

## RESOURCES DEVELOPMENT ON THE DARLING DOWNS: A THREAT TO FOOD SECURITY?

Strong global demand for resources such as coal and gas is creating strong market incentives to increase exploration and production. Good prospectivity and sound proximity to export infrastructure has resulted in increasing resources inquiry and development activity on the Darling Downs—an area renowned for its rich agricultural land and cropping and grazing potential.

In response to increasing food prices, a number of organisations have put the view that higher levels of land disturbance on the Darling Downs, in conjunction with other factors, will exacerbate domestic and global food security concerns.

In this paper, the QRC critically assesses the validity of such claims under a number of scenarios. This paper concludes that even under the most optimistic assumptions for yield rates and land usability, the resource sector's land disturbance on the Darling Downs will be minimal and is highly unlikely to have a material impact on domestic or global food security. As identified by expert agencies including Australia's ABARES and the United Nations Food and Agriculture Organisation, there are other much more critical issues impacting upon food security, and this is where the QRC believes the policy debate should be focused.

### Resources make an important contribution on Darling Downs

The resources sector makes an important contribution to the Darling Downs economy.

Analysis undertaken by the Central Queensland University for the QRC in 2010<sup>1</sup> showed that Arrow Energy, Tarong Energy, Millmerran Power Management Pty, New Hope Coal Australia, Ltd, Peabody Energy Australia Ltd, Origin Energy, ERM Power, Santos Pty Ltd, and QGC Limited collectively injected \$585 million in goods and services purchases (both operational expenditure [opex] and capital expenditure [capex]), employee salaries, and voluntary community contributions into this regional economy in 2009/10.

When converted to gross regional product, these contributions generated 7340 jobs or 6.1 percent of the entire workforce. Analysis shows that for every resource job another 5.2 indirect jobs are created. For more information refer to Attachment 1.

Also of note is that resource producing companies paid in excess of \$70 million in royalties to the Queensland Government in 2009/10. Companies and their employees would have also contributed other taxes, fees and charges including company and PAYE taxes to the federal government and payroll tax to the state government. Such revenues are typically used to

provide essential services such as roads, schools and health services.

Coupled with proposed new investment in coal projects, power generation and currently two<sup>2</sup> and possibly four<sup>3</sup> coal-seam gas (CSG) to liquefied natural gas (LNG) export projects, the resource sector's economic contribution is set to increase substantially over coming years.

This contribution will stem from higher gross regional product (generated from the resource sector's increasing opex and capex contributions and worker salaries and related consumption effects) and from higher royalties as value of production increases strongly.

The QRC estimates that the resource sector's value of production on the Darling Downs could exceed \$16 billion per annum<sup>4</sup> by 2020 at 2009/10 prices, with a subsequent royalties contribution in excess of a billion dollars at 2009/10 prices being quite plausible. Conversely, the QRC estimates that the agricultural sectors' value of production in the Darling Downs will be approximately \$2.2 billion by 2020 at 2009/10 prices<sup>5</sup>.

1 See <http://queenslandeconomy.com.au/economic-report>  
2 QGC's QCLNG project (US\$15b capital investment), Santos' GLNG projects (US\$16b)  
3 Origin (APLNG \$35b) and Arrow Energy (Shell Australia)

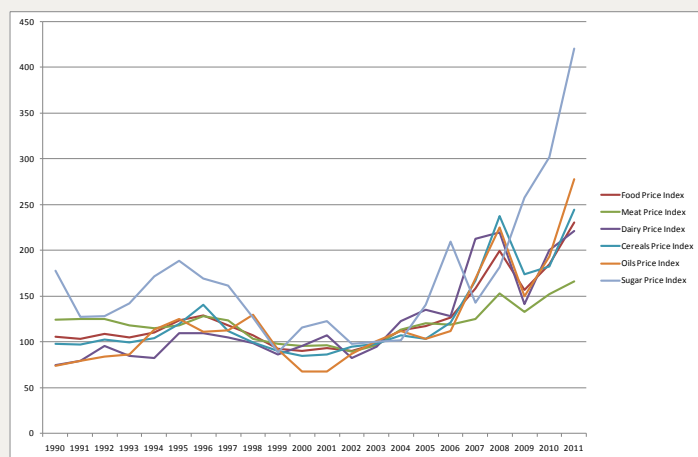
4 Assuming that the value of production from the anticipated 30 million tonne of CSG/LNG production is shared equally between the Darling Downs and Gladstone economies. Previously, the QRC forecast the annual value of resource production on the Downs and the associated downstream processing at Gladstone to grow from \$2.5 billion today to in excess of \$26 billion by 2020. For the purposes of this paper we exclude an estimated \$10 billion in 2020, which is a proxy value of downstream processing of LNG Gladstone  
5 The Darling Downs produced \$1.882 billion in agricultural output in 2009/10. This forecast assumes 1.5 percent growth per annum to 2020



