



GOVERNMENT OF
WESTERN AUSTRALIA



PEEL
DEVELOPMENT
COMMISSION

PEEL PROFILE



2011



Peel Development Commission

“Building a Strong Future For The Peel”

SEPTEMBER QUARTERLY EDITION

The Peel Region Map



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The data contained in this publication is sourced mainly from State and Federal government agencies. A small amount is obtained from industry organisations and company publications and web sites. All data and information included is the most recent available. The Peel Profile is updated quarterly and released at the end of each quarter.

Updated in this edition – Mining, Population, Building & Construction, Retail Turnover, Mean Taxable Income and Forest Products.

Overview

This publication presents a selection of interesting facts and figures relating to social, economic and environmental aspects of the Peel Region. Its purpose is to provide data and information to potential immigrants to the region, from both within Australia and overseas, students and educators, both the private and government business sector and wider community members.

The Peel is one of nine regions of Western Australia. It encompasses the five local government areas of Boddington, Murray, Serpentine-Jarrahdale and Waroona Shires and the City of Mandurah. Located a short 75 km south of Perth, it is Western Australia's smallest region geographically, covering 5,648 km².

Peel's landscape is geographically diverse with urban, agricultural and horticultural land, a forested escarpment and plateau, a major flood plain (the *palus plain*) and 137 km of inland waterways and 50 KMs of coastline.

At 30 June, 2010 the Peel Region had an estimated resident population of 108,560 (preliminary estimates). The majority of the population, (65%) is concentrated in or around Mandurah City. Peel is the fastest growing regional area in WA with a growth of 3.4% in 2009-2010.

Mining and construction are the leading contributors to the economy of the Peel Region with manufacturing, retail, tourism, agriculture and fishing making valuable contributions. In 2009-2010 the Peel Region's Gross Regional Product was valued at \$7.6 billion, representing a 4% increase over the previous year and 4.1% of the Gross State Product. Mining contributed 29.4% to this figure followed by construction at 16.6% and manufacturing at 9.9%.

The Peel is the third largest mineral producing region in Western Australia. Bauxite is mined at McCoy (near Dwellingup), Waroona and Boddington for processing into alumina at the Kwinana, Pinjarra, Wagerup (near Waroona) and Worsley refineries. These operations combined represent the single biggest source of alumina in the world. Gold is mined at Newmont's Boddington mine. This mine is expected to be the largest open cut gold mine in Australia when it reaches full production.

Metal products, machinery and equipment, wood products and food processing are the major manufacturing industries in the Peel Region. In the 2007 financial year

food products dominated the manufacturing sector of the Peel economy contributing \$62.8 million to the Western Australian economy.

The 2006 Census showed building and construction employed 13.6% of the region's workforce and accounted for 14.2% of the Peel economy. There were 1,663 residential building approvals in the 2010-11 financial year, worth a total value of \$395.7 million.

The retail industry had an estimated turnover of \$1,022 million in the year ending June, 2011. According to the 2006 Census 12.4% of the region's workforce was employed in Retail Trade.

The Peel Development Commission has recently launched its *Peel Economic Development Initiative (PEDI)* which is a focused program of strategic activities or interventions to facilitate investment-led growth and to create conditions and opportunities for new fixed-investment in the region. Whilst mining and metals manufacturing will remain the stable base for the region's economy, exciting growth prospects are being pursued in tourism, agriculture/forestry/fisheries, commerce and the environment. Strategic investment in infrastructure will support these growth prospects.



Aerial photo of Mandurah City

Table 1 Facts at a Glance

Key Indicators	Peel	Western Australia
Area	5,648 km ²	2.5 million km ²
Population (June 2010)	108,560	2,293,510
Population Growth (Average Annual Growth Rate 5 Years to 2010)	4.4%	2.6%
% of persons 65 & over	18.5%	12.1%
% of persons under 15	18.8%	19.4%
Labour Force (March 2011)	47,097	1,275,547
Unemployment Rate (December 2010)	5.9%	4.4%
Mean Taxable Income (2008-09)	\$ 62,460	\$ 60,001
Gross Regional Product (GRP) (2010)	\$ 7.6 Billion (4.1% of Gross State Product)	\$ 184.4 Billion
Main Industries by percentage of GRP (2010)	Mining, Manufacturing & Construction	Mining, Manufacturing & Construction
Main Industries by Number of Persons Employed (2006)	Construction, Manufacturing, Retail Trade	Retail Trade, Manufacturing & Health Care & Social Services
Estimated Visitor Numbers December 2010	380,800	6,474,800

Source: ABS, Estimated Resident Population; ABS Census of Population & Housing; ABS, Western Australia at a Glance 2010; Department of Education, Employment & Workplace Relations; Tourism Western Australia; Government of Western Australia

Population

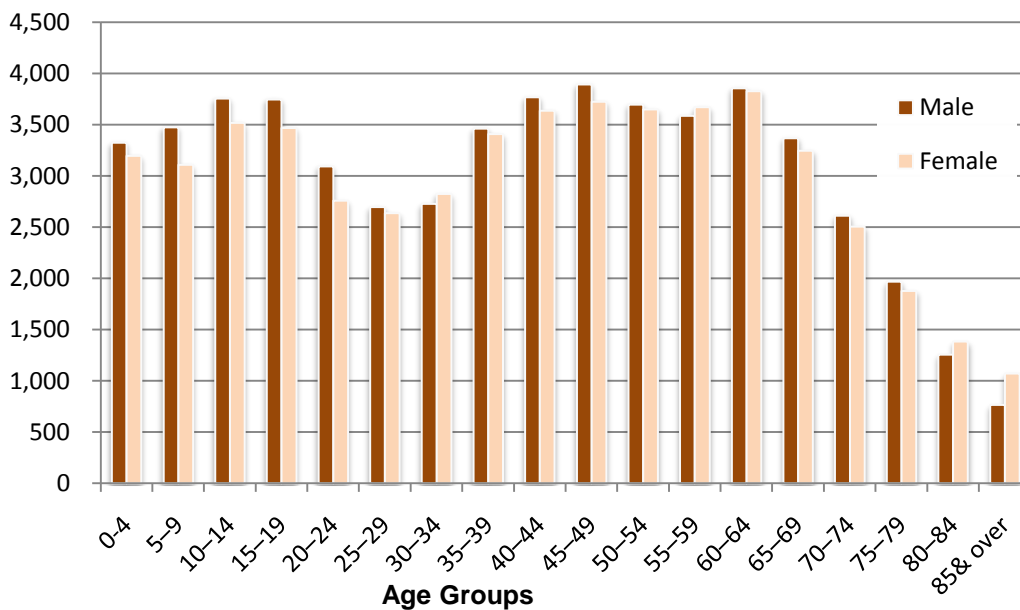
The estimated resident population of the Peel Region as at 30 June, 2010 was 108,560. Peel’s population is fairly evenly distributed between males (50.7%) and females (49.3%).

