



Sun Pharmaceuticals
Port Fairy Operations:
Economic Impact Analysis

Statement of Evidence prepared on behalf of Sun Pharmaceuticals by Matthew Nichol
Amendment C69 Moyne Planning Scheme
August 2022

Port Fairy Operations: Economic Impact Analysis

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August 2022

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Financial figures used to complete this assessment have been provided by Sun Pharmaceuticals. Economic impact analysis and economic data presented in this document are based on data sourced from the Australian Bureau of Statistics (ABS), and other government agencies. Using ABS datasets, the regional economic modelling software REMPLAN, developed by REMPLAN has also been applied to generate industrial economic data estimates. This document is provided in good faith with every effort made to provide accurate data and apply comprehensive knowledge. However, REMPLAN does not guarantee the accuracy of data, nor the conclusions drawn from this information. A decision to pursue any suggestions mentioned in the statement is wholly the responsibility of the party concerned. REMPLAN advises any party to conduct detailed feasibility studies and seek professional advice before proceeding with any action and accept no responsibility for the consequences of pursuing any of the findings or actions discussed in the document.

RESOURCES

All modelling has been undertaken using REMPLAN™ software that has been authored by Principal Research Fellow (ret.), Ian Pinge, at La Trobe University Bendigo.

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Executive Summary

Sun Pharma – Port Fairy

Sun Pharma manufactures starting materials for opiate-based pain relief medicines. Current estimates of Sun Pharma's production expect the facility to be responsible for an estimated 25-30% of global opiate-based pain relief medicine supply.

Raw inputs to produce these pharmaceutical products are sourced from Tasmanian growers, supporting Australian primary producers and national supply chains. The Sun Pharma Australian business employs an estimated 150 people in total, whilst the Port Fairy site employs an estimated 120 employees, or approximately 80% of Sun Pharma's total Australian workforce.

Evidence

This evidence provides an overview of the socio-economic context of Moyne Shire and presents analysis of the economic contributions of Sun Pharma's Port Fairy operations to the Shire's economy.

Key Industries and Economic Drivers

Manufacturing is an important industry for the Moyne Shire economy, contributing 34.5% of total economic output, 16.6% of employment and 17.5% of value-added to the local economy.

Table E.S. 1 Key Economic Indicators, Moyne Shire LGA

	Total	Manufacturing	Proportion
Output (\$M)	\$2,594.0	\$894.9	34.5%
Employment	6,380	1,061	16.6%
Value-Added (\$M)	\$959.2	\$168.0	17.5%

Pharmaceutical Product Manufacturing is a major sub-sector of the broader manufacturing industry sector, and it represents a notable area of workforce specialisation in Moyne Shire.

Economic Impacts

The operations of Sun Pharma's Port Fairy facility supports not only direct jobs and economy activity, but also delivers indirect supply chain and consumption related benefits to the Moyne Shire and Victorian economies.

The total annual direct and indirect economic impacts for Moyne Shire associated with Sun Pharma's Port Fairy operations are estimated at:

- \$41.2 million per year in revenue for local businesses and organisations
- 137 jobs
- \$21.9 million per annum in value-added.

Professional, scientific & technical services, electricity, and administrative & support services are the supply chain linked industries estimated to benefit the most from Sun Pharma's operations. Property services, accommodation & food services, and retail trade benefit the most from the consumption effects.

Table E.S. 2 Summary of Annual Operational Phase Impacts – Moyne Shire LGA

Impact Summary	Direct Effect	Supply chain Effect	Consumption Effect	Total Effect	Type 2 Multiplier
Output (\$M)	\$35.8	\$3.6	\$1.8	\$41.2	1.15
Employment (Jobs)	120	12	5	137	1.14
Value-Added (\$M)	\$19.3	\$1.5	\$1.1	\$21.9	1.13

For every 10 direct jobs at Sun Pharma in Port Fairy, a least one further job is supported in the Moyne Shire once flow-on supply chain and consumption effects are taken into consideration.

When Sun Pharma's Port Fairy operations are assessed in the context of Victoria's economy, it is estimated that a total of 196 jobs are supported (direct and indirect). This reflects the greater supply chain capacity and diversity of the wider State economy.

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Statement

My name is Matthew Nichol, and I am a Director and Principal Economist of REMPLAN which conducts its business at Sandhurst East, Bendigo, Victoria 3550.

I hold a Bachelor of Business (Hons), majoring in Economics with a Statistics minor (La Trobe University).

I have been a Director and Principal Economist at REMPLAN since December 2006 and I have led the design and architecture of REMPLAN software for over 10 years. I have been working in the field of regional and urban economics for twenty years and prior to that working with Ian Pinge at La Trobe University developing and supporting the early versions of REMPLAN Economy.

Other experiences include:

- REMPLAN software including Housing and Property, COVID Impacts modelling, and various data explorers.
- Bespoke Software Solutions including Renewable Energy Transition Socio-economic Modelling tool and QLD Procurement Analysis Dashboard.
- Studies including a Food Manufacturing Study for the Rural Councils Victoria and Workforce Design and Planning for the Government of Brunei Darussalam.
- Economic Impact and CBA for varying developments such as the Avonbank Rare Earths Mineral Sands Project and Roxy Theatre Redevelopment.

I have been instructed by Rigby Cooke Lawyers, acting on behalf of Sun Pharmaceuticals (Sun Pharma) to undertake an Economic Impact Analysis of Sun Pharma's Port Fairy operations to the Moyne Shire's economy. I have not been instructed to review or comment on Amendment C69 to the Moyne Planning Scheme.

In preparing this witness statement I have relied on:

- ABS data
- Financial figures provided by Sun Pharma
- Regional Economic modelling software REMPLAN

I have been assisted by James Pryor, Consultant REMPLAN in preparation of this statement.

1 Introduction

This statement has been undertaken at the request of Rigby Cooke Lawyers, on behalf of Sun Pharmaceuticals Australia Limited (Sun Pharma), to provide evidence of the economic contributions that their Port Fairy site has on the Moyne Shire local Government Area (LGA). Evidence provided in this statement is made with reference to the Practice Notes relevant to Planning Panels Victoria (PPV)¹.

A Glossary of Terms is provided in Section 4 for reference.

1.1 Company Background

Sun Pharma manufactures starting materials for opiate-based pain relief medicines. Current estimates of Sun Pharma's production expect the facility to be responsible for an estimated 25-30% of global opiate-based pain relief medicine supply.

Raw inputs to produce these pharmaceutical products are sourced from Tasmanian growers, supporting Australian primary producers and national supply chains. Sun Pharma Australian business employs an estimated 150 people in total, whilst the Port Fairy site employs an estimated 120 employees, or approximately 80% of Sun Pharma's total workforce.

¹ Victoria Government Department of Environment, Land, Water and Planning, Expert Evidence – PPV Practice Note 1

1.2 Purpose and scope

This statement provides an overview of the socio-economic context of Moyne Shire (includes Port Fairy), and to undertake Economic Impact Assessment (EIA) to estimate the economic impacts of the Sun Pharma Port Fairy operation on the Moyne Shire LGA and Victorian economies.

