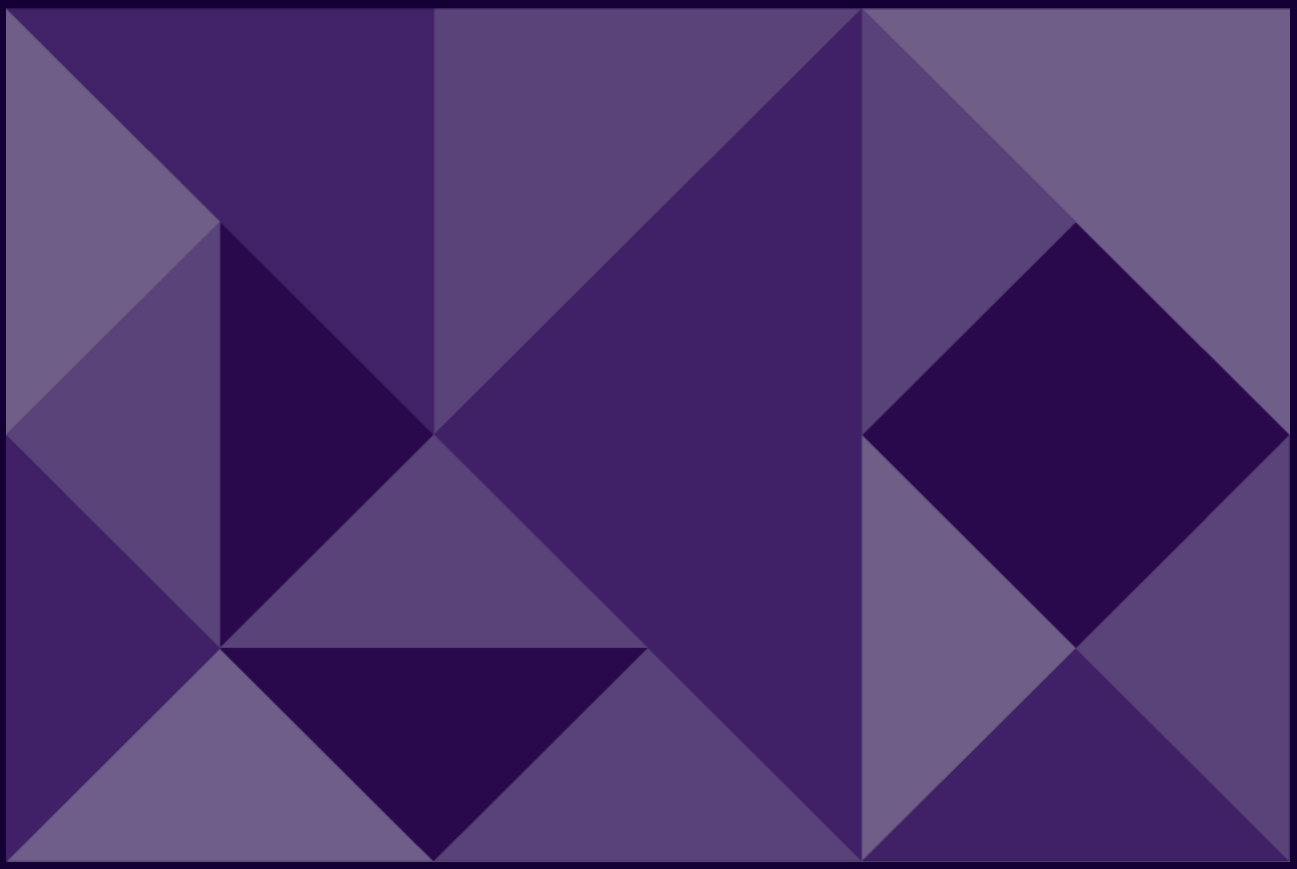
ACIL ALLEN

12 January 2024

Report to Australian Pork Limited

# 2022-23 Economic Contribution of the Australian Pork Industry

## FINAL REPORT



## About ACIL Allen

ACIL Allen is a leading independent economics, policy and strategy advisory firm, dedicated to helping clients solve complex issues.

Our purpose is to help clients make informed decisions about complex economic and public policy issues.

Our vision is to be Australia's most trusted economics, policy and strategy advisory firm. We are committed and passionate about providing rigorous independent advice that contributes to a better world.

Suggested citation for this report

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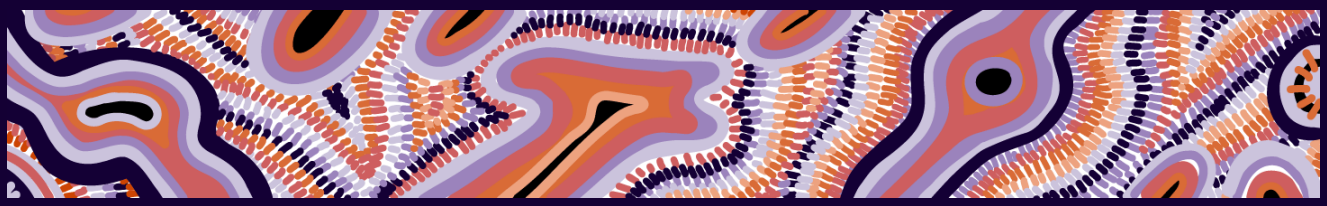
ACIL Allen acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the land and its waters. We pay our respects to Elders, past and present, and to the youth, for the future. We extend this to all Aboriginal and Torres Strait Islander peoples reading this report.



Goomup, by Jarni McGuire

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# Executive summary

The Australian pork industry is essential to the Australian agricultural, food manufacturing and distribution sectors. As a trade-exposed industry, competition with foreign producers is an ever-present threat to the local industry. Conversely, access to foreign markets and outcompeting imports are opportunities for growth in the local industry.

In this context, Australian Pork Limited (APL) commissioned ACIL Allen Consulting to assess the economic contribution of pig farming and pig meat processing in Australia for 2022-23.

## The overall footprint of the pork industry

**Table ES 1** and **Figure ES 1** present the estimated economic contribution of the Australian pork industry in 2022-23, including the contribution by three component sectors: pig farming, primary processing, and secondary processing and wholesaling. The estimates have been provided as lower and upper bounds. The lower-bound assessment of the economic contribution includes the direct contribution made by the industry to Australia's GDP, income, and employment, along with the contribution embodied in the industry's supply chain. The upper bound estimate of the economic contribution incorporates the lower-bound contribution as well as the contribution made by the workers throughout the pork industry's supply chain (including processing costs) spending their after-tax incomes on other Australian goods or services (such as hairdressers, restaurants, retail traders etc.). The lower and upper bound estimates are generated using Simple and Total multipliers, respectively.

The economic contribution elements of the three sub-sectors are reported on an additive basis. That is, the indirect value-added associated with primary processing does not include the value-added embodied in the pig farming sub-sector, nor does the indirect value-added embodied in the secondary processing sub-sector have that embodied in the primary processing sub-sector.

In 2022-23, the activities of the Australian pork industry as a whole resulted in:

- a *lower bound* economic contribution of $3,848.9 million to Australian GDP, comprising:
  - $1,477.4 million from the direct and indirect contributions of pig farming
  - $675.8 million from the direct and indirect contributions of primary processing
  - $1,695.6 million from the direct and indirect contributions of secondary processing and wholesaling
  - as a whole, the Australian pork industry contributed a minimum of 0.150 per cent to the Australian GDP in 2022-23
- an *upper bound* economic contribution of $6,031.1 million to Australian GDP, comprising:
  - $2,244.9 million from the direct and indirect contributions of pig farming
  - $1,091.9 million from the direct and indirect contributions of primary processing
  - $2,694.3 million from the direct and indirect contributions of secondary processing and wholesaling

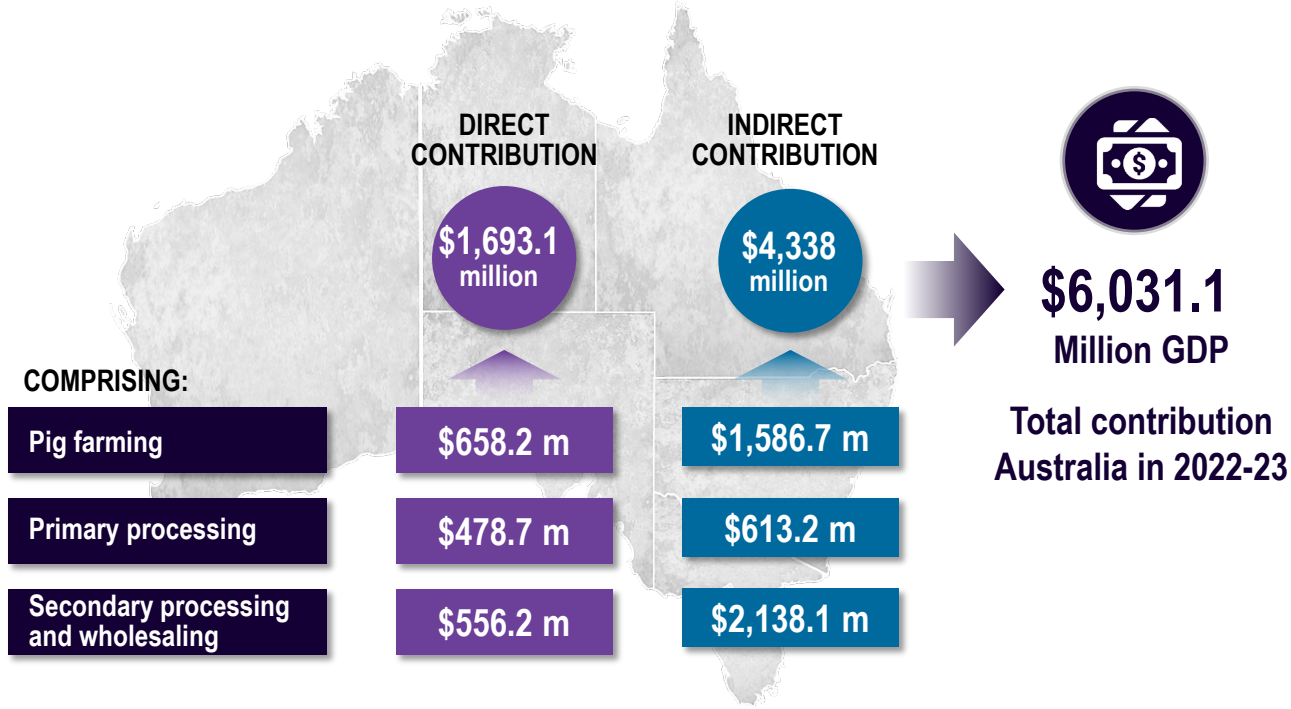
– Overall, the Australian pork industry contributed a maximum of 0.235 per cent to Australian GDP in 2022-23.

**Table ES 1** Total contribution of the pork industry to the Australian economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE | % employ |
| **Lower bound** | | | | | | |
| Pig farming | 1,477.4 | 0.058% | 722.9 | 0.061% | 8,029 | 0.068% |
| Primary processing | 675.8 | 0.026% | 416.2 | 0.035% | 4,358 | 0.037% |
| Secondary processing and wholesaling | 1,695.6 | 0.066% | 922.4 | 0.078% | 10,064 | 0.086% |
| **TOTAL** | **3,848.9** | **0.150%** | **2061.4** | **0.175%** | **22,451** | **0.191%** |
| **Upper bound** | | | | | | |
| Pig farming | 2,244.9 | 0.088% | 1076.4 | 0.091% | 12,314 | 0.105% |
| Primary processing | 1,091.9 | 0.043% | 607.8 | 0.052% | 6,681 | 0.057% |
| Secondary processing and wholesaling | 2,694.3 | 0.105% | 1382.3 | 0.117% | 15,639 | 0.133% |
| **TOTAL** | **6,031.1** | **0.235%** | **3066.4** | **0.260%** | **34,634** | **0.294%** |

*Source: ACIL Allen estimates.*

**Figure ES 1** Overall value-added contribution of the pork industry to Australia, 2022-23

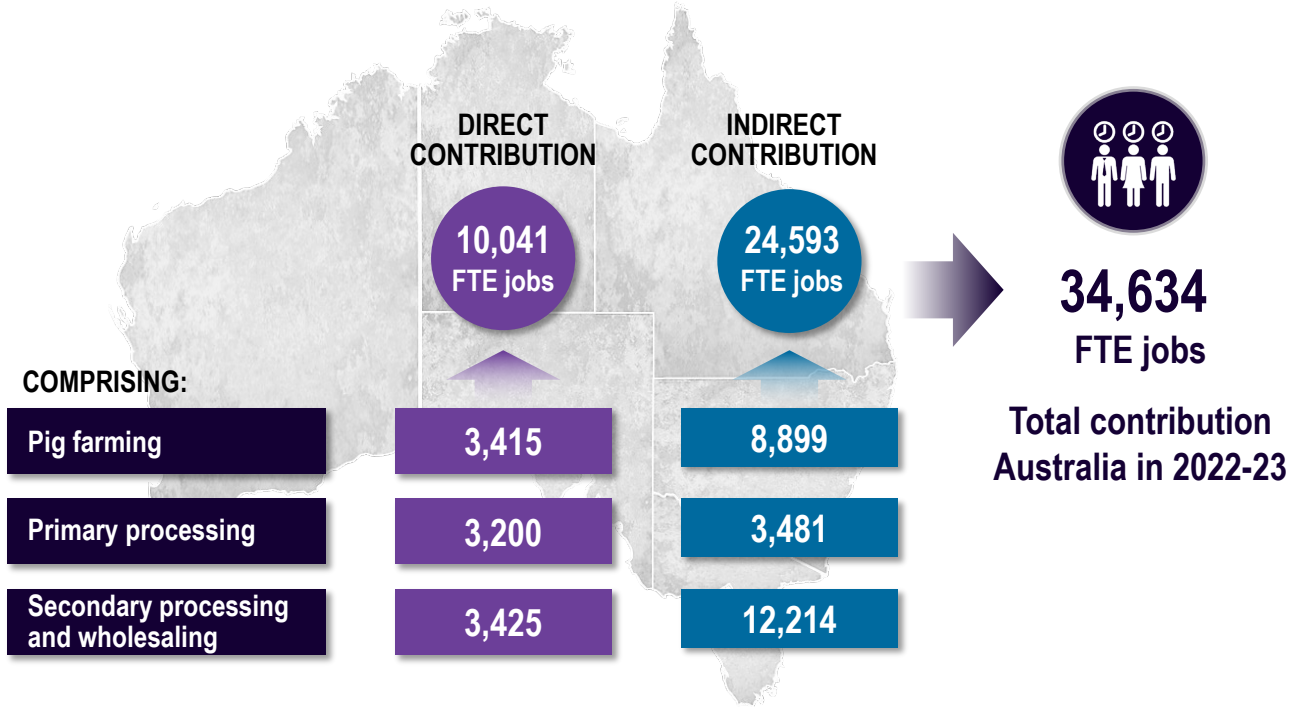



*Source: ACIL Allen estimates*

The employment contribution of the pork industry in Australia is estimated for 2022-23 and provided in **Table ES 1** and summarised in **Figure ES 2**. In understanding the estimated number of jobs the

industry supports, they are presented as full-time-equivalent (FTE) jobs. In reality, they represent the summation of many shares of individual jobs or include part-time and casual jobs.

