



VERSION 1.0

FOREST MANAGEMENT PLAN

For and on behalf of

The Trust Company (PTAL) Limited in its capacity as trustee of the
Tasmanian Forest Investment Sub Trust (TFIST)

The Trust Company (Aus) Limited in its capacity as trustee of the
Tasmanian Forest Operating Sub Trust (TFOST)

and

Forico Pty Limited as Forest Manager (Forico)

CONSULTATION DRAFT

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CONSULTATION DRAFT

1. OVERVIEW

Forico Pty Limited (Forico) is an integrated, timber plantation, forest management, and forest products export business operating within Tasmania managing in excess of 179,000 hectares of forestry estate, in addition to affiliated processing operations. The Forico plantation estate includes in excess of 96,000 hectares of sustainable hardwood and softwood timber plantations, primarily *Eucalyptus nitens* located across Tasmania.

The Forico Corporate Office is located in Launceston, Tasmania with a regional office at Ridgley, north-west Tasmania. The Forico seedling nursery is a purpose built facility located in north-west Tasmania with a capacity to grow up to 18 million seedlings per annum.

Processing and exporting assets are strategically located within Tasmania to optimise harvesting and management of the plantation estate. Assets include:

- Long Reach Mill;
- Surrey Hills Mill;
- Outsourcing / sub contracting at TasPorts' Burnie Port and Australian Marshalling Services' Massy Greene Processing Facility;
- Forico Fibre Technology Laboratory.

With these key assets, Forico has a long-term vision to manage, commit and contribute to a sustainable plantation forestry sector in Tasmania, producing high quality internationally certified plantation timber products through meeting the highest independently verified sustainable forest management standards. Forico has the supply chain infrastructure and export marketing capability in place to efficiently manage the entire seed to market supply chain.

The Forico managed Tasmanian Forest Estate can be described as the Defined Forest Area (DFA) which is composed of the **Forest Management Unit (FMU)**. The FMU encompasses all land and forest over which the company has management control.

Forico is committed to sustainable forest management of hardwood and softwood harvesting forest products from plantation sources. Forico is currently certified to the:

- International Standards Organisation ISO14001 for Environmental Management Systems;
- Australian Standard - Sustainable Forest Management AS4708;
- Australian Standard - Chain of Custody for certified wood and forest products AS4707;
- FSC Controlled Wood Standard for Forest Management Enterprises FSC-STD-30-010;
- FSC Standard for Multi-site Certification of Chain of Custody Operations FSC-STD-40-003;
- FSC Standard for Chain of Custody Certification FSC-STD-40-004;
- FSC Standard for Company Evaluation of FSC Controlled Wood FSC-STD-40-005.
- Requirements for the Competence of Testing and Calibration Laboratories ISO 17025.

Forico is seeking Forest Stewardship Council (FSC) Forest Management certification for the FMU. Forico is committed to the process and the application of FSC principles and criteria in sustainable forest management activities.

Forico forest activities include:

- Plantation establishment and maintenance;
- Plantation harvesting, extraction, transportation and marketing;
- Managing a forest nursery and tree improvement operations;
- Roding and quarrying works;
- Provider of plantation sawlogs to domestic markets;
- Provider of plantation logs for export log markets;
- Processing of plantation timber for export woodchips;
- Provision of export services (woodchip handling, storage and ship loading); and
- Maintenance, management and monitoring of the natural forest estate for non-production values.

2. PURPOSE

The purpose of this Forest Management Plan is to communicate management objectives and principles across the Forico FMU.

This Forest Management Plan forms an integral part of the systematic management system, and should be read in conjunction with the High Conservation Value (HCV) Assessment and Management Plan, and other site specific operational plans and manuals – for example Forest Practices Plans (see Figure 1).

Figure 1. Forico Planning and Assessment Process

Overarching Obligations and Commitments	FORICO Policies
	SHE Management System
Regional Instructions	Forest Management Plan
Regional Assessments	HCV Assessment and Management Plan
Operational Level Planning and Assessment	Operational Specific Plans, Manuals, Procedures, Checklists

3. MANAGEMENT OBJECTIVES

The primary objective of Forico is to manage a sustainable forestry business with principle activities of growing and selling plantation sourced forest products, whilst protecting environmental values, fostering communication through constructive and meaningful relations with interested and affected stakeholders. Sustainable management of the FMU is seen as vital to the maintenance of the Forico forestry business.

Corporate objectives encompass:

1. *Fully utilise the potential to grow and supply plantation based forest products and increase the productive capacity of the FMU.*
2. *Maintain, protect and enhance the significant environmental, social and cultural values.*
3. *Foster communications through constructive and meaningful relations with interested and affected stakeholders.*
4. *Zero harm to people, assets, and the environment.*

Measures put in place to achieve these objectives are guided by the Safety, Health and Environment (SHE) management system framework adopted by Forico for all activities.

3.1 Safety, Health and Environmental (SHE) Management System

Forico is committed to provide a safe and healthy environment for all employees, contractors, customers and visitors in the workplace in accordance with the corporate objective which includes the element “*Zero harm to people, assets, and the environment.*”

As a result, Forico implements a SHE management system, to implement company policies and procedures that allow corporate objectives to be achieved. The SHE management system itself focuses on:

- Ensuring continued compliance to all relevant legal obligations and requirements for Safety, Health and Environmental Management.
- Ensuring compliance to the structural system requirements and overall objectives of voluntary certification schemes against which Forico is certified, or strive to be certified.
- Providing other aspects of the business with sound systematic management protocols.

The SHE Management System is based on continual improvement and comprises a series of linked business processes within a “Plan-Do-Check-Act” cycle. In many cases the business processes are absolutely necessary to achieve or maintain compliance to legal and relevant voluntary requirements or implement specific company policy. In all cases however the underlying intent is to manage and mitigate SHE risks associated with undertaking business activities.

Forico company policies form the cornerstone of the SHE Management System. These policies include:

- *Environmental and Sustainability Policy;*
- *Occupational Health and Safety Policy;*
- *Chain of Custody Policy.*

Copies of these Policy documents are available from the Forico website (www.forico.com.au).

A critical element of the SHE Management System for forest operations involves the identification, assessment and management of SHE hazards and risks associated with the planning for and then undertaking of operations. The Forico Aspects and Impacts Register lists and ranks aspects associated with activities, based on a systematic and traceable risk assessment methodology ensuring all significant aspects (higher risk elements) are more closely examined. As a consequence of this systematic approach to risk management, Forico ensures that activities and operations are undertaken with a final risk profile that is either low or at least acceptably low enough, to meet the “zero harm” objective.

3.2 Legislative Context and Requirements

All key legal and other voluntary commitments or requirements (such as federal / state legislation, third-party independently verified standards, voluntary agreements or policies) relating to Forico, have been identified to ensure these requirements are taken into account in establishing, implementing and maintaining the SHE Management System.

To ensure activities undertaken within the Forico FMU adhere to all applicable legislation, access to all the current federal and state government acts and regulations is available through an external third party website. This user friendly process ensures all employees are made aware of the current state and federal legislation. Internal controls are implemented and monitored to measure ongoing compliance.

Forestry activities in Tasmania are regulated under the forest practices system, legislated through the Forest Practices Act (1985), and administered by the independent statutory government body the Forest Practices Authority (FPA). Forest practices in Tasmania require the production of a certified, legally binding Forest Practices Plan (FPP) which must be prepared in accordance with the Forest Practices Code 2000 (FPC). The FPC provides a set of legally enforceable guidelines and prescriptions to ensure management and protection of the natural and cultural values of the forest during forest operations.

The guidelines and standards prescriptions in the FPC address operational activities, including:

- Building access to the forest;
- Harvesting of timber;
- Conservation of natural and cultural values (soil and water, geomorphology, visual landscape, flora, fauna and cultural heritage);
- Establishing and maintaining sustainable, healthy forests; and
- Management and prevention of pollution including fuels, oils, rubbish, and emissions.

There are additional codes of practice that regulate forest activities in Tasmania including:

- Code of Practice for Aerial Spraying 2000;
- Code of Practice for Ground Spraying 2001;
- Quarry Code of Practice; and
- Forest Safety Code 2007 (approved Code of Practice enforced by the Work Health and Safety Act 2012 and associated Regulations);

Operational compliance to the legal and other voluntary requirements is achieved through regular and diligent internal and external auditing.

4. FOREST RESOURCE DESCRIPTION

The Forico Forest Management Unit is made up of the permanent and semi permanent estates. The permanent estate comprises freehold land owned by the Trust Companies and managed by Forico. The semi permanent estate comprises plantation areas managed by Forico on third party land and share farms.

The productive component of the FMU is comprised of hardwood (*Eucalyptus nitens* and *Eucalyptus globulus*) and softwood (*Pinus radiata*) plantations – **96,467** hectares. The FMU also includes some **79,333** hectares of natural vegetation, of which **36,498** hectares is maintained in dedicated reserves with **3,659** hectares under conservation covenant. Areas of natural vegetation on the freehold estate will be managed as natural vegetation for conservation and biodiversity benefits and not subject to commercial timber harvesting activities.

The hardwood estate accounts for approximately 96% of the plantation area (net planted area basis), with the softwood estate making up the remaining 4%. These plantations are grown to produce fibre for the pulp and paper industry and solid wood products for the structural and veneer timber markets. Table 1 summarises the area managed by Forico in Tasmania.

The FMU is located across all regions of Tasmania, with resource situated in south-east, north-east and north-west Tasmania as presented in Figure 2. In north-west Tasmania, a large proportion of the FMU occurs in two largely contiguous areas, which are referred to as Surrey Hills and Woolnorth. The remaining area comprises smaller, scattered properties ranging in size from several hectares to over 3,000 hectares generally located inland from Tasmania's north coast both to the west and east of Burnie.

