

# SFM Green Triangle Limestone Forest Management Unit (SFM-GTL-FMU)

## Water Impact Assessment

26 May 2023



### Contact

SFM Environmental Solutions Pty Ltd

20 Penola Road

Mount Gambier SA 5290

Tel: (08) 8778 1236

Email: [info@sfmes.com.au](mailto:info@sfmes.com.au)

Web: [www.sfmes.com.au](http://www.sfmes.com.au)



SFM acknowledges the traditional custodians of the land which we manage.

We show respect to their culture and their elders who have managed the land in the past.

## REVISION AND APPROVAL

This document will be reviewed whenever significant changes occur.

Version	Changes	Date
V1	Final Document	1 April 2016
V2	Update	22 Sep 2018
V3	Updated for NFSS	16 Sep 2019
V4	Minor Update	28 Jan 2022
V5	Minor Update	26/05/2023

Approved for use:  Andrew Morgan Managing Director	
---	--

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
<b>2</b>	<b>HYDROLOGICAL FLOWS AND CATCHMENT MANAGEMENT GOALS</b>	<b>4</b>
2.1	Victoria	4
2.2	South Australia	5
<b>3</b>	<b>PLANTATIONS AND WATER USE IN THE GT</b>	<b>8</b>
<b>4</b>	<b>CATCHMENT MANAGEMENT STRATEGIES</b>	<b>11</b>
4.1	Glenelg Hopkins Catchment / Waterway Strategies	11
4.2	Lower Limestone Coast Water Allocation Plan (LLCWAP)	13
<b>5</b>	<b>SOCIO-ECONOMIC ANALYSIS</b>	<b>14</b>
<b>6</b>	<b>BIBLIOGRAPHY</b>	<b>16</b>
	Appendix 1 – Map showing properties in the SFM-GTL-FMU	17
	Appendix 2 – Catchment summary for properties in the SFM-GTL-FMU	18

# 1 Introduction

SFM Environmental Solutions Pty Ltd (SFM) is the appointed Property Manager for the Limestone Plantations *Eucalyptus globulus* (Blue Gum) assets located in the Green Triangle Region (GT).

This document provides a water impact assessment for the Limestone Plantations properties included in the SFM Green Triangle Limestone Forest Management Unit (SFM-GTL-FMU).

## 2 Hydrological flows and catchment management goals

### 2.1 Victoria

The Limestone Plantations in Victoria are all located within the Glenelg Hopkins Catchment Management Area (CHCMA) region, which covers approximately 26,910 square kilometres, extending from Ballarat in the east to the South Australian border in the west, and from the southern coast of Victoria to the townships of Harrow and Ararat in the north. The region is characterised by flat volcanic plains in the south, while the Grampians, Dundas Tablelands, and Central Highlands are dominant in the north. The boundaries of the region include marine and coastal waters out to the state limit of three nautical miles. (see Figure 1).

**Figure 1.** Boundary and elevation for GHCMA region (**Source:** Glenelg Hopkins Regional Catchment Strategy 2013 – 2019).

There are four main basins occurring within the GHCMA region (see Figure 2):

- Glenelg (12,370km<sup>2</sup>);
- Hopkins (9,897 km<sup>2</sup>);
- Portland Coast (3,965 km<sup>2</sup>) and
- Millicent Coast (431 km<sup>2</sup>).

The length of coastline is 220km.

There are forty three properties within the SFM-GTL-FMU in Victoria. Twenty three (representing around 35 km<sup>2</sup>) are located in the Portland Coast Basin, which equates to only 0.9% of that catchment area (see Appendix 2 for individual properties) and 10 properties are located within the Glenelg Basin. There are also two properties located on the catchment boundary and have drainages flowing into both Glenelg Basin and Portland Coast Basin, and the rest of 3 properties are located on the catchment boundary between Glenelg Basin and Millicent Coast Basin.



**Figure 2.** Basin boundary and elevation for GHCMA region (**Source:** Glenelg Hopkins Regional Catchment Strategy 2013 – 2019).)

## 2.2 South Australia

The Limestone Plantations in South Australia are located in the Lower South East management area/Lower Limestone Coast Prescribed Wells Area of the South East region. The South East region covers approximately 28,000 square kilometres and is bounded by the Victorian border to the east, the Southern Ocean to the south, and the Coorong to the west. The area is commonly referred to as the Limestone Coast due to its proximity to the coast and abundance of limestone located under the soil, which acts as a filter to produce high quality water.