**Figure ES 2** Overall employment contribution of the pork industry to Australia, 2022-23



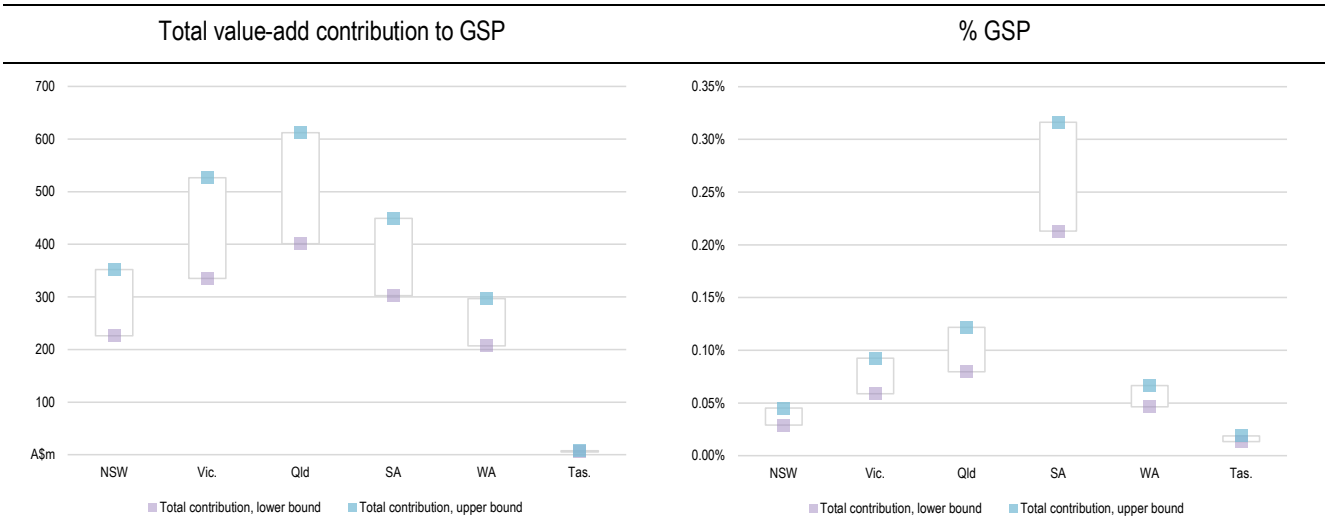

*Source: ACIL Allen estimates*

## The footprint of the pig farming sector by state

**Figure ES 3** provide the contribution of the pig farming sector to GSP in each state in 2022-23. These relativities illustrate the importance of the pig farming sector to the overall state economies in terms of magnitude and significance.

Pig farming makes the most considerable contribution, relative to GSP, in the South Australian economy, contributing between 0.21 per cent and 0.32 per cent of GSP.

**Figure ES 3** Total value-added contribution of pig farming sector by state, 2022-23




*Source: ACIL Allen estimates*

## Import replacement

**Table ES 2** below presents the estimated economic contribution to Australia that the Australian pork industry would have made without imported fresh or frozen pig meat. In summary, if domestic producers were to supply the entire domestic demand, the contribution of the Australian pork industry to Australian GDP, including flow-on effects, would increase by approximately 20 per cent, with the upper bound estimate rising from $6.0 billion to $7.2 billion. Similarly, the upper bound estimate of total FTE employment throughout the pork industry supply chain, including flow-on effects, would increase by 20 per cent from 34,634 to 41,537.

**Table ES 2** A comparison of the pork industry with and without imports, 2022-23

| | CURRENT WITH IMPORTS | | | WITHOUT IMPORTS (NO PRICE RESPONSE) | | |
|---|---|---|---|---|---|---|
| | Value added (GRP) | Household income | Employment | Value added (GDP) | Household income | Employment |
| | $ million | $ million | FTE jobs | $ million | $ million | FTE jobs |
| ***Lower bound*** | | | | | | |
| Pig producers | 1,477.4 | 722.9 | 8,029 | 2,006.7 | 981.9 | 10,905 |
| Primary processing | 675.8 | 416.2 | 4,358 | 928.0 | 571.4 | 5,984 |
| Secondary processing and wholesaling | 1,695.6 | 922.4 | 10,064 | 1,695.6 | 922.4 | 10,064 |
| **Total pork industry** | **3,848.9** | **2,061.4** | **22,451** | **4,630.3** | **2,475.7** | **26,953** |
| ***Upper bound*** | | | | | | |
| Pig producers | 2,244.9 | 1,076.4 | 12,314 | 3,049.1 | 1461.9 | 16,724 |
| Primary processing | 1,091.9 | 607.8 | 6,681 | 1,499.4 | 834.6 | 9,174 |
| Secondary processing and wholesaling | 2,694.3 | 1,382.3 | 15,639 | 2,694.3 | 1382.3 | 15,639 |
| **Total pork industry** | **6,031.1** | **3,066.4** | **34,634** | **7,242.7** | **3,678.8** | **41,537** |

*Source: ACIL Allen estimates.*

# 1 Introduction

The Australian pork industry is an important livestock industry to the Australian agricultural, food manufacturing and distribution sectors. As a trade-exposed industry, competition with foreign producers is an ever-present threat to the local industry. Conversely, access to foreign markets and outcompeting imports are opportunities for growth in the local industry.

In this context, Australian Pork Limited (APL) commissioned ACIL Allen to assess the economic contribution of pig farming and pig meat processing in Australia for 2022-23. This report updates previous economic impact reports undertaken for 2021-22, 2015-16, 2010-11, 2007-08 and 2001-02.

Previous reports have focussed on the Australian industry and its impact on the national and state economies. The 2021-22, 2015-16 and the 2010-11 reports considered the economic opportunities lost due to imports supplanting local production. The broader flow-on economic effects for a community from piggery development, production, processing and wholesaling, including potential 'multiplier effects', are estimated to provide the industry's economic footprint at the state and national levels.

The report examines the following:

— Trends in pig farming in Australia (see **Chapter 2** of the Report). This chapter updates all the statistics and figures in the 2021-22 report.
— **Chapter 3** provides ACIL Allen's approach to economic footprint analysis. The definitions of direct and indirect contributions and lower bound and upper bound estimates are provided in this chapter. This chapter also includes data sources for pig farming, primary and secondary processing, and wholesaling.
— **Chapter 4** reports the economic contribution of the pig farming sector, where pigs are grown commercially, and the overall contribution to the Australian economy. The economic footprint analysis includes contributions to GDP/GSP, household income, and employment.
— **Chapter 5** provides the economic contribution of the primary processing sector at the national level. Due to the small number of processors in each state and the confidentiality of data sources, estimates for processing are provided at the national level only.
— **Chapter 6** provides the economic contribution of the secondary processing and wholesaling sector at the national level.
— The overall economic footprint, which includes production, primary processing, and secondary processing and wholesaling, is provided in **Chapter 7**.
— An analysis of the importance of the pork industry to local, regional communities is provided in **Chapter 8**.
— The economic footprint analysis of replacing pork imports is provided in **Chapter 9**.

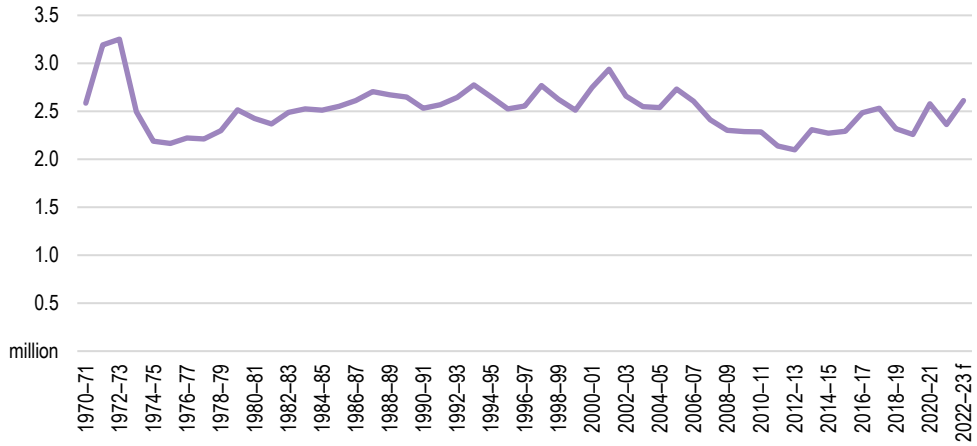
# Trends in pig farming in Australia 2

This chapter provides production statistics at the state and national levels.

## 2.1 Number of pigs and sows

At the end of June 2023, Australia reported around 2.6 million pigs. Industry rationalisation and a period of high feed costs saw the herd shrink to record lows by 2012-13 of just under 2.1 million head, with a gradual rebuild in recent years (**Figure 2.1**).

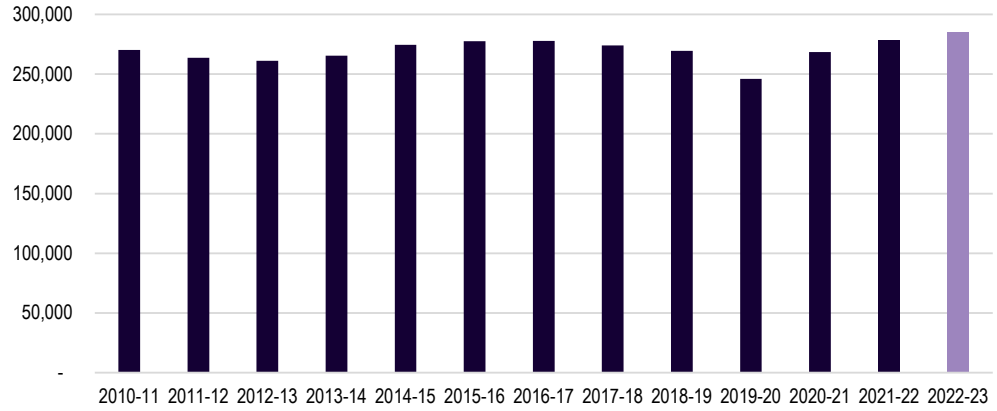
**Figure 2.1** Number of pigs, 1970-71 to 2022-23




*Source: ABARES*

At the end of June 2023, there were around 285,500 breeding sows in Australia (**Figure 2.2**).

**Figure 2.2** Number of breeding sows in Australia, 2010-11 to 2022-23




*Source: APL (2021-22, 2022-23), ABS Cat No: 7121.0 Agricultural Commodities, Australia and ABARES*

## 2.2 Number of pigs slaughtered

**Figure 2.3** presents the number of pigs slaughtered by the state.

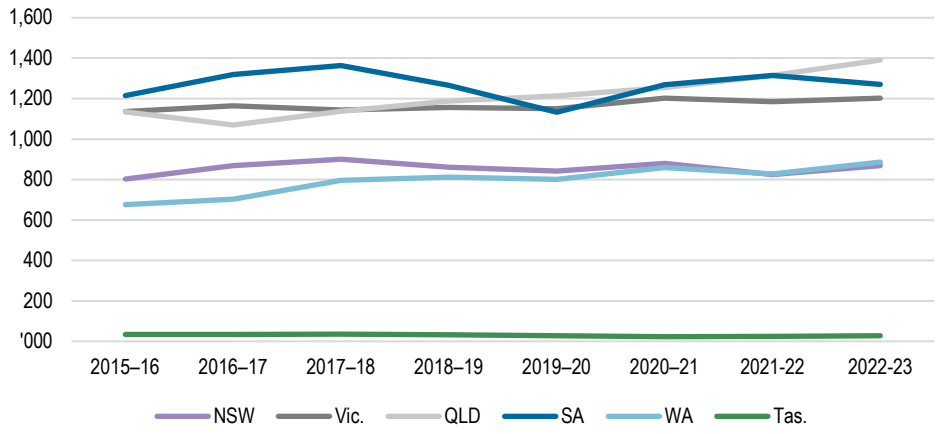
Between June 2016 and June 2023, the number of pigs slaughtered in Australia increased by 1.75 per cent a year, from 5.00 million pigs to 5.64 million.

The most significant increase in the number of pigs slaughtered was in Western Australia, with an average annual growth of nearly 3.9 per cent over the past seven years, from 676,806 pigs in 2015-16 to 885,600 pigs in 2022-23.

The number of pigs slaughtered in Queensland increased by an average of 2.94 per cent a year over the past seven years, while the increase in New South Wales, Victoria, and South Australia over the same period was 1.13, 0.80 and 0.65 per cent a year, respectively.

Tasmania is the only state that reported a reduction in the number of pigs slaughtered over the last seven years. In 2015-16, Tasmania reported 34,300 pigs slaughtered, and this decreased to 27,500 by 2022-23

**Figure 2.3** Number of pigs slaughtered by state, 2015-16 to 2022-23

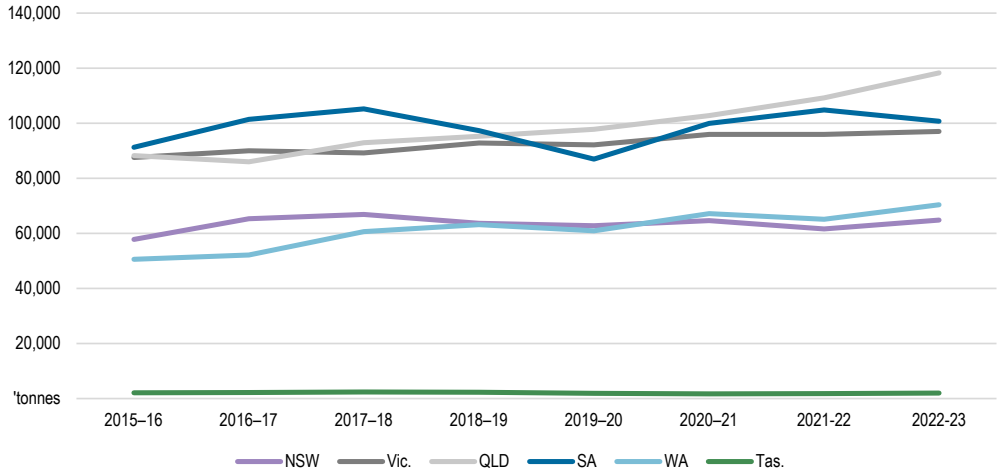



*Source: APL; ABS*

## 2.3 Pig production

**Figure 2.4** presents the historical tonnes of pigs produced by the state. In 2022-23, Queensland had the highest share of pig production (26 per cent) in Australia, followed by South Australia (22 per cent) and Victoria (21 per cent). New South Wales' share of Australia's production by pig farming declined to 14.3 per cent in 2022-23 from 15.3 per cent in 2015-16.

**Figure 2.4** Pig production by state, carcass weight (tonnes), 2015-16 to 2022-23

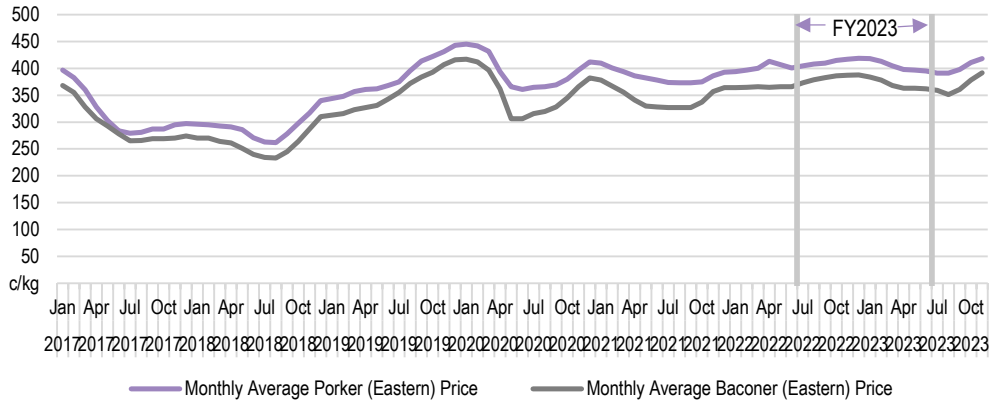



*Source: ACIL Allen estimates based on APL; ABS*

## 2.4 Baconer and porker prices

Baconer and porker prices have increased significantly over the last five years (as shown in **Figure 2.5**)

**Figure 2.5** Monthly average porker and baconer prices, January 2017 to November 2023




*Source: APL*

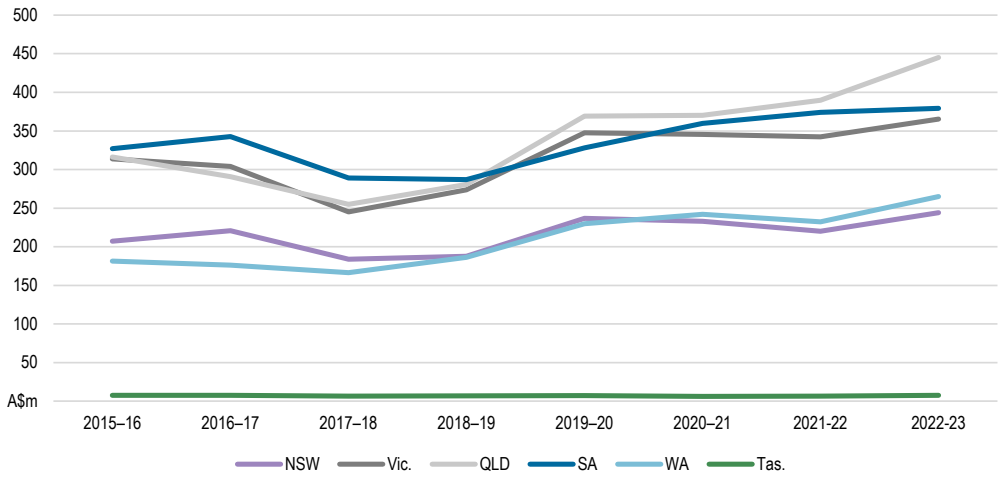
## 2.5 The gross value of pig farming

As a result of the increased number of pigs slaughtered and the increased prices in 2022-23, the gross value of pig farming has increased in Australia over the past seven years (**Figure 2.6**). In 2015-16, the gross value of Australian pig farming was $1,353 million, and this increased to $1,707 million by 2022-23, an increase of 26.1 per cent or an average annual growth of

3.4 per cent in nominal terms (current prices). Western Australia reported the highest average annual growth (5.6 per cent) between 2015-16 and 2022-23, followed by Queensland with an average annual increase of 5.0 per cent. In 2022-23:

- Queensland's share of Australia's gross value of pig farming was 26.1 per cent.
- South Australia's share of Australia's gross value of pig farming was 22.2 per cent.
- Victoria's share of Australia's gross value of pig farming was 21.4 per cent.
- Western Australia's share of Australia's gross value of pig farming was 15.5 per cent.
- New South Wales's share of Australia's gross value of pig farming was 14.3 per cent.
- Tasmania's share of Australia's gross value of pig farming was 0.4 per cent.