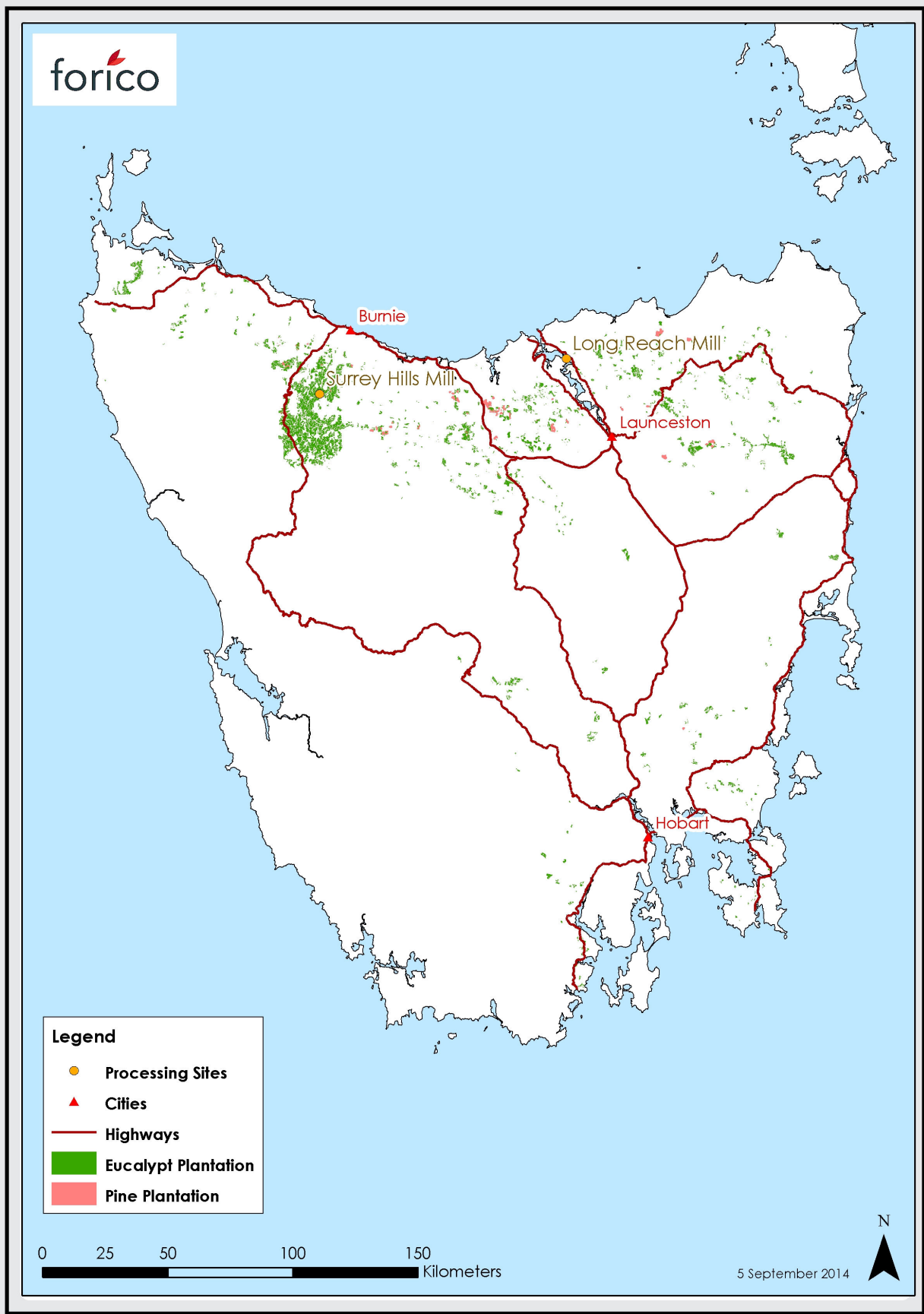
In north-east Tasmania the estate is dispersed in small to moderate sized holdings. In south-east Tasmania the estate is mainly located to the north of Hobart in small to moderate sized holdings covering a wide geographic spread.

Table 1. The Forico Forest Management Unit

PERMANENT ESTATE	
Net Plantation Area	86,373 ha
Native Vegetation Area	79,333 ha
Infrastructure and Other	3,553 ha
Sub-Total	169,259 ha
SEMI-PERMANENT ESTATE	
Net Plantation Area	10,095 ha
TOTAL	179,354 ha

* as at 05/09/2014 State of the Estate Report.

Map 1: The Forico Forest Management Unit



4.1 Environmental Management Compliance

All Forico forest operations are undertaken in accordance with the relevant State and Commonwealth legislation and other voluntary requirements (including certification obligations), Forest Practices Code 2000, Environmental Protection Notices, and other regulatory instruments.

The Forico FMU has numerous operational constraints that arise from environmental compliance. Forico maintains a comprehensive Geographic Information System (GIS) which records spatially information relevant to the protection and maintenance of production, environmental, social and cultural values. The GIS delineates exclusion and reserve areas and contains environmental information such as known localities of threatened species and additional biodiversity values, soil types, stream catchments, geoconservation, and visual landscape features. Areas of productive hardwood and softwood plantations are also incorporated into the coverage. This information is used during operational planning primarily in the development of site specific operational management prescriptions.

4.2 Ownership Status and Land Use

The Forico FMU is managed under two principal land estate classifications - the permanent and semi-permanent estate.

4.2.1 Permanent Estate

The freehold estate managed by Forico is the result of decades of land acquisition and sale. The permanent estate consists of **86,373** hectares of plantation and **79,333** hectares of native forest (the balance of **3,533** hectares of infrastructure).

The Permanent Estate consists of **169,259** hectares.

4.2.2 Semi Permanent Estate

The Forico semi permanent estate consists of plantations on third party privately owned land where Forico maintains legally definable management control. Typically, this management control is in the form of equity via a plantation growing contract, a current Forest Practices Plan, or third party agreement. The size and location of the semi-permanent estate will change over time. These changes occur in response to the approval of Forest Practices Plans for the harvesting of private third party plantation resources (that may incorporate establishment of new plantations, growing contracts) and periodic expiry of FPPs and plantation growing contracts.

In summary, for the semi-permanent estate, Forico can demonstrate management control and legal rights over the forest operation.

Currently **10,095** hectares of plantation fall in to this category.

4.3 Profile of Adjoining Lands

Forico manages forest predominantly on private land over a large geographic area. Land adjoining the FMU is used for a broad range of purposes, including formal and informal reserves, agriculture, tourism, residential, industrial, recreational uses and forestry.

4.4 Previous Land Use

A proportion of the estate is currently in its fourth plantation rotation. All land converted from natural forest to plantations was undertaken by the previous owners. The previous land use for the plantation estate is delineated within the Forico Geographic Information System (GIS).

4.5 Indigenous Peoples Rights

There are no known conflicts relating to land tenure within the FMU and no indigenous peoples have been identified with customary or traditional rights to forest resources (timber and non-timber) within the FMU.

Legal rights are prescribed under Australian law. The Commonwealth Native Title Act (1993) provides a mechanism by which native titles rights can be negotiated and recognised under Australian law. Through Native Title the right for 'exclusive possession' can only be recognised over unallocated or vacant Crown Land and some areas already held by, or for, indigenous Australians. Freehold and third party land within the FMU does not fall within this category.

Notwithstanding the above, Forico recognises the importance of land and traditional sites to indigenous people. Forico recognises that indigenous people may have interests in the Company's estate for:

- Access to the area for traditional purposes, such as ceremonies;
- Visits to important sites;
- Gathering of traditional resources, such as ochre and food; and
- Education to teach law and customs.

To this end, stakeholder engagement with indigenous groups forms an important component of Forico business strategy.

4.6 Stakeholders

Forico is committed to involve stakeholders, to maintain a healthy social environment in which Forico operates. Social diversity is respected, and where appropriate – cultural sensitivities are taken into account, including the acknowledgement of people's spiritual or traditional connection with the land.

A clear and timely communication to stakeholders is encouraged with the objective to ensure engagement builds trust and positive and productive stakeholder relationships. Continual improvement is promoted to refine the approach through feedback and commentary from a wide cross section of stakeholders.

Forico maintains a readily accessible and comprehensive list of interested and affected stakeholders within a Stakeholder Communication Database entitled Consultation Manager. Consultation Manager is a web-based application providing a company wide platform for the centralisation of stakeholder information. A diverse range of organisations, groups, individuals are incorporated into the database. The relevance and currency of the database is reviewed periodically.

Forico has a set of protocols and guidelines that defines the process of stakeholder identification, and how to adequately respond to stakeholder concerns (eg: grievances, complaints, and disputes),

Communication / engagement with stakeholders is managed through a variety of platforms. Direct interactions, meetings, phone calls and email correspondence are examples. Interested and affected stakeholders can access the Forico website (www.forico.com.au). The website incorporates key company policies and related publications detailing to activities within the FMU. Maps illustrating the location and distribution of the FMU are also available including the Forest Management Plan and the HCV Assessment and Management Plan.

All complaints, disputes and grievances are monitored and will be addressed in a professional manner.

