
Economic Impact Assessment for the Ingham to Cardwell Range Highway Planning Study

A report for the Queensland Department of Transport and Main Roads

April 2010



<http://www.marsdenjacob.com.au>

Marsden Jacob Associates

Financial and Economic Consultants

ABN 66 663 324 657

ACN 072 233 204

Internet: <http://www.marsdenjacob.com.au>

E-mail: economists@marsdenjacob.com.au

Melbourne office:

Postal address: PO Box 298, Camberwell

Level 3, 683 Burke Road, Camberwell

Victoria 3124 AUSTRALIA

Telephone: +61 (0) 3 9882 1600

Facsimile: +61 (0) 3 9882 1300

Brisbane office:

Level 5, 100 Eagle Street, Brisbane

Queensland, 4000 AUSTRALIA

Telephone: +61 (0) 7 3229 7701

Facsimile: +61 (0) 7 3229 7944

Perth office:

Level 6, 731 Hay Street, Perth

Perth, 6000 AUSTRALIA

Telephone: +61 (0) 8 9324 1785

Facsimile: +61 (0) 89324 1751

Author: Jim Binney

This report may be cited as: Economic Impact Assessment for the Ingham to Cardwell Range Highway Planning Study, Marsden Jacob Associates 2010

This report has been prepared in accordance with the scope of services described in the contract or agreement between Marsden Jacob Associates Pty Ltd ACN 072 233 204 (MJA) and the Client. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Marsden Jacob Associates accepts no responsibility for its use by other parties.



Copyright © Marsden Jacob Associates Pty Ltd 2010

TABLE OF CONTENTS

	Page
Executive summary.....	1
1. Introduction.....	8
1.1.The objective	9
1.1.1.. Flood immunity.....	9
1.1.2.. Amenity and road safety	10
1.2.General approach to assessment.....	11
1.2.1.. Survey and modelling approach.....	12
2. Demographic overview.....	15
2.1.Population and population forecasts.....	15
2.2.Labour force.....	16
2.3.Education.....	17
2.4.Income levels.....	18
3. Economic overview	19
3.1.Regional economy and prospects.....	19
3.1.1.. Primary industries.....	19
3.1.2.. Tourism.....	21
3.1.3.. Construction activity	22
3.2.Central Ingham study area businesses.....	22
3.2.1.. Businesses by sector and location	22
3.2.2.. Hours of operation.....	23
3.2.3.. Business ownership.....	23
3.2.4.. Employment.....	23
3.2.5.. Business turnover.....	25
3.2.6.. Sources of business income	26
3.2.7.. Business costs	27
4. Base case and changes assessed	30
4.1.Base case for 2015	30
4.2.Key changes triggering economic impacts.....	31
4.2.1.. Road construction	31
4.2.2.. Post bypass traffic movements in Central Ingham.....	32
4.2.3.. Reduction in sugar production.....	33
5. Construction phase economic impacts.....	34
5.1.Construction expenditure and impacts.....	34
5.2.Direct construction employment impacts	35
5.3.Flow-on impacts.....	36
5.4.Potential economic risks.....	36
5.4.1.. Crowding out local employers and subsequent labour cost impacts.....	36
5.4.2.. Potential accommodation shortfalls and rental price increases	37
5.4.3.. Crowding out other local construction and construction cost impacts.....	37
6. Ongoing economic impacts	39
6.1.Impacts identified by stakeholders.....	39
6.1.1.. Flood impacts.....	39
6.1.2.. Perceived impact of the bypass on trade	40
6.2.Estimated impacts attributable to changed traffic patterns	41
6.2.1.. Changes in business turnover in Central Ingham.....	41
6.2.2.. Changes in employment	42
6.2.3.. Distribution of impacts in Central Ingham	43
6.2.4.. Broader regional impacts.....	44
6.2.5.. Changes in property values	44
6.3.Ongoing impact on the agricultural sector.....	45
7. Maximising opportunities and mitigating risks for the Ingham community	47
Appendix — Review of social and economic impacts of highway bypasses.....	53

LIST OF TABLES

	Page
Table 1: Indicative average daily traffic movements (2008)	11
Table 2: Ingham population and age profile	15
Table 3: Population projections.....	16
Table 4: Labour force data	16
Table 5: Occupation data	17
Table 6: Educational attainment	18
Table 7: Value of agricultural production (2005–06)	19
Table 8: Building approvals (year to June 2009)	22
Table 9: Employment by industry classification.....	24
Table 10: Employment by position and type.....	25
Table 11: Business Turnover (gross income).....	25
Table 12: Estimated turnover: tourism-related businesses (%).....	26
Table 13: Business income required to cover all costs (%).....	27
Table 14: Business costs (%)	28
Table 15: Key assumptions underpinning base case.....	30
Table 16: Base case (Central Ingham study area)	31
Table 17: Estimated traffic movements in 2015 (Herbert St, Lannercost St & Townsville Rd combined as the study area)	33
Table 18: Potential areas and number of sugar properties impacted by bypass.....	33
Table 19: Estimated annual increase in expenditure during construction period	34
Table 20: Daily business income lost due to major flooding	40
Table 21: Annual business income lost due to bypass (%).....	40
Table 22: Range of impacts on turnover	41
Table 23: Range of impacts on employment	42
Table 24: Estimated impacts for sugarcane	46
Table 25: Construction phase: opportunities, risks and strategies	48
Table 26: Ongoing phase: opportunities, risks and strategies.....	51
Table 27: Bypass Impacts - Negative	54
Table 28: Bypass Impacts - Positive	55
Table 29: Existing Bypasses Reviewed	56
Table 30: Proposed Highway Bypasses Reviewed	58

LIST OF FIGURES

	Page
Figure 1: Flood road disruption data — Seymour River Bridge 1989–2009	9
Figure 2: Flood road disruption data — Gairloch Washaway 1989–2009.....	10
Figure 3: General approach to assessment	12
Figure 4: Tourism numbers to the Great Barrier Reef Marine Park — central section	21
Figure 5: Overview of Central Ingham study area businesses by ANZSIC classifications	23
Figure 6: Fixed and variable costs	29
Figure 7: Estimated direct construction jobs.....	35
Figure 8: Overview of skill requirements (mid-estimate)	35

Executive summary

BACKGROUND AND PURPOSE

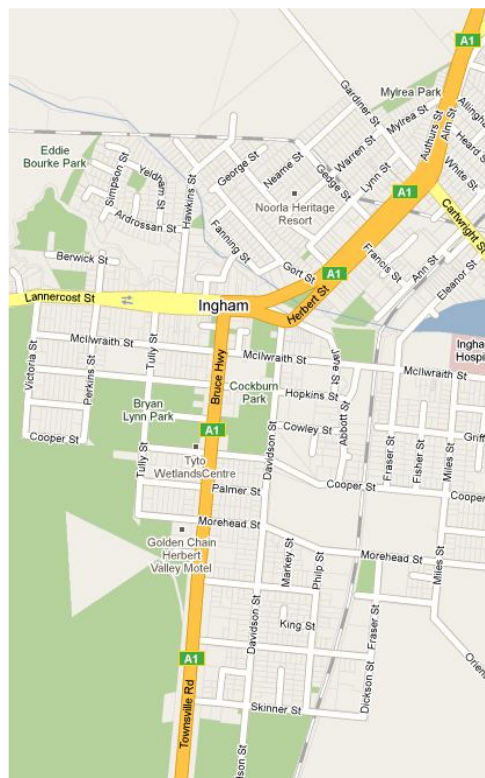
Significant flooding along the North Tropical Coast of Queensland, particularly in the Herbert River catchment area, causes flood-related closures of the Bruce Highway for up to eight days each year over the wet season. Flooding generally results in substantial disruption to traffic, to businesses reliant on the major transit route north of Brisbane, and to local communities, particularly the township of Ingham.

To mitigate the disruption caused by flooding on the Bruce Highway, the Department of Transport and Main Roads commissioned a study to investigate options to upgrade and potentially realign the Bruce Highway from the southern approach to Ingham to the foothills of the Cardwell Range.

This report is an economic impact assessment of the potential impact of realigning the Bruce Highway out of the centre of the Ingham township (bypass). This report provides social and economic background information and an economic impact assessment. It also discusses some strategies that could be used to maximise local benefits and mitigate risks from the construction of any bypass.

The economic impact assessment report primarily focuses on the central business district of Ingham, including: Townsville Road (section north of Andy's roadhouse), Lannercost Street, Herbert Street, and Palm Terrace. The general area for the focus of the study is shown in the map below. The broader economic impacts, data and information for the whole Ingham township and Hinchinbrook Shire is also assessed.