The Peel Region has a higher proportion of older residents than Western Australia as of June 2010. Residents aged 65 or older represent 18.5% of the total Peel population, compared to 11.9% in this age group for the total Western Australia.



Boddington Men's shed

Figure 1 Population by Gender & Age Distribution



Source: ABS, Population by Age & Sex 2010

The majority of the population of the Peel Region is centred in or close to the City of Mandurah (64.9%), followed by the Shires of Serpentine Jarrahdale (15.9%) and Murray (14.2%). The Shires of Boddington (1.6%) and Waroona (3.5%) make up the rest of the Peel Region population. The City of Mandurah is one of the largest urban centres outside the Perth metropolitan area.

Table 2 Peel Population at 30 June 2010

LGA	Population	% of Total Peel
Boddington (S)	1,692	1.6%
Mandurah (C)	70,413	64.9%
Murray (S)	15,401	14.2%
Serpentine-Jarrahdale (S)	17,212	15.9%
Waroona (S)	3,842	3.5%
Peel	108,560	

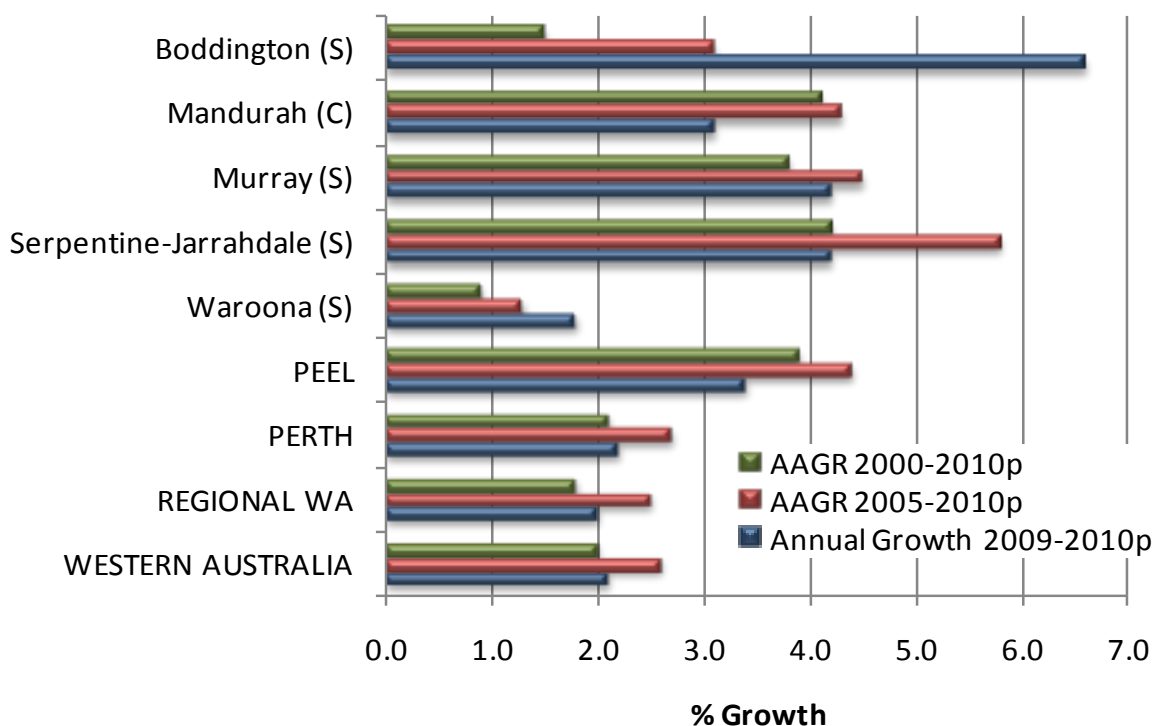
Source: ABS, Estimated Resident Population 2010

All of the local government areas in the Peel Region experienced a population increase in the period 2009 to 2010. The Shire of Boddington had the largest increase of 6.6% (111), followed by Murray 4.2% (642) and Serpentine-Jarrahdale 4.2% (725), Mandurah 3.1% (2,163) and Waroona with 1.8% (71). The Peel Region overall growth rate for 2009 to 2010 was 3.4% while the State growth rate for the same period was 2%, with Perth having a similar growth rate at 2.2%.



Family Fishing at Dawesville

Figure 2 Population Average Annual Growth



Source: ABS, Estimated Resident Population 2010. NOTE: AAGR = Annual Average Growth Rate

Growth Forecasts

Population forecasts predict the number of Peel residents to increase steadily at around 3% over the next ten years to reach 137,598 in 2020.

Table 3 Projected Population

Year	Population	Growth from 2010	Annual Average Growth	Average Annual Growth Rate
2010	104, 877			
2011	107,971	1 Year - 3,370	3,370	3.2%
2015	121,331	5 years - 16,730	3,346	3.1%
2020	137,598	10 Years - 32,997	3,300	3.2%

Source: ABS, Projected Resident Population by age & sex, 2007 to 2027

Economic Indicators

Labour Force

As of March 2011 the Peel Region had 47,097 persons in the labour force, 3.7% of



Mine Employee

the state total. Mandurah (C) has the highest number of persons in the labour force with 29,260 persons (62.1% of the Peel labour force). Boddington Shire has the lowest number of persons in the labour force with 868 (1.8% of the Peel Labour Force).

Table 4 Labour Force

Region	Labour Force as at March 2011	% of Peel Total
Boddington (S)	868	1.8%
Mandurah (C)	29,260	62.1%
Murray (S)	6,499	13.8%
Serpentine-Jarrahdale (S)	8,453	17.9%
Waroona (S)	2,017	4.3%
Peel	46,889	
Western Australia	1,271,004	

Source: Department of Education, Employment and Workplace Relations with additional estimates by the Department of Regional Development and Lands

Unemployment

Peel has a higher unemployment rate (5.9%) of the labour force as at March 2011 compared to 4.4% for all of Western Australia. Mandurah (C) has a particularly high unemployment rate at 7% (up 0.4% on the previous quarter) of the labour force. Serpentine-Jarrahdale (S) has the lowest unemployment rate of the region with only 2.7%.