**Figure 2.6** The gross value of pig farming by state, 2015-16 to 2022-23




*Source: ACIL Allen estimates based on APL data*

## 2.6 Production and usage of pig meat and pig meat products

**Table 2.1** provides the production and consumption of pig meat products in Australia.

**Table 2.1** Production and usage of pig meat products in Australia, 2015-16 to 2022-23

| | Units | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
|---|---|---|---|---|---|---|---|---|
| Production | '000 tonnes, cw | 397.1 | 417.4 | 414.5 | 402.7 | 432.2 | 438.6 | 453.4 |
| Imports | '000 tonnes, cwe | 326.9 | 322.5 | 403.1 | 299.5 | 252.2 | 330.9 | 296.1 |
| Exports | '000 tonnes, cwe | 37.6 | 43.6 | 39.3 | 34.5 | 39.5 | 48.7 | 52.2 |
| Net domestic consumption | '000 tonnes, cwe | 686.4 | 696.3 | 778.3 | 667.7 | 644.9 | 720.9 | 697.4 |
| Consumption per person | kg/person | 27.8 | 27.5 | 28.7 | 27.8 | 26.0 | 28.7 | 26.2 |
| Import share | % | 48% | 46% | 52% | 45% | 39% | 46% | 42% |

Note: cw is carcass weight. Conversion factors were used to estimate the carcass weight equivalent (CWE). APL has suggested a conversion factor of 0.56 for imports and 0.8 for exports to convert shipped-weight imports and exports into carcass-weight equivalents.

*Source: ACIL Allen based on ABS Cat No: 7215.0, and ABARES*

The Australian production of pig meat has increased over the past five years. Historically, one key characteristic of the usage of pig meat products in Australia is an increasing share of imports in the net Australian domestic consumption, which increased from 48 per cent in 2016-17 to 52 per cent in 2019-20 but has since declined to approximately 42 per cent in 2022-23. After allowing for net trade of pig meat and processed pork products, apparent consumption of pig meat domestically has decreased from 27.8 kg per person in 2016-17 to 26.2 kg per person in 2022-23, representing

a decrease in overall consumption of 1.6 kg per person. While some of the imported pig meat products (including cured meat and smallgoods) may not directly compete with domestically produced pig meat products, most imports compete with locally grown pigs, particularly in the processed pork segment (i.e. hams and bacon).

# 3 Measuring economic contribution

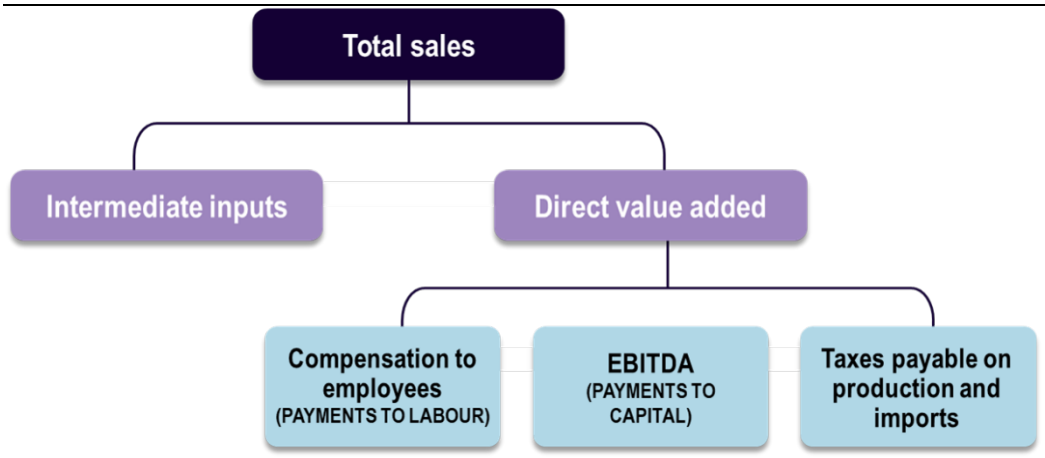
As per the 2015-16 report methodology, ACIL Allen used input-output multiplier analysis to estimate the Australian pork industry's economic contribution. The economic footprint analysis describes the *direct* contributions the Australian pork industry makes to the economies of each state and Australia as a whole, plus the pork industry's indirect contribution to each economy is their demand for intermediate inputs from other sectors — feed, packaging materials, electricity, machinery, freight etc. — as well as through demand stimulated by the wages and salaries of employees.

As per the previous analysis, this report also provides the economic contribution of the pork industry to gross value added, household income and employment.

## 3.1 Direct economic contribution

The standard measure of economic contribution is the extent to which the pig industry supply chain increases the value of goods and services generated by the economy– in other words, the extent to which it increases economic activity as measured by gross domestic product (GDP). An economy has a range of factors of production (including labour and capital stock) and access to various intermediate inputs. By appropriately using the factors of production, industries add value to intermediate inputs by converting them into a range of goods and services more suited for consumers or other sectors. An industry or business' contribution to GDP measures the total value added generated. It is defined as the income an industry or business generates, less the cost of the inputs it uses to create that income, plus certain taxes paid. The industry's direct contribution is payments to production factors plus the taxes (less subsidies) payable on production and imports (**Figure 3.1**).

**Figure 3.1** Calculation of direct value-added




*Source: Acil Allen*

Box 3.1 summarises the definitions used by the ABS as part of the System of National Accounts 1993 (SNA93).

**Box 3.1** ABS definitions of value-added

An industry's direct contribution to Gross Domestic Product or Gross State Product is well defined under the standard national accounting framework used by the Australian Bureau of Statistics (ABS), the System of National Accounts 1993 (SNA93). SNA93 recognises three different measures of value added:

1. Value added at Purchasers' Prices. This is defined as output valued at purchasers' prices, less intermediate consumption valued at producer prices. This measure is equivalent to the traditional estimate of value added at market prices.
2. Value added at Basic Prices. In this measure, the output is valued at basic prices, while intermediate consumption is valued at producer prices. In the case of production, this measure excludes excise as they are viewed as production taxes levied on output.
3. Value added at factor Cost. This measure excludes all production taxes net of subsidies. In other words, it excludes all production taxes – such as payroll taxes, fringe benefit taxes etc – and not just those that are levied on output.

For example, when presenting an industry view of GDP, the ABS uses value added at basic prices and adds an aggregate estimate of net taxes on products in question to give a full measure of GDP at purchasers' prices (ABS 1999).

*Source: ABS*

## 3.2 Indirect economic contribution

Indirect effects are a broader notion of the economic contribution, including the supply side. For example, when an employee of pig farming buys a restaurant meal, indirect effects are generated for the businesses supplying the produce, the transporter who made deliveries to the restaurant, the electricity company and other firms that provided the inputs required to make the meal. To fully measure the indirect effects, accounts should also be taken of income changes which may feed through to further changes in domestic demand.

The intermediate inputs used by the pork industry can be sourced either from within the Australian economy or from foreign economies. If purchased from within the Australian economy, then the portion of value added embodied in the intermediate input is indirectly associated with the activity of the purchaser. Calculating the indirect contribution becomes complicated as one considers the value-added embodied in the intermediate inputs of the intermediate input. For example, to raise pigs, consider the feed grains, fertiliser used in farming, the feedstock used in fertiliser manufacturing, and so on.

In a global context, the value-added chain is measured by the value of the final goods and services consumed. In a national context, input-output tables and the associated 'input-output multipliers' can be used to estimate indirect economic contributions. Input-output multipliers are summary measures generated from input-output tables that can be used for predicting the total impact on all industries in the economy of changes in demand for the output of any one sector. The tables and multipliers can also be used to measure the relative importance of the production chain linkages to different parts of the economy.

It should be noted that some of the assumptions underpinning input-output multipliers can impede credible analysis. Understanding these assumptions is necessary to prevent the inappropriate application of input-output multipliers – for example, in situations where economic constraints are present or when the profile of a business or project differs substantially from the industry average. We do not consider that these conditions apply to this analysis and that using input-output multipliers to estimate the economic footprint of the pork sector is appropriate. Further information

on input-output tables and the calculation of multipliers can be found in ABS Catalogue number 5246.0.

### 3.2.1 Lower and upper bounds

This report provides estimates of the lower and upper bounds of the indirect economic contribution of the pork sector's activities.

The lower bound estimate, derived from simple multipliers, captures only the value added and employment associated with the supply chain of each purchase stream (see Appendix A for details). Consequently, they provide a conservative estimate – or lower level bound – of the indirect economic contribution of intermediate inputs. The difference between these estimates and the direct economic contribution is the production-induced contribution. When appropriately calculated, the embodied contribution of alternative production chains is additive and should sum to the national accounts' estimates of gross state product and gross domestic product.

The upper bound estimate of the contribution of the pork sector, derived from total multipliers, captures all of the effects of inter-industry interactions and the impacts of the purchasing decisions made by workers employed throughout the pork sector's supply chain. This secondary effect is referred to as the consumption-induced effect. It provides a better estimate of the total amount of economic activity or jobs potentially affected by changes to the pork sector.

### 3.2.2 Additivity

Unless otherwise stated, all economic contribution elements of the three sub-sectors are additive. The indirect value-added associated with primary processing does not include the value-added embodied in the pig farming sub-sector. Similarly, the indirect value-added represented in the secondary processing sub-sector is incorporated in the primary processing sub-sector.

## 3.3 Data sources

This report used secondary data sources. **Table 3.1** outlines some data sources used in this report.

**Table 3.1** Key data sources

| Pork supply chain | Data sources | Details and comments |
|---|---|---|
| Pig farming by state | APL, ABS, IBISWorld 2022a | The number of sows, growers, weaners, breeders, finishers, and porkers. Tonnes of production, porker and baconer prices. 2022-23 annual data is generated from monthly data. Figure 2.4 provides pig farming data. Based on this data, the gross value of pig farming in Australia in 2022-23 was **$1,705.6 million**. State production details are:<br>NSW $244.1 million<br>Victoria $365.4 million<br>Queensland $445.3 million<br>South Australia $379.2 million<br>Western Australia $265.1 million<br>Tasmania $7.6 million<br>ABS publishes data on gross value agricultural commodities produced, preliminary for year ending 30 June (Cat No: 7501.0). For confidentiality reasons, the ABS has not released the data for Western Australia and Tasmania.<br>For this study, ACIL Allen has used estimates based on the APL data as it is more comprehensive than the two other data sources. |
| Primary processing | IBISWorld 2023, ABS | Detailed total revenue data for the primary processors was unavailable from official published data sources. The APL doesn't compile data related to processors. To obtain the size of the primary processing sector, ACIL Allen has relied on IBISWorld Report. IBISWorld report has provided that around 11.5 per cent of the meat processing sector in Australia constitutes pig meat processing. This share is applied to obtain the revenue of the primary processing sector in Australia (adjusted for exports). |

| Pork supply chain | Data sources | Details and comments |
|---|---|---|
| Secondary processing and wholesaling | IBISWorld 2022b, ABS | Detailed total revenue data for the secondary processors was unavailable from official published data sources. The APL doesn't compile data related to secondary processors. ACIL Allen has relied on IBISWorld Report. IBISWorld Report on Cured Meat and Smallgoods Manufacturing has provided the following shares associated with the secondary processing sector in Australia:<br>Bacon 19.9 per cent<br>Ham 24.7 per cent<br>Salami and sausages 25.6 per cent (50 per cent of this is assumed pork related)<br>Other products 14.0 per cent (50 per cent of this is assumed pork related)<br>Sliced poultry 15.8 per cent<br>Based on the above shares, about 64.4 per cent of Cured Meat and Smallgoods Manufacturing sector is related secondary processing of pig meat. |

*Source: Various*

## 3.4 Scope of the pork industry

The following three major sub-sectors of the pork industry are covered in this study to estimate the overall economic contribution of the pork industry:

- Pig farming — enterprises primarily engaged in pig farming and pig raising.
- Primary processing — enterprises primarily engaged in slaughtering and boning of pigs. Applies only to domestically grown pigs and generates cuts and carcasses for secondary processing and direct sale.
- Secondary processing and wholesaling — additional value-adding through activities such as cooking, curing, brining, smoking, fermenting, or slicing, creating a range of products, including hams, bacon, sausages and other smallgoods. Secondary processing also includes the packaging of products. Secondary processing can utilise domestically produced pig meat, imported pig meat or a combination of the two. Wholesaling enterprises mainly engaged in the purchase and selling, the commission-based buying, and the commission-based selling of goods, without significant transformation, to businesses.

# 4 Pig farming sector

This chapter estimates the pig farming sector's direct and indirect contributions to the Australian and state economies. The direct contribution of an activity in terms of value added is the initial impact of the pig farming activity on the economy. However, purchasing intermediate inputs or spending on incomes made from pig farming will lead to further economic impacts, estimated as the indirect contribution (described in **Chapter 3)**.

In addition to the direct value added by pig farming through its employment, profits, and taxes, there is an indirect channel through which the pig farming sector contributes to the Australian and state economies. That is, purchases of intermediate inputs by the pig farming sector. To produce pigs, pig producers purchase goods and services from various regional businesses. This effect is quantified by supply chain information embodied in input-output tables of the Australian and state economies.

As noted in **Chapter 3**, the indirect economic contribution can be measured using the relevant multipliers. Based on information from the ABS, ACIL Allen has developed (and regularly updates) detailed input-output tables for Australia and each State and Territory (along with various regional areas, when necessary). From these tables, ACIL Allen has calculated a range of multipliers to facilitate economic footprint analysis of the Australian pork industry in Australia.

## 4.1 The direct economic contribution of pig farming

### 4.1.1 Australia

The total estimated revenue of the Australian pig farming sector in 2022-23 was $1,706.6 million. The direct economic contribution (value-add) embodied in the revenue is estimated at $658.2 million, mainly comprising employee wages and mixed farm income. The industry is thus a low value-adding industry with a value-add to revenue ratio of 0.39.

In 2022-23, the Australian Gross Domestic Product (GDP) was $2,561 billion, implying that the direct economic contribution of the pig farming sector accounted for 0.026 per cent of Australia's 2022-23 GDP.

The direct income contribution (household income) was $340.4 million. In 2022-23, the Australian Compensation of Employees (COE)[1] was $1,177 billion, implying that the direct economic

[1] Total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the employee during the accounting period. It is further classified into two sub-components: wages and salaries; and employers' social contributions. Compensation of employees is not payable in respect of unpaid work undertaken voluntarily, including the work done by members of a household within an unincorporated enterprise owned by the same household. Compensation of employees excludes any taxes payable by the employer on the wage and salary bill (e.g. payroll tax).

contribution of the pig farming sector accounted for 0.029 per cent of Australia's household labour income.