The economic impact analysis presented in this statement has been undertaken using REMPLAN – *regional economic modelling and analysis system*².

This assessment applies REMPLAN economic data for the defined regions of Moyne Shire LGA, and the State of Victoria, incorporating data sourced from the ABS 2016 Census (Place of Work), ABS 2018 / 2019 National Input / Output Tables, and ABS Gross State Product (June 2021).

Economic impacts include direct and indirect (flow-on supply chain and consumption) activity associated with the operations of the Sun Pharma facility in Port Fairy. Economic impacts are reported in terms of:

- Output / Revenue (\$M)³
- Value-added (\$M)⁴
- Employment (Jobs).

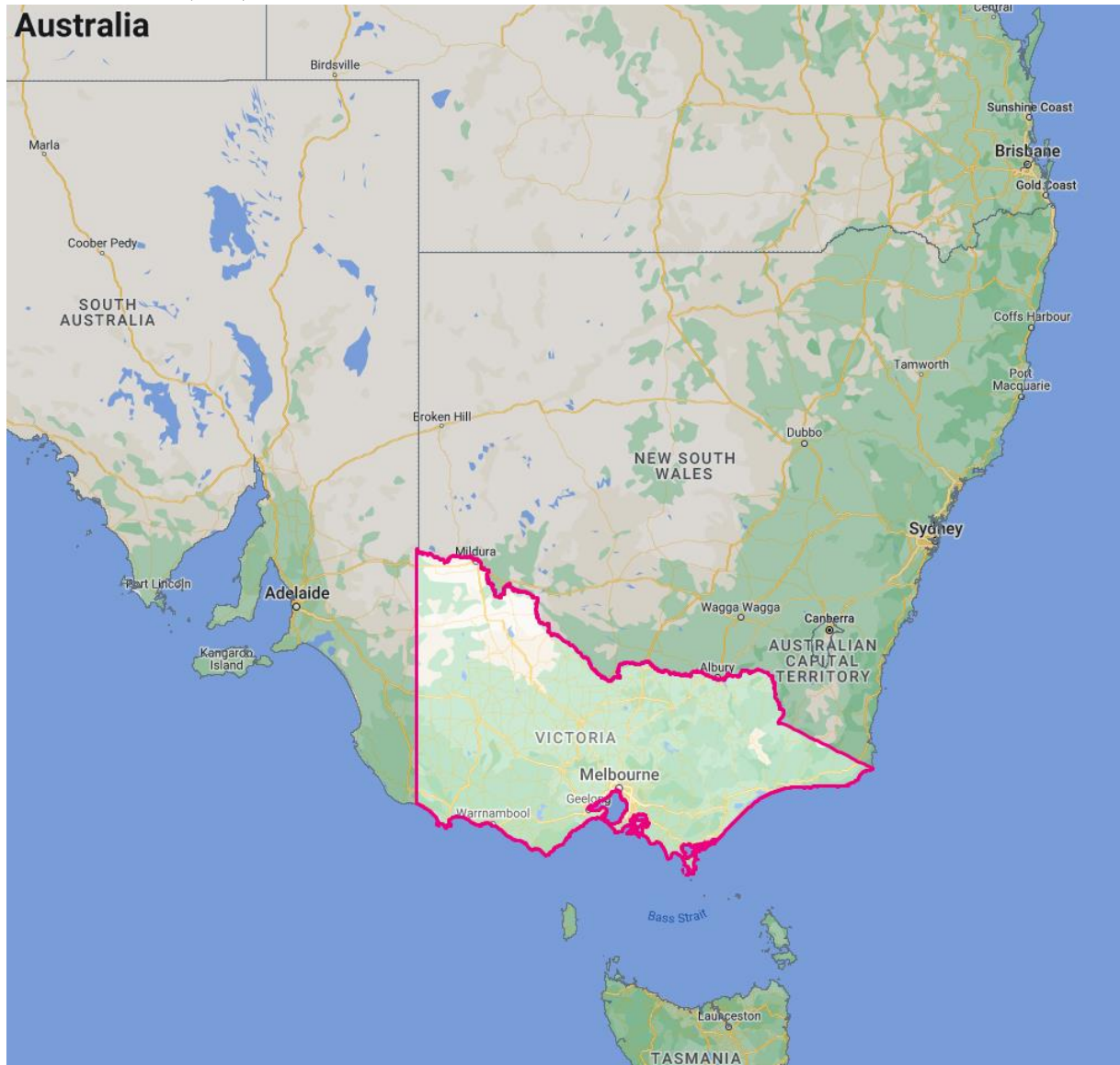
All direct expenditure, revenue and employment assumptions outlined in the statement are based on data that has been supplied to REMPLAN by Rigby Cooke Lawyers on behalf of Sun Pharma.

² www.remplan.com.au

³ Output data represents the gross revenue generated by businesses/organisations in each of the industry sectors in a defined region. Gross revenue is also referred to as total sales or total income.

⁴ Value-Added data represents the marginal economic value that is added by each industry sector in a defined region. Value-Added can be calculated by subtracting local expenditure and expenditure on regional imports from the output generated by an industry sector, or alternatively, by adding the Wages & Salaries paid to local employees, the gross operating surplus and taxes on products and production. Value-Added by industry sector is the major element in the calculation of Gross Regional Product / Gross State Product / Gross Domestic Product.

Figure 1-2 Victoria (State)