The Peel Region unemployment rate in March 2011 is down slightly (0.2%) on the same quarter in 2010. This is largely due to a significant drop (1.3%) in Serpentine-Jarrahdale as all other LGAs in Peel had a rise in unemployment from the March quarter in 2010 to the March quarter in 2011. The total unemployment rate for Western Australia has been dropping since March 2010, down 0.8%.

Table 5 Unemployment

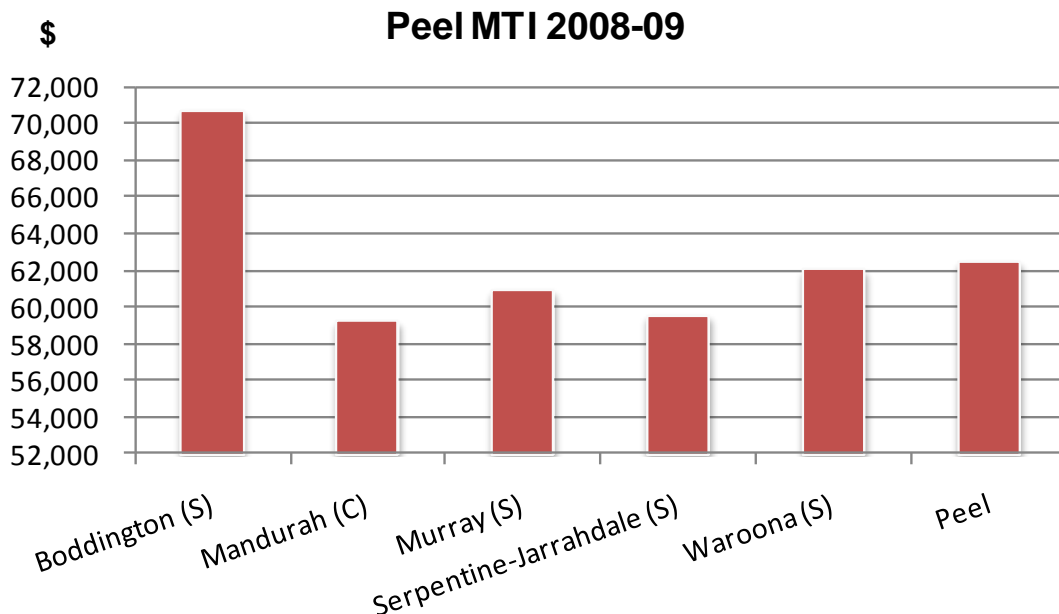
Region	Unemployment as at March 2011	Rate
Boddington (S)	27	3.1%
Mandurah (C)	2,034	7.0%
Murray (S)	400	6.2%
Serpentine-Jarrahdale (S)	228	2.7%
Waroona (S)	113	5.6%
Peel	2,802	5.9%
Perth	40,690	4.3%
Western Australia	55,938	4.4%

Source: Department of Education, Employment and Workplace Relations with additional estimates by the Department of Regional Development and Lands

Income

In 2008-09 the Peel Region Mean Taxable Income (MTI) was \$62,460, slightly higher than the state at \$60,001. Boddington (S) had the highest MTI with \$70,663. Mandurah (C) had the lowest MTI with \$59,218.

Figure 3 Mean Taxable Income



Source: ATO and the Department of Regional Development and Lands

Employment by Industry

The highest proportion of the Peel labour force was employed in construction (13.6%), manufacturing (13.5%) and retail trade (12.4%) according to the 2006 Census of Population and Housing.



Boddington Medical Centre under Construction

The category electricity, gas, water and waste services industry was equally the lowest employer with information, media and telecommunications. Both of these areas employed only 1% of the Peel labour force. Mining employed only 5.2% of the labour force despite being a major contributor to the Peel GRP.

Retail trade is a major employer in the Peel Region, however contributes only 3.6% to the Peel GRP.

Table 6 Peel Employment by Industry 2006

INDUSTRY	Number	% of Total
Construction	4,659	13.6
Manufacturing	4,616	13.5
Retail Trade	4,243	12.4
Health Care & Social Services	2,875	8.4
Education & Training	2,183	6.4
Accommodation & Food Services	1,921	5.6
Mining	1,799	5.2
Public Administration & Safety	1,599	4.7
Other Services	1,284	3.7
Transport, Postal & Warehousing	1,282	3.7
Professional, Scientific & Technical Services	1,257	3.7
Agriculture, Forestry & Fishing	1,091	3.2
Administrative & Support Services	1,042	3.0
Inadequately Described/Not Stated	997	2.9
Wholesale Trade	908	2.6
Rental, Hiring & Real estate Services	830	2.4
Financial & Insurance Services	571	1.7
Arts & Recreation Services	428	1.2
Electricity, Gas, Water & Waste Services	354	1.0
Information, Media & Telecommunications	330	1.0

Source: ABS, 2006 Census of Population & Housing

Gross Regional Product

The Gross Regional Product (GRP) was valued at \$7.6 billion in 2009-10, representing 4.1% of the Gross State Product. Mining at 29.4% was the leading contributor to the region's economy, followed by construction at 16.6% and manufacturing with 9.9%.

Table 7 Peel Gross Regional Product Share by Industry 2010

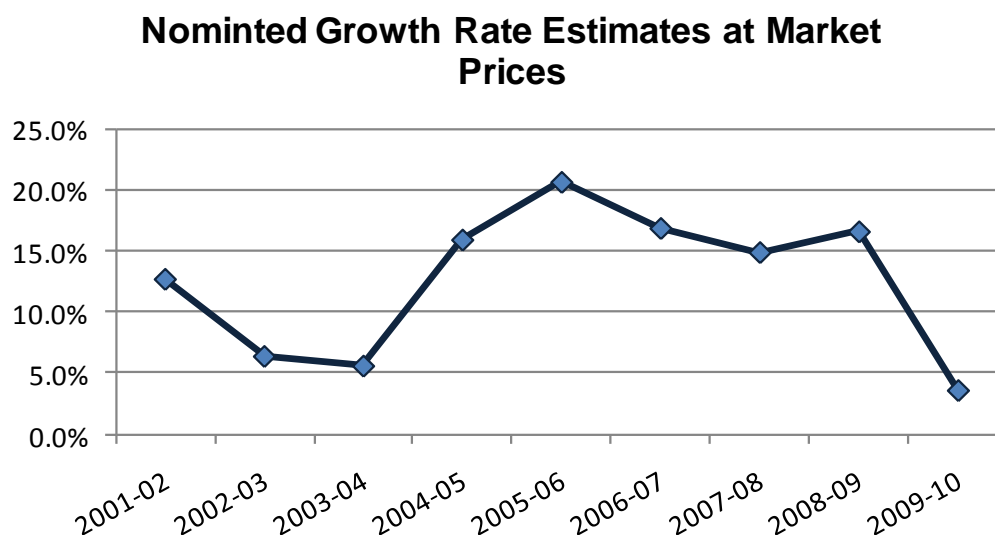
(Estimate only)