The region is characterised by a series of stranded dunes that rise between 20-50 metres above interdunal plains. The plains can become inundated over winter and host a variety of internationally recognised wetland systems including the Ramsar-listed Bool and Hacks lagoons and part of the Coorong and Lower Lakes Wetlands. The region also has a large network of limestone sinkholes and caves. See Figure 3 for a map of the South East region and the split between the Lower South East and Upper South East.



**Figure 3.** Boundary for Lower South East region (Source: [NRM group boundaries](#))

The 3 properties included within the SFM-GTL-FMU in South Australia are located in the Millicent Coast basin covering 32,521km<sup>2</sup>. (see Figure 4).



**Figure 4.** Boundary for Millicent Coast basin (Source: [NatureKit Victoria](#))

### 3 Plantations and Water Use in the GT

Since 2002, a significant amount has been written about the effects of plantations on water flows and usage in the GT, as summarized below.

- Plantation forestry typically leads to lower soil erosion and chemical use than other forms of agricultural land uses. Water quality is therefore likely to be better following reforestation of farmland, provided plantations are targeted to not reduce fresh water flows to salt affected streams.
- The level of the water table can be lowered by trees intercepting and using water. A greater proportion of rainfall may then be required to recharge groundwater rather than contributing to run off.
- Both softwood and hardwood plantation species are capable of using some groundwater under a combination of light- or medium-textured soil and shallow depth (i.e. < 6m) to a low-salinity water table.
- Following reforestation of farmland, the additional use when trees are mature, and water use has peaked, is estimated to be about 100 to 150 mm a year. Flood peaks may be lower and there may be more frequent low or zero flow days following reforestation.
- For each additional 10% of a sub-catchment covered by woody vegetation, potential water yield is predicted to fall by around 20mm/year.
- There is likely to be a significant reduction in the availability of surface water and groundwater resources in south-west Victoria as the result of land use change. However, it is not expected that land use change will have a marked effect on inflows to the region's major water storages.
- Water use is less if plantations are located in elevated parts of the catchment or in lower rainfall zones, or if distributed in small blocks across a catchment.
- Most of the existing pine plantations were established in large, consolidated areas on cleared native forest sites on public land. By contrast, hardwood plantations have generally been established in smaller scattered private blocks that occupy small proportions of catchments or sub-catchments.
- Due to land availability and cost, most hardwood plantations in the region were established in areas with 600 to 800 mm rainfall annually.
- When agriculture land is reforested, run-off reductions are minor in the first five years and increase to a peak 10 to 20 years after planting. The cycle starts again when the plantation is harvested and replanted, with the possibility of some groundwater recharge during this period. Water use is reduced for several years after a plantation is thinned. As a result of fluctuations in water use during the production cycle, only a proportion of a plantation estate will be at peak water use at any given time.
- In small catchments it is difficult to measure an impact if reforestation is less than 15 to 20% of the total catchment area. In larger catchments there



are areas that do not contribute to stream flow and this will vary with the size, topography and geology of the catchment.

The 2007 publication titled [Plantations and Water Use](#) by Parsons *et al.* identified that the effects of industrial plantations on water yield can potentially be minimised by four factors:

- Targeting new plantation establishment in lower rainfall areas (<800 mm/year) where reductions in water yields are smaller.

**The majority of plantations in the Limestone Plantations estate are in Sub-Basins with annual rainfalls from 600mm to 850mm (see Appendix 2)**

- Dispersing plantations across the landscape and keeping them to less than 20% of a catchment.

**Properties within the SFM-GTL-FMU range from 31.3ha to 2259.1ha, with an average area of 265.2ha. They are dispersed across different sub-catchments (see Appendix 2). The maximum area of SFM-GTL-FMU land contained within a catchment (Portland Coast Basin) is 0.9%.**