Source: <https://remplan.co/3AomKIW>

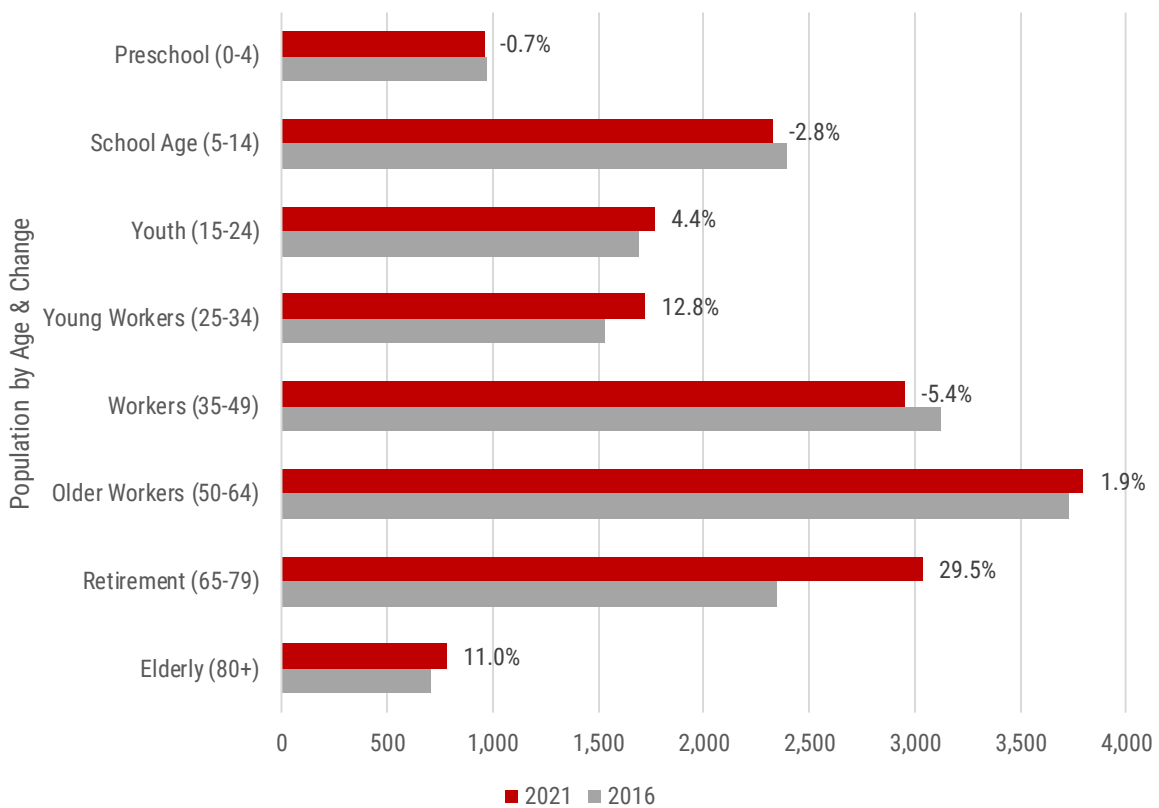
2 Moyne Shire Socio-Economic Context

2.1 Population

According to the ABS 2021 Census, Moyne Shire LGA had a population of 17,374, which is an increase of 5.3% from 16,499 people in 2016.

The LGA shows evidence of an ageing population with older workers through to elderly cohorts increasing as a share of the population from 2016 to 2021. Older Workers (50-64 years) were the largest represented cohort of the population (21.9%), followed by the retirement (17.5%) and workers (17.0%) cohorts.

Figure 2-1 Population Age Profile of Moyne Shire LGA, 2016 - 2021



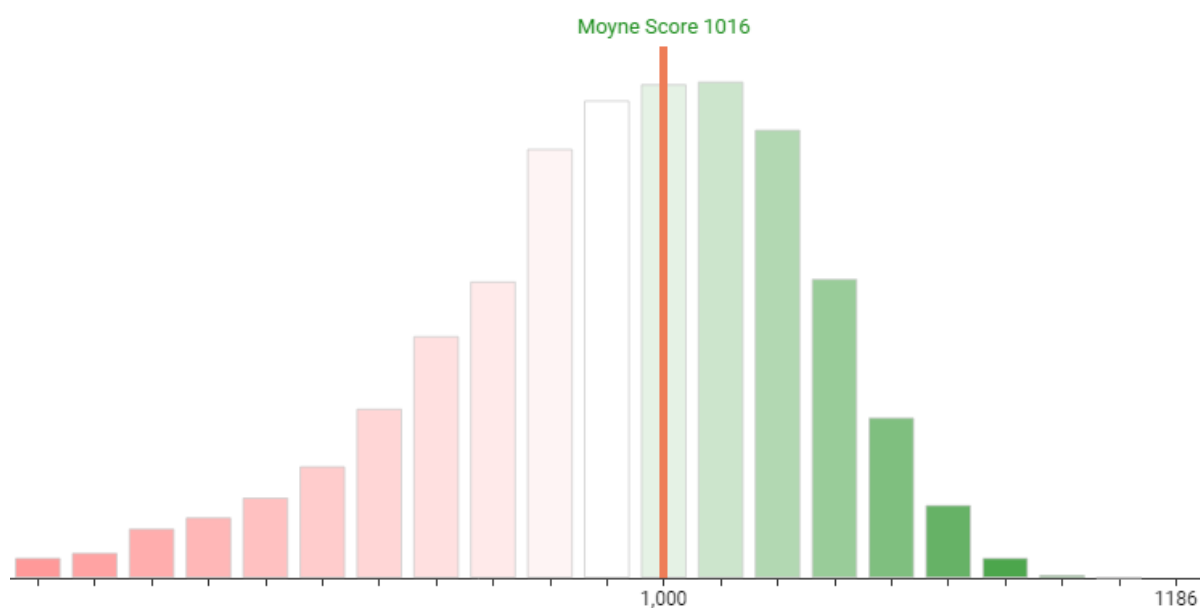
2.2 SEIFA

Socio Economic Indexes for Areas (SEIFA) is a suite of indexes published by the ABS based on socio-economic data from the Census. Each index ranks geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage. Essentially a low rank / low index score indicates higher rates of disadvantage, while a high rank / higher index score indicates lower rates of disadvantage.

The following data presents information from the Index of Relative Socio-economic Disadvantage, a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within an area⁵:

- The SEIFA index of disadvantage score for the Moyne Shire LGA is 1016⁶.
- Moyne Shire LGA ranks 426 out of 544 local government areas with SEIFA scores in Australia
- There are 425 local government areas that are more disadvantaged, and there are 118 local government areas which are less disadvantaged.

Figure 2-2 SEIFA Index Distribution Australian LGAs



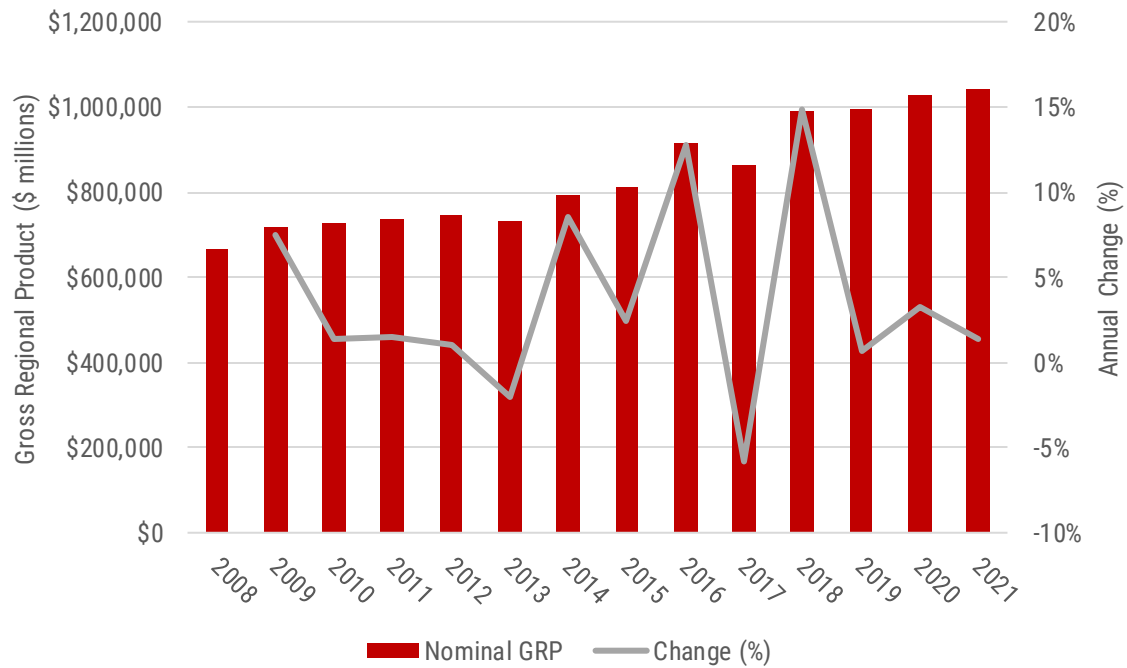
⁵ This index includes only measures of relative disadvantage.