Industry	%
Agriculture, forestry & fishing	2.4%
Mining	29.4%
Manufacturing	9.9%
Electricity, gas, water & waste services	1.7%
Construction	16.6%
Wholesale trade	2.2%
Retail trade	3.6%
Accommodation & food services	1.2%
Transport, postal & warehousing	4.2%
Information media & telecommunications	1.0%
Financial & insurance services	2.7%
Rental, hiring & real estate services	3.1%
Professional, scientific & technical services + Education & training	3.4%
Administrative & support services + Public administration & safety	2.4%
Public Administration and Safety	2.2%
Education and Training	2.5%
Health care & social assistance	3.7%
Arts & recreation services	0.7%
Other services & Ownership dwellings	7.0%

Source: Estimated by the Department of Regional Development and Lands

Nominal growth for the twelve months to June 2010 was well down compared to previous years at 3.6%. In the ten years to 2010, growth was highest in 2005-06 with 20.7%, before dropping to 14.9% in 2007-2008. There was a slight upward swing in 2008-2009 when growth reached 16.6% before falling again in the 2009-2010 year.

Figure 4 Nominal Growth of Gross Regional Product



Source: Estimated by the Department of Regional Development and Lands

Mining

Bauxite and gold are the two key minerals mined in the Peel Region. In the 2009-10 financial year Department of Mines and Petroleum estimated the value of minerals mined and processed in Peel to be almost \$2.7billion. Alcoa and Worsley mined bauxite at mines located at McCoy (near Dwellingup), Waroona (S) and Boddington(S) for processing into alumina at the Kwinana, Pinjarra, Wagerup and Worsley refineries.

The Newmont Boddington Gold Mine is expected to be the largest open cut gold mine in Australia when it reaches full production with estimated proven and probable reserves of 20.3million ounces.

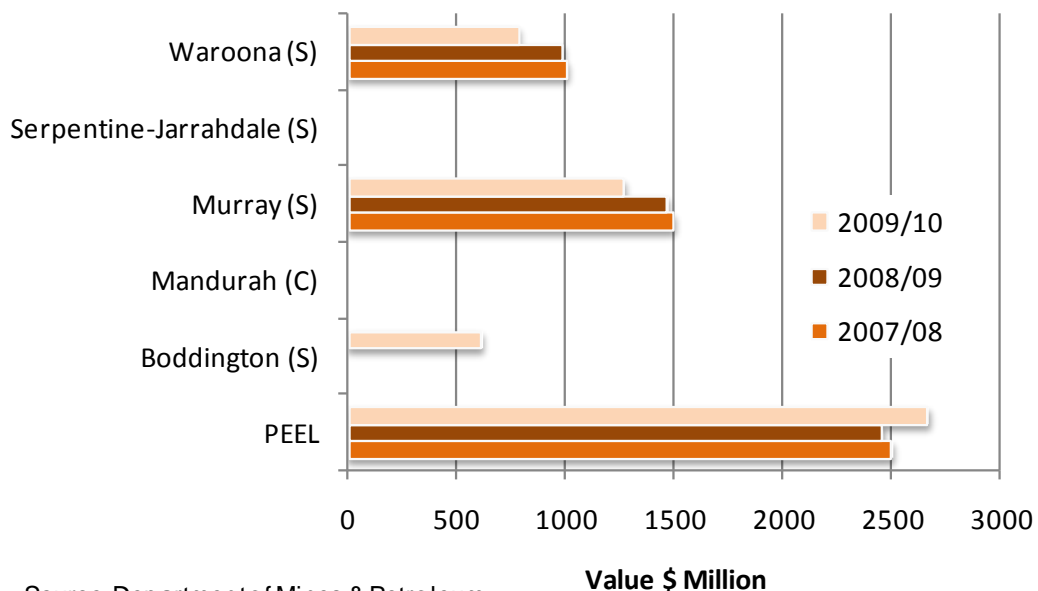


BHP Bauxite Conveyor System, Boddington (S)

In 2010 it produced 728,000 ounces of gold and is expected to produce between 750,000 and 800,000 ounces of gold per year for the next twenty years. Copper is also mined by Newmont at Boddington with approximately 30,000 tonnes being produced in 2010.

According to the Department of Mines and Petroleum approximately 6,700 people were employed in the mining industry in the Peel Region in 2010. Just over 4,100 of these were directly employed in mining bauxite and gold. A further 2,600 were employed in processing refineries producing alumina.

Figure 5 Minerals Production



Source: Department of Mines & Petroleum

Manufacturing

The major manufacturing industries in the Peel Region are food, fabricated metal products and transport equipment. Sales and service income generated from manufacturing is estimated at over \$2.5 billion in the 2006-07 year.



Murray Engineering Building

Retail Turnover

Retail turnover for the Peel Region increased 6.9% from \$956 million in 2009-10 to \$1,022 million in 2010-11. This was the largest increase of any region in Western Australia for this period. The States total retail turnover increased 4.4% from 2009-10 to 2010-11 or \$27,116 million. The Peel Region share of state total retail turnover has been steadily increasing over the past four years to 3.8% in the current year. In the 2006 census retail trade employed 4,242 of the region's workforce.

Building and Construction

Building and construction accounted for 16.6% of the Peel economy in 2009-10, the second highest contribution behind mining. There were 1,663 residential building approvals in the 20010/11 year with a total value of \$395.7 million. Non-residential building approvals were valued at \$50.8 million in the same period

Table 8 Building Approvals

Building Approvals 2010-11			
Region/LGA	Residential Number	Residential Value	Non-Residential Value
Boddington (S)	25	\$6,418,000	\$2,670,000
Mandurah (C)	891	\$219,379,000	\$31,529,000
Murray (S)	180	\$44,973,000	\$8,333,000
Serpentine-Jarrahdale (S)	528	\$115,580,000	\$6,315,000
Waroona (S)	39	\$9,356,000	\$1,923,000
Peel	1,663	\$395,706,000	\$50,770,000