The direct employment from pig farming was at 3,415 full-time equivalents (FTE) persons in 2022-23. Total FTE employment in the Australian economy was 11.76 million, implying that the direct employment contribution of the pig farming sector accounted for 0.029 per cent of Australia's total employment.

### 4.1.2 New South Wales

The estimated revenue of the New South Wales pig farming sector in 2022-23 was $244 million. From this revenue, the direct:

- economic contribution (value-added) is estimated to have been $94.1 million (0.012 per cent of NSW's 2022-23 GSP)
- income contribution (household income) was $48.7 million (0.013 per cent of NSW's household income)
- employment of 559 FTE persons (0.015 per cent of NSW's total employment).

### 4.1.3 Victoria

The estimated revenue of the Victorian pig farming sector in 2022-23 was $365 million. From this revenue, the direct:

- economic contribution (value-added) is estimated to have been $141 million (0.025 per cent of Victoria's 2022-23 GSP)
- income contribution (household income) was $72.9 million (0.025 per cent of Victoria's household income)
- employment of 774 FTE persons (0.026 per cent of Victoria's total employment).

### 4.1.4 Queensland

The estimated revenue of the Queensland pig farming sector in 2022-23 was $445 million. From this revenue, the direct:

- economic contribution (value-added) is estimated to have been $172 million (0.034 per cent of Queensland's 2022-23 GSP)
- income contribution (household income) was $88.8 million (0.039 per cent of Queensland's household income)
- employment of 926 FTE persons (0.039 per cent of Queensland's total employment).

### 4.1.5 South Australia

The estimated revenue of the South Australian pig farming sector in 2022-23 was $365 million. From this revenue, the direct:

- economic contribution (value-added) is estimated to have been $146 million (0.103 per cent of South Australia's 2022-23 GSP)
- income contribution (household income) was $75.6 million (0.109 per cent of South Australia's household income)
- employment of 709 FTE persons (0.091 per cent of South Australia's total employment).

### 4.1.6 Western Australia

The estimated revenue of the Western Australian pig farming sector in 2022-23 was $266 million. From this revenue, the direct:

— economic contribution (value-added) is estimated to have been $102 million (0.023 per cent of Western Australia's 2022-23 GSP)

— income contribution (household income) was $52.9 million (0.036 per cent of Western Australia's household income)

— employment of 401 FTE persons (0.031 per cent of Western Australia's total employment).

### 4.1.7 Tasmania

The estimated revenue of the Tasmanian pig farming sector in 2022-23 was $8 million. From this revenue, the direct:

— economic contribution (value-added) is estimated to have been $2.9 million (0.007 per cent of Tasmania's 2022-23 GSP)

— income contribution (household income) was $1.5 million (0.007 per cent of Tasmania's household income)

— employment of 47 FTE persons (0.020 per cent of Tasmania's total employment).

### 4.1.8 Summary

**Figure 4.1** summarises of direct value-added and employment (FTE) contribution of pig farming in Australia.

**Figure 4.1** Direct contribution of pig farming by the state, 2022-23


*Source: ACIL Allen estimates*

## 4.2 The indirect economic contribution of pig farming

### 4.2.1 Australia

Estimating the total Australian value-added and employment embodied in the Australian-produced inputs and services demanded by the pig farming sector is possible by allocating Australian intermediate inputs to their corresponding input-output industries and applying the appropriate multipliers for the Australian value-added, household income and employment. Australian pig farmers spent an estimated $1.05 billion on goods and services raising or fattening pigs in 2022-23. Of this, an estimated $947 million were domestically produced goods and services, comprising:

— $529 million on feed grains and other feeds

— $31 million on utilities, including electricity, gas, water and wastewater treatment.

— $67 million on transport
— $56 million on wholesale and retail trade
— $263 million on other inputs and services

**Table 4.1** provides the estimated indirect impacts at the national level with lower and upper bounds. It is estimated that:

— The domestic spend by pig producers indirectly contributed between $819 million and $1,587 million to the Australian economy, which is between 0.032 and 0.062 per cent of GDP in 2022-23. This indirect contribution is in addition to the direct contribution reported in **Section 4.1.1**.
— Between $382 million and $736 million in household income was indirectly supported by pig farming activities in the Australian economy.
— Between 4,614 and 8,899 FTE jobs were indirectly supported by pig farming activities in the Australian economy.

**Table 4.1** Indirect contribution of the pig farming sector to the Australian economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 819.2 | 0.032% | 382.5 | 0.032% | 4,614 | 0.039% |
| Upper bound | 1,586.7 | 0.062% | 736.0 | 0.063% | 8,899 | 0.076% |

*Source: ACIL Allen*

**Table 4.2** provides a summary of the sectors benefiting from flow-on impacts due to pig farming in Australia. The flow-on effects are those in addition to the direct contribution of pig farming. They reflect the production and consumption-induced influences of businesses and persons receiving income from pig farming with related economic activities. The flow-on effects by input-output industry group are estimated and mapped to ANZSIC division industries.

**Table 4.2** Total upper bound flow-on effects by industry in Australia, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 137.4 | 26.6 | 788 |
| Mining | 28.8 | 5.4 | 48 |
| Manufacturing | 243.5 | 116.8 | 1,455 |
| Electricity, gas, water and waste services | 41.4 | 16.4 | 153 |
| Construction | 67.7 | 33.6 | 487 |
| Wholesale trade | 97.5 | 55.0 | 394 |
| Retail trade | 89.2 | 52.9 | 930 |
| Accommodation and food services | 42.0 | 26.3 | 498 |
| Transport, postal and warehousing | 95.7 | 50.9 | 678 |
| Information media and telecommunications | 36.3 | 12.9 | 123 |
| Financial and insurance services | 161.8 | 56.2 | 480 |
| Rental hiring and real estate services | 195.5 | 24.1 | 210 |
| Professional, scientific and technical services | 131.8 | 90.2 | 879 |
| Administrative and support services | 60.1 | 48.7 | 298 |
| Public administration and safety | 12.3 | 10.8 | 103 |
| Education and training | 39.8 | 33.7 | 356 |
| Health care and social assistance | 45.3 | 37.2 | 396 |
| Arts and recreation services | 11.4 | 5.9 | 103 |
| Other services | 49.3 | 32.5 | 521 |
| **Total** | **1,586.7** | **736.0** | **8,899** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimated based on various sources.*

### 4.2.2 New South Wales

New South Wales pig farmers spent $150 million on goods and services raising or fattening pigs in 2022-23. Of this, an estimated $127 million was on domestically produced goods and services, comprising:

- $70.0 million on feed grains and other feeds
- $3.7 million on utilities, including electricity, gas, water and wastewater treatment.
- $8.9 million on transport
- $8.0 million on wholesale and retail trade
- $36.3 million on other inputs and services

**Table 4.3** summarises the estimated indirect impacts at the NSW state level with lower and upper bounds.

The domestic spend by pig producers in NSW contributed between $131.8 million and $585 million to the NSW economy, which is between 0.017 and 0.033 per cent of GSP in 2022-23. This indirect contribution is in addition to the direct contribution presented in Section 4.1.

Between $61.7 million and $118.9 million in household income was indirectly generated by pig farming activities in the NSW economy, and indirectly supported between 711 and 1,365 FTE jobs.

**Table 4.3** Indirect contribution of the pig farming sector to the NSW economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 131.8 | 0.017% | 61.7 | 0.016% | 711 | 0.019% |
| Upper bound | 258.0 | 0.033% | 118.9 | 0.031% | 1,365 | 0.037% |

*Source: ACIL Allen*

**Table 4.4** provides sectors benefiting from flow-on impacts due to pig farming in NSW.

**Table 4.4** Total upper bound flow-on effects by industry in NSW, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 17.7 | 3.1 | 115 |
| Mining | 1.7 | 0.5 | 4 |
| Manufacturing | 38.8 | 18.4 | 226 |
| Electricity, gas, water and waste services | 5.4 | 2.5 | 24 |
| Construction | 10.5 | 4.8 | 73 |
| Wholesale trade | 16.8 | 9.4 | 56 |
| Retail trade | 14.1 | 7.8 | 141 |
| Accommodation and food services | 6.6 | 4.4 | 72 |
| Transport, postal and warehousing | 14.8 | 7.0 | 97 |
| Information media and telecommunications | 7.7 | 3.2 | 23 |
| Financial and insurance services | 31.1 | 12.3 | 90 |
| Rental hiring and real estate services | 34.1 | 3.6 | 27 |
| Professional, scientific and technical services | 24.5 | 16.9 | 151 |
| Administrative and support services | 10.8 | 8.1 | 43 |
| Public administration and safety | 1.9 | 1.7 | 17 |
| Education and training | 6.2 | 5.3 | 56 |
| Health care and social assistance | 6.5 | 5.2 | 60 |
| Arts and recreation services | 1.7 | 0.9 | 16 |
| Other services | 7.3 | 5.0 | 79 |
| **Total** | **258.0** | **118.9** | **1,365** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimated based on various sources.*

### 4.2.3 Victoria

Victorian pig farmers spent $224 million on goods and services in producing pigs in 2022-23. Of this, an estimated $184 million was on domestically produced goods and services, comprising:

- $99.9 million on feed grains and other feeds
- $6.1 million on utilities, including electricity, gas, water, and wastewater treatment.
- $13.3 million on transport
- $12.0 million on wholesale and retail trade
- $52.8 million on other inputs and services

**Table 4.5** summarises the estimated indirect impacts at the Victoria state level with lower and upper bounds.

The domestic spend by pig producers contributed between $194.1 million and $385.7 million to the Victorian economy, which is between 0.034 and 0.068 per cent of GSP in 2022-23. This indirect contribution is in addition to the direct contribution presented in Section 4.1.

Between $93.2 million and $182.4 million in household income was indirectly generated by pig farming activities in the Victorian economy, and indirectly supported between 1,141 and 2,226 FTE jobs.

**Table 4.5** Indirect contribution of the pig farming sector to the Victorian economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 194.1 | 0.034% | 93.2 | 0.032% | 1,141 | 0.038% |
| Upper bound | 385.7 | 0.068% | 182.4 | 0.063% | 2,226 | 0.074% |

*Source: ACIL Allen*

**Table 4.6** provides sectors benefiting from flow-on impacts due to pig farming in Victoria.

**Table 4.6** Total upper bound flow-on effects by industry in Victoria, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 27.4 | 6.2 | 183 |
| Mining | 1.9 | 0.6 | 3 |
| Manufacturing | 60.1 | 28.4 | 395 |
| Electricity, gas, water and waste services | 9.7 | 3.6 | 36 |
| Construction | 15.6 | 6.5 | 113 |
| Wholesale trade | 25.7 | 15.3 | 99 |
| Retail trade | 21.4 | 12.4 | 231 |
| Accommodation and food services | 9.0 | 5.9 | 106 |
| Transport, postal and warehousing | 21.9 | 13.0 | 172 |
| Information media and telecommunications | 11.2 | 4.1 | 40 |
| Financial and insurance services | 47.1 | 16.3 | 147 |
| Rental hiring and real estate services | 44.6 | 5.2 | 47 |
| Professional, scientific and technical services | 37.0 | 24.9 | 249 |
| Administrative and support services | 15.9 | 12.8 | 64 |

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| Public administration and safety | 3.0 | 2.6 | 23 |
| Education and training | 9.8 | 8.2 | 94 |
| Health care and social assistance | 10.9 | 9.0 | 97 |
| Arts and recreation services | 3.2 | 1.5 | 27 |
| Other services | 10.8 | 7.1 | 112 |
| **Total** | **385.7** | **182.4** | **2,226** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimated based on various sources.*

### 4.2.4 Queensland

Queensland pig farmers spent $274 million on goods and services in producing pigs in 2022-23. Of this, an estimated $222 million was on domestically produced goods and services, comprising:

- $122.9 million on feed grains and other feeds
- $8.2 million on utilities, including electricity, gas, water, and wastewater treatment.
- $17.3 million on transport
- $11.9 million on wholesale and retail trade
- $61.9 million on other inputs and services

**Table 4.7** summarises the estimated indirect impacts at the Queensland state level with lower and upper bounds.

The domestic spend by pig producers contributed between $229.5 million and $440.7 million to the Queensland economy, which is between 0.046 and 0.088 per cent of GSP in 2022-23. This indirect contribution is in addition to the direct contribution presented in Section 4.1.

Between $109.9 million and $209.7 million in household income was indirectly generated by pig farming activities in the Queensland economy, and indirectly supported between 1,360 and 2,593 FTE jobs.

**Table 4.7** Indirect contribution of the pig farming sector to the Queensland economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 229.5 | 0.046% | 109.9 | 0.048% | 1,360 | 0.057% |
| **Upper bound** | 440.7 | 0.088% | 209.7 | 0.093% | 2,593 | 0.109% |

*Source: ACIL Allen*

**Table 4.8** provides sectors benefiting from flow-on impacts due to pig farming in Queensland.

**Table 4.8** Total upper bound flow-on effects by industry in Queensland, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 38.9 | 7.6 | 249 |
| Mining | 12.4 | 2.2 | 20 |
| Manufacturing | 73.1 | 35.5 | 455 |

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| Electricity, gas, water and waste services | 12.4 | 5.0 | 40 |
| Construction | 18.9 | 10.8 | 141 |
| Wholesale trade | 23.6 | 13.4 | 119 |
| Retail trade | 24.9 | 15.7 | 270 |
| Accommodation and food services | 12.9 | 8.5 | 151 |
| Transport, postal and warehousing | 28.5 | 14.7 | 193 |
| Information media and telecommunications | 7.3 | 2.4 | 30 |
| Financial and insurance services | 37.7 | 12.1 | 127 |
| Rental hiring and real estate services | 55.4 | 8.0 | 74 |
| Professional, scientific and technical services | 34.4 | 24.5 | 227 |
| Administrative and support services | 16.4 | 14.6 | 83 |
| Public administration and safety | 3.5 | 3.1 | 30 |
| Education and training | 10.8 | 9.3 | 94 |
| Health care and social assistance | 12.9 | 10.1 | 114 |
| Arts and recreation services | 3.5 | 1.8 | 29 |
| Other services | 13.5 | 9.3 | 143 |
| **Total** | **440.7** | **209.7** | **2,593** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimated based on various sources.*

### 4.2.5 South Australia

South Australian pig farmers spent $233 million on goods and services in producing pigs in 2022-23. Of this, an estimated $150 million was on domestically produced goods and services, comprising:

- $68.7 million on feed grains and other feeds
- $6.4 million on utilities, including electricity, gas, water and wastewater treatment.
- $14.2 million on transport
- $11.8 million on wholesale and retail trade
- $48.9 million on other inputs and services

**Table 4.9** summarises the estimated indirect impacts at the SA state level with lower and upper bounds. The domestic spend by pig producers contributed between $156.4 million and $303.0 million to the South Australian economy, which is between 0.110 and 0.213 per cent of GSP in 2022-23. This indirect contribution is in addition to the direct contribution presented in Section 4.1.

Between $69.0 million and $134.8 million in household income was indirectly generated by pig farming activities in the South Australian economy, and indirectly supported between 899 and 1,743 FTE jobs.

**Table 4.9** Indirect contribution of the pig farming sector to the SA economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 156.4 | 0.110% | 69.0 | 0.099% | 899 | 0.116% |

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| Upper bound | 303.0 | 0.213% | 134.8 | 0.194% | 1,743 | 0.225% |

*Source: ACIL Allen*

**Table 4.10** provides sectors benefiting from flow-on impacts due to pig farming in South Australia.

**Table 4.10** Total upper bound flow-on effects by industry in South Australia, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 32.0 | 5.6 | 155 |
| Mining | 5.6 | 1.3 | 12 |
| Manufacturing | 39.9 | 20.0 | 248 |
| Electricity, gas, water and waste services | 9.1 | 3.3 | 25 |
| Construction | 14.1 | 5.9 | 107 |
| Wholesale trade | 20.6 | 11.2 | 74 |
| Retail trade | 17.5 | 10.5 | 187 |
| Accommodation and food services | 8.2 | 4.4 | 103 |
| Transport, postal and warehousing | 17.7 | 9.4 | 137 |
| Information media and telecommunications | 6.9 | 2.3 | 20 |
| Financial and insurance services | 31.0 | 10.4 | 81 |
| Rental hiring and real estate services | 36.5 | 4.3 | 36 |
| Professional, scientific and technical services | 21.6 | 13.8 | 173 |
| Administrative and support services | 9.9 | 7.8 | 73 |
| Public administration and safety | 2.3 | 2.1 | 21 |
| Education and training | 8.0 | 6.7 | 68 |
| Health care and social assistance | 8.9 | 7.7 | 74 |
| Arts and recreation services | 1.7 | 0.8 | 17 |
| Other services | 10.5 | 6.7 | 122 |
| **Total** | **303.0** | **134.8** | **1,743** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimated based on various sources.*

### 4.2.6 Western Australia

Western Australian pig farmers spent $163 million on goods and services in producing pigs in 2022-23. Of this, an estimated $110 million was on domestically produced goods and services, comprising:

- $59.3 million on feed grains and other feeds
- $3.5 million on utilities, including electricity, gas, water, and wastewater treatment.
- $9.1 million on transport
- $6.7 million on wholesale and retail trade
- $31.1 million on other inputs and services

**Table 4.11** summarises the estimated indirect impacts at the WA state level with lower and upper bounds. The domestic spend by pig producers in Western Australia contributed between $104.9 million and $194.6 million to the Western Australian economy, which is between 0.024 and 0.044 per cent of GSP in 2022-23. This indirect contribution is in addition to the direct contribution presented in Section 4.1.