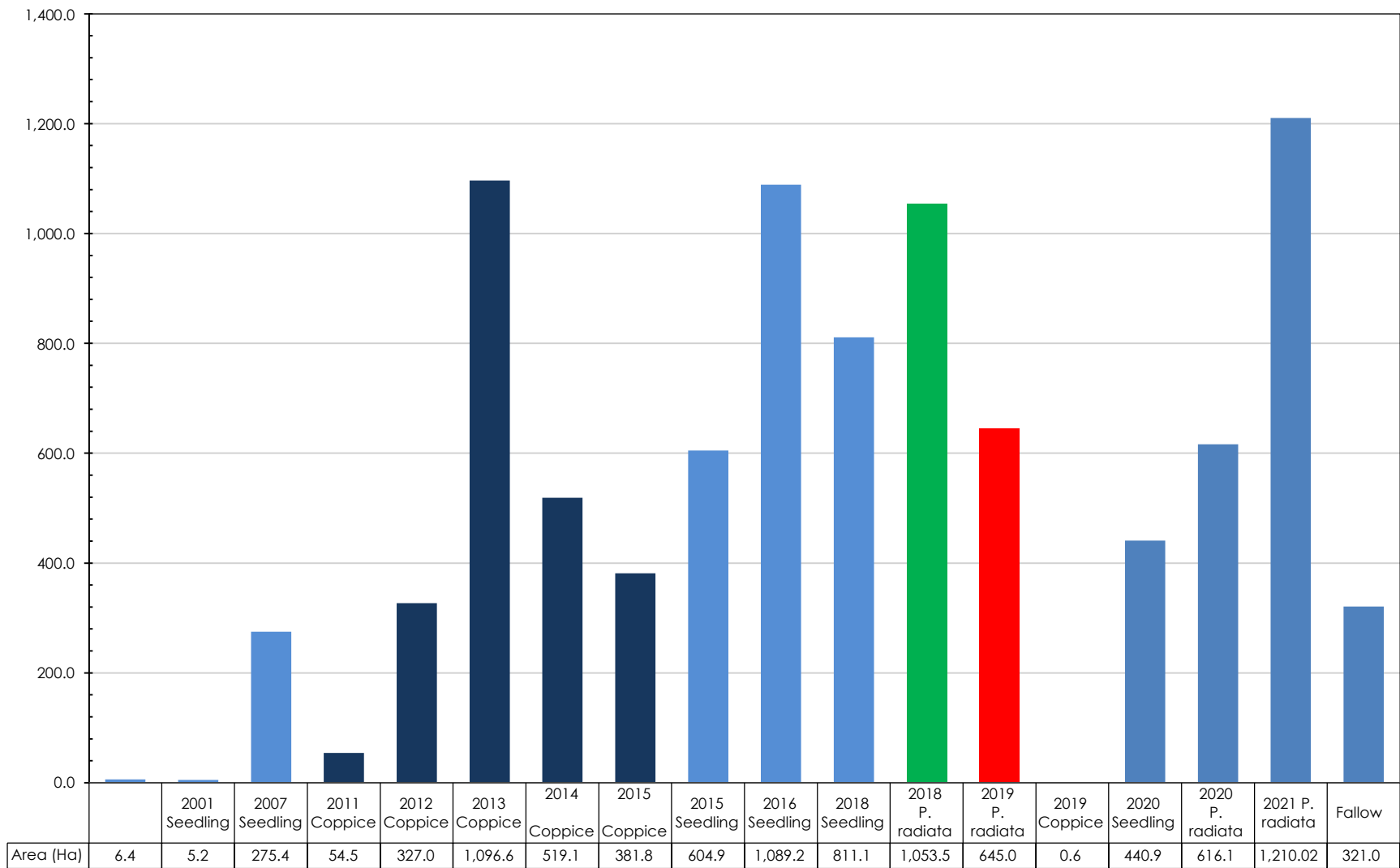
Land use across the GT is in a state of flux as landowners give consideration to reverting non-core plantings of Blue Gum plantation back to agricultural use. Once land use across the GT stabilises, it will be possible to determine with some accuracy the percentage of plantation (Radiata Pine and Blue Gum) in each catchment and sub catchment. Should expansion of the Limestone Plantations estate occur at a later date, then it is expected that the overall 20% catchment figure would be one of the key factors considered when selecting properties to acquire.

- Phasing planting to give a spread of age classes; and

**Figure 5 demonstrates that a significant spread of age classes will be achieved in the 2<sup>nd</sup> rotation for the Limestone Plantations estate, as compared with the 1<sup>st</sup> rotation. In the 3<sup>rd</sup> and subsequent rotations it is expected that the age classes will spread even further. In addition to this, as Limestone Plantations transition to planting more Radiata Pine, it will increase the harvest age of the plantations and increase the age-class distribution.**

- Thinning plantations to maintain them at a lower stocking density.