Source: ABS

Tourism

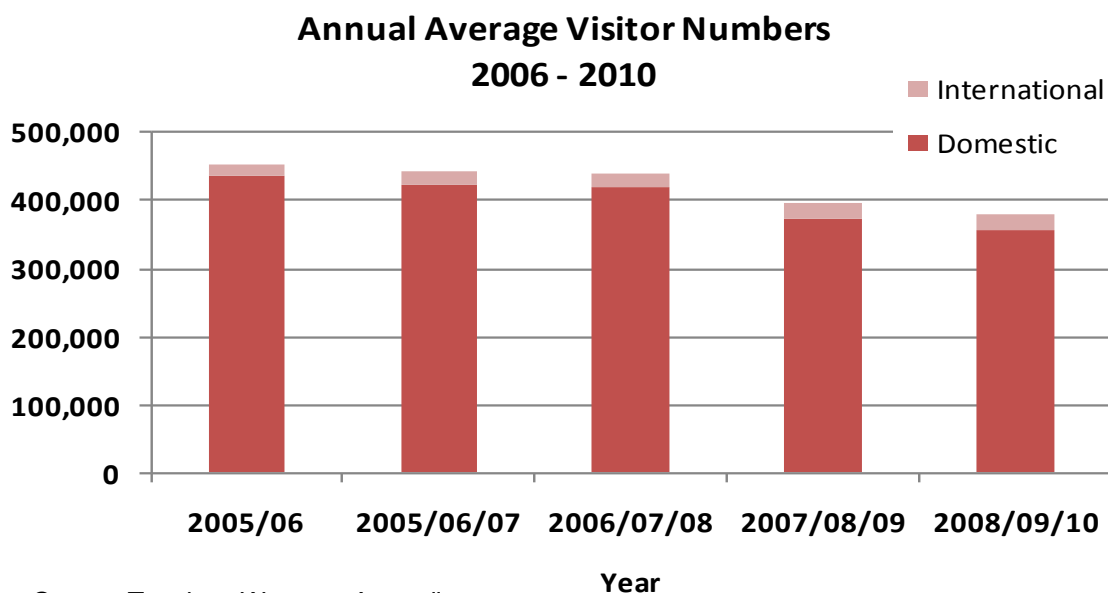
Tourism Western Australia averages visitor numbers over three calendar years. In 2008/09/10 an estimated 380,800 tourists per year visited the Peel Region. This number comprised 358,400 domestic visitors and 22,400 international visitors. The

overall number of tourists visiting Peel has declined by 16.2% from 2006 to 2010. However international tourist visits increased by 35.8% over the same period.

Travel parties comprised mostly adult couples for both domestic (29%) and international (41%) visitors. This was followed by family groups of parents and children; domestic 25% and international 38%.

Tourist expenditure increased by 20.4% to reach \$144.7 million over the five years to 2009. In 2009 international tourist expenditure was \$20.4 million and domestic tourist expenditure was \$124.3 million.

Figure 6 Average Annual Visitor Numbers



Source: Tourism Western Australia

Agriculture

The Peel Region contributed 1.8% to the State’s total agricultural production in 2009. Agriculture production was estimated to value \$129.3 million in 2009, a decrease of 17.3% in value from 2008.



Canola Crop Boddington (S)

The largest decrease in value was crops, down by 35.3%, followed by livestock products, down by 23.6%. Livestock disposals increased by 7.8%.

Fishing

In 2009-10 the Department of Fisheries estimated the total value of fishing in Peel was \$4.4 million, down 23.5% on the previous year. The value of fishing in the Peel Region has been declining since 2003-2004, down 76.6%.

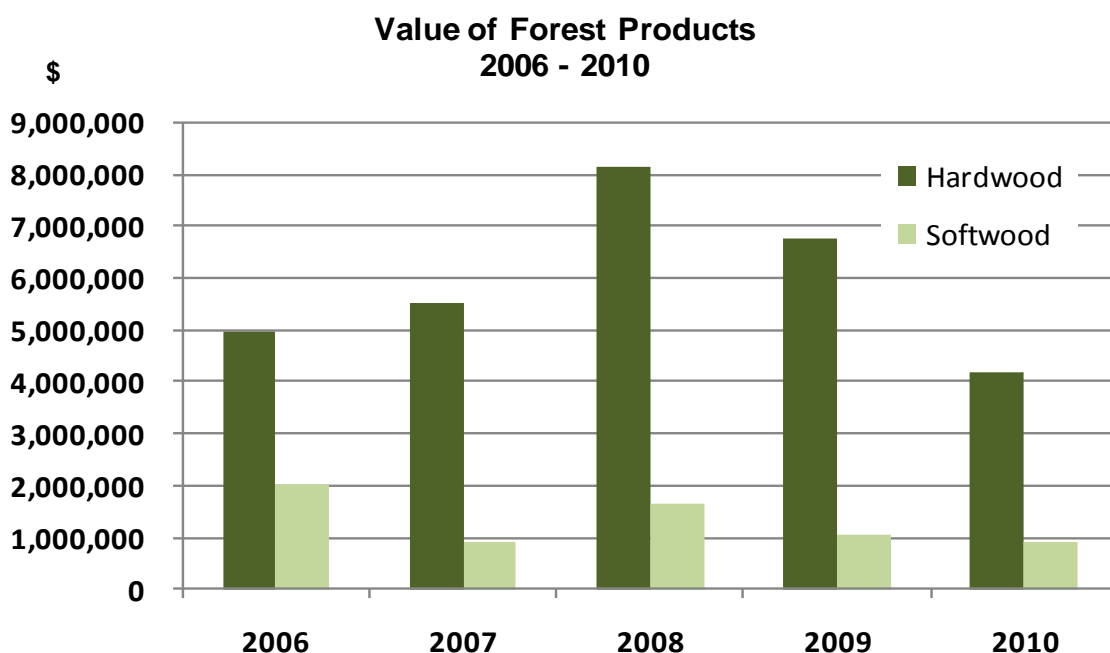
The total catch size decreased by 8.1% from 2008-09 to 339 tonnes in 2009-10. The average value per tonne also decreased by \$2,779 on the previous year to \$12,932 per tonne. Rock lobster continues to dominate the region's fishing output representing 84% of the total estimated value and 35.1% of the total catch.



Estuary Blue Manna Crabs

Forest Products

The total value of forest products for the Peel Region in 2010 was \$5 million. Hardwood represented 82.4% of total value of forest products at \$4.2 million and softwood represented 17.6% with a value of \$892,000. The Peel contributes 5.8% to the states total forest products.