Between $47.7 million and $88.1 million in household income was indirectly generated by pig farming activities in the Western Australian economy, and indirectly supported between 486 and 943 FTE jobs.

**Table 4.11** Indirect contribution of the pig farming sector to the WA economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 104.9 | 0.024% | 47.7 | 0.033% | 486 | 0.037% |
| Upper bound | 194.6 | 0.044% | 88.1 | 0.060% | 943 | 0.072% |

*Source: ACIL Allen*

**Table 4.12** provides sectors benefiting from flow-on impacts due to pig farming in Western Australia.

**Table 4.12** Total upper bound flow-on effects by industry in Western Australia, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 20.7 | 3.9 | 82 |
| Mining | 7.1 | 0.9 | 10 |
| Manufacturing | 31.1 | 14.1 | 127 |
| Electricity, gas, water and waste services | 4.7 | 2.0 | 26 |
| Construction | 8.2 | 5.4 | 50 |
| Wholesale trade | 10.7 | 5.6 | 45 |
| Retail trade | 11.1 | 6.2 | 99 |
| Accommodation and food services | 5.1 | 3.1 | 63 |
| Transport, postal and warehousing | 12.5 | 6.6 | 77 |
| Information media and telecommunications | 3.1 | 0.9 | 9 |
| Financial and insurance services | 14.4 | 5.0 | 34 |
| Rental hiring and real estate services | 24.4 | 2.8 | 24 |
| Professional, scientific and technical services | 14.0 | 9.8 | 76 |
| Administrative and support services | 7.0 | 5.4 | 33 |
| Public administration and safety | 1.5 | 1.3 | 12 |
| Education and training | 4.9 | 4.1 | 43 |
| Health care and social assistance | 5.9 | 5.0 | 50 |
| Arts and recreation services | 1.3 | 0.8 | 13 |
| Other services | 6.9 | 4.2 | 63 |
| **Total** | **194.6** | **88.1** | **943** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimated based on various sources.*

### 4.2.7 Tasmania

Tasmanian pig farmers spent $5 million on goods and services in producing pigs in 2022-23. Of this, an estimated $2.7 million was on domestically produced goods and services, comprising:

- $1.3 million on feed grains and other feeds
- $0.1 million on utilities, including electricity, gas, water, and wastewater treatment.
- $0.2 million on transport
- $0.2 million on wholesale and retail trade
- $0.8 million on other inputs and services

**Table 4.13** summarises the estimated indirect impacts at the Tasmania state level with lower and upper bounds.

The domestic spend pig producers in Tasmania contributed between $2.5 million and $4.7 million to the Tasmanian economy, which is between 0.006 and 0.012 per cent of GSP in 2022-23. This indirect contribution is in addition to the direct contribution presented in Section 4.1.

Between $1.1 million and $2.1 million in household income was indirectly generated by pig farming activities in the Tasmanian economy, and indirectly supported between 16 and 30 FTE jobs.

**Table 4.13** Indirect contribution of the pig farming sector to the Tasmanian economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 2.5 | 0.006% | 1.1 | 0.005% | 16 | 0.007% |
| Upper bound | 4.7 | 0.012% | 2.1 | 0.010% | 30 | 0.013% |

*Source: ACIL Allen*

**Table 4.14** provides sectors benefiting from flow-on impacts due to pig farming in Tasmania.

**Table 4.14** Total upper bound flow-on effects by industry in Tasmania, 2022-23

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| | A$m | A$m | FTE |
| Agriculture, forestry and fishing | 0.69 | 0.08 | 4 |
| Mining | 0.04 | 0.01 | 0 |
| Manufacturing | 0.58 | 0.39 | 4 |
| Electricity, gas, water and waste services | 0.15 | 0.07 | 1 |
| Construction | 0.25 | 0.10 | 2 |
| Wholesale trade | 0.23 | 0.11 | 1 |
| Retail trade | 0.28 | 0.17 | 3 |
| Accommodation and food services | 0.13 | 0.09 | 2 |
| Transport, postal and warehousing | 0.30 | 0.16 | 2 |
| Information media and telecommunications | 0.14 | 0.04 | 0 |
| Financial and insurance services | 0.38 | 0.12 | 1 |
| Rental hiring and real estate services | 0.54 | 0.05 | 1 |
| Professional, scientific and technical services | 0.26 | 0.17 | 3 |
| Administrative and support services | 0.11 | 0.08 | 1 |
| Public administration and safety | 0.04 | 0.03 | 0 |

| ANZSIC division | Value-added | Household income | Employment |
|---|---|---|---|
| Education and training | 0.12 | 0.11 | 1 |
| Health care and social assistance | 0.16 | 0.14 | 1 |
| Arts and recreation services | 0.04 | 0.02 | 0 |
| Other services | 0.18 | 0.10 | 2 |
| **Total** | **4.69** | **2.08** | **30** |

Notes: The indirect economic activity due to interstate trade is included in the regional contribution estimates. This is based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimates based on various sources.*

## 4.3 The total economic contribution of pig farming

Adding the direct and indirect economic contributions for the pig farming sector from sections **4.1** and **4.2** provides lower and upper bound estimates of the total economic footprint of the Australian pig farming sector.

### 4.3.1 Australia

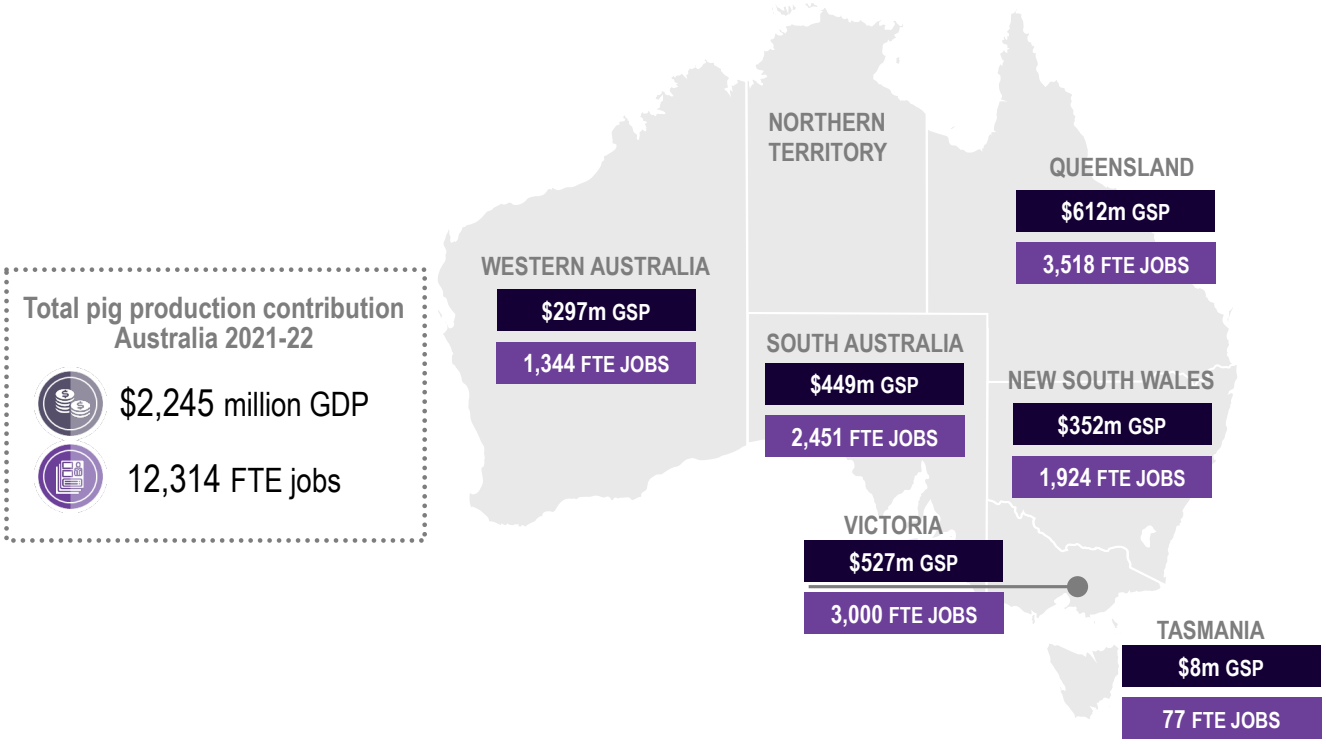
The pig farming sector in Australia in 2022-23 resulted in:

- A *lower bound* contribution of $1,477 million to the Australian GDP, comprising:
  - $658.2 million directly from the industry (direct contribution)
  - $819.2 million indirectly from demand generated through pig producers' purchases of inputs and services (indirect contribution)
  - the pig farming sector contributed a minimum of 0.058 per cent to the Australian GDP in 2022-23
- An *upper bound* contribution of $2,245 million to the Australian GDP, comprising:
  - $658.2 million directly from the industry (direct contribution)
  - $1,587 million indirectly from demand generated through pig producers' purchases of inputs and services (indirect contribution), and wage income spent by the employees in the supply chain.
  - Overall, the pig farming sector contributed a maximum of 0.088 per cent to the Australian GDP in 2022-23.

The pig farming sector in Australia supported up to 12,314 FTE jobs. To put this employment estimate another way, for every one million dollars of revenue received by pig producers, up to 7.2 FTE jobs are supported elsewhere in the Australian economy (this includes an estimate of the own labour supplied by pig producers).

In understanding the estimated number of jobs supported by the industry, it should be noted that they are presented as full-time-equivalent (FTE) jobs for convenience. They represent the summation of many shares of individual positions or include part-time and casual positions. Consequently, the number of people whose employment is supported (partially or wholly) by the activities of the pig farming sector will be greater than the estimated number of FTE jobs.

**Figure 4.2** Total contribution of pig farming in Australia by state (upper bound), 2022-23




*Source: ACIL Allen estimates*

### 4.3.2 Summary of pig-producing states: Value-added

**Table 4.15** summarises total economic footprint of the pig farming sector in terms of GSP by state.

In absolute terms, the pig farming sector makes the most significant contribution to the Queensland economy, contributing between $401 and $312 million to the state's GSP.

**Table 4.15** Total value-added contribution of pig farming sector by state, 2022-23

| | Direct | Indirect | | Total | | Total as % GSP/GDP | |
|---|---|---|---|---|---|---|---|
| State | | Lower | Upper | Lower | Upper | Lower | Upper |
| | A$m | A$m | A$m | A$m | A$m | % | % |
| New South Wales | 94.1 | 131.8 | 258.0 | 225.9 | 352 | 0.029% | 0.045% |
| Victoria | 140.9 | 194.1 | 385.7 | 335.0 | 527 | 0.059% | 0.093% |
| Queensland | 171.7 | 229.5 | 440.7 | 401.3 | 612 | 0.080% | 0.122% |
| South Australia | 146.3 | 156.4 | 303.0 | 302.6 | 449 | 0.213% | 0.316% |
| Western Australia | 102.2 | 104.9 | 194.6 | 207.1 | 297 | 0.047% | 0.067% |
| Tasmania | 2.9 | 2.5 | 4.7 | 5.5 | 8 | 0.013% | 0.019% |
| **Australia** | **658.2** | **819.2** | **1,586.7** | **1,477.4** | **2,245** | **0.058%** | **0.088%** |

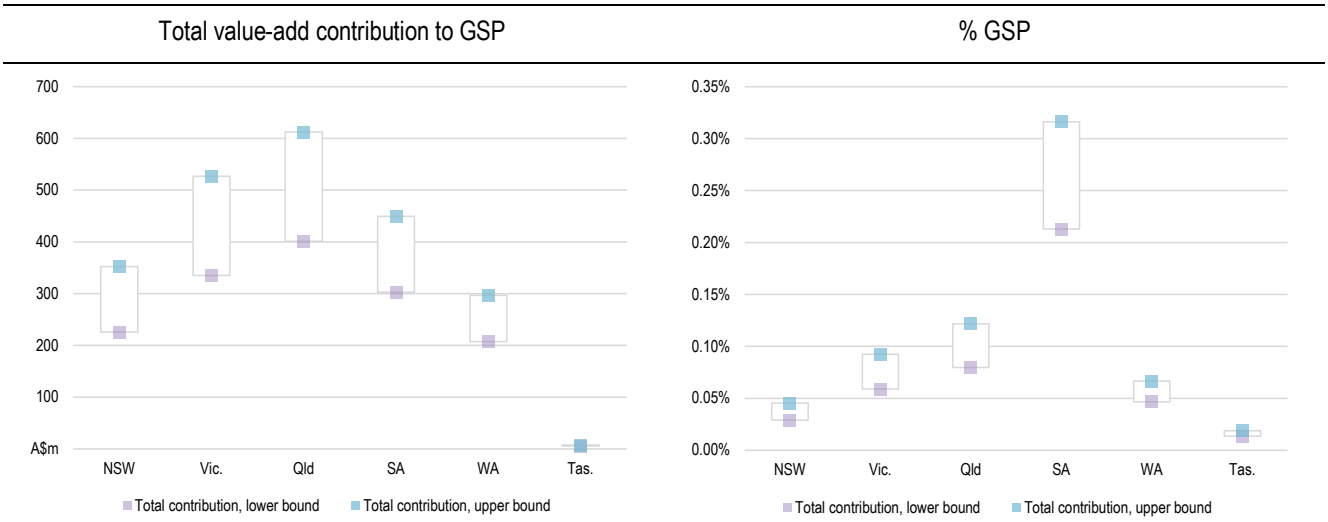
Notes: The lower and upper bounds are calculated using the Simple and Total multipliers. Indirect economic activity due to interstate trade is included in the regional contribution estimates based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimates.*

**Figure 4.3** provides relativities of states' total economic contribution (value-added). These relativities illustrate the importance of the pig farming sector to the overall state economies in terms of magnitude and significance. Pig farming makes the most considerable contribution, relative to

GSP, in the South Australian economy, contributing between 0.21 per cent and 0.32 per cent of GSP.

**Figure 4.3** Total value-added contribution of pig farming sector by state, 2022-23




*Source: ACIL Allen estimates*

### 4.3.3 Summary of pig-producing states: Household income

The total economic footprint of the pig farming sector, in terms of household income related to the compensation of employees (COE) by state, is provided in **Table 4.16**.

In absolute terms, similar to its GSP contribution, the pig farming sector makes the most significant household income contribution to the Queensland economy, contributing between $199 and $299 million to the household income.

Pig farming significantly contributes to the South Australian economy's COE, contributing between 0.21 per cent and 0.30 per cent of COE.