⁶ Across Australia's local government areas SEIFA scores range from 188 (most disadvantaged) to 1186 (least disadvantaged).

2.3 Gross Regional Product

For 2021, Moyne Shire's Gross Regional Product (GRP) is estimated at 2021. From 2008, the compounding annual growth rate (CAGR) for Moyne Shire's GRP is estimated at 3.5%.

Figure 2-3 Gross Regional Product Moyne Shire LGA, 2021



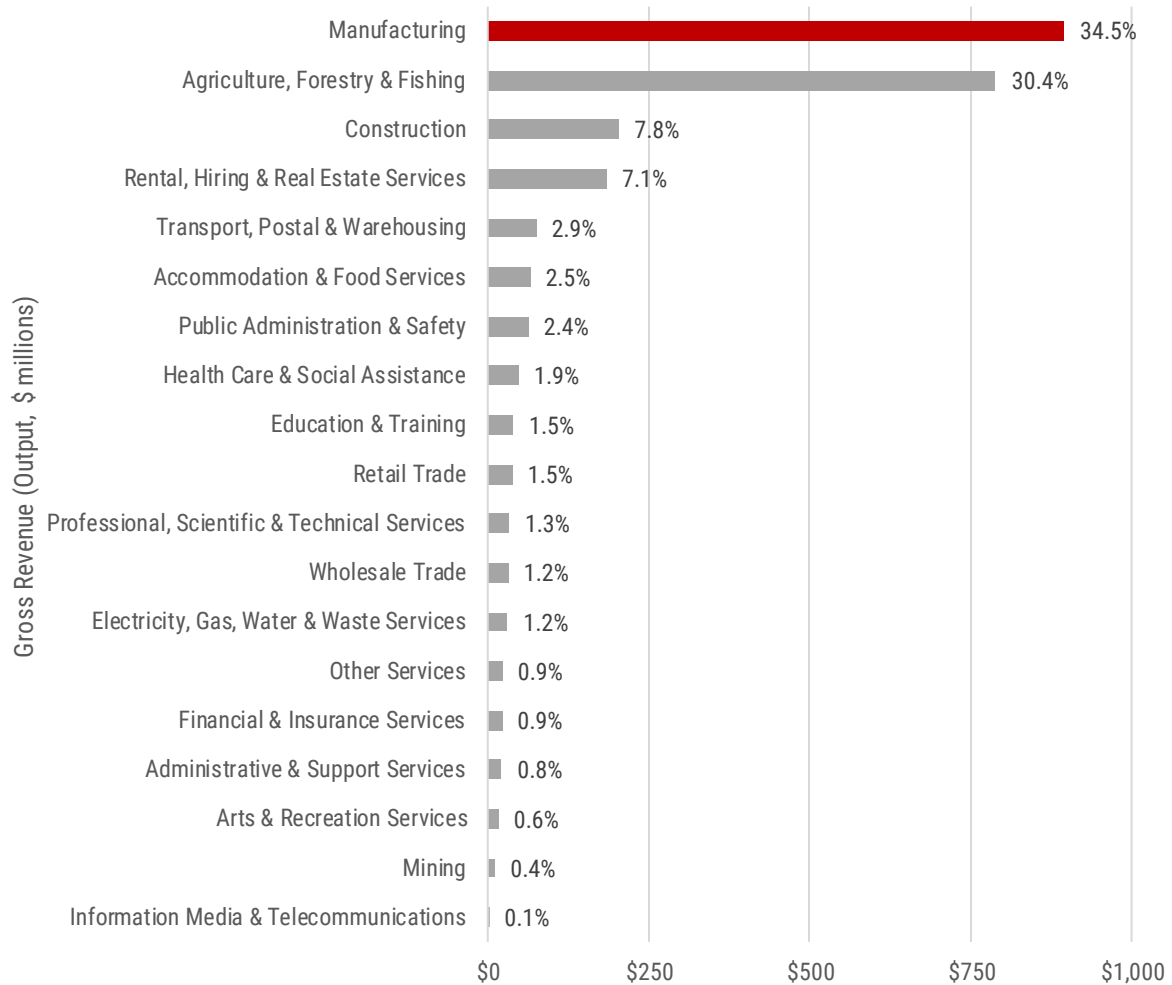
2.4 Key Industries and Economic Drivers

2.4.1 Output

Businesses and organisations in Moyne Shire generate an estimated \$2.6 billion in gross revenue (i.e., output) annually, primarily being driven by economic activity in manufacturing and agriculture, forestry & fishing sectors.

Pharmaceutical product manufacturing accounts for an estimated 16.1% of manufacturing output, and 5.5% of total economic output for Moyne Shire.

