

March 2022

Report to Western Rock Lobster

Economic Contribution of the Western Rock Lobster Industry

2020-21 Assessment



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Contents

Executive Summary	i
1 About this Report	1
1.1 Report background	1
1.2 Estimating the economic contribution of the industry	1
1.3 Report structure	2
1.4 Terms and abbreviations	3
2 Market Overview	4
2.1 Industry overview	4
2.2 Recent developments impacting the industry	7
2.3 Broader industry trends	11
2.4 Trends in the market for the western rock lobster	13
3 Economic Contribution of the Western Rock Lobster Industry	15
3.1 Economic modelling framework and assumptions	15
3.2 Contribution to the Western Australian economy	16
3.3 Contribution by sector	20
4 The Role of Western Rock Lobster Industry in Supporting Regional Communities	23
4.1 Economic contribution of the Northern Zone	24
4.2 Economic contribution of the Southern Zone	28
Appendices	34
A Western Rock Lobster Industry Survey Questionnaire	A-1
B Input Output modelling framework	4
B.1 Input Output modelling	4
B.2 Results of Input Output modelling	5

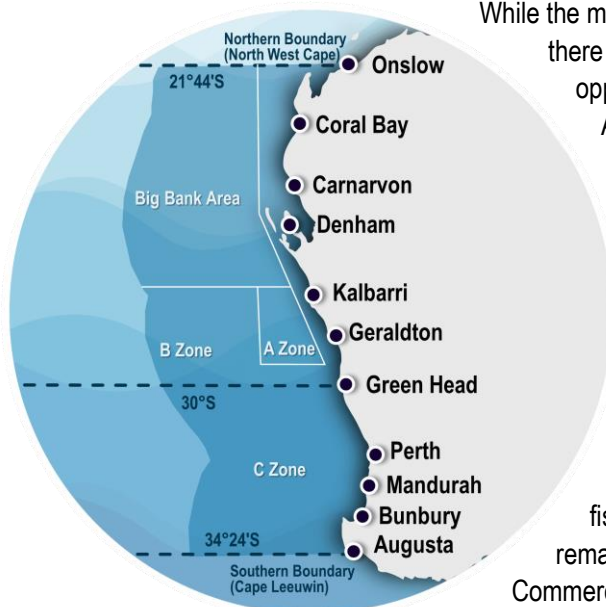
Executive Summary

Background and overview

The Western rock lobster fishery was established in the early 1950s and was integral to the establishment of many of the coastal communities north of Perth. Today it is the most valuable wild caught commercial fishery in Western Australia, generating hundreds of millions of dollars in exports each year, as well as indirect benefits to other industries including those in the tourism and agrifood industries.

ACIL Allen has been engaged by Western Rock Lobster, the peak industry body for the western rock lobster fishery, to conduct an economic contribution study of this iconic Western Australian industry in 2020-21. This report provides an update on the economic performance of the industry in light of the significant events that have impacted on the western rock lobster industry in the past two years, most notably the impact of COVID-19 and the restrictions imposed on the export of western rock lobsters to China.

To understand how the industry has evolved, and the economic consequences of these changes, this report presents the results of ACIL Allen's economic assessment of the industry in 2020-21. In undertaking this study, ACIL Allen has adopted the same methodology that it deployed for the 2016-17 study, but with updated data and information to reflect economic conditions in the industry.



While the most recognisable part of the western rock lobster industry is the fishery, there is a large value chain that exists, which together generates economic opportunities across regional coastal communities and the Western Australian economy more broadly. The **value chain extends from fishing, to transportation, to the processing of the western rock lobster into specialised boxes as live, cooked, or frozen product for distribution to key markets domestically and internationally, to the boat building and servicing sectors, and the tourism sector.** In order to understand the economic contribution of the western rock lobster industry, it is important to understand the value that is created across every link in the industry's value chain.

The western rock lobster industry is accredited by the London-based Marine Stewardship Council (MSC) as an ecologically sustainable fishery, with management measures introduced to ensure the fishery remains sustainable longer term. These measures include a Total Allowable Commercial Catch (TACC), which restricts the catch for the industry in each season, size limits, protection of breeding females, and area closures.

The outbreak of COVID-19 in early 2020 and the closure of the Chinese market in late 2020 had an impact on the viability of the western rock lobster industry during 2020-21. In order to support the

industry following the COVID-19 outbreak, the WA Government agreed to allow for an extended season to fishers with a commensurate increase in TACC by 50 per cent (to 9,000 tonnes), amongst other measures. Notwithstanding these measures, the industry was confronted with the loss of its key market in China, and the corresponding impact on the market price for western rock lobsters.

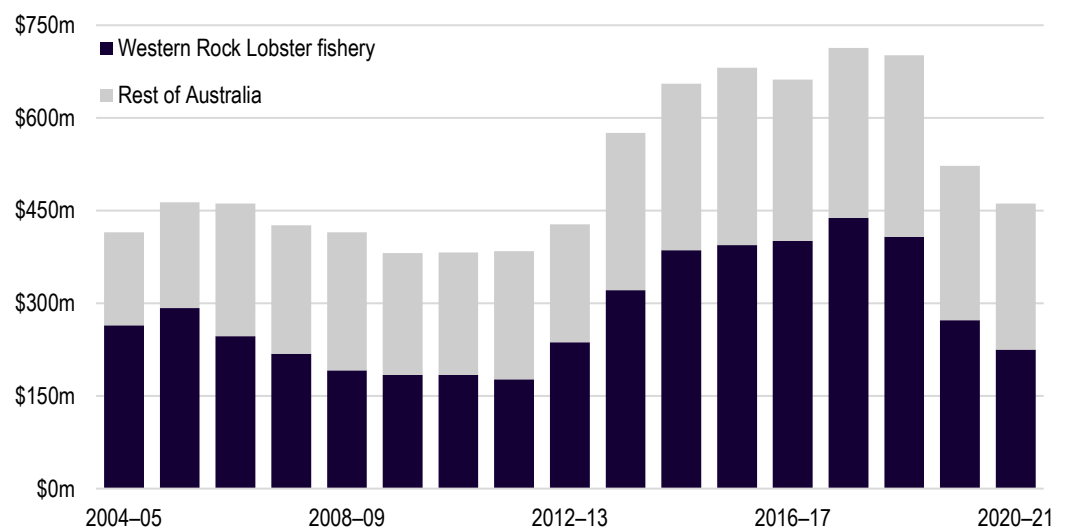
In order to obtain additional insights into the economic and social consequences of these developments on the industry and the community more broadly, ACIL Allen undertook a survey of the Western Rock Lobster membership in late 2021. In total, there were 64 respondents to the industry survey. While there was an acknowledgement of the short term impacts caused by COVID-19, the **biggest challenge facing the industry has been the closure of the Chinese market, which was the destination for over 90 per cent of the total western rock lobster catch**. Overall, industry reported that the closure of the Chinese market had a significant impact on the industry, with almost all respondents reporting that it had resulted in lower prices and demand for the western rock lobster. In response to these developments, industry stakeholders advised that they have had to adjust their operations in a lower price environment, explore new markets overseas and domestically, and cut costs to remain profitable.

The results of the industry survey are reinforced by recent trends in the price and value of production of the western rock lobster. Disruptions to the market for rock lobsters has had a significant impact on the market prices received by Australian producers, with the implied export price falling by almost one third in 2020-21 to \$58 per kilogram.

In 2020-21, there were 237 vessels that targeted western rock lobster in Western Australia with a total catch of 6,616 tonnes and an estimated value of \$225.0 million – representing a decline of nearly 50 per cent from the record of \$438.1 million set in 2017-18 (Figure ES 1).

Despite this decline, the western rock lobster industry continues to be the State’s most valuable fishery and one of Western Australia’s most valuable primary industries. To put this into context, **the average value of production of the western rock lobster is greater than the average gross value of production of milk and of pigs in Western Australia.**

Figure ES 1 Western rock lobster value of production vs the rest of Australia, \$ million



Source: ABARES. 2020-21 estimated by ACIL Allen from industry data

Economic contribution of the western rock lobster industry to Western Australia

The western rock lobster industry makes a significant contribution to the economy of Western Australia through the spending required to operate the activities along the value chain, the employment it supports, and through the profits it generates. This direct contribution provides a stimulus to the broader economy in the industries that support the western rock lobster industry.

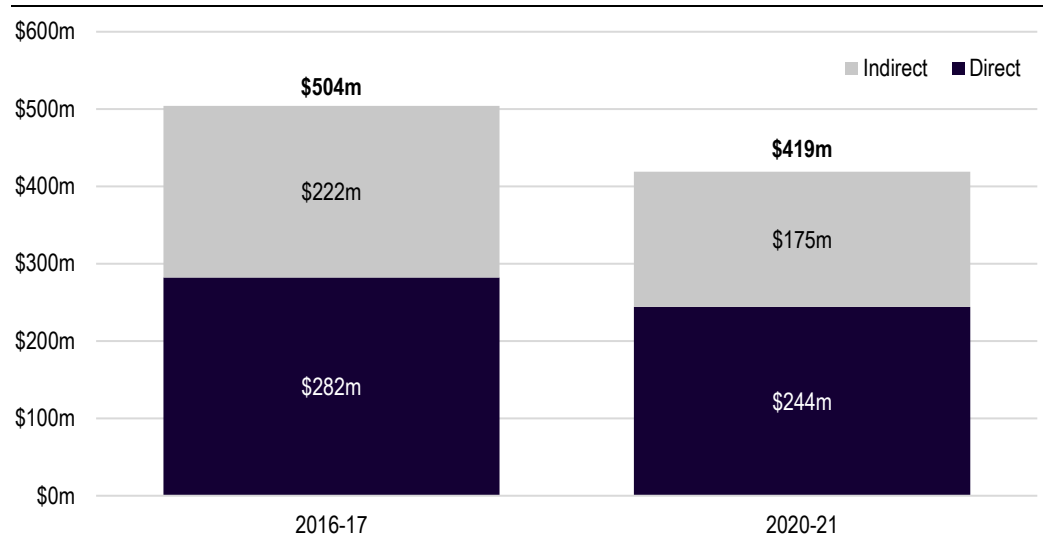
The contribution of the western rock lobster industry also extends to the impact of the spending by people directly employed by the western rock lobster industry on the local economy, on a range of household expenditure items such as retail goods and services, spending at cafes and restaurants, recreation spending, right through to expenditure on mortgages and insurances.

In 2020-21, ACIL Allen estimates that the western rock lobster industry **directly contributed \$244.3 million to the Western Australian economy**, as a result of the value added activities generated in the industry across the value chain – from harvesting through to the sales of lobsters to the domestic and export markets. A further **\$174.6 million in indirect economic benefits was realised for the Western Australian economy as a result of the spending generated across a range of other sectors** that directly support the western rock lobster industry and the people employed in the industry.

When combined, **ACIL Allen estimates that in 2020-21, the western rock lobster industry contributed \$418.9 million directly and indirectly to the Gross State Product of Western Australia**. Despite the significant challenges faced by the industry during 2020-21, ACIL Allen estimates that the economic contribution of the industry has remained strong overall, particularly when compared to the 2016-17 study, which found that the industry generated \$504 million to the WA economy during the year (**Figure ES 2**).

Notwithstanding the fall in the overall economic contribution of the western rock lobster industry, it remains a **significant feature of Western Australia’s economic landscape, generating economic value that was equivalent to one third of the total economic value generated by the State’s emerging Arts and Recreation sector in 2020-21**.

Figure ES 2 Economic contribution of the western rock lobster industry, 2016-17 vs 2020-21, \$ million



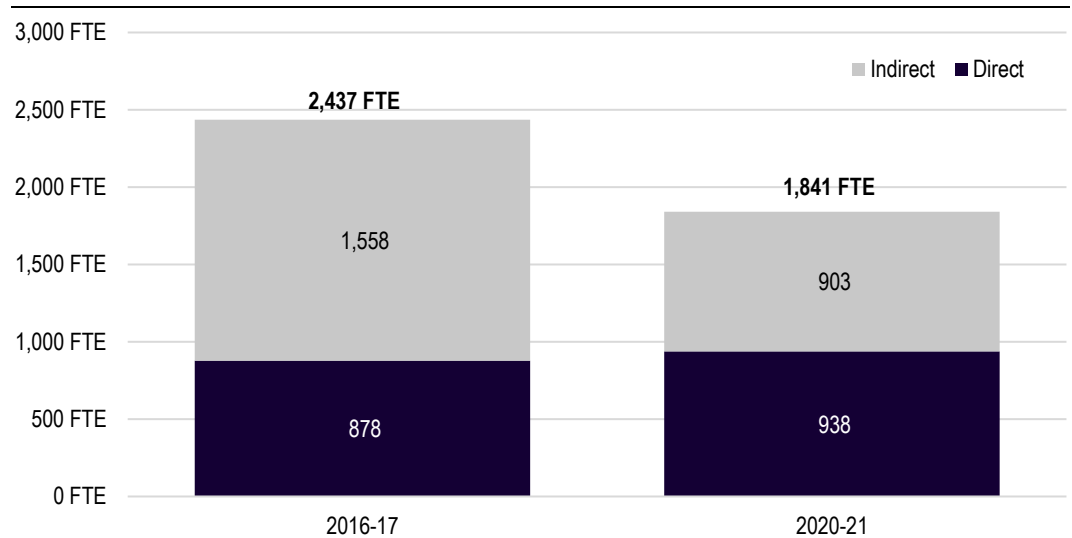
Source: ACIL Allen

From a jobs perspective, the **western rock lobster industry provides employment for people in a range of occupations and skills sets including many that are located in regional areas** helping these communities remain vibrant and diverse places to live and work. ACIL Allen estimates that in 2020-21, the **western rock lobster industry directly created 938 FTE jobs in the fishing, processing, transport, boat building and servicing, and tourism sectors** of the value chain. The economic activities created by the industry in turn generated a **further 903 FTE jobs indirectly across a broad range of businesses and industries that are supported by the spending and employment in the industry**. The importance of the industry to local communities is reflected by the fact that for every person directly employed in the industry on a full time basis, there is another full time job that is supported in other sectors of the economy.

Taken together, **ACIL Allen estimates that the industry created or supported some 1,841 FTE jobs across the State in 2020-21**. Reflecting the significant challenges faced by the industry in 2020-21, the economic contribution of the western rock lobster industry from a jobs perspective was down on the results presented in the 2016-17 study which found that the industry created or supported some 2,437 FTE jobs across the State in that year (**Figure ES 3**).

Notwithstanding the decline in the number of indirect jobs supported by the western rock lobster industry, it remains a significant employer for the State. In this regard, the **total number of full time equivalent jobs created or supported by the industry was equivalent to one quarter of the total number of people employed on a full time basis in the agriculture sector across the State by the end of 2020-21**.

Figure ES 3 Contribution of the western rock lobster industry to employment, 2016-17 vs 2020-21, FTE jobs created



Source: ACIL Allen

Economic contribution across the western rock lobster industry value chain

The western rock lobster industry value chain includes the fishing, transport, processing, and boat building and servicing sectors and the industry supports the tourism sector. While the economic value of the industry is reflected through the production and export of western rock lobsters, the

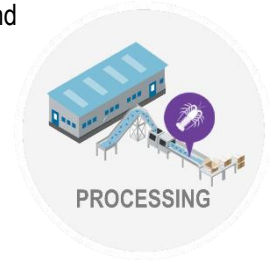
fishery is also an important recreational activity for Western Australians with 56,362¹ recreational fishers granted licences to catch lobsters for personal use in 2020-21.



There were 237 vessels that used baited pots to fish for 6,616 tonnes of rock lobster in Western Australia in 2020-21 with **the fishing activities of the western rock lobster industry contributing \$286.2 million to Gross State Product** including \$176.8 million of direct contribution and \$109.4 million from the flow on impacts generated by the industry.

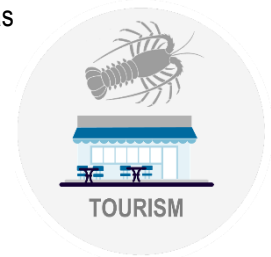
The fishery sector was a major employer providing jobs for 593 FTE skippers and crew many of whom were located in regional areas. The flow on employment created by the industry accounted for a further 547 FTE jobs resulting in **total employment creation of 1,139 FTE jobs in Western Australia**.

In relation to the **processing sector**², in 2020-21 it was estimated that around 4,220 tonnes of lobster was prepared for the export market in facilities located in Perth, Cervantes, and Geraldton which generated **\$110.8 million to the Gross State Product of Western Australia**, of which \$65.6 million as a direct result of the sector and a further \$45.2 million in flow on contributions in the broader economy. The processing sector directly employed 328 FTE employees and its activities generated a further 242 FTE jobs in the broader economy resulting in **total job creation in 2020-21 of 569 FTE jobs**.



Further down the value chain, the boat building and servicing industry is located in regional areas including Dongara and Geraldton, providing important economic value and employment in these areas. In 2020-21, it is estimated that the **boat building and servicing sector contributed \$17.5 million to the economy of Western Australia** and accounted for an estimated **102 direct and indirect FTE jobs** in the State.

The western rock lobster industry generates tourism activity, given its status as a premium product, with a number of successful tourism-based operators including those located in Cervantes, Jurien Bay, Dongara and Geraldton. It is estimated that **the tourism sector contributed \$4.4 million to the Western Australian economy** as a result of the activities associated with the western rock lobster industry and **generated 31 direct and indirect FTE jobs**, the majority of which were directly employed by tourism operators (18 FTE jobs).



The role of western rock lobster industry in supporting regional communities

The western rock lobster industry forms a key part of the economic and social fabric of many coastal communities in regional Western Australia. It provides employment allowing regional people to remain living and working in their home communities, and it provides economic value which support other businesses and their employees in these areas.