**Table 4.16** Total income contribution of pig farming sector by state, 2022-23

| | Direct | Indirect | | Total | | Total as % GSP/GDP | |
|---|---|---|---|---|---|---|---|
| State | | Lower | Upper | Lower | Upper | Lower | Upper |
| | A$m | A$m | A$m | A$m | A$m | % | % |
| New South Wales | 48.7 | 61.7 | 118.9 | 110.4 | 167.6 | 0.029% | 0.044% |
| Victoria | 72.9 | 93.2 | 182.4 | 166.1 | 255.2 | 0.057% | 0.088% |
| Queensland | 88.8 | 109.9 | 209.7 | 198.7 | 298.5 | 0.088% | 0.132% |
| South Australia | 75.6 | 69.0 | 134.8 | 144.6 | 210.4 | 0.208% | 0.302% |
| Western Australia | 52.9 | 47.7 | 88.1 | 100.6 | 141.0 | 0.069% | 0.097% |
| Tasmania | 1.5 | 1.1 | 2.1 | 2.6 | 3.6 | 0.013% | 0.018% |
| **Australia** | **340.4** | **382.5** | **736.0** | **722.9** | **1,076.4** | **0.061%** | **0.091%** |

Notes: The lower and upper bounds are calculated using the Simple and Total multipliers, respectively. Indirect economic activity due to interstate trade is included in the regional contribution estimates based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimates.*

### 4.3.4 Summary of pig-producing states: Employment

In absolute terms, the pig farming sector makes the largest employment contribution in Queensland, contributing between 2,286 FTE and 3,518 FTE to the state's total FTE employment.

**Table 4.17** Total employment contribution of pig farming sector by state, 2022-23

| State | Direct | Indirect | | Total | | Total as % employment | |
|---|---|---|---|---|---|---|---|
| | | Lower | Upper | Lower | Upper | Lower | Upper |
| | FTE | FTE | FTE | FTE | FTE | % | % |
| New South Wales | 559 | 711 | 1,365 | 1,269 | 1,924 | 0.034% | 0.052% |
| Victoria | 774 | 1,141 | 2,226 | 1,916 | 3,000 | 0.063% | 0.099% |
| Queensland | 926 | 1,360 | 2,593 | 2,286 | 3,518 | 0.096% | 0.148% |
| South Australia | 709 | 899 | 1,743 | 1,608 | 2,451 | 0.207% | 0.316% |
| Western Australia | 401 | 486 | 943 | 887 | 1,344 | 0.068% | 0.103% |
| Tasmania | 47 | 16 | 30 | 63 | 77 | 0.027% | 0.032% |
| **Australia** | **3,415** | **4,614** | **8,899** | **8,029** | **12,314** | **0.068%** | **0.105%** |

Notes: The lower and upper bounds are calculated using the Simple and Total multipliers, respectively. Indirect economic activity due to interstate trade is included in the regional contribution estimates based on their share of underlying activity. Totals may not add due to rounding.

*Source: ACIL Allen estimates.*

# 5 The primary processing sector

The economic contribution of the primary and secondary processing sectors has only been assessed at the national level to maintain the confidentiality of data provided by processors previously and other data sources. The pig processing sector constitutes two parts:

- The primary processing sector involves the activities of abattoirs and boning rooms, producing dressed carcasses and cuts for direct sale.
- Secondary processing involves further value-adding through activities such as cooking, curing, brining, smoking, fermenting or slicing, and creating a range of products, including hams, bacon, sausages and other smallgoods.
  - This also includes the packaging of pig meat products.
  - This can use domestically produced pig meat, imported pig meat or a combination of domestic and imported pig meats.

This study estimates the economic contribution of each part of the processing sector in 2022-23.

To avoid double counting related to the intra-sectoral purchases and vertical supply chain activities, the pigs and pig meat used from one sector to the other were excluded. As a result, the two parts of the processing sector can be combined to obtain the overall economic contribution of the pig processing sector.

## 5.1 The direct economic contribution of the primary processing sector

The total revenue of the Australian primary pig processing sector in 2022-23 was an estimated $2,374 million. The direct value-added embodied in the revenue was an estimated $478 million, meaning that the primary processing sector's direct economic contribution accounted for 0.019 per cent of Australia's 2022-23 GDP.

The direct income contribution (household income) in 2022-23 was $319 million (0.027 per cent of Australia's COE income).

In 2022-23, the primary processing sector directly employed an estimated 3,200 FTEs (0.027 per cent of Australia's total employment).

## 5.2 The indirect economic contribution of the primary processing sector

In addition to buying pigs for processing, Australian primary processors spent a further $257 million on goods and services preparing pig meat for domestic consumption and exports in 2022-23. Of this, an estimated $226 million was on domestically produced goods and services, comprising:

- $79.0 million other feed grains and feed supplements
- $39.3 million on utilities, including electricity, gas, water and wastewater treatment
- $9.3 million on transport

— $16.1 million on wholesale and retail trade

— $82.5 million on other inputs and services

**Table 5.1** summarises the indirect impacts at the national level with the lower and upper bounds. It is estimated that the spending on domestically produced goods and services by primary processors contributed between:

— $197.1 million and $613.2 million to the Australian economy, which is between 0.008 and 0.024 per cent of GDP in 2022-23. This is in addition to the direct contribution reported in Section 5.1.

— $97.1 million and $288.8 million to household income

— 1,157 and 3,481 FTE jobs throughout the Australian economy.

**Table 5.1** Indirect contribution of the primary processing sector in Australia, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 197.1 | 0.008% | 97.1 | 0.008% | 1,157 | 0.010% |
| Upper bound | 613.2 | 0.024% | 288.8 | 0.025% | 3,481 | 0.030% |

Note: These estimates exclude the economic contribution embodied in the upstream pig farming sector to allow these estimates to be additive to those provided for the pig farming sector.

*Source: ACIL Allen estimates*

## 5.3 The total economic contribution of the primary processing sector

Adding the direct and indirect contributions for the primary processing sector from Sections **5.1** and **5.2**, provides lower and upper bound estimates of the total economic footprint of the Australian primary processing sector (excluding the economic contribution embodied in the upstream pig farming sector to allow these estimates to be additive to those provided in Section 4.3). The primary processing sector in Australia resulted in the following:

— A *lower-bound* value-added contribution of $675.8 million to Australian GDP, comprising:
  — $478.7 million directly from the primary processing sector (direct contribution)
  — $197.1 million indirectly from demand generated through primary processors' purchases of inputs and services (indirect contribution)
  — The primary processing sector contributed at least 0.026 per cent to the Australian GDP in 2022-23.

— an *upper bound* value-add contribution of $1,091.9 million to Australian GDP, comprising:
  — $478.7 million directly from the industry (direct contribution)
  — $613.2 million indirectly from demand generated through primary processors' purchases of inputs and services and purchases made by the employees in the supply chain (indirect contribution)
  — The primary processing sector contributed a maximum of 0.043 per cent to the Australian GDP in 2022-23.

In 2022-23, the primary processing sector in Australia resulted in the following:

— A *lower-bound* household income contribution of $416.2 million to the Australian COE, comprising:
  — $319.0 million directly from the primary processing sector (direct contribution)
  — $97.1 million indirectly from demand generated through primary processors' purchases of inputs and services (indirect contribution)

  - The primary processing industry contributed at least 0.035 per cent to Australian COE in 2022-23.
- An *upper bound* household income contribution of $363 million to Australian COE, comprising:
  - $319.0 million directly from the industry (direct contribution)
  - $288.8 million indirectly from demand generated through primary processors' purchases of inputs and services and consumption induced by employees spend in the economy (indirect contribution)
  - The primary processing sector contributed a maximum of 0.052 per cent to Australian COE in 2022-23.

In 2022-23, the primary processing sector in Australia supported up to 6,681 FTE jobs. To put this estimate another way, for every one million dollars of revenue received by primary processors, up to 2.5 FTE jobs are supported elsewhere in the Australian economy.

**Table 5.2** Total contribution of the primary processing sector in Australia, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 675.8 | 0.026% | 416.2 | 0.035% | 4,358 | 0.037% |
| Upper bound | 1,091.9 | 0.043% | 607.8 | 0.052% | 6,681 | 0.057% |

*Source: ACIL Allen estimates*

# The secondary processing and wholesaling sector 6

The economic contribution of the secondary processing and wholesaling sector drew on information from a range of sources, including:

- Primary data regarding the pigs produced in 2022-23 in terms of the ratio of porkers and baconers
- APL data regarding imported pig meat
- IBISWorld 2023, C1113 Cured Meat and Smallgoods Manufacturing in Australia.

This chapter provides the economic contribution of Australia's secondary processing and wholesaling sector. As mentioned previously, these estimates exclude the economic contribution embodied in the upstream primary processing sector to allow these estimates to be additive to those provided for the other pork industry sectors.

## 6.1 The direct contribution of the secondary processing and wholesaling sector

The estimated revenue of the Australian secondary processing and wholesaling sector in 2022-23 was $3,104 million. The direct economic contribution (value-add) within these sales was an estimated $556 million, implying that the direct economic contribution of the Australian secondary processing sector accounted for 0.022 per cent of Australia's 2022-23 GDP.

The direct income contribution (household income) is $341 million, implying that the direct economic contribution of the Australian secondary processing sector accounted for 0.029 per cent of Australia's COE income.

The direct employment contribution from the secondary processing sector was 3,425 persons in 2022-23. Total FTE employment in the Australian economy was 11.2 million, implying that the direct employment contribution of the secondary processing sector accounted for 0.029 per cent of Australia's total employment.

## 6.2 The indirect economic contribution of the secondary processing sector

The Australian secondary processors spent $1,462 million on goods and services (excluding primary pig meat processed) to prepare the products for domestic consumption and exports in 2022-23. Of this, an estimated $1,314 million was on domestically produced goods and services, comprising:

- $746.3 million in other food products and feedstocks
- $140.7 million on utilities, including electricity, gas, water and wastewater treatment
- $129.2 million on transport
- $65.1 million on wholesale and retail trade

— $232.6 million on other intermediate inputs and services

**Table 6.1** provides indirect impacts at the national level with lower and upper bounds. The domestic spend by secondary processors and wholesalers, contributed between:

— $1,139.5 million and $2,138.1 million to the Australian economy, which is between 0.044 and 0.083 per cent of GDP in 2022-23.

— $580.9 million and $1,040.8 million to household income.

— 6,639 and 12,214 FTE jobs.

**Table 6.1** Indirect contribution of the secondary processing sector in Australia, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 1,139.5 | 0.044% | 580.9 | 0.049% | 6,639 | 0.056% |
| Upper bound | 2,138.1 | 0.083% | 1040.8 | 0.088% | 12,214 | 0.104% |

*Source: ACIL Allen estimates*

## 6.3 The total economic contribution of the secondary processing and wholesaling sector

Adding the direct and indirect economic contributions for the secondary processing sector from Sections **6.1** and **6.2** provides lower and upper bound estimates of the total economic footprint of the Australian secondary processing and wholesaling sector.

The secondary processing and wholesaling in Australia resulted in the following:

— A *lower bound* value-added contribution of $1,695.6 million to Australian GDP, comprising:
  — $556.1 million directly from the secondary processing and wholesaling sector
  — $1,139.5 million indirectly from demand generated through secondary processors and wholesalers' purchases of inputs and services, excluding the primary processed pig meat
  — The secondary processing and wholesaling sector contributed at least 0.066 per cent to the Australian GDP in 2022-23.

— an *upper bound* value-added contribution of $2,694.3 million to Australian GDP, comprising:
  — $556.1 million directly from the secondary processing and wholesaling sector
  — $2,138.1 million indirectly from demand generated through secondary processors and wholesalers purchases of inputs and services
  — The secondary processing and wholesaling sector contributed a maximum of 0.105 per cent to the Australian GDP in 2022-23.

In 2022-23, the secondary processing and wholesaling in Australia resulted in:

— A *lower bound* household income contribution of $922.4 million to Australian COE, comprising:
  — $341.4 million directly from the secondary processing and wholesaling sector
  — $580.9 million indirectly from demand generated through secondary processors and wholesalers' purchases of inputs and services
  — the secondary processing and wholesaling sector contributed a minimum of 0.078 per cent to Australian COE in 2022-23.

— an *upper bound* household income contribution of $1,273.9 million to Australian COE, comprising:
  — $341.4 million directly from the secondary processing and wholesaling sector

- $1,040.8 million indirectly from demand generated through secondary processors and wholesalers' purchases of inputs and services and the consumption-induced effect
- The secondary processing and wholesaling sector contributed a maximum of 0.117 per cent to Australian COE in 2022-23.

In 2022-23, the secondary processing and wholesaling sector supported up to 15,639 FTE jobs in Australia. To put this estimate another way, for every one million dollars of revenue received by secondary processors and wholesalers, up to 4.5 FTE jobs are supported elsewhere in the Australian economy (this includes an estimate of the own labour supplied by owner-operator).

**Table 6.2** Total contribution of the secondary processing sector in Australia, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE jobs | % employment |
| Lower bound | 1,695.6 | 0.066% | 922.4 | 0.078% | 10,064 | 0.086% |
| Upper bound | 2,694.3 | 0.105% | 1,382.3 | 0.117% | 15,639 | 0.133% |

*Source: ACIL Allen estimates*

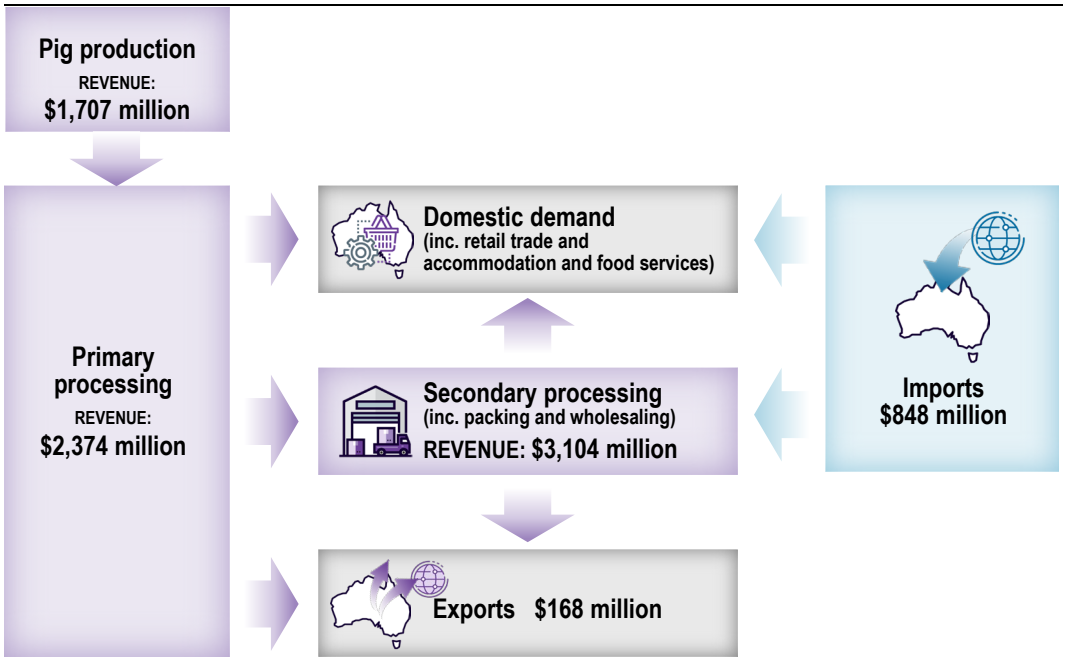
# The overall footprint of the Australian pork industry 7

The aggregation of pork meat and meat products produced in the previous chapters provide an overall footprint of the pork industry in Australia.

## 7.1 Overall pork industry contribution, 2022-23

**Figure 7.1** summarise the pork value chain in 2022-23. The value chain consists of pig farming, primary processing, secondary processing and wholesaling with domestic demand (including imports) and exports.

**Figure 7.1** Pork industry value-chain, 2022-23




*Source: ACIL Allen estimates*

**Table 7.1** summarise the pork value chain in 2022-23 by component with a lower and upper bound.

The value chain comprises pig farming, primary processing, secondary processing and wholesaling.