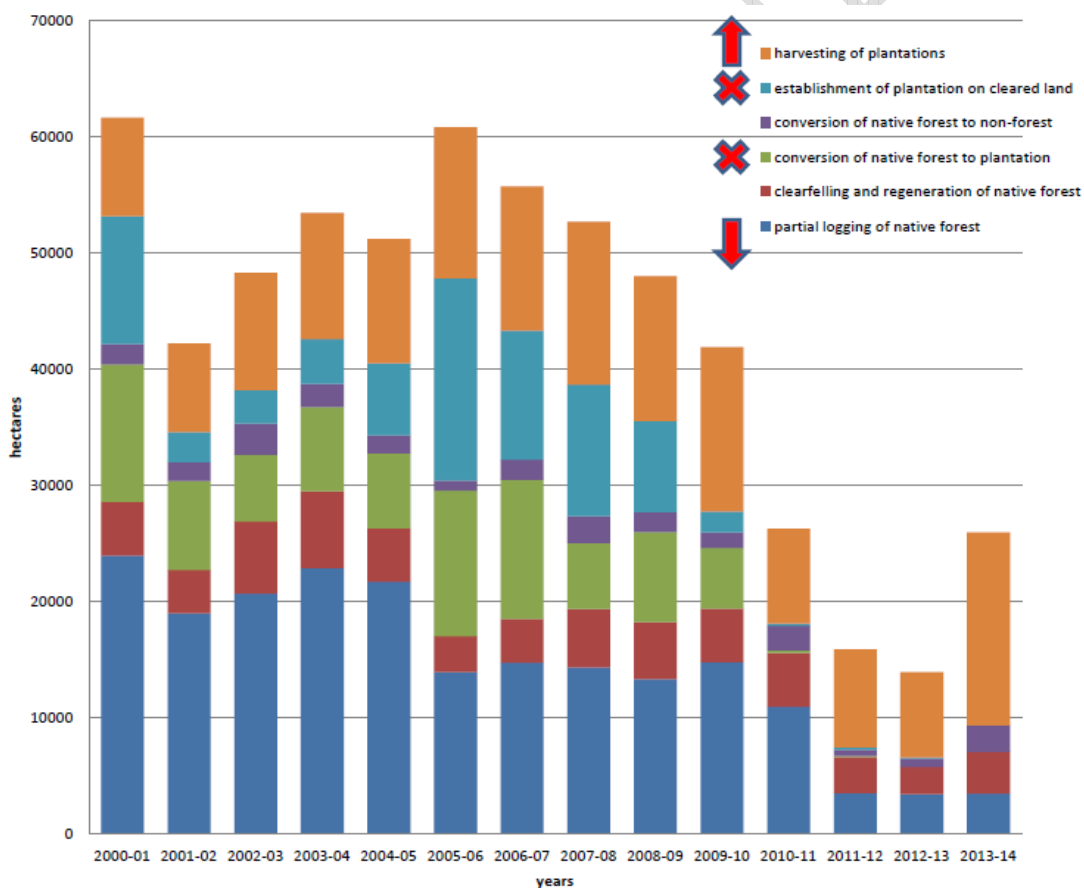
5. SOCIO-ECONOMIC ASSESSMENT

5.1 Tasmanian Regional Profile

The Tasmanian forest industry is currently undergoing substantial change. Since 2008 a significant downturn in industry activity, driven primarily by the global financial crisis, customer demands, appreciation of the Australian dollar, and other associated factors has resulted in the loss of thousands of jobs in the industry. The impacts of the downturn on forest industry businesses, workers, their families, and communities dependent on the forest industry have been profound. Many people have lost employment, many of those remaining in the industry have experienced a decline in income, and many members of the industry, including those working in businesses in which employment has remained stable, are experiencing considerable stress and uncertainty.

Within Tasmania, there has been a fundamental shift with respect to forestry operations. The Forest Practices Authority has prepared the following graph that quantifies the movement in type of operation proposed in Forest Practices Plan applications between 2000 – 2001 and 2013 – 2014. Conversion of natural forests to plantations has decreased dramatically in the past five years.

Figure 2. Tasmanian Forest Practices Plan Changes Over Time



Source: Forest Practices Authority, September 2014

Trends occurring over the past one to two decades include rapid expansion of the eucalypt plantation estate in Tasmania; whilst in the native forest sector an ongoing reduction in the quantity and quality of sawlogs available from natural forests (both public and private resources) has occurred.

Markets for forest products have also changed. In the structural sawn timber market, softwood plantation timber has increasingly competed with timber sourced from native forests, while demand for appearance-grade products manufactured from natural forest species has remained relatively strong. In addition to changes in wood resources and markets, business costs had grown more rapidly than revenue over the past 10 to 20 years, and increasing legislative and regulatory requirements has contributed to increased operating costs.

Tasmania has a strong dependence on primary industries for its economy and employment. The FMU is located within areas managed by twenty one Local Government Authorities (LGAs). Table 2 provides a demographic summary of each of these LGAs, information obtained from each Authorities' websites and local knowledge of employees who live and work within these municipalities.

Agriculture, primarily dairy, beef cattle, sheep, grain growing and cropping are indicated as the main industry for the majority of LGAs, with forestry and tourism featured as a significant contributor to the regional economy.

Table 2: Tasmanian Local Government Authority Coverage

Local Government Area	Demographic Summary	
Break O'Day	Population:	6,200
	Area:	3,810 km ²
	Main Industries:	Tourism, agriculture, forestry and viticulture.
Burnie	Population:	19,800
	Area:	618 km ²
	Main Industries:	Heavy machinery manufacturing, forestry, agriculture
Central Coast	Population:	21,300
	Area:	932km ²
	Main Industries:	Tourism, agriculture and forestry
Central Highlands	Population:	2,300
	Area:	7,976 km ²
	Main Industries:	Tourism, agriculture and forestry
Circular Head	Population:	8,100
	Area:	4917 km ²
	Main Industries:	Tourism, agriculture and forestry
Derwent Valley	Population:	9,500
	Area:	4,111 km ²
	Main Industries:	Tourism, agriculture and forestry
Dorset	Population:	7,100
	Area:	3,196 km ²
	Main Industries:	Tourism, agriculture and forestry
Kentish	Population:	1,180
	Area:	5,784 km ²
	Main Industries:	Tourism, agriculture and forestry
George Town	Population:	6,700
	Area:	653 km ²
	Main Industries:	Heavy industry, retail, tourism, agriculture and forestry
Glamorgan-Spring Bay	Population:	4,300

	Area:	2,522 km ²
	Main Industries:	Tourism, agriculture, forestry and viticulture.
Huon Valley	Population:	14,600
	Area:	5,497 km ²
	Main Industries:	Tourism, agriculture and forestry
Kingsborough	Population:	31,700
	Area:	717 km ²
	Main Industries:	Tourism, agriculture and forestry
Latrobe	Population:	8,900
	Area:	550 km ²
	Main Industries:	Health, tourism, agriculture and forestry
Launceston	Population:	65,000
	Area:	1,405 km ²
	Main Industries:	Retail, energy, agriculture, forestry, mining and tourism.
Meander Valley	Population:	19,000
	Area:	3,821 km ²
	Main Industries:	Tourism, agriculture and forestry
Northern Midlands	Population:	12,500
	Area:	5,130 km ²
	Main Industries:	Tourism, agriculture
Sorell	Population:	12,400
	Area:	583 km ²
	Main Industries:	Tourism, agriculture and forestry
Southern Midlands	Population:	5,800
	Area:	2,561 km ²
	Main Industries:	Tourism, agriculture and forestry
Tasman	Population:	2,300
	Area:	660 km ²
	Main Industries:	Tourism, agriculture and forestry
Waratah-Wynyard	Population:	13,800
	Area:	13,815 km ²
	Main Industries:	Tourism, agriculture and forestry
West Tamar	Population:	21,500
	Area:	689 km ²
	Main Industries:	Tourism, agriculture, viticulture and forestry

5.2 Socio-Economic Impacts

In conjunction with local stakeholders, including forest industry, the community and environmental groups, Forico undertakes evaluation of socio-economic impacts associated with plantation management activities in the local government areas of Tasmania.

Forico is a member of a number of local community and industry groups, including:

- Australian Forest Nursery Association;
- Australian Forest Operations Research Alliance. An alliance between University of Sunshine Coast and Australian Forest Managers aimed at jointly funding research into Australian forest supply operations;
- FWPA Project PNC209-1011: Genetic selection tools for enhanced wood properties in plantation productivity in Australia's temperate eucalypts (Blue Gum Genomics), Project Steering Committee;

- FWPA Project PNC211-1011: Optimal use of genetics in deployment and tree breeding, Project Steering Committee;
- Relationships with NRM groups, Schools and Universities, Government Agencies (eg: NRM Cradle Coast - Weeds Advisory Group; NRM North – Tamar Estuary and Esk River Water Quality Improvement Plan; University of Tasmania (UTas));
- Safety Standards Committee (Chair) - Representative Industry Group which reviews and discusses safety trends, issues and other safety matters relevant to the Forest Industry in Tasmania. The group has representation from private sector, public sector, regulators, training providers and Industry representative groups (TFCA);
- Southern Tree Breeders Association (Board member);
- Southern Tree Breeding Association Eucalypt Program Steering Committee;
- Southern Tree Breeding Association Technical Advisory Committee;
- Tasmanian Agricultural Productivity Group (Board member); and
- Western District Bushwatch Committee.

Forico staff have also participated in a number of broader regional based socio-economic studies, such as that undertaken by Australian Government, and this has contributed to Forico knowledge and evaluation of socio-economic impacts associated with plantation management activities at a district, regional, or national level.

Currently Forico employs 35 staff throughout Tasmania, in addition to approximately 150 contractors, supplying approximately 1 million tonnes of plantation forest products to customers.

Independent, external research and studies on the socio-economic impacts of plantations is ongoing. Research was previously conducted by the Cooperative Research Centre (CRC) for Forestry "Communities Project", which investigated research into the social fabric and dimensions of Australians forest industry. Two significant reports were subsequently published:

- Socio-economic impacts of forest industry change: a baseline study of the Tasmanian forest industry. Schirmer, J., Dunn, C., Dare, M. (2009);
- Socio-economic impacts of the plantation industry on rural communities in Tasmania. Schirmer, J., (2009).

Statistics and data derived from these studies are still relevant in the current operating environment.

These independent external publications were able to address a number of questions relating to socio-economic observations through analysing quantifiable data on employment, population, land prices, demographic changes within Tasmania.

1. *How much employment is generated by plantations ?*

In May 2011 (latest figures), the forest industry in Tasmania (natural forest and plantations) employed an estimated 3,460 people – generating 0.33 jobs per 100 hectares for hardwood plantations; 1.8 jobs per 100 hectares for softwood plantations. As hardwood plantations reach maturity and enter the harvesting and reforestation phase – more employment will be generated in upcoming years (a large proportion of the Tasmanian plantation estate has been established in the preceding 10 years, and is currently in a maintenance phase rather than harvesting / haulage / processing).

2. *How does the employment generated by plantations compare to other land uses ?*

To the point of "farm gate" (point at which goods such as logs, wool, grain or milk have been produced but not yet processed) hardwood and plantations generate less employment than most other uses except sheep grazing. When subsequent processing of goods is included – plantations generate more employment than sheep

grazing, beef grazing or cropping and approximately the same amount of employment as dairy farming.

3. *What types of jobs are generated by plantations ?*

The plantation industry generates a higher proportion of full-time jobs than the average for the workforce in Tasmania, and a similar proportion of full-time jobs as traditional agriculture.