**Blue gum plantations grown over short rotations for pulp wood production cannot be economically thinned. Work being undertaken in Tasmania to grow Blue gum plantations over 25-year sawlog/peeler log regimes may flow through to the GT with time, resulting in potential opportunities for commercial thinnings to be utilised in some stands. Coppiced stands are thinned on time to ensure that water use is optimised.**



**Figure 5.** Nine year spread in age classes achieved to date in SFM-GTL-FMU during 2<sup>nd</sup> rotation (2011 to 2021) as compared with three year spread in 1<sup>st</sup> rotation (2000 to 2007).

## 4 Catchment Management Strategies

### 4.1 Glenelg Hopkins Catchment / Waterway Strategies

The [Glenelg Hopkins Waterway Strategy 2014 – 2022](#) (GHWS) provides a single planning document for river, estuary and wetland management in the Glenelg Hopkins Catchment. The vision articulated in the GHWS is - ***resilient rivers, estuaries and wetlands connecting the environment and people and supporting regional communities.***

To achieve the vision, the following five regional goals were developed to enable identification of broad strategic directions, guide identification of priority waterways and inform development of an eight-year plan.

- *Maintain Heritage River values in the Glenelg River.*
- *Restore hydrological and ecological values of high value drained wetlands and wetland systems.*
- *Protect or improve threatened fish populations in the Glenelg Hopkins region.*
- *Maintain or improve significant waterway dependant species and communities.*
- *Maintain or improve high value recreational fishing through habitat protection.*

The goals align with the following key objectives for waterways as described in the [Glenelg Hopkins Regional Catchment Strategy 2021-2027](#) (GHRCS):

#### I. **Rivers**

- a. Traditional Owner communities are decision makers and provide strategic leadership for River Country
- b. The condition, function and resilience of priority rivers and their floodplains are maintained and improved
- c. Flood risks are reduced through improved flood intelligence and mitigation

#### II. **Wetlands**

- a. The function and resilience of wetlands are maintained or improved

#### III. **Estuaries**

- a. Manage specific threats to estuaries and improve condition where possible

#### IV. **Groundwater**

- a. The hydrological requirements or priority Groundwater Dependent Ecosystems (GDE) are protected

- b. Changes in groundwater water balance are factored into resource allocation decisions and management

Under the GHWS, high value waterways were identified, and, from these, a subset of priority waterways was determined for the eight-year planning period 2014-22. Drainage flows are established for each property in the SFM-GT-FMU (see Appendix 2), which enables the identification of flows into priority estuaries, river reaches and wetlands as identified in the [GHWS Regional Works Program \(Part D\)](#). For each applicable waterway identified in the GHWS Work Plan, it is then possible to identify the:

- Values linked to the regional goals.
- Long-term resource condition outcomes.
- Management outcome targets.
- Threats addressed by the work program.
- Work Program activities.

A cross check is then completed to identify any Management Activities proposed for consideration by the “forestry industry” within the GHWS Regional Works Plan.

For three of the properties included in the SFM-GTL-FMU (Sutherland, Kalambra and Kruger), the following Management Activities are proposed in the GHWS Regional Works Program for applicable reaches of the Crawford River (38-15, 38-16), with the second activity also proposed for a reach of Miakite Creek (38-30):

- *Ensure best management practice is applied to forestry operations in the catchment for nutrient management (38-15.2);*
- *Ensure best management practice is applied to forestry operations in the catchment for sediment management (38-15.1, 38-16.1, 38-30.1).*

The key values linked to regional goals that are addressed through these activities, and by other proposed activities undertaken by land managers and the Catchment Management Authority (CMA) along the waterway, are: Significant Fish Non-Migratory (38-15.1-2, 38-16.1 and 38-30.1); and Significant Birds Waterway (38-15.2). The long-term resource condition outcome expected to be addressed by the combined work program activities is to **protect all known populations of variegated pygmy perch and take immediate action to ensure that suitable habitat is appropriately managed.**

Best practice management practice for nutrient and sediment management is routinely achieved across all properties in the SFM-GTL-FMU by:

- Re-establishing as soon as possible after harvesting to minimise exposure of bare soil.
- Using a combination of coppicing and seedling established techniques, which minimises soil disturbance across the estate and, in some cases (e.g. Sutherland), across the property.