In total, the industry contributed \$149.8 million to the regional towns included in this study as well as 534 FTE jobs, of which 474 were direct FTE jobs. This is half of all of the direct jobs supported by the industry in 2020-21 and 29 per cent of the total job creation in the State. In 2020-21, the regional parts of the western rock lobster industry contributed 56 per cent of the direct economic value of the industry and 36 per cent of the total direct and indirect contribution to Gross State Product with nearly all of this contribution from the fishery. Whilst many of the contributions in

¹ Department of Primary Industries and Regional Development (2021), Annual Report 2020-21

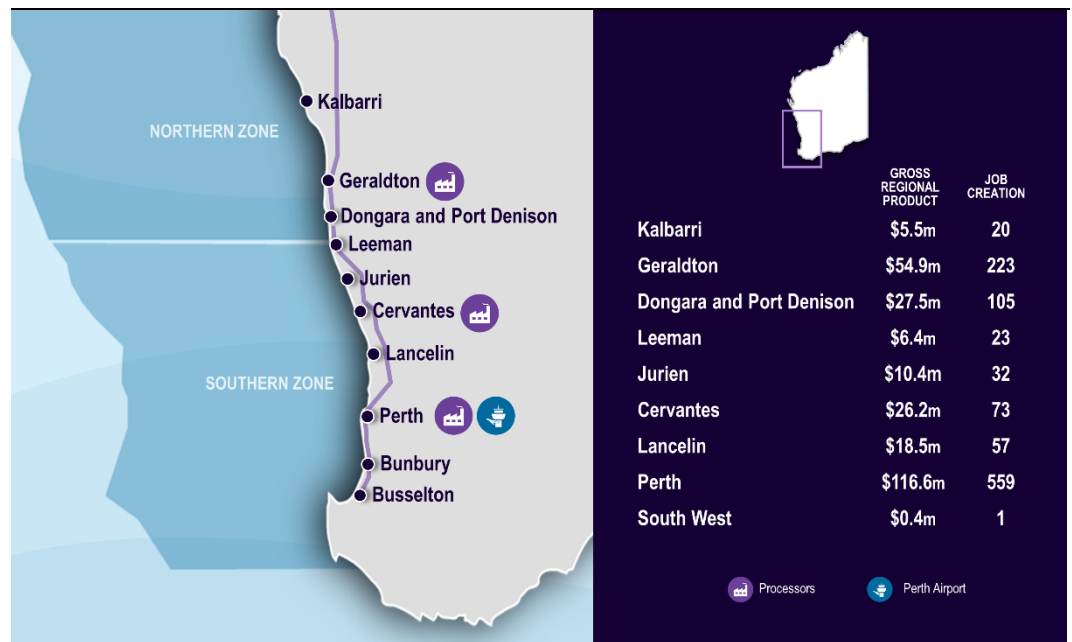
² including the contribution of the transport sector

regional coastal communities are small, they represent a significant share of local economies with **the industry contributing 57 per cent of the economy of Cervantes, 39 per cent of the economy of Leeman, and 33 per cent of the economy of Lancelin.**

Overall, **the largest impact from the western rock lobster industry in regional Western Australia is realised in Geraldton**, which accounts for 41 per cent of the contribution to the Gross Regional Product in the Northern Zone and 13 per cent of the total contribution made by the industry to Gross State Product.

As well as the large regional impact, there are also significant benefits realised in the Perth area, including \$116.6 million contribution to Gross Product and job creation of 559 FTE jobs including 411 direct FTE jobs (**Figure ES 4**).

Figure ES 4 The economic contribution of the western rock lobster industry by town



Source: ACIL Allen



1.1 Report background

The western rock lobster fishery was established in the early 1950's and was integral to the establishment of many of the coastal communities north of Perth. It continues to make an important economic contribution to the economy of Western Australia and to the many regional coastal communities in which the fishery operates. Today the western rock lobster fishery is the most valuable wild caught commercial fishery in Western Australia, generating hundreds of millions of dollars in exports each year, as well as indirect benefits to other industries including those in the tourism and agrifood industries.

ACIL Allen has been engaged by Western Rock Lobster, the peak industry body for the western rock lobster fishery, to conduct an economic contribution study of this iconic Western Australian industry in 2020-21. This report provides an update on the economic contribution of the industry following the completion of the 2016-17 economic contribution study by ACIL Allen. This study was a first of its kind and was undertaken to demonstrate the significant economic and social benefits that the western rock lobster industry generates to regional communities along the coastline, and the Western Australian economy more broadly.

Since this time, the industry has been required to adapt to a number of significant events, most notably the impact of COVID-19 and the restrictions imposed on the export of western rock lobsters to the key market in China. While the impact of COVID-19 was temporary, the restrictions on exports to China have continued, requiring the industry to explore new markets for its premium product.

To understand how the industry has evolved, and the economic consequences of this change, Western Rock Lobster commissioned ACIL Allen to model the economic contribution of the industry in 2020-21. In undertaking this study, ACIL Allen has adopted the same methodology that it deployed for the 2016-17 study, but with updated data and information to reflect economic conditions in the industry.

1.2 Estimating the economic contribution of the industry

The economic contribution of the western rock lobster industry is defined as the total economic activity required to produce a good or service. The economic contribution includes the direct contribution that the industry makes in terms of the spending, revenue, and employment immediately required to operate the industry as well as the broader economic contribution that this initial stimulus creates. These are the flow on benefits that are made along the value chains that support the industry and its employees.

Two key data sets are used to inform the analysis. The first uses data that describes the scale of the industry in terms of the volume and value of catch including exports and domestic sales.

The inputs to economic modelling describe the spending, revenue, and employment profile of the industry collected through consultation with key industry representatives including a survey of Western Rock Lobster members. This data was the primary input into ACIL Allen's in house Input Output modelling framework to identify the industry's contribution to the Gross State Product of Western Australia and to the regional coastal communities in which it is located, and the full time equivalent (FTE) jobs that are created by the industry and in the broader economy.

1.3 Report structure

This report has been structured into four primary sections (including this section) and an executive summary which provides a summary of the key findings and insights from the report. The remainder of this report includes the following sections:

- **Section 2: Market Overview** provides a broad overview of western rock lobster fishery and value chain, and its key markets from both a national and state perspective. This section also details the results of ACIL Allen's survey of Western Rock Lobster members in late 2021, which was undertaken to obtain additional insights into the economic and social consequences of these developments on the industry and the community more broadly arising from the COVID-19 pandemic and the closure of the Chinese market in late 2020.
- **Section 3: Economic Contribution of the Western Rock Lobster Industry** presents economic contribution of the western rock lobster industry, which has been based on ACIL Allen's Input Output model of the Western Australian economy. Results have been presented in terms of the direct and indirect contribution to Western Australia's Gross State Product, and full time equivalent job creation across the State. Consistent with the 2016-17 study, ACIL Allen has also presented the results across the western rock lobster value chain, with the economic contribution estimated for the fishery, processing, boat building and maintenance and tourism industries.
- **Section 4: The Role of the Western Rock Lobster Industry in Supporting Regional Communities** details the impact of the western rock lobster industry on key regional centres in the Northern Zone of Kalbarri, Geraldton, Dongara/Port Denison and Leeman, and the Southern Zone regional centres of Jurien, Cervantes, Lancelin, Perth and the broader South West region. Results have been presented in terms of the impact of the industry on economic activity in the region, and the jobs created or supported by the industry.
- **Appendix A** – contains the survey questions provided to industry regarding the impacts of COVID-19 and the closure of the Chinese market on the western rock lobster industry.
- **Appendix B** – provides details of the Input Output modelling approach used in this report.

1.4 Terms and abbreviations

The following table presents the terms used throughout this report.

Table 1.1 List of terms

Term	Meaning
Employment	The number of full time equivalent (FTE) job years created as a result of a project or expenditure in the economy, which includes direct and indirect (flow-on) employment. One FTE is equivalent to a fully employed person working full time hours in a year.
Gross product or real economic value add	<i>A measure of the size of an economy.</i> Gross product is a measure of the output generated by an economy over a period of time (typically a year). It represents the total dollar value of all finalised goods and services produced over a specific time period and is considered as a measure of the size of the economy. At a national level, it is referred to as Gross Domestic Product (GDP); at the state level, Gross State Product (GSP); at a regional level, Gross Regional Product (GRP); while at a town level, Gross Town Product (GTP).
Input-Output Tables	Input-Output (I-O) tables capture the direct and indirect effects of expenditure by capturing, for each industry, the industries it purchases inputs from and also the industries it sells its outputs to. For example, the I-O model for Western Australia captures purchases from and sales to industries located in Western Australia, as well as imports from outside of Western Australia.

Source: ACIL Allen

The following table presents the acronyms used throughout this report.

Table 1.2 List of acronyms

Acronym/ abbreviation	Meaning
\$m	Million Dollars
AUD/ A\$ or \$	Australian dollars (default unless otherwise specified)
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
FTE	Full Time Equivalent
FY	Financial year
GST	Goods and Services Tax
I-O tables	Input Output Tables
LGA	Local Government Area
TACC	Total Allowable Commercial Catch
WCRLF	West Coast Rock Lobster Managed Fishery
WRL	Western Rock Lobster, the peak industry body for the western rock lobster fishery

Source: ACIL Allen

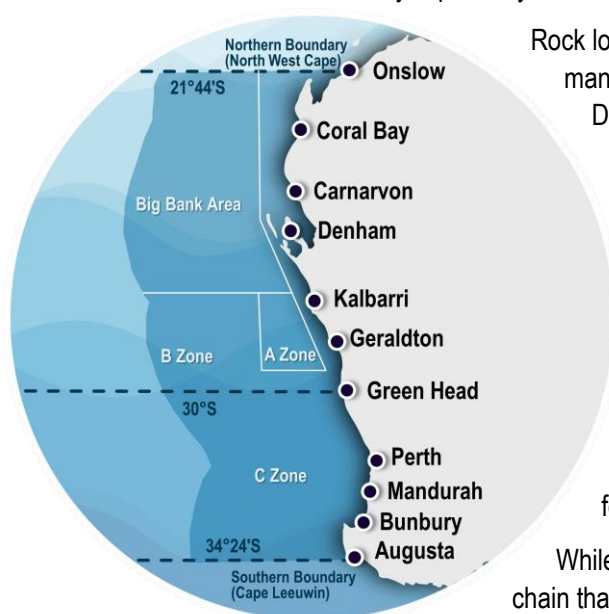
Market Overview

2

This chapter provides a broad overview of western rock lobster fishery and value chain, and its key markets from both a national and state perspective. This section also details the results of ACIL Allen's survey of Western Rock Lobster members in late 2021, which was undertaken to obtain additional insights into the economic and social consequences of these developments on the industry and the community more broadly arising from the COVID-19 pandemic and the subsequent closure of the Chinese market in late 2020.

2.1 Industry overview

The western rock lobster industry is the State's most valuable single-species wild capture fishery³ that targets the western rock lobster, the most abundant of the eight species found in the State. The distribution of western rock lobster is between Shark Bay in the north and Cape Leeuwin in the south, however they are most commonly found between Perth and Geraldton, which is also where industry is primarily focussed.



Rock lobsters are fished by commercial and recreational fishers and both are managed by the Department of Primary Industries and Regional Development. The commercial West Coast Rock Lobster Managed Fishery (WCRLF) is comprised of three fishing zones including Zone A (Abrolhos Islands), Zone B (north of latitude 30°S) and Zone C (south of latitude 30°S). In 2000, the WCRLF was the first in the world to be accredited by the London-based Marine Stewardship Council (MSC) as an ecologically sustainable fishery and in 2017 was the first to be recertified for a fourth time.

Management measures include a Total Allowable Commercial Catch (TACC), which restricts the catch for the industry in each season, while other measures relate to size limits, protection of breeding females, and area closures.

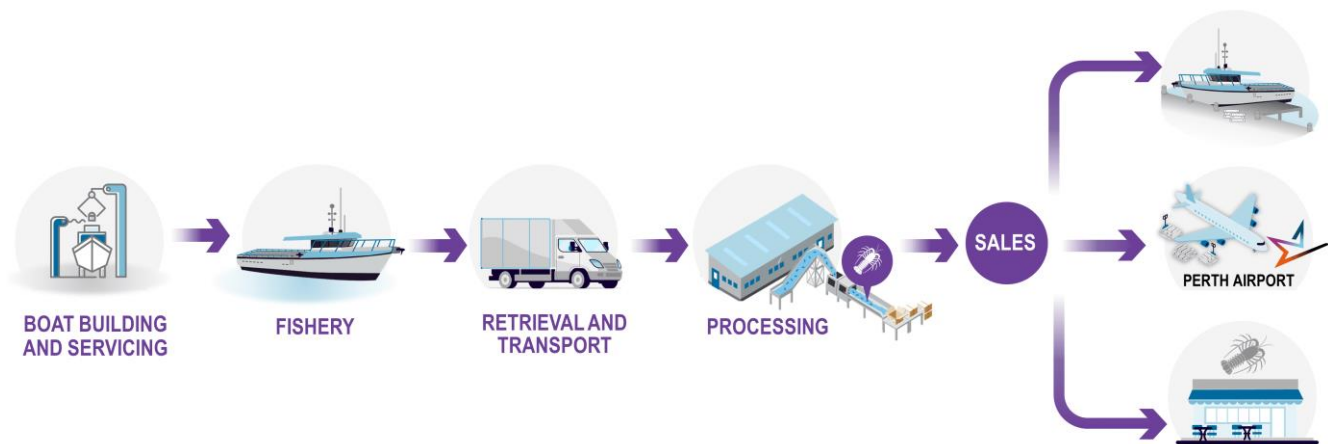
While the fishery is what the industry is recognised for, there is a large value chain that exists, which together generates economic opportunities across regional coastal communities and the Western Australian economy more broadly.

Broadly speaking, the western rock lobster industry value chain includes the fishing, transport, processing, and boat building and servicing sectors and the industry supports the tourism sector. These sectors are described briefly below.

Figure 2.1 illustrates the value chain for western rock lobster in Western Australia.

³ DPIRD, Fisheries (2021). Lobster commercial fishing

Figure 2.1 Western rock lobster value chain



Source: ACIL Allen

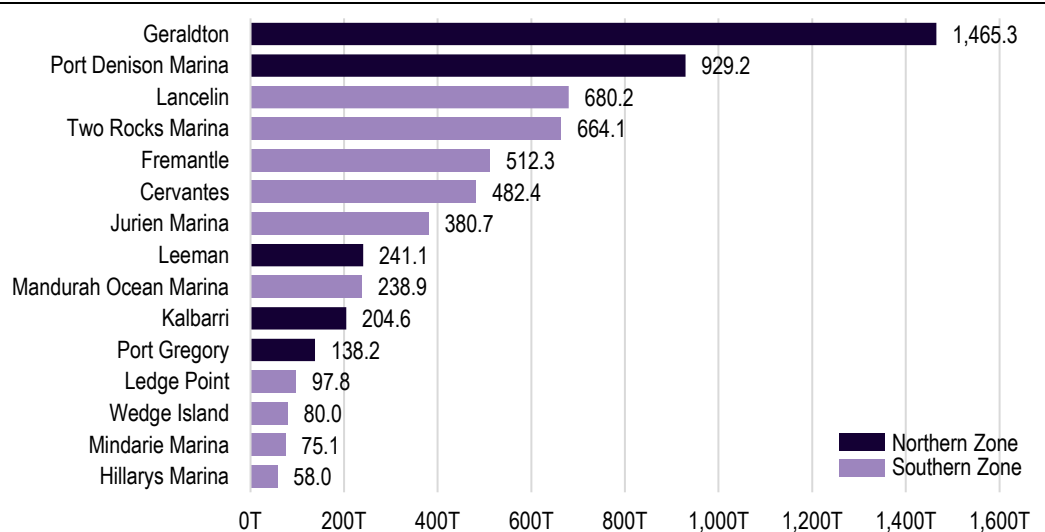
Fishery



The most visible part of the western rock lobster value chain is the fishery itself. There were 237 vessels that used baited pots to fish for 6,616 tonnes of rock lobster in Western Australia in 2020-21. The lobster catch from each boat is offloaded at receival points located along the coast where it is picked up by trucks and stored in spray bed tanks for transport to processors for preparation for market.

There are a number of receival points located along the western coast of Western Australia and those that receive greater than five vessels per annum are presented in **Figure 2.2**. Together they received 6,248 tonnes of lobster in 2020-21 which was 94 per cent of the total catch. The remainder of the catch was received by carrier boats as well as smaller receival points that are mostly located in small communities such as Horrocks Beach and Greenhead, but also include larger centres such as Carnarvon, Bunbury, and Rockingham.

Figure 2.2 Catch of western rock lobster by key receival point, tonnes



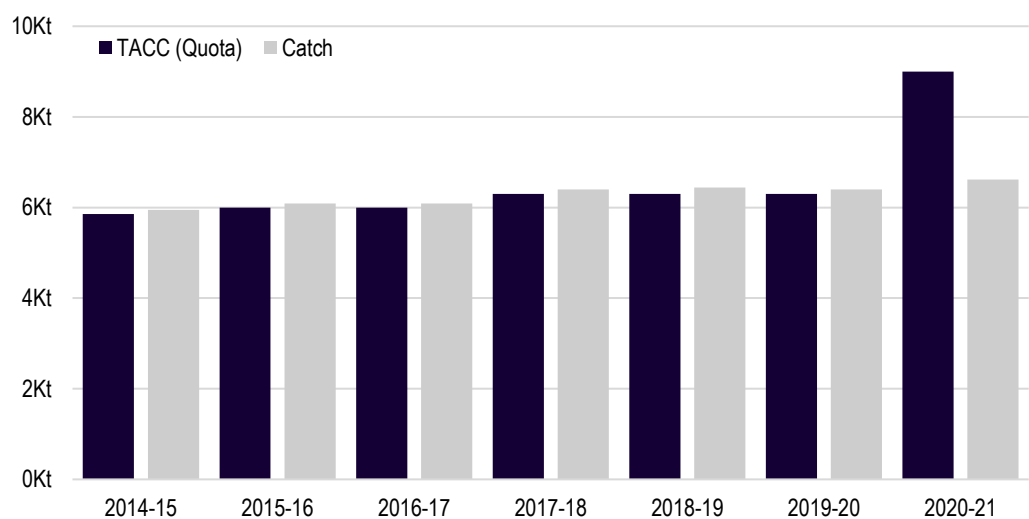
Source: DPIRD

Key inputs required for the operation of boats include lobster pots, fuel, bait, fishing equipment (including sea water pumps, rope, winches, and on-board tanks to store catch), and servicing and maintenance. A typical crew consists of three to four members comprising of two to three deckhands, and one skipper.

Historically, the TACC for the western rock lobster industry was around 6,000 tonnes per season. However, in 2020-21, the WA Government agreed to allow for an extended season to fishers which increased the TACC to 9,000 tonnes, a 50 per cent increase from the previous six seasons to reflect the extended season length – in effect, an unchanged TACC on an annual basis (Figure 2.3). Changes to the TACC and length of season to support the fishery were announced in March 2020 in response to the impact on the industry from COVID-19. These changes applied to the 2020-21 season and included:

- 18 month fishing season which extended the season to June 30, 2021
- TACC of 9,000 tonnes which brought forward a proportion of the quota from the future season and reflected the extended season length
- new mechanism for back of boat sales of lobsters, to help make it easier for licensed fishers to sell lobsters to the local community, restaurants and seafood wholesale and retail outlets
- wider promotion of existing 'registered receiver' mechanisms for local businesses to access larger numbers of rock lobster direct from fishers.⁴

Figure 2.3 Total Allowable Commercial Catch of western rock lobster, Kt



Source: WRL. Note: 2020-21 includes the extended season.