Figure 2-4 Output by Industry, Moyne Shire, 2021

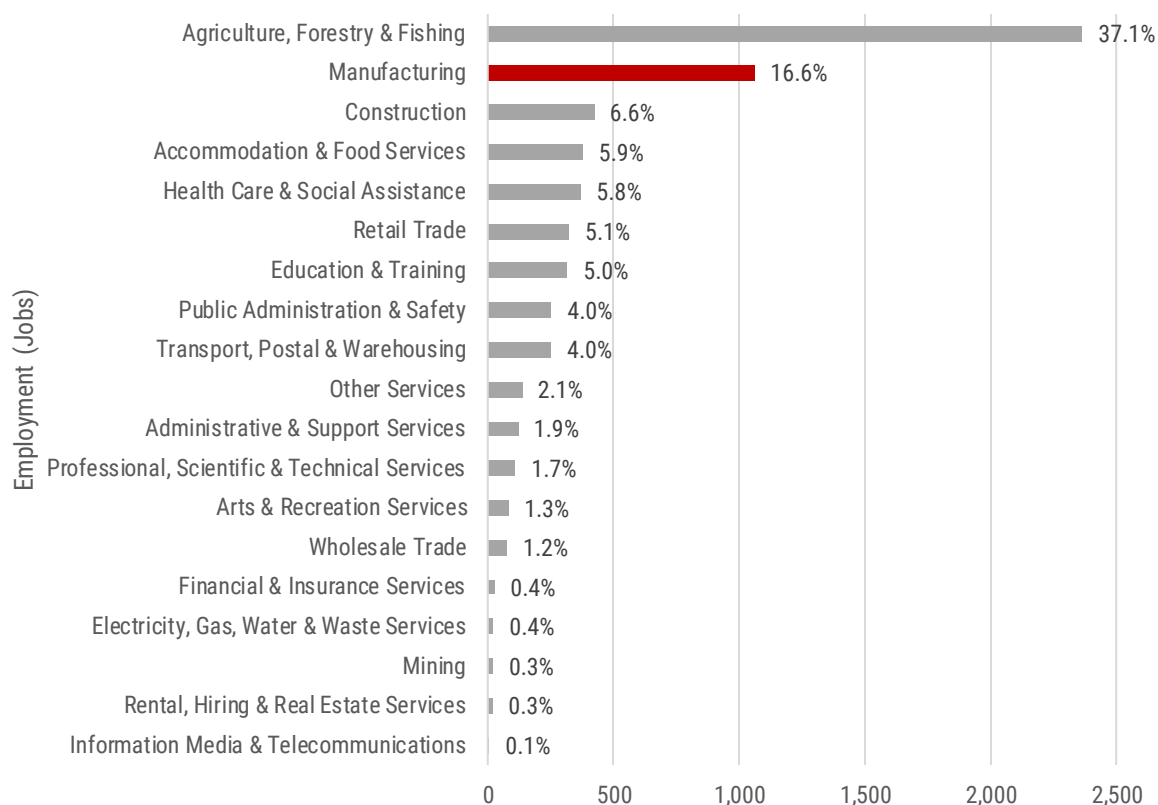


2.4.2 Employment

It is estimated that there are 6,380 jobs in the Moyne Shire, primarily within agriculture, forestry & fishing, and manufacturing sectors. One in six (16.6%) of the region's workforce is employed in manufacturing, which is approximately double the proportion for Victorian at 8.2%.

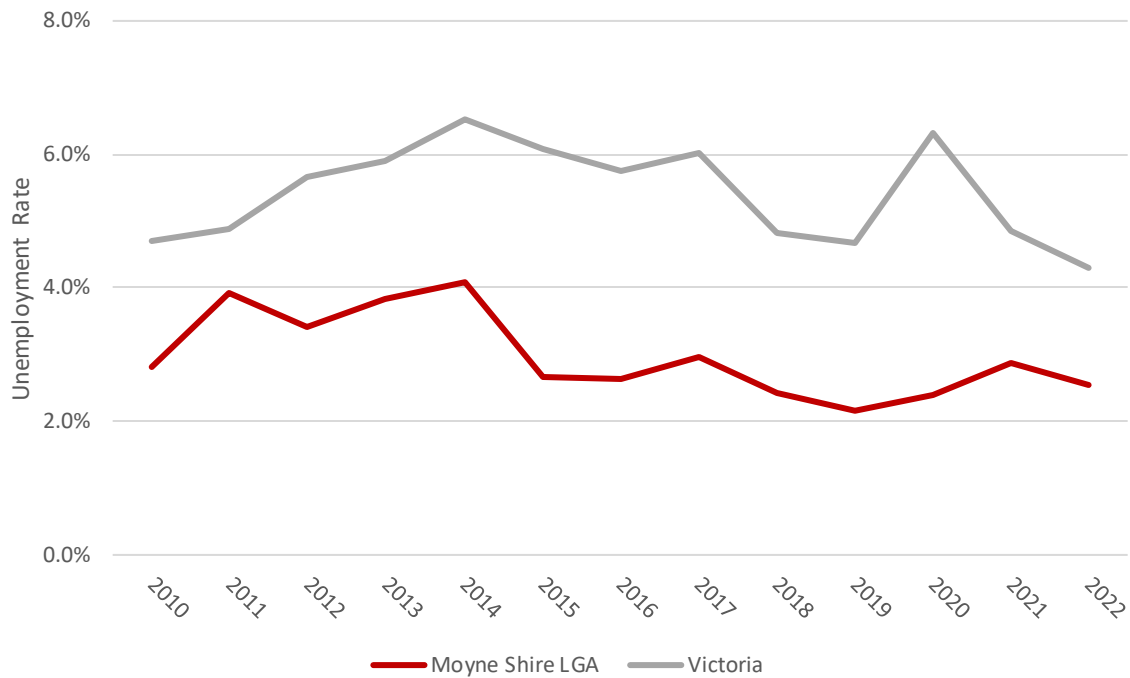
Close to one in ten (8.9%) of the LGA's manufacturing workforce are employed in the pharmaceutical product manufacturing sector.

Figure 2-5 Employment by Industry, Moyne, 2016



At 2.5%, the unemployment in the Moyne Shire LGA is low compared with Victoria at 4.3%.