ES Map 1: General focus area for study



CURRENT ECONOMIC STRUCTURE OF INGHAM

The demographic and economic analysis revealed a number of findings relevant to the realignment of the Bruce Highway:

- whilst Hinchinbrook Shire has considerable underemployment, much of the underemployment is not necessarily in segments of the labour force that will benefit greatly from any bypass construction project;
- the local economy has a relatively narrow base, particularly reliant on sugar (primary production and manufacturing). Tourism is also a relatively major contributor to the local economy;
- the majority of businesses in the Central Ingham study area (60%) are relatively small, family-owned and operated businesses with turnovers of less than \$500,000 per annum. This is relatively consistent with the rest of the Hinchinbrook Shire and the State average;
- the impacts of the proposed bypass have been assessed against a base case that outlines expected economic conditions for 2015 which is the earliest possible time the works could be commenced. In the Central Ingham study area, population and economic growth is unlikely to be significant between now and 2015. The outlook for the broader Hinchinbrook Shire is also similar. The economic outlook is neutral for sectors such as primary industries, and tourism will continue to decline in the short term, only recovering to current levels by around 2015;
- turnover of businesses in Central Ingham study area is currently around \$139 million per annum and is expected to grow to approximately \$144 million by 2015; and
- it is estimated that there are around 1,400 persons employed in the Central Ingham study area with this expected to increase to around 1,454 by 2015.

Key economic and employment statistics for Central Ingham for the current period and 2015 are shown in Table ES1. These statistics form the base case against which each alignment options will be assessed.

Table ES1: Base case (Central Ingham study area)

Key statistic	Current	2015	Change (%)
Turnover attributable to locals	\$102.2 m	\$103.4 m	1.2
Turnover attributable to tourists	\$18.6 m	\$18.6 m	0.0
Turnover attributable to other through-traffic	\$17.9 m	\$22.1 m	22.8
Total turnover	\$138.7 m	\$144.1 m	3.9
Employment (persons)	1,399	1,454	3.9

Source: MJA estimates.

The current demographic makeup and economic structure of Ingham and the surrounding region are outlined in detail in sections 2 and 3 of this report.

POTENTIAL IMPACTS OF A BYPASS

The alignment of the potential bypass is yet to be finalised, but AECOM and UDP Horman Traffic (the specialist traffic engineers working on the bypass options) have estimated potential impacts on traffic movements for a number of scenarios.

Marsden Jacob Associates, MJA, developed a model of the Central Ingham economy based on the results of a survey of retail and service businesses fronting the highway on Townsville Road, Lannercost Street, Herbert Street, and Palm Terrace undertaken by EBC (the consultancy firm undertaking the consultation for the bypass) in 2009.

Using the model, MJA estimated impacts on total business turnover and total employment in the Central Ingham study area that would be attributable to changes in traffic volume. This modelling was done for both the construction phase and the operational phase of the bypass. These results were assessed against a base case, that is, estimates of turnover and employment for the Central Ingham study area in 2015.

CONSTRUCTION PHASE

The range of construction costs provided by AECOM translates to annual construction costs of between \$96 million and \$137 million per annum (current day values) over a 40 month construction phase. A likely breakdown in construction costs by activity is shown in the table below. The analysis indicates a number of key points:

- the dominant cost is sourcing basic construction materials (construction minerals, cement, bitumen) accounting for approximately 55% of total costs. Wherever practicable, these inputs should be sourced locally to minimise transport costs;
- labour is the other dominant cost, at approximately 30% of total costs. The construction phase would generate between \$29 and \$41 million per annum in additional wages and a significant portion of the wages would accrue to local residents working on the project; and
- transport, machinery and many other construction inputs would be imported into the region for the construction phase. While these expenditures are significant (between \$15 and \$21 million per annum), the bulk of this expenditure would not benefit the economy of Hinchinbrook Shire beyond some servicing, transport and the services associated with these inputs.

Estimated annual increase in expenditure during construction period

<i>Inputs</i>	<i>Estimated expenditure (\$ million)</i>		
	<i>Low</i>	<i>Medium</i>	<i>High</i>
Labour costs (primarily salaries and wages)	29	35	41
Materials (construction minerals, concrete, bitumen etc.)	37	45	53
Construction steel products	5	6	7
Transport inputs	3	3	4
Machinery inputs	7	8	10
Other business services (e.g. maintenance)	1	2	2
Other expenditure	14	17	20
Total	96	116	137

Source: MJA estimates.

It is estimated the construction phase could generate around 410–590 full-time equivalent jobs. The construction phase will require a mix of skills ranging from highly technical engineering skills through to basic unskilled labour inputs. Key points to note include:

- the dominant skill requirement will be for plant and machinery operators (around 32% of the labour requirements);
- labourers form the next largest group (around 26% of total requirements);
- with the exception of some specialised professional and para-professional skill requirements, ABS data and EBC survey data show most required skills for the construction phase could be locally available; and
- the skills in most demand (plant and machinery operators, labourers) are already near to full employment in the broader Hinchinbrook Shire.

The construction phase will increase Hinchinbrook's annual non-building construction activity by 8 to 12 times. While this will create significant opportunities for local businesses and the community via increased economic activity and jobs, the construction phase could create some risks for the community:

- the sheer size of project will increase demand for key inputs (materials, skilled labour etc.). This may limit the availability of these inputs for other purposes (e.g. machine operators available for seasonal cane harvesting jobs) and possibly push up prices (including wages) for goods and services competing with the road construction for inputs; and
- the temporary increase in population to house the construction workforce may absorb all rental accommodation, limiting availability for other people and generally pushing up rental prices for the duration of the construction phase.

These risks are similar to the impacts that have occurred in other small rural areas that have experienced a mining-related boom in recent times (e.g. Nebo). The potential impacts of constructing a bypass are outlined in detail of Section 5 of the report. There are opportunities to mitigate these risks and they are outlined in Section 7 of the report.

POST CONSTRUCTION IMPACTS

Estimates of post-construction impacts on economic activity and employment in the Central Ingham study area and on regional sugar production are shown in the table below.

While the traffic movements estimated by UDP Horman Traffic for the planning study estimate road usage for scenarios with and without a bypass, these estimates provide little insight into driver behaviour, particularly how many vehicles actually stop *and* create economic activity. Therefore, three traffic scenarios have been developed to estimate the range of potential economic impacts:

- **Worst case scenario (highly unlikely).** This is the 16% reduction in total traffic in Central Ingham attributable to the bypass for 2015. This reduction is drawn directly from total traffic movements developed by UDP Horman Traffic and used for the planning study. This includes no consideration of driver behaviour and subsequent interactions with local businesses (e.g. what types of people will be using the bypass and would they have stopped and spent money anyway?);
- **Mid case scenario (most likely without mitigation strategies).** A more likely scenario is that the majority of vehicles that use the bypass would be the vehicles that currently already travel through Ingham without stopping. When those vehicles are netted out of the equation, the estimated reduction in relevant vehicle movements in Central Ingham is around 6%; and

- **Best case scenario (possible with mitigation strategies).** It would be possible to reduce the decline in vehicle movements in Central Ingham through strategies that enhance the appeal of Central Ingham to consumers and travellers. For the purposes of establishing a best case scenario, a reduction of only 3% is assumed.

The diversion of traffic away from Central Ingham has potential impacts on turnover and employment in Central Ingham, particularly for businesses on Townsville Rd (north of Rutledge St), Lannercost St, and Herbert St. Results from the economic analysis are shown in the table below.

Post construction phase: key impacts

Indicator	Estimates of impacts			
	Scenario			
	Base	Best case (possible)	Medium case (most likely)	Worst case (highly unlikely)
<i>Economic impact — Central Ingham</i>				
Turnover (\$m)	144.1	142.8	141.6	137.6
Turnover (change \$m)	N/A	-1.2	-2.4	- 6.5
Turnover (change %)	N/A	-0.8%	-1.7%	-4.5%
<i>Employment impacts — Central Ingham</i>				
Employment (persons)	1,454	1,442	1,429	1,388
Change (persons)	N/A	-12	-25	-66
Change (%)	N/A	-0.8%	-1.7%	-4.5%
<i>Impacts on regional sugar production</i>				
Potential loss of production (tonnes of cane)	N/A	9,000	10,100	11,300
Loss of district's total production (%)	N/A	0.2%	0.2%	0.3%
Annual value of production lost at current prices (\$)	N/A	560,000	630,000	700,000

Source: MJA estimates.

There are a number of key points to note from the economic analysis:

- the changes in traffic patterns are expected to decrease turnover by between 0.8% (best case) and 4.5% (worst case), with the most likely case being a decrease of around 1.7%. These proportional decreases are significantly lower than the proportional decreases for the corresponding scenarios because the majority (76%) of business turnover in Central Ingham is attributable to local customers that will not be affected by the bypass;
- the sectors most likely to be impacted by reductions in through-traffic will be retail businesses such as cafes, restaurants and service stations;
- the degree to which business profits are impacted will depend on whether businesses can avoid input costs (e.g. stock) to compensate for reductions in turnover;
- reduced turnover will reduce demand by employees for labour inputs. Total demand for labour inputs (full-time equivalents) is expected to fall by between 0.8% and 4.5% (12–

66 jobs), primarily concentrated in the sectors reliant on through-traffic. Based on current ratios of employment to turnover, the most likely outcome is a loss equivalent to around 25 positions. However, because of the dominance of part-time and casual employees in these sectors, the employment impacts are likely to result in a reduction of hours for a relatively significant proportion of the workforce. In other words, the reduction in labour requirements may not play out as complete losses in jobs. Rather, the impacts will be reductions in the hours available for part-time and casual employees;

- analysis of survey results shows that virtually all through-traffic reliant businesses, which face a downturn in trade, should be able to adjust to the lower revenue stream by cutting costs;
- if through-traffic between Cairns and Townsville bypasses Ingham, the economic activity lost by Ingham is likely to result in increases in either Cardwell or Tully;
- the bypass will have a potential impact on property prices. While there is likely to be a positive spike in demand (and potentially rents and prices) during the construction phase, the bypass is likely to further contribute to the downward trend on demand in the longer term, particularly for commercial premises, with subsequent impacts on rents and prices; and
- the impact on the sugar industry will be relatively minor within the broader Herbert River region.