Transport



Once the western rock lobsters are offloaded at receival points, they are next transported to processing facilities. The transport industry provides an essential service to the western rock lobster industry by collecting catch from coastal collection points and delivering it in specialised trucks to processing facilities. In 2020-21, there were 17,855 visits by boats to receival points located along the coast from Bunbury to Kalbarri.

Specialised trucks are also used to transport processed products to their market destination within Western Australia including Perth Airport (for transport to export markets), as well as local restaurants, and local seafood businesses.

⁴ WA Government Media Statement (March 2020). Lobster rescue plan aims to support industry through COVID-19



Processing

Live lobsters are prepared for market in climate-controlled processing plants in Western Australia located at Perth, Cervantes, and Geraldton. The majority of processed lobsters are prepared for the export market where they are packaged into specialised boxes as live, cooked, or frozen product with the majority of product sold as whole lobsters or lobster tails.



Boat building and servicing

The boat building and servicing industry supplies new and second hand boats to the fishery and provides servicing and maintenance to the fleet. Many of the businesses in the industry are located in regional areas including Dongara and Geraldton, providing important economic value and employment in these areas. These include boat lifting businesses, as well as boat builders, refits, repairs, and modifications.



Tourism

The western rock lobster industry is an iconic Western Australian industry and several operators have been successful in building tourism businesses that leverage the industry. The Lobster Shack in Cervantes is a processing company that operates a restaurant, factory tours, and charter tours for visitors. Charter tours also operate from other towns including Geraldton, Dongara/Port Denison, and Jurien Bay.

Recreational sector

While the economic value of the commercial fishery is reflected through the production and export of western rock lobsters, the fishery also provides an important contribution to society as a recreational activity. Rock lobster fishing is a major recreational activity for Western Australians with 56,362⁵ recreational fishers granted licences to catch lobsters for personal use in 2020-21. This accounted for 23 per cent of all recreational fishing licences issues by the Department of Primary Industries and Regional Development.

2.2 Recent developments impacting the industry

ACIL Allen undertook a survey of the Western Rock Lobster membership in late 2021 to understand the impacts of COVID-19 and the closure of the Chinese market on the industry

The outbreak of COVID-19 in early 2020 and the closure of the Chinese market in late 2020 had an impact on the viability of the western rock lobster industry during 2020-21 as evidenced by a large fall in the value and volume of export sales compared with 2018-19 which was the last operating year before these impacts took hold. The economic impacts of COVID-19 and the Chinese market disruptions to the industry is reflected in the production and export data available for the industry at a national and state level. These insights are presented in further detail in the next section.

However, in order to obtain additional insights into the economic and social consequences of these developments on the industry and the community more broadly, ACIL Allen undertook a survey of the Western Rock Lobster membership in late 2021. In total, there were 64 respondents to the industry survey. A copy of the online survey questionnaire is provided in **Appendix A**.

While there was an acknowledgement that the market disruptions caused by the COVID-19 outbreak in early 2020 had an impact on the industry during 2020-21, this impact was short lived, with stakeholders indicating that the industry was recovering strongly during the early part of 2020-21. The biggest challenge was when the industry was hit a second time by disruptions to the Chinese market and its eventual closure in late 2020, which was the destination for over 90 per cent of the total western rock lobster catch. Unlike the COVID-19 impacts, the closure of the Chinese market is still in force today, which has required the industry to make significant

⁵ Department of Primary Industries and Regional Development (2021), Annual Report 2020-21

adjustments to its operations and the marketing of the western rock lobster to new markets. As put by a number of industry stakeholders:



“There are two very separate issues here, when COVID-19 struck we were still exporting to China. We got back on track and prices and demand were good until November when trade disruptions kicked in and has reduced demand to our highest priced market”

“Income has halved due to low prices, and the value of the pots has nearly halved. Closure of the Chinese market is 97% of our problem. They paid the premium [prices].”

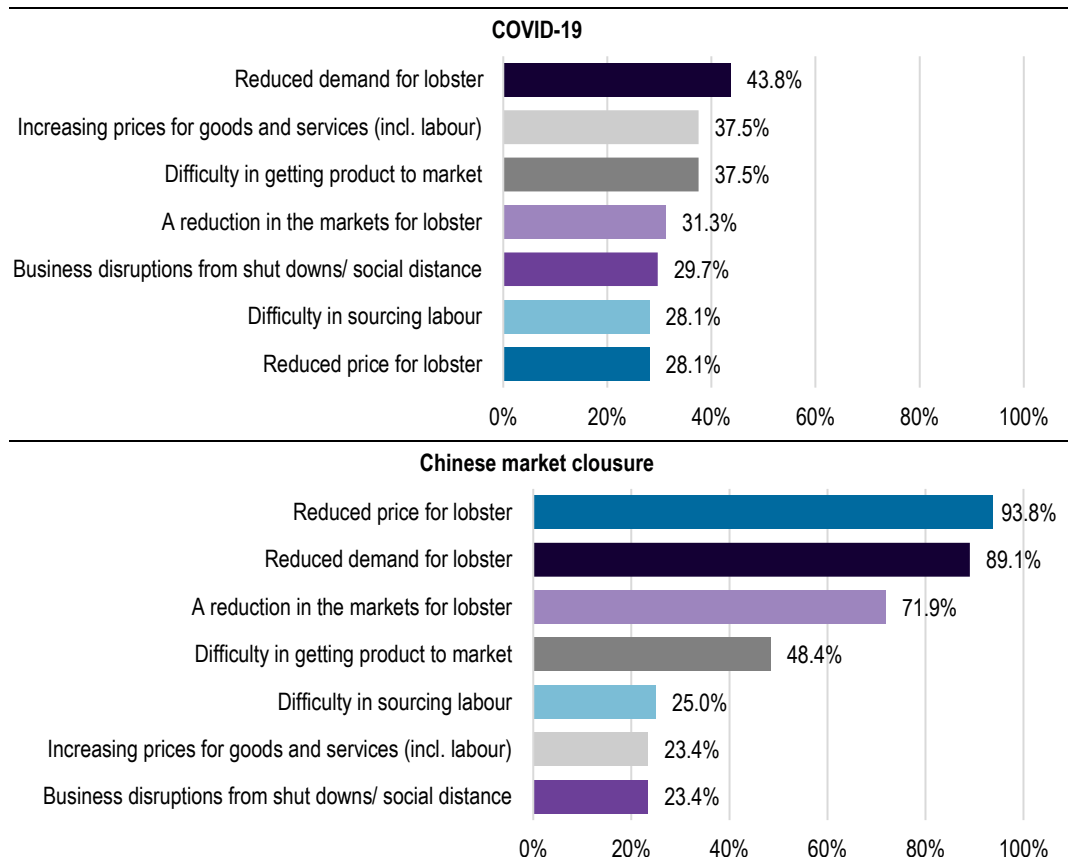
“The closure of the Chinese market has devastated our industry to date. Hopefully our governments can resolve their dispute soon.”

“The closure of the Chinese market has devastated our industry to date. Hopefully our governments can resolve their dispute soon.”

The aggregated results demonstrated the concerns over the impact of the closure of the Chinese market to industry. When asked how COVID-19 and the Chinese market disruptions impacted the western rock lobster industry, the majority of respondents believed that the Chinese market disruptions had brought with it a decline in prices and demand, and the ability to get products to market (Figure 2.4).

Specifically, almost 94 per cent of respondents indicated that the Chinese market disruptions had brought with it a reduced market price for the western rock lobster, with a further 89 per cent of respondents suggesting that the Chinese market disruptions had reduced the demand for lobsters. Almost 72 per cent of respondents also indicated that the market for western rock lobster had reduced as a result of the closure of this market.

Figure 2.4 Industry impacts of COVID-19 and Chinese market closure, percentage of respondents identifying a selected impact as one of their top three responses



Source: ACIL Allen Online industry Survey. Total responses: 64, total answers: 391. Note: some respondents selected more or less than the requested “top three” impacts.

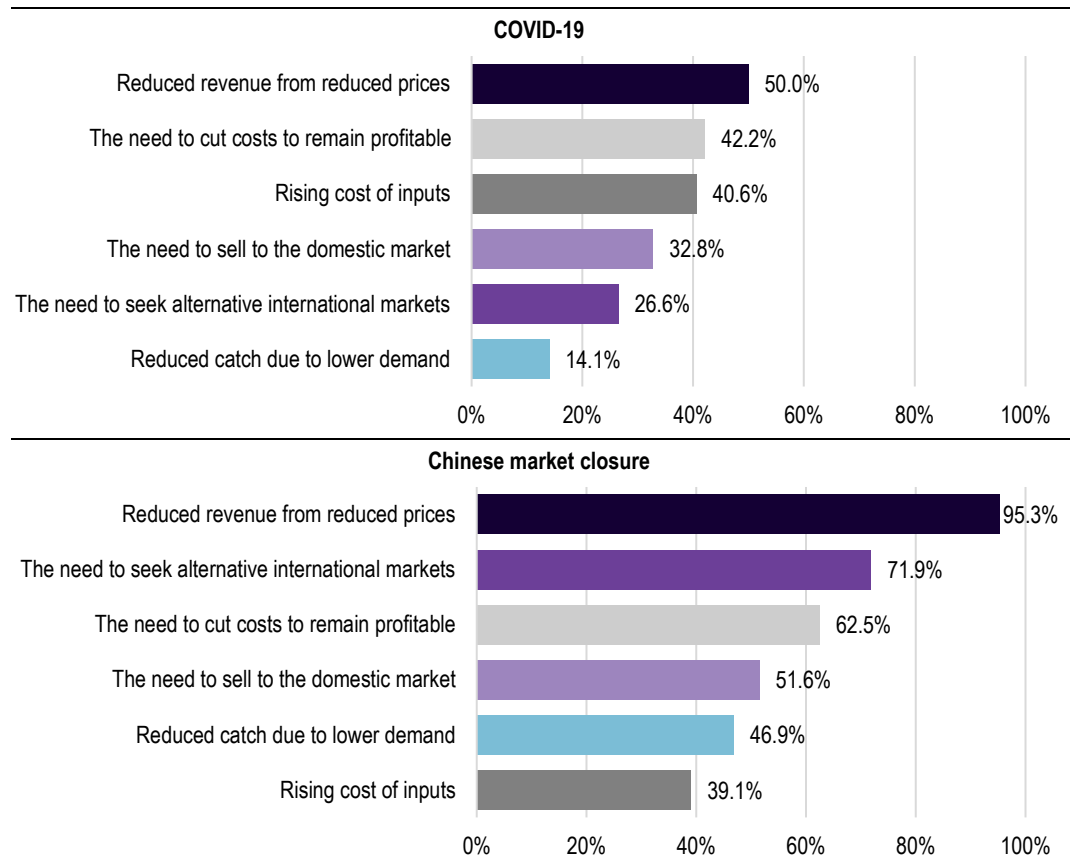
The closure of the Chinese market has meant industry has had to adjust their operations in a lower price environment, explore new overseas and domestic markets, and cut costs to remain profitable

These results were not surprising given the importance of the Chinese market to the industry. While the impacts associated with COVID-19 were less significant, there was still large percentage of respondents that reported that COVID-19 had impacted the demand for lobsters (43.8 per cent identifying it as one of their top three impacts) and in making it difficult to get product to market (37.5 per cent of respondents). Unlike the impacts of the Chinese market disruptions, the impacts of COVID-19 were skewed more towards increasing the costs of doing business, with a large percentage of respondents highlighting that it had increased business costs (37.5 per cent of respondents), the costs associated with business shut downs and social distancing (29.7 per cent) and difficulties in sourcing labour (28.1 per cent), reflecting the impact of border closures on value chains and the local labour market.

In response to these developments, industry has had to adjust their operations significantly. According to the results of the industry survey, from an organisational perspective, the most significant impacts of the Chinese market disruptions have been adjusting to lower prices for western rock lobster and therefore revenues (95.3 per cent of respondents identifying this as one of their top three impacts), the need to seek alternative markets overseas (71.9 per cent of respondents), the need to cut costs to remain profitable (62.5 per cent of respondents), and the need to sell to domestic markets (51.6 per cent of respondents) (Figure 2.5).

While the organisational impacts of COVID-19 were less widespread compared to the closure of the Chinese market, respondents still reported that it had impacted on the prices received and therefore revenues (50 per cent of respondents), as well as the need to cut costs to remain profitable (42.2 per cent of respondents) and the rising costs of inputs due to the impact of border closures on value chains and labour availability (40.6 per cent of respondents).

Figure 2.5 Organisational impacts of COVID-19 and Chinese market closure, percentage of respondents identifying a selected impact as one of their top three responses



Source: ACIL Allen Online industry Survey. Total responses: 64, total answers: 391. Note: some respondents selected more or less than the requested "top three" impacts.

These impacts were reflected in a range of responses to the industry survey, including the following comments by industry stakeholders:



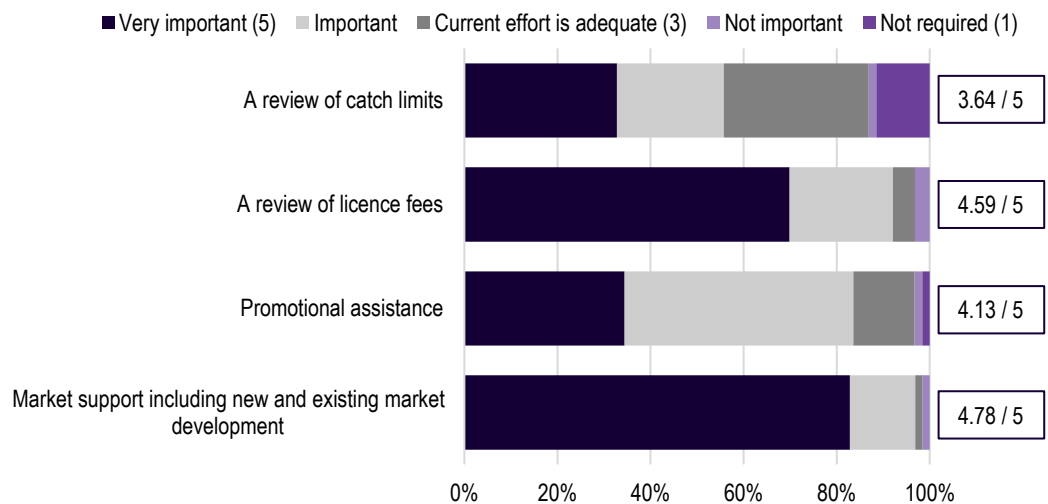
“The increase in freight costs due to chartered flights being used instead of commercial flights as well as the loss of revenue due to the reduction of prices has put a huge strain on smaller business as we still have the same amount of costs / obligations to meet in order to run the business. Apart from IFAM Grant there was very little Government support to this sector considering how much revenue the Lobster industry contributes to the State.”

“Local market is of really minimal help for our industry, based on high costs associated with our industry and government charges.”

The most significant response that industry is looking for as a result of the impacts of the closure of the Chinese market and COVID-19 was for market support and promotional assistance from Government

Given the impacts on industry from these developments, industry stakeholders were asked what needed to be done to assist industry over the short to medium term. The key assistance response that industry is seeking as a result of the impacts of the Chinese market disruptions and COVID-19 is market support, including new and existing market development, with 96 per cent of respondents indicating that this was “important” or “very important” for the future of the industry (Figure 2.6). Aligned to this initiative was the need for promotional assistance from Government to assist the industry in reaching new markets, with 83.6 per cent of respondents indicating this was important or very important.

Figure 2.6 Importance of industry assistance options to the future of the industry



Source: ACIL Allen Online industry Survey

The other priorities identified by industry stakeholders were focussed on their operations, with 92.1 per cent of respondents indicating that there needed to be a review of licence fees to reduce the costs of doing business, with 55.7 per cent of respondents also seeking a review of catch limits. These results were reinforced through the following feedback provided through the online survey:



“China -Australia relations need to be sorted ASAP.”

“The major immediate factor is for a reduction in fees. The deferral of fees is not going to help - it is only prolonging the pain. There needs to be a reduction to reflect the true Beach Price at the time - to which the whole structure needs to shift to permanently.”

“We don’t need a lift in the TACC because we are finding it hard enough to sell our current amount.”

“Again, increase quota to 11 million kg until things go back to normal. The fishery can sustain that. Plenty on stock on ocean floor.”

2.3 Broader industry trends

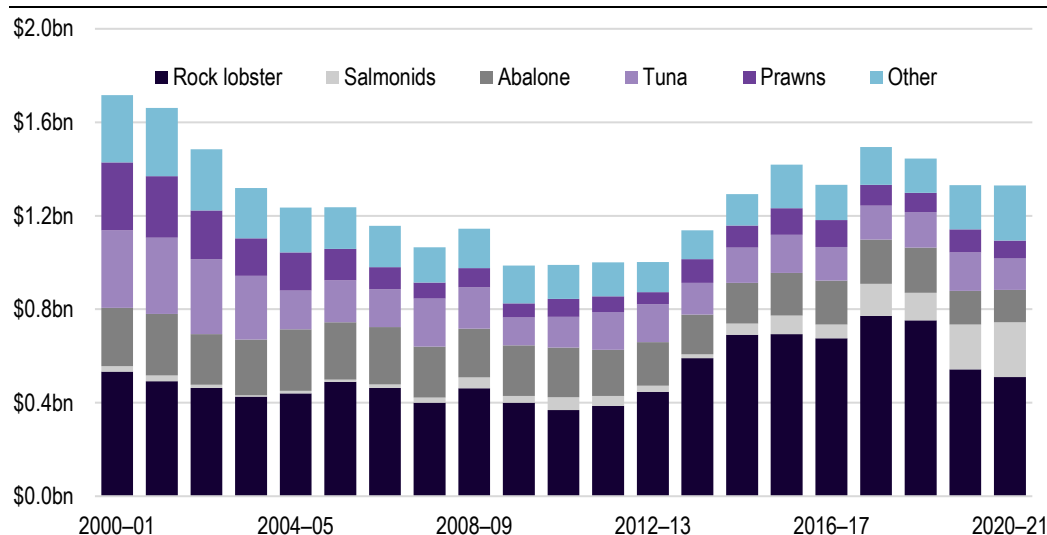
The rock lobster is Australia’s most valuable fishery export, accounting for more than one third of total fishery and aquaculture exports each year since the beginning of the century

The previous section provided insights into the perceptions within the industry around its performance in light of the damaging impacts that COVID-19 and the Chinese market disruptions have had on their operations. These perceptions are reinforced when analysing the market trends observed through official data sources.