## The food security debate

Food security relates to the physical availability and access to food as well as to its affordability. The continued escalation of global food prices from 2000 onwards (see Chart 1) means that food security both globally and domestically maintains a high profile.

**Chart 1: Global Food Prices**



SOURCE: FAO, 'OECD-FAO AGRICULTURAL OUTLOOK 2010-2019', 2010

A number of commentators have expressed views as to why food prices are increasing and what the appropriate policy responses should be. One theory is that the expansion of the resources sector represents a threat to the ongoing availability of land for agricultural production and that as a consequence, resources activity should be curtailed in certain areas.

The following quote from peak rural body AgForce<sup>6</sup> is representative of the general food security concerns expressed by bodies including 'Six Degrees', Friends of the Earth (Brisbane), Friends of Felton, Queensland Farmers' Federation and the National Farmers' Federation:

*AgForce welcomed the move to protect prime cropping areas from mining and urban development, and has long advocated the importance of these iconic agricultural lands. AgForce continues to lead the focus to ensure the security of food production is not undermined by detrimental planning policies such as mining or urban encroachment.*

An assessment of Australia's horticulture industry has also been delivered in a report by Queensland-based Growcom<sup>7</sup>, Chief Executive Alex Livingstone who stated:

*There was a misconception that Australia's food supply was secure because 60 percent of its agricultural production was exported.*

(See Attachment 2 for more detail on Australia's

agricultural import and exports)

The report went on to say that land availability was a major threat to horticulture in Australia, noting specifically concerns about urban sprawl, coal-seam gas mining and foreign governments buying up Australian farmland to secure their own food security.

Similarly FutureFood Queensland say<sup>8</sup>:

*FutureFood Queensland's mission is to protect the world renowned, clean and green, premium food production capacity (iconic farmland) of Queensland from inappropriate mining developments.*

Organisations such as the United Nations Food and Agriculture Organisation (FAO) offer alternative views<sup>9</sup>, stating in 2010, the risk of future food shortages could be anticipated if there is:

- an increased severity of weather events
- climate change
- increasing global population and rising incomes in key developing countries
- higher cost structures particularly in regions where energy inputs are used intensively.

FAO believe that a degree of normalcy has returned to many markets, with production closer to historical levels and demand recovering. The FAO concludes that while global agricultural production is anticipated to grow more slowly in the next decade than in the previous decade, growth remains on track with estimated longer term requirements of a 70 percent increase in global food production by 2050 (in the absence of unexpected shocks).

Average crop prices over the next 10 years for the commodities covered in the FAO Outlook 2010/19 are projected to be above the levels of the decade prior to the 2007/08 peaks, in both nominal and real terms (adjusted for inflation). Average wheat and coarse grain prices are projected to be nearly 15-40 percent higher in real terms relative to 1997-2006, while for vegetable oils real prices are expected to be more than 40 percent higher. World sugar prices to 2019 will also be above the average of the previous decade but well below 29-year highs experienced at the end of 2009.

According to Australia's leading agricultural research agency ABARES<sup>10</sup>, factors driving higher food prices include a combination of demand and supply factors. Demand for food is increasing with:

- population growth
- changing consumer tastes as incomes rise.

6 [http://www.agforceqld.org.au/index.php?tgtPage=&page\\_id=275](http://www.agforceqld.org.au/index.php?tgtPage=&page_id=275)  
 7 Sydney Morning Herald, 'Growers warn about Aust food security', March 17, 2011  
 8 FutureFood website  
 9 FAO, 'OECD-FAO Agricultural Outlook 2010-2019', 2010  
 10 ABARE (2009) 'Global food security and Australia' December 2009 [http://www.abare.gov.au/interactive/09\\_ins/a8/](http://www.abare.gov.au/interactive/09_ins/a8/)

