facility. Currently, there are no natural gas boilers at the Willmott facility. The proposed natural gas boilers have a combined maximum capacity of 23.5 MW, and will be operated at 70% of maximum capacity. As a result of the proposed installation of boilers, the annual consumption of natural gas at the site is expected to increase from 0 GJ to approximately 518,767 GJ.

The NGA Factors workbook provides emission factors (EFs) (expressed in kg  $CO_2$ -e/GJ) which are split into gas types ( $CO_2$ ,  $CH_4$  and  $N_2O$ ) to calculate Scope 1 and Scope 3 emissions from the consumption of natural gas.

The Scope 1 EFs relate to the direct emissions associated with the consumption of natural gas at the site and are 51.2 kg/GJ for CO<sub>2</sub>, 0.1 kg/GJ for CH<sub>4</sub> and 0.03 kg/GJ for N<sub>2</sub>O. Based on these emission factors, the Scope 1 greenhouse gas emissions associated with natural gas consumption at the Willmott facility is expected to be 26,628 t CO<sub>2</sub>-e.

The Scope 3 EF relates to the indirect emissions that result from the extraction and distribution of natural gas and is 16.4 kg/GJ for small NSW users (consuming less than 100,000 GJ per annum) and 15.7 kg/GJ for NSW large users (consuming more than 100,000 GJ per annum). The Willmott facility is classified as a large user and therefore the Scope 3 greenhouse gas emissions associated with natural gas consumption at the Willmott facility are expected to be 8 145 t  $CO_2$ -e.

Based on these calculations, the total Scope 1 and Scope 3 annual greenhouse gas emissions associated with the consumption of natural gas at the Willmott facility is expected to increase from 0 t  $CO_2$ -e to 34,773 t  $CO_2$ -e.

### 14.3.2 Combustion of Wood Residue

Wood residue is consumed by the existing wood fired boiler at the Willmott facility. The wood consumption at the site is 0.93 tonnes/hr. The quantity of wood residue consumed by the existing wood fired boiler will not change for the proposed expansion.

The NGA Factors workbook provides emission factors (EFs) (expressed in kg  $CO_2$ -e/GJ) which are split into gas types ( $CO_2$ ,  $CH_4$  and  $N_2O$ ) to calculate emissions from the combustion of wood waste.

The Scope 1 EFs relate to the direct emissions associated with the combustion of wood at the site and are 0.08 kg/GJ for  $CH_4$  and 1.2 kg/GJ for  $N_2O$ . Based on these emission factors, the Scope 1 greenhouse gas emissions associated with wood residue combustion at the Willmott facility is expected to remain 118 t  $CO_2$ -e.

#### 14.3.3 Electricity Use

Electricity is required at the Willmott facility to drive numerous plant components including the kilns, timber mill, debarker, lighting and general plant items. The proposed increase in production will result in an increase in electricity usage.

In particular, electricity usage is expected to be highest during the transition period between the operation of the proposed mill components and the phasing out of the existing mill components. The worst case electricity usage during this transition period was used in the calculation to determine the greenhouse gas emissions.

The annual electricity consumption rate at the Willmott site is currently 7,862,400 kWh. Annual electricity consumption is expected to increase to 49,000,000 kWh as a result of the proposed expansion.

The calculation of Scope 2 greenhouse gas emissions (end-use electricity) requires the use of an EF specific to the state or territory in which the electricity is consumed. This factor is kilograms of CO<sub>2</sub>-e generated per kilowatt hour of electricity consumed (kg CO<sub>2</sub>-e/kWh). The latest full fuel cycle factor (EF for Scope 2 and EF for Scope 3) provided in the NGA Factors workbook for NSW is 1.07 kg CO<sub>2</sub>-e/kWh.

Based on these calculations, the annual greenhouse gas emissions generated as a result of electricity consumption at the Willmott facility are expected to increase from  $8\,413$  t CO<sub>2</sub>-e to 52,371 t CO<sub>2</sub>-e.

## 14.3.4 Transport Fuel Consumption

Vehicle movements associated with the Willmott facility include the transport of logs and chemicals to the site, transportation of products and residues from the site to customers, and the transport of liquid and solid wastes from the site to resource recovery and landfill facilities. The consumption of transport fuels related only to vehicles transporting wastes from the Willmott facility has been considered in this analysis.

Currently, the total distance travelled is estimated to be approximately 891,000 km per year for transport of waste, products and residues to and from the site. This is expected to increase to approximately 2,135,000 km per year as a result of proposed expansion.

The Scope 1 and 3 greenhouse gas emissions associated with transport fuels consumption have been calculated using the NGA Factors workbook. This method is based on the calculated kilometres travelled, as well as three coefficients that depend on the vehicle type and fuel used. These coefficients are:

- Vehicle fuel consumption rate (L/km);
- Energy content of fuel (GJ/kL); and
- Full fuel cycle coefficient (kg CO<sub>2</sub>-e/GJ).

Assuming all transport trucks are diesel fuelled and can be classified as heavy trucks, the fuel consumption rate is 0.546 L/km. This rate is considered to be conservative by the Greenhouse Challenge Team. For automotive diesel fuel, the energy content of the fuel is 38.6 GJ/kL. The greenhouse gas emissions from transport activities were calculated by using the worst case Scope 1 EFs for heavy vehicles using diesel oil. The Scope 1 EFs provided by the NGA factors workbook are 69.2 kg/GJ for CO<sub>2</sub>, 0.2 kg/GJ for CH<sub>4</sub> and 0.5 kg/GJ for N<sub>2</sub>O. The Scope 3 EF for extraction and distribution of diesel oil is 5.3 kg/GJ.

Using these factors and the calculation procedure specified in the NGA Factors workbook, the annual quantity of Scope 1 and 3 greenhouse gas emissions from transport activities is currently  $1413 \text{ t } \text{CO}_2$ -e and will increase to  $3384 \text{ t } \text{CO}_2$ -e as a result of the proposed expansion.

## 14.3.5 Waste to Landfill

As described in Section 12, the waste streams from the Willmott facility which cannot be reused or recycled are disposed of to landfill. The majority of the wastes generated by the operations at the Willmott facility include CCA sludge and treated timber wastes. In addition, a small quantity of general solid waste is generated on site. The Scope 3 greenhouse gas emissions resulting from the landfilling of general solid wastes, CCA sludge and treated timber wastes are  $CH_4$ . The impact of the emissions from the waste generated at the Willmott facility has been calculated using the NGA Factors workbook.

The quantity of timber wastes disposed of to landfill for the site is expected to increase as a result of the proposed expansion. Therefore, the total quantity of waste disposed of to landfill will increase from 154 t/y to 243 t/y.

The NGA factors workbook provides EFs for different waste mixtures. The greenhouse gas emissions from waste disposal to landfill were calculated by using the EF for wood waste of 2.70 t CO<sub>2</sub>-e/t, as the majority of the waste stream from the Willmott facility is timber and timber related waste. The annual greenhouse gas emissions for wastes disposed of to landfill will increase from 416 t CO<sub>2</sub>-e to 656 t CO<sub>2</sub>-e.

# 14.4 Total Greenhouse Gas Emissions

The estimated greenhouse gas emissions that will be emitted directly and indirectly at the Willmott mill including the proposed expansion are summarised in Table 52. Full details of all calculations are provided in Appendix J.

Greenhouse Gas Emission Source	Quantity of Greenhouse Gas Emitted (t CO <sub>2</sub> - e/year)			
	Current	Proposed		
Natural gas consumption	0	34,773		
Combustion of wood waste	118	118		
Electricity use	8 413	52,371		
Transport fuels consumption	1 413	3 384		
Waste to landfill	416	656		
Total GHG emissions	10,360	91,303		
Total energy related GHG emissions	8 531	87,263		
Specific GHG emissions (t CO <sub>2</sub> -e/1000 m <sup>3</sup> of wood processed)	104	245		

The total annual greenhouse gas emissions from the facility including the proposed Willmott plant are estimated to be 91,303 t CO<sub>2</sub>-e. The total energy related emissions are estimated to be 87,263 t CO<sub>2</sub>-e.

There is approximately a two and a half fold increase in specific greenhouse gas emissions for the proposed facility, with the estimated specific greenhouse gas emissions being 245 t  $CO_2$ -e for every 1 000 m<sup>3</sup> of wood processed at the site. This is due to the product variety and increase in operating hours proposed for the mill.

The proposed mill will produce a wider variety of products that require redrying in the redry kilns. Currently, approximately less than 1% of product streams require redrying in the kilns. However, approximately 80% of the product streams for the proposed mill will be redried in the redry kilns, and therefore a large increase in boiler capacity is required for the proposed mill. Additionally, the increase in the hours of operation of the proposed mill compared to the existing mill results in an increase in electricity demand at the site.

The estimated greenhouse gas emissions for the project lifetime of approximately 20 years are expected to be 1,826,063 t  $CO_2$ -e. In accordance with the NSW Greenhouse Office, *NSW Greenhouse Plan*, 2005 the NSW's greenhouse gas emissions in 2000 was 150 Mt  $CO_2$ -e. Therefore the proposed Willmott facility will generate the equivalent of approximately 0.06% of the total emissions in NSW in 2000 (the latest available aggregate NSW greenhouse gas data).

### 14.5 Options to Reduce Greenhouse Gas Emissions

The substitution of all wood fired boilers at the site to replace the proposed capacity of natural gas fired boilers would generate significant particulate emissions, and cause potential fall out problems from the boilers. Costly control measures, such as multiple wet scrubbers, would be required to manage the potential particulates issue as a result of the wood fired boilers. It would also compromise future value-added production options (such as a future particleboard mill) on the site. Therefore, the utilisation of all wood fired boilers to reduce greenhouse gas emissions would not be an economically or environmentally feasible option for Willmott. Willmott will investigate the feasibility of obtaining a second wood fired boiler at the site to reduce natural gas consumption

Willmott will also investigate the use of solar kilns to further reduce their natural gas consumption, where possible. Additionally, improved design and procedures at the treatment plant will result in a decrease in the quantity of contaminated sludge generated, and consequently reduce the amount of waste to landfill.

