
Economic Impact of the Queensland Petroleum & Gas Sector 2011-23

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Prepared for Australian Energy Producers



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Introduction

Lawrence Consulting was commissioned by Australian Energy Producers (AEP) to undertake an economic impact assessment of the Queensland petroleum and gas industry over the period from 2011/12 to 2022/23 (2011-23). The analysis is an update of a previous study completed by Lawrence Consulting for the period 2011-18.

The analysis utilised data from the annual expenditure survey completed by Australian Energy Producers and Queensland Resources Council (QRC) full-member companies and selected key service members which asks companies to disclose expenditure and other information by postcode in the following categories:

- Employee salaries and wages (by place of residence) for full-time direct employees and contract workers as well as the number of FTE employees by place of operation;
- Goods and services expenditure by individual supplier, including separate identification of both operational expenditure (opex) data for current projects and capital expenditure (capex) data from projects currently under development;
- Voluntary community contributions by individual organisation;
- Local government payments, including council rates and infrastructure charges; and
- State government payments, including royalties, stamp duty, payroll tax and land tax.

The petroleum & gas sector companies that provide expenditure data annually as part of the Australian Energy Producers and QRC study and which have been aggregated to represent the impact of the industry as contained in this report are shown in Table 1.

Table 1: Queensland Petroleum & Gas Companies Supplying Expenditure Data

Arrow Energy Limited	Senex
Bengal Energy	Shell (QGC)
ConocoPhillips/APLNG	State Gas
Denison Gas	Tri-star
Origin Energy (APLNG)	Westside Corporation
Santos/TOGA Pty Ltd (GLNG)	

The data was supplied by Australian postcodes where the salary was paid (residence of the direct employee) and where the community contributions and business expenditures were made.

The postcode spend data were then aggregated to identify the geographical spread of direct impacts from the petroleum and gas sector across Queensland at a number of different geographic scales:

- State (the whole area of Queensland);
- Regional (represented by 13 former Statistical Divisions in Queensland); and
- Local (represented by 78 Local Government Areas in Queensland).

This report concentrates on the direct spending and other impacts and benefits of the Queensland petroleum and gas industry over the period 2011-23; detailed economic modelling of the flow-on impacts from this direct expenditure – specifically, indirect and consumption-induced impacts – are contained in Appendix A.

The report also focuses on state and regional profiles, whilst data tables for LGAs are contained in the Appendices.

Comparison with the previous report produced by Lawrence Consulting for the period 2011-18 demonstrates that the petroleum and gas sector had significant amount of capital spending, in particular during the period 2012-15. The period since then shows continued economic benefits derived to the Queensland economy and regions from the operational phase of these projects.

Lawrence Consulting and Australian Energy Producers would like to thank the Queensland Resources Council for shared datasets in preparing this report.

Disclaimer

Lawrence Consulting does not warrant the accuracy of this information and accepts no liability for any loss or damage that you may suffer as a result of your reliance on this information, whether or not there has been any error, omission or negligence on the part of Lawrence Consulting or its employees.

Economic Benefits

Direct Spending

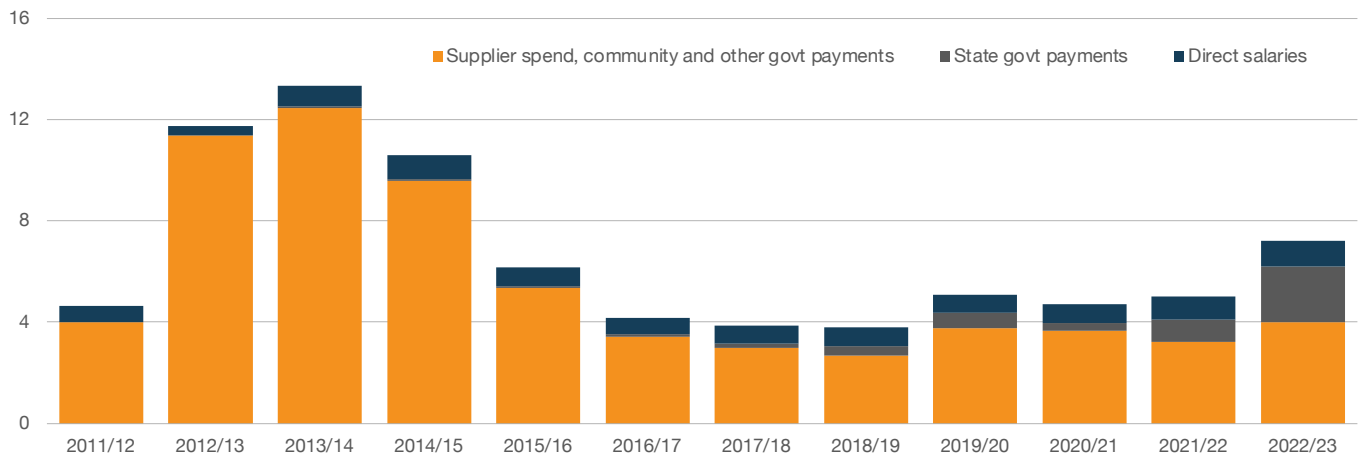
Expenditure data provided by companies indicated that the **petroleum & gas sector contributed \$80.4 billion** in direct spending to the Queensland economy over the period 2011/12-2022/23, comprising:

- **\$9.0 billion in wages and salaries** to an average direct workforce (i.e. not including contract workers) of approximately **4,736 fulltime resident employees**, representing an **average salary** level across the sector of **\$158,679** per annum;
- **\$65.8 billion in purchases of goods and services from an average of 3,135 local businesses** (including contract payments) and **voluntary contributions to an average of 289 community groups**;
- **\$646.2 million** in payments to local government (including rates, developer contributions and other payments); and
- **\$4.9 billion** in state government payments (including royalties, stamp duty, payroll tax and land tax).

The petroleum & gas sector contributed \$80.4 billion in direct spending to the Queensland economy over the period 2011/12 to 2022/23.

Direct Expenditure of Qld Petroleum & Gas Sector

Queensland (\$ billion, real)



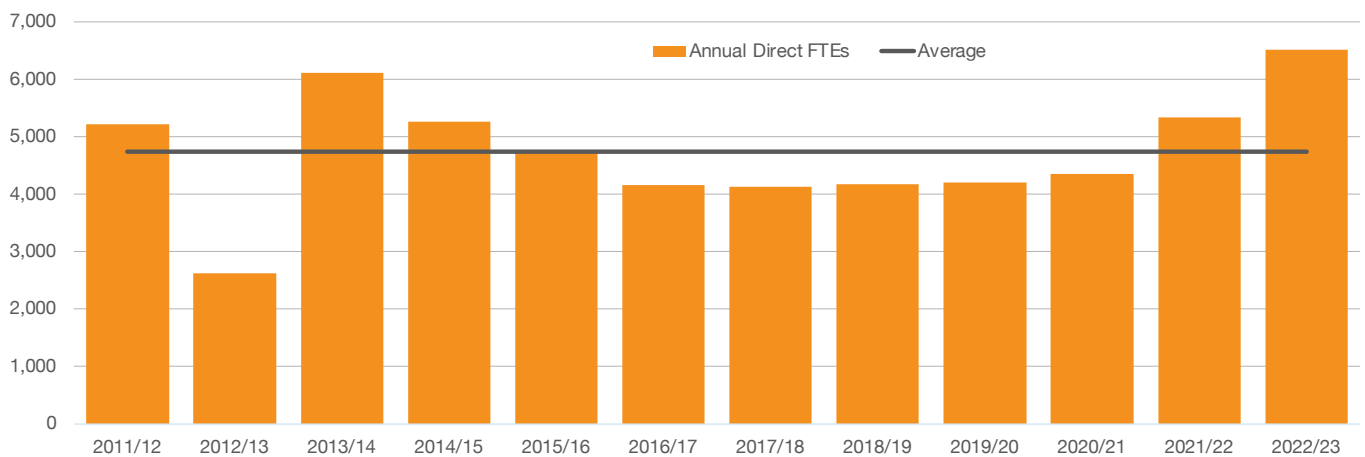
Note: State government payments data only collected from 2013/14 onwards; included in supplier spend, community and other government payments in years prior to this.

Table 2: Direct Impact of Queensland Petroleum & Gas Sector, 2011-23

	Direct employees, avg. (FTEs)	Associated salaries (\$M)	Suppliers, community and local govt payments (\$M)	State govt payments (\$M)	Total direct spending (\$M)
2011/12	5,220	652.6	3,987.7	n.a.	4,640.3
2012/13	2,628	359.9	11,390.7	n.a.	11,750.6
2013/14	6,109	789.5	12,470.2	78.8	13,338.6
2014/15	5,268	954.4	9,586.3	62.1	10,602.8
2015/16	4,727	745.0	5,349.4	75.6	6,170.0
2016/17	4,156	634.5	3,427.7	94.9	4,157.2
2017/18	4,137	720.7	2,972.0	177.4	3,870.1
2018/19	4,181	733.7	2,661.3	394.1	3,789.1
2019/20	4,201	718.4	3,763.0	617.0	5,098.4
2020/21	4,349	766.4	3,666.3	291.8	4,724.5
2021/22	5,339	920.8	3,203.3	886.8	5,010.8
2022/23	6,523	1,022.9	3,993.8	2,200.7	7,218.6
Total spend	4,736	9,018.8	66,471.8	4,879.3	80,371.1

Note: State government payments data only collected from 2013/14 onwards; included in supplier spend, community and other government payments in years prior to this.

Direct Employment Workforce of Qld Petroleum & Gas Sector



Local Suppliers

On average over the period 2011-23, approximately 3,315 businesses in Queensland received payments for goods and services supplied to petroleum and gas companies. The highest average number of suppliers was recorded in the Brisbane region (1,682 businesses), although notably, an average of 46% of payments for goods and services were received by companies with a business address outside of Brisbane.

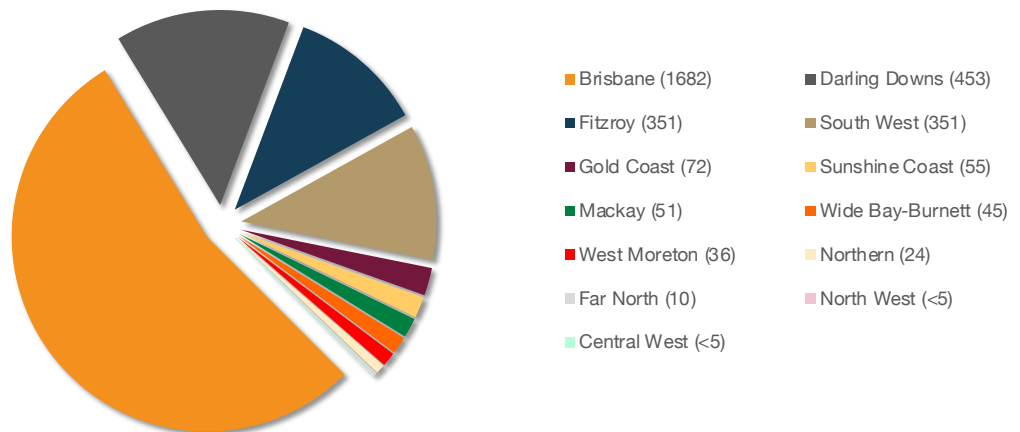
Table 3: Number of Businesses Supported by Region, 2011-23

Region	2022/23	Average
Brisbane	1,724	1,682
Darling Downs	616	453
Fitzroy	327	351
South West	417	351
Gold Coast	85	72
Sunshine Coast	62	55
Mackay	74	51
Wide Bay-Burnett	57	45
West Moreton	58	36
Northern	33	24
Far North	14	10
North West	5	<5
Central West	5	<5
Total Queensland	3,477	3,135

Note: Only for those companies that provided supplier details. n.p. not publishable data. Duplicates were removed to the best extent practicable to ensure an accurate estimation of the number of businesses supported at both state and regional level.

Local Businesses Supported by Qld Petroleum & Gas Sector by Region

Queensland (annual avg.), 2011-23



Community Support

Over the period 2011-23, Queensland petroleum and gas companies contributed to an annual average of 289 separate community groups in a wide range of areas including health, education, environment and the arts. The Darling Downs region recorded the highest average number of community organisations supported (109), followed by Fitzroy (80), South West (46) and Brisbane (35).

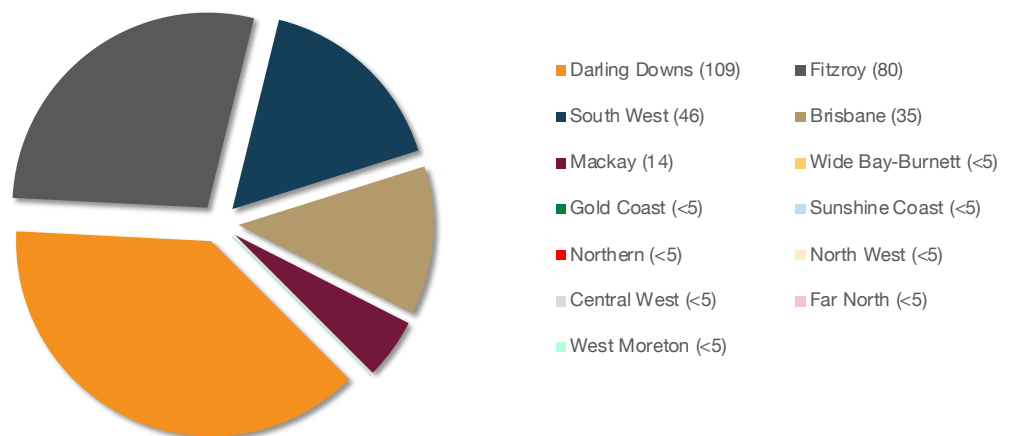
Table 4: Number of Community Organisations Supported by Region, 2011-23

Region	2022/23	Average
Darling Downs	148	109
Fitzroy	131	80
South West	82	46
Brisbane	37	35
Mackay	<5	14
Wide Bay-Burnett	5	<5
Gold Coast	<5	<5
Sunshine Coast	<5	<5
Northern	<5	<5
North West	<5	<5
Central West	<5	<5
Far North	<5	<5
West Moreton	<5	<5
Total Queensland	408	289

Note: Only for those companies that provided details. n.p. not publishable data. Duplicates were removed to the best extent practicable to ensure an accurate estimation of the number of individual community organisations supported at both state and regional level.