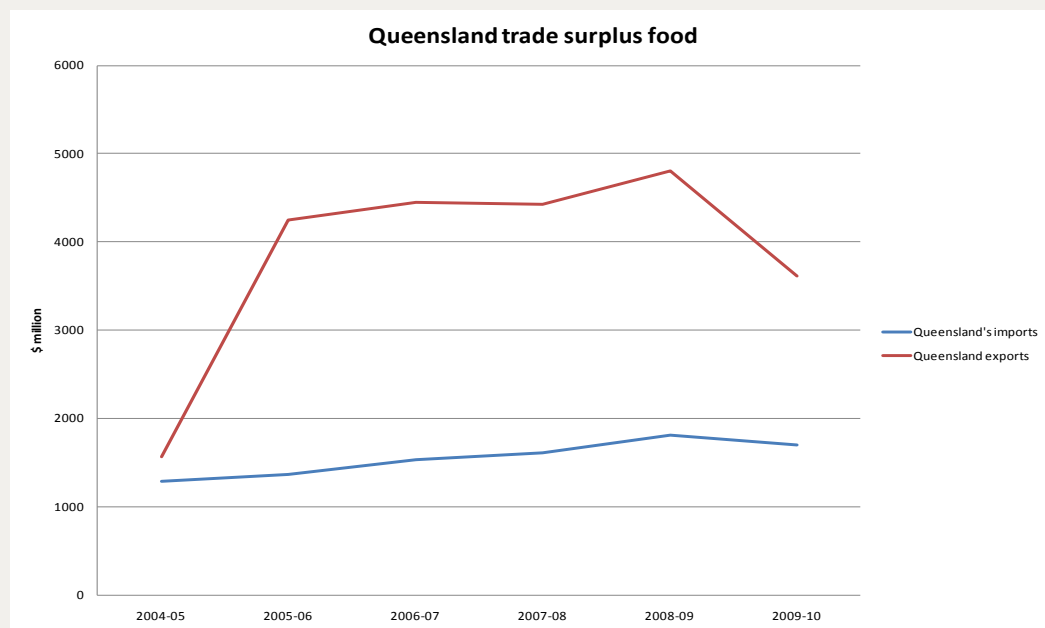
On the other hand, supply in recent years has failed to keep pace with demand growth because of:

- adverse weather events
- rising input costs, which contributed to a rundown in stocks of staple grains in particular
- government support for the biofuels industry through production subsidies and consumption mandates in some countries
- climate change
- diminishing water supplies
- soil degradation
- agricultural labour shortages
- declining productivity.

Despite the challenges posed by severe drought across much of Australia between 2006 and 2008; floods in northern New South Wales and Queensland in February and March 2009; and more recently, floods in 2010 and 2011, Australia remains a net exporter of major agricultural products. Chart 2 shows that Queensland food exports far outweighed food imports in 2009/10.

However, there are longer term challenges for Australian agriculture to maintain productivity and cost competitiveness in an environment of climate change, and the associated potential for more frequent and severe droughts and reduced supplies of irrigation water.

**Chart 2: Queensland trade surplus food**



SOURCE: KPMG (2010) 'STATE OF THE INDUSTRY 2010- ESSENTIAL INFORMATION: FACTS AND FIGURES' AUSTRALIAN FOOD AND GROCERY COUNCIL

## Food production on the Darling Downs

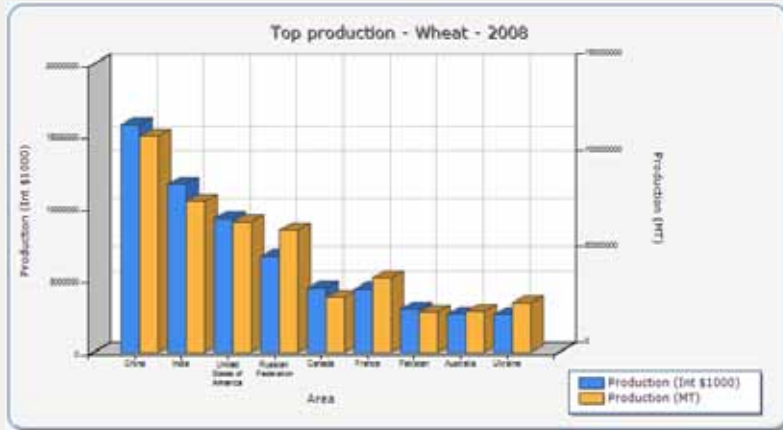
According to the ABS<sup>11</sup> in 2008/09, agricultural production in the Darling Downs region in value terms was \$1,664 million and accounted for 18 percent of gross value of production for the state and four percent of production for Australia.