During the construction stages of the expanded mill and the eventual mill operation, Willmott will continue to examine ways to increase the efficiency of the operations to reduce energy use and the resulting greenhouse gas emissions.

### 14.6 Greenhouse Emission Offset

Specific greenhouse emission offset options for the Willmott timber processing facility may include planting of trees on the Bombala site and purchasing of renewable energy or emission offsets from various creditable sources. Willmott will investigate these potential options in the long term, once the proposed works is operating smoothly, to further reduce the impact of their greenhouse gas emissions.

### 14.7 Conclusions

The main source of greenhouse gas emissions from the mill is from the use of fossil fuel derived energy sources generally sourced from the grid. The expansion of the mill will require more energy in the form of electricity and gas which results in an increase in the greenhouse gas emissions compared with existing operations. Willmott will endeavour to minimise emissions through regular equipment maintenance and consideration of alternate energy options as appropriate to the mill operations.

This level of emissions will require reporting under the National Greenhouse and Energy Reporting Scheme as and when the relevant threshold is reached in the facility's expansion.

## 15. FLORA AND FAUNA

A thorough investigation of the potential ecological impacts of the project has been undertaken by a specialist consultant, Australian Museum Business Services. The assessment is attached, in Appendix K. The assessment consisted of both desktop and field studies.

### 15.1 Flora

At the time of the ecological survey, the majority of the Bombala site was found to consist of planted Monterey Pine (*Pinus radiata*) in an approximately 10 hectare area. The northern, eastern and western sides of the site are largely cleared easements, while the southern side was a small drainage line with young regrowth and the two existing ponds (with no water present at the time of the survey). South of the drainage line (outside of the defined study area) was a smaller stand of Monterey Pine. Since the survey was undertaken, the pines north of the drainage line have been felled as part of normal operation.

The study area comprised the following three plant communities:

- Pine Forest The Monterey Pine (*Pinus radiata*) low open forest occupies the largest portion of the study area. The northern half of the pine forest comprise grasses with a projective foliage cover, and the ground cover in the southern half of the pine forest. Is mostly absent except for small patches of in canopy gaps and scattered individuals. Exotic plant species, including *Acetosella vulgaris*, comprised 100% of the canopy, and 30% and 70% of the ground cover on the northern and southern aspects, respectively.
- Low open woodland The drainage line south of the Pine Forest had been cleared for many years. Three species of eucalyptus was planted by Willmott more than eight years ago, these species include *Eucalyptus stellulata* (Black Sally), *Eucalyptus crenulate* (Victorian Silver Gum) and a species tentatively identified as *Eucalyptus ovata* (Swamp Gum). The Eucalyptus growth is relatively young and range in size from approximately one to five metres.
- Grassland Mixed exotic and native grassland around the eastern, northern and western boundary of the Pine Forest. The ground cover of the northern portion is dominated by grasses, and the ground cover of the southern portion is less dense and dominated by exotic species. The percentage of introduced species in each of the three portion of the grassland is approximately 30% in the northern section, 40-80% in the western portion and 60-80% in the eastern portion.

## 15.2 Fauna

There is minimal habitat for threatened fauna species within the study area as the majority of the site is dominated by *Pinus radiata*. Additionally, the young Eucalyptus growth in the low open woodland showed little development of the features suitable for threatened species (e.g. no tree hollows present).

One mature tree with a number of hollow-bearing branches and fissures was identified to the south east of the pine forest within the gas pipeline easement. There was minimal fauna habitat features including fallen bark, logs and large rocks within the study area.

Fauna identified in the study included the Spotted Grass Frog in two areas in the drainage line, the Woodland Cool-skink beneath fallen bark on the edge of the Pine Forest and common animal species such as the Crimson Rosella, Australian Raven, Australian Magpie, Superb Fairy Wren and Yellow-rumped Thornbill. The only fauna observed during the nocturnal spotlight surveys was the European Rabbit.

The proposed expansion site may contain potential foraging habitat for four threatened fauna species including the Masked Owl, the Barking Owl, the Grey-headed Flying-fox and the Eastern Bent-wing Bat. However, the proposed expansion site contains no potential nest sites for the two owl species and no potential roost sites for the Eastern Bent-wing Bat. Potential foraging habitat for the Grey-headed Flying-fox is limited to the regrowth vegetation within the drainage line to the south of the proposed development area. Therefore the proposed expansion is not likely to cause significant impact to threatened species in the locality.

## 15.3 Potential Impacts of the Proposed Development

The main potential impact of the proposed development on terrestrial flora and fauna would be the removal of the pine plantation. Additionally, some indirect impacts on the drainage line to the south of the site. These impacts include soil erosion, temporary storage of items, vehicle and machinery access and ingress of pollutants.

A total of 48 plant species and 19 animal species were identified within the study area and immediate surrounds during the field surveys. A list of all plant and animal species recorded is provided in the study report. None of the species recorded are listed as threatened on either the *Environment Protection and Biodiversity Conservation Act 1999* or *Threatened Species Conservation Act 1995*.

The report concluded that the potential impact of the proposed development on "critical habitats, threatened species, populations or ecological communities and their habitats in the region" could be summarised as follows:

- Threatened plant species nil. No threatened plant species were recorded within the study area or are considered likely to occur. The closest threatened species were recorded 7 km east of the site.
- Threatened ecological communities nil. No threatened ecological communities were recorded within the study area or are considered likely to occur.
- Critical habitat nil. The study area does not contain any critical habitat listed on either the DECCW or DEWHA Critical Habitat Register.
- Endangered populations nil. No endangered populations are known from the locality.
- Threatened animal species nil or minimal. The study area contains no suitable habitat
  for the majority of threatened fauna known from the locality. The only likely impact of
  the proposed development is the removal of 10 hectare of pine plantation, which might
  provide a small proportion of highly modified foraging habitat for one or more of four
  threatened animal species. None of these species are likely to roost or nest within the
  study area. The proposed development is not likely to affect the overall abundance,
  distribution or conservation status of any of these species in the region.

The report also made the following recommendations, which are aimed at maintaining biodiversity values within and around the study area:

- Retaining the mature hollow-bearing tree in the gas pipeline easement and ensuring it remains undamaged during construction and operation of the proposed development;
- Implementation of environmental management measures (soil, water and pollution control) to prevent or minimise indirect impacts on the drainage line south of the subject site; and
- Protecting the modified bushland north of the existing sawmill during construction and operation of the proposed development.

The mature hollow-bearing tree is no longer present at the site due to embers from a recent fire.

As well, after the completion of the new sawmill, Willmott intends for the northern grassland and southern woodland (drainage line) to be planted with trees as part of a visual barrier along Delegate Road and for revegetation/restoration purposes. In order to assist Willmott should they proceed with these revegetation works, a list of potential species for revegetation is provided in the study report, and it was recommended that:

• Planting of the area to the north and south of the proposed sawmill be aimed at establishing habitat that is a simplified form of naturally occurring habitat in the local area. Plants should be grouped in natural style arrangements;

- Minor tree planting be undertaken along appropriate parts of the gas pipeline corridor to provide connectivity with the upper and lower treed areas and help compensate for loss of habitat when the pine forest is cleared;
- Locally native plant species be used in revegetation and landscape works, as provided in the list in Table 6 of the report; and
- Noxious species, especially Rosa rubiginosa (Briar Rose), be controlled.

As discussed in Section 11.4.5.4, a natural wetland will be constructed in the drainage line to treat wastewater generated by the mill and for the remediation of the existing southern pond. Trees will be planted on both sides of the wetland which will assist to improve the quality of the water entering the wetland including removing any coarse organic material (e.g. woodchips) and sediment from unsealed areas.

# 15.4 Conclusions

The results of the flora and fauna assessment demonstrated that there are no threatened species or endangered population that will be impacted upon by the mill expansion. A number of recommendations to maintain biodiversity values within and around the study area, and recommendations for approaching revegetation of the site, were made in the study report and will be implemented by Willmott.

# 16. VISUAL AMENITY

## 16.1 Existing Visual Amenity

The project is planned to be situated immediately adjacent to the existing sawmill. This materially lessens any visual impact, as the site already has a significant visual impact from certain aspects.

The western portion of the site which is currently undeveloped is undulating, with the rear southern end of the site covered in immature *Pinus radiata*. Until recently, the pine forest covered the entire site up to Delegate Road. The dense, dark green view of the forest contrasts sharply with the surrounding properties, which are generally cleared.

## 16.2 Vantage Points

The mill area and vantage points are outlined in Figure 2.