Community Organisations Supported by Qld Petroleum & Gas Sector by Region

Queensland (avg), 2011-23



Regional Impact

The postcode expenditure data provided by petroleum and gas companies was aggregated using geographical concordances at the ABS statistical division (SD) and local government area (LGA) levels.

The level of average employment and total aggregate direct expenditure on employees and business purchases over the period 2011-23 is summarised for the 13 major regions in Queensland in Table 5.

The data illustrates that the largest proportion of direct expenditure from the petroleum and gas sector in Queensland over the past twelve years was in the Brisbane region (\$44.3 billion), followed by Fitzroy (\$13.1 billion) and Darling Downs (\$11.0 billion).

Brisbane recorded the largest share of direct expenditure by region over the period 2011-23 (\$44.3 billion), followed by Fitzroy (\$13.1 billion) and Darling Downs (\$11.0 billion).

With regard to employment, the largest average direct full-time resident employee workforce across Queensland was again recorded in the Brisbane region (2,941 FTEs), followed by the Darling Downs (553 FTEs) and Fitzroy (451 FTEs) regions.

The average salary for petroleum & gas sector workers in Queensland was approximately \$158,679 over the period 2011-23.

Total QLD Petroleum & Gas Sector Direct Spend by Region

Queensland, 2011-23 (\$ billion)

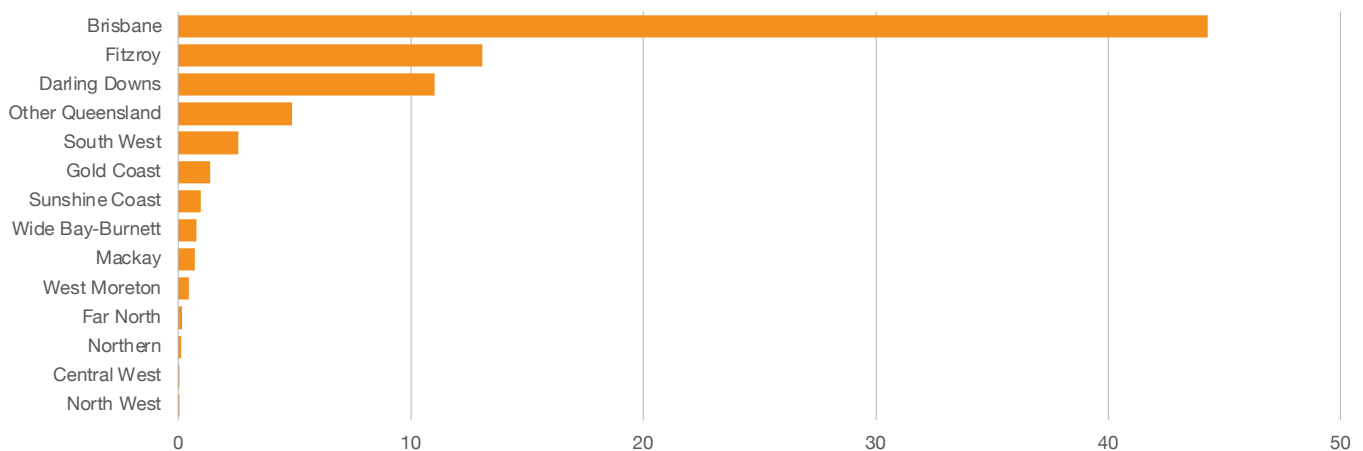


Table 5: Direct Impact of Queensland Petroleum & Gas Sector by Region, 2011-23

Region	Avg residing employees (FTEs)	Associated salaries (\$M)	Suppliers, community and govt payments (\$M)	Total direct spending (\$M)
Brisbane	2,941	5,791.4	38,495.5	44,286.9
Central West	<5	3.7	50.7	54.4
Darling Downs	553	920.3	10,101.7	11,022.1
Far North	17	29.7	127.8	157.5
Fitzroy	451	939.3	12,127.2	13,066.5
Gold Coast	149	267.4	1,105.4	1,372.9
Mackay ^(a)	104	159.7	525.8	685.5
North West	1	0.9	4.7	5.6
Northern	20	35.1	93.5	128.5
South West	148	226.4	2,330.4	2,556.9
Sunshine Coast	221	413.9	529.0	942.9
West Moreton	38	68.9	380.5	449.4
Wide Bay-Burnett	90	162.0	600.8	762.8
Other Queensland ^(b)	<5	0.0	4,879.3	4,879.3
Total Queensland	4,736	9,018.8	71,352.3	80,371.1

Note: (a) Includes Mackay, Isaac and Whitsunday LGAs. (b) Includes State Government and unallocated payments.

Average Qld Petroleum & Gas Sector Direct Employment by Region

Queensland, 2011-23 (FTEs)

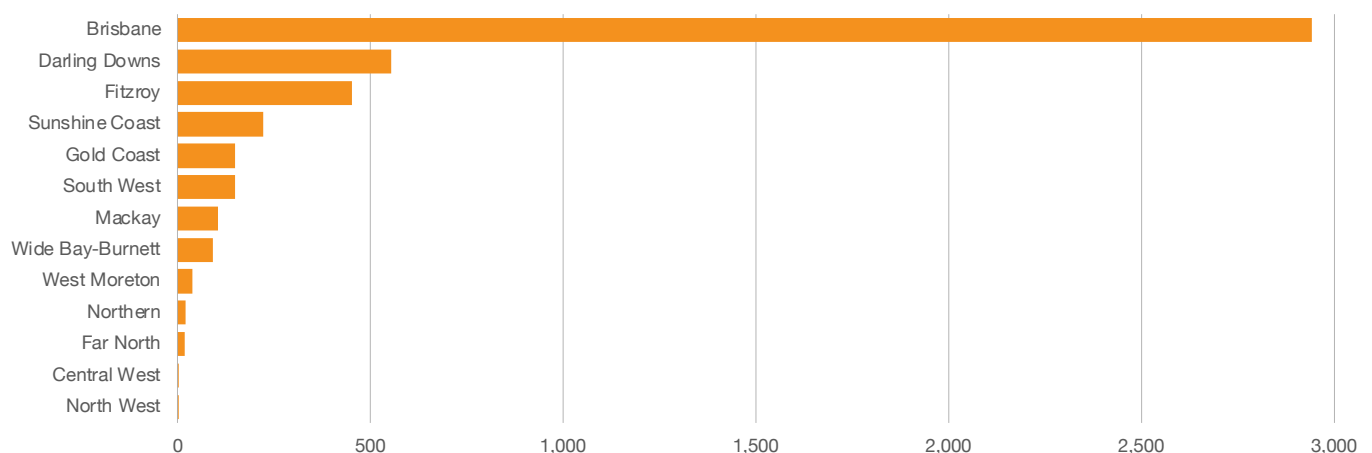
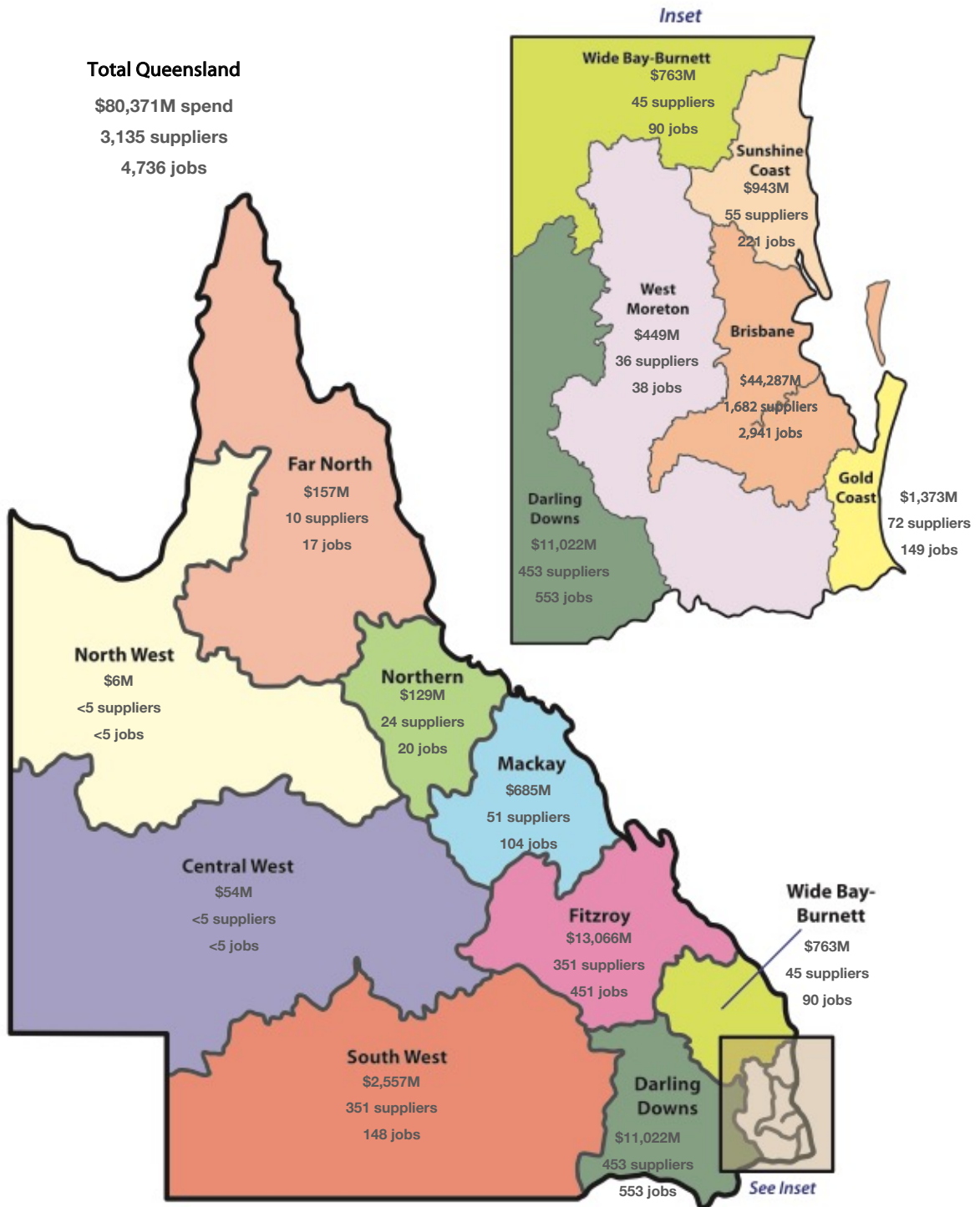
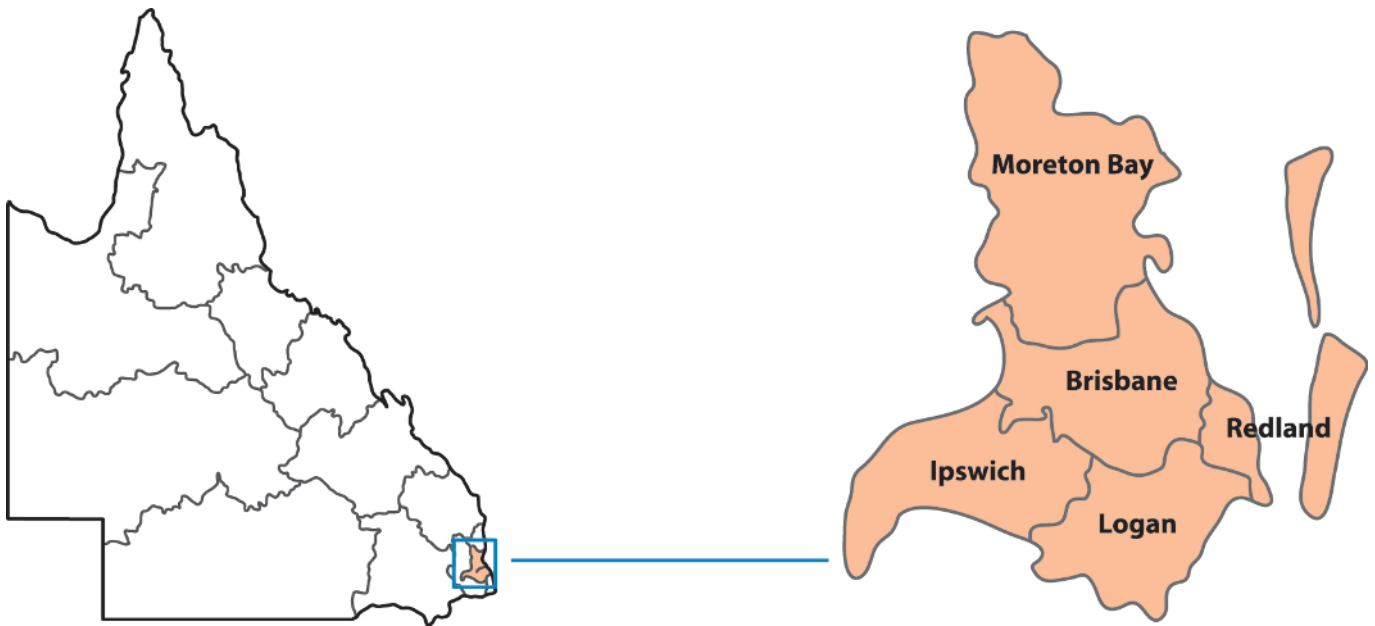


Figure 1: Total Petroleum & Gas Sector Direct Spending and Average Employment by Region, 2011-23