Figure 2-6 Unemployment Rates for Moyne Shire LGA and Victoria, 2010-2022



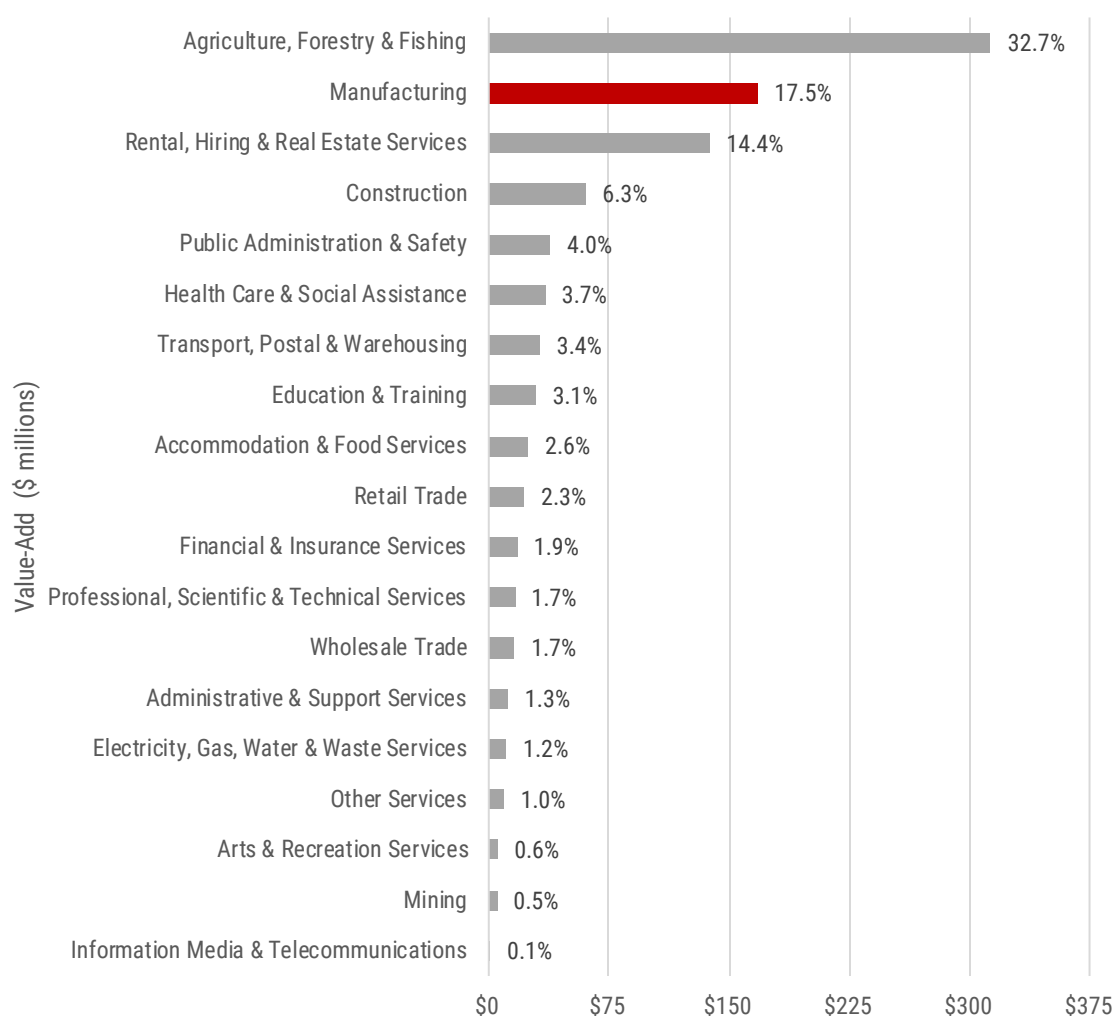
2.4.3 Value-Added

Value-Add by industry is a major element in the calculation of Gross Domestic/State/Regional Product and represents industry's contribution to GRP.

Total marginal economic value that is generated by industry in the Moyne Shire is estimated at \$959.2 million annually, primarily driven by agriculture, forestry & fishing, and manufacturing.

Manufacturing generates 17.5% of total value-add for the region. The pharmaceutical product manufacturing sector contributes 16.6% of the overall manufacturing industry's value-add.

Figure 2-7 Value-Added by Industry, Moyne Shire, 2021



2.4.4 Economic Drivers

Industry Specialisation – Employment

A Location Quotient (LQ) analysis summarised in Table 2-1 reflects Moyne Shire LGA's employment concentration and relative specialisation across industry sectors.

The LQs have been estimated based on industries' shares of total employment for the Moyne Shire, divided by the same industries' shares of employment for Victoria. LQs over 1 indicate relative specialisation for those industries in Moyne Shire.

Employment in Moyne Shire is highly specialised in agriculture, forestry & fishing, followed by manufacturing.

Within manufacturing, pharmaceutical product manufacturing reflects an LQ of 5.9, reinforcing the sector's unique and specialised place within the Moyne Shire's economy.

Table 2-1 Industry Specialisation, Moyne Shire LGA Relative to Victoria

Industry	Location Quotient
Agriculture, Forestry & Fishing	16.0
Manufacturing	2.0
Pharmaceutical Product Manufacturing	5.9
Construction	0.8
Accommodation & Food Services	0.9
Health Care & Social Assistance	0.4
Retail Trade	0.5
Education & Training	0.5
Public Administration & Safety	0.7
Transport, Postal & Warehousing	0.8
Other Services	0.6
Administrative & Support Services	0.5
Professional, Scientific & Technical Services	0.2
Arts & Recreation Services	0.6
Wholesale Trade	0.4
Financial & Insurance Services	0.1
Electricity, Gas, Water & Waste Services	0.3
Mining	1.1
Rental, Hiring & Real Estate Services	0.2
Information Media & Telecommunications	0.1

Source: Based on REMPLAN Economy.

Key Propulsive Sectors

Key drivers of the Moyne Shire economy in terms of regional exports, employment, value-added and local expenditure on goods and services (backward linkages) is analysed in Table 2-2. Agriculture, forestry & Fishing, and manufacturing industries are identified as key economic drivers (key propulsive sectors) of the Moyne Shire LGA economy. Within the manufacturing industry, pharmaceutical product manufacturing is a key exporting sector for the economy. Changes to industries that are identified as key propulsive sectors are likely to have broader implications for the Moyne Shire economy.

Table 2-2 Key Propulsive Sectors, Moyne Shire LGA

Industry	Backward Linkages	Exports	Employment	Value-Added	Total
Agriculture, Forestry & Fishing	✓	✓	✓	✓	4
Mining		✓			1
Manufacturing	✓	✓	✓	✓	4
Electricity, Gas, Water & Waste Services	✓				1
Construction	✓		✓	✓	3
Wholesale Trade					0
Retail Trade					0
Accommodation & Food Services		✓	✓		2
Transport, Postal & Warehousing		✓			1
Information Media & Telecommunications					0
Financial & Insurance Services					0
Rental, Hiring & Real Estate Services				✓	1
Professional, Scientific & Technical Services					0
Administrative & Support Services					0
Public Administration & Safety				✓	1
Education & Training					0
Health Care & Social Assistance			✓		1
Arts & Recreation Services	✓				1
Other Services					0

2.5 Business Numbers by Turnover and Employment

Total business counts grew by 5.3% between June 2019 and 2021⁷. Entities with a turnover range of \$2 million to less than \$5 million make up the largest proportion (44.3%) of business counts by revenue, whilst counts of businesses that are not employing represent 60.8%.

In 2021, an estimated 66 manufacturing businesses were counted in Moyne Shire LGA of varying size in terms of turnover and employment. With 120 employees in Port Fairy, Sun Pharma is one of the larger employers in the Moyne Shire.

Table 2-3 Business Counts by Turnover and Employment, 2019-2021, Moyne Shire LGA

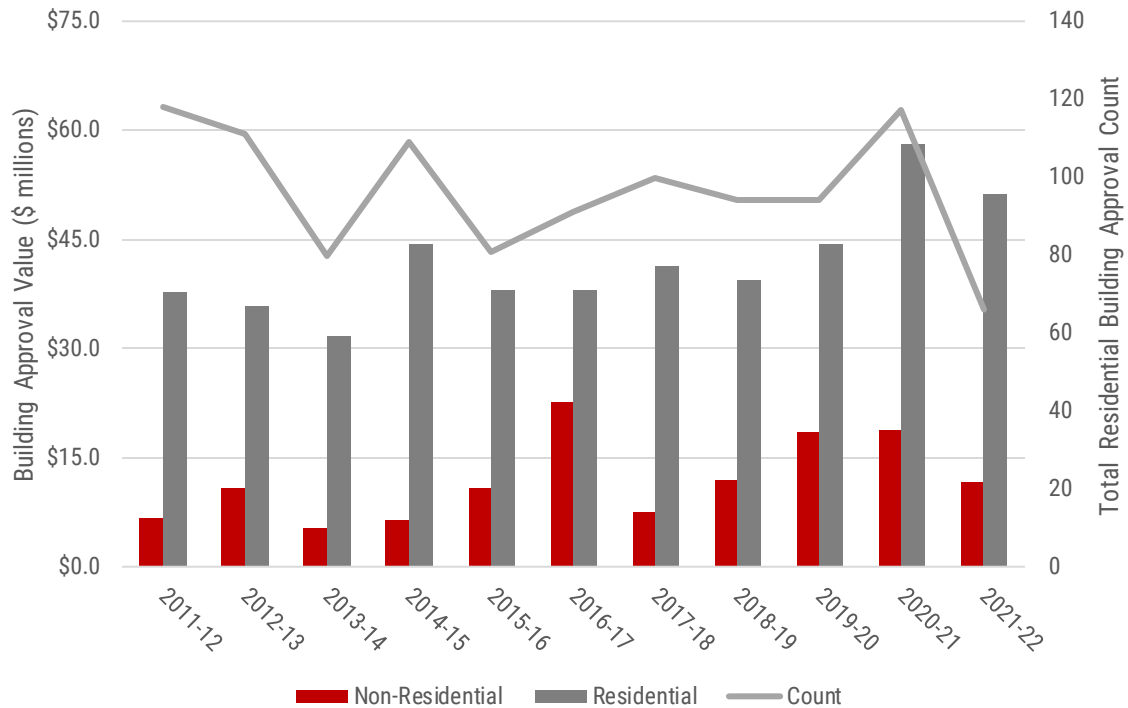
Business Counts	Jun-19	Jun-20	Jun-21
Turnover Range			
Zero to less than \$50k	419	398	448
\$50k to less than \$200k	740	762	727
\$200k to less than \$2m	988	992	1,060
\$2m to less than \$5m	94	102	128
\$5m to less than \$10m	18	18	15
\$10m or more	16	14	17
Employment Range			
Non employing	1,421	1,431	1,455
1-19	821	824	906
20-199	33	31	34
200+	0	0	0
Total	2,275	2,286	2,395