Figure 2 Aerial Photograph of the Site Vantage

# Table 53 Site Vantage Point

Vantage Point	Viewers	Discussion
Delegate Road	Main transport	The vacant front portion of the existing site means that there
(also known	route between	is little or no view of the site from Delegate Road westbound.
as Delegate	townships of	Due to the natural gentle slope in the local topography, and
Bombala	Bombala and	the curvature of the road, the pine forest on the western side
Road)	Delegate	of the site is visible from Delegate Road eastbound. The
		proposed mill will therefore also be visible. The visual controls
		(discussed later) will ensure the visual amenity is maintained
		or improved.
		It is possible that the siting of the new office block at the
		north-east portion of the site will be visible to Delegate Rd
		traffic both east- and westbound. The office building will be
		coloured to blend with the surrounding environment and
		appropriate landscaping will shield view of it and the
		staff/visitor car park.
Sandy Lane	Accessed	Sandy Lane is accessed by the few properties behind the mill
	almost entirely	site. The main impact of the project visually will be the
	by heavy	construction of the 3.5 metre high noise mitigation barrier
	vehicles and	along the Sandy Lane border. The barrier will be coloured to
	mill staff/visitors.	blend with the environment, and trees will line the Sandy
	Low volume	Lane side of the barrier to minimise its visual impact. Another
		impact of the project will be to improve the visual amenity at
		the south-eastern portion of the site by removing the waste
		stockpiles to achieve the waste and surface water
		management objectives.
Residential	Residents and	The location of the residence is to the southwest of the site.
property:	visitors only	Because the expansion will retain the pine forest at the rear
Irevanion		of the property (south of the drainage line), the visual impact
		from Trevanion will be largely unchanged. Further, the mid-
		the impact of the beight of the buildings (refer to Figure D14)
Posidontial	Decidents and	The only viewed impact on The December of from the preject will
		the only visual impact on the Parsonage from the project will
property: The	visitors only	be the noise attenuation partier and associated tree
raisollaye		processory of the processory viewel offects of the expension expension
		Parsonage from any visual ellects of the expansion, except

Vantage Point	Viewers	Discussion
Residential	Residents and	Given the distance from Benlady Park to the development
property:	visitors only	site, any visual impact resulting from the project will be
Benlady Park		minimal. The closest part of the site is the area of the south-
		eastern residue stockpiles. The gradual removal of the
		stockpiles over the next 2-3 years is likely to have a positive
		effect, if any, on Benlady Park.
New	Residents and	The new residence is located approximately 1.2 km to the
residential	visitors only	southeast of the site on top of a hill. The residue stockpiles
property		and a limited section of southern portion of the mill are visible
		from the new residence. Similar to Benlady Park, the removal
		of the stockpiles is likely to improve the visual amenity on the
		new residence.

# 16.3 Landform and Landscaping

The expansion site undulates and civil design will require it to be levelled to enable construction. From the front of the site at Delegate Road, travelling southward, the property slopes downwards. There is then a rise before the drainage line between the two pine forested areas. The drainage line and rear forested area will remain intact.

The site will therefore be built up at the front. This will not have a material impact on visual amenity from the primary vantage point, Delegate Road. The tree plantings around the northern and western perimeter of the site, those visible from the roads, will improve the site's visual amenity.

A visual barrier of trees will be planted at the front of the site of the expansion to shield the development from view. The ecology consultant to the project (Australian Museum Business Services Pty Ltd) has recommended appropriate native species for this barrier which will be most suitable for the site.

A 3.5 metre high noise mitigation barrier will be constructed along the Sandy Lane border, and the barrier will be coloured to blend with the surrounding environment. Willmott will plant trees along the Sandy Lane side of the barrier to minimise its visual impact.

### 16.4 Design and Siting of Buildings

The design and siting of buildings for the expansion have been undertaken with due regard to the visual amenity of the site. The buildings will be low-rise, with the most prominent structure on the new area being the greenmill building. The building will sit at about 12 metres above the levelled height. The new treatment plant building on the existing site will sit about 1.5 metres above the existing roof height of the drip pad. The new buildings will be clad in non-reflective Colorbond steel cladding, suitably coloured to blend with the surrounding environment.

## 16.5 Lighting and Signage

Specifications for the external areas of the site have been developed so that there is zero upward light component, which reduces glare and light pollution. Additionally, all exterior fittings will use high pressure sodium lamps for efficiency and lamp life.

Lighting at the proposed site includes individual lamps for lighting internal roads and four light towers situated within the processing areas. A site plan has been prepared which shows the location of the lighting at the site and is provided in Figure D15.

External lighting in areas which may be used during night hours will be kept to the minimum required for safety of personnel. Lighting will be directioned with the location of nearby residential and traffic receivers in mind. Other external lighting for roads and the carpark will be designed in accordance with applicable Australian Standards.

The neighbouring properties to the south of the site will not be significantly impacted by the lighting at the expanded mill due to the distance of the residences. The Parsonage is also unlikely to be impacted by the lighting due to the 3.5 metre high noise mitigation barrier along the Sandy Lane boundary. Therefore, there is unlikely to be obtrusive light impact from the expanded mill on the neighbouring residences.

The area at the front of the site would have the most potential for lighting to affect passing traffic. This area will contain the log storage area where a light tower will be situated. It will be designed such that the lighting does not impact the passing traffic by facing the lights away from the road and inwards towards the log yard, and using non-glare lights. Any lighting will also be shaded by the tree barrier along the boundary.

Signage of the mill is currently minimal. Additional signage for the expansion will be increased. Signage will be of appropriate size and design for the nature and scale of the development. It is expected that two signs of 3 x 4 metres will be erected, one to replace the existing sign at Sandy Lane, and one at the new exit onto Delegate Road. Traffic directional signs will also be required at both entrances, advising of the one-way traffic movement around the site. The visual amenity of the signage will be acceptable, as it will be visible only to passing vehicles on Delegate Road.

## 16.6 Conclusions

Each of the vantage points to the mill and the potential visual impacts as a result of the expanded mill has been assessed. The assessment has shown that the visual impact from the project will not be adverse, and indeed, the planned tree plantings and improvement in the quality and upkeep of the site may have beneficial visual effects.

## 17. HERITAGE

## 17.1 Non-Aboriginal

A historic heritage assessment was undertaken for the sawmill site (both existing and new areas) by specialist consultants, Tardis Enterprises Pty Ltd. The assessment included research of relevant plans and databases, and a site survey. The full assessment is attached in Appendix L.

The assessment showed that two sites of potential heritage value exist on the site. These are the ruins of the Wool Pack Inn (circa 1850) and a filled-in well, which is potentially linked to the Inn.

The key recommendation of the assessment was:

Any activities likely to affect these two sites must be preceded by further archaeological and historical investigation before a suitable conservation strategy may be formulated. (pp 17)

The Inn is well outside of the works area for the project, and it will be fenced to protect it from any inadvertent impact.

The civil plan for the site has been modified so that the well will not be impacted by the development. Originally, the well would have been within the area requiring backfilling to provide the appropriate site level. It is now proposed that the embankment around the well is more steeply graded and stabilised, thereby not encroaching within a safe radius of the well. This detail is shown in Figure D16.

The assessment has been placed on file, and any future development of the site which may affect the potential heritage sites will follow the recommendations. These include further assessment and listing with the relevant heritage offices, if necessary, prior to any works taking place.

Willmott will engage with local heritage groups about ways to optimise the community value from the site.

# 17.2 Aboriginal

A review of the Regional State of the Environment Report 2008 sourced from the ACT Commissioner for Sustainability and the Environment website indicates that the Bombala Council area does not contain any listed Aboriginal Cultural Heritage sites. The combined existing and proposed sawmill site has been highly modified over a long period of European settlement. Changes to the existing site will take place in between existing buildings of the sawmill, which has been fully graded and extensively excavated. The expansion site has been dug and planted with exotic pine trees.

Willmott commissioned an Aboriginal heritage survey and assessment of the site to ascertain whether any potentially significant sites or artefacts were present in the project area. The study was undertaken by the Eden Local Aboriginal Land Council. The assessment resulted in the discovery of artefacts on the site, in the form of seven stone shards from tools or toolmaking, which were likely uncovered during previous excavation work. The artefacts are located within the area which will be subject to significant ongoing earthworks during the project. The specialist report notes its approximate AMG coordinates are 696633E 5910472N (ADG66), and this location is shown on Figure D17. Willmott will work with the local Aboriginal community and the NSW Department of Environment and Climate change to determine the most appropriate course of action to preserve the artefacts are uncovered during the project. A copy of the full Aboriginal heritage assessment is provided in Appendix L.

## 17.3 Conclusions

The ruins of the Inn and associated filled in well at the site will be protected in the site development.

The aboriginal heritage artefacts which are known to be present at the site have been listed on the Aboriginal Heritage Information Management System by the Eden Local Aboriginal Land Council, at Willmott's request. Willmott will consult with the Department of Environment and Climate Change and the local Aboriginal community as to how best preserve the artefacts prior to any works taking place in their vicinity.

### 18. SOCIO-ECONOMIC

The town of Bombala is well-recognised as a "timber town", in the words of the sign which marks entry into the town, and the forestry and timber processing industry is generally well-accepted by and within the local community. Indeed, the agriculture, forestry and fishing industry provides the highest number of jobs in the Bombala Local Government Area (Australian Bureau of Statistics, 2006).

Prior to the relatively recent development of the softwood plantation industry, many sawmills operated in the district utilising hardwood timber resources from State Forests and private resources. The 1980s saw the scaling back of the available hardwood timber resource as new National Parks were gazetted. The consequent mill closures led to employment losses which damaged Bombala's socio-economic prospects.

The recent emergence of the plantation pine industry has improved the region's employment and economic prospects, starting with the plantation establishment phase. The development of softwood sawmilling is the next phase in this progression, with the proposed expansion of the Bombala sawmill and its value-adding facilities enabling the continuation of regional job opportunities in activities downstream from plantation establishment and management *per se*.

From a socio-economic perspective, this development completes the cycle of investment in softwood plantations that was anticipated when Willmott Forests commenced its plantation establishment operations here in the early 1980s. The investment will provide a sustainable basis for the community's future because it will provide (a) direct and flow-on jobs, (b) a stable local market for plantation log resources, and (c) the basis for continuation of the plantation investment cycle beyond the current first rotation plantings into second and subsequent rotations.

At the national level, the proposed sawmill development will materially assist in addressing Australia's current trade imbalance in wood and forest products. Commonwealth Government statistics show that while Australia's total exports of wood products were valued at \$2.5 billion in 2007-08, our imports during the same period cost us \$4.4 billion. This represents a trade deficit of \$1.9 billion per year. Of this, our imports of sawn timber – mainly in the form of softwood – approached \$500 million in value. The proposed development will supply sawn timber products to the domestic market at an aggregate value of around \$70-74 million per year, equivalent to more than 10 percent of our national sawn timber import value.

## 18.1 Employment Impacts

Softwood timber processing developments generate jobs and investment in three areas of the supply chain: (a) forestry development, management, harvesting and log transport; (b) timber processing and value-adding within the saw mill and (c) product transport and distribution to markets. As well as these direct employment impacts, significant flow-on or indirect jobs are associated with investments such as this.