Brisbane

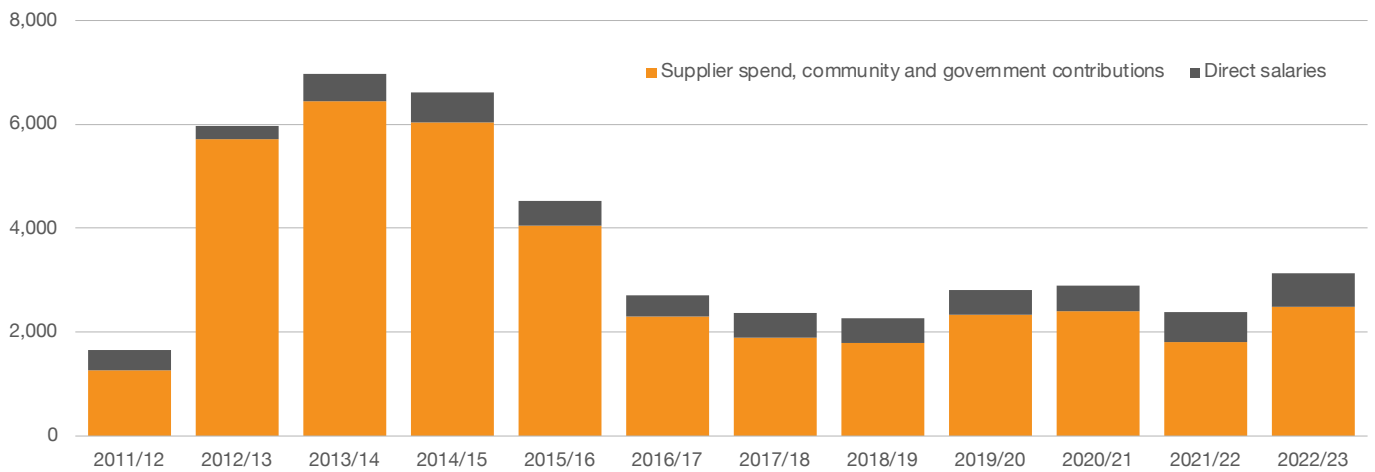


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$44.3 billion in direct spending in the **Brisbane** region, including:

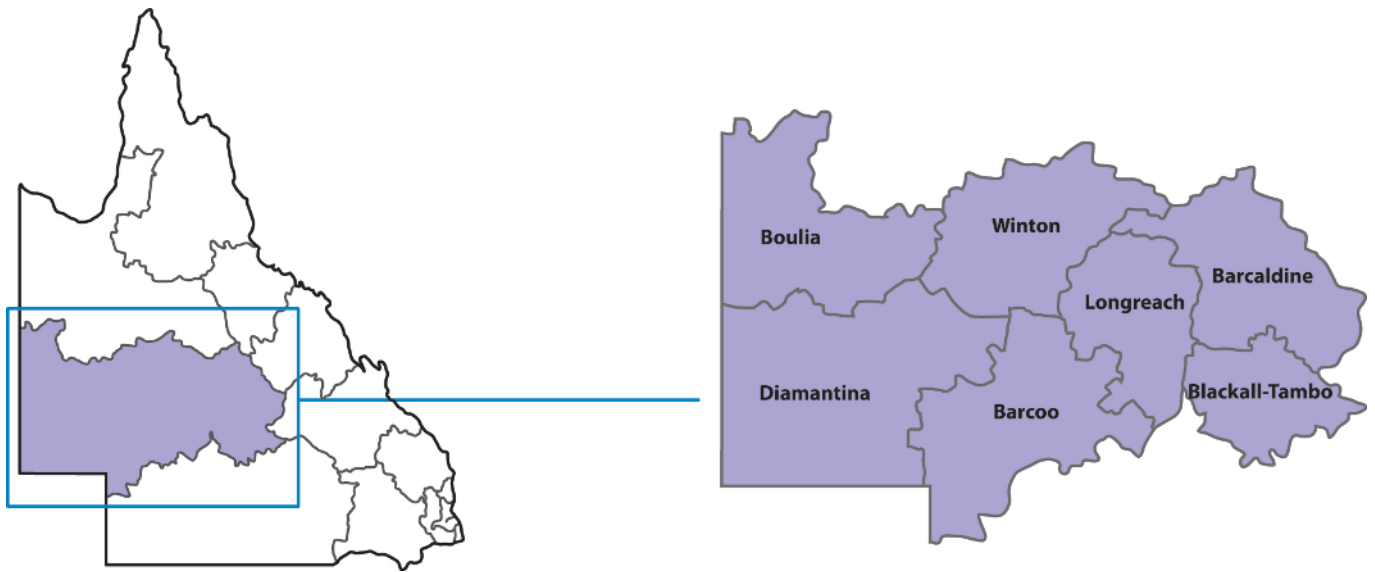
- \$5.8 billion in total wages and salaries to 2,941 average direct fulltime employees, with an average salary of \$164,094; and
- \$38.5 billion in purchases of goods and services from an annual average of 1,682 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Brisbane (\$ million)



Central West

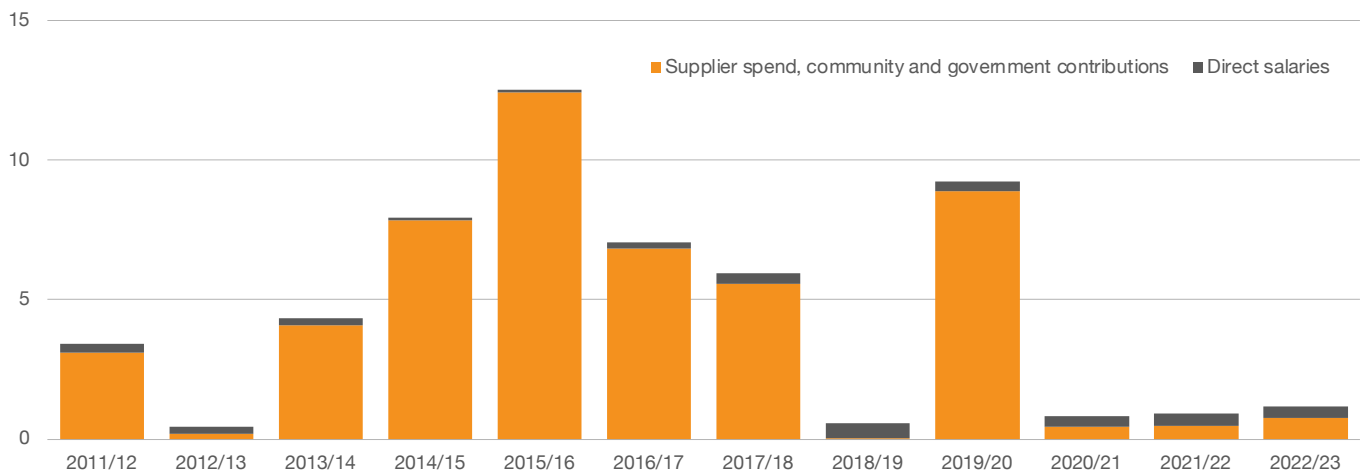


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$54.4 million in direct spending in the **Central West** region, including:

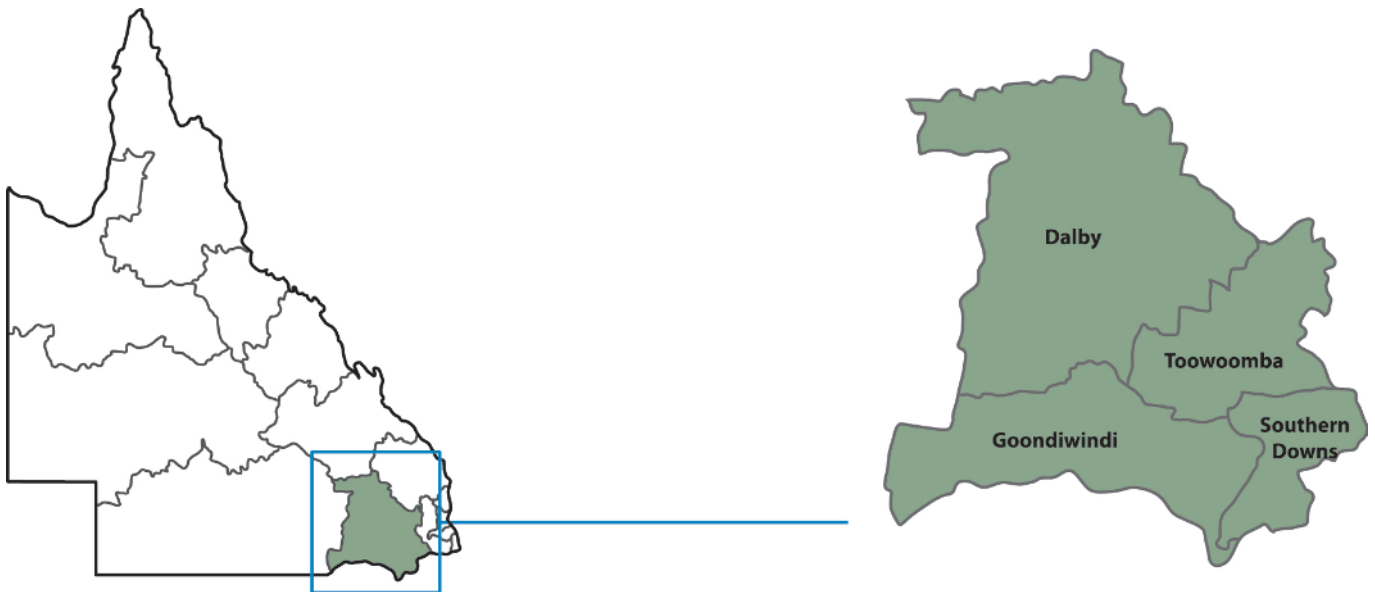
- \$3.7 million in total wages and salaries to direct fulltime employees, with an average salary of \$148,632; and
- \$50.7 million in purchases of goods and services from local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Central West (\$ million)



Darling Downs

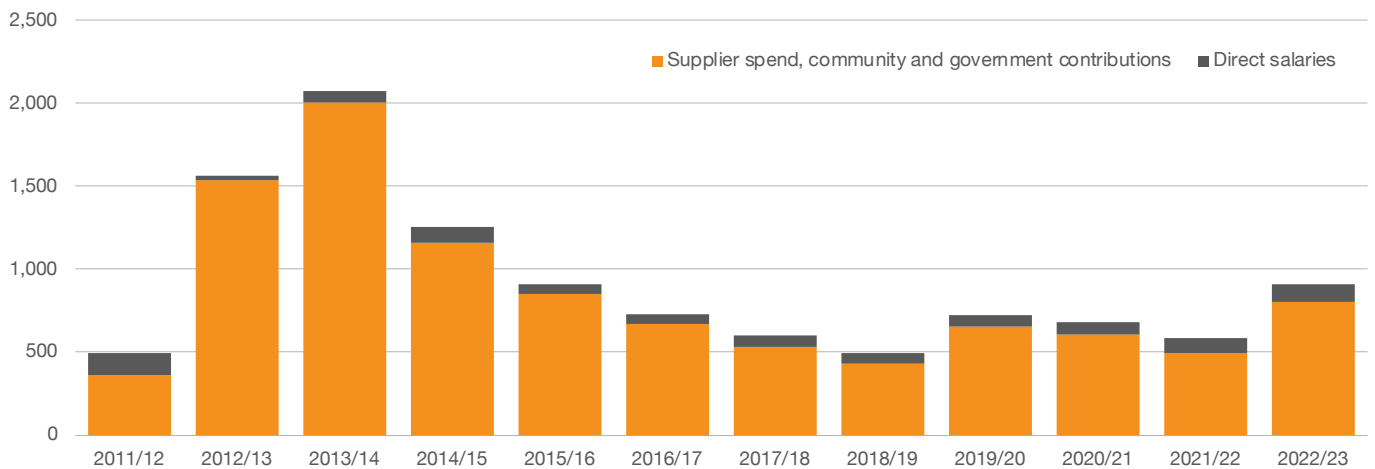


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$11.0 billion in direct spending in the **Darling Downs** region, including:

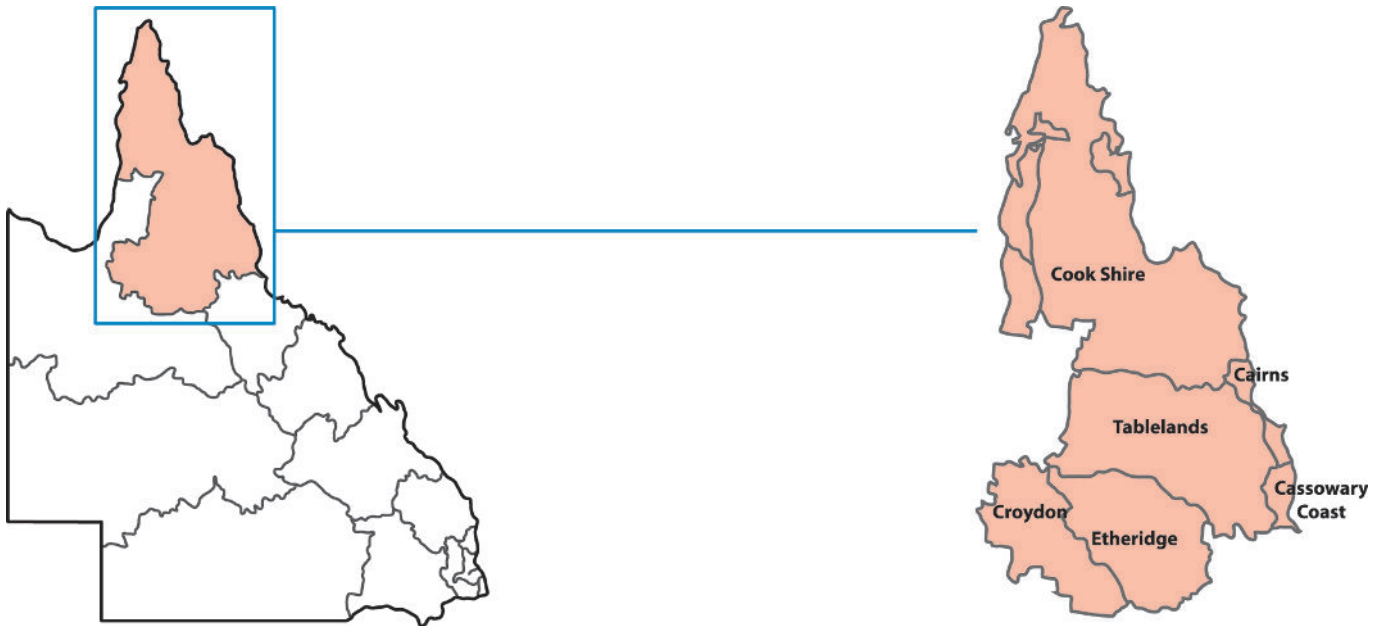
- \$920.3 million in total wages and salaries to 553 average direct fulltime employees, with an average salary of \$138,745; and
- \$10.1 billion in purchases of goods and services from an annual average of 453 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Darling Downs (\$ million)