Figure 7 Value of Forestry Products

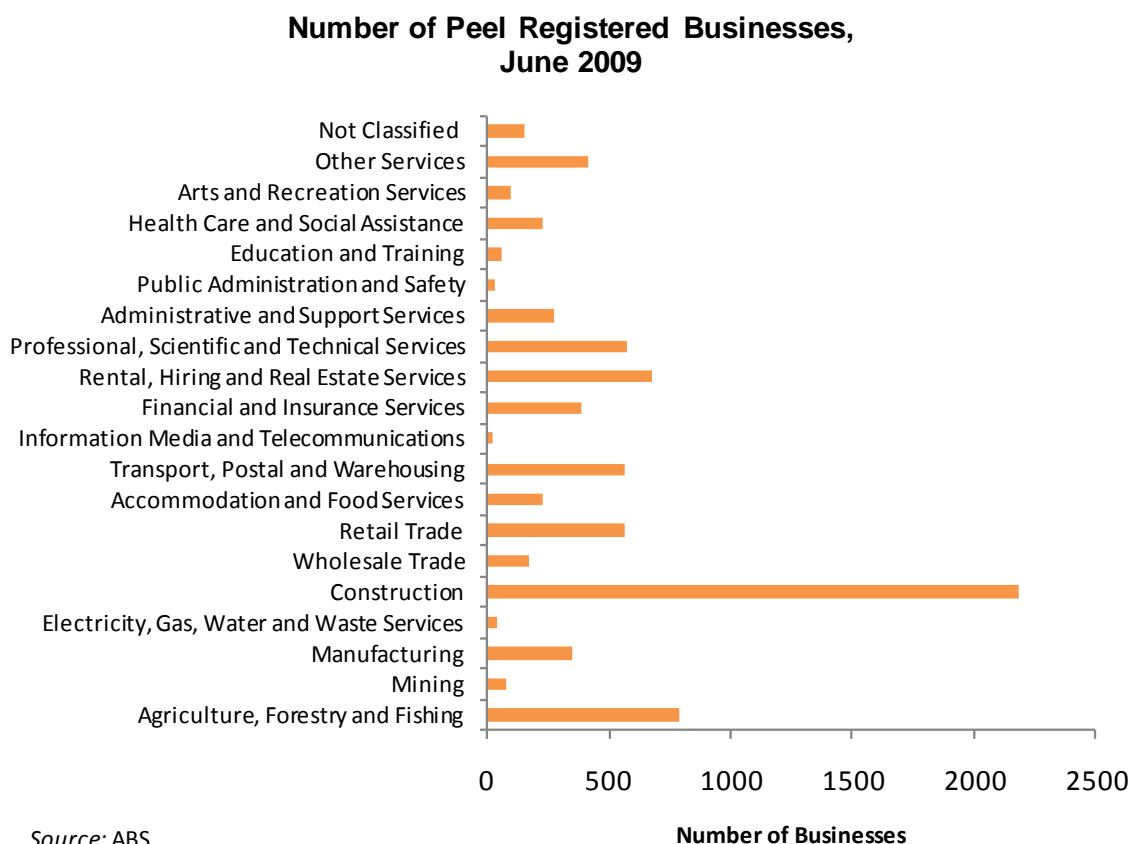
Source: Forest Products Commission

Business Registrations

As at June 2009, there were 7,878 actively trading businesses registered in the Peel Region. The construction industry had by far the highest registrations with 2,183 registered businesses. Over 70% of these were non-employed. Agriculture, forestry and fishing had the second highest number of actively trading registered businesses at 791. This industry also had a majority of non-employed businesses (76.7%). Information, media and telecommunications had the lowest number of registered businesses (24), half of these were non-employed.

Mining, the leading contributor to Peel GRP had 75 registered businesses, 56% of which were non-employed and manufacturing, the other major contributor to Peel GRP had 348 registered businesses, 57% of which were non-employed. Retail Trade, one of the largest employers in the region had 564 actively trading registered businesses, of which 40% were non-employed.

Figure 8 Number of Registered Businesses



Source: ABS

Project Investment

In December 2010, there was one project under consideration with a total value of \$30 million. This project is the Byford Secondary School. Construction is anticipated to begin in 2011, with expected completion in 2014.

There were no other projects under construction or committed in the Peel Region.

Infrastructure

The development of industrial land has been identified as the Region’s highest infrastructure priority. A current shortage of industrial land is having a negative impact on economic, business and jobs growth.

The expansion of the Pinjarra Industrial estate is currently underway. In 2008, 24 lots were created in Stage 1. Ten of these lots have been sold to date. It is intended to create and release a further 34 lots over two stages. The time frame for these stages will be dictated by demand.

The proposed Nambelup industrial site is strategically located beside the new Kwinana Freeway in the Shire of Murray, close to both Mandurah City and the proposed Keralup Housing Estate. There are a number of environmental constraints to the development of the Nambelup site. Approval has been recently given for an Outline Development Plan (ODP) for a portion of the estate.

Industrial land development projects are underway or under consideration at a number of sites in the Peel Region. Serpentine-Jarrahdale Shire and Waroona Shire both have sites under consideration and

initial subdivision of industrial land has occurred at Boddington. Of the six sites released at Boddington three have been sold. The Mandurah Entrance Road, now known as Mandjoogoordap Drive has recently been completed. Mandjoogoordap Drive links Mandurah directly to the Kwinana Freeway.



Mandjoogoordap Drive Overpass

Social

Police & Crime

There are 145.1 full time equivalent (FTE) police officers in the Peel Region. This comprises of 110.6 in Mandurah, 14 in Mundijong, 8.5 in Pinjarra, 6 in Waroona, 4 in Boddington and 2 in Dwellingup. The Mandurah Police Service includes forensic officers, detectives, general, traffic and administrative staff.

There were 3,067 recorded crimes committed in the Peel Region in the 2010-11. Boddington Shire had the lowest crime rate with only 23 crimes or 1 crime per 73.6 persons. Mandurah had the highest crime rate with 2,353 crimes or 1 crime per 29.9 persons.

The category Burglary (dwelling) had the highest number of Peel Region offences with 1,073 or 1 per 101.2 persons recorded. Boddington had the lowest recorded rate of Burglary (dwelling) with only 1 burglary per 564 persons and Mandurah had the highest with 1 per 84.6 persons.

Table 9 Crime Statistic

Crime Statistics 2010-11							
Suburb	Assault	Burglary (Dwelling)	Burglary (Other)	Graffiti	Robbery	Steal Motor Vehicle	Total Crimes
Boddington	8	3	6	3	0	3	23
Mandurah	806	832	170	294	52	199	2,353
Murray	128	107	58	24	6	25	346
Serpentine-Jarrahdale	70	107	39	10	2	39	267
Waroona	19	24	25	2	0	8	78
PEEL	1,031	1,073	296	333	60	274	3,067

Source: Western Australia Police

Health

There are three hospitals in the Peel Region, the Peel Health Campus located in Mandurah, the Murray Hospital located at Pinjarra and the Boddington Hospital. The Peel Health Campus has 197 public and 29 private beds, including out-patient and emergency beds. Murray hospital provides 18 beds and Boddington 16.