**Table 7.1** Total contribution of the pork industry to the Australian economy, 2022-23

| | Value-added | | Household income | | Employment | |
|---|---|---|---|---|---|---|
| | A$m | %GDP | A$m | %COE | FTE | % employ |
| **Lower bound** | | | | | | |
| Pig farming | 1,477.4 | 0.058% | 722.9 | 0.061% | 8,029 | 0.068% |
| Primary processing | 675.8 | 0.026% | 416.2 | 0.035% | 4,358 | 0.037% |
| Secondary processing and wholesaling | 1,695.6 | 0.066% | 922.4 | 0.078% | 10,064 | 0.086% |
| **TOTAL** | **3,848.9** | 0.150% | **2061.4** | 0.175% | **22,451** | 0.191% |
| **Upper bound** | | | | | | |
| Pig farming | 2,244.9 | 0.088% | 1076.4 | 0.091% | 12,314 | 0.105% |
| Primary processing | 1,091.9 | 0.043% | 607.8 | 0.052% | 6,681 | 0.057% |
| Secondary processing and wholesaling | 2,694.3 | 0.105% | 1382.3 | 0.117% | 15,639 | 0.133% |
| **TOTAL** | **6,031.1** | 0.235% | **3066.4** | 0.260% | **34,634** | 0.294% |

*Source: ACIL Allen estimates*

## 7.2 Overall total value-added contribution, 2022-23

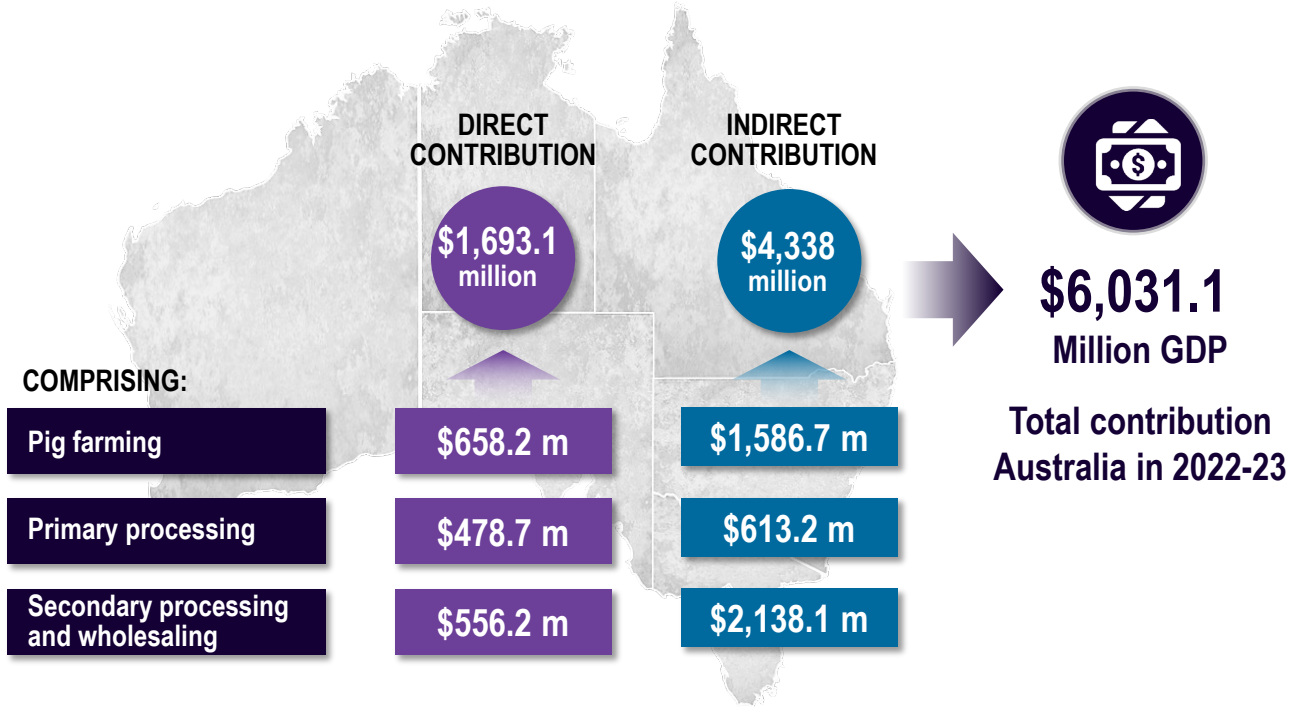
Adding the direct and indirect value-added economic contributions for the pig farming sector, primary processing sector, and secondary processing and wholesaling sector provides lower and upper bound estimates of the total economic footprint of the Australian pork industry.

The pork industry contributed between $3,849 million and $6,031 million to the Australian economy, between 0.150 and 0.235 per cent of GDP in 2022-23.

As shown in **Table 7.1** and **Figure 7.2**, the pork industry in Australia resulted in the following:

- A *lower bound* value-add contribution of $3,849 million to Australian GDP, comprising:
  - $1,693.1 million directly from the pig farming, primary and secondary processing and wholesaling sector.
  - $2,155.8 million indirectly from demand generated through the pork industry's total purchases of inputs and services from other sectors of the economy.
  - The Australian pork industry contributed at least 0.150 per cent to the GDP in 2022-23.
- an *upper bound* value-add contribution of $6,031.1 million to Australian GDP, comprising:
  - $1,693.1 million directly from the pig farming, primary and secondary processing and wholesaling sectors
  - $4,338.0 million indirectly from demand generated through the pork industry's purchases of inputs and services from other sectors of the economy, including induced consumption effects (indirect contribution)
  - the Australian pork industry contributed a maximum of 0.235 per cent to the Australian GDP in 2022-23.

**Figure 7.2** Overall value-added contribution of the pork industry to Australia, 2022-23




*Source: ACIL Allen estimates*

## 7.3 Overall total household income contribution 2022-23

Adding the direct and indirect household income contributions for the pig farming sector, primary processing sector, and secondary processing and wholesaling sector provides a lower and upper-bound estimate of the total household income footprint of the Australian pork sector.

The pork value chain contributed between $2,061.4 million and $3,066.4 million to the household's wage income, between 0.175 and 0.260 per cent of Australian wage income in 2022-23.

In 2022-23, the pork sector as a whole in Australia resulted in the following:

- A *lower bound* household income contribution of $2,061.4 million to Australian households' wage income, comprising:
  - $1,000.9 million directly from the pig farming, primary and secondary processing and wholesaling sector (direct contribution)
  - $1,060.5 million indirectly from demand generated through the pork industry's purchases of inputs and services from other sectors of the economy (indirect contribution)
  - Overall, the Australian pork industry contributed a minimum of 0.175 per cent to Australian wage income in 2022-23.
- an *upper-bound* household income contribution of $3,066.4 million to Australian households' wage income, comprising:
  - $1,000.9 million directly from the pig farming, primary and secondary processing and wholesaling sector (direct contribution)
  - $2,065.5 million indirectly from demand generated through the pork industry's purchases of inputs and services from other sectors of the economy (indirect contribution)
  - Overall, the Australian pork industry contributed a maximum of 0.260 per cent to Australian wage income in 2022-23.

## 7.4 Overall total employment contribution 2022-23

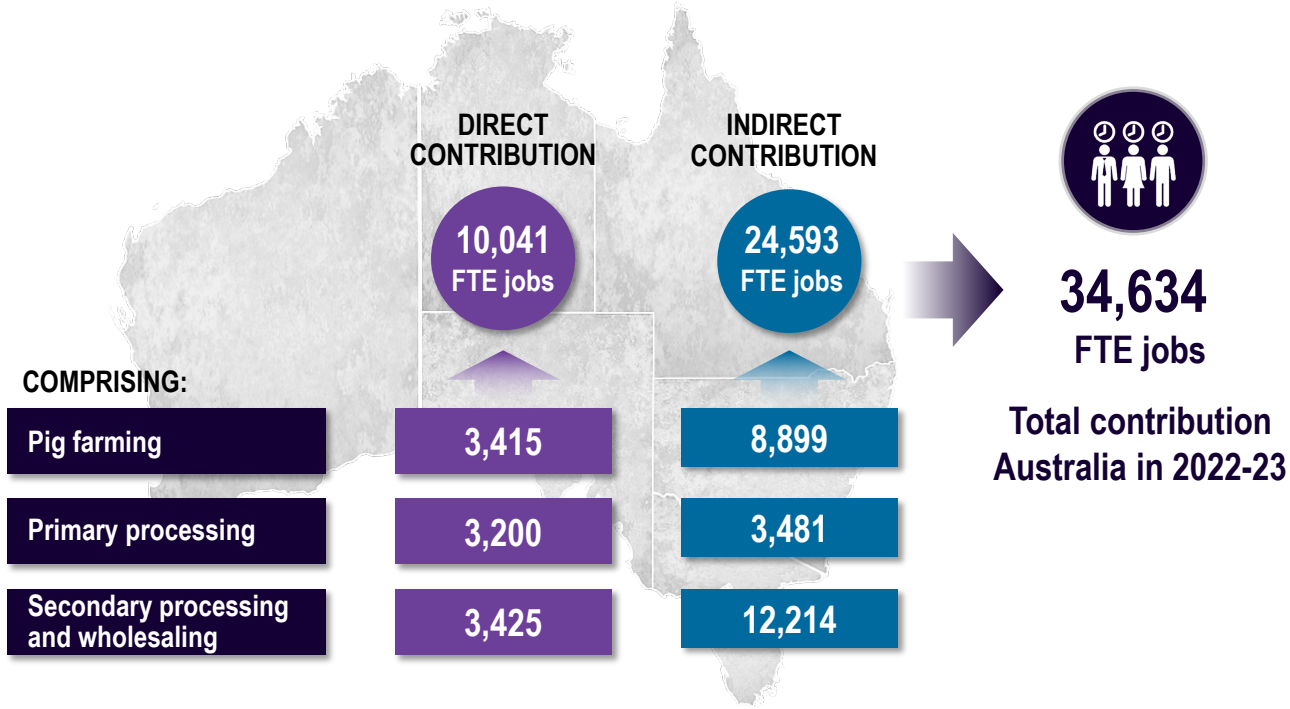
Adding the direct and indirect employment contributions for the pig farming sector, primary processing sector, and secondary processing and wholesaling sector provides lower and upper-bound estimates of the overall employment footprint of the Australian pork industry.

The pork industry contributed between 22,451 and 34,634 FTE employment to the Australian economy, which is between 0.191 and 0.294 per cent of Australian FTE employment in 2022-23.

The pork industry as a whole in Australia resulted in the following:

- A *lower bound* employment contribution of 22,451 FTEs to Australian employment, comprising:
  - 10,041 directly from the pig farming, primary and secondary processing and wholesaling sector (direct contribution)
  - 12,410 indirectly from demand generated through the pork industry's purchases of inputs and services from other sectors of the economy (indirect contribution)
  - Overall, the Australian pork industry contributed at least 0.191 per cent to Australian employment in 2022-23.
- an *upper bound* employment contribution of 34,634 FTEs to Australian jobs, comprising:
  - 10,041 directly from the pig farming, primary and secondary processing and wholesaling sector (direct contribution)
  - 24,593 indirectly from demand generated through the pork industry's purchases of inputs and services from other sectors of the economy, including consumption-induced effects (indirect contribution)
  - Overall, the Australian pork industry contributed a maximum of 0.294 per cent to Australian employment in 2022-23.

**Figure 7.3** Overall employment contribution of the pork industry to Australia, 2022-23




*Source: ACIL Allen estimates*

# Regional contribution analysis 8

This section presents the indicative economic contribution of piggery to a local community. Although there are many differences between regional economies throughout Australia, there are also many similarities. ACIL Allen has generated a stylised representation of a piggery operation in a 'typical' regional community for this analysis. The region comprises one town of 8,000-15,000 people and a surrounding regional area of approximately 60 km. For each significant state, ACIL Allen selected regions[2] with these characteristics with known piggeries and at least one medium-large primary processing facility.

## 8.1 Local contribution per sow and per kilogram production

ACIL Allen created a stylised local cost structure for a pig farmer and a primary processor, estimated the regional economic impacts, and converted the results into several metrics. **Table 8.1** presents the average economic contribution per sow of pig farming and primary processed pork, while **Table 8.2** presents the average economic contribution on a per kilogram basis.

The metrics are presented as the midpoint of the overall range of the estimated regional economies. There were only minor variations between regions to the estimated contribution of a piggery to the local economy. Consequently, the estimated economic contributions should be applicable across most areas of Australia.

To interpret the metrics, **Table 8.1** shows that the contribution of a piggery to a local community has:

— A lower bound contribution of $3,775 per sow to value-added (or the Gross Regional Product) in the regional economy. This contribution embodies the direct value-added by the pig producer as well as the local value-added embodied in the piggeries supply chain.

— An upper bound contribution of $5,399 per sow to value-added (or the Gross Regional Product) in the regional economy. This contribution embodies the lower bound contribution as well the economic contribution made by the piggery and supply chain workers spending their after-tax incomes on other local goods or services (such as local hairdressers, restaurants, retail traders etc).

If the local region also contains a primary processing facility, then the economic contribution made by the piggery operations will be greater. More specifically, as per **Table 8.1** a piggery in a region with a primary processing facility has:

— A lower bound contribution of $5,746 per sow to value-added (or the Gross Regional Product) in the regional economy. This contribution embodies the direct value-added by the pig producer as well as the local value-added embodied in the piggeries supply chain and the

[2] Comprising two ABS Statistical Area Level 2 (SA2) geographies with such characteristics (one SA2 for the town and one regional SA2 surrounding the town).

value added embodied in the primary processor's purchases of the average piggeries production per sow.

— An upper bound contribution of $7,708 per sow to value-added (or the Gross Regional Product) in the regional economy. This contribution embodies the lower bound contribution as well the economic contribution made by the workers throughout the piggery supply chain (including processing costs) spending their after-tax incomes on other local goods or services (such as local hairdressers, restaurants, retail traders etc).

It should be noted that these estimates are for the 2022-23 financial year and, because pig and pig meat prices fluctuate considerably (which affects profit margins), may not be applicable in other years.

**Table 8.1** Local and national economic contribution per breeding sow and gilt, 2022-23

| | LOCAL REGION | | | AUSTRALIA | | |
|---|---|---|---|---|---|---|
| | Value added (GRP) | Household income | Employment | Value added (GDP) | Household income | Employment |
| | $/sow | $/sow | FTE jobs per thousand sows | $/sow | $/sow | FTE jobs per thousand sows |
| ***Lower bound*** | | | | | | |
| Pig farming | 3,775 | 1,496 | 16 | 5,174 | 2,532 | 28 |
| Primary processing | 1,972 | 1,201 | 13 | 2,367 | 1,457 | 15 |
| *Total primary processed pork* | *5,746* | *2,697* | *29* | *7,541* | *3,989* | *43* |
| Secondary processing and wholesaling | n.e. | n.e. | n.e. | 5,938 | 3,230 | 35 |
| **Total pork industry** | n.e. | n.e. | n.e. | **13,479** | **7,219** | **79** |
| ***Upper bound*** | | | | | | |
| Pig farming | 5,399 | 1,838 | 21 | 7,862 | 3,770 | 43 |
| Primary processing | 2,309 | 1,296 | 14 | 3,824 | 2,129 | 23 |
| *Total primary processed pork* | *7,708* | *3,134* | *36* | *11,686* | *5,898* | *67* |
| Secondary processing and wholesaling | n.e. | n.e. | n.e. | 9,436 | 4,841 | 55 |
| **Total pork industry** | n.e. | n.e. | n.e. | **21,122** | **10,739** | **121** |

Note: n.e. = not estimated. GRP = Gross Regional Product. GRP is equivalent to GDP in the regional economy.

*Source: ACIL Allen estimates.*

**Table 8.2** Local and national economic contribution per unit of primary processed pork, 2022-23

| | LOCAL REGION | | | AUSTRALIA | | |
|---|---|---|---|---|---|---|
| | Value added (GRP) | Household income | Employment | Value added (GDP) | Household income | Employment |
| | $/kg CW | $/kg CW | FTE jobs per thousand kgs | $/kg CW | $/kg CW | FTE jobs per thousand kgs |
| ***Lower bound*** | | | | | | |
| Pig producers | 2.38 | 0.94 | 10.3 | 3.26 | 1.59 | 17.7 |
| Primary processing | 1.24 | 0.76 | 8.0 | 1.49 | 0.92 | 9.6 |
| *Total primary processed pork* | *3.62* | *1.70* | *18.3* | *4.75* | *2.51* | *27.3* |
| Secondary processing and wholesaling | n.e. | n.e. | n.e. | 3.74 | 2.03 | 22.2 |
| **Total pork industry** | n.e. | n.e. | n.e. | **8.49** | **4.55** | **49.5** |
| ***Upper bound*** | | | | | | |
| Pig producers | 3.40 | 1.16 | 13.4 | 4.95 | 2.37 | 27.2 |
| Primary processing | 1.45 | 0.82 | 9.1 | 2.41 | 1.34 | 14.7 |
| *Total primary processed pork* | *4.85* | *1.97* | *22.5* | *7.36* | *3.71* | *41.9* |
| Secondary processing and wholesaling | n.e. | n.e. | n.e. | 5.94 | 3.05 | 34.5 |
| **Total pork industry** | n.e. | n.e. | n.e. | **13.30** | **6.76** | **76.4** |

Note: n.e. = not estimated. GRP = Gross Regional Product. GRP is equivalent to GDP for the regional economy.