The top nine agricultural products produced on the Darling Downs in 2008/09 were:

1. Livestock slaughtered – cattle and calves (\$442m)
2. Wheat (\$278m)
3. Sorghum (\$234)
4. Cotton (\$149m)
5. Vegetables for human consumption (\$123m)
6. Eggs for human consumption (\$90m)
7. Milk (\$71m)
8. Fruit (\$59m)
9. Chickpeas (\$29m)

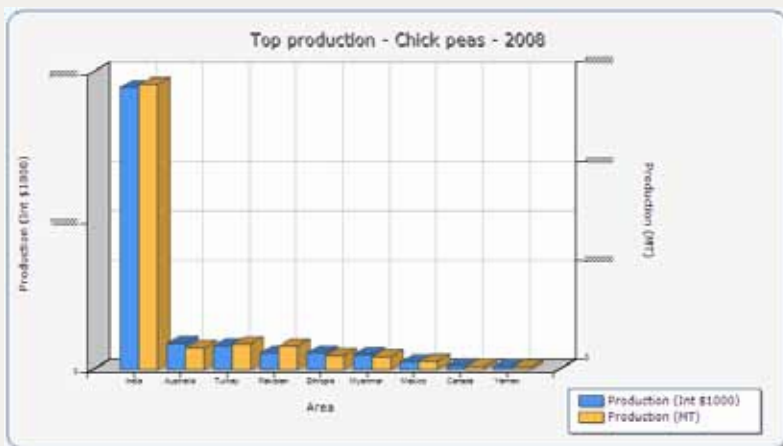
This paper looks specifically at the hypothetical impacts on beef production, and separately wheat and chick pea production, from greater resources activity on the Darling Downs (more next page). As well as the value of production statistics above, it is important to look at these outputs in state, Australian and global contexts (Table 1).

**Table 1: Key statistics: Darling Downs wheat, chick pea and beef production**



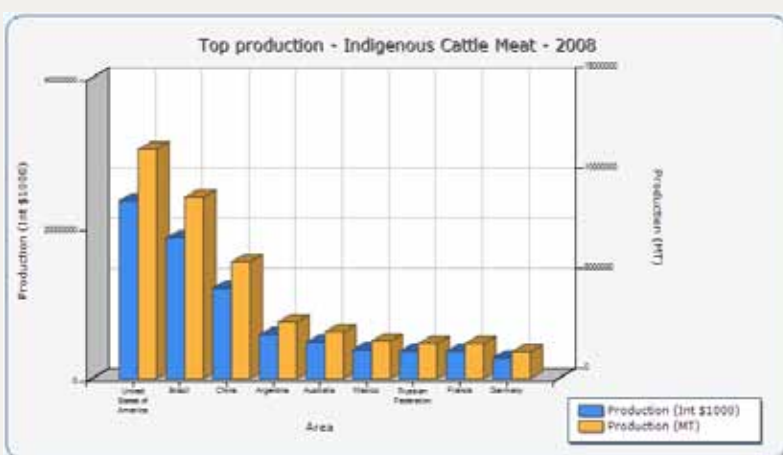
Darling Downs wheat production (2008/09)

- \$278 million in value of production, accounting for 17 percent of total value of agricultural production in the region
- Representing 52 percent of wheat produced in the state and 5 percent of wheat produced in Australia in value terms
- Australia 8th in terms of global supply



Darling Downs chick pea production (2008/09)

- \$29 million in value of production, accounting for 2 percent of total value of agricultural production in the region
- Representing 52 percent of chick pea produced in the state and 15 percent of wheat produced in Australia in value terms
- Australia 2nd (distant) in terms of global supply



Darling Downs beef production (2008/09)

- \$442 million in value of production, accounting for 27 percent of total value of agricultural production in the region.
- Representing 8 percent of beef produced in the state and 4 percent of beef produced in Australia in value terms.
- Australia 5th in terms of global supply

SOURCE: FAOSTAT

## Food security analysis

Analysis<sup>12</sup> conducted in 2010 by the QRC with the assistance of the Queensland Department of Environment and Resource Management shows that the resources sector accounted for 0.09 percent of the state in terms of land disturbed<sup>13</sup> compared with cropping that accounted for 2.1 percent and grazing natural vegetation that accounted for 86.1 percent.

The Darling Downs encompasses 9,007,000 hectares (ha) of the state.