There are approximately 96 general practitioners operating in the Peel Region, 66 of these are located in Mandurah, 18 in the Shire of Murray, 10 in Serpentine-Jarrahdale, 1 in Boddington and 1 in Waroona.



Boddington Medical Centre

Education

There are 30 government schools (10,795 students) and 11 non-government schools (5,863 Students) in the Peel Region offering pre-primary, primary and secondary education services. Two of these are sub-schools/campuses with the main campus located outside the Peel Region. One new school opened in 2011, Austin Cove Baptist College, catering for 350 students from kindergarten to year 8. By 2015 Austin Cove is expected to have 500 students enrolled, covering kindergarten up to year 12. There are three new schools proposed in the coming years: public primary schools to be opened in Meadow Springs (2012) and Byford (2013) and a public secondary school in Byford (2014). There is one proposed amalgamation; Mandurah Senior College and Mandurah High School are to amalgamate in 2012 and will be known as John Tonkin College.

A total of 16,658 students attended school in the Peel Region in Semester 2, 2010. This was made up of 10,795 attending government run schools and 5,863 at private schools. Of the 10,795 students at government schools 1,712 (16%) were at pre-primary level, 6,098 (56%) at primary level and 2,985 (28%) at secondary level.

Table 10 Gender of Students Attending Government Schools

Gender of students attending government schools in the Peel Region			
Level	Females	Males	Total
Pre-Primary	884	828	1712
Primary	3051	3047	6098
Secondary	1337	1648	2985
Total	5272	5523	10795

Source: Department of Education, Western Australia.

There were 600 Indigenous students at government schools in this period: 118 (19%) at pre-primary level, 335 (56%) at primary level and 149 (25%) at secondary level. The number of Indigenous students at non-government schools is not available.

There was a total of 2,051 staff at these schools: 824 teaching and 583 non-teaching staff for the same period. This equates to 706.8 full time teachers and 395.8 full time non-teaching staff.

In 2009 of the 387 students who completed grade 12 at public schools 352 (91%) were awarded their Senior Certificate. Grade 12 was completed by 379 students at private schools, with 373 (94%) being awarded their Senior Certificate.

Total Net Recurrent income for schools in the Peel was \$178.4 million for 2009, made up of \$127 million for public schools and \$51.1 million for private schools. This equates to an average of \$10,694 per student. In 2009 the total capital expenditure undertaken by Peel schools was \$29.6 million.

The Peel Region is serviced by the Peel Education Campus which is a multi-partnered complex comprising of Mandurah Senior College (secondary school), Challenger Institute of Technology (technical and further education) and Murdoch University Peel Campus. Challenger Institute Access Centres have been

established, in partnership with community learning centres in Boddington, Waroona, Pinjarra and Mundijong.

Murdoch University opened its Peel Campus in 2004 and offers nursing and business courses. In 2012 Social Work programs will be introduced.

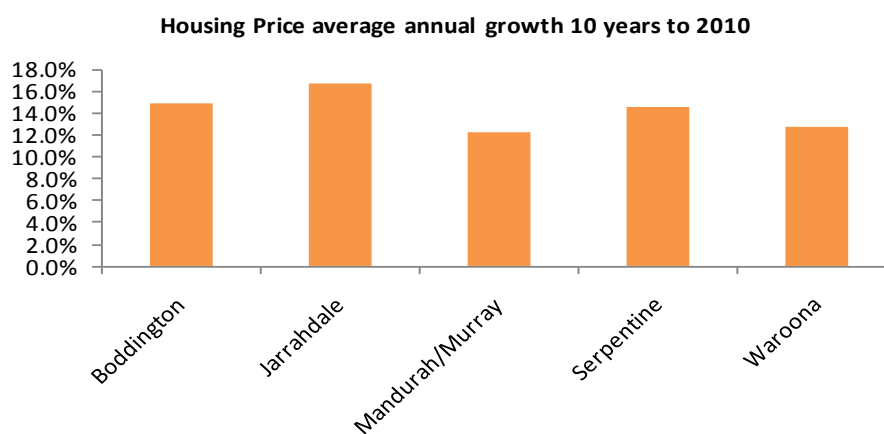
Housing

According to the 2006 ABS Census there were 32,891 occupied private dwellings in the Peel Region. Of these 11,313 (34.4%) were fully owned, 10,861 (33%) were being purchased and the rest were rented (22.9%) or fell under the categories of other tenure or not stated.

The average weekly rent paid in 2006 was \$193. The average monthly repayment was \$1,392.

Average house prices in the Peel Region grew by 14.2% in the ten years to 2010. Jarrahdale had the highest growth rate at 16.7%, followed by Serpentine at 14.6%. Mandurah/Murray had the lowest growth with 12.2 %.

Figure 9 Housing Price Average Annual Growth



Source: Reiwa

Environment

Climate

The Peel Region experiences a climate that is best described as 'Mediterranean' with hot dry summers and cool wet winters. During summer hot dry easterly winds prevail. Normally there is little rain during summer however occasional thunderstorms and remnant tropical cyclones can produce heavy rainfall. Winter usually brings consistent rainfall.

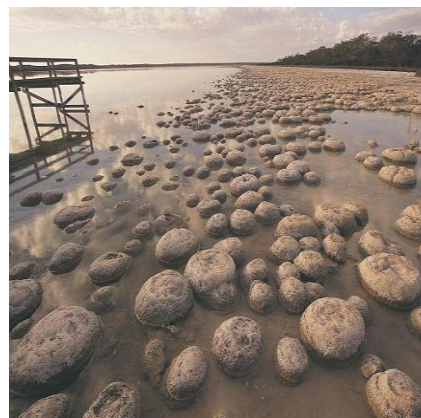
Temperatures average 29°C during summer, however can reach over 38°C. The summer minimum temperature is 17.9°C. Winter temperatures range from a minimum of 9.4°C to a maximum of 17.5°C.

Estuarine

The most significant environmental feature in the Peel Region is the Peel-Harvey Estuary which is fed by the Murray, Serpentine and Harvey Rivers. Together the Peel Inlet and Harvey Estuary form a large shallow basin, covering approximately 130 km². This is more than two and a half times the size of the Swan River Estuary.

The Peel Inlet is a roughly circular lagoon with a diameter of approximately 10 km. It is connected to the ocean by a narrow inlet channel at Mandurah. The Harvey Estuary is narrow, approximately 20 km long and 2-3 km wide. It is connected to the ocean by a man-made channel at Dawesville. More than half the area of the Peel-Harvey Estuary is less than 0.5 metres deep.