The ongoing impacts of the bypass are outlined in detail of Section 6 of the report.

OPPORTUNITIES AND RISK MANAGEMENT STRATEGIES

The establishment of the bypass will create both opportunities and risks for Ingham. Key opportunities include:

- the significant increases in direct and indirect employment opportunities and opportunities to provide other business inputs during the construction phase. Any construction project of the scale proposed will require significant support and inputs from the local community in terms of labour, construction inputs, accommodation, catering, repairs and maintenance, and clothing; and
- the reductions in traffic attributable to the bypass will enhance road safety and amenity in Central Ingham. This may create opportunities to reinvigorate the retail precinct for the greater benefit of residents and visitors.

While the bypass will create opportunities, there are also risks to the community and local business during both the construction and operating phases of the project. During the construction phase these risks are triggered by significant demand for labour inputs, other inputs and accommodation, all pushing up prices.

Ongoing risks relate to the declines in economic activity, potential reductions in profits for some businesses, job losses, reductions in commercial rents and land values and a reduction in regional sugar production.

Strategies required to mitigate these potential impacts are outlined in Section 7 of this report. Key strategies for the construction phase include:

- the establishment of registers of key skills in the local community to inform contractors of local labour availability and capabilities;
- targeted training of locals to enhance their employability for the project;

- the development of registers and capability statements for the local business community to increase the direct and indirect inputs of local businesses; and
- coordination of accommodation for workers to ensure sufficient accommodation is available and that the risk of price increases are mitigated.

Key strategies for the post-construction phase include:

- the reinvigoration of the Central Ingham retail precinct reflecting improved road safety and visual amenity; and
- the investigation of options arising from the bypass to diversify the commercial base of the Central Ingham retail precinct.

1. Introduction

Ingham is located within the Hinchinbrook Shire approximately 110 kilometres north of Townsville and approximately 220 kilometres south of Cairns, on Queensland's North Tropical Coast. The region surrounding Ingham is a popular tourist destination, known for its World Heritage-listed Wet Tropics rainforests, Wallaman Falls, Hinchinbrook Island and various National Parks and tropical islands.

There are several important rivers surrounding Ingham, including the Herbert River and Seymour River. These rivers, particularly the Herbert, support the major sugar cane industry in the area, for which Ingham is the commercial centre. The Victoria Mill located just outside Ingham is Australia's largest sugar cane mill, and the Macknade Mill is also located in the Ingham region.

Significant flooding along the North Tropical Coast of Queensland, particularly in the Herbert River Catchment area, causes flood-related closures of the Bruce Highway for up to eight days each year over the January to March wet season. Flooding generally results in substantial disruption to traffic and businesses reliant on the major transit route north from Brisbane along the Queensland coast and to locally affected communities, in particular the township of Ingham.

To mitigate the disruption caused by this flooding on the Bruce Highway, the Department of Transport and Main Roads (TMR) has commissioned a road corridor planning study to investigate options to upgrade and potentially realign the Bruce Highway from the southern approach to Ingham to the foothills of the Cardwell Range. The economic impact assessment was commissioned as part of the planning study and focuses on the central business district of Ingham, including: Townsville Road (section north of Andy's roadhouse), Lannercost Street, Herbert Street and Palm Terrace. The report also assesses broader economic impacts, analysing data and information for the whole Ingham township and Hinchinbrook Shire.

This report provides an assessment of the potential economic impacts from the establishment of any bypass.

This report is structured as follows:

- **Section 1** outlines the background and approach for the economic impact assessment.
- **Section 2** provides a demographic overview of the study region.
- **Section 3** provides an economic overview of the region and Ingham's economy.
- **Section 4** provides an economic base case for the Central Ingham business district, against which the impacts of the bypass can be measured.
- **Section 5** summarises the key positive and negative economic impacts relating to the construction phase of the bypass, specifically: construction expenditure; labour requirements (number and skills required) and identifies a number of risks to the local economy attributable to such as large project.
- **Section 6** summarises the ongoing economic impacts from the bypass (post construction). This includes the impacts on total turnover for businesses in Central Ingham; employment impacts; distributional impacts (sectors and areas most affected); impacts on property prices; and the impacts on the sugar industry.
- **Section 7** outlines some mitigation strategies to maximise local benefits from the establishment of any bypass.

1.1. The objective

The main objective of potentially realigning the Bruce Highway is to reduce the frequency and duration of flood related road closures.

1.1.1. Flood immunity

The Bruce Highway between Ingham and the southern foothills of the Cardwell Range traverses an area which is subject to frequent floods, during the wet season.

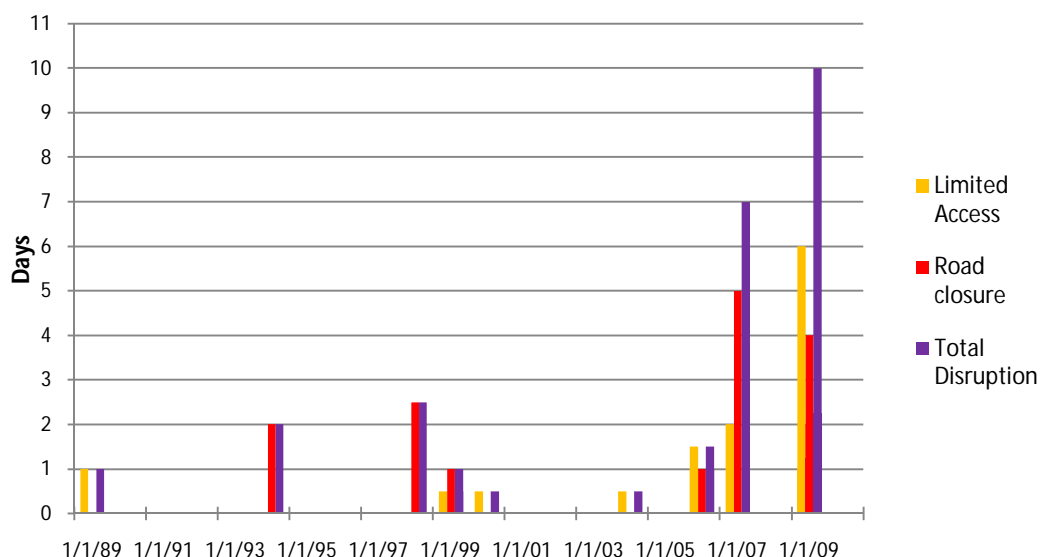
Ingham is located on the flood plain just south of the lower part of the Herbert River Catchment and is at substantial and regular risk from flooding. Bureau of Meteorology data indicates rainfall in excess of 200 mm in 24 hours can cause moderate to major flooding and disrupt traffic on roads across the Catchment region. Figures 1 and 2 show the flood duration history from 1989 to 2009 at the Seymour River Bridge (Figure 1), which is the first point at which flood waters breach the Bruce Highway, and at the Gairloch Washaway north of Ingham (Figure 2).

The impacts of flooding closures on the highway affect both the local and the broader community and businesses as they essentially cut the main north–south access route between Townsville and Cairns. The flood immunity standard that the Department of Transport and Main Roads wants to achieve is:

- no more than 10 hours in any average year; and
- less than 48 hours for a 50 year flood event (severe flood).

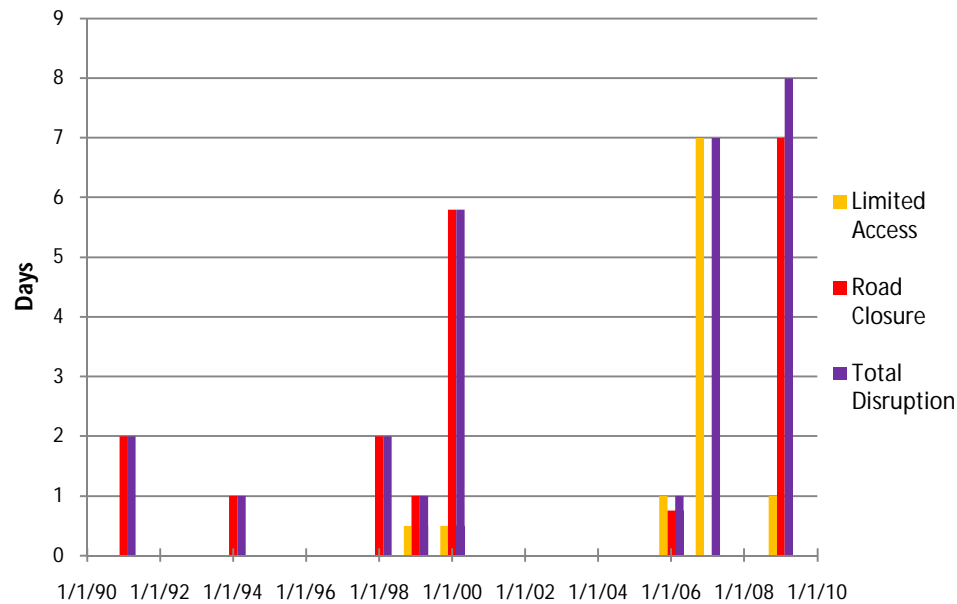
This would essentially bring the relevant sections of the highway network up to a similar flood immunity standard as was recently achieved on the upgraded section of the Bruce Highway south of Tully.