⁷ Australian Bureau of Statistics, Counts of Australian Businesses, including Entries and Exits & REMPLAN Explorer for Moyne Shire LGA

2.6 Building Approvals

Building approvals have steadily increased in value over the 2011-12 to 2021-22 period, from \$44.4 million to \$63.0 million⁸. During this time, the average residential approvals are 78.6% of total building approval value whilst year on year, almost all (average 96.0%) building approvals by count were new houses. More residential building approvals have occurred in Moyne Shire over the last decade relative to non-residential approvals. New approvals will require land to be made available for development. However, this graph does not differentiate where in the Shire that new approvals are being made, just that the trend is evident.

Figure 2-8 Building Approvals by Value and Count, 2019-2021, Moyne Shire LGA



⁸ ABS, Building Approvals & REMPLAN Explorer for Moyne Shire LGA

3 Economic Impact Assessment

This section presents analysis of the estimated direct and indirect contributions of Sun Pharma's Port Fairy operations to the Moyne Shire and Victorian economies.

3.1 Reporting elements of the EIA

The following economic indicators are the reported elements in the EIA. Section 4 includes a glossary with these terms, plus others.

Output

Output data represents the gross revenue generated by businesses/organisations in each of the industry sectors in a defined region. Gross revenue is also referred to as total sales or total income. As such, estimates of output provide an indication of the level of activity occurring in a region, an industry or organisation.

Output is a high-level economic indicator which is inclusive of other indicators such as wages, intermediate inputs and value-added. Output is an essential measure in understanding the interrelationships between industries in a region and for measuring an individual industry's output. However, for the broader economy, output does include a degree of double counting by including the sales of intermediate products and final products. Output can also be referred to as revenue, or total sales.

Value-added

Value-added is a key economic metric which estimates the marginal economic value-added by an industry. Unlike output, value-added is a non-duplicative indicator as it excludes the costs of intermediate inputs. Therefore, it is one of the best indicators of industries' contribution to the wealth of a region. However, output, and value-added are complementary indicators and when considered together, give an indication of the proportional level of value-added by an industry.

Value-added by industry sector is the major element in the calculation of Gross Regional Product / Gross State Product / Gross Domestic Product.

Employment

Employment data represents the number of people employed by businesses and organisations within the defined region. Employment data presented in this statement is destination of work data. That is, no inference is made as to where people in a defined region reside unless otherwise stated. Employment figures are not converted to full-time equivalence.

3.2 Impact Analysis Scenarios

Sun Pharma has supplied REMPLAN with current estimates regarding its Port Fairy facility operations, which includes revenue, staffing levels, and wages for the FY 2021/22 period. This is summarised in Table 3-1.

Across Australia, Sun Pharma's operations generate \$44.7 million in gross revenue and support 150 jobs. The company's Port Fairy operations represent 120 of these jobs, and these employees are paid a total of \$15.3 million in wages and salaries.

The following scenario has been applied to the 'Pharmaceutical Product Manufacturing' sector in the REMPLAN model of the Moyne Shire LGA economy. The REMPLAN analysis provides insights into the indirect (flow-on) benefits for the local economy of Sun Pharma's operations.

Table 3-1 Sun Pharma Port Fairy Operations – Direct revenue, wages, and jobs

Impact Scenario	Moyne Shire LGA analysis
Pharmaceutical Product Manufacturing	
Revenue (\$ millions)	\$35.8
Wages and salaries (\$ millions)	\$15.3
Employment (jobs)	120

Source: REMPLAN Analysis based on input from Sun Pharma.

3.3 EIA results

Direct economic impacts are those that result from the operational revenue generated within the local economy. This direct revenue supports economic activity in local supplying sectors, these are reported as supply chain impacts.

Economic activity that occurs through direct and supply chain effects supports jobs in the local economy, which corresponds to the payments of wages and salaries paid to employees. A proportion of these wages and salaries are captured within the local economy. These are reported as consumption impacts and typically occur in population serving industries such as retail trade, health care and education.

3.3.1 Operational Phase Impacts – Sun Pharma - Moyne Shire LGA

Output: Output of \$35.8 million is estimated to support demand for intermediate goods and services in Moyne Shire valued at \$3.6 million. These annual supply chain effects include multiple rounds of flow-on effects.

The direct and indirect (flow-on) output supports jobs and the payment of wages and salaries in the Shire. A proportion of these wages are typically spent on consumption and a proportion of this expenditure is captured in the Moyne Shire economy. The consumption effects under this scenario are estimated at \$1.8 million. Total output, including all direct, supply chain and consumption effects is estimated at up to \$41.2 million per annum. This represents a Type 2 Output Multiplier of 1.15.

The Type 2 Multiplier for output estimates that for every dollar generated by the Port Fairy facility, a further 15 cents is generated throughout the Moyne Shire economy once flow-on supply chain and consumption effects are taken into consideration.

Employment: Operation of the Port Fairy facility supports 120 direct jobs in Moyne Shire LGA, with the indirect supply chain impacts supporting a further 12 jobs. The consumption effects under this scenario are estimated to further support employment by 5 jobs. Total employment supported, including all direct, supply chain and consumption effects is estimated at 137 jobs. This represents a Type 2 Employment Multiplier of 1.14.

That is, for every 10 jobs at Sun Pharma, a least one further job is indirectly supported across the Moyne Shire economy.