A significant feature in the Peel Region is the thrombolite reefs of Yalgorup National Park. Thrombolites, one of the earliest known life forms, are a particular type of microbialite that have a clotted internal structure. They were common 600 million years ago. The Lake Clifton thrombolites cover an area 6 kilometres long and 120 metres wide.



Thrombolites, Yalgorup National Park

Ocean

There are a number of reef systems off the Peel coast. The Murray Reef system runs from Warnbro Sound to Halls Head, approximately 5 nautical miles offshore. Murray, James Service and Horseshoe reef are some of the notable reefs within this system. Approximately 3 nautical miles off the coast is Bouvard Reef. This system runs from Cape Bouvard to south of Preston Beach. There are several more reefs between Halls Head and Tim's Thicket.

All the local reefs are limestone covered with coral and weed. The water depth inside these systems averages 10 metres. Water depth drops from 17 metres to 25 metres approximately 7 nautical miles off shore at the five fathom bank.



Serpentine-Jarrahdale Falls

Water Resources

Water is a significant feature of the Peel Region, with over one third of the coastal plain within 100 metres of an identifiable watercourse.

Dams in the Peel Region contribute more than 50% to the total capacity of the State's Integrated Water Supply System (IWSS). The IWSS is the largest scheme managed by Water Corporation, with a total capacity of 622 GL, and supplies over 1.5 million Western Australians with water.

The three major dams are at Serpentine, South Dandalup and North Dandalup. North Dandalup is the smallest dam with a capacity of 75 GL and a surface area of 510 Hectares when full. It has a catchment area of 153 km². South Dandalup, the largest dam, has a capacity of 208 GL and has a surface area of 2100 hectares when full. Its catchment area is 311 km². Serpentine has two dams, the Serpentine Dam and the Serpentine Pipe Head Dam. Together they have a capacity of 141 GL, a surface area of 1,128 hectares when full and a catchment area of 692 km².

Vegetation

A wide variety of flora is contained within the Peel Region. Tuart and jarrah are endemic to the coastal plain and are found in the open forest of the Spearwood Dunes, along with marri.



Coastal Vegetation

The understorey of this region consists of banksia, peppermint, she-oak, hakea and acacia. Tuart, peppermint and acacia are also found along the Quindalup Dunes. Swamp she-oak and salt water paperbark are found along the Peel-Harvey Estuary shore line with samphire marshes occurring on the low lying flood prone areas.

The Darling Scarp and Pinjarra Plain have both been largely cleared for pasture; however there are still remnant areas of marri, wandoo and jarrah. Ghost gums also appear on the Darling Scarp. Some pockets of banksia, she-oak and grass trees can still be found on the Pinjarra Plain.

Jarrah is the principal form of vegetation found on the mostly uncleared Darling Plateau. There are also scattered marri and an understorey of banksia and she-oak.

Fauna

The Peel Region has a large bird population with over 130 species being identified. Although few birds breed in this region it is a significant feeding area for native and migratory birds. Some birds, including the red-necked stint and the curlew sandpiper migrate from as far away as the northern hemisphere. Others such as musk and black ducks breed in other areas of Western Australia and migrate to the Peel waterways to feed in summer. Birds found around the Peel waterways include black swan, fairy terns, cormorants, little egrets and pelicans.

A wide range of birds, including 28 parrots, kookaburras and splendid wrens can be found in the inland areas. Two out of the three species of cockatoo found in the area are endangered.



Galahs

Two rare bird species, peregrine falcon and red-eared firetail finch, have been identified in the area.



Quoll

Mammal species of the region include brush wallaby, short-nosed bandicoot, mardo, echidna, pygmy possum, dunnart, western native quoll and grey kangaroo. Quokkas can be found around stream and swamp areas.

Whiting, tailor, mullet, mulloway, cobbler and mullet can be caught in the waters of the Peel-Harvey Estuary, along with blue manna crabs and king prawns. Fresh water species found in the Peel Region are redfin, western pygmy perch, rainbow trout and western minnow. Marron is common in many rivers and dams.

Further Information:

For more information please contact the Peel Development Commission (see back cover) or visit the following websites:

Australian Bureau of Statistics

www.abs.gov.au/

Australian Curriculum, Assessment and Reporting Authority

www.myschool.edu.au/

Australian Taxation Office

www.ato.gov.au/

Department of Education

www.det.wa.edu.au/

Department of Education, Employment and Workplace Relations

www.deewr.gov.au

Department of Fisheries

www.fish.wa.gov.au/

Department of Health

www.health.wa.gov.au

Department of Mines and Petroleum

www.dmp.wa.gov.au

Department of Regional Development and Lands

www.rdl.wa.gov.au

Forest Products Commission

www.fpc.wa.gov.au/

Newmont Asia Pacific

www.newmont.com/asia-pacific

Peel-Harvey Catchment Council

www.peel-harvey.org.au/

REIWA

www.reiwa.com.au/Pages

Tourism Western Australia

www.tourism.wa.gov.au/

Water Corporation

www.watercorporation.com.au

Western Australia Police

www.police.wa.gov.au

About The Peel Development Commission

OUR VISION

For Peel to be recognised as a uniquely beautiful and sustainable place to live, work and visit

OUR MISSION

Develop and enhance the opportunities of the Peel people, economy and environment by providing strong leadership and engaging in effective and innovative partnerships to achieve the vision

The Peel Development Commission is one of nine Regional Development Commissions in Western Australia. As State Government Statutory Authorities the Development Commissions report to the Honourable Brendon Grylls MLA, Minister for Regional Development. The Peel Development Commission has a board of directors, the members of which are appointed by the Minister. These appointments consist of one third community representatives, one third nominated by local government and one third appointed at the Minister's discretion.

The Peel Development Commission is governed by the *Regional Development Commission Act 1993* to work towards:

- Maximising job creation and improving career opportunities
- Developing and broadening the Region's economic base
- Identifying infrastructure services to promote economic and social development
- Providing information and advice to promote business development
- Ensuring equitable delivery of services

By partnering with industry, community and government agencies, the Commission initiates and accelerates regional development projects that have a sustainable benefit to the Peel Region.

The Commission is the regional conduit between State Government Policy and regional aspirations.

The Commission's staff are specialised in various areas of regional development and can assist with general advice through to dedicated project management.

For further information about this publication or the Peel Development Commission enquiries can be directed to:

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This publication is available in alternative formats on application to the Peel Development Commission.