4. *How does plantation expansion affect rural population levels ?*

Depending on land tenure and tree ownership, the conversion of agriculture to plantations results in:

- Establish own plantations: generally no population change.
- Lease land from third party: net change over time -5%
- Land sold to a company: net change over time -7% to -19%

These changes are not necessarily higher than would occur in the absence of plantation expansion, with trends including farm amalgamations having similar impacts on rural populations.

5. *How does plantation expansion affect rural land prices ?*

The rapid expansion of plantations was associated with higher than average land price growth, although in recent years land prices has increased similarly rapidly for all types of rural land use.

6. *What are the socio-economic implications of forestry ?*

If employment opportunities transfer from small rural towns to larger regional centres as a result of the land use change, this may have negative impacts for some people living in the small town; and positive impacts for small people living in the regional centres.

Additionally, the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) research publication “Australian Plantation Statistics 2014 Update” has been reviewed as part of the Forico socio-economic assessment. The publication provides an overview of the plantation estate, assessed at a regional level (state or territory). The information supports strategic forest industry planning and decision-making by presenting information on total plantation area, new planting, and ownership.

Some statistics, specific to Tasmania, drawn from the report include:

- Tasmania plantation estate consists of 235,600 hectares of hardwood plantations, 75,100 hectares of softwoods resulting in a total of 310,700 hectares.
- New planting areas (ie: excludes reforestation of existing forested areas), between 2000 – 2001 compared to 2012 – 2013, decreased by 99.7% (14,950 hectares compared to 40 hectares). This statistic is reflected throughout Australia.
- The predominant plantation species in Tasmania is *Eucalyptus nitens* (Shining gum) 208,400 hectares (88.5%) compared to *Eucalyptus globulus* (Blue gum) consisting of 20,400 hectares (8.7%).
- In 2012 – 13, plantations produced 82.7% of the total wood supply from Australian forests.
- 99% of softwood plantations were primarily managed to produce sawlogs for sawn timber for the building and construction industry. Logs produced from thinnings and low-quality parts of the tree are used to produce engineered wood products, landscaping products and pulplogs.
- 84.4% of hardwood plantations are used primarily to produce pulplogs for paper manufacturing. 11.3% of plantations were managed to produce sawlogs.

Forico will become actively involved in any future socio-economic research opportunities, and will modify existing company policies and procedures if a new direction is advocated to minimise negative socio-economic impacts whilst optimising positive measures.

5.3 Social Performance Indicators

The key socio-economic impacts and issues associated with plantation activities in Tasmania include:

- Community engagement;
- Land use planning policy and compliance;
- Integrated pest and disease management;
- Fire management; and
- Plantation water use.

Forico has developed and reports on a number of socio-economic indicators and environmental indicators with social components as part of its annual Sustainable Forest Management Reporting commitments. Forico produces its Sustainable Forest Management Report on an annual basis, which is published on Forico website www.forico.com.au.

6. SILVICULTURAL SYSTEMS

The evaluation and selection of a silvicultural system for the FMU, is based on recognised forest practices and guidelines, taking into account management objectives for the specific site. The primary objectives in selecting a fit for purpose silvicultural system is to maximise the value of wood products grown and harvested from the land whilst maintaining the long term productivity of the land and other environmental values.

In determining the appropriate silvicultural system, a number of factors need to be considered. These include, but are not limited to:

- Plantation management objectives;
- Species and regime selection;
- Rotation length;
- Site environmental factors;
- Natural and cultural values;
- Fire management requirements;
- Commercial / marketing factors;
- Plantation investment requirements;
- Lease agreement terms and conditions;
- Operational constraints; and
- Community expectations.

Additional information, policies and procedures regarding plantation management and silvicultural systems utilised by Forico are prescribed within the SHE Management System.

6.1 Softwood Plantations

Pinus radiata (Monterey Pine) is currently the only species of softwood planted by Forico on a commercial scale within the FMU. *Pinus radiata* is frost resistant, tolerant of dry sites and capable of satisfactory rates of growth on less fertile sites. Within the FMU, *Pinus radiata* is planted in accordance with strategic management requirements.

Pinus radiata is grown primarily as a sawn timber resource. Although exact silvicultural prescriptions will vary from site to site, a typical prescription may involve three thinning operations (extraction row harvest followed by two bay thinnings) with a final clear fall at around age 28 – 30 years.

6.2 Eucalypt Plantations

Two species of Eucalyptus are utilised in plantations across the FMU and are best suited to sites with reasonable fertility. *Eucalyptus globulus* (Tasmanian Blue Gum) and *Eucalyptus*

nitens (Shining Gum) are planted dependant on site factors which are assessed in relation to either species relative strengths.

Broadly speaking, *Eucalyptus nitens* is not planted above 750m in altitude, and *Eucalyptus globulus* is not planted over 300m, unless overriding local site conditions warrant establishment. Care must be taken to avoid frost hollows when planting *Eucalyptus globulus*, however *Eucalyptus nitens* is more cold air temperature tolerant.

Rotation length of the eucalypt plantations varies according to site quality and end product objectives. As a guide, most eucalypt plantations managed by Forico for pulpwood production are generally age 12 to 15 years at the time of final harvest.

6.3 Plantation Establishment

Providing the seedling with the best opportunity to survive is critical to achieving a quality productive crop. Operations at establishment aim to:

- Remove excessive competition (weeds and debris) that may impede planting or impact on tree growth / development;
- Use appropriate site preparation techniques to cultivate the soil if tree growth is impeded;
- Establish healthy tree stocks when weather and soil conditions are favourable;
- Ensure correct planting techniques are used;
- Apply controlled release fertilisers to optimise early growth;
- Reduce mammal browsing pressures; and
- Reduce competition from other vegetation through the judicious use of herbicides.

Operational establishment plans and spray plans are prepared for active operations to ensure specified operational techniques or prescriptions are applied and any environmental or social considerations are taken into account during the operation.

Specifically related to planning spraying operations, the most appropriate pesticide is selected for topography, soil type and species in the first instance. All neighbours within 100 metres are notified prior to the commencement of the operations. Spray operations are supervised in accordance with Forico own operating procedures and associated legislated code of practice requirements. Additional operational buffers may apply depending on the classification and vulnerability of watercourses, particularly if there is a downstream water intake. Within sensitive water catchments, water sampling will be considered and may be implemented.

6.4 Fertiliser Application

To optimise tree growth and to reduce the need to apply herbicides to reduce competing vegetation – fertiliser application is an important management tool available to the forest manager throughout the plantation rotation. Forico implements a technique of applying a tablet of controlled release fertiliser at the same time of planting the tree. This technique has numerous advantages, one being the locating of the fertiliser adjacent to the tree root (a more efficient, targeted and direct technique) rather than a broadcast distribution of the fertiliser above ground (less efficient, more potential for environmental impact including leaching). The technique will reduce the need to have a follow up weed control (herbicide) application (reduced cost, less chemical applied, fewer machinery movements, and enhanced productivity improvements).

This application technique in combination with establishing plantations during the spring period of the year, greatly improves survival rates, growth rates, limits competition from weeds, and reduces the necessity to invest in intensive game control programs.

These changes in the establishment process will significantly reduce the need to target mammal browsing pressures due to larger, healthier trees growing within the first 12 – 18 months following establishment. Reduction in the requirement to apply quantities of chemical in the period following establishment has the desirable outcome of reducing the necessity to apply additional herbicide and / or fertiliser during the rotation and reducing the operational expense, through minimising regular machinery movements across the site.

6.5 Research, Development and Tree Improvement

The genetic improvement of plantation trees is actively pursued by Forico as this presents an opportunity of substantial production capacity gains in plantation performance. This investment, enables increased productivity to be achieved across the plantation assets, which is an important management objective.

Forico participates in a number of tree improvement programs (both internal and external) for the three plantation tree species used within the FMU to ensure optimal performance from planted stock. Forico does not use genetically modified trees in any of its operations. This is clearly outlined within the *Environmental and Sustainability Policy*.

All *Eucalyptus nitens* seed is sourced through an open pollinated tree improvement program. Forico maintains an established network of company owned and managed seed orchards to ensure improved genetic traits are selected and grown to optimise quality and performance across the suite of site conditions present across the FMU.

Forico tree orchards have been established to grow selections of trees with different tree improvement traits. These opportunities include (i) Productivity gains to improve wood fibre yield - higher density, growth rates, or branch habit (ii) Survival Risk Reduction - disease resistance, selection for specific climate conditions. As a consequence, Forico is able to match, allocate and grow improved seed to localised areas (accounting for climate, ground conditions, soil, topography and elevation) within the FMU for productivity and quality benefits.

Improvements in productivity can also be achieved through innovative cultivation and plantation establishment practices and fertiliser treatments. The monitoring of all operations compliments the investment in research and development.

6.6 Monitoring of Silvicultural Systems

The plantation monitoring program, carried out to ensure acceptable stocking, performance, and quality, involves surveying and assessment of the recently established planted area up until age 3 to ensure successful reforestation has been achieved at these critical early stages of the plantation life cycle. Monitoring includes:

- Site preparation quality control;
- Planting quality control;
- Regular post planting browsing surveys; and
- A survival assessment no more than 18 months post establishment to ensure adequate stocking levels have been achieved; and
- Annual plantation health assessments.

Plantation assessments and monitoring occur throughout the rotation (not simply restricted to the early operational phases). For example, growth plots, are being measured and assessed as required (refer to Section 7) to ensure data is collected to validate that sustainable forest management practices are being implemented.

Plantation health assessments occur at strategic periods during the annual growth cycle when abiotic and biotic conditions result in vulnerable periods for the plantations, where the plantation damage tolerance thresholds may potentially be exceeded.

6.7 Permanent Natural Forest Estate

The Forico natural forest estate is managed primarily for conservation and biodiversity benefits and are not subject to commercial timber harvesting activities.

Approximately **36,500** hectares of the natural forest estate is classified as reserved, either formal or informal. Reserve areas can be divided into the following categories:

- Cultural Heritage (European and Indigenous);
- Flora;
- Fauna;
- Landscape;
- Soil & Water;
- Geomorphology; and
- Social.