The rock lobster is Australia’s most valuable fishery export, accounting for more than one third of total fishery and aquaculture exports each year since the beginning of the century (Figure 2.7). Despite the decline in the total value of fishery exports over the past two decades, the rock lobster industry shown significant growth, with export returns increasing from \$533 million in 2000-01 to \$771 million by 2018-19, just prior to the onset of COVID-19 and the introduction of export restrictions to China.

As noted in the previous section, these market developments have had a significant impact on the rock lobster industry, with exports falling by 51 per cent to \$380 million by 2020-21, which has had the impact of driving down the overall value of Australia’s fishery and aquaculture exports.

Figure 2.7 Australian fisheries and aquaculture export value, \$ billion



Source: ABARES; ACIL Allen. Note: ABARES estimate 2020-21. Other includes live fish, swordfish, other fish, scallops, crabs, and other crustaceans and molluscs.

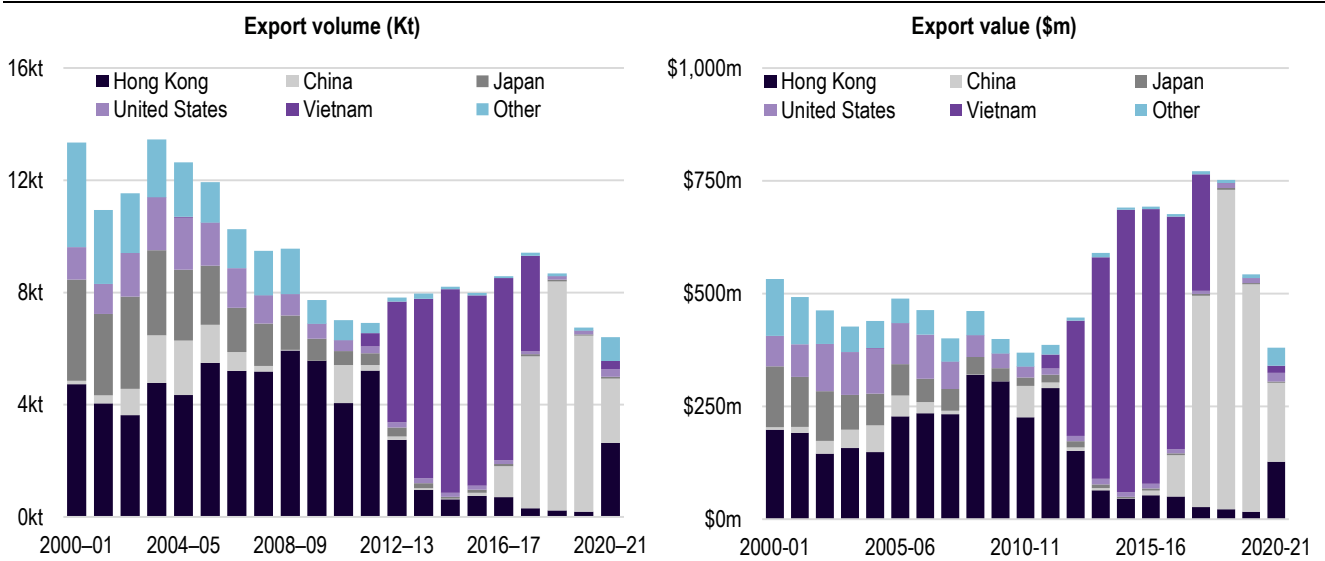
Historically, Hong Kong was Australia’s primary export market for rock lobsters, accounting for around half of Australia’s rock lobster export volumes. However, the direction of trade for rock lobsters pivoted to Vietnam between 2012-13 and 2016-17, with more than three quarters of all exports of rock lobsters from Australia going to this market, albeit a staging post for the Chinese market as the market of final consumption.

Further changes occurred between 2017-18 and 2019-20, with the China Australia Free Trade Agreement facilitating direct trade to China and resulting in this market emerging as the leading market for Australian rock lobster, taking over 80 per cent of trade volume and peaking at more than 93 per cent of rock lobster exports in 2019-20. China remained the key market in 2020-21 with sales of \$174.6 million which took place in the first half of the financial year and prior to the closure of this market in late 2020 resulting in it accounting for 36 per cent of the volume of rock lobster exports from Australia and 46 per cent of the value.

Following disruptions to the Chinese market in 2020-21, there has been an uplift of exports to the traditional market of Hong Kong, with export sales increasing from \$16.6 million in 2019-20 to \$127.6 million in 2020-21 accounting for one third of the value of rock lobster exports during the

year. Vietnam and the United States (Figure 2.8) have also seen significant growth with export sales to Vietnam increasing from \$0.01 million to \$15.9 million and exports to the United States doubling in value.

Figure 2.8 Volume and value of Australian rock lobster exports by destination, Kt and \$ million

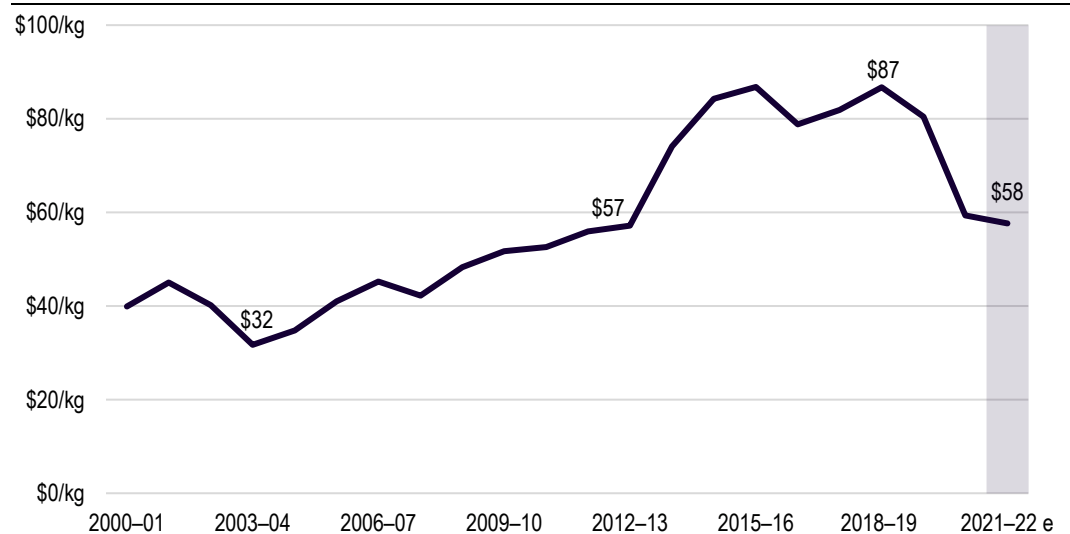


Source: ABARES; Agricultural Commodities December 2021; ACIL Allen. Note: ABARES estimate 2021-22.

Disruptions to the market for rock lobsters has had a significant impact on the market prices received by Australian producers, with the implied export price falling by almost one third in 2020-21 to \$58 per kilogram

The major disruptions to the market for Australian rock lobsters has had a significant impact on the market prices received by Australian producers. Over the past decade, the implied export price of rock lobster (volume divided by value) for Australian exports has followed an upwards trajectory, peaking at \$87 per kilogram in 2015-16 and 2018-19 driven primarily by demand from the Chinese market. However, with the Chinese market closed off from Australian exporters, this has significantly impacted export prices, as Chinese consumers were willing to pay a premium price in order to access Australia’s premium rock lobster product. In 2020-21, the export price declined by almost one-third from the peak price to around \$58 per kilogram, which is similar to prices received a decade ago in 2010-11 (Figure 2.9).

Figure 2.9 Implied Australian rock lobster export price, \$ per kg

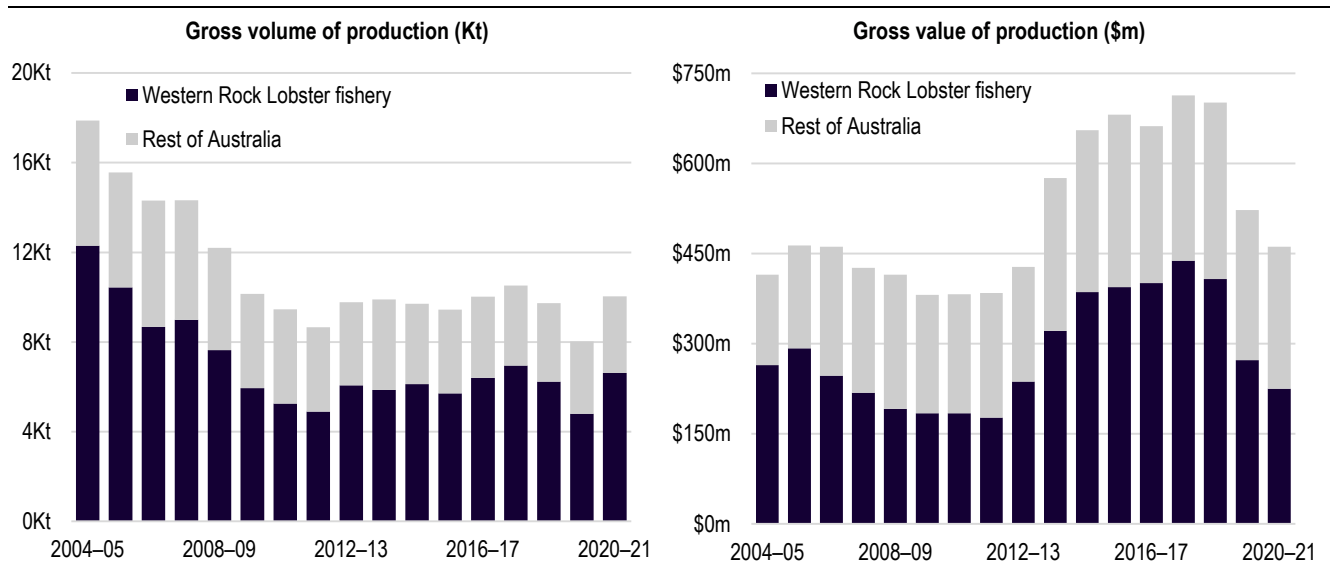


Source: Agricultural Commodity Statistics 2021: 8. Fisheries; ACIL Allen. Note: ABARES estimate 2021-22.

2.4 Trends in the market for the western rock lobster

Figure 2.10 shows that production volumes remained relatively steady over the past decade whilst value increased significantly. This increase is reflective of the growth in exports to the Chinese market and the willingness of this market to pay premium prices.

Figure 2.10 Australian Rock Lobster gross volume and value of production, Kt, \$ million



Source: ABARES. 2020-21 from Department of Primary Industries and Regional Development

After peaking at \$713.1 million in 2017-18, the gross value of production for rock lobsters declined to \$522.2 million in 2019-20 and again to \$461.2 million in 2020-21 as a result of market disruptions from COVID-19 and the closure of the Chinese market. ABARES has forecast the value of production to recover gradually over the next four to five years to remain at values returned by the industry prior to 2013-14⁶.

Figure 2.10 also highlights Western Australia’s prominence as the largest producer of rock lobsters in volume and value terms. Over the period from 2003-04 to 2020-21, Western Australia contributed an average of 63 per cent of the national annual production of rock lobsters and 56 per cent of its value. Prior to the impacts of COVID-19 and the closure of the Chinese market, Western Australia’s contribution to national production and exports increased from 48 per cent in 2010-11 to 61 per cent in 2016-17 and 2017-18.

In 2020-21, there were 237 vessels that targeted western rock lobster in Western Australia with a total catch of 6,616 tonnes and an estimated value of \$225.0 million⁷. This was down from the record high of \$428.1 million recorded three years earlier in 2017-18 and represents a halving in value whilst catches have remained broadly similar highlighting the significant impact that COVID-19 and the Chinese market disruptions have had on the industry in Western Australia. The decline in the value of production has had a significant impact on western rock lobster export returns, which have fallen by 35 per cent from a peak of \$501.1 million in 2017-18 to \$223.0 million in 2020-21.

Despite the decrease in the value of production, the western rock lobster industry remains one of Western Australia’s most valuable primary industries and is the largest wild caught commercial fishery in the State. Between 2014-15 to 2019-20, the gross value of rock lobster averaged \$383.3

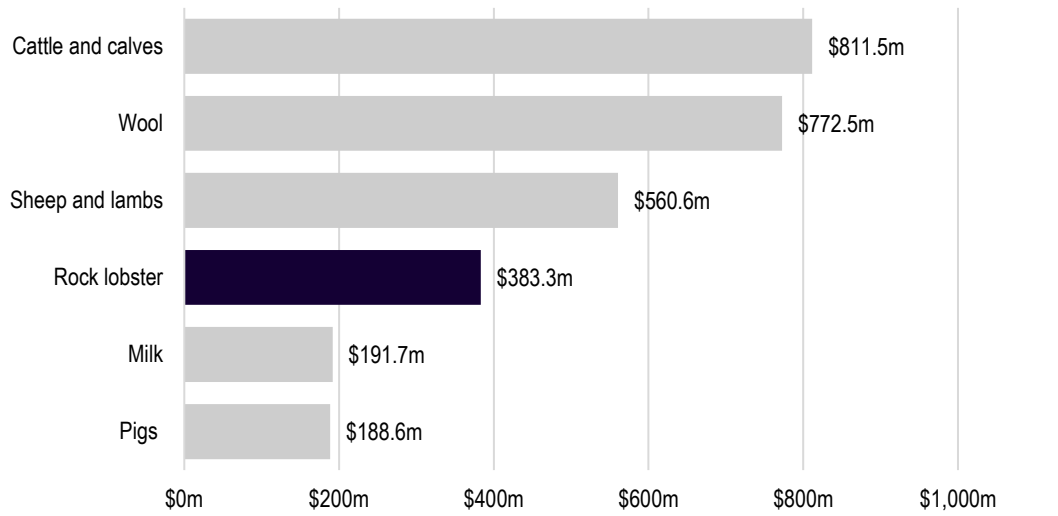
⁶ ABARES, Australian fisheries and aquaculture outlook 2021, Outlook for Key Species <https://www.awe.gov.au/abares/research-topics/fisheries/fisheries-economics/fisheries-forecasts#rock-lobster>

⁷ Based on beach price value before processing takes place.

The Western Rock Lobster industry is one of Western Australia’s most valuable primary industries, with its average value of production larger than the average gross value of production of milk and of pigs

million per annum which is larger than the average gross value of production of milk, and of pigs (**Figure 2.11**).

Figure 2.11 Gross value of production of Western Australia’s primary industries, six year average (2014-15 to 2019-20), \$ million



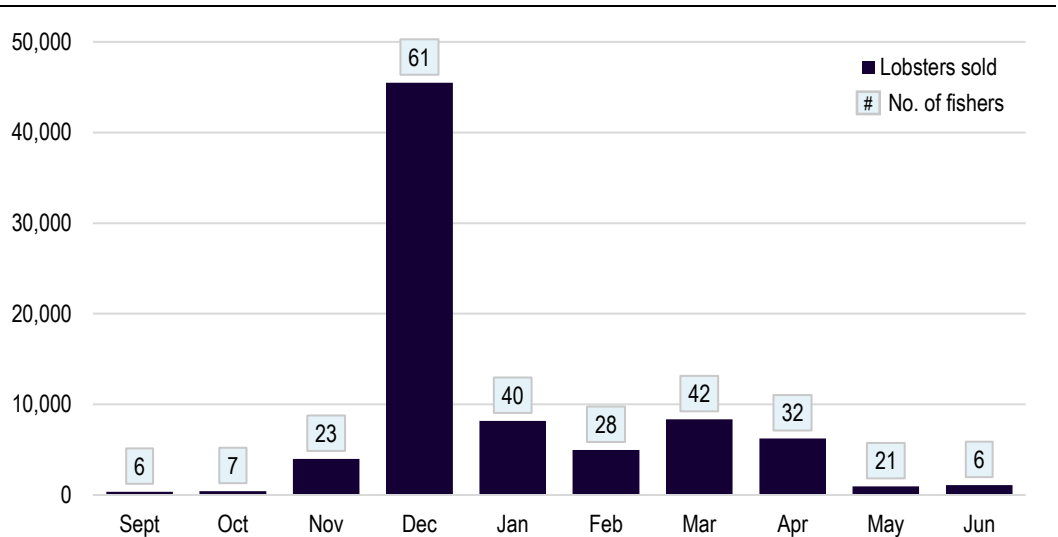
Source: ABS 7503.0 - Value of Agricultural Commodities Produced, Australia; ACIL Allen. Note: sheep and lambs, cattle and calves and pigs refer to 'Livestock slaughtered and other disposals' from that particular animal group. ABARES Fisheries and aquaculture production, Western Australia. Note: rock lobster is preliminary estimate of value of production.

2.4.1 Response to the closure of the Chinese market

The introduction of back of boat sales in 2020-21 resulted in the sale of nearly 80,000 lobsters with a value of \$2.2 million

In response to poor market conditions in 2020-21, the West Coast Rock Lobster Management plan was amended to allow back of boat lobster sales. This mechanism allows fishers to sell up to 100 lobsters per day directly to local restaurants, seafood retailers, the general public and tourists.

Figure 2.12 Back of boat sales (number of lobsters) and number of fishers, 2020-21



Source: WRL

In 2020-21, back of boat sales were in place from September 2020 and resulted in the sale of nearly 80,000 lobsters of which over half took place over the Christmas period resulting in total sales of approximately \$2.2 million. **Figure 2.12** presents the number of fishers that took advantage of this relaxation in regulations and the sale of lobsters.

Economic Contribution of the Western Rock Lobster Industry

3

This section presents economic contribution of the western rock lobster industry, which has been based on ACIL Allen's Input Output model of the Western Australian economy. Results have been presented in terms of the direct and indirect contribution to Western Australia's Gross State Product, and full time equivalent job creation across the State. Consistent with the 2016-17 study, ACIL Allen has also presented the results across the western rock lobster value chain, with the economic contribution estimated for the fishery, processing, boat building and maintenance and tourism industries.

3.1 Economic modelling framework and assumptions

3.1.1 Model framework

An Input Output (IO) modelling framework has been used for the purposes of estimating the realised economic contribution of the western rock lobster industry. IO models measure the direct and indirect effects of expenditure by capturing, for each industry, the industries it purchases inputs from and the industries it sells its outputs to. For example, the IO model for Western Australia captures purchases from and sales to industries located in Western Australia, as well as imports from outside the State. At a regional level, an IO model captures the purchases from and sales to industries located within the region to those located outside of it.