The following table shows the employment by industry and occupation from most recent census data. This shows that the agriculture, forestry and fishing industry supports approximately one third of local families. It also shows the very high proportion of skilled managerial jobs in this industry, at 72%. As mentioned above, the jobs provided by this project will not only directly increase job positions available within the industry, but associated ones such as trade, accommodation and food services (especially during construction), transport, education and health care.

	Managers	Professionals	Technicians	Community	Clerical	Sales	Machinery	Labourers	Not stated	Total
			and trades	and personal	and	workers	operators			
			workers	service	admin.		& drivers			
				workers	workers					
Agriculture, forestry	198	17	21	0	18	0	27	56	0	337
& fishing				·		·			-	
Mining	0	0	0	0	0	0	0	0	0	0
Manufacturing	0	4	13	0	5	0	17	34	0	73
Electricity, gas,										
water & waste	3	0	3	0	3	3	0	3	0	15
services										
Construction	5	0	14	0	0	0	10	9	0	38
Wholesale trade	5	0	0	0	3	4	7	3	0	22
Retail trade	24	0	13	0	5	44	3	10	3	102
Accommodation &	10	0	F	20	0	0	0	10	0	50
food services	15	0	5	20	0	0	U	12	0	50
Transport, postal &	6	0	0	0	10	0	36	0	0	52
warehousing	0	0	0	0	10	0	30	0	0	52
Information media										
&	3	3	0	0	0	0	0	0	0	6
telecommunications										
Financial &	0	0	0	0	0	0	0	0	0	0
insurance services	0	0	0	U	9	0	0	0	0	9
Rental, hiring & real	0	0	0	0	0	0	0	0	0	0
estate services	U	U	U	U	U	U	U	U	U	U

# Table 54Local Employment by Industry and Occupation

	Managers	Professionals	Technicians	Community	Clerical	Sales	Machinery	Labourers	Not stated	Total
			and trades	and personal	and	workers	operators			
			workers	service	admin.		& drivers			
				workers	workers					
Professional,										
scientific &	0	5	4	0	10	3	0	0	0	22
technical services										
Administrative &	0	0	0	0	0	0	3	Q	0	11
support services	U	0	0	0	0	0	5	0	0	11
Public										
administration &	6	5	5	6	13	0	15	12	4	66
safety										
Education &	Q	45	6	10	1	0	0	6	0	70
training	0	45	0	10	4	0	0	0	0	79
Health care & social	5	20	7	20	11	0	0	Q	0	08
assistance	J	29	1	30		0	0	0	0	90
Arts & recreation	0	8	0	0	0	0	0	3	0	11
services	0	0	0	0	0	0	0	5	0	
Other services	0	4	13	0	3	0	0	0	0	20
Inadequately										
described / Not	0	0	0	0	0	6	3	0	0	9
stated										
Total	276	120	104	74	94	60	121	164	7	1,020

Source: Australian Bureau of Statistics, 2006 Census Community Profile Series : Bombala (A) (Local Government Area

(a) Industry of employment was coded to the 2006 Australian and New Zealand Standard Industrial Classification (ANZSIC) edition. This has replaced the 1993 ANZSIC edition.

(b) Occupation was coded to the 2006 Australian and New Zealand Standard Classification of Occupations (ANZSCO). This has replaced the 1996 Australian Standard Classification of Occupations (ASCO) Second Edition.

# 18.1.1 Employment By and For the Mill Operation

The development is essential for the retention of the existing 71 direct jobs in the existing mill, plus the generation of new jobs in related industries. Without the investment in the mill expansion, the existing sawmill would be rendered uneconomic and would necessarily close. Table 55 shows the direct employment impacts of the proposed development during its first four years of activity. Beyond Year 4 the jobs effect is expected to stabilise at that level.

The proposed mill development will provide 179 direct jobs by its fourth year of operation, 94 (52%) of which will be within the sawmilling and value-adding facility itself, and 85 (48%) outside the plant in upstream and downstream activities.

Many of these direct new jobs will be engaged via contract. For example, most of the plantation timber harvesting will be undertaken by independent contracting crews; however, the proponent may change this model in the future, subject to economics and other factors.

In addition, truck/freight services are often contracted from owner-drivers or other small businesses. It is estimated that, of the 90 additional jobs generated by this development, about two-thirds will be contractors, engaged under long-term renewable contracts.

The employment effect is closely related to the amount of plantation log input to the mill at any stage. Table 55 shows that the annual roundwood (log) input to the expanded facility will commence at 205,000 tonnes in Year 1, and will rise progressively to 400,000 tonnes by Year 4.

	Employees							
	Current	Year 1	Year 2	Year 3	Year 4			
	mill							
Direct in-mill jobs <sup>1</sup>								
Log yard	2	2	2	3	3			
Green mill	20	13	13	24	24			
Kilns/boilers	4	5	6	7	8			
Dry mill	21	25	25	25	35			
Treatment plant	5	5	5	5	5			
Despatch	8	4	5	5	7			
Administration	11	10	10	10	12			
Total direct (in-mill)	71	64	66	79	94			
	Contractors							
Harvesting & transport								
Log delivery	5	10	13	16	20			
Chip cartage	3	9	11	13	17			
Other waste cartage	1	4	5	2	3			
Value-added products cartage	4	13	17	20	25			
Harvesting operations	4	11	13	15	18			
Other servicing & goods	1	2	2	2	2			
Total direct (harvest/transport)	18	49	61	68	85			
Total direct jobs impact	89	113	127	147	179			
Log input (t/yr)	106,000	205,000	253,000	308,000	400,000			

## Table 55 Employment Impact of the Development

Maintenance jobs are included in the particular work areas to which they relate.

Compared with the current direct employment by Willmott of 71, the mill expansion will represent an increase of some 23 direct jobs by four years after commissioning. This quite modest increase within the mill reflects the fact that the operation will be significantly more capital intensive than at present. In fact, during the first three years of the expanded operation the total number of in-mill jobs will decline by up to seven people, again reflecting the fact that the development will increase the labour productivity of the mill significantly compared to the present facility, which is quite labour intensive.

Table 55 shows that jobs in the harvesting, log haulage and market delivery of mill products will increase significantly as a result of the mill development. This is because of the fact that the harvesting and handling of plantation timber and its products is volume-based and labour productivity gains through capital investment in these activities are not as marked as in the mill itself. These harvesting, log haulage and product transport jobs will rise by more than 300% to 85 people by Year 4 of the development compared with the current employment generated by these activities.

## 18.1.2 Construction Jobs

It is estimated that 102 construction jobs will be created by this investment. This is the peak manpower and will occur in Year 1 of the development. Some of these jobs will persist within the Bombala region during the commissioning and transition period.

## 18.1.3 Other Employment Impacts

A feature of integrated softwood plantation timber companies is that the associated employment effects extend widely into the regional community, particularly if there is a timber processing or value-adding component involved (see, for example, Schirmer, J. 2009). However, because of the seasonal and otherwise "peaky" nature of much of the plantation forestry work, direct and indirect employment effects are sometimes difficult to clearly delineate.

Willmott Forests Limited, one of the project's joint venture partners, undertakes the forestry activities upon which part of this mill's future log supply depends. Willmott Forests directly employs around 78 people in its role of managing more than 53,000 hectares of softwood plantations, ranging from new plantings to mature trees. More than half of these plantations are in the Bombala Region, but because Willmott Forests' newer establishment activities are centred on other regions (such as Tumut and the North Coast of NSW), the direct plantation jobs here only now represent about one tenth of the Company's directly-employed plantation workforce. In addition to its direct employees, Willmott Forests engages many contractors to undertake seasonal plantation establishment, management and protection work. During 2008 Willmott Forests engaged over 480 contractors in these tasks, of which about 20-30 were engaged in the Bombala Region.

The likely level of flow-on employment generated as a result of this development has not been specifically measured for this assessment. However, employment multiplier studies in the forest-based industries indicate that for every \$1 000/yr of increased value-adding production (i.e. sawmilling output), 0.0030 indirect jobs are created (Margules Groome Poyry et al. 1995 – cited in Centre for International Economics 2005). On this basis, and at a conservative output of \$50 million per year, we would expect a further 150 indirect jobs to be generated as a result of this development.

## 18.2 Economic Impacts

The 2005 Centre for International Economics study – noted above – recorded that the Bombala timber milling operations contributed significantly to the local economy, with almost \$10 million annually being retained locally. These data have been CPI adjusted to today's terms (Table 56) to provide an indication of the economic impact of the current mill operations.

## Table 56 Direct Economic Contribution of the Current Mill Activities

Type of Expenditure	Expenditure per year,
	indexed to 2009 dollars
Creditors	
Purchase of services	3,806,472
Total purchase of goods	910,965
Purchase of goods locally retained	136,645
Freight	599,223
Logs and sawn timber	6,346,311
Total expenditure on goods and services	11,662,971
Total expenditure locally retained	10,888,650
State and local taxes	245,323

Source: 2005 Centre for International Economics Study

The proposed mill expansion will build on this economic contribution to the local economy, but also to the wider NSW economy. A key economic benefit is the proponent's payments to the NSW Government forests agency (Forests NSW) for softwood log deliveries will amount to some \$16 million per year after Year 4. Over the life of the Forests NSW timber supply agreement, the aggregate of these payments to the Government will exceed \$300 million. Timber purchases over and above those under the Forests NSW source will further boost the economic flows from the project.

On the basis of a four-fold volume throughput increase between 2004 and when the proposed mill is operating at full capacity, it is estimated the mill operations will contribute well over \$50 million annually in total from the purchase of goods and services, of which at least \$20 million will stay in the local and regional community.

## 18.3 Social Impact

There are obvious social implications of the proposed development on the town of Bombala and the wider region. Secure, sustainable employment provides income and stability for families and for other town institutions, particularly schools. In fact, were the development not to proceed, there would be immediate adverse impacts on the Bombala community.