Figure 1: Flood road disruption data – Seymour River Bridge 1989–2009



Source: TMR 2009.

Figure 2: Flood road disruption data – Gairloch Washaway 1989–2009



Source: TMR 2009.

Flooding classifications

Flooding above 9.5 metres is classified as Minor Flooding and results in the closing of minor roads and the submergence of low level bridges. Flooding above 10.5 metres is classified as Moderate Flooding and results in the closure of main traffic bridges and the evacuation of some houses. Major Flooding occurs above 11.5 metres and results in the inundation of large areas, isolating towns and cities and causing major disruptions to road and rail links as well as the evacuation of many houses and business premises.

Floods categorised as Moderate to Major cause significant disruptions to traffic on the Bruce Highway between Ingham and the southern foothills of the Cardwell Range and, particularly in the case of Major Flooding, result in the closure of the highway for at least the length of the flood's duration. Moderate and Major floods result in significant disruptions to highway traffic post-flood for at least half a day, and up to 7 days, due to the need to undertake flood-related repairs.

In total, it is assessed that in an average year that flooding results in *complete* closure of the highway for 0.4 days per year (or 1 day per flood), while other disruptions (e.g. heavy-vehicle bans, speed reductions etc.) account for a further 0.45 days.

1.1.2. Amenity and road safety

In addition to the problems associated with flood disruptions, the centre of Ingham also has significant volumes of heavy vehicles that cause both negative amenity issues (noise, dust) as well as potential road safety risks. Both of these issues have a detrimental impact on the attractiveness of retail businesses in the affected areas for Ingham residents and visitors.

Average daily vehicle movements for various points around the study area are shown in Table 1.

Table 1: Indicative average daily traffic movements (2008)

<i>Location</i>	<i>Total vehicles</i>	<i>Heavy vehicles</i>	<i>% of total</i>
Lannercost St	2,740	200	7.2
Bruce Highway (Townsville Rd north of Rutledge St)	6,650	1,000	14.8
Herbert Street (near Rotary Park)	13,500	1,000	7.4

Source: UDP Horman Traffic, 2009.

Key points to note include:

- there are approximately 13,500 daily traffic movements through the study area at the busiest point (Herbert St near Rotary Park), which provides the focus for north–south through-traffic as well as much of the local traffic;
- heavy vehicle movements are significant and are as high as 1,000/day at the busiest points, which translates to a heavy vehicle moving through Herbert Street near Rotary Park and Townsville Road north of Rutledge St every 90 seconds. This creates a significant negative impact on amenity and safety in the retail and commercial hub of Ingham and may constrain commercial growth opportunities. It should be noted that this traffic count data is daily averages and if heavy vehicle movements are more concentrated during daylight hours, the impacts on amenity and road safety will be even greater; and
- previous estimates of growth in traffic volumes along the Bruce Highway indicate growth in the vicinity of 2.0 to 2.9% per annum.¹

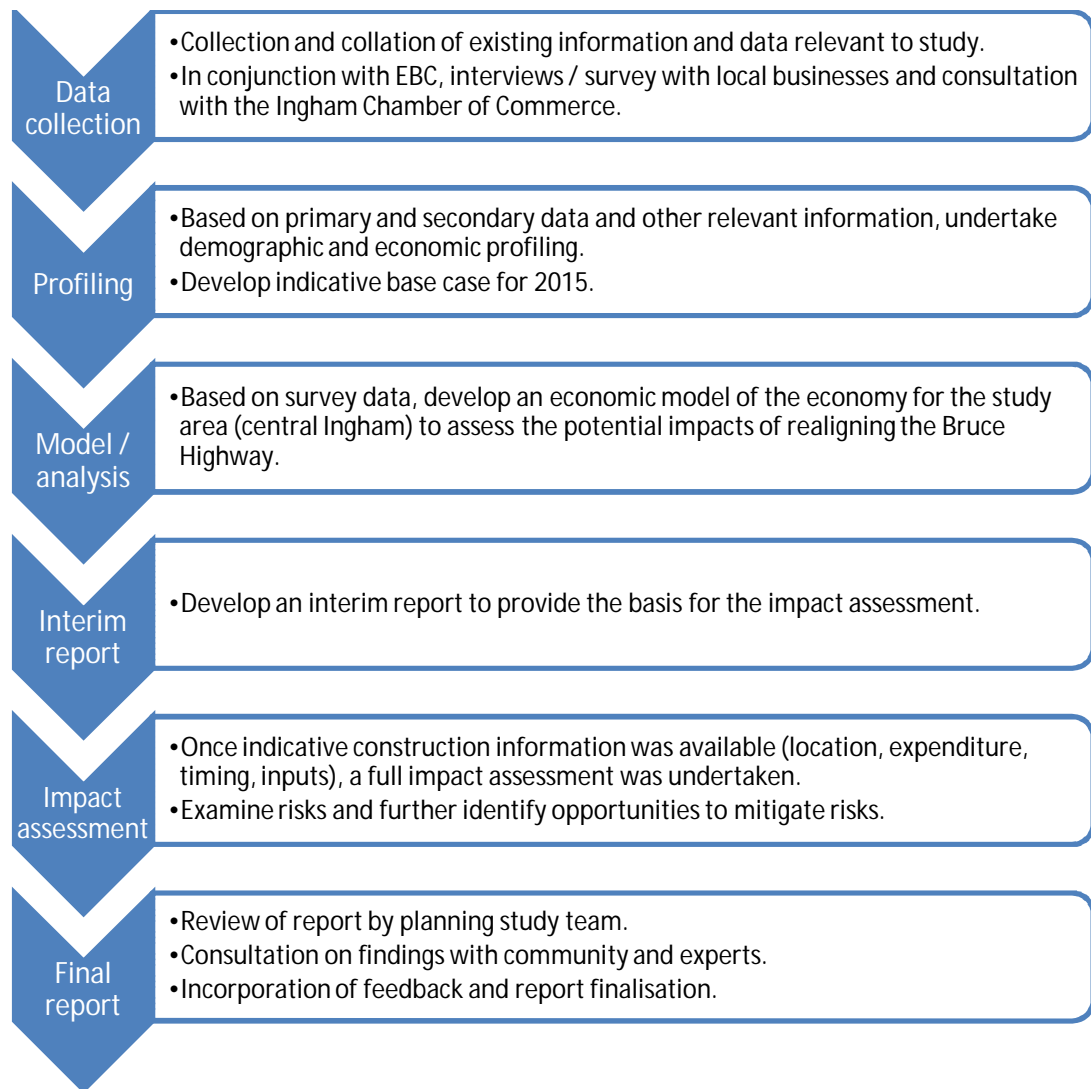
A realignment of the highway could significantly enhance amenity and road safety in the centre of Ingham and remove an obvious constraint on commercial development and diversification.

1.2. General approach to assessment

The approach adopted for this economic impact assessment reflected the strong participatory approach adopted for the broader planning study. The general approach for the economic assessment is shown in Figure 3.

¹ Department of Transport and Regional Development Services (DOTARS) 2007, *Brisbane–Cairns Corridor Strategy*. (Now the Department of Infrastructure, Transport, Regional Development and Local Government).

Figure 3: General approach to assessment



Source: MJA.

1.2.1. Survey and modelling approach

In 2009, EBC undertook 115 commercial in confidence survey interviews with retail businesses in Central Ingham, primarily retail businesses on Townsville Road, Lannercost Street, Herbert Street, Palm Terrace and Cartwright Street. In addition, interviews were conducted with approximately 20 non-retail businesses, and six major owners of commercial property in the same area.

Using the information provided in the survey and information of the number of businesses in the study area, MJA established an economic model of the Central Ingham business district that represents the revenue and cost data provided in the survey. To establish aggregate estimates for the whole of the Central Ingham study area, where only some businesses provided survey responses, the following steps were undertaken:

- first, average survey responses from each sub sector (e.g. accommodation, cafés and restaurants) were calculated; and
- second, the averages derived per business for each sub-sector were multiplied by the number of businesses in that sub sector to establish aggregate estimates for that sector. For example, if there are 20 businesses in a sub-sector and the 10 survey responses received indicate an average turnover of \$100,000 each, it is assumed the total turnover for that sub-sector is \$2 million.

Approximately 73% of the total commercial businesses in the Central Ingham study area participated in the interviews² and the distribution of businesses interviewed by industry classification was a relatively close proportional match to the actual count of all businesses. For example, 20% of businesses that participated in the survey are in the accommodation, cafes and restaurants sector, while the actual proportion of total businesses in that sector is 18%.