For this project, ACIL Allen has developed bespoke models of the Western Australian economy as well as those for the Northern Zone, the Southern Zone and for each of the Local Government Areas detailed in this report with the western rock lobster industry included as one of the more than 65 industries that are included in the model. Further details regarding ACIL Allen's Input Output model framework is presented in **Appendix B**.

The attributable direct net change in the economy as a result of the western rock lobster industry in 2020-21, has been produced in terms of:

- Economic value add in terms of the Gross State Product of Western Australia and the Gross Regional Product of the Northern Zone, Southern Zone, and towns
- Employment creation, in terms of the direct and indirect FTE jobs supported in the State and each region.

3.1.2 Modelling assumptions

Assumptions have been made regarding the inputs to the economic modelling. For each of the sectors of the value chain, the following assumptions have been made for 2020-21:

- Employment – the number of employees and the days they have worked for have been aggregated into a full time equivalent (FTE) terms for modelling purposes. This information

has primarily been sourced from Western Rock Lobster and its members on a confidential basis.

- Spending – the cost of inputs required to operate each business including items such as salaries, fuel, bait, pots, and repairs and maintenance including details of where these items are likely to have been purchased. This information has primarily been sourced from Western Rock Lobster and its members on a confidential basis.
- Revenue – the revenue generated including from the sale of lobsters to processors, direct to customers through back of boat sales, and to the export market. Revenue calculations for the tourism sector have also been made. This information has primarily been sourced from Western Rock Lobster and its members, and supplemented by ACIL Allen through official data sources on a confidential basis.

This study has had to generate additional insights from Western Rock Lobster and its members due to the unique circumstances faced by the industry due to the ongoing impacts of the COVID-19 outbreak and the impact Chinese market closure in late 2020. The WA State Government announced⁸ initiatives to support the western rock lobster industry including those that impacted the 2020-21 season. The 2021-21 economic contribution report reflects the changed operating environment including:

- season extension from 12 months to 18 months to provide fishers more time to land their catch and open value chains into other markets
- back of boat sales, allowing fishers to sell to the local community, restaurants, and wholesale and retail outlets
- waiver of mooring and licence fees
- reduction in revenue from export sales
- assumed reduction in spending by the western rock lobster value chain
- reduction in international and interstate tourism
- relaxation of restrictions around rock lobster boats and the operation of charter tours.

3.2 Contribution to the Western Australian economy

The western rock lobster industry makes a significant contribution to the economy of Western Australia through the spending required to operate the activities along the value chain, the employment it supports, and through the profits it generates. This direct contribution provides a stimulus to the broader economy in the industries that support the western rock lobster industry.

The contribution of the western rock lobster industry also extends to the impact of the spending by people directly employed by the western rock lobster industry on the local economy, on a range of household expenditure items such retail goods and services, spending at cafes and restaurants, recreation spending, right through to expenditure on mortgages and insurances.

In 2020-21, the western rock lobster industry made a direct contribution to the Western Australian economy because of the fishing, processing, and transport of lobsters and through the support of the boat building and servicing and tourism sectors which relied on the industry for their business. In 2020-21, ACIL Allen estimates that the 237 boats that comprise the industry harvested 6,616 tonnes of western rock lobster, which generated:

- \$225.0 million in value of production⁹
- \$309.7 million of sales, of which \$223.0 million was earned through sales to the export market including the key markets of Hong Kong, United States, and Vietnam and \$2.2 million was

⁸ WA State Government (2021). Changes to support recovery of WA's western rock lobster fishery

⁹ The value of production prior to any processing taking place.

from back of boat sales representing a new market for the industry. The remaining \$84.5 million in sales were to markets within Australia.

- Employment of 938 FTE workers including 593 fishers and 328 processors. A further 18 FTE jobs are estimated to be employed in the tourism sector as result of the industry.

3.2.1 Contribution to Gross State Product

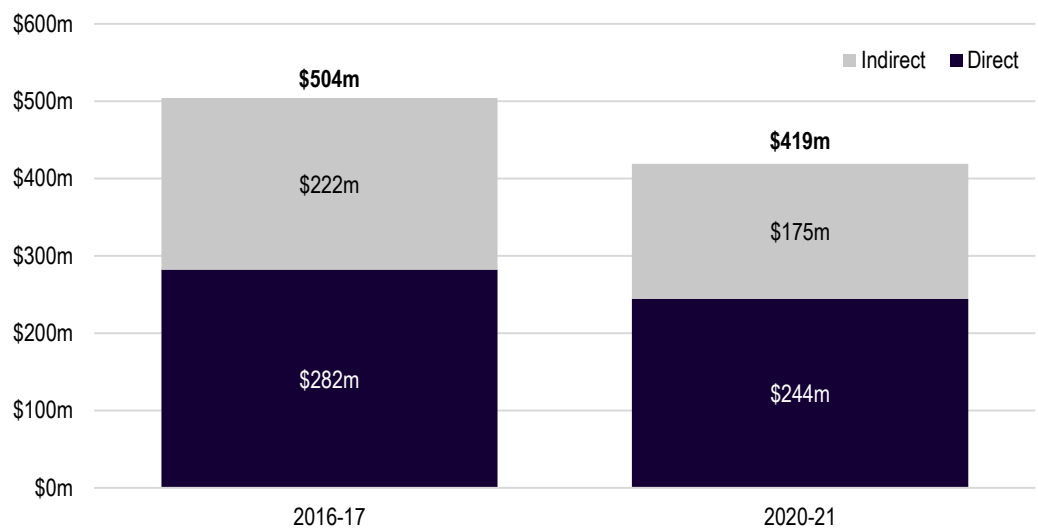
ACIL Allen estimates that in 2020-21, the Western Rock Lobster industry contributed \$418.9 million directly and indirectly to WA’s GSP. This is equivalent to one third of the total economic value generated by the State’s emerging Arts and Recreation sector in 2020-21

In 2020-21, ACIL Allen estimates that the western rock lobster industry directly contributed \$244.3 million to the Western Australian economy, as a result of the value added activities generated in the industry across the value chain – from harvesting through to the sales of lobsters to the domestic and export markets. A further \$174.6 million in indirect economic benefits was realised for the Western Australian economy as a result of the spending generated across a range of other sectors that directly support the western rock lobster industry and the people employed in the industry.

When combined, ACIL Allen estimates that in 2020-21, the western rock lobster industry contributed \$418.9 million directly and indirectly to the Gross State Product of Western Australia. Despite the significant challenges faced by the industry during 2020-21, ACIL Allen estimates that the economic contribution of the industry has remained strong overall, particularly when compared to the 2016-17 study, which found that the industry generated \$504 million to the WA economy during the year (Figure 3.1).

Notwithstanding the fall in the overall economic contribution of the western rock lobster industry, it remains a significant feature of Western Australia’s economic landscape. To put this into perspective, the overall economic contribution of the industry in 2020-21 was equivalent to one third of the total economic value generated by the State’s emerging Arts and Recreation sector in 2020-21.

Figure 3.1 Economic contribution of the western rock lobster industry, 2016-17 vs 2020-21, \$ million



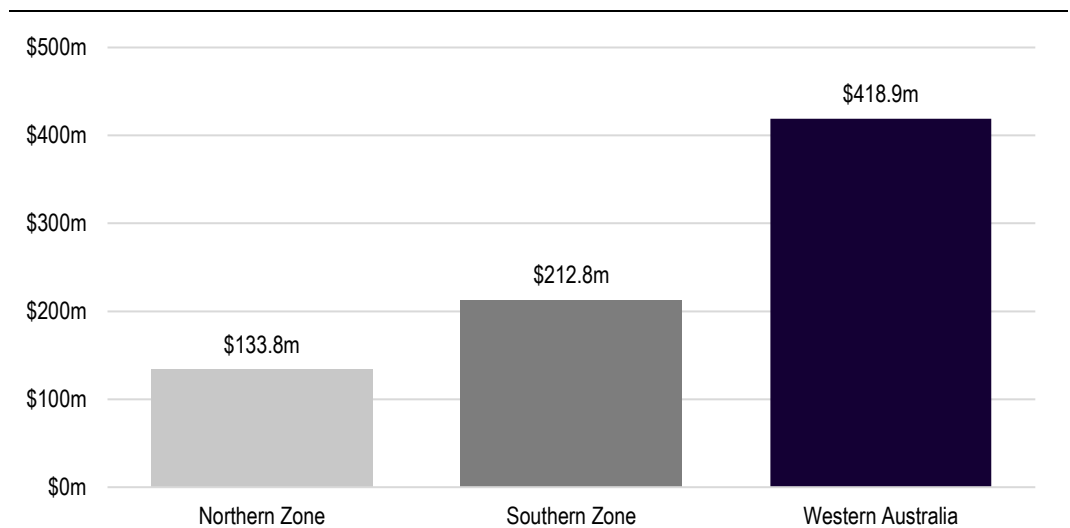
Source: ACIL Allen

ACIL Allen estimates that around one third or \$133.8 million of the total contribution to the Gross State Product of Western Australia was realised in the Northern Zone which is where half of the catch is harvested, and where a processing facility, several large boat building and servicing businesses, and visitor attractions based around the industry are located.

Just under half or \$212.8 million of the contribution of the western rock lobster industry to the Gross State Product of Western Australia was realised in the Southern Zone from the rock lobster fishing, processing, boat building and servicing, and tourism activities in this Zone.

The remaining \$72.3 million of contribution was realised in other parts of Western Australia which also benefits from the industry through the flow on impacts in the broader economy. Further details and insights on the localised impacts of the industry on regional centres across the Northern and Southern zones is presented in the next section of this report.

Figure 3.2 Contribution of the western rock lobster industry to Gross State Product by Zone, \$ million



Source: ACIL Allen

3.2.2 Job creation

The importance of the industry is reflected by the fact that for every person directly employed on a full time basis, there is another full time job that is supported in other sectors of the economy

The western rock lobster industry provides employment for people in a range of occupations and skills sets including many that are located in regional areas helping these communities remain vibrant and diverse places to live and work.

ACIL Allen estimates that in 2020-21, the western rock lobster industry directly created 938 FTE jobs in the fishing, processing, transport, boat building and servicing, and tourism sectors of the value chain. The economic activities created by the industry in turn generated a further 903 FTE jobs indirectly across a broad range of businesses and industries that are supported by the spending and employment in the industry. The importance of the industry to local communities is reflected by the fact that for every person directly employed in the industry on a full time basis, there is another full time job that is supported in other sectors of the economy.

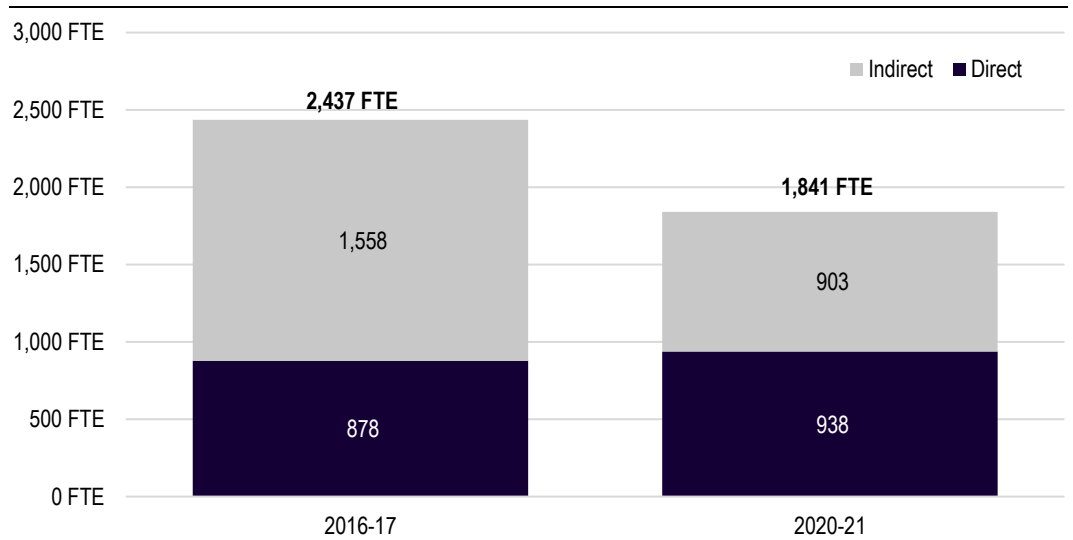
Taken together, ACIL Allen estimates that the industry created or supported some 1,841 FTE jobs across the State in 2020-21. Reflecting the significant challenges faced by the industry in 2020-21, the economic contribution of the western rock lobster industry from a jobs perspective was down on the results presented in the 2016-17 study which found that the industry created or supported some 2,437 FTE jobs across the State in that year.

Notwithstanding the decline in the number of indirect jobs supported by the western rock lobster industry, it remains a significant employer for the State. In this regard, the total number of full time equivalent jobs created or supported by the industry was equivalent to one quarter of the total number of people employed on a full time basis in the agriculture sector across the State by the end of 2020-21.

ACIL Allen estimates that the Western Rock Lobster industry created or supported some 1,841 FTE jobs which is equivalent to one quarter of the total number of full time people employed in the State's agriculture sector in 2020-21

The decline in employment outcomes was concentrated amongst those sectors that are supported by the western rock lobster industry. In this regard, ACIL Allen estimates that employment within the industry increased by almost seven per cent (or 60 FTE jobs) between 2016-17 and 2020-21, however, this was offset by the 42 per cent (or 655 FTE jobs) decline in jobs indirectly supported by the industry over the same period (Figure 3.3).

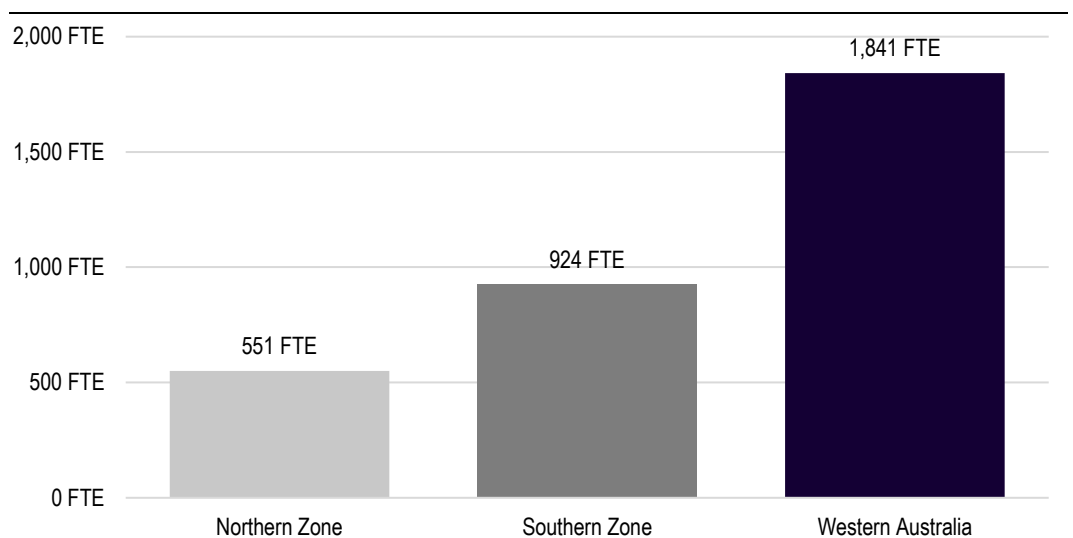
Figure 3.3 Contribution of the western rock lobster industry to employment, 2016-17 vs 2020-21, FTE jobs created



Source: ACIL Allen

By location, ACIL Allen estimates that in 2020-21 there were 576 FTE workers employed in the value chain for the Southern Zone of the western rock lobster industry, the majority of which (411 FTE) were employed in the Perth zone. The activities of the industry indirectly supported a further 348 FTE jobs in the Southern Zone. In total, the western rock lobster industry created or supported an estimated 924 FTE jobs in the Southern Zone, meaning that for every FTE job directly employed by the western rock lobster industry value chain, another 0.6 of a full time job is created in the broader economy.

Figure 3.4 Contribution of the western rock lobster industry to employment by Zone, FTE jobs created



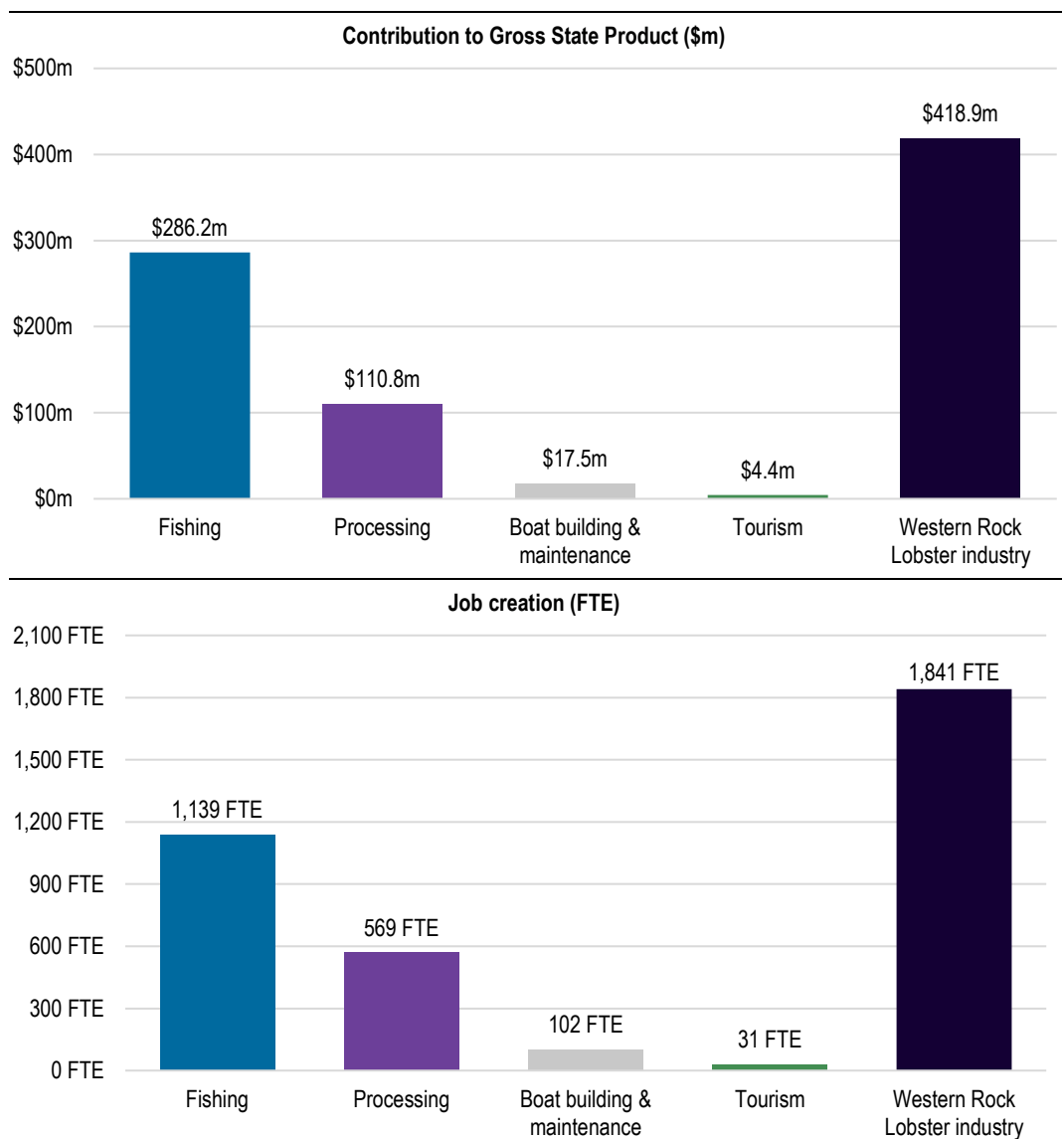
Source: ACIL Allen

In the Northern Zone, there were an estimated 363 FTE workers employed directly by the industry in 2020-21 most of which are located in regional coastal communities of Kalbarri, Geraldton, Dongara/Port Denison, and Leeman. The western rock lobster industry indirectly supported a further 188 FTE jobs in the Northern Zone. Overall, there were some 551 FTE jobs created or supported in the Northern Zone from the activities of the industry, meaning that for every FTE job directly created by the industry, a further 0.5 of an FTE job in the broader economy is supported in the regional areas of the Northern Zone (Figure 3.4).