All natural forest areas have value from an environmental, cultural or social perspective. Where these values are considered to be of high conservation significance, containing High Conservation Values (HCVs), these sections of the FMU can be defined as High Conservation Value Forest (HCVF). Where HCVs are identified within the FMU, Forico will establish management objectives, and apply operational controls to ensure HCVs are identified, maintained and enhanced.

Management objectives for HCVs are prescribed within the Forico Assessment and Management Plan (refer to the HCV Assessment and Management Plan).

7. RATE OF HARVEST AND SPECIES SELECTION

7.1 Annual Harvest Rates

The Forico annual harvest rates are determined with respect to the following considerations:

- Maximum sustainable harvest limits as determined by Forico forest yield modelling;
- The market demand for the forest products; and
- Optimise the Enterprise Value (EV) of the forest resource.

The managed eucalyptus plantation estate is modelled using Woodstock, a software package produced by Remsoft Incorporated. Woodstock models the plantation resource over a 50 year period (ie, 2-4 rotations dependent on site quality) under a number of prescribed assumptions and constraints (based on historic, current knowledge and future predictions).

The strategic resource model has been developed to address a number of criteria which meet Forico expectations, they include:

- Ensuring harvest levels are sustainable;
- Optimising EV for the company;
- Managing the cost of harvest;
- Managing the silvicultural standard thresholds of the stands;
- Managing the expectations of different forest owners; and
- Managing the age class distribution of the estate.

The outputs of the Woodstock model are then presented to the Forico Management Team in a two stepped approach:

1. The management team is presented with the 50 year forest yield model projection of cut volumes and feedback sought.
2. Following feedback including operational optimisation, the 3-5 year harvest program is then agreed to by all parties and adopted.

7.2 Species Selection

As previously described, the plantation species Forico propagate, establish and manage include *Eucalyptus nitens* (shining gum), *Eucalyptus globulus* (Tasmanian blue gum) and *Pinus radiata* (Monterey pine) to produce fibre for the pulp and paper industry and solid wood products for structural and veneer markets.

Species selection is determined by the requirement to optimise the rate of return by allocating the most economically productive species to site quality, whilst at the same time giving consideration to:

- Meeting commitments to existing customers and internal processing facilities;
- Forecast market demand for differing products; and
- Minimising the financial risk to Forico.

Species grown are selected according to the optimal site suitability.

7.3 Non-Timber Forest Products (NTFPs)

The FMU contains NTFPs, including berries, apiary sites, game meats and quarry materials. Where NTFPs are identified, management of these products will be considered and managed through implementing a strategic and systematic approach.

8. MONITORING OF FOREST GROWTH

Forico continually monitors the growth of its forest resource through extensive forest inventory programs to ensure an accurate calculation can be made of sustainable yield throughout the entire FMU.

Forico has developed inventory and tree modelling techniques using actual historical data to predict future growth rates and volume recovery within plantations. Mensuration techniques that have evolved over one, two and even three plantation rotations has enabled an accurate prediction of the optimum point of harvest in addition to modifying the growth modelling capabilities.

Every plantation area is allocated a site quality (SQ) incorporating various characteristics in one of the following ways:

- MAI Calculator (MC);
- Spatial Averaging (SA);
- Estimation (ES);
- Previous Plantation Inventory (PI);
- Yield Analysis (PI); or
- Age 6 Strategic Inventory (SI).

All methods other than the SI are estimations of what the site could potentially produce, based on factors such as rainfall, soil type and land use history. SI is an actual plantation inventory of all age 6 plantations in a given year. SI is considered the most reliable means of predicting future yields for a given plantation, when analysed against established growth models.

8.1 Inventory

Historically inventory assessments took place across all eucalypt plantations at age 6 and a sub-sample of plots at age 12. Plots were randomly distributed across the entire Developed Area (DA), each plot was then measured for its Basal Area (G) and Mean Dominant Height (MDH).

Plots were of variable radius, with an aim to get 8-12 trees in a sweep.

The sampling specifications were:

- One plot per 3 hectares; and
- Minimum number of plots per DA was 6

The results from the data collected from the field were then analysed within a database where the basal area and MDH are imported as coefficients into a volume equation. The result generated gave a volume for each individual plot in m³/ha of Entire Stem Volume (ESV).

The age 6 assessment enabled a comparison of actual growth performance with the modelled data. The inventory was not restricted to calculating forest growth, but also incorporated visual assessment of tree form and stocking.

Under the Forico commitment to continual improvement in all areas of forest management, LiDAR (Light Detection and Ranging technology) derived plantation inventory has been undertaken on large areas of the Tasmania Plantation Estate in the south-east and north-east. This system has been developed, trialled and proven to be an accurate tool to validate plantation forest growth. The areas where LiDAR has been completed are currently being analysed. Subsequently, a data capture program for the remainder of the FMU will be scheduled.

8.2 Permanent Growth Plots

Forico aims to have a representation of one Eucalypt Growth Plot (EGP) per 1,000 hectares that is stratified by locality boundaries. EGPs provide long term data describing how the plantation is growing through the entire rotation. EGPs are measured on a biennial basis and the data generated from the EGPs is used to validate the existing growth models, adjusting for longer term variability.

8.3 Growth Models

Forico utilises a specific growth model for the Tasmania Plantation Estate. The growth model is based on the data generated from the Forico EGP monitoring program. Growth models project the height and basal areas of individual trees to calculate volume forecasts.

The company has developed its own taper and mathematical volume equations from internal work undertaken by Forico Resource Information Team to be incorporated to provide a prediction of growth and plantation volume.

The growth model is designed to 'grow' the plantation forest in a virtual sense from its initial strategic inventory at age 6 to the estimated time of harvest. This information is then used to derive strategic wood flows and forest valuations.

8.4 Harvesting Reconciliation

A Yield Analysis database will compare the actual harvested volumes against the predicted volumes from any particular plantation. This mechanism improves the accuracy of the resource information system and ultimately harvest predictions.

8.5 Quality Assessment of Operations

A critical component of any operation undertaken on the Forico forest resource is monitoring the quality of the task. Forico have developed tolerance thresholds that must be adhered to for each operation including site preparation, spraying, planting, thinning and harvesting. Monitoring reports also assess specific environmental and health and safety requirements to ensure certification and voluntary obligations, legislation, and regulatory compliance is continually achieved.

8.6 Carbon Accounting

To maintain the capacity of the FMU to act as a net carbon sink, the following parameters are monitored and reported annually:

8.6.1 Carbon Sequestration

The amount of carbon stored in the forests is calculated using tree volumes obtained from inventory growth models. The tree volumes are converted to above and below ground biomass using allometric relationships developed by the Department of the Environment (DOE) for varying plantation types. This biomass is then reported as carbon dioxide equivalents (CO₂-e).

Factors considered in determining the amount of carbon sequestered include:

- Identification of whether the forests are Kyoto compliant (Kyoto Protocol Article 3.3);
- The methodology by which the National Carbon Accounting System (NCAT) measures carbon; and
- The projection of future carbon stocks via modelling.

Carbon sequestration is reported annually in the Sustainable Forest Management Report that is made publically available

8.6.2 Carbon Emissions

To monitor greenhouse gas emissions resulting from forest management activities the National Greenhouse and Energy Reporting (NGER) – Energy and Emissions Report is submitted on an annual basis. NGER is a customised web-based tool developed and managed by the Australian government (The Clean Energy Regulator). Forico scope 1 and 2 greenhouse gas emissions are reported annually as CO₂-e in the National Greenhouse Gas and Energy Report.

Scope 1 emissions are direct emissions of greenhouse gases from sources that are owned or controlled by the reporting company, such as diesel consumption. Scope 2 emissions are indirect emissions that are a consequence of the operations of an organisation, but occur from sources owned or controlled by another company. For Forico, the primary scope 2 emission source is from the purchase of electricity for consumption.

The framework enables the opportunity to capture and report Scope 3 emissions. Scope 3 indirect emissions include transport related activities in vehicles not owned or controlled by the organisation, for example, air travel and waste disposal.

9. ENVIRONMENTAL SAFEGUARDS AND ENVIRONMENTAL ASSESSMENTS

Forico undertakes environmental assessments at the landscape level and on a site or operational specific basis. It is recognised that environmental components such as soil, water and underlying geomorphology are an essential part of the forest and broader ecosystem and need sensitive management and safeguarding.

Forico environmental safeguards have been developed into management prescriptions and operational procedures, based on a combination of company assessments, external assessments and operational experience. The Forico planning procedures require that each operation is individually assessed and a plan produced detailing site specific management prescriptions.

Compliance to the SHE Management System and legal and other regulatory frameworks is monitored both internally and externally through engaging independent third party auditors.

9.1 Landscape Level Assessments

9.1.1 Tasmanian Regional Forest Agreement

Regional Forest Agreements (RFAs) have been developed as long term plans for the conservation and sustainable management of native forests across tenures and the landscape. RFA's are 20 year plans for the conservation and sustainable management of Australia's natural forest. They are produced as a result of years of scientific study, consultation and negotiation covering a diverse range of interests.

The guiding principles of the RFA are the:

- Maintenance of connectivity across the landscape;
- Maintenance of landscape heterogeneity;
- Maintenance of stand structural integrity; and
- Adoption of "risk-spreading measures.

The Australian government and the Tasmanian government recognises that strategic landscape management planning is an important tool in ensuring the long-term viability of the Tasmanian RFA priority species and their habitats. The Tasmanian RFA includes protection of priority flora and fauna species. The RFA is implemented, managed, implemented with the effectiveness reported by the Forest Practices Authority (FPA) through the setting of goals, specific targets, actions and a monitoring strategy to guide forest management planning. The FPA develops landscape level planning guidelines including those that manage threatened species and other groups of species of high conservation significance. The RFA is reviewed to identify opportunity for improvement with respect to landscape level management.

The Forest Practices system ensures the reasonable protection of the natural and cultural values of the forest. It is unique in that the FPA responsibility and authority covers both public and private land through a co-regulatory approach that incorporates industry cooperative management, in combination with independent monitoring and enforcement by the FPA. The FPA, in addition to a suite of specialists from the Threatened Species Section of DPIPWE have developed Landscape Planning Guidelines that must be followed.