The QRC estimates that in 2010 the resources sector accounted for approximately 10,000 ha<sup>14</sup> or 0.1 percent of total land area in the Darling Downs region. In 2020, resource sector land disturbance is forecast to increase to approximately 50,000 ha<sup>15</sup> or 0.6 percent of total land area on the Darling Downs.

To illustrate this impact, if the Darling Downs was the size of Brisbane's entire 'Gabba' stadium—grandstands and playing surface—the resources sector in 2010 would occupy just 24 seats. By 2020, forecasts indicate it would occupy a land area equivalent to 139 of the stadium's seats.

### Scenario 1 - foregone wheat and chick pea production

Assuming that between 2011 and 2020 50,000 ha of land is utilised temporarily by the resources sector, what would be the percentage reduction in wheat and chick pea production if ALL that land was used in constant 3:2 crop rotations—that is, a business as usual (BAU) scenario of one sorghum, one wheat and one chick pea crop every two years between 2011 and 2020?

Analysis shows Darling Downs wheat production (cumulatively over the nine years) would be only 0.27 percent lower—being the difference between the BAU scenario and the reference case, which is all the land is utilised temporarily for resources development.

A slightly larger impact is recorded for Darling Downs chick peas production, which would be approximately 5.09 percent lower (again cumulatively over the nine years). These impacts are illustrated in Attachment 3.

Foregone wheat and chick pea production is also represented as a percentage of Queensland, Australian and global production for the period 2010-2020 in Table 2.

**Table 2: Results of analysis**

<b>WHEAT</b>	
% of foregone production Darling Downs	0.27%
% of foregone production Queensland	0.15%
% of foregone production Australia	0.01%
% of foregone production World	0.0004%
<b>CHICK PEAS</b>	
% of foregone production Darling Downs	5.09%
% of foregone production Queensland	1.24%
% of foregone production Australia	0.37%
% of foregone production World	0.02%

### Scenario 2 – foregone beef production

A second BAU scenario assumes that ALL the 50,000 ha of temporarily utilised land had instead been devoted to beef production out to 2020 (a more reasonable assumption given the quality of the land in question). Similar to the findings above, because land usage is minimal beef production is estimated to be only 0.34 percent lower. Again, this is the difference between the BAU scenario and the scenario that all the land is utilised temporarily for resources development.

These impacts are illustrated at Attachment 3.

Foregone beef production is also represented as a percentage of Queensland, Australian and global production for the period 2010-2020 in Table 3.

**Table 3: Results of analysis**

<b>BEEF PRODUCTION</b>	
% of foregone production Darling Downs	0.34%
% of foregone production Queensland	0.03%
% of foregone production Australia	0.01%
% of foregone production World	0.0002%

<sup>12</sup> <http://queenslandeconomy.com.au/land-use-comparison>

<sup>13</sup> The term 'land disturbance' is just that – the exact amount of land physically disturbed by resource operations that cannot be used right now for other purposes

<sup>14</sup> Defined as the current joint activities of Arrow Energy, Ambre Energy, Tarong Energy, Millmerran Power Management Pty, New Hope Coal Australia Ltd, Peabody Energy Australia Ltd, Origin Energy, ERMPower, Santos Pty Ltd, and QGC Limited.

<sup>15</sup> Defined as the expected future joint activities of Arrow Energy, Ambre Energy, Tarong Energy, Millmerran Power Management Pty New Hope Coal Australia Ltd, Peabody Energy Australia Ltd, Origin Energy, ERM Power, Santos Pty Ltd, and QGC Limited. The QRC understands that other companies are exploring on the Darling Downs and total land disturbance would have to be adjusted once drilling, regulatory and final investment decisions are concluded.



It should be noted that under both scenarios a number of 'optimistic' assumptions were applied:

- No progressive rehabilitation occurs. The model assumes that between 2011-2020, land disturbed because of resource activity increases equally (ie pro-rated) from 10,000 to 50,000 ha. In essence this is likely to overstate the quantity of land that is temporarily sterilised as both coal and oil and gas proponents would progressively rehabilitate a percentage of the land effectively making it available for agricultural production once more.
- All the land sterilised is considered good quality agricultural land. This is highly unlikely as resource companies active in the Darling Downs report that a percentage of their activities impact upon land that has no reasonable prospects of being utilised at all for agricultural production, and if so, is generally considered more reasonable grazing land than good cropping land.
- Forward year wheat, chickpea and beef production projections to 2020 are based on an Australia-wide yield and population growth rates sourced from the FAO. They do not take into account the potential for extreme weather events on the Darling Downs region, notably the drought and flood scenarios experienced in recent years. The yields are more optimistic and average out the effects of production shocks across Australia. Hence the BAU projections are assuming producers average similar yields and beef repopulation to good years of production for the period 2000-2009 for the Darling Downs region. Attachment 3 shows the Darling Downs share of Australian and global production for the period 2000-2009. From the table, in dry years the share Australian and global production from the Darling Downs is almost zero.<sup>16</sup>