Generally the survey can be considered at a broadly representative sample of all businesses in the Central Ingham study area. The exceptions to this are attributable to some of the larger businesses (e.g. banks) not participating in the survey process. Therefore, the survey and the estimates created using the survey data may have a very slight bias towards underestimating the size of the economy and therefore impacts in the Central Ingham study area, but the results will still be significantly more accurate than if publically available data was used in lieu of the survey data.

Not all participants provided answers to each area covered in the interviews. This was particularly the case with respect to specific business financial information.³ Through the survey, data was gathered on:

- business operations (what type of business, hours of operation, ownership etc.);
- employment;
- business finances (turnover, sources of income, reliance on through-traffic, costs and cost structures etc.);
- the impacts from recent flooding events; and
- attitudes towards a potential bypass (including estimated impacts on business operations and impacts on real property such as rents and values).

The model estimates changes to key economic indicators (total turnover, costs, employment) based on changes in economic activity attributable to passing traffic (i.e. numbers of vehicles). Using the estimates of changes in traffic flows provided by AECOM, MJA was then able to estimate the likely economic impacts of a potential bypass.

As part of the economic impact assessment, MJA has examined both the construction and ongoing phases of the project. A range of ongoing impacts were then established based on the estimated range of vehicles expected to use the proposed bypass. This was assessed

² It should be noted that there are also non-commercial entities in the Central Ingham study area and 20 of those businesses were also surveyed including church organisations, government departments etc. While these businesses have been included in the broader consultation and surveying undertaken by EBC, these businesses have been excluded from the economic modelling as their services are primarily for local residents and they are unlikely to be impacted by any bypass.

³ This was particularly the case for larger businesses and businesses that were local branches of larger national firms where the data may not have been readily available to local staff.

against a 2015 base case (see Sections 5 and 6), developed from information gathered during the data collection and analysis phase. The key considerations for a potential bypass are:

- the ongoing direct and flow-on impacts on local businesses, turnover and employment;
- the significance of impacts on agricultural production and mill viability;
- impacts on the regional economy and communities;
- impacts on real property (rents and values); and
- mitigation options for any identified negative impacts to inform the implementation of any future projects.

In addition to the impacts on the Central Ingham business district, estimates of the impacts on the sugar industry attributable to cane land lost to production were also undertaken.

2. Demographic overview

This section examines the composition of the population, the characteristics of the labour force and levels of education attainment for Ingham and the surrounding region and makes comparisons with data for Queensland as a whole.

2.1. Population and population forecasts

Table 2 shows the age profile for Ingham compared to Queensland as a whole. In 2006, there were an estimated 4,605 persons residing in Ingham, including 2,200 males and 2,405 females.⁴ The median age was 43 (compared to 37 nationally), with 35.9% of the population aged 55 years and over. The key observation from this data is that the proportion of Ingham's working age population (15–54 years) is significantly lower than the State average, potentially reflecting the limited employment opportunities in Ingham.

Table 2: Ingham population and age profile

Age	Ingham (number)	Ingham (%)	Queensland (%) ^a
0-4 years	259	5.6	6.6
5-14 years	652	14.2	14.1
15-24 years	478	10.4	13.8
25-54 years	1,564	34	42
55-64 years	515	11.2	11.2
65 years and over	1,137	24.7	12.4
TOTAL	4,605	100.0	100.0

Source: ABS 2006. Note: a. Based on 2006 ABS Census for Queensland Population (Excluding Overseas Visitors).

There are currently no population projections available specifically for Ingham. However, population projections for the Hinchinbrook Shire and the Northern Statistical Division (SD), in which Ingham is located, are provided in Table 3, as well as projections for Queensland as a whole.

The forecasts indicate that population growth in Hinchinbrook Shire is expected to be significantly lower than in the broader North Queensland region and Queensland as a whole. The low estimates for Hinchinbrook Shire would see a 2% decline in population by 2016, while the most optimistic estimates are for 5% growth. By comparison, population growth of 21-32% is estimated for the Northern SD, and 19-30% for Queensland.

It is likely that population growth in Ingham will be negligible between now and 2015 in the absence of a major project and local organic population growth is unlikely to contribute to growth in commercial activity. However, population growth in smaller centres such as Lucinda and Forrest Beach is likely to generate moderate growth in commercial activity in Ingham.

⁴ Australian Bureau of Statistics (ABS) 2006, QuickStats: Ingham (Urban Centre/Locality), available at www.censusdata.abs.gov.au.

Table 3: Population projections

Area	2006	Population projections — 2016 (growth in brackets)		
		Low growth expectations	Medium growth expectations	High growth expectations
Hinchinbrook Shire	12,239	12,000 (-2%)	12,400 (1%)	12,800 (5%)
Northern SD	209,900	254,000 (21%)	264,000 (26%)	277,000 (32%)
Queensland	4,090,000	4,880,000 (19%)	5,040,000 (23%)	5,300,000 (30%)

Source: Department of Infrastructure and Planning 2008.⁵

2.2. Labour force

An estimated 1,905 Ingham residents aged 15 years and over were in the labour force as of June 2006, whilst 1,625 residents over 15 years were not in the labour force, and a further 92 persons were unemployed.⁶ Tables 4 and 5 show the labour force (Table 4) and occupation statistics (Table 5) for Ingham, compared to Queensland as a whole.

Table 4: Labour force data

Labour force	Ingham (number)	Ingham (%)	Queensland (%)
Employed full-time	1,109	58.2	61
Employed part-time	565	29.7	28
Employed away from work	56	2.9	3
Employed hours not stated	83	4.4	3
Unemployed	92	4.8	5

Source: ABS 2006.

The broad structure of the labour force and unemployment is not materially different between Ingham and Queensland as a whole.

However, there are material differences in the occupational makeup between Ingham and Queensland. Ingham has a significantly higher proportion of people working in trades, as labourers and as machinery operators and drivers, compared to the State as a whole. This reflects the dominance of agriculture (particularly sugar) in the region. Importantly, trade skills and machinery operators and drivers will be in high demand for the construction of any potential bypass and there may be significant opportunities for local labour inputs. However, major projects such as bypasses do create risks insofar as they often result in shortages in

⁵ Department of Infrastructure and Planning, 2008, Queensland's Future Population, available at <http://www.dip.qld.gov.au/resources/report/future-population/queensland-future-population-2008-full-report.pdf>.

⁶ ABS Census QuickStats, June 2006, for Ingham (Urban Centre/Locality), available at www.censusdata.abs.gov.au.

labour availability for existing employers (e.g. insufficient machinery operators for sugar harvesting).

Table 5: Occupation data

<i>Occupation</i>	<i>Ingham (number)</i>	<i>Ingham (%)</i>	<i>Queensland (%)</i>
Technicians and trades	308	17.0	15
Labourers	258	14.2	12
Machinery operators and drivers	241	13.3	7
Professionals	204	11.3	17
Community and personal services	197	10.9	9
Sales	196	10.8	10
Clerical and administration	193	10.6	15
Managers	173	9.5	12

Source: ABS 2006.

Employment data by industry for the Hinchinbrook SLA also indicates that the structure of the economy is heavily reliant on a few key industries. For example:

- Manufacturing accounts for 15.4% of employment in Hinchinbrook, compared to 10% in Queensland. Sugar manufacturing alone accounts for 9.7% of the labour force (480 jobs).
- Primary industries are also very dominant, accounting for 19.6% of all employment. In particular, 'other crop growing' (which is almost exclusively sugarcane) accounts for around 12.8% of employment (640 jobs) and services to agriculture account for a further 4% of employment (200 jobs). By comparison, for the whole of Queensland, all primary industry employment (including services to agriculture) accounts for around 3% of total employment.
- Employment in retail trade and accommodation and food services (often used as a proxy for tourism),⁷ indicates a share of employment of 16.6% in Hinchinbrook compared to 17.6% for the State.⁸

In addition, employment in the construction sector is only 5.6% of employment, compared to 9.0% for the State. This reflects the very slow population and economic growth being experienced by the region.

2.3. Education

The educational attainment levels for Ingham, Hinchinbrook and Queensland are shown in Table 6. In Ingham and the broader Hinchinbrook Shire, a significantly higher proportion of the population has trade and technical qualifications (certificate qualifications) than for Queensland as a whole.

⁷ Tourism data is not available from the ABS as tourism is not a formal industry sector under standard classifications.

⁸ ABS Census QuickStats, June 2006, available at www.censusdata.abs.gov.au.

Table 6: Educational attainment

<i>Level</i>	<i>Ingham</i>		<i>Hinchinbrook</i>		<i>Queensland</i>
	Number	%	Number	%	%
Degree or above	216	11.7	566	11.0	21.0
Diploma / Advanced Diploma	110	6.0	303	6.0	11.0
Certificate	687	36.0	1767	34.0	29.0

Source: ABS 2006.

2.4. Income levels

Income levels in Ingham are significantly lower than Queensland and Australia for individuals, households and families. However, this is not unusual for regions with significant reliance on agricultural production and without large-scale centres of white-collar professionals (e.g. lawyers, accountants, etc.).

For 2006, median individual weekly income in Ingham was \$374, which is less than the Queensland median of \$476 and the national median of \$466. The median household income was \$648 (compared to \$1,033 for Queensland and \$1,027 nationally) and the median family income was \$936 (compared to \$1,154 for Queensland and \$1,171 nationally).⁹

⁹ ABS Census QuickStats, June 2006, available at www.censusdata.abs.gov.au.