The Centre for International Economics (2005), in a study commissioned by Willmott Forests, concluded:

If Willmott Forests failed to expand its own Processing Operations because of an inability to reduce security risks to acceptable levels through increased plantings, the regional economy can be expected to forego between \$1 million and \$5 million in annual value added, depending on whether expansion was to 200,000 or 300,000 tonnes intake by the Company's mills. These forfeited benefits are not distant benefits but relatively immediate. (p.35)

# 18.3.1 Critical Mass for Social Infrastructure

No specific analyses were undertaken of social impacts of this development for this environmental assessment. However, the Centre for International Economics (2005) again underlined the importance of the forest-based industry for the retention of social institutions and services, viz:

Some services in the Bombala LGA are not particularly resilient, and are vulnerable to decline if regional employment levels are reduced. The local timber industry is an important contributor to the maintenance of medical, educational, retail services and other services within the region. (p.16)

On this basis, and on the basis of feedback received through the letterbox drop, and discussions with local community representatives, the proposed development will make an important contribution to the critical mass needed to maintain key social services.

## 18.3.2 Housing

There is an acknowledged housing shortage in Bombala. The Centre for International Economics (2005) socio-economic study found:

The inadequate supply of housing appears to be having a negative impact on businesses' ability to attract new workers, which has been experienced by local forestry and health services providers. (p.12)

The potential shortage of suitable housing is an issue that has been raised by the Bombala Shire Council during consultations. Council advised there are currently a number of residential dwelling sites which are approved for development in the town. The proposed mill expansion will provide an incentive for private housing developers to utilise those sites in the future.

Not all people who work in the town choose to live in the town. Some people who work in Bombala choose to live in other towns or on rural holdings for lifestyle and other reasons. Typical locations are Cooma to the north of Bombala, and Bega-Merimbula-Eden at the coast. At a typical travelling time of 1 hour from these centres, this is a feasible arrangement for many workers, and mirrors the situation in many other parts of regional NSW.

Temporary accommodation for construction workers is available through a number of local accommodation providers: the motel, hotels, guest houses and the caravan park. Further temporary accommodation is available in Delegate, Cooma, Merimbula and Eden, but would require daily travel to site.

### 18.4 Conclusions

The mill expansion will generate significant socio-economic benefits for the town of Bombala, the wider region and for the State of NSW. It will also have a material, positive impact on Australia's current trade deficit in sawn timber products.

Total direct employment will increase by around 90 people, with a further estimated 150 flow-on jobs generated by the investment and economic activity. There will also be 102 construction jobs created for a period of 12-15 months.

Total annual payments to Forests NSW for delivered logs will be more than \$300 million in aggregate over the 20 years of the current wood supply agreement.

Estimated recurrent revenue to the town and region will exceed \$20 million per year, out of more than \$50 million per year total purchases of goods and services.

The only apparent social shortcoming is the provision within Bombala of suitable houses for an expanding workforce, a matter that needs to be addressed if the expanding workforce is to be suitably accommodated within the town. However, the alternative of living out of the town, or in adjacent towns within an acceptable travelling distance from the mill, is a feasible alternative that is already adopted by some workers.

# 19. ENVIRONMENTAL RISK EVALUATION

Following the implementation of control measures identified in this EA, the potential residual environmental risks resulting from Willmott's proposed development have been evaluated. These are outlined in Table 57 and discussed further in the following sections. This follows on from the risks identified before the incorporation of control measures discussed in Section 7. The same risk rating as was used in Section 7 is used in the following table where the residual risks are rated on a magnitude of high to low.
Environmental Aspect	Activity	Environmental Impact	Environmental Risk Rating	Proposed Control Measures	Residual Environmental Risk Rating
Noise	Additional operational plant and equipment at the site, and increased traffic to and from the site.	Increase in noise levels from operational plant and traffic, impacting on neighbours.	High	Noise assessment of the proposed project demonstrates compliance with the limits specified in the <i>NSW Industrial Noise Policy</i> for the expanded operations, with the inclusion of some noise barriers. Ameliorative measures will be implemented to ensure there are not adverse impacts on the residence to the north-east form the construction works.	Medium
Flora and Fauna	Development footprint is not expected to extend to the existing area of native trees and grasses at the site.	No impact expected.	Low	Wetland development; tree planting programs on the site, with endemic species selected as recommended in the specialist report	Low
Chemical Usage and Storage	Increase in the storage and usage of the same chemicals.	Chemical spill or leak during transport or usage, impacting on soil, groundwater or stormwater.	Medium	The treatment plant includes an undercover and bunded concrete area for assembly of timber prior to and after treatment. A dedicated forklift is assigned to the treatment plant to ensure that contaminated materials and chemicals are kept within sealed and bunded areas.	Low

Table 57Potential Residual Environmental Risks Following Implementation of Control Measures for the Proposed Mill Expansion

Environmental	Activity	Environmental	Environmental	Proposed Control Measures	Residual
Aspect		Impact	<b>Risk Rating</b>		Environmental
					<b>Risk Rating</b>
Heritage	Two sites of potential	No impact expected.	Low	The Inn is well outside of the works area for the	Low
	heritage value (Wool			project, and it will be fenced to protect it from any	
	Pack Inn ruins and a			inadvertent impact. The embankment around the well	
	filled in well) exist on			will be more steeply graded and stabilised, thereby not	
	the proposed and			encroaching within a 5 metre radius of the well.	
	existing site. There			Willmott has committed to working with the Aboriginal	
	are Aboriginal			community and the regulators to ensure that the	
	heritage sites or			aboriginal heritage sites or objects are managed	
	objects at the Willmott			appropriately.	
	site.				
Air Emissions	Timber treatment	Increase in air	Medium	Air dispersion modelling and determination of stack	Low
	plant and drying	emissions with		height shows standard of concentration limits and	
	operations with	potential health		impact assessment criteria (ground level	
	potential discharges	impacts.		concentration) thresholds can be met. Dust	
	to air.			management procedures will minimise any impacts on	
				neighbouring residents.	
Odour	Odorous emissions	Potential increase in	Medium	The new surface water management system will	Low
	may be generated by	odorous emissions		eliminate the odour issues associated with the	
	the expansion.	with the potential for		southern pond. Additionally, any potential kiln odours	
		off-site impacts.		will be mitigated through a management process.	

Environmental	Activity	Environmental	Environmental	Proposed Control Measures	Residual
Aspect		Impact	<b>Risk Rating</b>		Environmental
					<b>Risk Rating</b>
Traffic and	Increases in the	Increases in traffic	High	A traffic assessment has been undertaken for the site	Medium
Transport	utilisation of raw	movements resulting		and required upgrades or improvements have been	
	materials, generation	in impacts on the road		identified.	
	of products and	network, road safety			
	number of employees	and community			
	at the site.	disturbance.			
Soil	Timber processing	Potential for soil	Medium	Contaminated soil in the vicinity of the existing	Low
	and treatment	contamination and		treatment plant will be remediated as part of the	
	activities associated	erosion from		proposed expansion, and the expanded works will be	
	with the proposed mill	proposed mill		managed to avoid any future contamination issues.	
	and construction	activities and			
	activities.	construction.			
Surface Water	Increased surface	Increased quantities	Medium	Re-design of the surface water (stormwater and	Medium
	water runoff from mill	of water to manage		wastewater management systems).	
	expansion.	and potential for			
		contamination of			
		water.			
Water Usage	Increase in water	Increased water	Low	Recycling of boiler condensate water for utilisation in	Low
	usage due to	demand and impact		the treatment plant. Willmott will investigate the	
	additional operational	on southern pond.		potential use of bore water on site to reduce main	
	plant.			water demand.	

Environmental	Activity	Environmental	Environmental	Proposed Control Measures	Residual
Aspect		Impact	<b>Risk Rating</b>		Environmental
					<b>Risk Rating</b>
Energy and	Increased energy	Impacts on energy	Medium	Periodic facility energy audits and reporting to inform	Medium
Greenhouse	demand from	supply and increase		energy efficiency investments.	
Gas Emissions	additional operational	greenhouse gas			
	plant.	emissions.			
Wastewater	Increase in the	Additional load on	Medium	Re-design of the current wastewater system to	Medium
	generation of	kilns and storage		improve the management of wastewater.	
	wastewater due to	dams, and potential			
	additional operational	impact on soil,			
	plant on-site.	groundwater and			
		stormwater.			
Solid Waste	Increase in the	Impact on local landfill	Medium	Willmott has investigated various opportunities of	Low
	generation of solid	capacity.		reuse and sale of timber and wood residue, where	
	wastes due to			possible. Improved operational procedures will also	
	increased production			reduce the quantity of steel waste and hazardous	
	capacity.			waste generated at the proposed site.	
Socio	Increased	Impacts on	Low	Provision of information to Bombala Council on	Low
Economic	employment	community		employment numbers and trends to assist housing and	
	opportunities and	infrastructure, social		social infrastructure planning	
	possibly additional	values, housing and			
	population to the local	property prices in the			
	area.	local area.			

Environmental	Activity	Environmental	Environmental	Proposed Control Measures	Residual
Aspect		Impact	<b>Risk Rating</b>		Environmental
					<b>Risk Rating</b>
Visual Amenity	Construction of mill	Potential visual	Low	A visual barrier of trees will be planted at the northern	Low
	expansion	amenity impacts from		end of the site of the expansion to shield the	
		mill expansion		development from view. In addition, the design of the	
				new buildings has been undertaken with regard to the	
				visual amenity of the site.	

# 19.1 High Environmental Risks

There are no high residual environmental risks associated with the mill expansion following the implementation of control measures.