- Not using deep ripping of soils for 2<sup>nd</sup> rotation replanted sites. Existing planting rows are simply re-mounded (where slopes are suitable).
- Optimising the application of fertiliser by taking foliar samples for coppiced plantations to ensure that only required nutrients are delivered.
- Using stream side buffers and drainage to minimise potential for sedimentation and nutrients to move into waterways.
- Working with the GHCMA to identify waterway revegetation opportunities.
- Undertaking site visits with Nature Glenelg Trust (NGT) to assess wetlands and the options for their restoration. Nature Glenelg Trust specialise in projects reinstating/improving wetlands that have been drained by past agricultural activities. A specific example of this is hydrological restoration projects planned at Kalambra, Sutherland and Castine, which should provide improvements in both water quality and ecological health.

No forestry industry activities relating to groundwater use were identified for any waterways in the GHWS Regional Works Plan associated with any of the initial properties included within the SFM-GTL-FMU.

## **4.2 Lower Limestone Coast Water Allocation Plan (LLCWAP)**

A Water Allocation Plan (WAP) for the Lower Limestone Coast was released by the South East Natural Resources Management Board (SENRM) on the 26<sup>th</sup> Nov 2013 which resulted in legislative changes to the Natural Resources Management Act 2004 that require commercial forestry to become a licensed water user.

The WAP manages water use by commercial forests in the Lower Limestone Coast by granting water allocations attached to a forest water licence. The allocations are based on recharge interception and direct groundwater extraction (where <6m to groundwater). For recharge interception, the allocation is based on the recharge intercepted by a forest at canopy closure. The allocation for direct groundwater extraction is based on an assumed deemed rate of water use of 1.82ML/ha/year for hardwood and 1.66ML/ha/year for softwoods where the water table is less than 6m from the surface.

The water available to Limestone Plantations post release of the WAP was not sufficient to support plantation forestry on every property due to:

- 1) water allocations were granted to the forest manager as opposed to the landowner. Where Limestone Plantations properties were encumbered under lease to Australian Bluegum Plantations, Limestone Plantations did not receive any water, and;
- 2) some Water Management Zones (WMZ's) required reductions in water allocations for commercial forestry (e.g Coles WMZ, Short WMZ).

Due to the lack of water available to Limestone Plantations, SFM has:

- completed reversion on a selection of properties without enough water to higher and better use (HBU), mainly dryland agriculture;
- planted *Pinus radiata* in place of *Eucalyptus globulus*, which will use less water;
- ensured that enough water is available to support the remaining forests.

Subsequently only three Limestone Plantations properties have been added to the SFM-GTL-FMU.

## 5 Socio-economic analysis

Around 18.5 percent of the nation's 1.774M ha plantation estate is located in the GT. The region is recognised nationally and internationally for its innovation in growing, harvesting and processing of plantations. The region has low operating costs, good proximity to processing facilities and ports, and excellent forestry management capacity. The harvesting of 180,000 ha of blue gum plantations over the next few years will make the Port of Portland Australia's largest hardwood chip handling port.

Plantations provide most of the timber used in Australia to manufacture products for home building, paper and other products. Much of this is processed locally and timber industries are major employers in some regional communities. For example, plantation forestry uses about 9% of the land used by primary industries in the Green Triangle region. However, the plantation sector in that region generates 30% of the gross value of primary industries and 23% of the employment generated by primary industries.

A recent analysis completed by the Australian Forest Products Association (AFPA) titled "[Plantations – The Missing Piece of the Puzzle](#)", has identified the following facts for the strategic plantation resource hubs centered on Mt Gambier and Portland (assumes 100km overlapping radii around each town):

- The total plantation area in these hubs is 328,000 ha (Legg et al, 2021).
- The primary plantation owners are:
  - OneFortyOne Plantations (softwood)
  - Green Triangle Forest Products (softwood)
  - Australian Bluegum Plantations (hardwood)
  - New Forests (hardwood and softwood)
- The Forest Products Industry dependent on the resource includes:
  - Mt Gambier SA: CHH Wood Products (sawmill and particleboard), NF McDonnell and Sons (sawmills)
  - Tarpeena SA: Timberlink (sawmill)
  - Myamyn Vic: South West Fibre (woodchip mill)
  - Portland Vic: Port for hardwood and softwood woodchip exports
- The forest industry in these hubs employs 6,165 people.