3. Economic overview

This section provides a broad regional overview of the key sectors in the Ingham area and a detailed analysis of the businesses in the Central Ingham study area.

3.1. Regional economy and prospects

The regional economy is highly reliant on primary industries and associated service sectors. Tourism is also emerging as a key source of economic activity, albeit in the broader region and not necessarily in Ingham. This section provides a brief overview of these sectors. In addition, the construction sector is briefly examined as it provides a key indicator of economic growth at a localised scale.

3.1.1. Primary industries

Ingham is located in a region heavily dominated by agriculture, in particular, sugar, grazing and forestry. Each of these sectors has a strong influence on the Ingham economy, with many businesses providing inputs for these sectors. The broad value of agricultural production for Hinchinbrook and Queensland is shown in Table 7. Hinchinbrook Shire's agricultural production was worth approximately \$145 million in 2005–06. The Shire's crop production represented approximately 3.4% of Queensland crop values, while livestock production represented approximately 0.1% of the State's production.

Table 7: Value of agricultural production (2005–06)

Region	Crops (\$m)	Crops (%)	Livestock (\$m)	Livestock (%)	Total (\$m)
Hinchinbrook	142.0	97.9	3.1	2.1	145.0
Queensland	4,167.9	47.9	4,541.0	52.2	8,708.9

Source: ABS 2005-06, *Agricultural Commodities, Australia*.

Agricultural production in Hinchinbrook is heavily dominated by sugar production, which accounts for the majority of crop production in the local Government area, and increases in production are highly reliant on the prospects for the sugar industry.

Sugar industry prospects

The sugar industry is a highly competitive industry dominated by a small number of worldwide producers, particularly Brazil, which has a significant impact on prices received on the world market. Approximately 65,000 hectares in Hinchinbrook is currently under sugar production, with the Victoria and Macknade mills both operating significantly below capacity (approximately 50% below full capacity). Production from Hinchinbrook is exported through the bulk terminal at Lucinda.

MJA recently undertook an analysis of north Queensland's competitive advantage in terms of current and potential agricultural commodities.¹⁰ Sugar was not identified as a commodity with significant positive medium-term export growth prospects, and expansion of sugar production was generally assessed as not commercially viable at either the current price or forecast longer-term prices. In addition, even with a major long-term turnaround in the

¹⁰ MJA 2008, *North Queensland Regional Water Supply Strategy: Rural Water Demand*, for the Queensland Department of Natural Resources and Water, December.

Australian market, the Hinchinbrook region was not identified as an area where major expansion would occur.

However, world sugar prices have held up in very recent times due to constraints in production in India, which will assist in maintaining production levels in north Queensland and the Hinchinbrook region in the short term.¹¹

Worldwide growth in demand for non-food sugar (used primarily for ethanol but also for plastics and paper) has been higher than sugar for food and this trend is expected to continue, although growth rates are expected to decline. This has sparked significant interest in the prospect for increased sugar production for biofuels in northern Queensland. However, the production of ethanol from sugar is less commercially viable than its production from other sources interstate (such as wheat and sorghum). Therefore, it is expected that the expansion of sugar production for ethanol is unlikely to be commercially viable unless the price of fossil fuels and other biofuels increases significantly.¹²

In summary, there are limited prospects for the expansion of the sugar industry between now and 2015 and the outlook is probably neutral (i.e., neither a major expansion nor contraction).

Beef production prospects

There is a relatively modest livestock production sector in Hinchinbrook. Beef production is a major industry in northern Queensland and has undergone significant expansion in recent years, with a significant export focus. While the growth in the north Queensland beef sector is expected to be concentrated in areas away from Hinchinbrook, the long-term prospects for the sector would appear to be very positive as worldwide markets expand and north Queensland producers continue to have a competitive advantage in production.¹³

In summary, prospects for beef production are positive, which may result in some very modest increases in economic activity around Ingham.

Forestry

Hinchinbrook and its neighbouring Shire, Cardwell, have well-established mostly exotic pine plantations, covering an estimated 10,200 hectares (most of which are closer to Cardwell). Timbers harvested from these plantations are generally used to produce various wood products for export, including pallets and crates for international shipment of meat and metals, from the Port of Townsville.

Experts have indicated that this area would benefit from expansion of the current plantation estate. However, difficulties exist in attracting industry to utilize these resources, due to the small size of the plantations. Research indicates that, to ensure international competitiveness, the minimum viable size for a plantation estate is 15,000 to 20,000 hectares, or log input of approximately 200,000 cubic metres annually.¹⁴

¹¹ Chandler, Luke, Rabobank Netherlands, as cited in <http://news.tradingcharts.com/futures/1/3/121494431.html>.

¹² CSR, *Submission by CSR Ethanol Limited to the Economic Development and Infrastructure Committee – Inquiry into Mandatory Ethanol and Biofuels Targets in Victoria*, 2007.

¹³ Marsden Jacob Associates for the Queensland Department of Natural Resources and Water, North Queensland Regional Water Supply Strategy: Rural Water Demand, December 2008.

¹⁴ Kent, G, 2006, DPI's role in forestry industry development, available at http://www.rainforest-crc.jcu.edu.au/publications/sustainable_forestry.pdf.

In summary, while there is some prospect for growth in forestry in the broader region, any potential impact on Ingham is likely to be negligible as only a proportion of inputs for the industry are sourced locally.

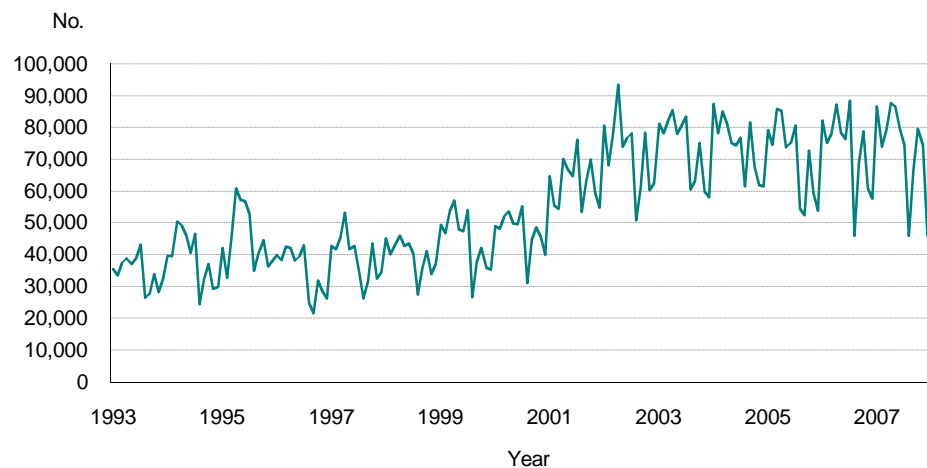
3.1.2. Tourism

Tourism is a relatively major industry in the Hinchinbrook region and provides opportunities for economic diversification away from sugar.

Ingham itself has a relatively modest tourism industry, based on visitors to local attractions (recreational fishing, local historical sites etc.) as well as those transiting through Ingham as part of a trip to/from the Great Barrier Reef and other regional tourism attractions.

Tourism data obtained from the Great Barrier Reef Marine Park Authority (GBRMPA) indicated that visitors to the central section of the Reef (to which Ingham is most closely located) numbered around 800,000 in 2008.¹⁵ Figure 4 indicates the trend in tourism numbers for the central section of the Reef: while visitation grew rapidly in the five years to 2003, visitation growth rates have been very low or declining in recent years.¹⁶

Figure 4: Tourism numbers to the Great Barrier Reef Marine Park – central section



Source: GBRMPA 2008.

The Tourism Forecasting Council anticipate a decline of around 4% in inbound international visitors in the current year, followed by growth of around 35% between 2009 and 2015.¹⁷ However, because most international visitors tend to fly directly into destinations such as Cairns, any future increase will result in little benefit to centres such as Ingham.¹⁸

After a fall of 3.9% in 2009, domestic tourism activity in north Queensland is expected to slowly recover to the levels of activity experienced in 2008 by around 2015–16.

¹⁵ Great Barrier Reef Marine Park Authority, 2008, available at www.gbrmpa.gov.au. Data based on total Environmental Management Charges levied by the GBRMPA.

¹⁶ MJA, 2008, Economic value of the dive industry in the Great Barrier Reef

¹⁷ Tourism Forecasting Council, 2009, Forecast 2009 – Issue 1

¹⁸ MJA 2008, Economic value of the dive industry in the Great Barrier Reef

In summary, the tourism sector is currently undergoing a significant contraction due to the worldwide economic environment. It is likely that tourism-related activity in and around Ingham will continue to decline in the short term, but recover slowly in the period to 2015.

3.1.3. Construction activity

Construction activity is generally seen as a key indicator of economic growth for a region. Data for building approvals for Hinchinbrook Shire and Queensland for the 12 months to June 2009 are shown in Table 8. Construction activity in Hinchinbrook Shire is relatively low compared to the State average, with total expenditure per capita (around \$1,790/person) being only around 45% of the State average. This reflects the relatively low population growth in the region.