### 19.2 Medium Environmental Risks

Following the implementation of the proposed control measures, the risk of noise impacts and traffic and transport issues as a result of the proposed expansion has been reduced from medium to low risk. This is considered acceptable as comprehensive monitoring and management will be in place to ensure compliance and minimise impacts. The medium risks associated with the site are:

- Traffic and transport residual risk for this issue is due to the fact that the traffic assessment conducted for the mill expansion has identified that the certain areas of local road network were inadequate and increased traffic movements could exacerbate this situation. However, road upgrades will improve traffic safety and travel times that not only benefit Willmott but all other users of the road.
- Noise impacts on nearby neighbours residual risk is associated with the potential for noise impacts from construction activities and operation of equipment items that may occur during noise enhancing conditions. However, measures will be in place to mitigate impacts on the surrounding sensitive receptors.
- Wastewater and surface water- increased wastewater generation and surface water runoff, and potential impacts on soil and groundwater as a result of contaminated wastewater. Residual risk is associated with the possibility of utilising potentially contaminated wastewater for dust suppression purposes and due to the need for active management of clean and contaminated runoff streams. However, potential impact of these will be reduced by the re-design of the stormwater and wastewater management systems, and monitoring programs proposed.
- Energy and greenhouse gas increased consumption of fossil fuels (i.e. natural gas, power from grid) will increase greenhouse gas emissions. Residual risk is associated with the inherent increase in greenhouse gas emission due to increase in production.

#### 19.3 Low Environmental Risks

Following the implementation of the proposed control measures, the risk of air emission impacts, odour, chemical and storage, soil and solid waste has been reduced from medium to low risk. Other risks such as visual amenity, flora and fauna, heritage and water usage continue to remain low.

### 20. ENVIRONMENTAL MANAGEMENT AND MONITORING

During the construction and operation of the proposed mill, a number of environmental management and monitoring systems and procedures will be implemented. The systems and procedures have been identified during the studies for the EA of potential environmental impacts associated with the expansion. Proposed actions build upon the current systems and procedures in place for the existing operations.

In addition to the proposed measures listed below, Willmott will comply with all monitoring and management requirements identified in the Development Consents issued by DoP and the POEO Licence for the mill. As part of Willmott's EPL, the company operates a public complaints hotline whenever the processing plant at Sandy Lane is in operation.

#### 20.1 Environmental Management Plan

Willmott is committed to the sound environmental management of all aspects of its operations. The construction and operation of the mill expansion will follow these principles. Measures will be implemented to mitigate the impacts of the mill's construction and operation through the preparation and implementation of Environmental Management Plans (EMP's).

#### 20.1.1 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) will be prepared for the construction phase of the development. Implementation of the CEMP by all contractors on site will be mandatory. This plan will include management of issues associated with the existing site environmental issues outlined in Section 5.3.

#### 20.1.2 Operational Environmental Management Plan

The existing Operational Environmental Management Plans (OEMP) will be updated and consolidated into one OEMP, which will include the proposed mill expansion including the environmental commitments in this EA, the Development Consent Conditions and the licence conditions that will be imposed by DECCW. Training of all onsite personnel in the requirements of the revised plans will be the key to their successful implementation. The OEMP will describe the management of:

- Dust;
- Wastewater;
- Stormwater;
- Groundwater;

- Surface water;
- Traffic; and
- Waste.

## 20.2 Emergency Response

The existing Emergency Response Plan and procedures for the mill will be updated to include the construction and operational phases of the proposed mill. This would entail revising the assembly areas and emergency procedures to include the new operational areas and processes. Training of all on-site personnel on the revised requirements of the plan will be undertaken.

## 20.3 Monitoring

# 20.3.1 Traffic Monitoring

Records of all heavy vehicles entering and leaving the site over the weighbridge will continue to be collected. Details including time, date, product type, weight and route taken will also continue to be recorded.

## 20.3.2 Noise Monitoring

Monitoring of the noise levels at the site will be undertaken during Year 1 of the operation of the proposed mill, as well as during Year 4 after full operation, to ensure the amelioration measures are effective.

## 20.3.3 Air Monitoring

Willmott propose to monitor the air emissions from the existing wood fired boiler during commissioning to determine the effectiveness of the multiclones on particulate emissions and confirm that emissions are low and comply with the POEO (Clean Air) Regulation.

Additionally, should Willmott receive any complaints from the neighbouring receptors regarding odorous emissions of natural pine odours from the kilns, Willmott will immediately try to identify the source of the odorous emission. The appropriate management measures will be implemented to eliminate the source of the odorous emission, and Willmott will develop a management plan to outline the procedure to rectify the issue. This could include shutting down specific equipment responsible for the odorous emissions in extreme cases until the issue has been rectified. Willmott will also conduct an odour survey at the boundary of the site to ensure that all odorous emissions have been eliminated.

## 20.3.4 Surface Water Monitoring

Surface water samples will be retrieved on a biannual basis from each of the water storage bodies and on a quarterly basis from the outlet of the activated carbon treatment vessel which will be installed to treat the steamer/kiln condensate. The sample from the outlet of the activated carbon treatment vessel is to confirm that the treatment method is satisfactorily removing all of the organic carbon from the steamer/kiln condensate prior to reuse or discharge into the future southern wetland. The locations of the surface water monitoring points are shown in Figure D12 and the monitoring program is summarised in Table 58.

Location	Location	Monitoring	Analytical Program		
Number	Description	Frequency			
Soil					
BH01 - BH10	Refer to Figure D12	Biannual	Arsenic, copper, chromium (total), chromium (VI)		
Surface Water					
SW1	Northern pond (sedimentation pond)	Biannual	Arsenic, copper, chromium (total), chromium (VI), TOC, pH, DO, EC, redox and hardness		
SW2	Northern pond (main pond)	Biannual	Arsenic, copper, chromium (total), chromium (VI), TOC, pH, DO, EC, redox and hardness		
SW3	North-western Pond	Biannual	Arsenic, copper, chromium (total), chromium (VI), TOC, pH, DO, EC, redox and hardness		
SW4	Outlet from Activated Carbon Vessel (Boiler Room)	Quarterly	Arsenic, copper, chromium (total), chromium (VI), iron, TOC, pH, DO, EC, redox and hardness		
SW5	Inlet to Southern Wetland System	Biannual	Arsenic, copper, chromium (total), chromium (VI), iron, ammonia, TOC, lignin/tannin, pH, DO, EC, redox and hardness		
SW6	Outlet to Southern Wetland System	Biannual	Arsenic, copper, chromium (total), chromium (VI), iron, ammonia, TOC, lignin/tannin, pH, DO, EC, redox and hardness		
SW7	South-eastern Pond	Biannual	Arsenic, copper, chromium (total), chromium (VI), iron, ammonia, TOC, lignin/tannin, pH, DO, EC, redox and hardness		
	Pefer to Figure D12	Biannual	Arsenic conner chromium (total)		
GVV I - GVV /		DidiiilUdi	chromium (VI), zinc, iron, TOC, TDS, pH, DO, EC, redox and hardness		
Note: EC = Electrical Conductivity					

Table 58 Proposed Ongoing Monitoring Program for Soil, Surface Water and Groundwater

DO = Dissolved Oxygen TDS = Total Dissolved Solids TOC = Total Organic Carbon

Surface water samples will be collected in accordance with DECCW's *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales* (DEC 2004) or any subsequent superseding document. In particular, surface water samples will be taken from 0.1 m below the water surface to avoid the influence of near surface evaporation. Samples to be analysed for heavy metals should be filtered to 0.1 µm prior to acid preservation. Quality assurance procedures, including the collection of quality control samples, will also be implemented. Further detail is provided in the Soil, Groundwater and Surface Water Management Plan in Appendix D.

Trigger values for the surface water samples are provided for the contaminants of concern at the site in Table 59. The trigger values have been set to primarily ensure that no off-site impacts occur in the unlikely even that it is necessary to discharge surface water offsite, and also to ensure that the wastewater treatment systems are operating optimally.

Analyte	Guideline Value <sup>1</sup>
	(mg/L)
Arsenic	0.013 (a)
Chromium (III)	0.0033 (b)
Chromium (VI)	0.001
Copper	0.0014
рН	6.5 - 8.0
TOC	To be determined (c)
Ammonia	0.90
Iron	0.3 (b)
Nitrate (as N)	0.159
Aesthetic considerations	The water should not have an objectionable
	odour or colour.

Notes: <sup>1</sup> ANZECC 2000 criteria for freshwater ecosystems, 95% level of protection

(a) ANZECC 95% trigger value for arsenic as arsenic V.

(b) ANZECC 2000 low reliability trigger value adopted in the absence of ANZECC 95% trigger values.

(c) To be set at the natural background level in Saucy Creek.

Should the results of the surface water monitoring exceed the trigger values listed in Table 59 in a single monitoring round, then the responses outlined in Table 60 are proposed to be implemented. It may also be necessary to immediately resample to confirm the result. In addition, if an overall long-term trend is identified which would result in trigger levels being exceeded in the next monitoring period, then a suitable response will be developed.

Sample	Sample	Applicable	Response
Numbero	Laationa	Analytaa <sup>1</sup>	Response
Numbers	Locations	Analytes	
1 and 2	Northern pond	Chromium (VI)	Some low level CCA contamination expected.
			Investigate cause of any chromium (VI)
			exceedences (i.e. spillage). Keep water levels in
			ponds low to prevent over flow during potential
			storm events.
3	North-Western	тос	Potential for organic carbon contamination to
	Pond		occur. Re-evaluate suitability for reuse.
4	Outlet of	тос	TOC Exceedence: Contact wastewater specialist
	Activated		to replenish activated carbon.
	Carbon Vessel,		
	Boiler Room		
5	Inlet To	тос	TOC Exceedence: Investigate cause of
	Southern pond		exceedence. Consider increased monitoring
			frequency for locations 5, 6 and 7.
6 and 7	South-Eastern	Arsenic,	During Pilot Trial: Do not discharge water off-site.
	Pond	Copper,	Re-circulate through wetland. Implement
		Chromium,	contingencies as outlined in Section 11.4.5.2
		pH, TOC,	Following Pilot Trial: Do not discharge water off-
		Ammonia,	site. Re-circulate through wetland and investigate
		Nitrate, Iron,	likely cause of exceedence. Consider
		Aesthetics	implementing contingencies.