Far North

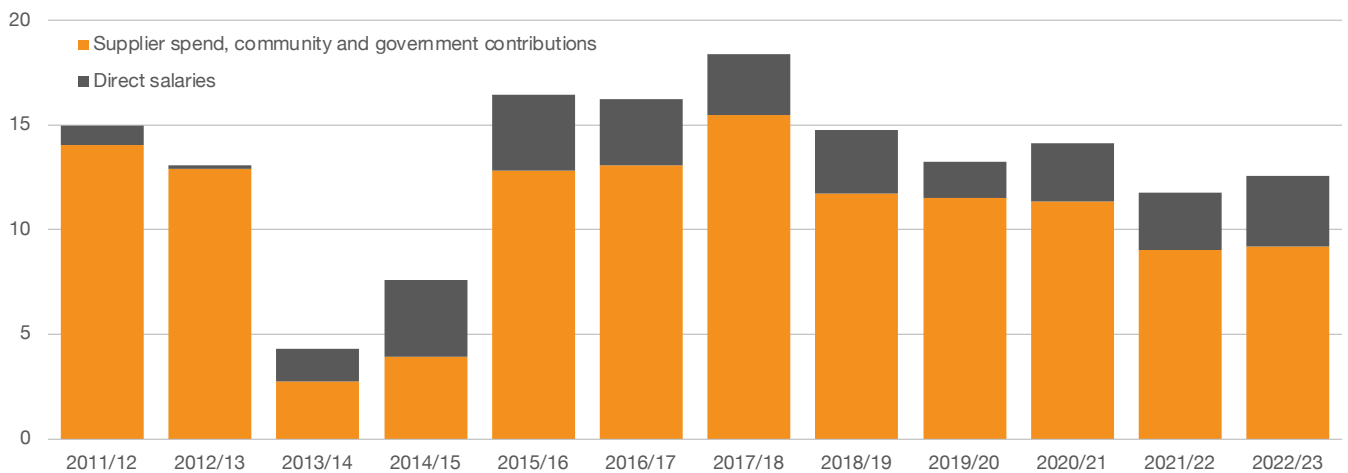


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$157.5 million in direct spending in the **Far North** region, including:

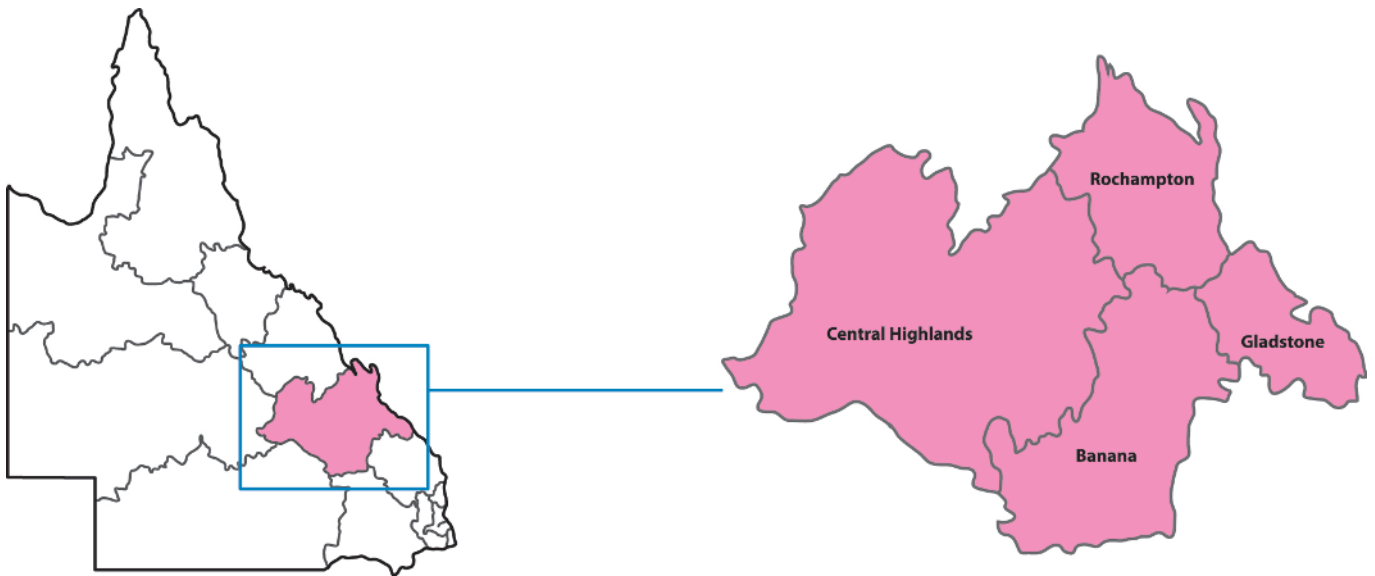
- \$29.7 million in total wages and salaries to 17 average direct fulltime employees, with an average salary of \$148,022; and
- \$127.8 billion in purchases of goods and services from an annual average of 10 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Far North (\$ million)



Fitzroy

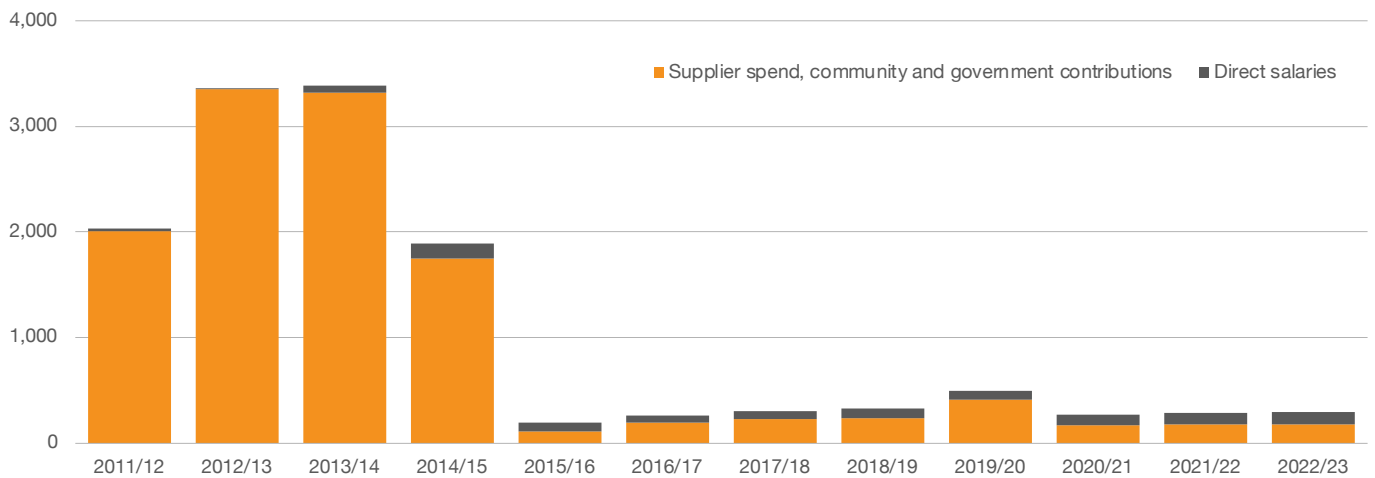


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$13.1 billion in direct spending in the **Fitzroy** region, including:

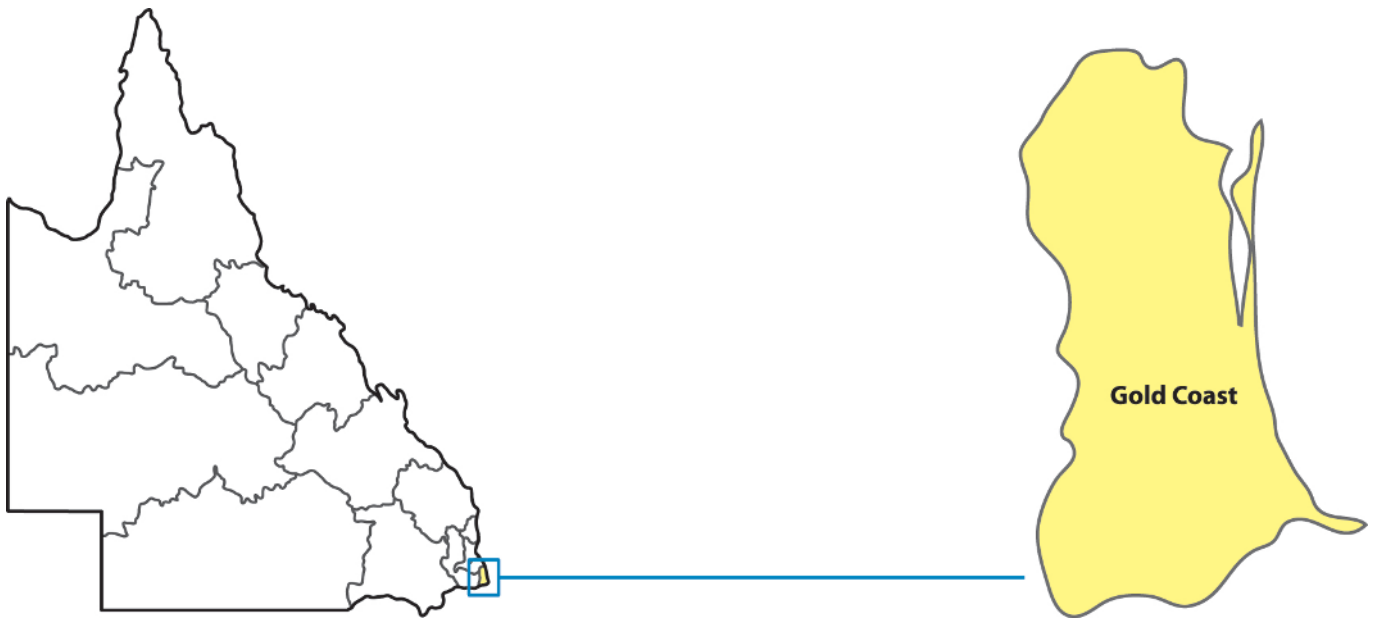
- \$939.3 million in total wages and salaries to 451 average direct fulltime employees, with an average salary of \$173,393; and
- \$12.1 billion in purchases of goods and services from an annual average of 351 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Fitzroy (\$ million)



Gold Coast

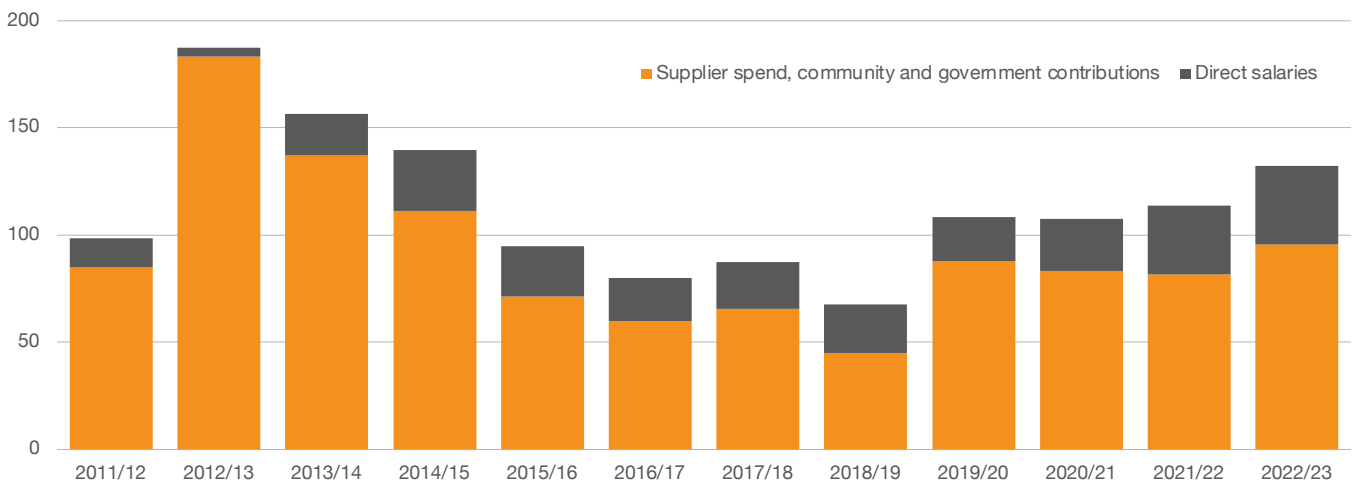


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$1.4 billion in direct spending in the **Gold Coast** region, including:

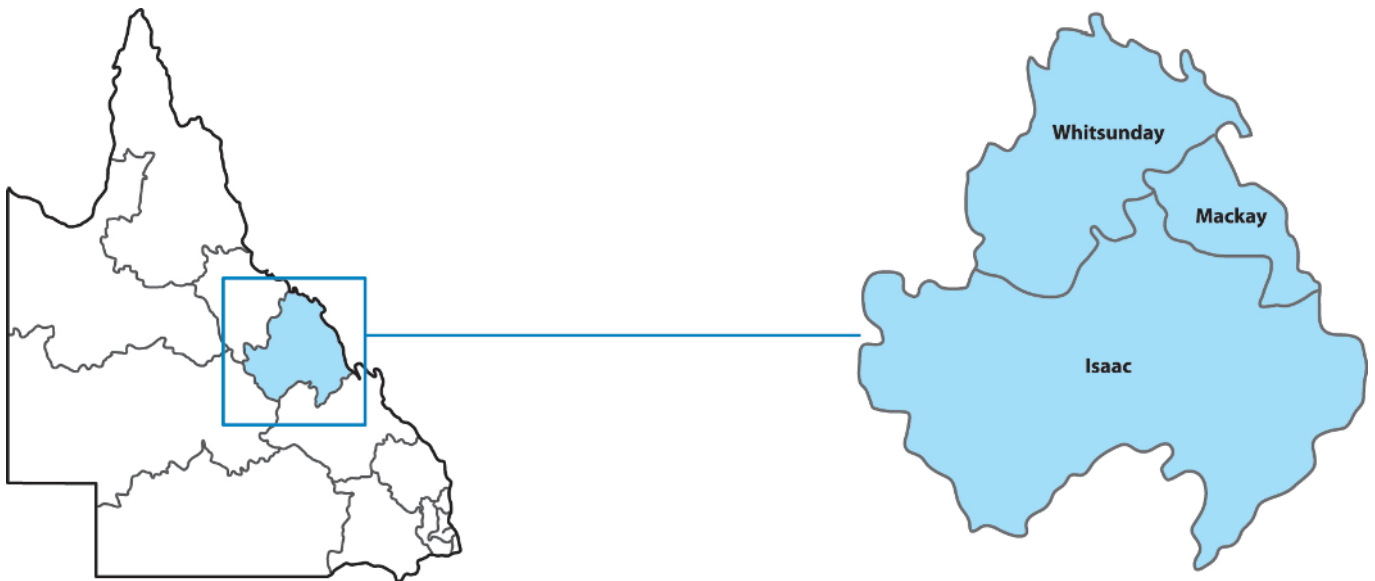
- \$267.4 million in total wages and salaries to 149 average direct fulltime employees, with an average salary of \$149,253; and
- \$1.1 billion in purchases of goods and services from an annual average of 72 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Gold Coast (\$ million)