Table 8: Building approvals (year to June 2009)

Region	Residential		Non-residential		Total	
	\$m	\$/person	\$m	\$/person	\$m	\$/person
Hinchinbrook Shire	10.6	870	11.3	920	21.9	1,790
Queensland	7,640	1,880	8,120	1,980	15,790	3,860

Source: ABS 2009, Building Approvals.

3.2. Central Ingham study area businesses

The major focus of the impact assessment is on the retail businesses in the centre of Ingham, located on Lannercost Street, the section of Townsville Road, Herbert Street and Palm Terrace. The rationale for concentrating on these businesses is that they are on the major local transport routes that would be impacted by any realignment of the Bruce Highway.

Statistics and information on these businesses is not available from official sources (e.g. the ABS) due to the very small size of the study area. Therefore, to establish a baseline picture of the businesses that may be impacted by any bypass, EBC in conjunction with MJA, undertook comprehensive interviews and surveys of 115 retail businesses and 6 landlords in during the second and third quarters of 2009.

The survey represents approximately two thirds of the total relevant businesses in the study area. The survey was specifically designed to elicit information on the nature of each business, its employees (numbers and skills) and financial information. Survey responses were then used to estimate key information relating to the Central Ingham Study Area.

3.2.1. Businesses by sector and location

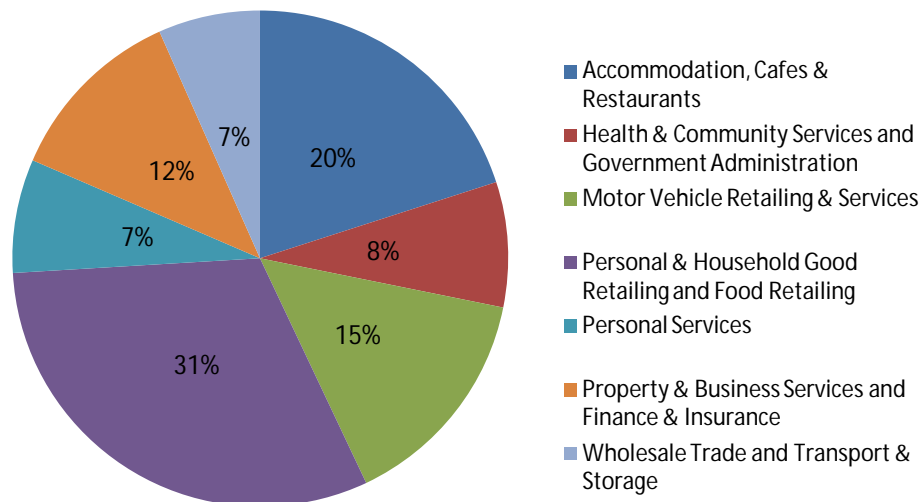
Figure 5 shows the estimated proportion of businesses by sector type located in the survey area. Approximately 53% of the businesses surveyed were located in the area surrounding Herbert Street, with 33% in the Lannercost Street area and 14% in the Townsville Road area.

The largest proportion of businesses is in personal and household goods retailing and food retailing (31%), while a further 20% are in the accommodation, cafes and restaurants sector. In effect, over 50% of businesses are in sectors that are more likely to be impacted by a realignment of the highway as they are at least partly reliant on traffic passing through Ingham (as opposed to locals shopping in Central Ingham as a specific destination).

In terms of the geographical distribution of businesses in these key sectors:

- The Herbert St area had the majority of personal and household good retailing and food retailing businesses (52%). Approximately 33% were located in the Lannercost St area and 15% in the Townsville Rd area.
- The Herbert St and Lannercost St areas had a relatively equal number of businesses in the accommodation, cafes and restaurants sector (44% and 37% respectively) with 19% in the Townsville Rd area.

Figure 5: Overview of Central Ingham study area businesses by ANZSIC classifications



Source: MJA analysis based on EBC survey data.

3.2.2. Hours of operation

The majority of surveyed businesses within the Central Ingham area operate six days per week (56%), with 27% open on both Saturday and Sunday and 17% open on weekdays only. As would be expected, the majority of the businesses operating significant weekend hours are in the broader retail sector such as cafes, food retailers, service stations etc. Of those businesses that operate seven days per week, approximately 33% are in the accommodation, café and restaurant sector and 22% are in the personal and household good retailing and food retailing. A similar split between sectors applies for businesses open six days a week.

3.2.3. Business ownership

The survey data indicates that the Central Ingham study area is heavily dominated by small businesses that are family owned or are family trusts — these account for 85% of all businesses. In addition, many businesses surveyed have been operating for a significant period (the average is 27 years). The majority (72%) of those businesses rent or lease their business properties, whilst the remainder (28%) own their own property.

3.2.4. Employment

Based on the survey data and counts of businesses, MJA estimates that approximately 1,399 people are employed by the businesses within the Central Ingham study area. Of those employed, around 688 were employed full-time (49%), 171 part-time (12%) and 540 on a casual basis (39%). More than 80% of businesses in the survey area had five or less

employees in each employment category. There were only three businesses with more than 25 employees in any category. Table 9 shows the proportion of businesses that employ staff in the various employment categories by the number of employees.

Employment categories (full-time, part-time, casual)

Accommodation, cafés and restaurants and personal and household goods retailing and food retailing had very high levels of casual employees (69% and 41% respectively). While these jobs are potentially the most at risk if a realignment of the highway slowed business activity in the Central Ingham study area, it also indicates there is significant scope to meet additional labour requirements during the construction phase of any realignment.

Table 9: Employment by industry classification

Sector	Full time		Part time		Casual		Total empl.
	Number	%	Number	%	Number	%	
Accommodation, Cafés and Restaurants	93	25	23	6	259	69	375
Health and Community Services and Government Admin	92	53	23	13	59	34	174
Motor Vehicle Retailing and Services	153	80	15	8	23	12	191
Personal and Household Good Retailing and Food Retailing	184	44	63	15	168	41	415
Personal Services	21	38	12	23	21	38	54
Property and Business Services, Finance and Insurance	96	73	30	23	5	4	131
Wholesale Trade and Transport and Storage	49	82	5	9	5	9	59
TOTAL	688		171		540		1,399

Source: MJA analysis based on EBC survey data.

Table 10 shows the proportion of persons employed by position type. The data indicates that managers are most likely to have full-time jobs, while full-time jobs in tourism and hospitality are limited.

Table 10: Employment by position and type

<i>Position</i>	<i>Full Time %</i>	<i>Part Time %</i>	<i>Casual %</i>
Managers	30	7	2
Administration/Clerical	14	16	5
Professionals	8	0.8	0.8
Tradespersons	14	4	2
Machinery/Plant Operators	3	0.8	0.5
Retail/Wholesale	15	48	35
Labourers	3	3	0.5
Tourism/Hospitality	0.4	8	32
Other	13	13	22
Total	100	100	100

Source: MJA analysis based on EBC survey data.

Seasonal fluctuations

Most businesses surveyed (70%) stated that employment levels did not fluctuate during the year. Of the businesses whose employment levels did change during the year, around 75% of them attributed the fluctuations to the seasonality of their industry (e.g. tourism is busier in the dry season).

3.2.5. Business turnover

Based on actual survey data and counts of businesses, MJA estimates that central Ingham businesses had a combined business turnover of \$138.7 million in the 2007/2008 financial year.¹⁹ Approximately 29% of these businesses had gross incomes of \$100,000 or less, whilst only 5% had a turnover in excess of \$7.5 million. Table 11 shows the spread of business turnover by business size for the survey region (2007/2008) and for Hinchinbrook Shire and Queensland (ABS data for 2006/07).

Table 11: Business Turnover (gross income)

<i>Turnover</i>	<i>Ingham % (MJA estimate)</i>	<i>Hinchinbrook Shire % (ABS data)</i>	<i>Queensland % (ABS data)</i>
< \$100,000	29.4	34.4	43.8
\$100,000 – \$500,000	24.7	45.9	36.6
\$500,000–\$1 million	16.5	12.1	8.5
Over \$1 million	29.4	7.6	11.1
Total	100.0	100.0	100.0

Source: MJA analysis based on EBC survey data and ABS 2006/07.

¹⁹ This figure is based on \$98 million in turnover derived from the actual survey data calibrated up to \$138.7 million for the total number of businesses in Central Ingham. It is assumed that the turnovers for businesses that did not respond to the survey, are the same as the average from the survey responses.

Key points to note from the analysis include:

- when compared to Hinchinbrook Shire, the study area has relatively fewer very small businesses (i.e. turnover less than \$100,000). This is partially attributable to Ingham's role as the commercial hub for much of the Shire;
- while the survey data indicates a higher proportion of businesses in the study area with turnover in excess of \$1 million (compared to the Shire or State), the figure may be somewhat skewed given the small sample size. In addition, a third of the Ingham businesses in this category have turnover that is only marginally above the \$1 million mark; and
- in terms of the geographical distribution of businesses, Herbert Street has a higher proportion of businesses with turnover in excess of \$1 million, while the Lannercost St area has a higher proportion of businesses with turnover less than \$100,000.