3.3 Contribution by sector

The western rock lobster industry value chain includes the fishing, transport, processing, and boat building and servicing sectors, as well as its role in directly supporting the tourism activities. These sectors and their economic contribution are described in greater detail below and in Figure 3.5.

Figure 3.5 Economic contribution of the western rock lobster industry by sector, \$ million and FTE jobs created



The fishing sector is the largest part of the Western Rock Lobster industry, generating \$286.2 million to the WA economy, and creating or supporting some 1,139 FTE jobs in 2020-21

Source: ACIL Allen

ACIL Allen estimates that the largest contributing sector in terms of the contribution to Gross State Product is the fishing sector, which contributed \$286.2 million or 68 per cent of the total value contributed by the industry. The processing sector contributed \$110.8 million to WA's Gross State

Product, which is 26 per cent of the total industry contribution, while ACIL Allen estimates that the boat building and servicing sector contributed \$17.5 million. The tourism sector is estimated to have contributed a further \$4.4 million to GSP, highlighting the important role it plays in leveraging additional jobs and revenue in regional areas.

The fishery sector was also the largest employing sector in the western rock lobster industry value chain, with 593 FTE jobs directly employed in the sector, and a further 547 FTE jobs indirectly employed. In total, there were 1,139 direct and indirect FTE jobs created in the Fishery sector in 2020-21. In relation to the other sectors in the western rock lobster industry, ACIL Allen estimated that the processing sector contributed 569 direct and indirect FTE jobs, boat building contributed 102 FTE jobs and the tourism sector contributed 31 FTE jobs in 2020-21 (**Figure 3.5**).

3.3.1 Fishing

There were 237 vessels that used baited pots to fish for 6,616 tonnes of rock lobster in Western Australia in 2020-21. The lobster catch from each boat is offloaded at receival points located along the coast where it is picked up by trucks and stored in spray bed tanks for transport to processors for preparation for market.



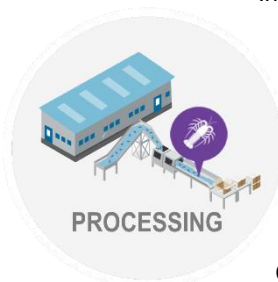
In 2020-21, the fishing activities of the western rock lobster industry contributed \$286.2 million to the Gross State Product of Western Australia including \$176.8 million of direct contribution and \$109.4 million from the flow on impacts generated by the industry.

The industry was a major employer providing jobs for 593 FTE skippers and crew. In addition, the flow on employment created by the industry accounted for a further 547 FTE jobs resulting in **total employment creation of 1,139 FTE jobs in Western Australia** in 2020-21.

3.3.2 Processing

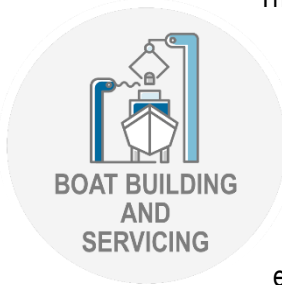
Live lobsters are prepared for market in processing plants located in Perth, Cervantes, and Geraldton with the majority of processors located in Perth in proximity to Perth Airport as the international gateway for lobster exports. The bulk of processed lobsters are prepared for the export market where they are sold as live, cooked, or frozen product. For the purposes of this report, the contribution associated with the transport component of the value chain has been incorporated into the results for the processing sector.

In 2020-21, ACIL Allen estimates that around 4,220 tonnes of lobster were prepared for the export market generating employment for an estimated 328 FTE staff. The activities of the sector and the spending by the employees of the sector created a further 242 FTE jobs in the broader economy resulting in total job creation of 569 FTE workers.



ACIL Allen estimates that the western rock lobster processing sector added \$110.8 million to the Gross State Product of Western Australia, including \$65.6 million from its direct activities and a further \$45.2 million in flow on contributions in the broader economy. The contribution by the processing sector is equivalent to 26 per cent of the total contribution of the western rock lobster industry.

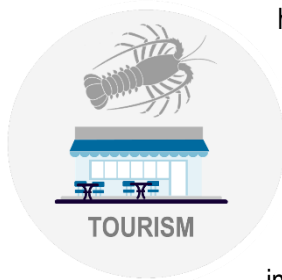
3.3.3 Boat building and servicing



The boat building and servicing industry supplies new and second hand boats to the fishery and provides servicing and maintenance to the fleet. Many of the businesses in the industry are located in regional areas including Dongara and Geraldton, providing important economic value and employment in these areas.

In 2020-21, it is estimated that the **boat building and servicing industry contributed \$17.5 million to the economy of Western Australia**. This is equivalent to four per cent of the total contribution of the western rock lobster industry. This part of the value chain accounted for an estimated **102 direct and indirect FTE jobs** in the Western Australian economy.

3.3.4 Tourism



The western rock lobster industry is an iconic Western Australian industry and several operators have been successful in building tourism businesses that leverage the industry. The Lobster Shack in Cervantes is a processing company that operates a restaurant, factory tours, and charter tours for visitors. Charter tours that focus on the western rock lobster industry also operate from other towns including Geraldton, Dongara/Port Denison, and Jurien Bay. For the purposes of economic modelling, ACIL Allen has only attributed the value that the industry directly adds to the economy. There are other significant tourism activities elsewhere such as Fishing Boat Harbour in Fremantle which benefit from the industry but have not been included in the economic contribution modelling.

It is estimated that **the tourism sector contributed \$4.4 million to the Western Australian economy** as a result of the activities associated with the western rock lobster industry and **generated 31 FTE jobs**, of which 18 were estimated to be directly created by the industry.

The Role of Western Rock Lobster Industry in Supporting Regional Communities

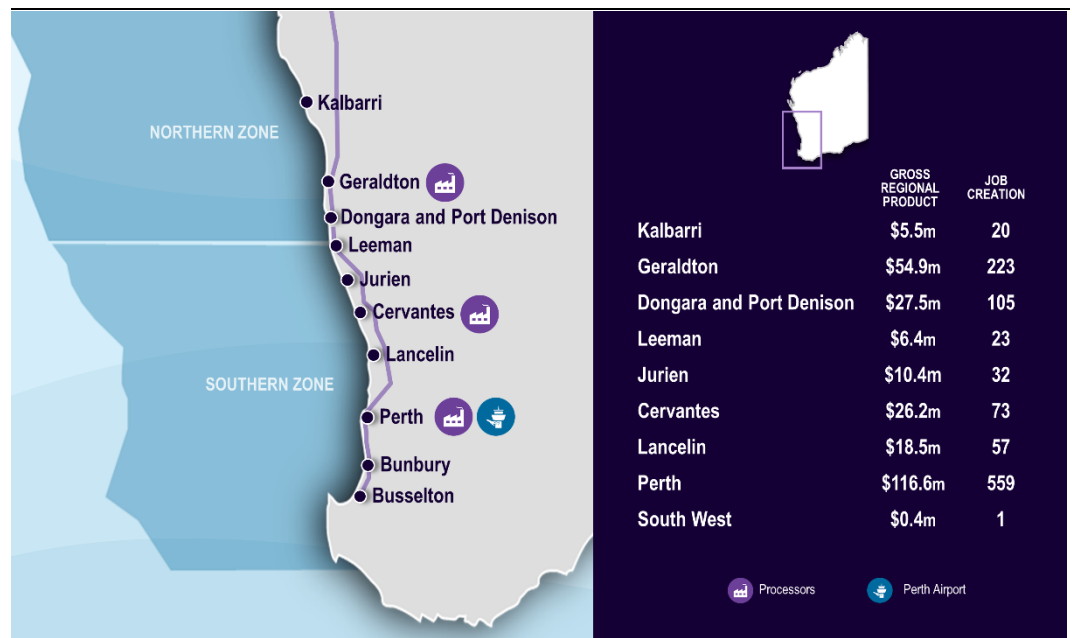
4

This section details the impact of the western rock lobster industry on key regional centres in the Northern Zone of Kalbarri, Geraldton, Dongara/Port Denison and Leeman, and the Southern Zone regional centres of Jurien, Cervantes, Lancelin, Perth, and the broader South West region. Results have been presented in terms of the impact of the industry on economic activity in the region, and the jobs created or supported by the industry.

The western rock lobster industry forms a key part of the economic and social fabric of many coastal communities in regional Western Australia. It provides employment allowing regional people to remain living and working in their home communities, and it provides economic value which support other businesses and their employees in these areas.

Figure 4.1 provides a summary of the economic contributions of the western rock lobster industry on the key towns in the Northern Zone and Southern Zone in terms of the impact on Gross Product and the jobs created by the industry.

Figure 4.1 The economic contribution of the western rock lobster industry by town, \$ million and FTE jobs created



Source: ACIL Allen

In 2020-21, the industry represented 57% of the economy of Cervantes, 39% of the economy of Leeman, and 33% of the economy of Lancelin

Overall, **the largest impact from the western rock lobster industry in regional Western Australia is realised in Geraldton**, which accounts for 41 per cent of the contribution to the Gross Regional Product in the Northern Zone and 13 per cent of the total contribution made by the industry to Gross State Product. Whilst the contribution in other regional towns is smaller, it remains significant. In 2020-21, **the industry represented 57 per cent of the economy of Cervantes, 39 per cent of the economy of Leeman, and 33 per cent of the economy of Lancelin.**

In total, the industry contributed \$149.8 million to the regional towns included in this study as well as 534 FTE jobs including 474 direct FTE jobs. This is half of all of the direct jobs supported by the industry in 2020-21 and 29 per cent of the total job creation in the State. In 2020-21, the regional parts of the western rock lobster industry contributed 56 per cent of the direct economic value of the industry and 36 per cent of the total direct and indirect contribution to Gross State Product with nearly all of this contribution from the fishery.

As well as the large regional impact, there are also significant benefits realised in the Perth area, including \$116.6 million contribution to Gross Product and job creation of 559 FTE jobs including 411 direct FTE jobs.

4.1 Economic contribution of the Northern Zone

The Northern Zone is defined as the western rock lobster fishery Zone A and Zone B which is the area north of and including Green Head. It includes the major rock lobster fishery ports of Geraldton, Dongara/Port Denison as well as processing facilities in Geraldton and significant boat building and servicing businesses in Geraldton and Dongara. The ports of the Northern Zone include:

- Kalbarri
- Port Gregory
- Geraldton
- Port Denison Marina
- Leeman
- Carnarvon
- Lucky Bay
- Horrocks Beach
- Coronation Beach
- Flat Rocks
- Seven Mile Beach
- Big Freshwater/Little Freshwater
- Knobby Head North
- Greenhead.

In addition, the catch from Zone A can be delivered to a carrier boat for delivery to a receiver and is allocated to the Northern Zone.

Vessels operating in the Northern Zone accounted for 3,317 tonnes of catch in 2020-21 which was half of the total catch of western rock lobster in the State during the season. The following sections outline the contribution that the industry makes to the key towns and regions in the Northern Zone during the 2020-21 season.

4.1.1 Kalbarri

The town of Kalbarri is located 590km from Perth in the Shire of Northampton. In 2020-21, there were 626 visits by 13 rock lobster boats to Kalbarri with an estimated catch of 204.6 tonnes which is around 4.1 per cent of the total catch in the Northern Zone.

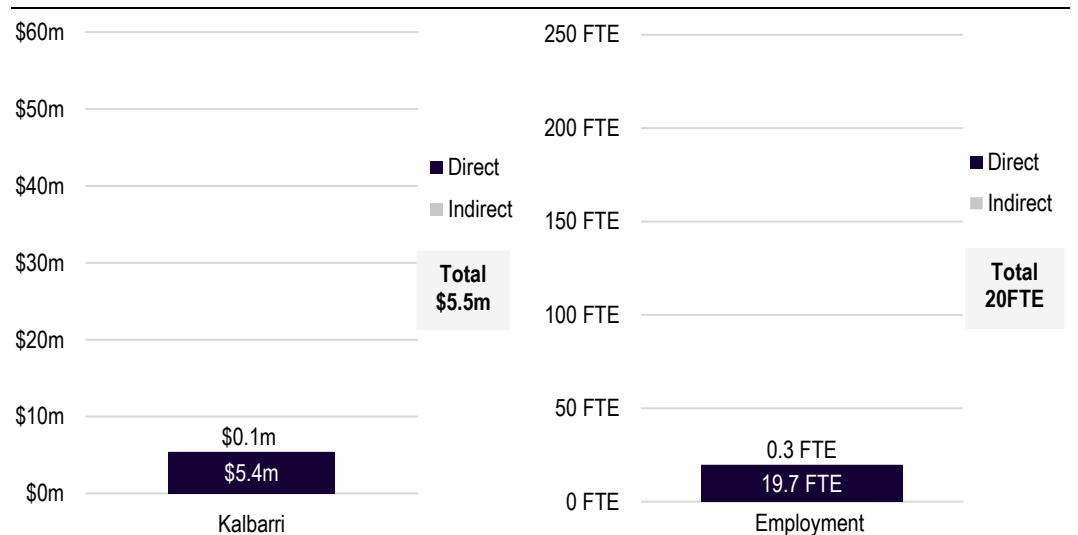


Figure 4.2 presents the economic contribution the industry made to the Kalbarri economy in 2020-21. The industry accounted for \$5.4 million in direct economic contribution in the area, which was derived from the fishery sector. The direct output generated a further indirect economic value add of \$0.1 million to Kalbarri.

Kalbarri had a Gross Town Product of \$102 million in 2020-21, with the western rock lobster industry accounting for approximately \$5.5 million or 5.4 per cent of this value. This is equivalent to 4.5 per cent of the contribution of the industry to the Northern Zone.

There were 20 direct FTE jobs in the western rock lobster industry in the town in 2020-21. Although there was estimated to be only a further 0.2 indirect FTE jobs supported by the activities of the industry in the town, the total direct and indirect job creation accounted for almost eight per cent of the estimated 463 FTE workers¹⁰ in the town, and 3.6 per cent of the job creation created by the industry in the Northern Zone.

Figure 4.2 Economic contribution of the western rock lobster industry in Kalbarri in 2020- 21, \$ million and FTE jobs created



Source: ACIL Allen

4.1.2 Geraldton

Geraldton is a major population centre located 424 km north of Perth. It is the regional service centre for the Mid West region providing businesses and services to the surrounding economy and population. The rock lobster fishing industry began in the town in the early 1900s and has grown to become one of the most important towns for the western rock lobster industry.

¹⁰ FTE workers have been calculated by adding part time and full time workers to provide an estimate of the FTE workforce living in a town.



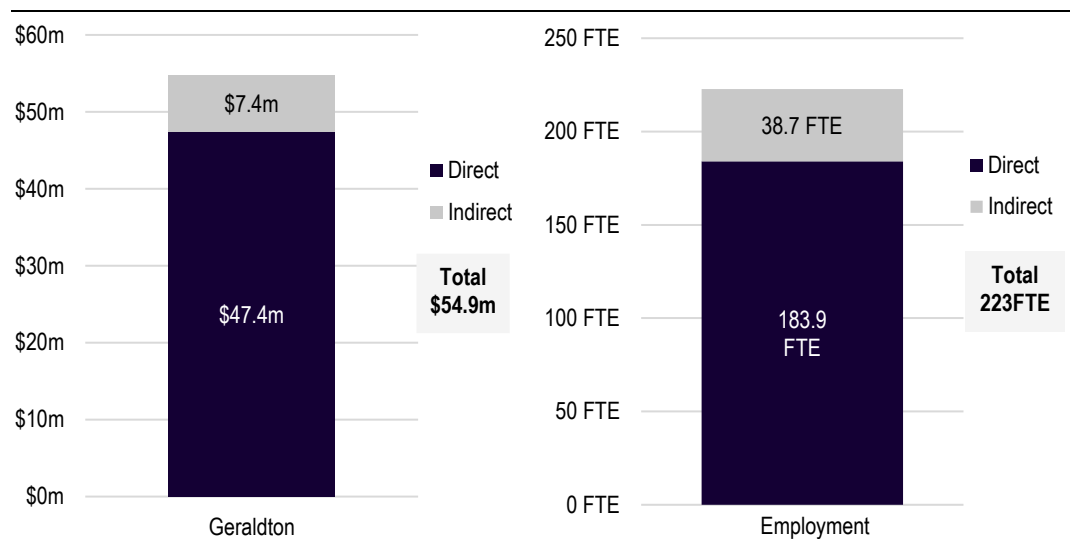
In 2020-21, it was estimated that there were 4,493 visits by 90 rock lobster boats to the town which is the highest number of boat visits of any port. Together they landed a catch of just over 1,465 tonnes which is also the largest of any single receival point and equivalent to 22 per cent of the total industry catch in 2020-21 and 44 per cent of the total catch in the Northern Zone. The town is also home to one of the State's two regionally based rock lobster processing facilities as well as a number of boat building and servicing businesses.