Delivery of the Forest Practices System adopting Landscape level prescriptions and measures may negate the requirement for stand-level measures for some species. The system has demonstrated that a flexible multi-scaled approach is required that follows landscape level management principles. Monitoring the effectiveness and implementation of the landscape level planning tool is the responsibility of the FPA.

At a company strategic landscape level, Forico ensures that the broader landscape obligations are achieved through the development of a High Conservation Assessment and Management Plan.

9.1.2 High Conservation Assessment and Management Plan

Forico has undertaken an assessment of high conservation value forests within the FMU (refer to the High Conservation and Assessment and Management Plan). The estate was modelled to identify High Conservation Value Forests – these areas are currently being verified to confirm the presence or absence of these attributes including the interrogation of the data by respected independent experts. The management objective for HCV forest is to maintain, and where appropriate enhance, the HCV forest through specific management strategies. Forico is currently maintaining the entire natural forest estate within the FMU as a non-productive, conservation asset. Currently, of the **79,333 hectares** that are classified as non-productive forestry areas – **36,498 hectares** have been reserved during operational planning activities.

Forico has undertaken an analysis of the significant environmental aspects of its forest management operations using the ISO14001, AFS and FSC principles and criteria. This analysis has resulted in the production of the Forico Sustainable Forest Management Report.

The Sustainable Forest Management Report monitors operational performance for continual improvement of environmental performance and provide a quantifiable comparable framework of reporting Forico environmental performance.

Forico also conducts and is involved in scientific research into the significant environmental aspects of its forest and land management at a site specific level including:

- Ptunarra brown butterfly;
- Crowded Leek Orchid management;
- Tree improvement research;
- Grassland management (incorporating low intensity ecological burning);
- Water catchment use study in the Flowerdale and Brid River catchments; and
- Tasmanian Devil research projects.

To demonstrate this commitment towards conservation outcomes, Forico has executed a number of conservation covenants throughout the FMU. These covenants extend in perpetuity and are registered on the land title. Examples of non-productive attributes protected within the FMU include the reservation of rainforest, wet forest, and native grassland communities.

In combination with the covenant areas, Forico entered into a Vegetation Management Agreement (VMA) with the Tasmanian State government, covering the remainder of the non-covenanted grassland areas within the Surrey Hills forest estate. The VMA is a fixed term agreement (currently valid until December 2019). Ongoing management of these areas for conservation benefits is an integral component of the conservation covenants and Vegetation Management Agreements.

At an operational level, planning of establishment and harvesting often results in reservation of natural values under the legislative coverage of the Tasmanian Forest Practices Act 1985. These values encompass – cultural values; flora; fauna; geomorphology; landscape; soil and water; and social benefits. Management objectives are prescribed to ensure that any identified value is protected.

Forico continually assesses environmental and cultural values within the FMU. Where appropriate and relevant, information gained through this process is recorded in the GIS for

strategic management and operational planning. This information is also provided to appropriate authorities for inclusion in broader land management datasets.

9.2 Site / Operational Specific Assessments

Within the FMU, Forest Practices Plans (FPPs) document and plan proposed forest operational activities at a detailed site specific level in accordance with the Forest Practices Code 2000 (FPC). Proposed activities must adhere to and protect all principles, guidelines and values outlined in the landscape level assessments and meet or exceed all legislative requirements for forest operations within Tasmania.

FPPs are a legally binding document, signed / authorised by all relevant parties (the applicant, landowner and certifying Forest Practices Officer (FPO)), have a timeframe in which they are active, and only one FPP may be active over a given geographical area at one time. FPPs are prepared for all road construction, harvesting and forest establishment operations. These plans and the FPC specify where significant environmental values occur on or adjacent to the planned area and the prescriptions that will be applied to protect them.

Input into plan preparation is obtained from forestry staff employed by Forico and / or specialists from within the State Government agencies, including the FPA.

Operations that are not covered by a certified Forest Practices Plan (FPP), must comply with the Forico SHE Management System through preparation of:

- a Forest Operational Burn Plan for High and Low Intensity Ecological Burning; or
- a Non-operational Activities Plan.

This will ensure the work does not impact on any value that may be present or impacted by the activity.

9.2.1 Assessment of Natural and Cultural Values

All areas to be roaded, established, harvested or reforested undergo assessment to identify significant values within or surrounding the operational boundary during Forest Practices planning. This process may lead to significant areas being excluded from the operational area and / or changes to planning to manage identified issues.

Where required, Forico staff consult with external specialists for information or identification of species and locations or sites that require additional advice. This may include Government based specialists (eg: FPA specialists, Threatened Species Section (DPIPWE)), community based experts or interested people or Indigenous people for Aboriginal site management.

Prescriptions are developed to manage each of these natural and cultural values when preparing a Forest Practices Plan (FPP) both within the operational area and adjacent impacted values. Natural and Cultural values of the site which are assessed during planning are:

Flora:

Assessment of flora values includes detailed mapping of the forest communities and the presence or potential presence of any rare, threatened or endangered flora species. Operational impacts on these values are taken in to account, as well as evaluation of any other potential management impacts, including weeds potentially being introduced, diseases and presence of reserved areas.

Fauna:

Assessment of fauna values, including the presence of rare, threatened or endangered species or their habitat, and management of important landscape values for fauna such as tree hollows.

Prescriptions for flora and fauna are developed prior to an operation commencing. Known locations are identified through using a variety of tools

- Forico internal “Plan Coupe” GIS assessment tool;
- Forico HCV Assessment and Management Plan;
- Conserve Database (FT);
- Tasmanian Aboriginal Site Index (Aboriginal Heritage Tasmania);
- Natural Values Atlas (DPIPWE);
- Threatened Fauna Advisor (FPA);
- Forest Botany Manuals (FPA);
- Manual for Forest Landscape Management (FPA);
- Biodiversity Values Database (FPA); and
- TasVeg Database (DPIPWE) – Tasmanian Vegetation Communities.

Spatial information contained within the relevant databases are incorporated into the Forico GIS and updated when required to ensure the latest and most accurate information is made available to all subscribers.

To ensure information is available for future planning and management purposes, Forico maintains a Geographic Information System that records the location and attributes of identified natural and cultural values. Information is also provided back to Government agencies to update State registers and records.

Consideration is also given to weed and diseases (eg: *Phytophthora cinnamomii*) when planning for operations to ensure the intrinsic biodiversity value is maintained and enhanced when operations are considered. Prescriptions adopted may include machinery washdown procedures (refer to the Tasmanian Washdown Guidelines for Weed and Disease Control) to limit potential distribution and translocation of weeds and diseases across the landscape through forestry operational machinery.

Cultural Heritage:

Assessment of areas identified as having Indigenous or Historic heritage values. Examples include Aboriginal artefact scatters or settlers / trappers huts. There are a number of sites of Aboriginal and European cultural significance across the FMU. To ensure the sites are protected, the relevant legislation and recommendations from specialists (prescriptions included in the FPP) are applied.

The location of known aboriginal heritage sites is not publically available. The locations statewide are managed within the Conserve database (linked to the Aboriginal Heritage Tasmania (TASI) records) with access to the database restricted to individuals who have undertaken training in indigenous culture. A search of this database is conducted as part of the FPP planning process. Predictive mapping is also used during planning operations of localities with a high likelihood of containing potential artefacts.

European cultural heritage is regulated through Tasmanian cultural heritage legislation (Historic Cultural Heritage Act 1995). Three locations within the FMU are listed on the Tasmanian Heritage Register – the Hampshire Hills Homestead, Brick Pits Site and the Silver Mine. All sites were formerly part of the Van Diemen’s land located in Surrey Hills.

If a cultural heritage site has been missed in the planning stage, but found during an operation, exclusion zones are immediately located around the respective site for protection with the relevant specialist notified for relevant management prescriptions.

Geomorphology:

Geological, landform, and soil sites are important for their intrinsic, scientific, recreational, inspirational values and the role geodiversity plays in sustaining natural processes. Survey, identification, assessment, and recording of geoconservation values should be carried out prior to forest operations commencing. Predictive geology mapping is undertaken to identify possible new landforms and features.

Assessment of areas containing significant geological sites, landforms, soil sites or limestone karst features vary in their vulnerability to damage and require protection by means of management prescription or reservation.

Visual (Landscape) Management:

Forest operations can be highly visible and have an impact on the landscape. Operations do not need to be hidden from view, but can be designed to reduce visual impact and harmonise with the local visual character and land use patterns.

Assessment of important visual or social landscape values provide visual standard principles that should be applied to the management of proposed forest operations.

Soil and Water:

Assessment of streams, rivers and other water bodies and buffer zones are required to protect water quality and quantity through the provision of filtration zones adjoining forest operations. By providing shade, these buffer zones also assist maintaining aquatic ecosystems and riparian values. Acceptable watercourse conditions are maintained throughout the duration of the plantation rotation by using best roading, harvesting, establishment and maintenance practices.

Watercourse and drainage lines are verified within the operational boundaries to observe condition, waterflow direction and slope. Once the known waterways are identified, prescriptions can be applied to exclude areas from harvest or establishment. This enables landscapes prone to erosion and degradation to be managed through stream evaluation and catchment management strategies.

Assessment of soils type, compaction, erodibility, productive capacity ensures appropriate management regimes can be adopted through a clear understanding of the capacity and limitations of the site. This allows optimization of timber yields whilst maintaining and protecting the integrity of soil structure and site productivity. For example, the allocation of the best suited harvesting machinery to the site will ensure the long term sustainability and viability of the land through understanding of soil type present, and erodibility classification.

9.2.2 Operational Planning

Aspects such as road locations and associated engineering planning are determined, along with plantation timber inventories and operations strategy prior to commencement of activities. Instructions to contractors engaged with the operation are made clear in the body of the FPP or non-operational plan, in particular the special management prescriptions required for any of the assessed Natural and Cultural Values. Boundaries are marked in the field to ensure that the operational area is clearly delineated prior to commencement.

The process consists of three stages:

- Forest Practices Plan development, planning, approval and certification by an approved Forest Practices Officer.
- Operational prescriptions and standard operating procedures.
- Monitoring effectiveness of prescriptions, quality assurance, and compliance to prescriptions.