*Source: ACIL Allen estimates.*

# 9 Import replacement

## 9.1 Imports

Section 2.6 shows Australia imported approximately 296,147 tonnes (CWE) or 165,842 tonnes (SW) of pig meat in 2022-23.

As shown in **Table 9.1**, almost all of this was primary processed meat rather than secondary (93.1 per cent by tonnage and 85.6 per cent by value). While secondary processed products include speciality products such as Jamón ibérico (Iberian ham) that are not easily substitutable with domestic equivalents, most imported products have minimal processing that competes directly with Australian producers. If Australian producers could competitively replace fresh or frozen imported pig meat with domestic pigs, it would represent an increase in domestic pig farming of nearly 70 per cent, significantly impacting the local economy.

**Table 9.1** Volume and value of pig meat imports by level of processing, 2022-23

| | Volume | Value |
|---|---|---|
| | SW '000 tonnes | $m |
| **Primary processed meat** | | |
| – Boneless frozen | 154.3 | 725.0 |
| – Chilled and other frozen | 0.0 | 0.5 |
| **Secondary processed meat** | | |
| – Dried | 2.4 | 45.3 |
| – Preserved | 9.1 | 76.8 |
| **Total** | **165.8** | **847.6** |
| Primary share | 93.1% | 85.6% |
| Secondary share | 6.9% | 14.4% |

Note: Value is customs value. Volume is shipped weight (SW), not carcass weight equivalent.

*Source: ACIL Allen based on APL data.*

## 9.2 Assumptions

There are many possible drivers for import replacement, including changes in consumer preferences, exchange rate movements, changes in production costs (either domestically or internationally), changes in the relative returns to pig farmers compared to other farmers or the imposition of trade barriers. Some drivers will positively impact the Australian economy, while others will have negative or neutral impacts. Rather than modelling specific scenarios, this section estimates how the pork industry's economic contribution will change if all primary processed meat

through domestic supply chains is supplied. For the modelling, it has been assumed that the increased pig farming is undertaken by large producers rather than small or medium producers. No impact, however, has been assumed to occur in the secondary processing sector as the other pig meat supplied through domestic supply chains replaces meat that is currently imported (although, in practice, there may be some implications through changes in the price structure and product mix).

**Table 9.2** A comparison of the pork industry with and without imports, 2022-23

| | CURRENT WITH IMPORTS | | | WITHOUT IMPORTS (NO PRICE RESPONSE) | | |
|---|---|---|---|---|---|---|
| | Value added (GRP) | Household income | Employment | Value added (GDP) | Household income | Employment |
| | $ million | $ million | FTE jobs | $ million | $ million | FTE jobs |
| ***Lower bound*** | | | | | | |
| Pig producers | 1,477.4 | 722.9 | 8,029 | 2,006.7 | 981.9 | 10,905 |
| Primary processing | 675.8 | 416.2 | 4,358 | 928.0 | 571.4 | 5,984 |
| Secondary processing and wholesaling | 1,695.6 | 922.4 | 10,064 | 1,695.6 | 922.4 | 10,064 |
| **Total pork industry** | **3,848.9** | **2,061.4** | **22,451** | **4,630.3** | **2,475.7** | **26,953** |
| ***Upper bound*** | | | | | | |
| Pig producers | 2,244.9 | 1,076.4 | 12,314 | 3,049.1 | 1461.9 | 16,724 |
| Primary processing | 1,091.9 | 607.8 | 6,681 | 1,499.4 | 834.6 | 9,174 |
| Secondary processing and wholesaling | 2,694.3 | 1,382.3 | 15,639 | 2,694.3 | 1382.3 | 15,639 |
| **Total pork industry** | **6,031.1** | **3,066.4** | **34,634** | **7,242.7** | **3,678.8** | **41,537** |

*Source: ACIL Allen estimates.*

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# Appendices

# Input-output analysis A

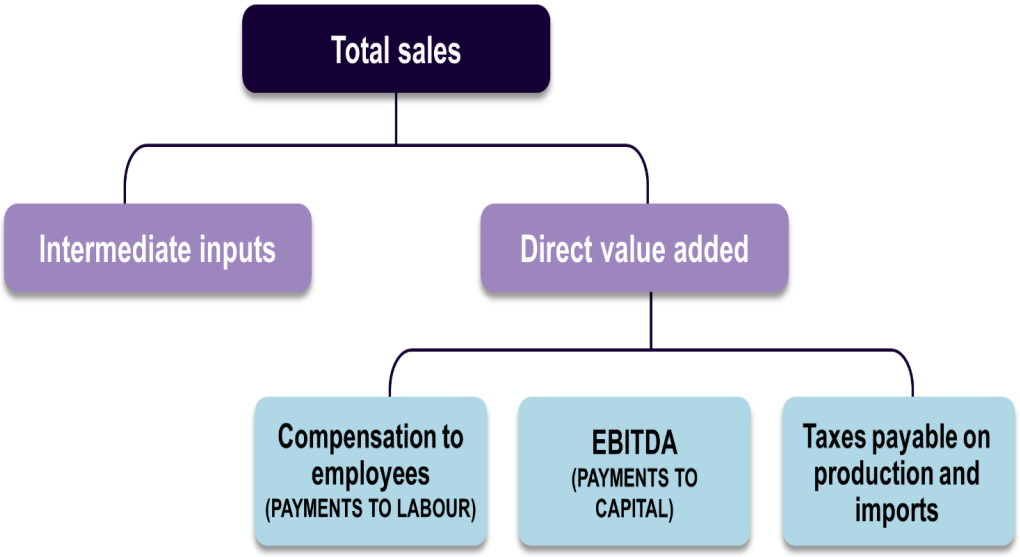
## A.1 Direct economic contribution

The standard measure of economic contribution is the extent to which it increases the value of goods and services generated by the economy as a whole – in other words, the degree to which it increases economic activity as measured by GDP.

An economy has a range of factors of production (including labour and capital stock) and access to various intermediate inputs. By appropriately using the factors of production, industries add value to intermediate inputs by converting them into a range of goods and services more suited for consumers or other sectors.

The direct contribution of an industry to the Australian economy is estimated by determining their payments to the factors of production plus the taxes (fewer subsidies) payable on production and imports, as shown graphically in **Figure A.1**.

**Figure A.1** Calculation of value-added




Note: EBITDA is equivalent to the SNA definition of gross operating surplus

*Source: ACIL Allen based on Australian National Accounts.*

**Box A.1** summarises the ABS definitions as part of the System of National Accounts (SNA).

**Box A.1** ABS definitions of value added

An industry's direct contribution to GDP or GSP is well defined under the standard national accounting framework used by the ABS, known as the System of National Accounts (SNA). SNA recognises three different measures of value added:

- a) Value added at Purchasers' Prices. This is defined as output valued at purchasers' prices, less intermediate consumption valued at producer prices. This measure is equivalent to the traditional estimate of value added at market prices.
- b) Value added at Basic Prices. In this measure, the output is valued at basic prices, while intermediate consumption is valued at producer prices. In the case of beer production, this measure excludes beer excise, which is viewed as a production tax levied on output.
- c) Value added at factor Cost. This measure excludes all production taxes net of subsidies. In other words, it excludes all production taxes – such as payroll taxes, fringe benefit taxes etc – and not just those that are levied on output.

The measure of value added to be used depends on the nature of the analysis that is to be conducted. When presenting an industry view of GDP for example, the ABS uses value added at basic prices and adds an aggregate estimate of net taxes on products in question to give an objective measure of GDP at purchasers' prices (ABS Catalogue No. 5216).

*Source: ABS*

## A.2 Indirect economic contribution

Indirect effects are a broader notion of the economic contribution that includes supply-side effects of employees' expenditure beyond the direct export production component. To fully measure the indirect effects, an account should also be taken of changes in incomes, which may further increase domestic demand.

The intermediate inputs used by industry can be sourced either from within the Australian economy or from foreign economies. If purchased from within the Australian economy, then the portion of value-added embodied in the intermediate input is indirectly associated with the purchaser's activity. The indirect contribution calculation quickly becomes complicated as one considers the value-added embodied in the intermediate inputs of the intermediate input.

IO and the associated 'IO multipliers' can be used to estimate indirect economic contributions. IO multipliers are summary measures generated from IO tables that can be used for predicting the total contribution of all industries in the economy of changes in demand for the output of any one sector. The tables and multipliers can also be used to measure the relative importance of the production chain linkages to different parts of the economy.

It should be noted that some of the assumptions underpinning IO multipliers can impede credible analysis. Understanding these assumptions is necessary to prevent the inappropriate application of IO multipliers — for example, in situations where economic constraints are present or when the profile of a business or project differs substantially from the industry average. We do not consider that these conditions apply to this analysis and that using IO multipliers to estimate the economic footprint of the pork industry is appropriate. Further information on IO tables and the calculation of multipliers can be found in ABS Catalogue number 5246.0.

## A.3 Overview of IO tables

IO tables provide a snapshot of an economy at a particular time. The tables used in this analysis were for the 2021-22 financial year.

IO multipliers are derived from IO tables. These multipliers show how changes to a given part of an economy contribute to the economy.

The IO multipliers allow an analysis of the economic footprint of an industry in an economy. Although IO multipliers may also be suitable tools for analysing the contribution of various types of economic change, caution needs to be adopted in their application for this purpose. Misuse of IO multipliers for contribution analysis has led to scepticism of their general use in favour of other tools such as CGE modelling. Notwithstanding this, they are still eminently suitable for understanding the economic linkages between a given activity or industry to gain an appreciation of the broader interactions of the industry beyond its direct contribution.

### A.3.1 Multiplier types

IO multipliers estimate the economic contribution of a region's economy from a one-dollar change in the final demand for one of the region's industries' output. Generally, four types of multipliers are used:

— Output – measures the contribution on the production of all sectors in the economy
— Income – measures the effect on the wages and salaries paid to workers within the economy
— Employment – measures the jobs creation contribution, and
— Value-added – measures the contribution on wages and salaries, profits and indirect taxes.

The sum of wages and salaries, profits and indirect taxes for a given industry provides a measure of its contribution to the size of the local economy – its contribution to gross regional product (GRP). The value-added multiplier can, therefore, also be considered to be the GRP multiplier.

IO multipliers are a flexible tool for economic analysis. Their flexibility stems from the different forms of each multiplier type. For each region, multipliers were estimated in the following forms:

— initial effects
— first-round effects
— industrial support effects
— production induced effects
— consumption induced effects
— simple multipliers
— total multipliers
— type 1A multipliers
— type 1B multipliers
— type 2A multipliers
— type 2B multipliers.

Further information on IO tables and the calculation of multipliers can be found in ABS Catalogue number 5246.0. However, a brief overview of the different types of output multipliers is presented below.

### A.3.2 Multiplier effects

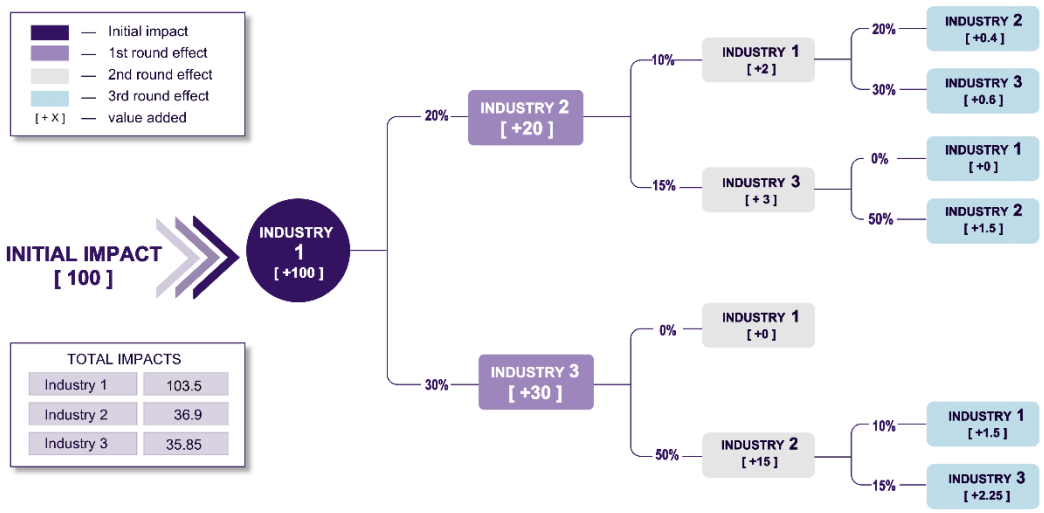
When additional sales to final demand are made, for example, through increased exports, production increases to meet the increased demand, and this is the initial effect. Since production increases to exactly match the increased final export demand, the increase is always equal to one (noting that the multipliers are defined in terms of a one dollar increase in final demand). The industry producing the additional output makes purchases to enable itself to increase production, these new purchases are met by production increases in other industries, and these constitute the *first-round effect*. These first-round production increases cause other industries also to increase their purchases, and these purchases cause other industries to increase their production, and so

on. These 'flow-on' effects eventually diminish, but when 'added together constitute the industrial support effect.

The industrial support effect added to the first-round effect is known as the production induced effect. So far, this chain of events has ignored one important factor, the effect on labour and its consumption. When output increases, employment increases, and increased employment translates to increased earnings and consumption by workers, which translates to increased output to meet the increased consumption. This is the consumption effect.

An illustration of direct and indirect contributions is shown in **Figure A.2**.

**Figure A.2** An illustration of direct and indirect contributions




*Source: ACIL Allen*

### A.3.3 Multipliers

The simple and total multipliers are derived by summing the effects. The simple multiplier is the sum of the initial and production induced effects. The total multiplier is larger because it also adds in the consumption effect. So far, all the effects and multipliers listed have had one thing in common: they all measure the contribution on the economy of the initial increase in final demand.

The remaining multipliers take a different point of view. They are ratios of the above multiplier types to the initial effect. The type 1A multiplier is calculated as the ratio of the initial and first-round effects to the initial effect, while the type 1B multiplier is the ratio of the simple multiplier to the initial effect. The type 2A multiplier is the ratio of the total multiplier to the initial effect, while the type 2B multiplier is the ratio of the total multiplier less the initial effect to the initial effect. Given the large number of multiplier types to choose from, output, income, employment, and value-added multipliers, each with numerous variations (simple, total, type 2A, et cetera) it is important that the analysis uses the most appropriate multipliers. Usually, the multipliers that include consumption effects (i.e. the added contribution that comes from wage and salaries earners spending their income) are used. These are the total and type 2A multipliers. The total and type 2A multipliers will generally provide the biggest projected contribution. Simple or type 1B (which omit the consumption effect) may be used to provide a more conservative result.

For this analysis, the Simple multipliers were used to calculate the lower bound estimates of the contribution of the sector to the economy with Total multipliers providing upper bound estimates.

## A.4 Limitations of input-output analysis

Although IO analysis is valid for understanding a sector's contribution to the economy, when used for analysing the potential contributions of a change in the production of a particular sector, IO analysis is not without its limitations. IO analysis builds on a snapshot of an economy in a given period. The multipliers derived from these tables are therefore based on the structure of the economy at that time, a system that it is assumed remains fixed over time. When multipliers are applied, the following is assumed:

- prices remain constant
- technology is fixed in all industries
- import shares are fixed.

Therefore, the changes predicted by input-output multipliers proceed along a path consistent with the economy's structure described by the input-output table. This precludes economies of scale. That is, no efficiency is gained by industries getting larger – rather they continue to consume resources (including labour and capital) at the rate described by the input-output table. Thus, if output doubles, the use of all inputs doubles as well.

One other assumption underpinning input-output analysis which is worth considering, is that there are assumed to be unlimited supplies of all resources, including labour and capital. With input-output analysis, resource constraints are not a factor. Thus, it is assumed that no matter how large a development, all required resources are available, and there is no competition between industries for these resources.

It is important to understand the limitations of input-output analysis and to remember that the analysis provides an estimate of the contribution of an industry or activity to the economy and is not necessarily the best estimate of the impact to the economy if that industry or activity changes.

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