## Table 60 Response to Surface Water Trigger Exceedences

Notes: <sup>1</sup> Analytes for which a response should be considered.

#### 20.3.5 Groundwater Monitoring

Further groundwater assessment will be performed to determine the extent of the contamination present at the site and the need for any active remediation of groundwater. This would include sampling from all existing wells at the site, and may involve the installation of additional groundwater wells. The assessment would be completed over the next 12 months, and prior to the completion of construction of the proposed mill components.

Ongoing groundwater monitoring consistent with the existing EPL requirements will also be undertaken. Groundwater monitoring will be undertaken on a biannual basis from the existing groundwater monitoring wells located at the site. Should additional wells be installed at the site, then these would also be incorporated into the groundwater monitoring program. It is expected that at least five additional groundwater monitoring wells will need to be installed at the site. The locations of the groundwater monitoring wells are shown in Figure D12. The monitoring program is summarised in Table 58.

The groundwater monitoring wells will be sampled in accordance with DECCW's *Guidelines for the Assessment and Management of Groundwater Contamination* (DECC 2007), or any subsequent superseding document. In particular, 'low flow' purging techniques will be used to ensure data reliability. Care will also be taken to ensure that drawdown in the monitoring well does not exceed 0.1 m during 'low flow' purging. In addition, water samples for heavy metal analysis will be field filtered to 0.1 µm prior to acid preservation. These procedures are necessary to ensure that the groundwater samples are not affected by high suspended solids, which can result in false positives, particularly for heavy metals. Groundwater standing water levels will also be recorded at the time of sampling and be related to the Australian Height Datum.

Groundwater trigger values will be developed following the groundwater assessment. These trigger values will be developed in order to provide an indication of the contaminant concentrations in the groundwater which may result in adverse impacts to the water quality in nearby Saucy Creek. Exceedence of the trigger values does not necessarily mean that an impact is occurring, but that there is the potential for impacts to occur in the future. A series of management procedures and responses will be developed for situations where the trigger values are exceeded to mitigate the risk. The trigger values will take into account the natural attenuation that occurs between the contaminant source and the receiving water body, as is indicated to be occurring at the site.

#### 20.3.6 Soil Sampling

A soil sampling program will be performed prior to the construction of the proposed mill components. The purpose of the program will be to verify the previous soil assessment results, in light of the time which has passed since the last assessment, and to provide updated information on the site condition.

Soil sampling will be undertaken in the vicinity of the proposed new CCA/ACQ treatment facility and in the CCA timber storage areas on a biannual basis. This is to verify that soil impacts are not occurring in the treatment and post-treatment storage areas, although it is noted that the new design of the plant will minimise the potential for soil contamination to occur. The proposed monitoring locations are shown in Figure D12. The monitoring program is summarised in Table 58.

Soil samples will be retrieved in accordance with Australian Standard 4482.1-2005: Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-volatile and Semi-volatile Compounds, 2 November 2005, Standards Australia.

Should significant contamination be identified that would impact on the ongoing use of the site for a commercial/industrial land use, remediation will be undertaken. The National Environment Protection (Assessment of Site Contamination) Measure (NEPM) Health Investigation Level's for a commercial/industrial land use (HIL F) will be used as screening criteria. Should these criteria be exceeded, then further investigation will be undertaken to determine the significance of the contamination and the most appropriate remedial response. This is in accordance with the NEPM.

### 20.4 Summary of Mitigation Measures

#### 20.4.1 Noise

Barriers and noise berms will be constructed along the eastern and southern boundaries of the site, and at noisy equipment items to mitigate potential noise impacts on the surrounding sensitive receptors. Noise control measures will be implemented to ensure construction noise does not adversely impact on the residence to the north-east of the site, which may include exhaust silencers.

#### 20.4.2 Air Emissions

Multiclones will be installed on the existing wood fired boiler to minimise the discharges of particulates to air.

Management of dust on the site will continue through construction and into operation. It will reflect the level and type of use of the various elements of the site as they are progressively developed and commissioned.

Dust management measures include hardstand surfacing the majority of the site, dust suppression by watering with a water truck, progressive removal of the residual stockpiles on site and construction of a concrete bunker for any residues generated by the proposed mill. A dust management plan will be developed prior to construction to detail the procedures which will be employed to minimise dust generation from the site.

## 20.4.3 Odorous Emissions

Odorous emissions from the southern pond will be reduced by the implementation of the new wastewater system. This will include the decommissioning and removal of the southern pond to remove a significant source of organic odorous emission.

Should Willmott receive any complaints in regards to odorous emissions from the site, the appropriate mitigation measures will be undertaken. Additionally, an odour survey will be conducted from the site boundary to ensure that all mitigation measures have been effective.

### 20.4.4 Surface Water Management

Willmott will improve the current surface water (stormwater and wastewater) management system to allow for better management of surface water flow to the northern and southern ponds.

As part of the evaluation process, a detailed hydrological assessment will be undertaken to determine the capacity of the existing northern pond and proposed Ponds 1 and 2 during normal operations and flood events.

#### 20.4.5 Chemical Hazards

Willmott will comply with the relevant statutory procedures for the transportation, storage and handling of chemicals. Detailed in-house procedures will be maintained in relation to storage and handling of chemicals and emergency. In order to ensure collection of any spills of liquid chemicals, all liquid chemicals and process areas will be appropriately bunded.

### 20.4.6 Safety and Hazards

Willmott will operate the proposed mill in accordance with appropriate operating procedures. Training and induction of all personnel will be conducted outlining the safety and hazard issues associated with operation of the proposed mill. All documentation such as emergency plans, safety records and changes to operation practices will be maintained and all changes will be communicated to staff and contractors.

### 20.4.7 Solid Waste Generation

Willmott will continue to investigate other reuse opportunities for solid wastes produced by the process. These alternatives include converting timber waste into wood chips for use as potting mix or boiler fuel.

### 20.4.8 Construction Phase

Appropriate sediment and erosion control measures will be put in place to minimise potential impacts on stormwater leaving the site. Construction activities will be scheduled to minimise noise impacts to neighbouring properties i.e. avoidance of noisy activities at night. All contractors will undergo instruction on site procedures and company expectations and complete inductions prior to entering the site.

## 20.5 Licensing and Approval Requirements

#### 20.5.1 Principal Development Consent

The NSW Minister for Planning is the consent authority for the proposed Willmott mill expansion. Before the expansion project can proceed it requires development consent and one or more additional approvals from other NSW Government agencies. That is, the planning consent for the project, when issued, will include conditioned consent for all of the other approvals to be issued. Consent conditions to manage the transitional aspects of the expansion are discussed in Section 3.1.

#### 20.5.2 NSW Department of Environment, Climate Change and Water

The current mill operations are licensed by an Environment Protection Licence (No. 11205) issued by the DECCW under the NSW POEO Act. The licence covers emissions to air, noise generation, dust, and water discharges. This licence will need to be amended to enable the expanded operations to proceed, with the principal variations being an increase in the number of stack emission points and changes to the land and water monitoring requirements due to the expansion.

Under the POEO (UPSS) Regulation, Willmott is required to provide a validation report to the Council after the removal of an UPPS no later than 60 days after the UPSS has been removed. Willmott will provide a validation report to Council upon removal of the UPSS.

## 20.5.3 Commonwealth Legislation

The Commonwealth recently introduced the Energy Efficiency Opportunities Act 2006. This requires a company (measured as an ownership group) to register for energy efficiency management and reporting purposes if its annual energy use exceeds 0.5 PJ. On this basis, Willmott will not be required to register for the purposes of this Act.

## 20.5.4 Local Government Law

No specific aspects of local government law apply to the expansion of the Willmott mill.

# 21. DRAFT STATEMENT OF COMMITMENTS

The draft statement of commitments presented in this section is intended to be considered as a standalone document to be attached to the conditions of consent from the Department of Planning should the proposed expansion be approved. The statement of commitments details the environmental mitigation, management and monitoring of the proposal.

# 21.1 Approvals and Licences

Willmott will require an amendment to their existing EPL to authorise the carrying out of the proposed mill operations. This licence will need to be amended to enable the expanded operations to proceed, with the principal variations being an increase in the number of stack emission points and changes to the land and water monitoring requirements due to the expansion.

Willmott will also submit a notification to WorkCover regarding the volume and type of dangerous goods stored at the site, to update the existing Dangerous Goods Licence.

# 21.2 Environmental Mitigation, Management and Monitoring

Table 61 outlines Willmott's commitments to environmental mitigation, management and monitoring associated with the mill expansion drawing on the points outlined in previous sections of the EA.

Environmental Issue	Commitments	Timing
Consolidation of	• Willmott will surrender all existing consents pertaining to the site at or before all new equipment is	Construction and
Consents	commissioned, according to Table 7.	Operational Phases
Safety and Hazard	• Update and maintain all documentation such as fire management and emergency plans, safety	Construction and
	records and changes to operation practices and communicate changes to staff and contractors.	Operational Phases
	Conduct training and induction of all site personnel outlining safety hazard issues associated with	
	construction and operation of the proposed mill.	
	Appropriate engineering controls, process monitoring and, physical inspections of all components of	
	the storage tanks.	
Noise	Barriers and noise berms will be constructed along the eastern and southern boundaries of the site	Construction and
	to mitigate potential noise impacts on the surrounding sensitive receptors.	<b>Operational Phases</b>
	Alternative reverse beepers will be fitted to mobile machinery to reduce the impact of this noise.	
	• Noise control measures will be implemented during construction to ensure there are no adverse	
	impacts on the residence to the north-east of the site. This may include fitting front end loaders and	
	excavators with exhaust silencers or sourcing alternative quieter models. Other mitigation	
	measures will include limiting the hours of noisy construction activities, establishing clear	
	communication channels with the community and contractors, and appointing a site representative	
	responsible for matters relating to noise.	
	Compliance with operation, traffic and construction noise limits, as outlined in the noise assessment	
	report will be achieved.	
Waste	Removal of the existing residual stockpiles on site.	Operational Phase
	Ensure that there are appropriate areas for the storage of wastes and wood residues, including the	
	construction of bunkers for the containment of residues.	