## Conclusion

Based on this analysis and under the most optimistic assumptions concerning yield rates, beef repopulation and land usability, the resource sector's land disturbance footprint in the Darling Downs will be minimal and is highly unlikely to have a material impact on domestic or global food security.

For example, even if ALL the land potentially disturbed by expanding resource operations in the Darling Downs was fully allocated to chickpea and wheat production, production of these crops under the most optimistic land usability and yield assumptions would be 5.09 and 0.27 percent lower respectively compared with a BAU situation. Similarly, beef production would be a mere 0.34 percent lower.

The Queensland Resources Council is of the view that representative bodies and decision makers need to recast the debate and seek policy solutions to those factors that

reputable bodies such as Australia's ABARES and the United Nations Food and Agricultural Organisation believe are the true issues driving food prices higher and causing demand and supply imbalances.

The QRC is confident that high quality agricultural and resource production can coexist in the great Darling Downs region without compromising the state's, the nation, or the world's food security.

## ATTACHMENTS

### ATTACHMENT 1: RESOURCES AND ALL SECTOR ECONOMIC CONTRIBUTION TO THE DARLING DOWNS



**Map 1: Darling Downs region of Queensland**

In 2010 the value of production of resources companies in the Darling Downs was 2849 million in 2020 it is estimated the total value of production of operations in the region will be 27,885 million. Note that some of the increase in value of production will be realized outside the Darling Downs region. In 2010 the resources sector directly contributed to the Darling Downs economy:

- \$154.4 million in wages and salaries to approximately 1188 residing employees and contractors
- \$102 million in direct mining salaries
- \$52.4 million in estimated contractor salaries
- \$429.3 million in goods and services purchases and other community contributions.

Directly and indirectly the resources sector generated 7340.4 jobs or 6.1 percent of the entire workforce in this region. For every resource sector job created another 5.2 indirect and consumption jobs are created in the local area.

Table 2 shows the level of gross regional product for the Darling Downs Statistical Division by industry.

**Table 2: Estimate Gross Regional Product for the Darling Downs Statistical Division**

Gross Regional Product - Darling Downs SD	\$ million
Agriculture, forestry and fishing	\$953
Mining	\$946
Manufacturing	\$1,257
Electricity, gas, water and waste services	\$382
Construction	\$916
Wholesale trade	\$423
Retail trade	\$676
Accommodation and food services	\$240
Transport, postal and warehousing	\$558
Information media and telecommunications	\$174
Financial and insurance services	\$661
Rental hiring and real estate services	\$271
Professional, scientific and technical service	\$215
Administrative and support services	\$167
Public administration and safety	\$443
Education and training	\$845
Healthcare and social assistance	\$854

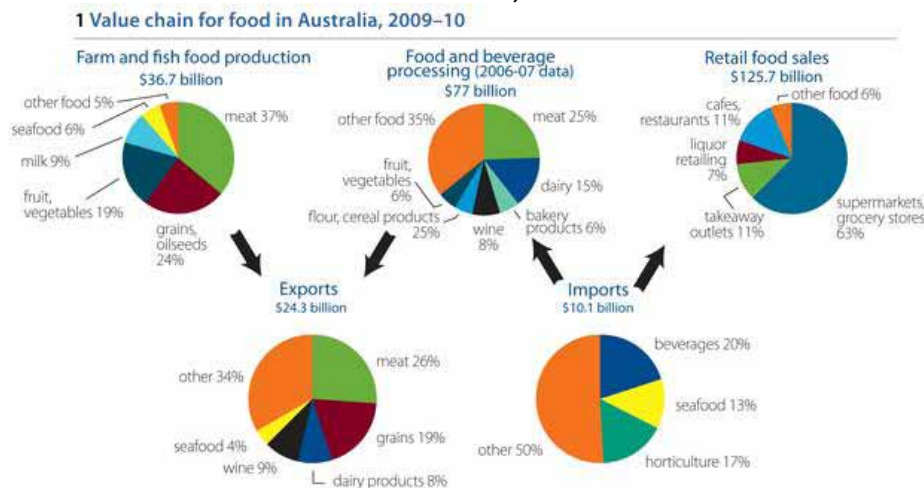
Arts and recreation services	\$56
Other services	\$303
Total Industry factor income	\$10,342
Ownership of dwellings	\$955
GRP at Factor cost/Total Factor Income	\$11,297
Taxes less subsidies on production and imports	\$798
Statistical discrepancy	\$233
Gross Regional Product (at current prices)	\$12,328