9.2.3 Plan Review and Approvals

Every Forest Practices Plan is peer reviewed on an individual basis by Forico management staff prior to being certified to ensure compliance with Company Policies and Procedures, as well as the FPC and associated guidelines.

In accordance with the Forest Practices Act, Forico prepares a 3 Year Plan each year that is presented to councils and other interested and affected stakeholder groups to inform those present the proposed planned operations scheduled during the next 3 year period. Issues discussed include:

- Areas planned to be harvested;
- Scheduled volumes transported across roads;
- Planned cartage routes; and
- Areas scheduled for establishment / re-establishment.

9.2.4 Active Operation Management

Management systems and procedures are used to ensure the correct process is followed during forest operations through adherence to the Forico SHE Management System. Accredited Company staff visit, audit and monitor operations regularly (at least monthly) to demonstrate that activities are occurring in compliance with the Forico SHE Management System and Forest Practices Plan prescriptions to ensure high levels of environmental and safety performance are maintained.

Inspections (Certificates of Compliance) are carried out at the completion of each discrete operational phase (eg: roading, harvesting, establishment, re-forestation). This ensures that the Forest Practices Plan has been complied with, and that any issues are recognised and corrected in a timely manner. Certificates of Compliance also ensure that prescriptions and specifications have been followed. This is a legally binding aspect of the Forest Practices system.

9.2.5 Monitoring Compliance and Continuous Improvement

As an external and independent validation, the Tasmanian Forest Practices Authority conducts an annual audit of a representative sample of current Forest Practices Plans prepared to ensure that the Plans are compliant and field operations have fulfilled the Plan conditions. Any identified areas of required operational improvement can be identified and rectified.

To compliment external audits and ensure that Forico maintains a commitment to sustainable forest practices, Forico internally audit a further sample of active Forest Practices Plans. These audits use internal review of systematic processes to ensure protection of biological diversity, soil and water resources, and indigenous, cultural and historic values. Internal audits enable Forico to identify areas where better practices are required, or could be developed and hence promote a culture of continual improvement.

Management requirements of the natural forest adjacent or within the operational area are monitored to ensure:

- Prescriptions incorporated are effective;
- Habitat protection, particularly along streams and native forest edges;

- Site preservation, for example sites of cultural or historical significance; and
- Maintenance and enhancement of natural forest ecosystems;

Compliance to legislative commitments and voluntary obligations (eg: sustainable forest management commitments, certification obligations) is achieved through conducting internal and independent third party external audits of the SHE Management system. Results of these assessments are made publically available through the Sustainable Forest Management Report.

10. THREATENED SPECIES MANAGEMENT

Forico implements procedures within the FMU for the identification and management of threatened species. Forico maintains a GIS in which known biodiversity values, including threatened species locations, are maintained. In addition, as a component of strategic and operational planning Forico utilise threatened species databases that are maintained by external agencies (eg: Government authorities) are accessed and used to identify values.

10.1 Identification and Assessment of Threatened Species

Forico uses internal and external databases and procedures to identify threatened species and their habitat throughout the FMU. These procedures provide for known localities and potential habitat of threatened species, both flora and fauna. If a threatened species or potential habitat is identified further investigation is required, to maintain and / or enhance these values, which may include consultation with specialists.

Management prescriptions for threatened species and / or their habitat are incorporated into Forest Practices Plans to ensure the maintenance and protection of the value during the forest operation. Management prescriptions for many threatened species have been developed by individual species specialists and specialists from organisations such as the Forest Practices Authority, DPIPW, and the University of Tasmania (UTas).

10.2 Staff Training

Forico employs suitably qualified staff and relies on further focussed professional development to ensure threatened species management is aligned with the most current accepted theories and practices. Staff regularly undertake training provided by the Forest Practices Authority, in particular the Botany Course which provides training in the identification and management of threatened Flora species and the Fauna Course for threatened fauna species.

11. GEOGRAPHIC INFORMATION SYSTEM (GIS)

The Forico GIS enables the company to monitor and manage the forest resource and allows users to create maps and query information. Data from the GIS is used to produce various reports and maps and plays an important role in the creation of woodflow models for the plantation estate when developing harvesting plans and growth models. The information stored in the GIS enables an accurate and timely response to any management queries regarding the forest resource. Non-productive natural forest datasets provide accurate and valuable information pertaining to natural values management.

11.1 Resource Information Platform

The system is administered by the Forico Resource information Team (RIT). The RIT uses a combination of Arc GIS 9.3 and Arc View 3.3 with a SPARQS (Spatial Planning and Resource Query System) extension.

11.2 Spatial Planning and Resource Query System (SPARQS)

SPARQS has been developed in house and allows employees to use GIS to perform specific tasks, for example, create Forest Practices Plan maps, create burn plan maps, develop neighbour notifications based on cadastre or perform resource updates. SPARQS is a fit for purpose tool, for the operational forestry environment.

The user friendly SPARQS software is compatible with Arc View and Arc GIS and assists operational users to access information. High quality, accurate and detailed information is captured and stored on the GIS providing easily accessible data on the FMU.

11.3 Key Datasets

The RIT is responsible for maintaining, updating and auditing all datasets within the GIS. There is detailed documentation (metadata and procedures) available for all datasets and processes. Data within the GIS is either created internally or sourced from external agencies. Examples of externally sourced datasets include: rare, threatened, and endangered species, cadastre, state roads, contours, watercourse locations, rainfall information etc. Forico has data licences and agreements in place for the sharing of data - both within and external to the company. Forico supplies data to a variety of external sources including federal and state government, consultants and non-Government Organisations (NGO's).

Key internally developed and maintained datasets include:

- Resource Layer (plantation and natural forest);
- Forest Practices Plan Layer;
- Roads Layer;
- Freehold Management Zones; and
- Freehold Titles.

11.3.1 Resource Layer

- Contains information on productive forest resource, data includes:
 - Plant year;
 - Species;
 - Location;
 - Unique identifier;
 - Mean Annual Increment (MAI); and
 - Harvesting regime.
- The datasets are updated on a continual basis with auditing and archiving quarterly;
- Data from this layer is supplied to federal and state government agencies.

11.3.2 Forest Practice Plan Layer

- FPP datasets include the area to be harvested, planted or where road construction is to occur;
- The information is updated on a continual basis, with the layer archived when the plan expires;
- This layer is provided to the Forest Practices Authority.

11.3.3 Roads Layer

- Contains roads built, and maintained by Forico;
- The roads can be on located on freehold titles, or privately owned;
- Includes the information:
 - Date road built;
 - Surface type; and
 - Road class.
- Updated when new road built;

- Supplied to state governments for inclusion on state road dataset coverage and state forestry agencies.

11.3.4 Freehold Management Zones

- Contains information for non-productive or reserved areas on the freehold estate;
- Includes areas such as:
 - Reserves flora, fauna, social, cultural heritage, streamside values;
 - Inaccessible areas or non commercial areas; and
 - Utility areas – easements, quarries, or roads.
- Updated on a continual basis and audited on a quarterly basis;
- Supplied to Tasmanian State government as part of the reserve layer of Tasmania.

11.3.5 Freehold Titles

- Contains cadastre record of land that is owned by The Trust Companies and managed by Forico.
- Includes information such as:
 - address detail of properties;
 - ownership;
 - acquisition date; and
 - sold date (archived layer).
- The layer is updated when property is either bought or sold;
- Cadastral data is supplied by the state government and additional fields are added when required.

12. HARVESTING EQUIPMENT AND TECHNIQUES

Timber harvesting is performed by specialised contractors who have the appropriate skills, experience and machinery to perform the required operations. Productivity, efficiency and value recovery is imperative to the success of a harvest operation. Within plantations, stump height and logging residue assessments are used as mechanisms to monitor value recovery.

The terrain, slope, soil erodibility are three factors that will determine which harvesting system should be appropriate for the specific site. Tailoring of equipment to the operation will optimize productivity whilst minimise soil disturbance and compaction.

12.1 Ground-based Harvesting Systems

Ground based harvesting systems can consist of a number of different combinations of machinery and personnel dependant on forest type and levels of production.

- “Cut-to-length” (CTL) harvesting occurs where the trees are felled using a feller buncher and the trees are located in bunches through the harvested area. Single grip harvesting heads (an excavator type machine with a processing head) subsequently cut-to-length logs at the stump. The machine de-limbs, removes the bark, cuts the tree into logs, and the product is transported to the landing through a forwarder and stockpiled ready for transportation, or
- Whole Tree Extraction (WTE) where trees are cut to length at the landing after being felled within the plantation and the whole tree transported via skidder to the landing to be processed at the road edge.

The log product is then transported by haulage contractor either:

- Direct to the sawmill (or other processing facility);
- Converted to woodchip by static chipper units located on-site at Massy Greene and subsequently transported to TasPorts Burnie Port for export (eucalyptus woodchips); or

- Alternatively log product is hauled to Long Reach Mill, converted by static chipper into woodchip product which is then stockpiled for export.

12.2 In-field chipping

The felling of the timber and snigging of material to the landing is conducted as either CTL or WTE harvesting systems. However, rather than transporting whole logs via haulage contractors to a centralised static mill for processing, in-field chipping operations use a mobile woodchipping equipment to process the logs at the site of harvest into woodchips. The woodchips are then transported to the nearest shipping facility. The segregation of logs into the various products (sawlogs, peeler logs, pulp logs) occurs as per other harvesting systems to ensure that the highest value product is recovered from each log. Harvesting residue from the operation is returned and distributed evenly over the harvest area.

In-field chipping provides for efficiency gains in transport costs (more end-product per cubic metre, no requirement to transport residue off site) and enables the retention and distribution of residue on site to contribute towards nutrient recycling.

12.3 Cable Harvesting Systems

Cable harvesting systems utilize a cable yarding machine to extract the logs from the harvest area to the landing. There are numerous variations to cable harvesting systems such as size of material to be harvested (generally determined by the height of the cable yarding tower), cable length and yarding configuration. The simplest and most common of cable systems is the skyline with a carriage. In this system, the carriage runs down the skyline by gravity. When the carriage is over the logs to be dragged the skyline is lowered, the logs are attached to the carriage via chokers, the skyline is then tensioned and the carriage is pulled back to the yarder using the haul back line.