# Table 61 Draft Statement of Commitments

Environmental Issue	Commitments	Timing
	• Handling and disposal of CCA contaminated waste in accordance with waste immobilisation	
	approval from DECCW.	
Chemical Storage and	Construction of a new undercover treatment plant with bunded concrete area to reduce the risk of	Construction Phase
Handling	chemical contamination of soil and groundwater.	
	• Assign a dedicated forklift to the treatment plant to ensure that contaminated materials and	Operational Phase
	chemicals are kept within sealed and bunded areas.	
Water Supply	• Willmott will continuously investigate and implement water minimisation measures, including on-site	Operational Phase
	reuse	
	• Willmott will review and, if appropriate, support the Council's endeavours to increase the water	
	security of Bombala	
Surface Water	• Re-design of the wastewater and stormwater management system in accordance with the Soil,	Design/ Construction
(Wastewater and	Groundwater and Surface Water Management Plan, to maximise the reuse of clean water and	Phase
stormwater)	appropriately manage and treat contaminated water.	
	• Surface water monitoring will be undertaken on a biannual basis from each of the water storage	Design/ Construction
	bodies (six locations) and on a quarterly basis from the outlet of the activated carbon treatment	Phase
	vessel which will be installed to treat the steamer/kiln condensate.	
	• The Soil, Groundwater and Surface Water Management Plan will be implemented. In particular	
	wastewater from the steam/kilns will be treated prior to reuse at the site and a wetland will be	
	constructed to capture and treat any stormwater runoff.	
Air Quality (including	• Re-design of the wastewater management system including decommissioning and removal of the	Design/ Construction
odour)	southern pond to eliminate any associated odour issues.	Phase
	• Dust management measures including sealing of the site, dust suppression, removal of residual	Construction and
	stockpiles and a new area for the storage of wood residues generated by the proposed mill.	Operational Phases

Environmental Issue	Commitments	Timing
	• Upon receipt of a complaint regarding odorous emissions, undertake an odour survey at the	
	boundary of the site to ensure that all mitigation measures have been adequate and any odorous	
	emissions have been eliminated. Should Willmott receive on-going complaints regarding odorous	
	emissions at the site, an external specialist will be engaged to conduct a detailed odour survey and	
	identify the source of the odorous emission.	
	Multiclones will be installed on the wood fired boiler to minimise particulate emissions.	Commissioning Phase
	• The wood fired boiler will be monitored during commissioning to ensure that the particulate control	Construction Phase
	equipment is adequate.	
Traffic and Transport	• Undertake the required construction works for the Sandy Lane - Delegate Bombala Road	Design/ Construction
	intersection, and the new intersection onto Delegate Bombala Road.	Phase
Heritage	• Fence off the ruins of the Inn and associated filled in well to prevent encroachment of the site	Construction Phase
	operations on the well.	
Soil and Water Impacts	• Remediation of contaminated soil present in the vicinity of the CCA treatment area will be	Construction and
	undertaken following the demolition of this facility.	Operational Phases
	• A preliminary soil sampling program will be performed prior to the construction of the proposed mill	Design/ Construction
	components.	Phase
	Groundwater assessment will be performed to determine the extent of the contamination present at	
	the site and the need for any active remediation of groundwater.	
	• Ongoing soil and groundwater monitoring will be performed biannually at seven groundwater	Construction and
	locations and ten soil sampling locations at the site, consistent with the EPL. Should additional	Operational Phases
	wells be installed at the site, then these would also be incorporated into the groundwater monitoring	
	program. It is expected that at least five additional groundwater monitoring wells will need to be	
	installed at the site.	

Environmental Issue	Commitments	Timing
	• Construction of bunded areas for the storage and handling of chemicals to reduce the risk of	Construction Phase
	chemical contamination of soil and groundwater.	
Flora and Fauna	Protecting the modified bushland north of the existing sawmill.	Construction and
		<b>Operational Phases</b>
	Planting of trees on both sides of the wetland at the drainage line as part of the implementation of	
	the re-designed wastewater and stormwater management system.	
	• Planting of the area to the north of the proposed sawmill be aimed at establishing habitat that is a	Design/ Construction
	simplified form of naturally occurring habitat in the local area.	Phase
	<ul> <li>Locally native plant species be used in revegetation and landscape works.</li> </ul>	
Construction	• Install appropriate sediment and erosion control measures to minimise potential impacts on	Construction Phase
	stormwater leaving the site.	
	Prepare a Construction Environmental Management Plan.	
	Ensure physical segregation of operational and construction areas.	
	Develop and maintain a comprehensive planning schedule.	
	Contractors to undergo instruction on site procedures and company expectations	
Visual Amenity	Landscaping will be carried out with a view to minimising any visual impacts of the development.	Operational Phase
	<ul> <li>Building colours and finishes will aim to blend with the surrounding landscape.</li> </ul>	
	Lighting will minimise glare offsite.	
Operation	Preparation of an Operational Environmental Management Plan.	Operational Phase
Other Commitments	Continue consultation with DECCW during construction and operation of the proposed mill.	Construction and
	Continue consultation with DoP during construction and operation of the proposed mill.	Operational Phases
	• Ongoing consultation with the community regarding significant progress of the project via a number	
	of channels, including local media and further letterbox drops.	

### 22. CONCLUSIONS

Willmott proposes to expand its timber production and value-adding facilities by constructing a world-scale sawmill at Sandy Lane, Bombala. The development will increase the timber processing capacity at the site to 400,000 tpa of softwood log input.

### 22.1 Economic Justification

The proposed sawmill and value adding project at Bombala will ensure the continued viability of the Bombala community, given its socio-economic importance in the region. The investment will generate an additional 90 fulltime jobs and inject over \$20 million into the local economy annually.

The project's proponents have a demonstrated ability to deliver on the project and ensure its ongoing economic viability. The current mill does not run at an economically sustainable level, and the expansion outlined in this EA is required to increase its efficiency of scale to enable it to continue supporting the local economy.

The ability to market the mill's products has been demonstrated in this EA.

### 22.2 Social Justification

In addition to the economic benefits resulting from the project, social benefits will also ensue. The creation of an expanded local employment hub will help to boost the local population, which will have flow-on benefits of attracting social infrastructure, such as qualified health care practitioners.

Willmott is committed to training, both on-the-job and formal training, and the skilled jobs generated from the project will enable the local community to benefit from enhanced education opportunities and up-skilling of its residents.

The mill's ability to attract people to the region will encourage currently approved developments to proceed. Willmott is liaising with the Bombala Shire Council to ensure that adequate housing is available for current and future residents.

### 22.3 Environmental Justification

The environmental outcomes associated with the expansion will have a net benefit over the impacts of the existing mill, by introducing world's best practice technology and water management practices. The potential environmental risks posed by the facility have been identified and assessed in this EA. These have included hazard and risk, noise, greenhouse gas emissions, soil and water contamination, air quality, waste management, traffic, flora and fauna impacts, visual and heritage impacts. The following conclusions are made:

- The assessment of traffic flows from the proposed mill has shown that the increase from the mill expansion does not trigger an upgrade in the surrounding road network. The network is currently sufficient to handle the present and increased traffic volume, although some intersection and bridge sections improvements have been suggested. However, there are no suggested upgrades from the traffic assessment that are attributable to the proposed mill expansion.
- The results of the noise assessment performed have shown that the proposed mill will be in compliance with the project specific noise levels for the site. This compliance is achieved through the inclusion of acoustic barriers and berms in the development, along two site boundaries. The potential impact from traffic noise resulting from the mill expansion is not considered to be extensive or excessive. The noise levels during construction are in compliance at all receptors, with the exception of one residence to the north-east of the site, where the noise level is predicted to be slightly above the noise limits.
- The discharges to air from the facility were also assessed as part of the EA. The expected
  emissions to air from the proposed facility were found to comply with the DECCW impact
  assessment criteria for the ground level concentrations of contaminants. Additionally, the
  proposed new boilers will comply with the POEO (Clean Air) Regulation standard of
  concentration limits. Treatment control technology will be added to the existing wood fired
  boiler to ensure compliance with the standard of concentration limit, and monitoring will be
  performed to confirm the emissions.
- Management of dust on the site will continue through construction and into operation. The
  new stormwater management plan will eliminate the existing odour issues associated with
  the southern pond, and an odour management plan will be prepared to address any
  potential odorous emissions from the kiln operation.

- Willmott has prepared a Soil, Groundwater and Surface Water Management Plan to address the existing site legacy contamination issues, and to outline the measures at the proposed mill to prevent a recurrence of these issues. In addition, the stormwater management measures described will improve water quality and ensure that the stormwater and wastewater systems at the mill will be sufficient for the expanded operations, and maximise water re-use.
- Willmott will continue to recycle, re-use and sell the waste generated at the site, where
  possible. The proposed expansion will result in a decrease in the quantity of some of the
  waste streams as part of the proposed waste management strategy.
- There are Aboriginal moveable heritage artefacts at the Willmott site, and Willmott has committed to working with the Aboriginal community and the regulators to ensure they are managed appropriately.
- The European heritage study undertaken has demonstrated two sites of potential European heritage value, and Willmott will take measures to ensure that the sites are protected from the proposed expansion works.
- The proposed expansion is expected to have minimal effect on the visual amenity and the flora and fauna of the area, and greenhouse gas emissions will be generated but are not considered excessive for a facility of this type. No unacceptable risk to the surrounding land users was identified from the site operations through the PHA.

Willmott is committed to a number of mitigation actions, including the installation of multiclones on the waste wood boiler, noise amelioration measures and the implementation of a detailed plan to manage the stormwater and wastewater streams that will be generated by the proposed mill operation. Monitoring of air emissions, noise, soil, groundwater, surface water and noise will be undertaken during commissioning and/or operation of the mill to ensure regulatory compliance.

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