SOURCE: WWW.QUEENSLANDECONOMY.COM

## ATTACHMENT 2: AUSTRALIA IS A LARGE NET EXPORTER OF FOOD

Chart 3 shows that exports of food products from Australia totalled \$24.3 billion in 2009-10 well above total imports of \$10.1 billion.

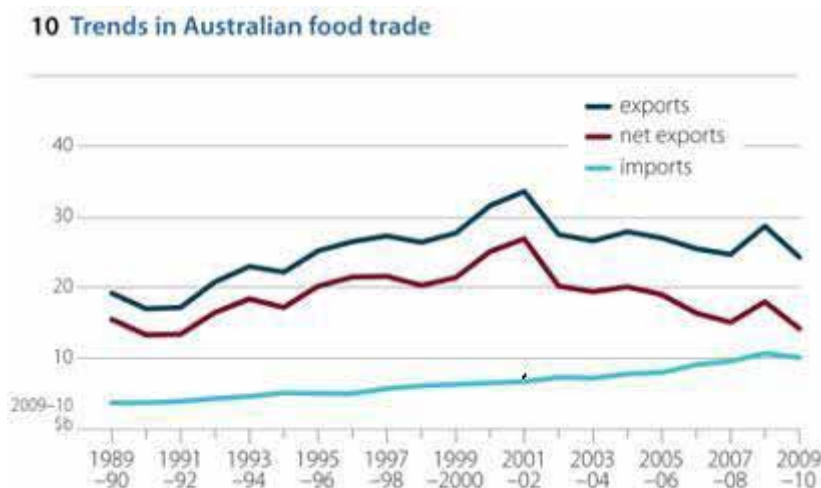
**Chart 3: Value chain for food in Australia, 2009-10**



SOURCE: ABARES

Chart 4 shows that for the last decade Australian food exports far outweighed imports.