Figure 4.3 presents the economic contribution the industry made to Geraldton's economy in 2020-21. The industry generated \$47.4 million in direct economic activity in the area, of which \$38.9 million was derived from the fishery with smaller contributions from the processing of rock lobster. The direct output of the industry generated a further indirect economic value add of \$7.4 million to the Geraldton economy. This means that for every \$1.00 in economic activity by the western rock lobster industry in the town, a total of \$1.16 is generated for the town's economy.

The City of Greater Geraldton had a Gross Town Product of \$4,004 million in 2020-21, with the western rock lobster industry accounting for approximately \$54.9 million or 1.4 per cent of this value. In value terms, the economic activity generated in Geraldton is the largest of any regional town reflecting the significant fishing fleet, processing facilities and boat building and servicing businesses located in the town and is equivalent to 41 per cent of the contribution of the industry to the Northern Zone.

There were 184 direct FTE jobs in the western rock lobster industry in the town in 2020-21 employed in fishing, transport, processing, and boat building and servicing. The economic activity associated with the industry generated an additional 39 indirect FTE jobs spread over a number of industries and businesses in the town. In total, there were 223 FTE jobs associated with the western rock lobster industry in 2020-21, implying an employment multiplier of 1.21. This total job creation is equivalent to around 1.7 per cent of the estimated 12,900 FTE workers¹¹ living in the City of Greater Geraldton and 40 per cent of the job creation created by the industry in the Northern Zone.

Figure 4.3 Economic contribution of the western rock lobster industry in **Geraldton** in 2020- 21, \$ million and FTE jobs created



Source: ACIL Allen

¹¹ FTE workers have been calculated by adding part time and full time workers to provide an estimate of the FTE workforce living in a town.

4.1.3 Dongara/Port Denison

Dongara/Port Denison are neighbouring towns located around 351 km north of Perth in the Shire of Irwin that are serviced by the Port Denison Marina. Rock lobster fishing began in the towns in the 1950's and continues to play an important role in the economy. In 2020-21, there were 1,870 visits to the Port Denison Marina by 51 vessels carrying a catch of 929.4 tonnes of lobster. In addition, there are boat building and servicing businesses located in the town which support the western rock lobster industry.

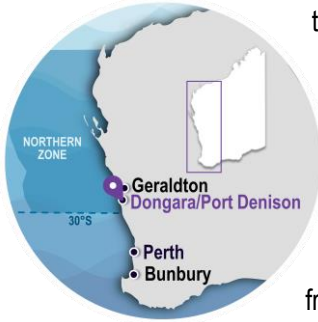
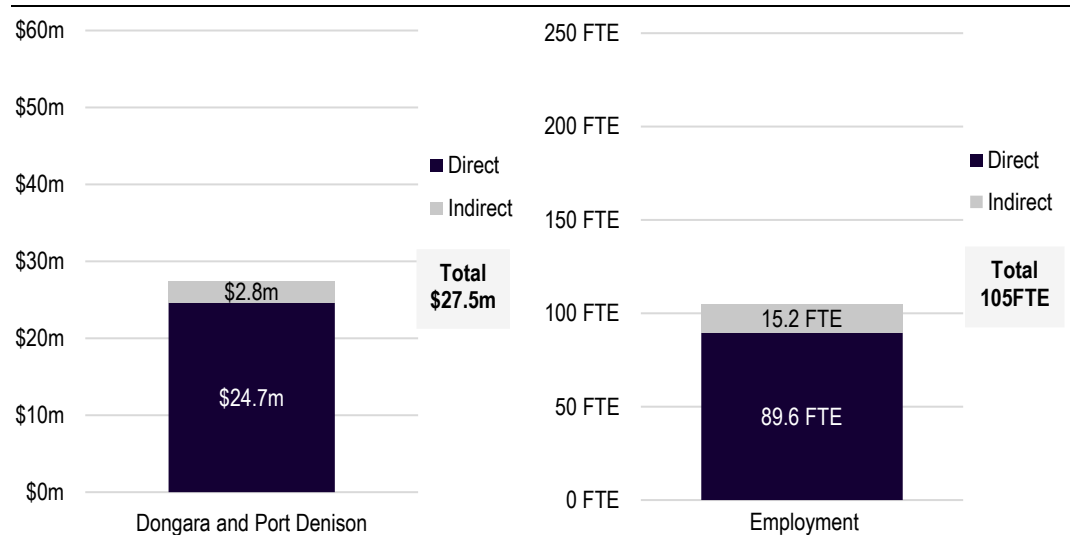


Figure 4.4 presents the economic contribution the western rock lobster industry made to the economy of the towns of Dongara/Port Denison in 2020-21 in terms of the value add it contributed to the economy and the job creation it supported. The industry accounted for \$24.7 million in direct economic contribution in the area, the majority of which was derived from the fishery sector. The direct output generated a further indirect economic value add of \$2.8 million to the towns.

Dongara/Port Denison had a Gross Town Product of \$114 million in 2020-21, with the western rock lobster industry accounting for approximately \$27.5 million or 24.2 per cent of this value. The economic activity generated through the towns is equivalent to 21 per cent of the contribution of the industry to the Northern Zone.

There were 90 direct FTE jobs in the western rock lobster industry in the towns in 2020-21, with a further 15 FTE jobs indirectly supported across a number of industries and businesses in the towns. In total, there were 105 FTE jobs associated with the western rock lobster industry in 2020-21 implying an employment multiplier of 1.17. This total job creation is equivalent to around 14 per cent of the estimated 732 FTE workers¹² living in the towns and 19 per cent of the job creation created by the industry in the Northern Zone.

Figure 4.4 Economic contribution of the western rock lobster industry in Dongara/Port Denison in 2020-21, \$ million and FTE jobs created



Source: ACIL Allen

4.1.4 Leeman

Leeman is located 260km north of Perth in the Shire of Coorow. The rock lobster industry began in the area in the late 1950's and continues to play a key role in the town's economy with the western

¹² FTE workers have been calculated by adding part time and full time workers to provide an estimate of the FTE workforce living in a town.

rock lobster industry, contributing almost half of the town’s economy in 2020-21. In 2020-21, there were 719 visits by 19 lobster vessels to the town with a catch of 241.1 tonnes.

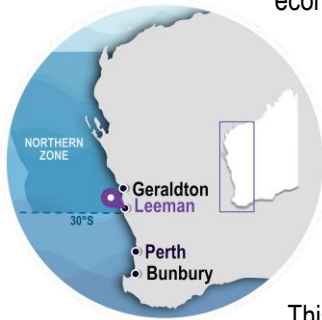
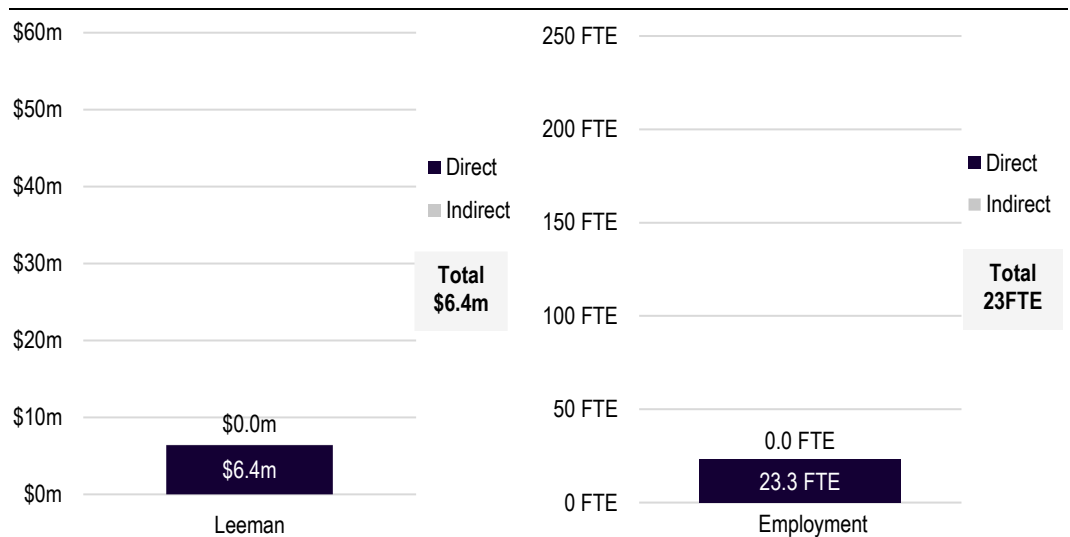


Figure 4.5 presents the economic contribution the western rock lobster industry made to the economy of Leeman in 2020-21 in terms of the value add it contributed to the economy and the job creation it supported. The industry accounted for \$6.4 million in direct economic contribution in the area, all of which was derived from the fishery sector. While the economic activity through the town is equivalent to just 4.8 per cent of the contribution of the industry to the Northern Zone, it represents an important contribution to the town, accounting for 39 per cent of town’s economy in 2020-21.

There were 23 FTE jobs created by the western rock lobster industry in the town in 2020-21 all of which were employed directly by the western rock lobster industry.

This total job creation is equivalent to around 27 per cent of the estimated 86 FTE workers¹³ living in the town and 4.2 per cent of the job creation created by the industry in the Northern Zone.

Figure 4.5 Economic contribution of the western rock lobster industry in **Leeman** in 2020-21, \$ million and FTE jobs created



Source: ACIL Allen

4.2 Economic contribution of the Southern Zone

The economic contribution of the Southern Zone is significant and driven by the catch of lobster, processing facilities located at Fremantle and Cervantes, boat building and servicing, transport, and tourism with the Lobster Shack at Cervantes attracting large numbers of visitors and charters offered in other towns including Jurien Bay.

The ports in the Southern Zone that are visited by boats from the western rock lobster industry include:

- Cervantes
- Wedge Island
- Lancelin
- Ledge Point

¹³ As of 2016 Australian Bureau of Statistic Census

- Two Rocks Marina
- Mindarie Marina
- Hillarys Marina
- Fremantle
- Port Coogee Marina
- Mangles Bay near Rockingham
- Mandurah Ocean Marina
- Bunbury Casuarina Harbour.

In 2020-21, there were 165 lobster boats that operated in the Southern Zone and together these ports accounted for 3,299 tonnes of catch in 2020-21, which is half of the total western rock lobster catch in the State during the season. The following sections outline the contribution of the western rock lobster industry to the regional centres in the Southern Zone.

4.2.1 Jurien Bay

Jurien Bay is located 220km north of Perth, along Indian Ocean Drive in the Shire of Coorow. Rock Lobster as a commercial industry began in Jurien Bay in the 1950's and remains an important part of the local economy. In 2020-21 there were 540 visits to the Jurien Marina by 11 boats with a catch of nearly 381 tonnes. In addition, tours are run from the town which focus on the rock lobster fishing and processing sectors.

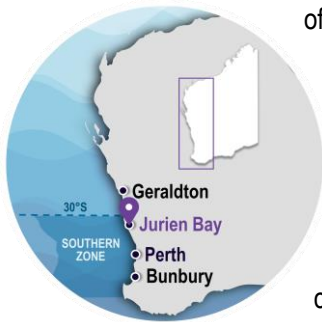
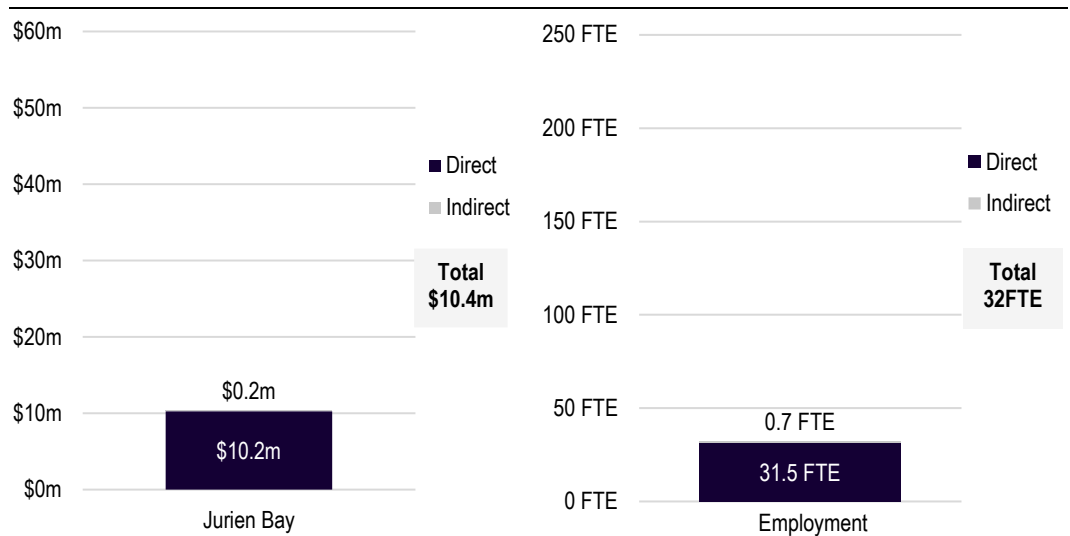


Figure 4.6 presents the economic contribution the industry made to the economy of Jurien Bay in 2020-21. The industry accounted for \$10.2 million in direct economic contribution in the area, which was derived from the fishery sector. The direct output generated a further indirect economic value add of \$0.2 million. The total economic contribution of the western rock lobster industry to the town is estimated to be \$10.4 million in 2020-21, which represented 9.6 per cent of Jurien Bay economy and 4.9 per cent of the contribution of the industry to the Southern Zone.

Figure 4.6 Economic contribution of the western rock lobster industry in **Jurien Bay** in 2020- 21, \$ million and FTE jobs created



Source: ACIL Allen

There were 31 direct FTE jobs in the western rock lobster industry in the town in 2020-21. The economic activity associated with the industry generated an additional one indirect FTE job spread

over a number of industries and businesses in the town. In total, there were 32 FTE jobs associated with the western rock lobster industry in 2020-21, which represents around six per cent of the estimated 495 FTE workers¹⁴ living in the town and 3.5 per cent of the job creation created by the industry in the Southern Zone.

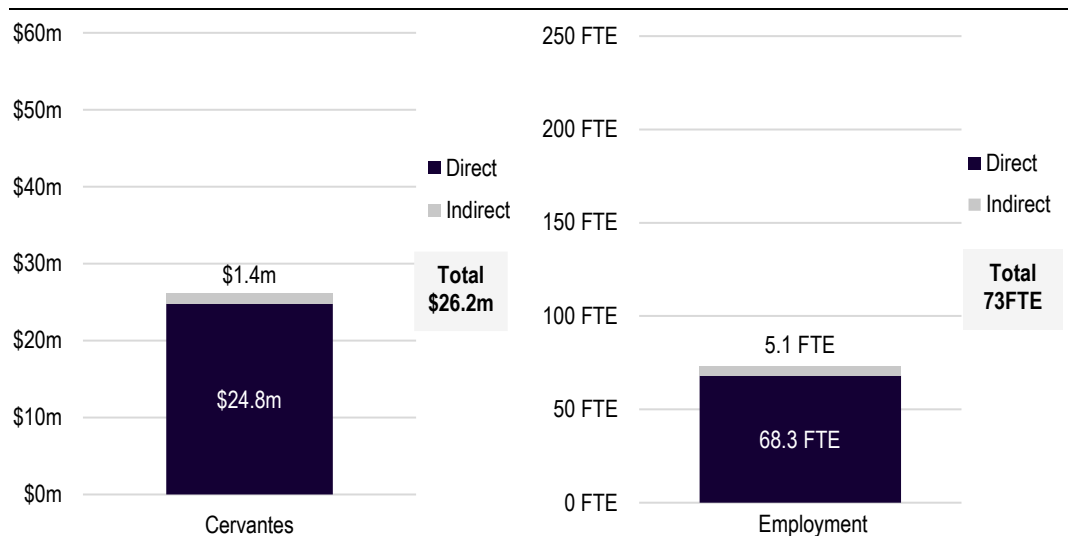
4.2.2 Cervantes

Cervantes is located 198 km north of Perth in the Shire of Coorow. Rock Lobster fishing has played an integral part of the town’s economic development since the 1960’s and remains a key economic contributor. In 2020-21 there were 907 visits to the town by 14 boats with a catch of over 482 tonnes. One of the State’s two regionally based rock lobster processors is located in the town and there is a popular visitor attraction that forms part of the processing facility, offering tours and meals which assists in attracting large numbers of day trippers and overnight visitors to the town.

Figure 4.7 presents the economic contribution the industry made to the Cervantes economy in 2020-21. The industry accounted for \$24.8 million in direct economic contribution in the area, which was derived from the fishery, processing, and tourism sectors. The direct output generated a further indirect economic value add of \$1.4 million to Cervantes.

Cervantes had a Gross Town Product of \$46 million in 2020-21, with the western rock lobster industry accounting for approximately \$26.2 million or 57 per cent of this value which is the largest contribution to the share of an economy made by the western rock lobster industry to any town in this study. This contribution is equivalent to 12.3 per cent of the contribution of the industry to the Southern Zone.

Figure 4.7 Economic contribution of the western rock lobster industry in **Cervantes** in 2020- 21, \$ million and FTE jobs created



Source: ACIL Allen

There were 68 direct FTE jobs in the western rock lobster industry in the town in 2020-21. The economic activity associated with the industry generated an additional 5 indirect FTE jobs spread over a number of industries and businesses in the town. In total, there were 73 FTE jobs associated with the western rock lobster industry in 2020-21, which is equivalent to around 48 per

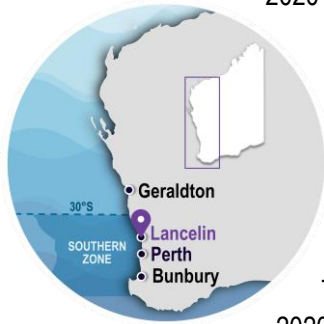
¹⁴ FTE workers have been calculated by adding part time and full time workers to provide an estimate of the FTE workforce living in a town.

cent of the estimated 153 FTE workers¹⁵ living in the town and 7.9 per cent of the job creation created by the industry in the Southern Zone.

4.2.3 Lancelin

Lancelin is situated 127km north of Perth and within the shire of Gingin. The rock lobster industry began in the town in the late 1940's and remains an important contributor to the economy. In 2020-21, there were 1,680 visits to the town by 29 lobster vessels with a total catch of 680.2 tonnes.