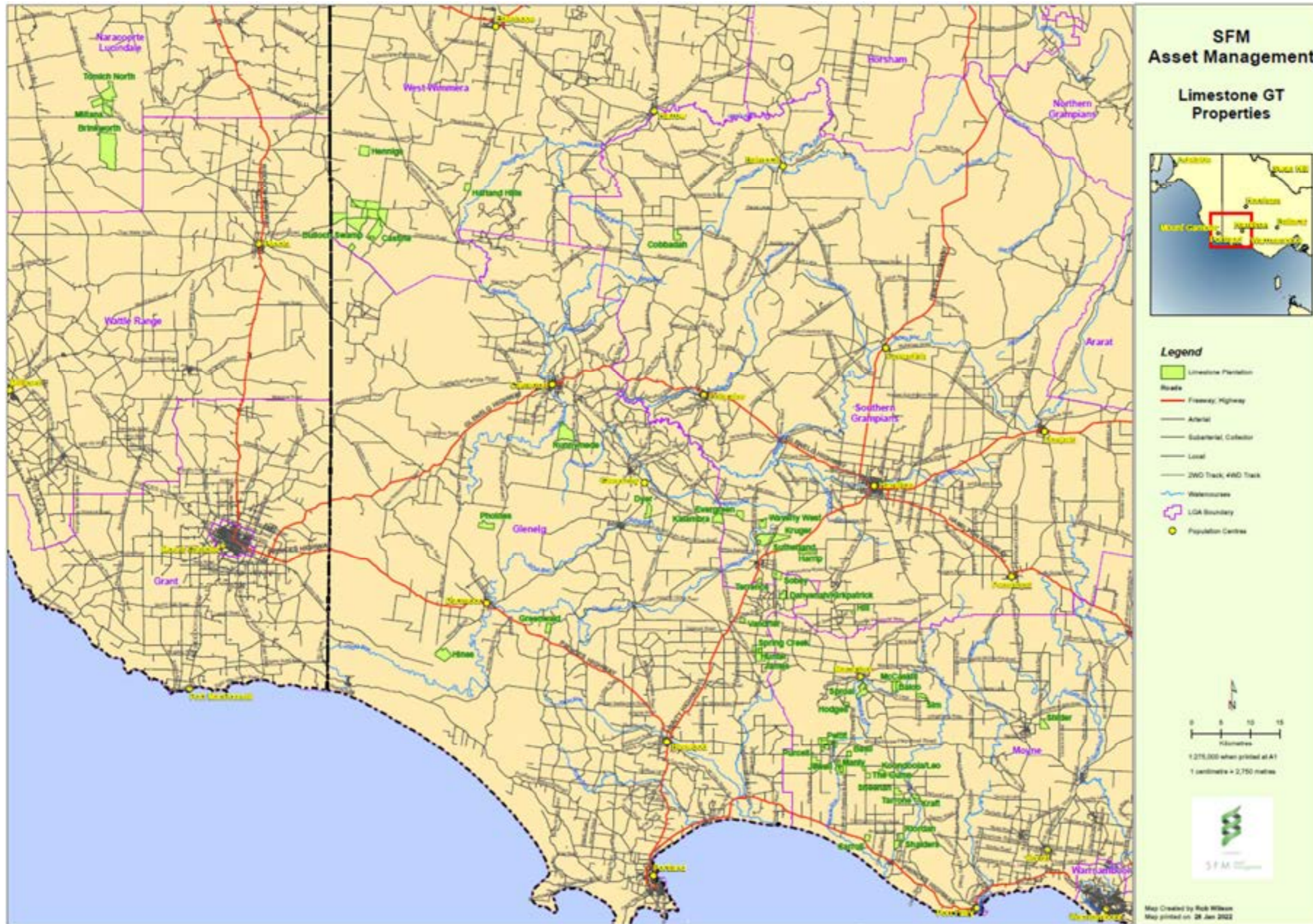
In the 1<sup>st</sup> rotation over 1 million tonnes of wood was harvested from 41 of the 46 properties included in the SFM-GTL-FMU (see Appendix 2), providing significant economic and social activity benefit along the harvest and transport value chain. The reestablishment operations being undertaken across the SFM-GTL-FMU are contributing to sustainable livelihoods for local suppliers and contractors involved in silvicultural activities such as: growing seedlings; chopper rolling; mounding; spraying, planting, coppice thinning, fertilising and slashing. SFM's employees, and most contractors who perform work on the properties in the SFM-GTL-FMU, live or stay in regional towns in the GT. The Limestone Plantations estate also provides for a range of other non-forest values, including affordable building rental and grazing.