Mackay

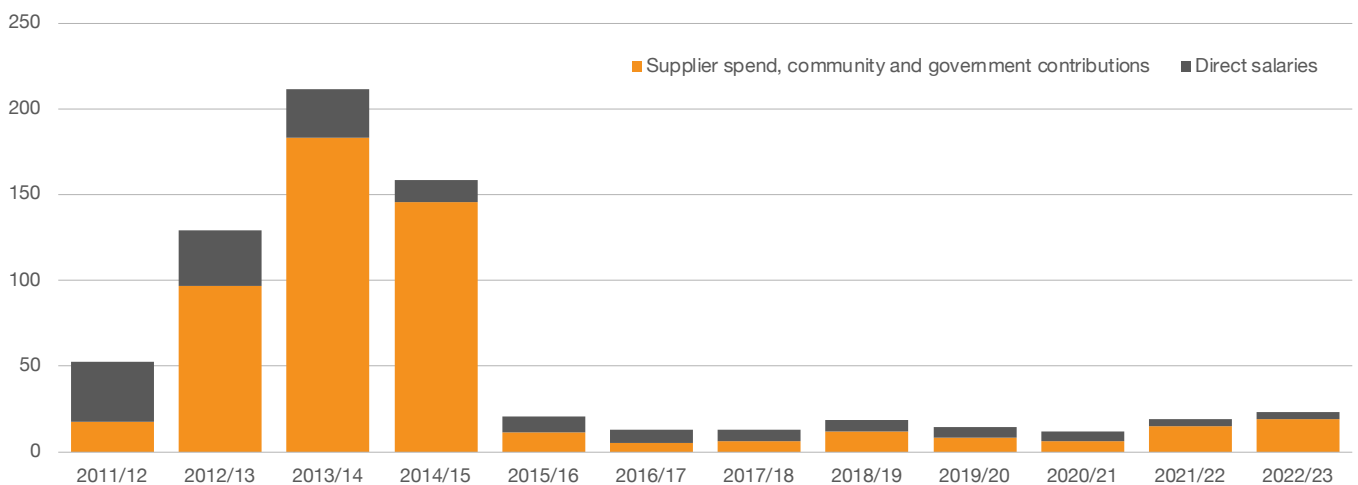


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$685.5 million in direct spending in the **Mackay** region, including:

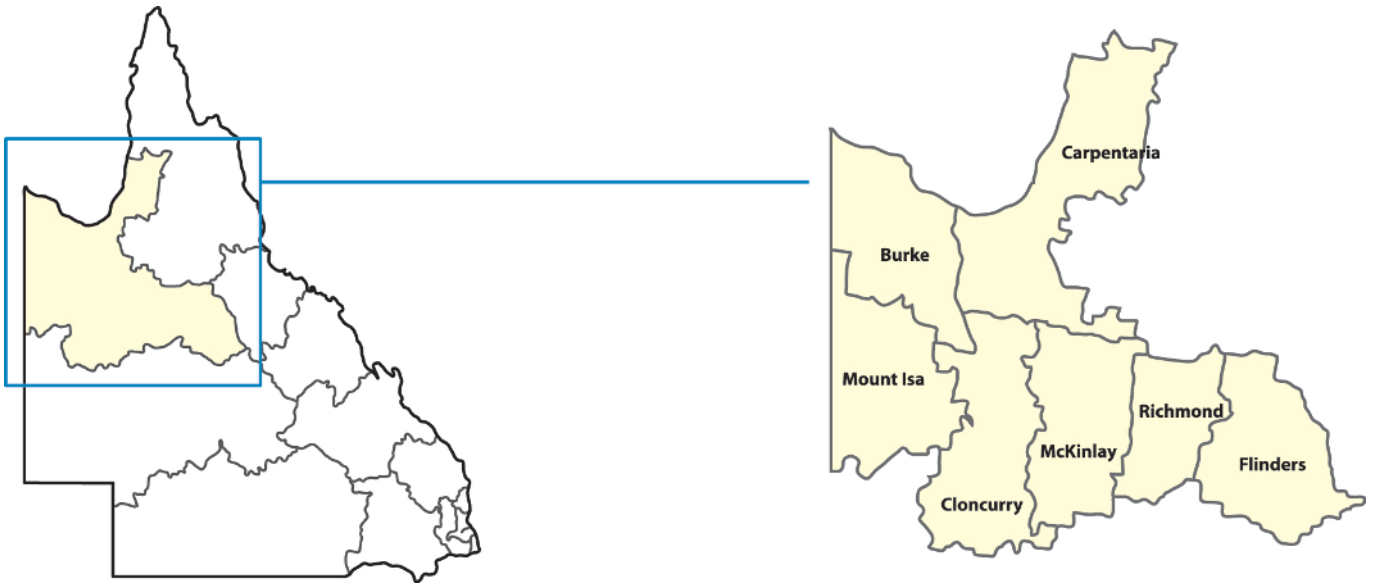
- \$159.7 million in total wages and salaries to 104 average direct fulltime employees, with an average salary of \$127,841; and
- \$525.8 million in purchases of goods and services from an annual average of 51 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Mackay (\$ million)



North West

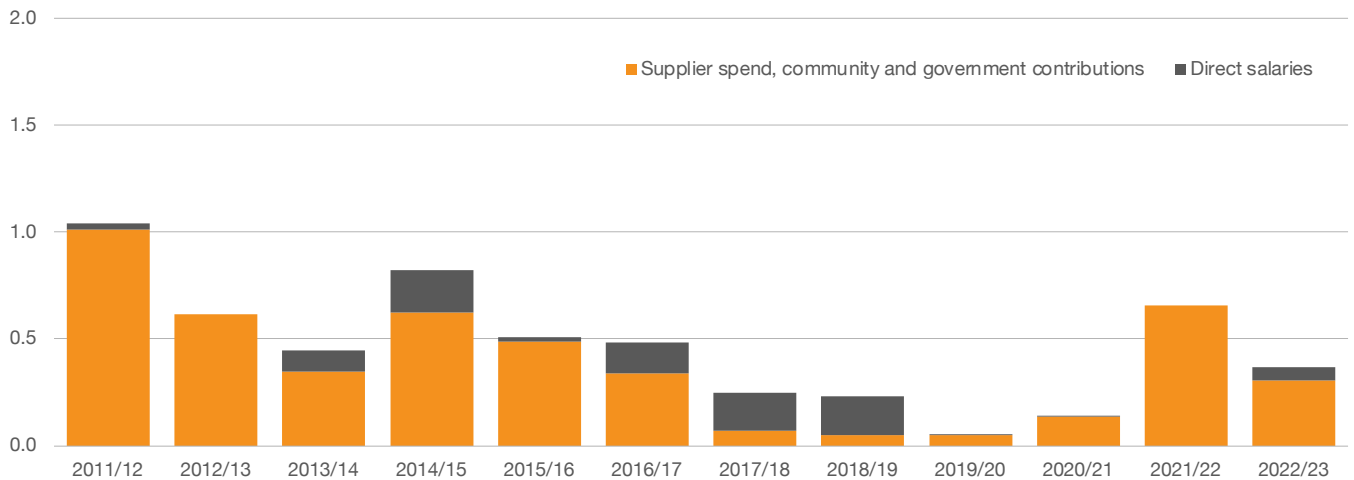


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$5.6 million in direct spending in the **North West** region, including:

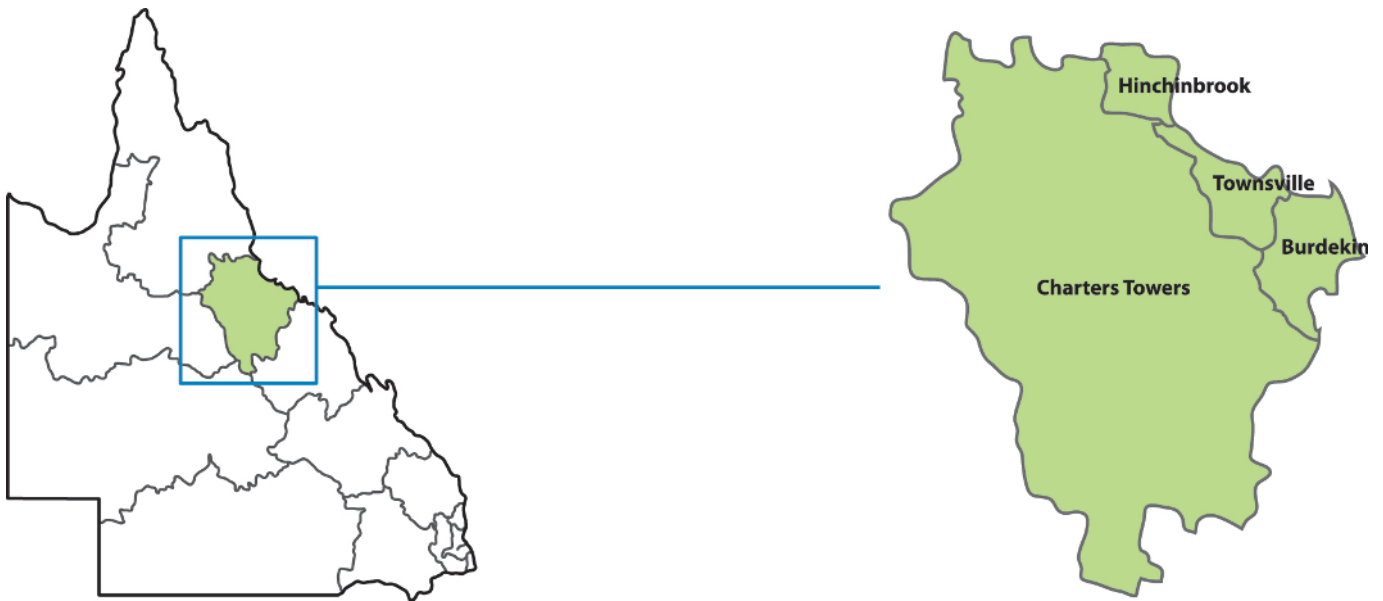
- \$0.9 million in total wages and salaries to direct fulltime employees, with an average salary of \$87,256; and
- \$4.7 million in purchases of goods and services from local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

North West (\$ million)



Northern

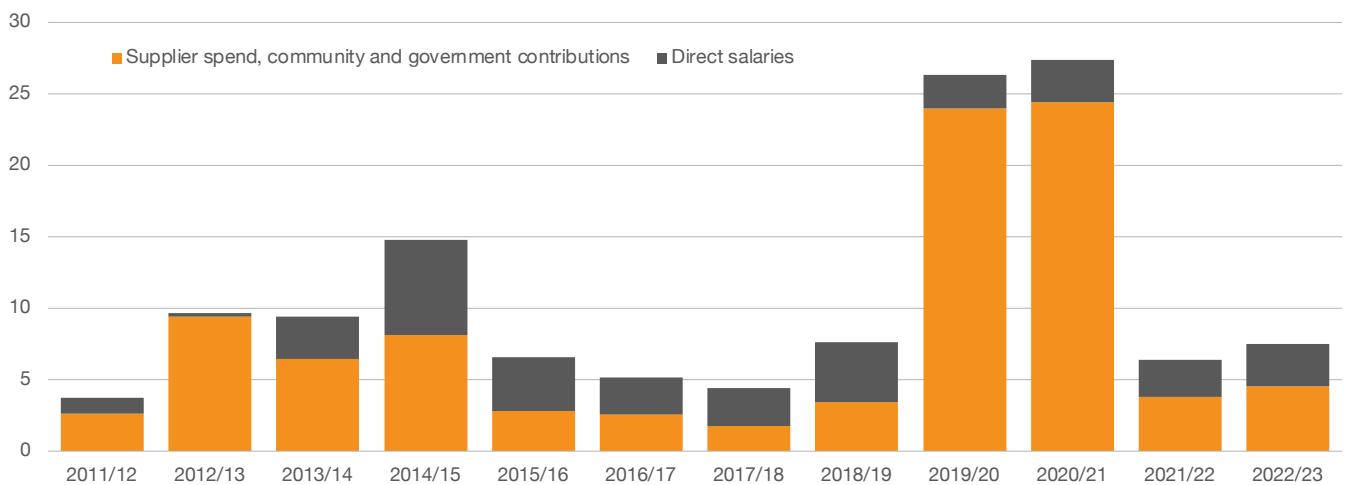


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$128.5 million in direct spending in the **Northern** region, including:

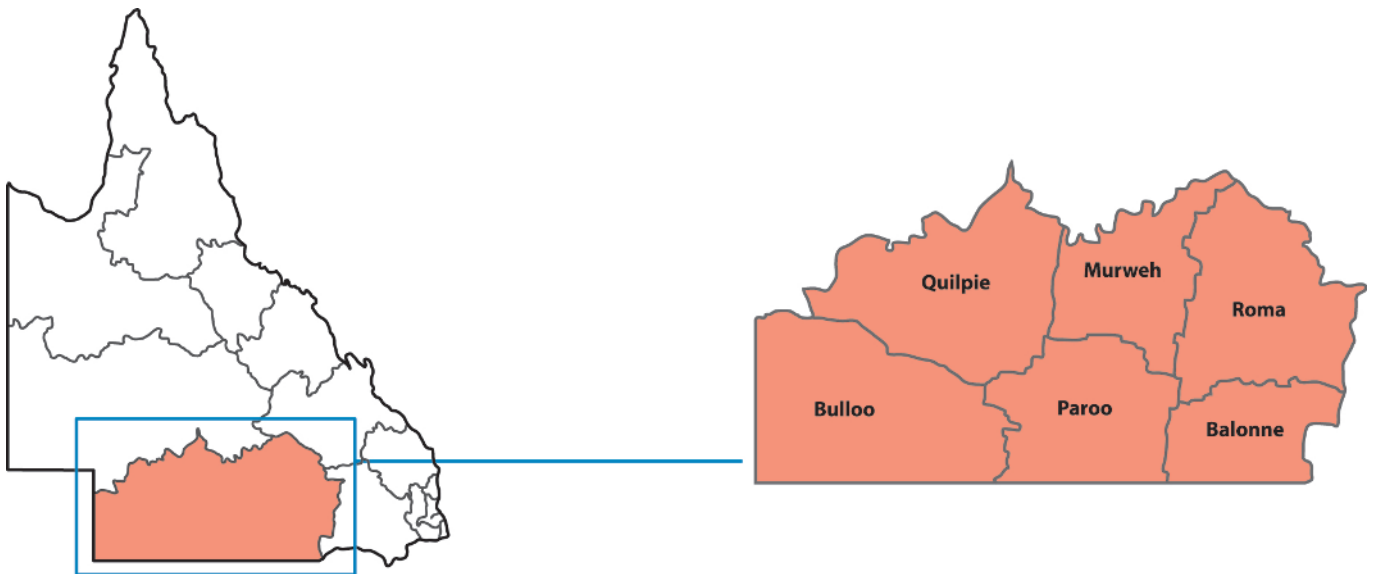
- \$35.1 million in total wages and salaries to 20 average direct fulltime employees, with an average salary of \$142,972; and
- \$93.5 million in purchases of goods and services from an annual average of 24 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Northern (\$ million)



South West

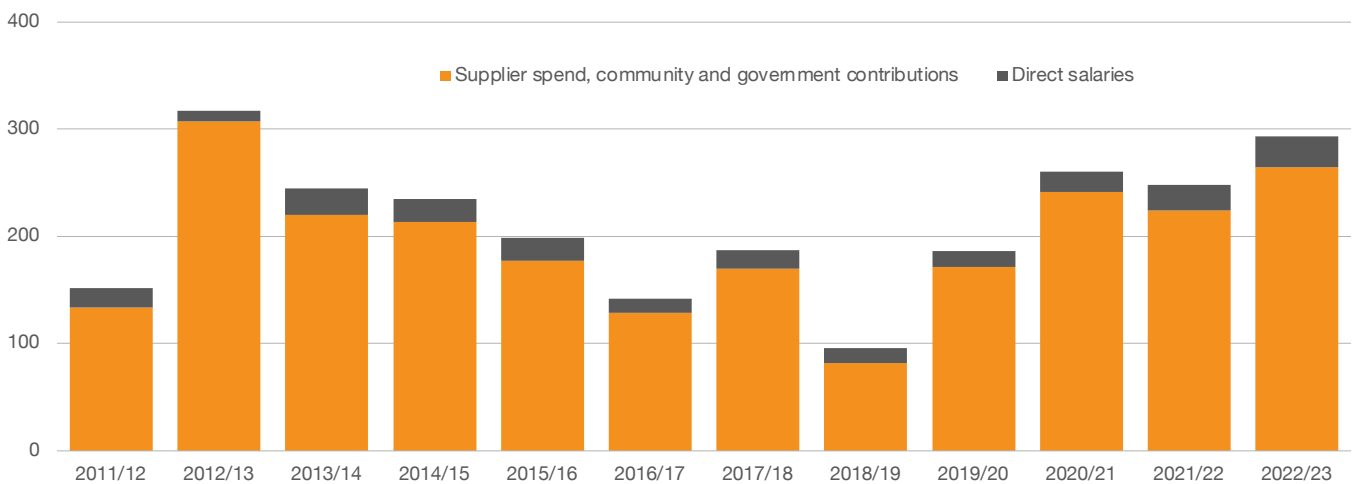


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$2.6 billion in direct spending in the **South West** region, including:

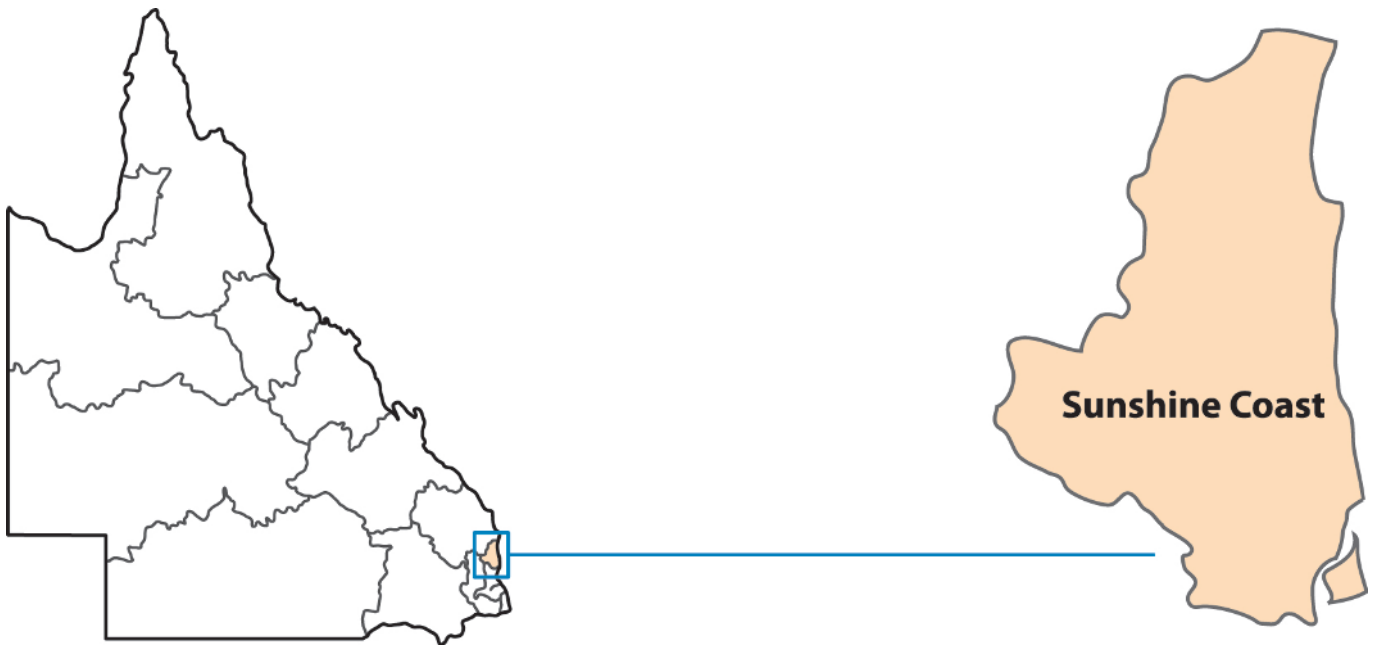
- \$226.4 million in total wages and salaries to 148 average direct fulltime employees, with an average salary of \$127,224; and
- \$2.3 billion in purchases of goods and services from an annual average of 351 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

South West (\$ million)



Sunshine Coast

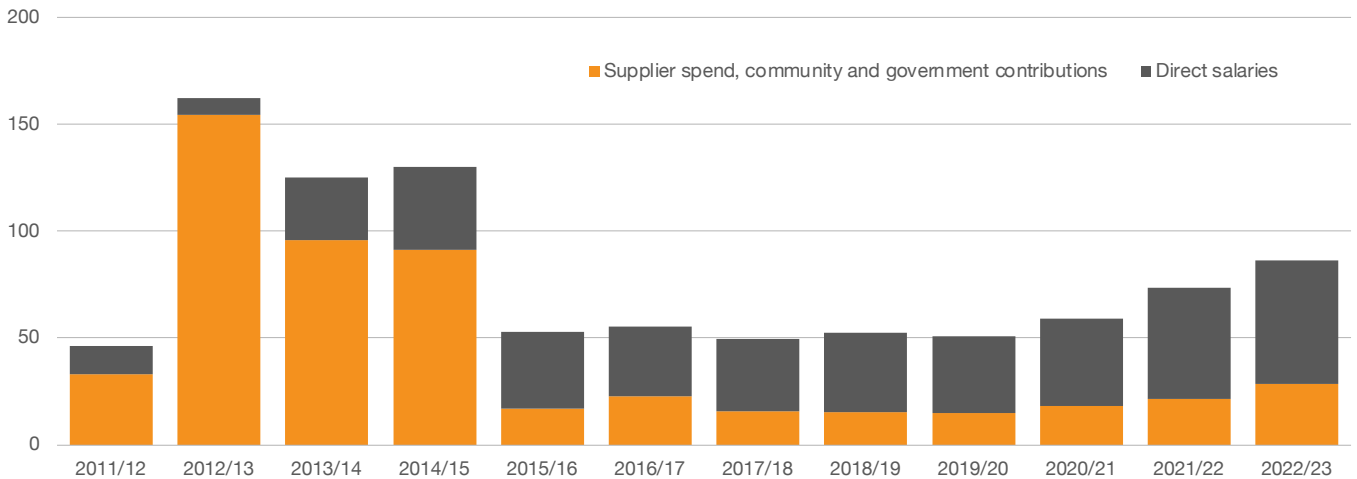


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$942.9 million in direct spending in the **Sunshine** region, including:

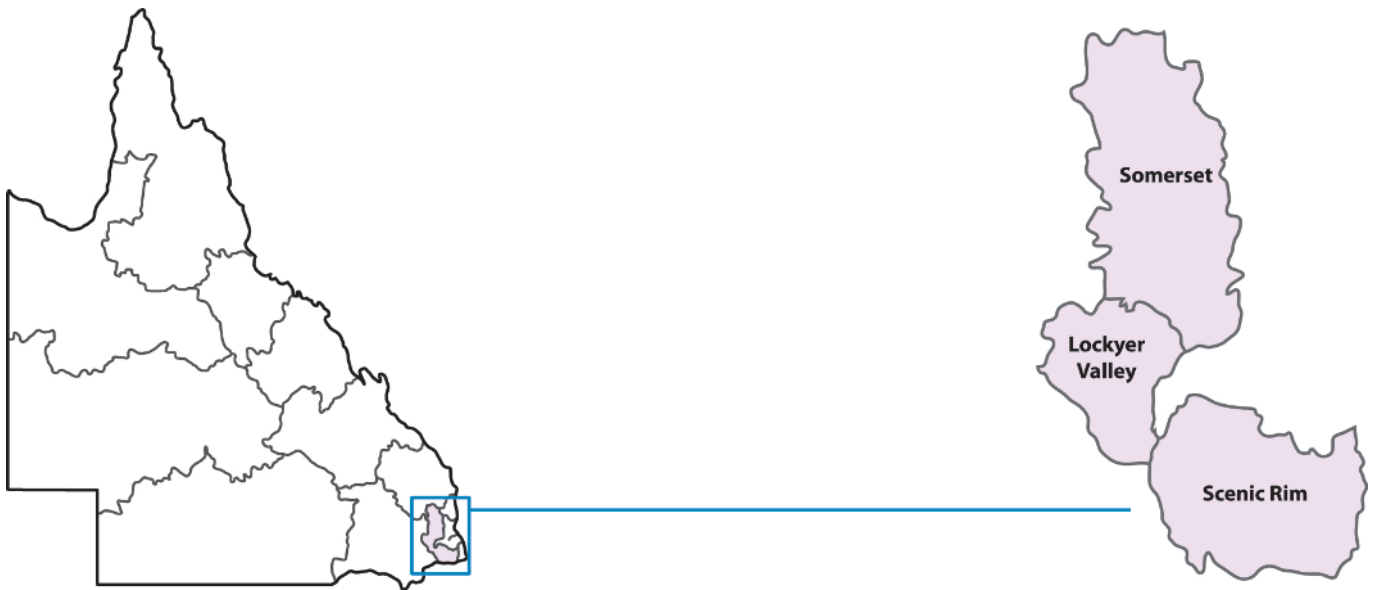
- \$413.9 million in total wages and salaries to 221 average direct fulltime employees, with an average salary of \$156,424; and
- \$529.0 million in purchases of goods and services from an annual average of 55 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Sunshine Coast (\$ million)



West Moreton

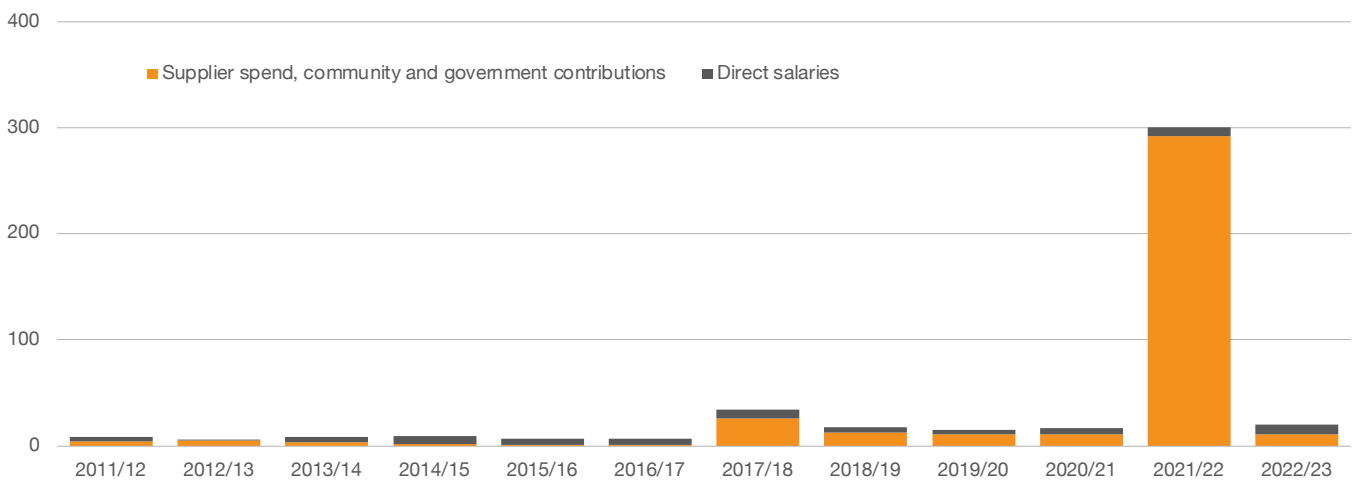


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$449.47 million in direct spending in the **West Moreton** region, including:

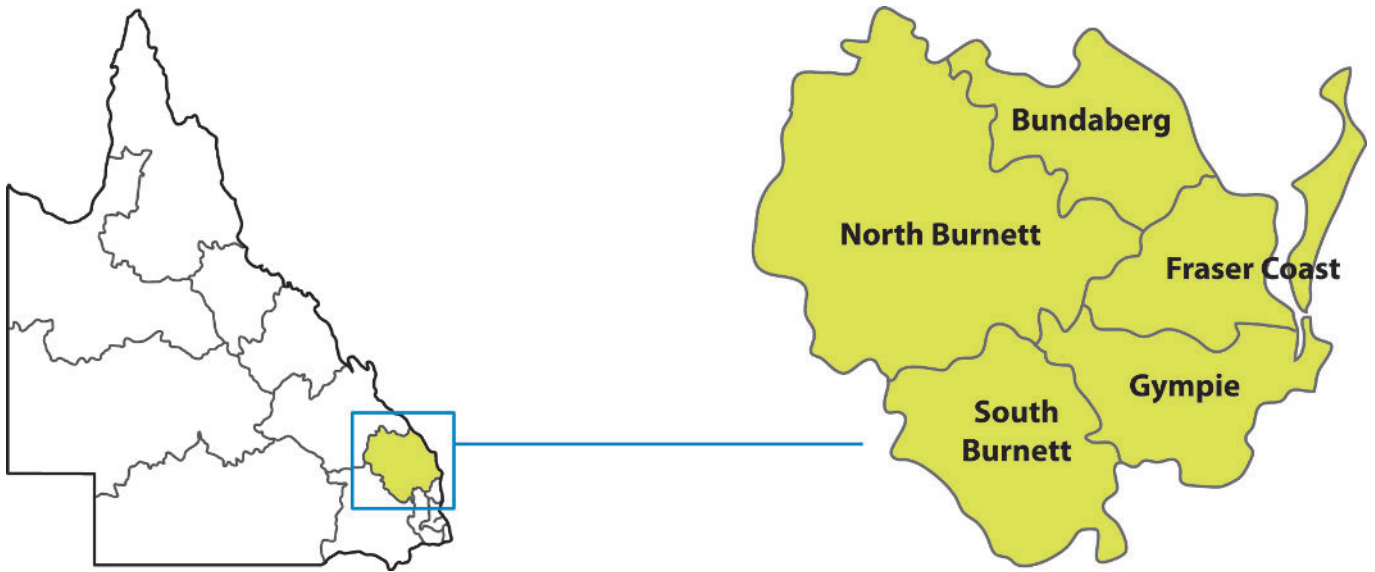
- \$68.9 million in total wages and salaries to 38 average direct fulltime employees, with an average salary of \$149,772; and
- \$380.5 million in purchases of goods and services from an annual average of 36 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

West Moreton (\$ million)



Wide Bay-Burnett

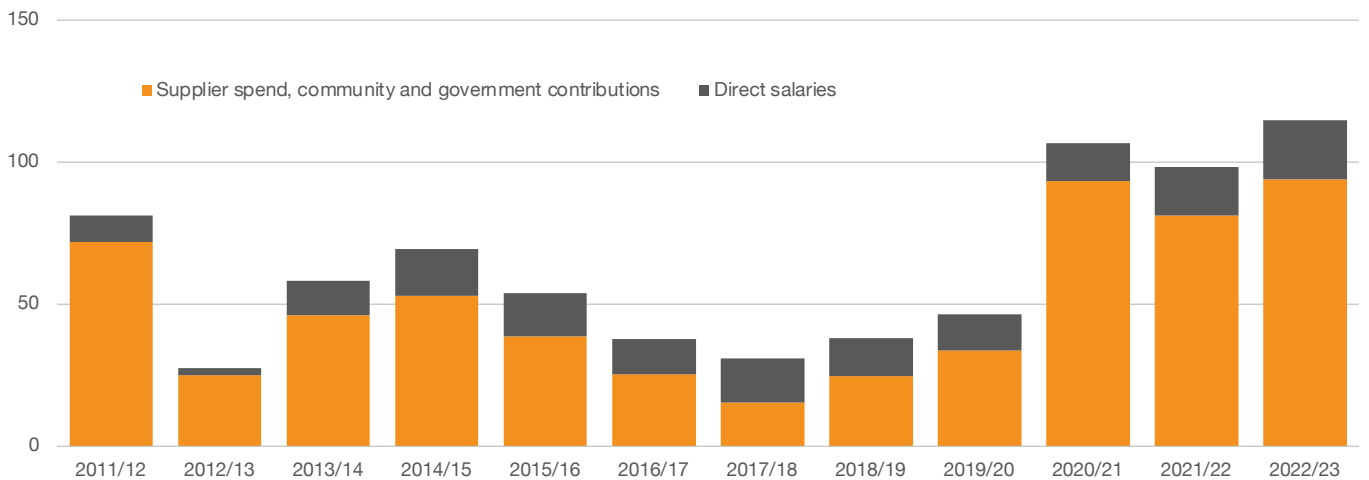


Over the period 2011/12 to 2022/23, the petroleum and gas sector has contributed \$762.8 million in direct spending in the **Wide Bay-Burnett** region, including:

- \$162.0 million in total wages and salaries to 90 average direct fulltime employees, with an average salary of \$149,348; and
- \$600.8 million in purchases of goods and services from an annual average of 45 local businesses (including contractors), community contributions and local government payments.

Direct Expenditure of Qld Petroleum & Gas Sector

Wide Bay-Burnett (\$ million)



Conclusion

This report identifies the direct impact of the Queensland petroleum & gas sector by local and regional areas between 2011/12 and 2022/23.

The analysis identifies that Queensland petroleum and gas companies contributed approximately \$80.4 billion in direct spending to the state economy over the period 2011-23, comprised of:

- \$9.0 billion in wages and salaries to an average direct workforce (i.e. not including contract workers) of approximately 4,7836 fulltime resident employees
- \$65.8 billion in purchases of goods and services from an average of 3,135 local businesses (including contract payments) and voluntary contributions to an average of 289 community groups;
- \$646.2 million in payments to local government (including rates, developer contributions and other payments); and
- \$4.9 billion in state government payments (including royalties, stamp duty, payroll tax and land tax).

*The petroleum & gas sector contributed **\$80.4 billion** in direct spending to the Queensland economy over the period 2011/12 to 2022/23.*

Expenditure from the petroleum and gas sector in Queensland has indirect impacts on the business environment in many areas, and generates substantial levels of production in the Brisbane, Fitzroy, Darling Downs and South West regions in particular.

Appendix A: Indirect & Total Economic Impact

Modelling Approach

For this study, input-output (I-O) modelling has been used to estimate the sum of direct, indirect and consumption-induced effects of the companies surveyed on different regions of Queensland. I-O techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and hence are an appropriate tool for determining the direct, indirect and induced economic impact of economic stimuli.

I-O models can be used to capture only the indirect impacts that occur through other industry sectors (Type I models), or the indirect plus the consumption-induced effects (Type II models), which have been adopted for the current study. Further, the I-O models used in this study were based on the ABS model of the Australian economy generated from general equilibrium models. Note: Type II models involve assumptions about fixed relationships between income and consumption patterns. These factors mean that the results of I-O models should generally be treated as the upper bound of estimates, and that care has to be taken in interpreting the results of very large changes in demand or production.

A concept underlying I-O modelling is that an initial economic shock or stimulus can have multiplier effects through a series of successive spending rounds. The size of the economic multiplier in a local or regional area can be summarised in the following way:

- The extent to which project operators purchase inputs from the local or regional economy. Examples of inputs include wages for labour supplied from the local or regional area, and purchases of goods and services. The more that a project operator sources from the local or regional economy, the more money that is directly injected into the economy; and
- The extent to which money spent in a local or regional economy is retained within that economy. If there is not much opportunity for people receiving income to spend it on goods and services in their local or regional area, then not as much money will be kept in the local or regional area. Larger and more diverse regional economies tend to be better at keeping expenditures in their economy and not 'losing' it to other regions.

Key advantages of using input-output models are the fineness of detail available at a disaggregated industry level, the relative ease of application, particularly for sub-regional levels, and the ability to model effects in a timely manner.

To generate predictions, the economic contribution of an industry is applied to the relevant industry sectors of the input-output model of a regional economy. The stimulus from economic activity can be traced through the economy in several different ways:

- The first-round effect, or direct effect, are those from the activities expenditure in purchasing goods from other industries;
- The second-round effects are those from the supplying industries increasing their purchases to meet the additional demand. The second and subsequent rounds of purchasing are termed the indirect effects; and
- The consumption-induced effects, which recognise that the level of local production is important in determining regional levels of household consumption, that this in turn will be spent locally to a large extent and therefore influence the level of regional consumption and the level of output of each sector.

These effects can be represented in terms of multipliers and changes in four key variables:

Output

The output impact measures the increase in gross sales throughout the whole economy by summing all the individual transactions resulting, directly and indirectly, from the economic stimulus.

Income

The income impact measures the additional amount of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the stimulus to the economy.

Employment

The employment impact measures the combined number of existing jobs sustained and new jobs generated by the stimulus, both directly and indirectly, although allocation between these forms of employment is not separately identified.

Value Added

The value added or Gross Regional Product (GRP) impact measures only the net activity at each stage of production. GRP is defined as the addition of consumption, investment and government expenditure, plus exports of goods and services, minus imports of goods and services for a region. The GRP impacts are the preferred measure for the assessment and contribution of a stimulus to the economy.

Key advantages of using input-output models are the fineness of detail available at a disaggregated industry level, the relative ease of application, particularly for sub-regional levels, and the ability to model effects in a timely manner. However, care has to be taken in its application and interpretation of results. Key assumptions that underpin the application of I-O models are:

- The inputs purchased by each industry are a function of the level of output of that industry. The input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs);
- Each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies that there is only one method used to produce each commodity and that each sector has only a single primary output;
- The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the additivity assumption;
- The system is in equilibrium at given prices. This would not be the case in an economic system subject to external influences;
- In the static input-output model, there are no capacity constraints so that the supply of each good is perfectly elastic. Each industry can supply whatever quantity is demanded of it and there are no capital restrictions. This assumption would come into play depending upon the magnitude of the changes in quantities demanded, brought about through changes in taxation levels; and
- The input-output model is an optimisation model that allocates resources between sectors to their most efficient use.

Type II models involve additional assumptions about fixed relationships between income and consumption patterns. These factors mean that the results of I-O models should generally be treated as the upper bound of estimates, and that care has to be taken in interpreting the results of very large changes in demand or production.

Construction of Regional Models

For the derivation of the regional I-O tables, a variable interference non-survey technique was applied, involving a formalised non-survey method compilation. This allowed data on direct effects of the companies surveyed to be inserted at any stage of the compilation procedure. This approach is based primarily on the Generation of Regional Input-Output Tables (GRIT) technique, a widely used method of constructing local and regional input-output tables in Australia, America and Europe. The procedure utilises cross-industry location quotients as well as superior data (including expenditure patterns of within the primary company data) for the regionalisation of the national direct requirements matrix (DRM) or at the elements of other final payments and demand, which are at the core of any I-O table.

In summary, the construction of the local and regional I-O models employed the following steps:

- Adjustment to the latest available national I-O table;
- Computation of the regional direct requirement matrix;
- Aggregation of regional sectors (if necessary); and
- Computation of the complete regional I-O table.

All the necessary data for the regionalisation procedure were collected from the Australian Bureau of Statistics as well as other reliable sources for secondary data such as regional household expenditure patterns, income and productivity measures. The latest available national I-O tables were 2020-21, which consisted of 114 sectors of economic activity, at the 4-digit level, compiled following the industry-technology assumption, product-by-product, with total flows and valued at basic values in current prices.

For estimating the regional I-O tables, and especially in the interpretation of results, relevant limitations of the I-O approach (static, linear production function, no substitution or scale economy effects, infinite elasticity of supply) were taken into consideration. Once the I-O models were generated, predictions of impact were estimated for each regional area using the available data on salary and business expenditure.

The predictions of the I-O models for regional area were estimated in two separate groups. The first group involved the economic impacts of expenditure on business goods and services (business suppliers), while the second involved economic expenditure of the labour force. Each stimulus group was modelled using expenditure coefficients and household consumption patterns applicable for each region, also taking into account the type of commodity and the nature of the expenditure (i.e. operating or capital expenditure).

The outputs of the models can be classified into First Round and Indirect Effects, representing industry impacts through the business chain, and Final Consumption-Induced effects, which represent the economic activity needed to support the increased workforce from Direct, First Round and Indirect Effects.

The data collection and the methodology applied in this study are notable in three key aspects:

- First, the data collected on actual spending by the petroleum & gas sector allowed an assessment of impacts by spending in the economy in comparison to the more traditional approach of predicting economic impacts from total revenue changes;
- Second, the collection of primary data by local area allowed a much more accurate assessment of the direct impacts by geographic area than had previously been available; and
- Third, the application of the I-O modelling framework down to the LGA, SED and CED levels, when combined with the accuracy of the primary data, meant that relatively accurate models of local impacts from the Queensland petroleum & gas sector could be generated.

The outcomes of the data collection and modelling approach meant that the assessment of direct, indirect and consumption effects could be expected to be more detailed and accurate at the LGA, SED and CED levels than could be achieved with standard applications of general equilibrium models.