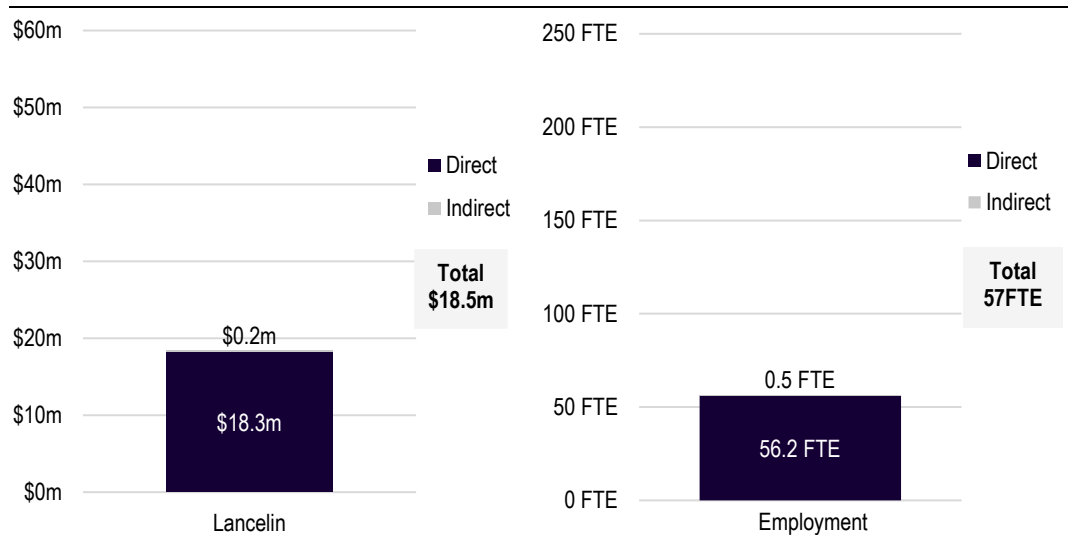
Figure 4.8 presents the economic contribution the industry made to the economy of Lancelin in 2020-21. The industry accounted for \$18.3 million in direct economic contribution in the area, which was derived from the fishery sector. The direct output generated a further indirect economic value add of \$0.2 million in Lancelin.



Lancelin had a Gross Town Product of \$56 million in 2020-21, with the western rock lobster industry accounting for approximately \$18.5 million or 33 per cent of this value. This is equivalent to 8.7 per cent of the contribution of the industry to the Southern Zone.

There were 56 direct FTE jobs in the western rock lobster industry in the town in 2020-21. The economic activity associated with the industry generated an additional one indirect FTE job spread over a number of industries and businesses in the town. In total, there were 57 FTE jobs associated with the western rock lobster industry in 2020-21, which is equivalent to one quarter of the estimated 227 people employed on an FTE basis in the town and 6.1 per cent of the job creation created by the industry in the Southern Zone.

Figure 4.8 Economic contribution of the western rock lobster industry in Lancelin: 2020-21, \$ million and FTE jobs created



Source: ACIL Allen

4.2.4 Perth area

The Perth area is inclusive of the suburbs in the Perth Metropolitan Area stretching from Two Rocks in the north to Mandurah in the south. In 2020-21, there were 104 boats that visited ports in the area with a total of 4,564 landings including 1,804 at Two Rocks, 1,752 at Fremantle, 511 at

¹⁵ FTE workers have been calculated by adding part time and full time workers to provide an estimate of the FTE workforce living in a town.

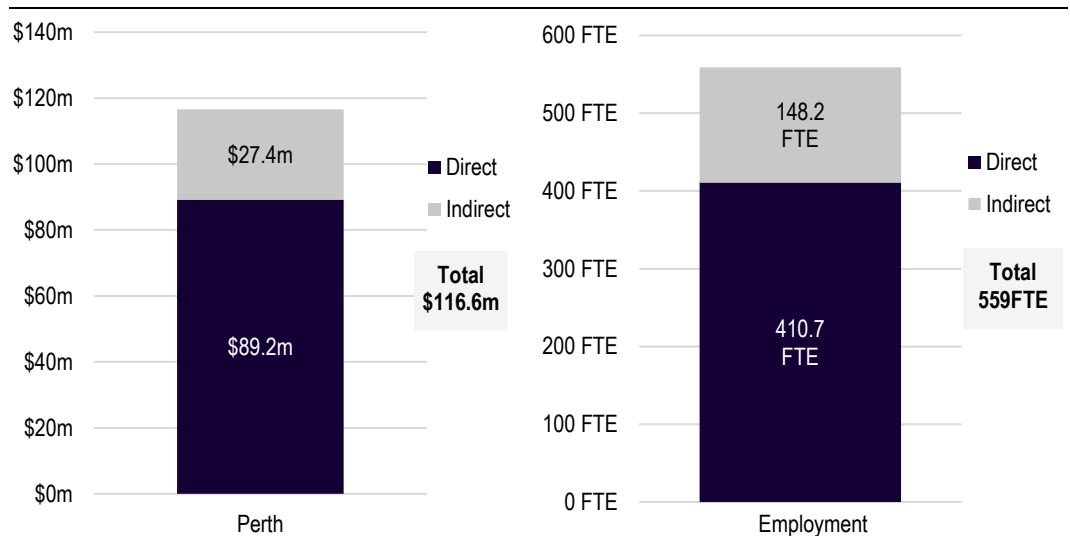
Mandurah, 325 at Mindarie Marina, 159 at Hillarys Marina, and the remainder at Mangles Bay (Rockingham) and Port Coogee Marina which collectively had a total catch of 1,563 tonnes. There are significant processing facilities located in Perth which are strategically located close to the major lobster receival points and Perth Airport as the international gateway to the export market.

Figure 4.9 presents the economic contribution the industry made to the economy of the Perth area in 2020-21. The industry accounted for \$89.2 million in direct economic contribution in the area, which was the largest direct contribution of any regional economy analysed for this contribution study. The direct output generated a further indirect economic value add of \$27.4 million to the Perth area, which suggests that for every \$1.0 generated by the western rock lobster industry in the area, a total of \$1.31 is generated in the local economy.

Overall, the western rock lobster industry generated \$116.6 million to the Perth economy in 2020-21. This is the largest contribution of any town analysed and is equivalent to 55 per cent of the contribution of the industry to the Southern Zone. The contribution was generated from across the western rock lobster value chain, including fishing, processing, and boat building and servicing.

There were 411 direct FTE jobs in the western rock lobster industry in the town in 2020-21. The economic activity associated with the industry generated an additional 148 indirect FTE jobs spread over a number of industries and businesses in Perth. In total, there were 559 FTE jobs associated with the western rock lobster industry in 2020-21, implying an employment multiplier of 1.36. This total job creation is equivalent 61 per cent of the job creation created by the industry in the Southern Zone.

Figure 4.9 Economic contribution of the western rock lobster industry in **Perth area** in 2020- 21, \$ million and FTE jobs created



Source: ACIL Allen

4.2.5 South West

The South West region is defined as the area to the south of the Perth Metropolitan Area and includes the regional cities of Busselton and Bunbury. In 2021-21, there were three vessels that visited ports in the region with a total of 48 landings and carrying a catch of 14.6 tonnes.

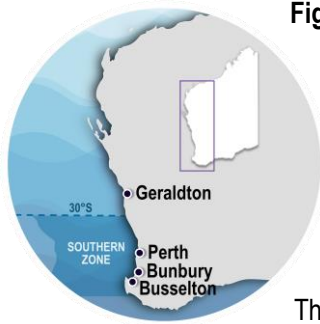
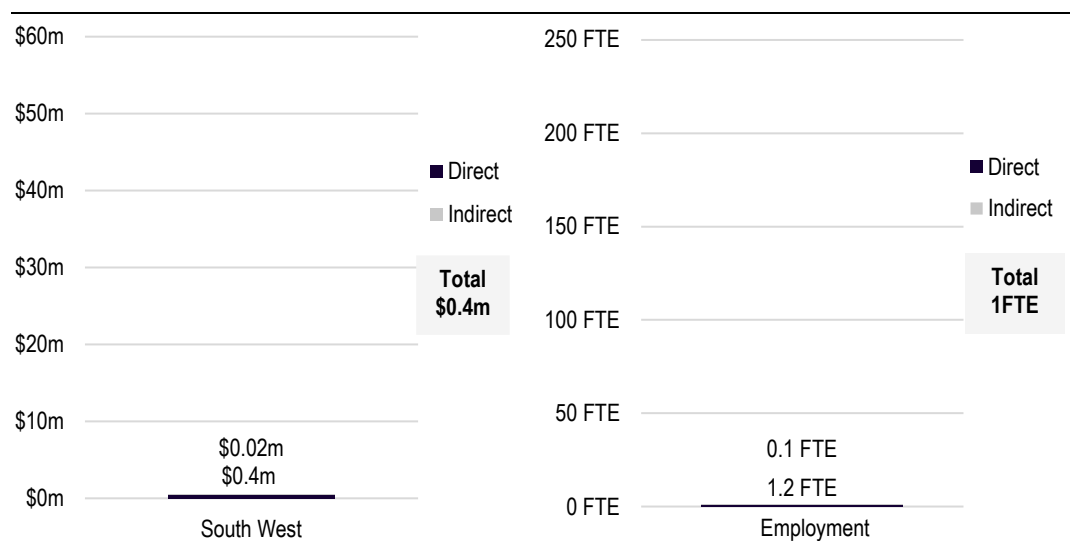


Figure 4.10 presents the economic contribution the industry made to the South West economy in 2020-21. The industry accounted for \$0.4 million in direct economic contribution in the area, which was derived from the fishery sector. The direct output generated a further indirect economic value add of \$0.02 million to the South West.

The South West had a Gross Product of \$9,003 million in 2020-21, with the western rock lobster industry accounting for approximately \$0.4 million of this value. This is equivalent to less than one per cent of the contribution of the industry to the Southern Zone.

There was one direct FTE jobs in the western rock lobster industry in the South West in 2020-21 which represented all of the job creation by the industry in this region. This total job creation is equivalent to less than one per cent of the job creation created by the industry in the Southern Zone.

Figure 4.10 Economic contribution of the western rock lobster industry in **South West** in 2020- 21, \$ million and FTE jobs created



Source: ACIL Allen

Appendices

Western Rock Lobster Industry Survey Questionnaire

A

To support this study, ACIL Allen undertook a survey of western rock lobster industry members in late 2021 to assist in understand the impact of the ongoing spread of COVID-19 and the closure of the Chinese market during 2020-21.

Western Rock Lobster industry survey

Western Rock Lobster has engaged ACIL Allen to undertake an economic contribution assessment of the Western Rock Lobster fishery in 2020-21 which updates the contribution study completed in 2017-18.

An aim of the 2020-21 study is to understand how the operating environment during the year impacted your business and what you think the future of the industry might be given the global operating environment. This short survey is designed to gather feedback from industry participants that will help with this analysis.

The survey should only take a few minutes of your time. If you require any further information regarding the survey or the economic contribution assessment, please contact Dan Fels at Western Rock Lobster.

Please use the slide to show which one of the following has had **the most impact** on your business during 2020-21?

COVID-19

equal impact

Closure of Chinese
market



How have COVID-19 and the closure of the Chinese market impacted the Western Rock Lobster Industry?

	COVID-19 (please choose the top three reasons)	Closure of Chinese market (please choose the top three reasons)
Reduced demand for lobster	<input type="checkbox"/>	<input type="checkbox"/>
Reduced price for lobster	<input type="checkbox"/>	<input type="checkbox"/>
A reduction in the markets for lobster	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty in getting product to market	<input type="checkbox"/>	<input type="checkbox"/>
Business disruptions from shut downs and the need to socially distance	<input type="checkbox"/>	<input type="checkbox"/>

ymonkey.com/r/WRL2020-21

Western Rock Lobster industry survey

	COVID-19 (please choose the top three reasons)	Closure of Chinese market (please choose the top three reasons)
Difficulty in sourcing labour	<input type="checkbox"/>	<input type="checkbox"/>
Increasing prices for goods and services, including labour	<input type="checkbox"/>	<input type="checkbox"/>

You are welcome to provide additional information to support your answer:

How has **your business changed** because of the impacts from COVID-19 and the closure of the Chinese market?

	COVID-19 (please choose the top three reasons)	Closure of Chinese market (please choose the top three reasons)
Reduced revenue from reduced prices	<input type="checkbox"/>	<input type="checkbox"/>
Reduced catch due to lower demand	<input type="checkbox"/>	<input type="checkbox"/>
Rising cost of inputs	<input type="checkbox"/>	<input type="checkbox"/>
The need to cut costs to remain profitable	<input type="checkbox"/>	<input type="checkbox"/>
The need to seek alternative international markets	<input type="checkbox"/>	<input type="checkbox"/>
The need to sell to the domestic market	<input type="checkbox"/>	<input type="checkbox"/>

You are welcome to provide additional information to support your answer:

What do you think is key to the **short and medium term future** of the Western Rock Lobster industry?

	Very important	Important	Current effort is adequate	Not important	Not required
Market support including new and existing market development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promotional assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A review of licence fees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A review of catch limits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Western Rock Lobster industry survey

	Very important	Important	Current effort is adequate	Not important	Not required
Nothing. This is a short term disruption and industry will return to business as usual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You are welcome to provide additional information to support your answer:

Source: ACIL Allen; SurveyMonkey

Input Output modelling framework B

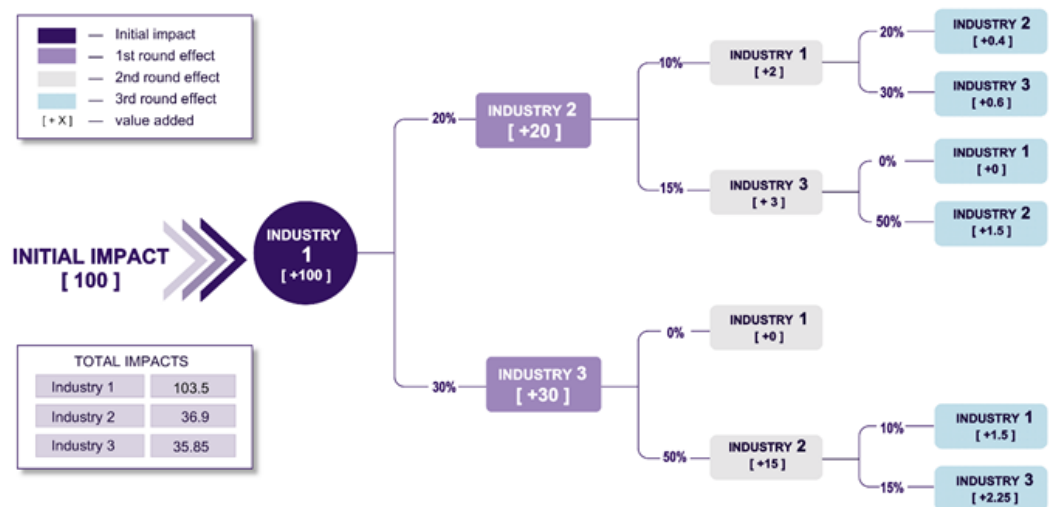
B.1 Input Output modelling

Input Output models capture the direct and indirect effects of expenditure by capturing, for each industry, the industries it purchases inputs from and also the industries it sells its outputs to. For example, the Input Output model for Western Australia captures purchases from and sales to industries located in Western Australia, as well as imports from outside of Western Australia.

Figure B.1 depicts how an impact is traced through a (very simple) economy with three industries (1, 2, and 3). This impact includes:

1. The initial impact occurs in industry 1 where an additional 100 units of value are added to its output. In order to generate this additional output, industry 1 requires additional inputs from industry 2 and industry 3.
2. Therefore, industry 2 and 3 increase their output as well. This in turn requires input from industry 1 and 3 and industry 1 and 2 respectively which increase their output to satisfy this additional demand, and so on.
3. The impacts grow smaller with each iteration and ultimately converge to zero. This is because they always only share the impact that occurred in the preceding iteration.

Figure B.1 “Trace through” of an Input Output Model



Source: ACIL Allen

B.2 Results of Input Output modelling

Input Output tables are able to produce results for a range of key economic indicators including:

- real economic value add;
- industry Gross Value Added;
- incomes; and
- employment.

The following table details the sectors Input Output tables are able to produce results for.

Table B.1 Sectors of ACIL Allen’s Input Output tables

Sector		Sector			
1	Paddy rice	24	Dairy products	47	Metal products
2	Wheat	25	Processed rice	48	Motor vehicle and parts
3	Cereal grains nec	26	Sugar	49	Transport equipment nec
4	Vegetables, fruit, nuts	27	Food products nec	50	Electronic equipment
5	Oil seeds	28	Wine	51	Machinery and equipment nec
6	Sugar cane, sugar beef	29	Beer	52	Manufactures nec
7	Plant based fibres	30	Spirits and RTDs	53	Electricity generation
8	Crops nec	31	Other beverages and tobacco products	54	Electricity transmission and distribution
9	Bovine cattle, sheep, goats, horses	32	Textiles	55	Gas manufacture, distribution
10	Animal products nec	33	Wearing apparel	56	Water
11	Raw milk	34	Leather products	57	Construction
12	Wool, silk worm cocoons	35	Wood products	58	Trade
13	Forestry	36	Paper products, publishing	59	Road transport
14	Fishing	37	Diesel (incl. nonconventional diesel)	60	Rail and pipeline transport
15	Brown coal	38	Other petroleum, coal products	61	Water transport
16	Black coal	39	Chemical, rubber, plastic products	62	Air transport
17	Oil	40	Iron ore	63	Transport nec
18	Liquefied natural gas (LNG)	41	Bauxite	64	Communication
19	Other natural gas	42	Mineral products nec	65	Financial services nec
20	Minerals nec	43	Ferrous metals	66	Insurance
21	Bovine meat products	44	Alumina	67	Business services nec
22	Meat products nec	45	Primary aluminium	68	Recreational and other services
23	Vegetables oils and fats	46	Metals nec	69	Public Administration, Defence, Education, Health

Source: ACIL Allen

Antonia Hodby
a.hodby@acilallen.com.au
0404 822 301

John Nicolaou
j.nicolaou@acilallen.com.au
0412 499 355

Marshall Roberts
m.roberts@acilallen.com.au

Melbourne
Suite 4, Level 19; North Tower
80 Collins Street
Melbourne VIC 3000 Australia
+61 3 8650 6000

Sydney
Suite 603, Level 6
309 Kent Street
Sydney NSW 2000 Australia
+61 2 8272 5100

Brisbane
Level 15, 127 Creek Street
Brisbane QLD 4000 Australia
+61 7 3009 8700

Canberra
Level 6, 54 Marcus Clarke Street
Canberra ACT 2601 Australia
+61 2 6103 8200

Perth
Level 12, 28 The Esplanade
Perth WA 6000 Australia
+61 8 9449 9600

Adelaide
167 Flinders Street
Adelaide SA 5000 Australia
+61 8 8122 4965

ACIL Allen Pty Ltd
ABN 68 102 652 148

acilallen.com.au