Value-added: From this annual output of \$35.8 million, the corresponding direct value-added generated in Moyne Shire is estimated at \$19.3 million. Flow-on supply chain effects in terms of local purchases of goods and services (indirect impacts) corresponds to further value-added generated of \$1.5 million.

The consumption effects under this scenario are expected to generate further value-added estimated at \$1.1 million. Total value-added, including all direct, supply chain and consumption effects, is estimated at \$21.9 million per annum. This represents a Type 2 Value-Added Multiplier of 1.13.

Operational phase summary

Total annual direct and indirect economic impacts for the Moyne Shire associated with Sun Pharma's Port Fairy operations, are estimated at:

- \$41.2 million in output
- 137 jobs
- \$21.9 million in value-added.

Professional, scientific & technical services, electricity, and administrative & support services are the supply chain linked industries estimated to benefit the most from Sun Pharma's operations. Property services, accommodation & food services, and retail trade benefit the most from the consumption effects.

Figure 3-1 Operational Impacts, Moyne Shire LGA

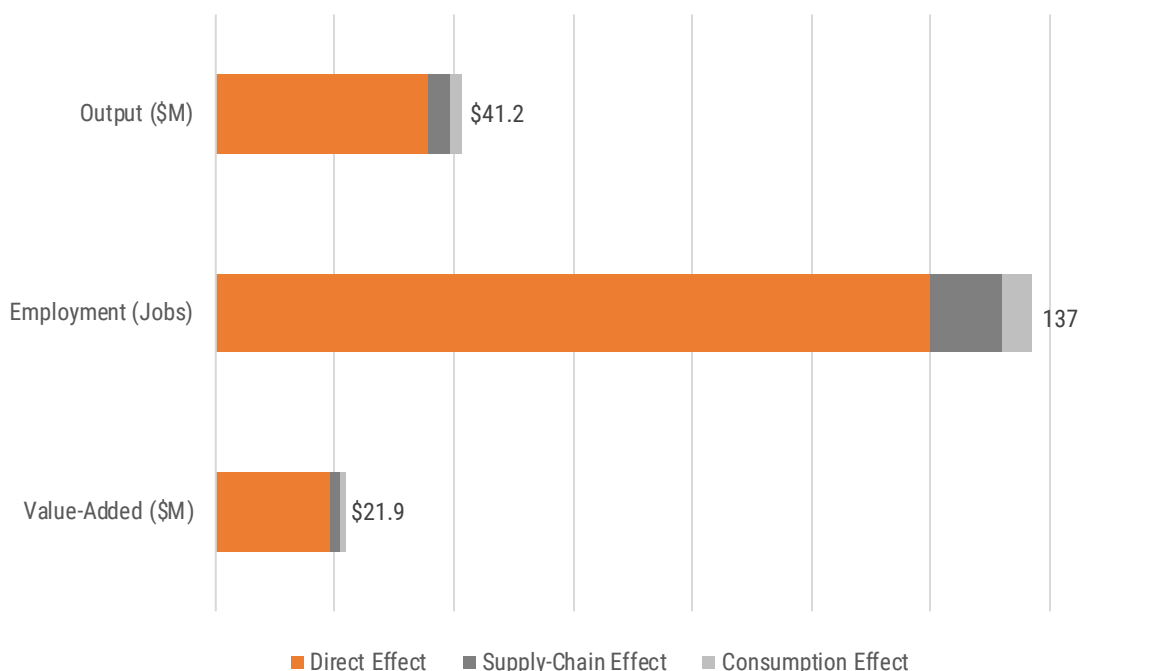


Table 3-2 Summary of Annual Operation Phase Impacts – Moyne Shire LGA

Impact Summary	Direct Effect	Supply chain Effect	Consumption Effect	Total Effect	Type 2 Multiplier
Output (\$M)	\$35.8	\$3.6	\$1.8	\$41.2	1.15
Employment (Jobs)	120	12	5	137	1.14
Value-Added (\$M)	\$19.3	\$1.5	\$1.1	\$21.9	1.13

When Sun Pharma's Port Fairy operations are considered in the context of Victoria's economy, it is estimated that a total of 196 jobs are support (direct and indirect). This reflects the greater supply chain capacity and diversity of the State's economy relative to that of the Moyne Shire LGA. In the context of Moyne Shire LGA, Sun Pharma's Port Fairy operation is estimated to support the following proportions of employment⁹:

- 1.9% of Moyne Shire's total workforce; and
- 11.3% of people employed in manufacturing.

⁹ Employment referring to 2016 Census Place of Employment data, scaled by REMPLAN. 2021 Census equivalent has not been published at time of this assessment.

4 Glossary of Terms

Consumption Effects

As output increases, so too does employment and wages and salaries paid to local employees. Part of this additional income to households is used for consumption in the local economy which leads to further increases in demand and output.

Employment

Employment data represents the number of people employed by businesses/organisations in each of the industry sectors in a defined region. Employment data presented by REMPLAN is destination of work data. That is, no inference is made as to where people in a defined region reside. This employment represents total numbers of employees without any conversions to full-time equivalence. Retail jobs for instance, represent typical employment profiles for that sector, i.e., some full time, some part time and some casual.

Gross Regional Product (GRP)

GRP is the net measure of wealth generated by the region. GRP can be measured by using the incomes approach, where all incomes earned by individuals (wages and salaries), firms (gross operating surplus) and governments (taxes on products or services) are added. Alternatively, an expenditure approach can be taken where all forms of final expenditure, including consumption by households, consumption by governments, additions or increases to assets (minus disposals) and exports (minus imports), are added. The expenditure approach does not include intermediate expenditure, as this would lead to double counting. E.g., the wheat and flour in a loaf of bread. These methodological approaches are the same as those used to calculate Gross Domestic Product (GDP) at a national level.

Output

Output data represents the gross revenue generated by businesses/organisations in each of the industry sectors in a defined region. Gross revenue is also referred to as total sales or total income.

Supply-Chain Effects

The increased output generated by servicing industry sectors in response to the direct change in output and demand.

Type 1 Multiplier

Includes the Direct Effect + Supply-Chain Effects. For example, if you have a Type 1 output multiplier of 1.489 then for every direct one dollar increase in output you would expect to see an extra \$0.49 of activity generated within the region due to supply-chain effects.

Type 2 Multiplier

Includes the Direct Effect + Supply-Chain Effects + Consumption Effects. For example, if you have a Type 2 output multiplier of 2.011 then for every direct one dollar increase in output you would expect to see an extra \$1.01 of activity generated within the region due to the supply-chain effects plus the consumption effects.

Value-added

Represents the marginal economic value that is added by each industry sector in a defined region. Value-Added can be calculated by subtracting local expenditure and expenditure on regional imports

from the output generated by an industry sector, or alternatively, by adding the Wages and Salaries paid to local employees, the gross operating surplus and taxes on products and production. Value-Added by industry sector is the major element in the calculation of Gross Regional Product.

In coming to these conclusions, I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Panel.

A handwritten signature in black ink, appearing to read 'Matthew Nichol'.

Statement authored by Matthew Nichol

Director and Principal Economist at REMPLAN

18 August 2022