## 6 Bibliography

- Australian Forest Products Association (2015) [Plantations – The missing piece of the puzzle](#). Canberra, ACT (31 pages).
- Benyon, Richard G (2002) [Water Use by Tree Plantations in the Green Triangle: A Review of Current Knowledge](#). Glenelg Hopkins Catchment Management Authority, Hamilton and CSIRO Forestry and Forest Products, Mt Gambier (32 pages).
- Benyon, Richard G., Theiveyanathan, S. and Doody, Tanya M. (2006) [Impacts of tree plantations on groundwater in south-eastern Australia](#). Australian Journal of Botany, 2006, 54, 181 – 192.
- Glenelg Hopkins Catchment Management Authority (2013). Glenelg Hopkins Regional Catchment Strategy 2013-2019. Hamilton, Victoria (82 pages).
- Glenelg Hopkins Catchment Management Authority (2022). [Glenelg Hopkins Regional Catchment Strategy 2021-2027](#). Hamilton, Victoria (342 pages).
- Glenelg Hopkins Catchment Management Authority (2014). [Glenelg Hopkins Waterway Strategy 2014 – 2022](#). Hamilton, Victoria (254 pages).
- Legg, Frakes and Gavran (2021), [Australian Plantation Statistics and Log Availability 2021](#), ABARES, Canberra, ACT (76 pages).
- Parsons, Mark, Frakes, Ian and Gerrand, Adam (2007) [Science for Decision Makers - Plantations and Water Use](#). Australian Government Bureau of Rural Sciences (12 pages).