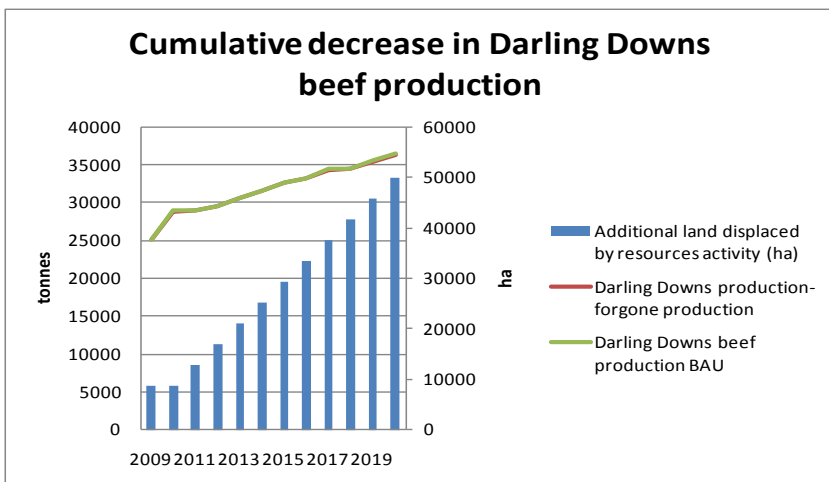
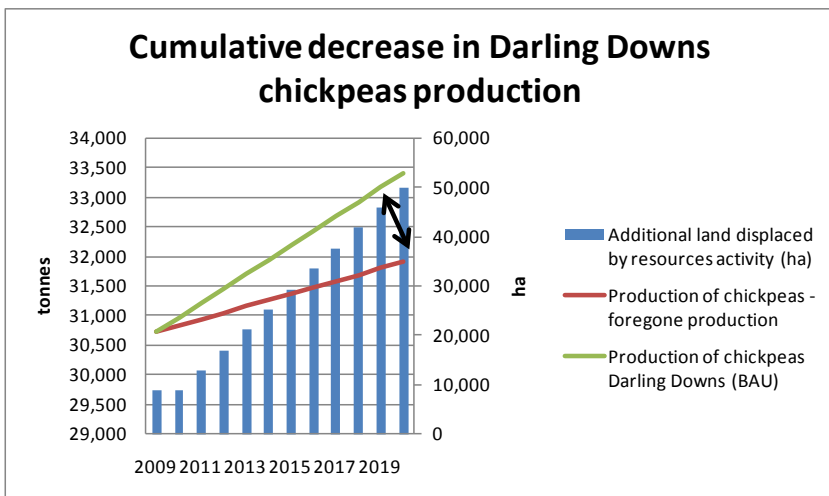
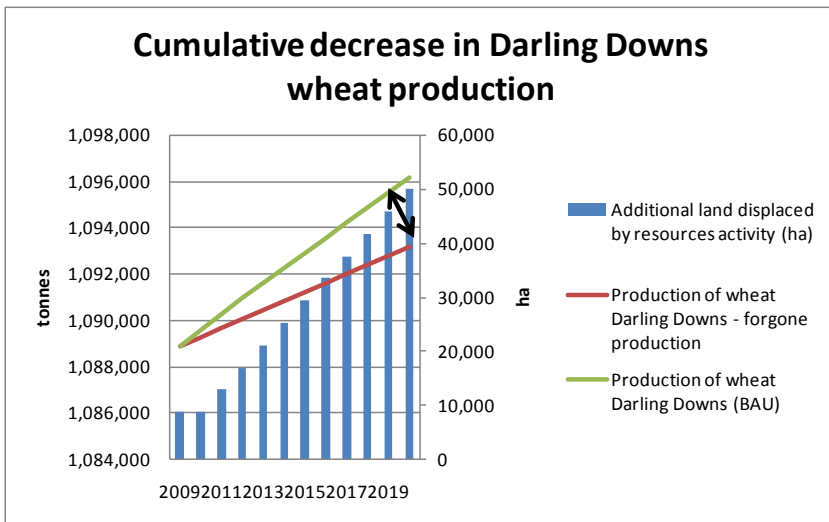
**Chart 4: Trends in Australian food trade**



SOURCE: ABARES



## ATTACHMENT 3: CUMULATIVE DECREASE IN WHEAT, CHICK PEA AND BEEF PRODUCTION ASSUMING THAT ALL ESTIMATED LAND DISTURBED BETWEEN 2010 AND 2020 FROM RESOURCES SECTOR IS USED IN CHICK PEA AND WHEAT PRODUCTION, AND SEPARATELY, FOR BEEF PRODUCTION



ATTACHMENT 4

**Table 4: The proportion of Darling Downs production of global and Australian production of key agricultural products.**

% Darling Downs of Australia		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Wheat for grain - production		5.61%	0.01%	0.01%	0.01%	0.01%	0.00%	5.59%	1.44%	2.40%	4.83%
Chick peas - production		21.27%	0.12%	0.26%	0.21%	0.23%	0.11%	7.28%	8.46%	0.00%	14.84%
Meat cattle at 30 June - total number		4.78%	0.02%	0.02%	0.02%	0.02%	0.01%	4.92%	4.67%	4.07%	3.70%
% Darling Downs of world											
Wheat for grain - production		0.2117%	0.0003%	0.0002%	0.0002%	0.0002%	0.0002%	0.1003%	0.0319%	0.0753%	0.1533%
Chick peas - production		0.4303%	0.0043%	0.0041%	0.0058%	0.0038%	0.0016%	0.1996%	0.2737%	0.0000%	0.6758%
Meat cattle at 30 June - total number		0.1002%	0.0003%	0.0003%	0.0003%	0.0003%	0.0003%	0.1027%	0.0965%	0.0810%	0.0747%

SOURCE: ABS AND FAOSTAT



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## QRC PROFILE

The Queensland Resources Council is the peak representative body for more than 200 companies with interests in the state's minerals and energy sector. The QRC's 89 full-member companies comprise explorers, miners, contractors, mineral processors, oil and gas producers and electricity generators. QRC service companies cover the gamut of professional services provided to the resources sector in the four corners of Queensland.

Written and prepared by the QRC. For more information, contact the QRC on (07) 3295 9560 or [www.qrc.org.au](http://www.qrc.org.au)