Indirect Impact

The input-output (I-O) modelling conducted for this project has estimated the indirect (Type I) and consumption-induced (Type II) effects over the period 2011/12 to 2022/23 flowing from the business expenditure, community and government contributions of \$71.4 billion and the employment expenditure of \$9.0 billion. These impacts have been modelled separately and then aggregated to identify the level of impacts on output, incomes, employment and industry value added in Queensland.

Over the past twelve years, the \$80.4 billion in direct spending by the petroleum & gas sector in Queensland supported additional supply chain and consumption-induced effects of 62,845 fulltime jobs and \$169.8 billion in aggregate spending (\$60.8 billion in wages and salaries and \$109.0 billion in purchases of goods and services).

Over the period 2011/12 to 2022/23, the Qld petroleum & gas sector supported an additional 62,845 fulltime jobs and \$169.8 billion in aggregate spending (\$60.8 billion in wages and salaries and \$109.0 billion in purchases of goods and services).

Total Impact

The results of the economic modelling allow forecasts to be made about the total size of impacts from the Queensland petroleum & gas sector on the economy. For each key measure, the total impact on the economy is the sum of the direct effects from industry, the indirect effects through the business chain, and the final consumption-induced effects. The total economic impact (i.e. direct, indirect and induced, or Type II impact) from the petroleum and gas sector to the Queensland economy over the period 2011/12 to 2022/23 amounted to:

- **\$189.3 billion in output/turnover** (or purchases from supplying businesses);
- **\$173.2 billion in gross value added** (contribution to gross state product);
- **\$69.8 billion in income** (wages and salaries); and
- An average of **67,581 full-time equivalent jobs**.

Estimates of the contribution to Gross State Product (GSP) require an estimate of the initial contribution of the industry in terms of direct value added – defined as compensation of employees plus gross operating surplus plus other taxes less subsidies on production – plus the value added effects generated through the business chain and consumption effects.

A precise measure of direct value added for the petroleum & gas sector is not available from the data; an estimated value added of \$80.4 billion – equivalent to the sum of input and labour costs, or total direct spending – has instead been adopted.

When business supply and employment effects are considered, the Queensland petroleum and gas sector generated approximately **\$173.2 billion in gross value added** (\$80.4 billion in direct effects, and \$92.8 billion in supply chain and consumption effects) between 2011/12 and 2022/23 and was responsible for supporting an average of approximately **67,581 jobs** (4,736 in direct employment and 62,845 in additional employment). Consequently, the petroleum and gas sector contributed an average of **4.1% of Gross State Product** and **2.7% of total employment** in Queensland over the past twelve years.

*The total economic impact of the Queensland petroleum & gas sector over the period 2011/12 to 2022/23 was estimated at **\$173.2 billion in gross value added** and an average of **67,581 jobs supported**.*

Under the more conservative Type I scenario (i.e. excluding consumption-induced effects), direct spending by the petroleum and gas sector and flow-on impacts contributed 3.4% to GSP and 1.7% of total state employment.

Table A1: Economic Impact of Queensland Petroleum & Gas Sector, 2011-23

	Total
Gross Value Added (\$M)	
Direct	80,371
% of Gross State Product (GSP)	1.9%
Indirect	59,019
Total GVA (Type I)	139,390
% of GSP	3.2%
Consumption-induced	33,803
Total GVA (Type II)	173,193
% of GSP	4.1%
Employment (FTEs)	
Direct	4,736
% of total state employment	0.2%
Indirect	37,070
Total employment (Type I)	41,806
% of total state employment	1.7%
Consumption-induced	25,775
Total employment (Type II)	67,581
% of total state employment	2.7%
Business spend (incl. community contributions and govt payments) (\$M)	
Direct	71,352
Indirect	43,069
Total business spend (Type I)	114,421
Consumption-induced	65,887
Total business spend (Type II)	180,308
Wages & salaries (\$M)	
Direct	9,019
Indirect	39,312
Total wages & salaries (Type I)	48,331
Consumption-induced	21,490
Total wages & salaries (Type II)	69,821

Note: Consumption-induced impacts, i.e. the increase in economic activity generated to service the additional employment generated or sustained through the direct and indirect effects, are included in Type II impacts, but are excluded from Type I impacts. Total figures may not appear as the sum of individual commodities due to rounding errors.

Regional Impact

The economic modelling conducted for this project has estimated the indirect and consumption-induced effects flowing from the two key direct impacts on the economy, i.e. those generated by business supply chain and consumption-induced spending. These impacts have been modelled separately and then aggregated to identify the level of impacts on output, incomes, employment and industry value added for each region.

Table A2: Flow-on Impacts of Queensland Petroleum & Gas Sector by Region, 2022/23 (Type II)

Region	Indirect full-time employees, avg. (FTEs)	Associated salaries (\$M)	Supply of goods and services (\$M)	Total indirect value added (\$M)
Brisbane	36,422	35,621.9	65,355.4	54,135.0
Central West	65	50.7	104.8	88.4
Darling Downs	8,004	6,531.7	10,810.9	10,612.5
Far North	123	89.4	159.7	156.8
Fitzroy	10,084	10,836.3	18,034.2	14,921.2
Gold Coast	1,086	1,065.8	1,954.2	1,616.6
Mackay	624	650.7	927.1	743.9
North West	4	2.9	4.8	4.8
Northern	97	70.8	120.7	120.0
South West	1,817	1,483.1	2,457.7	2,422.3
Sunshine Coast	695	666.2	1,227.6	1,014.5
West Moreton	346	347.3	619.7	516.6
Wide Bay-Burnett	612	598.7	1,108.7	913.8
Other Queensland	2,866	2,786.7	6,070.6	5,555.6
Total Queensland	62,845	60,802.0	108,956.1	92,822.1

Total Qld Petroleum & Gas Sector Value Added by Region

Queensland, 2011-23 (\$ billion)

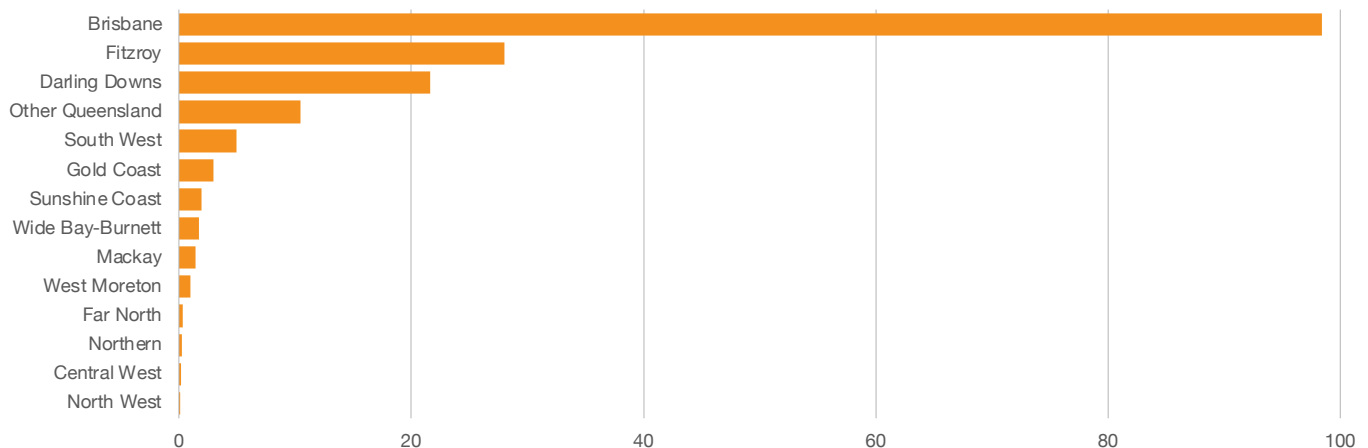


Table A3 shows that the petroleum and gas sector has the highest overall impact in the Brisbane region, with total value added of \$98.4 billion over the period 2011/12 to 2022/23, whilst the sector contributed an average of 4.8% per annum to gross regional product. The impact in Brisbane was significantly higher than that of other resource-based regional economies, namely the Fitzroy region (\$28.0 billion in total value added) and Darling Downs (\$21.6 billion).

The South West region had the highest average annual share of GRP contributed by the petroleum and gas sector (20.7%), followed by the Fitzroy (11.4%) and Darling Downs (10.6%) regions.

The South West region had the highest proportion of GRP contributed by the petroleum and gas sector between 2011-23 (20.7%), followed by the Fitzroy (11.4%) and Darling Downs (10.6%).

With regard to employment, the petroleum & gas sector again had the greatest impact on jobs in the Brisbane region, supporting an annual average of 39,363 FTEs, or 3.2% of the total regional workforce. The Fitzroy (10,535 FTEs) and Darling Downs (8,556 FTEs) regions recorded the next highest employment levels.

Table A3: Total Economic Impact of Queensland Petroleum & Gas Sector by Region, 2011-23

Region	Total GVA (\$M)	Total value added as % of GRP	Average jobs supported (FTEs)	% of regional employment
Brisbane	98,421.9	4.8%	39,363	3.2%
Central West	142.8	1.5%	67	1.2%
Darling Downs	21,634.6	10.6%	8,556	7.2%
Far North	314.3	0.1%	140	0.1%
Fitzroy	27,987.7	11.4%	10,535	9.6%
Gold Coast	2,989.5	0.7%	1,235	0.4%
Mackay	1,429.4	0.5%	728	0.7%
North West	10.4	0.0%	5	0.0%
Northern	248.5	0.2%	117	0.1%
South West	4,979.1	20.7%	1,965	15.0%
Sunshine Coast	1,957.4	0.8%	916	0.5%
West Moreton	966.0	1.6%	384	0.8%
Wide Bay-Burnett	1,676.7	1.0%	703	0.6%
Total Queensland	173,193.1	4.1%	67,581	2.7%

Appendix B: Impact by Local Government Area

Table B1: Estimated Total Economic Impacts of Queensland Petroleum & Gas Sector by LGA, 2011-23

Local government area	Direct impact			Total impact			
	Avg residing employees (FTEs)	Associated salaries (\$M)	Suppliers, community and govt payments (\$M)	Total direct spending (\$M)	Local suppliers (avg.)	Gross value added (\$M)	Avg total jobs (FTEs)
Brisbane	2,360	4,722.8	35,943.2	40,666.0	1,464	89,223.7	34,943
Gladstone	408	868.6	11,350.5	12,219.2	146	26,255.6	9,891
Toowoomba	116	202.9	6,164.3	6,367.2	122	12,488.0	4,745
Western Downs	416	682.0	3,873.3	4,555.3	320	8,862.0	3,647
Maranoa	128	192.3	2,076.3	2,268.6	297	4,364.6	1,680
Moreton Bay	295	545.9	1,366.0	1,911.9	75	4,056.2	1,752
Gold Coast	149	267.4	1,105.4	1,372.9	72	2,989.5	1,235
Sunshine Coast	192	358.7	495.8	854.5	49	1,781.4	826
Logan	94	160.4	459.7	620.1	64	1,317.9	567
Ipswich	87	143.2	452.9	596.0	39	1,271.7	544
Redland	105	219.1	273.7	492.7	40	1,035.7	476
Mackay	17	27.2	440.8	468.0	24	1,003.8	471
Banana	18	29.5	329.2	358.7	123	756.7	289
Gympie	22	40.8	292.3	333.1	6	761.0	305
Lockyer Valley	14	27.0	305.7	332.6	15	723.2	275
Rockhampton	14	20.4	296.0	316.5	50	676.9	260
South Burnett	19	30.9	203.6	234.6	16	504.4	200
Isaac	82	121.4	84.4	205.8	25	368.3	215
Mareeba	13	21.5	177.6	199.2	43	369.7	172
Cairns	10	17.5	124.9	142.4	7	285.3	122
Townsville	17	29.2	91.8	121.0	22	234.0	108
Central Highlands	5	7.5	112.5	120.0	21	253.5	96
Noosa	28	55.2	33.2	88.4	5	176.1	89
Scenic Rim	14	25.0	61.3	86.3	14	179.2	76

Table B1: Estimated Total Economic Impacts of Queensland Petroleum & Gas Sector by LGA, 2011-23

Local government area	Direct impact			Total impact			
	Avg residing employees (FTEs)	Associated salaries (\$M)	Suppliers, community and govt payments (\$M)	Total direct spending (\$M)	Local suppliers (avg.)	Gross value added (\$M)	Avg total jobs (FTEs)
Southern Downs	14	23.1	62.6	85.7	8	165.1	75
Bundaberg	25	45.4	35.3	80.7	10	159.9	79
Fraser Coast	23	42.1	36.1	78.2	9	157.9	78
Bulloo	<5	0.6	59.0	59.6	<5	116.3	40
Livingstone	7	13.2	38.9	52.1	11	109.8	47
Longreach	<5	1.6	46.9	48.5	<5	131.0	61
North Burnett	<5	2.5	32.4	34.9	<5	75.8	28
Somerset	10	16.9	13.5	30.4	7	58.3	30
Goondiwindi	7	12.3	1.6	13.9	<5	24.4	15
Quilpie	<5	1.7	11.6	13.3	<5	25.3	9
Whitsunday	6	11.0	0.6	11.6	<5	21.7	14
Murweh	<5	2.7	7.0	9.7	<5	17.8	8
Cassowary Coast	<5	6.5	0.1	6.5	<5	11.3	7
Balonne	<5	5.4	0.5	6.0	<5	9.0	6
Charters Towers	<5	1.9	1.3	3.2	<5	5.9	<5
Douglas	<5	2.9	0.2	3.1	<5	6.0	<5
Burdekin	<5	2.6	0.3	2.9	<5	5.0	<5
Barcoo	<5	0.0	2.7	2.7	<5	5.4	<5
Paroo	<5	2.5	0.2	2.7	<5	3.9	<5
Cloncurry	<5	0.1	2.6	2.7	<5	5.1	<5
Blackall Tambo	<5	1.9	0.4	2.2	<5	3.6	<5
Tablelands	<5	1.5	0.7	2.2	<5	4.0	<5
Mount Isa	<5	0.8	1.4	2.1	<5	3.9	<5
Cherbourg	<5	0.3	1.0	1.4	<5	2.7	<5

Note: Excludes LGAs with total direct spend of less than \$1 million.

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