Appendix 1 – Map showing properties in the SFM-GTL-FMU



## Appendix 2 – Catchment summary for properties in the SFM-GTL-FMU

Property Name	Ave Rainfall (mm/annum)	Elevation (MASL)	IBRA V7 Bioregions	IBRA V7 Subregions	Agency	Surface Water Basin	GHCMA Sub Basin	GHCMA Waterway Management Area	Prescribed Wells Area (PWA)	Surface Water Management Zone	Ground Water Management Zone	Drainage Flows (assessed by SFM)
Baloo	745	150	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Eumeralla River/Lake Yambuk
Basil	754	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Eumerella River/Lake Yambuk
Brinkworth	638	50 - 60	NCP - Naracoorte Coastal Plain	NCP03 - Lucindale	SENRM	Millicent Coast	NA	NA	Lower Limestone	South East Non-	Coles	Bool Lagoon/Drain M & Drain C/Lake George
Bulloch Swamp	666	80 - 130	NCP - Naracoorte Coastal Plain	NCP02 - Glenelg Plain	GHCMA	Glenelg and Millicent Coast	G2	Lower Glenelg River	NA	NA	NA	Dorodong Creek /Castines Swamp
Carroll	754	10	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Eumerella River/Lake Yambuk
Castine	666	90	NCP - Naracoorte Coastal Plain	NCP02 - Glenelg Plain	GHCMA	Glenelg	G2	Lower Glenelg River	NA	NA	NA	Dorodong Creek /Castines Swamp
Cobbadah	660	260	VIM - Victorian Midlands	VIM04 - Dundas Tablelands	GHCMA	Glenelg	G4	Glenelg River - Dundas Tablelands	NA	NA	NA	Glenelg River
Danyenah/Kirkpatrick	653	80	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Condah Swamp/Darlot Creek/Fitzroy River
Dyer	727	160	VIM - Victorian Midlands	VIM04 - Dundas Tablelands	GHCMA	Glenelg	G8	Stokes River	NA	NA	NA	Stokes River / Glenelg River
Evergreen	653	150	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Glenelg	G7	Crawford River	NA	NA	NA	Crawford River / Glenelg River
Greenwald	842	100 - 130	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Glenelg	G1 & G7	Glenelg Estuary & Crawford River	NA	NA	NA	Drain/Crawford River/Glenelg River
Harland Hills	683	150	VIM - Victorian Midlands & NCP	VIM04 - Dundas Tablelands &	GHCMA	Glenelg and Millicent Coast	G2	Mid Glenelg River	NA	NA	NA	Stream/Salt Creek/Glenelg River
Harrip	734	160 - 170	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Darlot Creek/Fitzroy River
Hennigs	666	140	NCP - Naracoorte Coastal Plain	NCP02 - Glenelg Plain & MDD05	GHCMA	Glenelg and Millicent Coast	G2 & G3	Lower Glenelg River & Mid Glenelg River	NA	NA	NA	NA
Hill	749	160	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Stream/Scott Creek/Louth Drain
Hines	836	40	NCP - Naracoorte Coastal Plain	NCP02 - Glenelg Plain	GHCMA	Glenelg	G1	Glenelg Estuary	NA	NA	NA	Glenelg River
Hodges	745	80	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Eumeralla River/Lake Yambuk
Hunter	745	80	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Condah Swamp/Darlot Creek/Fitzroy River
James	745	70	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Condah Swamp/Darlot Creek/Fitzroy River
Jewell	719	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Eumeralla River/Lake Yambuk
Kalambra	600	170	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Glenelg	G7/G9	Crawford River & Lower Wannon River	NA	NA	NA	Miakite Creek/Crawford River/Glenelg River
Koondoola/Leo	719	70	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Shaw River/Lake Yambuk
Kraft	754	50 - 60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Shaw River/Lake Yambuk
Kruger	734	170	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Glenelg/Portland Coast	G7/P4	Crawford River & Darlots Creek	NA	NA	NA	Crawford River and Fitzroy River
Manly	754	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Eumeralla River/Lake Yambuk
McCaskill	745	150	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Eumeralla River/Lake Yambuk
Miltana	638	50	NCP - Naracoorte Coastal Plain	NCP03 - Lucindale	SENRM	Millicent Coast	NA	NA	Lower Limestone	South East Non-	Spence	Drain/Goose Swamp
Pettit	754	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Eumeralla River/Lake Yambuk
Phoines	836	50	NCP - Naracoorte Coastal Plain	NCP02 - Glenelg Plain	GHCMA	Glenelg	G2	Lower Glenelg River	NA	NA	NA	Glenelg River
Purcell	719	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Eumeralla River/Lake Yambuk
Riordan	719	20	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Shaw River/Lake Yambuk
Runnymede	625	140	VIM - Victorian Midlands	VIM04 - Dundas Tablelands	GHCMA	Glenelg	G2	Lower Glenelg River	NA	NA	NA	Glenelg River
Shalders	754	10 - 20	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Shaw River/Lake Yambuk
Sheehan	754	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Shaw River/Lake Yambuk
Shider	753	150	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P6	Moyne River	NA	NA	NA	Moyne River
Sim	754	150	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Carmichael Creek/Shaw River/Lake Yambuk
Sobey	653	110	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Condah Swamp/Darlot Creek/Fitzroy River
Spring Creek	745	70	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Condah Swamp/Darlot Creek/Fitzroy River
Sproal	754	70 - 100	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Eumeralla River/Lake Yambuk
Sutherland	600	130 - 150	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Glenelg/Portland Coast	G7/P4	Crawford River & Darlots Creek	NA	NA	NA	Crawford/Glenelg Rivers and Fitzroy River
Tarrone	754	50 - 60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Shaw River/Lake Yambuk
Terrence	734	100 - 110	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Darlot Creek/Fitzroy River
The Gums	754	60	SCP - South East Coastal Plain	SCP03 - Warrnambool Plain	GHCMA	Portland Coast	P5	Eumerella River	NA	NA	NA	Drain/Eumeralla River/Lake Yambuk
Tomich North	638	50	NCP - Naracoorte Coastal Plain	NCP03 - Lucindale	SENRM	Millicent Coast	NA	NA	Lower Limestone	South East Non-	Spence	Drain/Goose Swamp
Vandriel	734	120	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Portland Coast	P4	Darlots Creek	NA	NA	NA	Darlot Creek/Fitzroy River
Waverley West	653	160	SVP - Southern Volcanic Plain	SVP01 - Victorian Volcanic Plain	GHCMA	Glenelg	G7	Crawford River	NA	NA	NA	Crawford River/Glenelg River