Cable harvesting enables log extraction from slopes beyond the limits of other harvesting systems. Ground disturbance can be minimised by supporting the majority of the logs weight via the skyline, thus resulting in positive environmental outcomes. Planning for cable harvesting systems is more intensive, landings are generally considered permanent and road construction costs are often higher. For these reasons, the use of cable harvesting systems is confined to strategically important resource that cannot be harvested via more conventional methods.

12.4 Plantation Thinning

Plantation thinning operations are primarily undertaken as part of good silvicultural practice – to enhance stand quality, plantation health and maximise economic returns where suitable opportunities are available. The technique will improve the proportion of higher value sawlogs produced at the end of the rotation (at the time of clear felling) and enhance the growth rate of the residual crop. Suppressed or poorly formed trees are removed, leaving dominant trees behind to grow for the duration of the rotation. Forico undertakes thinning operations within the pine estate when economic conditions enable a viable operation. Thinning operations generally use a feller buncher with an associated forward to extract the processed logs to a landing to enable transportation to their destination. Damage tolerance threshold levels apply.

12.5 Harvest Operations Monitoring

All harvesting operations are regularly monitored (at least monthly) to assess:

- environmental performance;
- health and safety obligations; and
- production and quality tolerance thresholds.

In addition, as a requirement of the Forest Practices System, once an operational phase is completed (eg; Harvesting or establishment), the applicant of the Forest Practices Plan (FPP) is legally obligated to complete a completion notice and record on the FPP database that this discreet operational phase is completed. GIS surveys of operational boundaries, including retained sections are recorded. This ensures an accurate comparison can be drawn when comparing actual harvested volumes achieved versus planned or modelled yields.

13. ASSET PROTECTION

13.1 Fire Protection

Fire is a natural part of the Australian environment.

The major eucalypt forest types have adapted to particular natural fire frequencies and regularly burn with fire intervals ranging from approximately 4 – 20 years in dry eucalypt forests and 20 – 100 years in wet eucalypt forests. However, there are some forest types that are not well adapted to fire such as rainforest and alpine communities. Also included in this group are the major plantation species (*Eucalyptus nitens*, *Eucalyptus globulus* and *Pinus radiata*), which all have a low tolerance to fire.

Fire management is recognized as an integral part of the Forico business. Forico is committed to:

- Minimising adverse impact on the health and safety of Forico employees, other fire fighters and the wider community;
- Comply with all applicable fire legislation requirements, Codes of Practice, insurance and other external and internal policies and procedures;
- Minimise fire impact to Forico resource assets. This can lead to loss of resource and downgrade in quality which can have a negative financial impact. These factors can considerably effect wood flows and have long term ramifications on Forico and the industry as a whole;
- Minimise adverse impacts upon the environment. Specifically protect biodiversity and other conservation values in natural vegetation reserves on or adjacent to Forico managed properties;
- Ensure a risk management framework underpins regional fire management programs;
- Have an annually updated operational Fire Action Plan in place;
- Consult and form cooperative working alliances with fire authorities, service providers, neighbours, traditional owners, applicable industry groups and the wider community. Forico will, where practicable, actively contribute to managing fire at a landscape level;
- Ensure an appropriate level of fire awareness and readiness is integrated into all operational programs;
- Effectively respond to all fire incidents that are either on Forico managed land or threatening Forico and investor assets.

In the FMU, the Tasmanian Fire Service (TFS) has legislated responsibility for the management of fires that occur on all private land in Tasmania under the *Fire Services Act 1979*. This includes all properties owned or occupied by Forico. Forico has a memorandum of understanding (MOU) with the TFS, which highlights that Forico has an extensive area within the state that consists of valuable forestry assets requiring protection. The MOU provides specific operational guidelines for the management of fire within these areas.

The key components of the fire protection strategy for the FMU:

- **Prevention** – The majority of assets are enclosed with firebreaks and are accessed via comprehensive road networks. Firebreak maintenance programs are conducted to keep these effective for the control of fire. Fuel Reduction burning programs are also undertaken which can help contain the spread of fire, reduce intensity and allow more efficient and effective suppression. Other vegetation management such as grazing and slashing also contributes to minimising the build up of fuels and potentially causing greater fire potential.

The choice of preventative methods is based on the cost effectiveness of each measure at reducing the number of fires, the area burnt, the damage to assets and predicted fire suppression costs.

During periods of high fire danger, operations are also subject to industry approved fire weather “shutdown” procedures as well as having specified minimum fire suppression equipment requirements for each operational type.

- **Monitoring** – A combination of fire monitoring techniques are employed by the forest industry during the fire season. These consist of, but are not limited to, spotter plane flights, fire lookout towers and notification from other sources including Company staff and contractors, other industry members and importantly the general public.
- **Fire Action Plans** – A key component of the fire protection strategy is the operational Fire Action Plan. The function of this plan is to provide a reference document which details the procedures relating to responsibility, preparedness, the detection and suppression of fires, and available resources for fire management.

Sections covered include, but are not limited to, fire policy, company procedures, roles and responsibilities, communications, fire detection measures, inter agency protocols, fire permits, contractor guidelines, fire law, duty teams and rosters, personnel skills lists, available resources and incident and reporting forms.

- **Fire Equipment** – Appropriate equipment for fire suppression activities is purchased and maintained to a high standard and available to be used in the event of a fire by trained staff.
- **Training** – Forico employees and contractors are appropriately trained in fire suppression techniques and procedures and in the operation of machinery in fire fighting situations to an agreed industry standard.
- **Cooperation And Liaison** – a high degree of consultation and information sharing with other stakeholders in relation to fire management.

13.2 Plantation Health and Integrated Pest Management Plans

Forico employ a range of forest management programs to ensure that plantations remain in good health throughout the rotation and whereby growth is not restricted by factors that can otherwise be controlled. An effective management strategy is required to ensure that the plantation crop health is not compromised, and the values in the surrounding natural non-productive habitat in the landscape is maintained. Effective control of native and introduced weeds, native browsing animals, insects and fungal, bacterial and viruses often requires an integrated approach using pesticides, fertilisers and potentially biological agents. Any technique must adhere to a number of legislative and regulatory obligations, including coverage:

- Forest Practices Act 1985;
- Forest Practices Code 2000;
- Australian Pesticides and Veterinary Medicines Authority (to ensure the judicious use of chemicals);
- Nature Conservation Act 2002, Animal Welfare Act 1993 (lethal and non-lethal game management techniques).

Forico has been an active participant into biological control and alternatives to pesticides. Forico does not use chemicals, including 1080, to control browsing mammals. An Integrated Pest Management Approach incorporates a number of management alternative strategies. This integrated pest management program includes:

- An advanced tree breeding program that aims to deploy selected genotypes that demonstrate resistance to natural pests and diseases within the deployment environment;
- During the establishment phase expert field officers monitor young seedlings for nutrition deficiencies, weed competition and browsing from vertebrates and invertebrates. Reduced competition for nutrients and water optimises growth and reduces competition that would otherwise result in suppressed trees that are vulnerable to mammal, insect and/or pathogen attack;
- Throughout the life of the plantation each area is formally inspected at least annually to monitor plantation health including nutrition and identify remedial actions where required. Additional fertiliser treatments is one such example;
- During vulnerable periods of plantation growth formal monitoring is conducted on browsing insect populations as well as natural predators. Where natural predators have been unable to maintain normal levels of browsing insects within tolerance thresholds, remedial control techniques are sometimes employed including targeted insect spraying programs;
- In forest management regimes involving thinning or pruning careful consideration is given in operational planning to maintain stand vigour and integrity; and
- During periods of fire danger the estate is monitored for incidents of wildfire and company resources are deployed where required.

These programs combine to ensure that Forico plantation estate performs optimally throughout the FMU. Where required, Forico will employ remedial actions in a safe and environmentally sustainably responsible manner.

14. PRODUCT PROCESSING, MARKETING AND RESEARCH

14.1 Local Processing Facilities

Logs sourced from the Forico managed forest resource are processed at local facilities, either:

- Woodchip Processing facilities;
- Sawmills; or
- Port export facilities.

This ensures economic and environmental efficiencies via reduced transport and handling as well as social benefits through generating local employment and service requirements.

14.2 Export of Wood Fibre

Forico export wood fibre in the form of woodchips, due to there currently being no domestic options for the sale of substantial volumes of wood fibre. Wood fibre is considered an international commodity and is commonly traded in an international market place.

Both the Chinese and Japanese pulp and paper industry are important wood fibre markets for Forico. Customers expect and demand product dispatched has the ability to be sold with certification claims. Forico export woodchips products from the company owned Log Reach mill in north-eastern Tasmania, and the TasPorts Burnie Port export facility in north-western Tasmania. This supply chain infrastructure enables efficient resource flow from the plantation source to the port operations, and permits the establishment of competitive wood fibre markets.

14.3 New or Future Market Opportunities

The developing carbon market holds many potential benefits for Forico. As such, Forico maintains a market ready position of monitoring and measuring carbon sequestration and carbon emissions.

Market opportunities for both solid wood plantation products and residue are being investigated. In terms of plantation residue future markets, this could potentially incorporate the consideration of engineered solid wood products, advanced polymers such as carbon-fibre, biofuels, ethanol production, wood energy and bioenergy, and biochar opportunities.

Alternative value creation potential opportunities include environmental values incorporated within the maintenance and enhancement opportunities of the natural forest.

14.4 Research

Opportunities for research and development are considered a critical part of the company overarching strategy if the outcome results in:

- sustainable forest management solutions; continue growth of forest value; improve the financial return to Forico.
- Innovative management solutions aligned to appropriate budget constraints.
- Improve the efficiency of the FMU management by delivering timely and accurate information and results in compliance with operational practices and procedures.

15. PLAN REVIEW

The Certification and Compliance Manager is responsible for the production and review of the Forico Forest Management Plan.

The Forico Forest Management Plan will be reviewed every 5 years, or following significant change to operations. Stakeholder consultation will be invited and conducted during the review process with all feedback documented, considered and incorporated (if applicable) into the latest version.

The review process will be enhanced through the completion of internal and external independent third party audit programmes. Audit findings will be carefully considered during the review process. Any results from operational and / or environmental monitoring will be taken into account.