3.2.6. Sources of business income

Responses to the survey indicate that approximately 55% of income was received from sales of goods and services to local residents, 21% to local businesses, 13% to tourists and 11% to other sources (presumably non-tourist passing traffic and visitors).

Approximately 61% of the businesses surveyed stated that the proportion of income received from tourists fluctuated during the year, with 93% of these businesses attributing this to the dry season peak. The majority of businesses (54%) reported that business activity/turnover had increased in the last five years, with 14% reporting a decrease and 12% reporting no change. Importantly, the 21% of income attributable to sales to other local businesses provides an indication of the degree of flow-on impacts from any changes in business activity in the Central Ingham study area. This has further implications for the assessment outlined in Section 6.

Tourism-related businesses

As previously stated, the sectors typically most exposed to fluctuations in demand from passing traffic are accommodation, cafes and restaurants; motor vehicle related retailing and services (includes service stations); and personal and household good retailing and food retailing. Table 12 profiles turnover for these sectors.

Table 12: Estimated turnover: tourism-related businesses (%)

<i>Turnover</i>	<i>Accommodation, cafés and restaurants</i>	<i>Motor vehicle retailing and services</i>	<i>Personal and household good retailing and food retailing</i>
\$0–\$100,000	28	17	33
\$100,001–\$500,000	33	8	27
\$500,001–\$1,000,000	17	25	13
Over \$1,000,000	22	50	27
Total	100	100	100

Source: MJA analysis based on EBC survey data.

Key points to note include:

- the majority of businesses in the accommodation, cafes and restaurant sector (61%) have a turnover of less than \$500,000; while a similar proportion applies to personal and household goods retailing and food retailing;
- around 30% of accommodation, cafes and restaurant sector businesses and personal, household good and food retailing businesses have turnover of less than \$100,000. It is likely that these businesses are at greatest risk if any realignment option results in a major downturn in turnover; and
- motor vehicle related retailing and service sector businesses tend to be larger, with 75% of businesses having turnover in excess of \$500,000 and 50% having turnover in excess of \$1 million.

3.2.7. Business costs

Based on the survey results, MJA estimate that the total costs for businesses in the study region average approximately 76% of gross business income, with the majority of businesses having costs equivalent to 70%–90% of their gross income (in other words, the majority of businesses have a pre-tax profit level of between 10% and 30% of revenue).

Cost recovery

Table 13 shows the proportion of gross income required to cover all costs for businesses in the study region. Key points to note include:

- for 17% of businesses, costs accounted for more than 90% of business income and therefore profit margins (before tax) were less than 10% of total business revenue. Businesses in this category which also have a high proportion of fixed costs such as mortgage payments and rent (and a low proportion of avoided costs) may be more susceptible to relatively small changes in turnover;
- a small number of businesses reported operating losses, or very low profit margins, indicating that these businesses were already at risk even in the shorter term, given the current economic environment; and
- for two-thirds of all businesses, costs accounted for at least 70% of business revenue.

Table 13: Business income required to cover all costs (%)

<i>Proportion of income</i>	<i>Proportion of businesses (%)</i>
0–50%	12%
51–60%	6%
61–70%	16%
71–80%	26%
81–90%	23%
91–100%	17%

Source: MJA analysis based on EBC survey data.

An analysis of cost recovery and profit by business size did not indicate any meaningful relationship between business size and profit margins, nor were there any meaningful relationships between profit margins and any particular sector.

Input costs by type

Supplies were the major cost for businesses in the survey region, representing approximately 56% of all costs, followed by salary/wage costs at 18%. The different cost types and their proportion of overall costs in the survey region is set out in Table 14.

It should be noted that there is significant variability in the makeup of business costs between sectors and between different businesses within each sector. However, there is insufficient information to draw any statistically valid conclusions regarding standard costs and profitability structures for individual sectors.

Table 14: Business costs (%)

<i>Cost Type</i>	<i>% of total costs</i>
Supplies	56
Wages	18
Rent	6
Utilities	4
Maintenance	4
Freight	3
Interest on loans	2
Insurance	2
Mortgage	1
Other	1

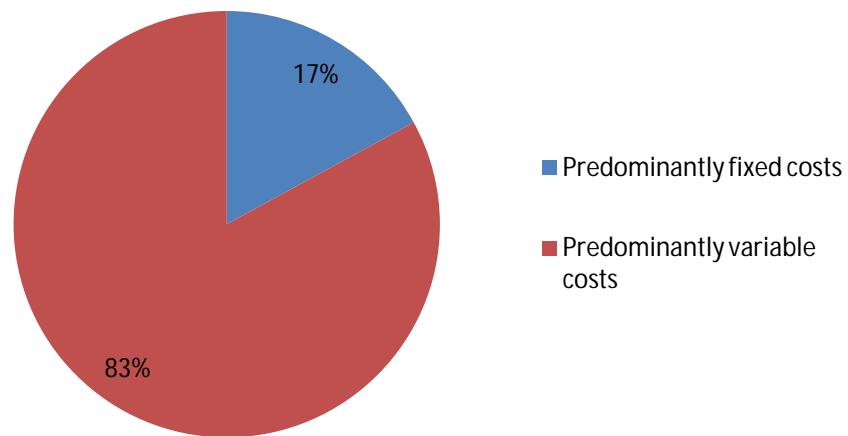
Source: MJA analysis based on EBC survey data.

Where there are likely to be changes in business activity attributable to a highway realignment, it is instructive to look at the broad cost structure of the businesses in the study area to determine what costs are predominantly fixed and what costs are predominantly variable. Fixed costs generally don't change with activity, unlike variable costs. Figure 6 shows the proportion of fixed and variable costs for businesses in the study area, based on survey responses.²⁰

Where a business has a high proportion of fixed costs, it is less able to deal with downturns in turnover because fixed costs must still be met and profits will fall faster than in the case where costs could be avoided. As Figure 6 shows, the majority of costs are predominantly variable in nature and most businesses in the study area should be able to partially mitigate the impacts of any downturn in sales by reducing their input costs.

²⁰ For the purposes of this analysis, costs that are predominantly fixed were considered to be: interest on loans, insurance, mortgage payments and rent payments.

Figure 6: Fixed and variable costs



Source: MJA analysis based on EBC survey data.

4. Base case and changes assessed

4.1. Base case for 2015

In developing the impact assessment for a potential bypass, it is vital to establish a benchmark or base case against which a realignment can be assessed. This is necessary as the relevant impacts of any alignment are the changes in key outcomes with and without the alignment. The previous sections of the report have outlined key information used to develop this base case, particularly the growth in the local economy that is expected by 2015. This is underpinned by population growth, the growth of key industries, and local growth attributable to broader growth in regional economic activity. Key elements, assumptions and forecasts underpinning the development of the base case are outlined in Table 15.

Table 15: Key assumptions underpinning base case

<i>Key element</i>	<i>Assumptions</i>	<i>Forecast change (2015)</i>
Population growth (local demand)	Population growth will be modest due to limited opportunities in key industries. 'Middle series' estimate from State forecasts used (see Section 2.1.1).	+ 1%
Primary industries (local demand)	Neutral outlook for sugar, beef and forestry (see Section 3.1.1).	+ 0%
Tourism (through-traffic)	Tourism will contract in 2009/10 and then recover to current levels by 2015, as per Tourism Forecasting Council forecasts (see Section 3.1.2).	+ 0%
Construction	Generally a function of population growth and/or major economic growth. No major commercial development expected and dwelling construction will match population growth (see Section 3.1.3).	N/A. Incorporated into population growth to avoid double counting.
Broader regional development (through-traffic)	General traffic movements will increase as broader region grows. Forecast growth for the Bruce Highway is 2.9% per annum (see Section 1.1.2).	+19%
First-round economic flow-on impacts	Survey data indicates the flow-on impact from expenditure is approximately 20%.	
Proportion of economic activity attributable to locals, tourists and other passing traffic	Surveys indicate that 76%, 14% and 11% of economic activity is attributable to locals, tourists and other passing traffic, respectively (see Section 3.2.6).	
Relationship between turnover and employment	Data analysis indicates that 1 full-time equivalent job is created for every \$100,000 increase in turnover (based on information in Sections 3.2.4 and 3.2.6).	

Source: MJA analysis.

Based on the assumptions above and the survey data, MJA has estimated a base case for the economic assessment.²¹ This is outlined in Table 16.

Table 16: Base case (Central Ingham study area)

Key statistic	Current	2015	Change (%)
Turnover attributable to locals	\$102.2 m	\$103.4 m	1.2
Turnover attributable to tourists	\$18.6 m	\$18.6 m	0.0
Turnover attributable to other through-traffic	\$17.9 m	\$22.1 m	22.8
Total turnover	\$138.7 m	\$144.1 m	3.9
Employment (persons)	1,399	1,454	3.9

Source: MJA analysis.

Key points to note include:

- economic growth in the study area of Ingham is expected to increase business turnover by approximately 3.9% in real terms, reaching an estimated \$144.1 million by 2015. While this growth is modest, it does represent a reasonable assumption given the current economy and the outlook for the short-to-medium term;
- based on this modest growth, it is anticipated that employment in the study area will increase by around 53 people; and
- the estimates used in this base case should be treated as indicative only as the current environment continues to create significant uncertainty with respect to economic prospects, particularly for key sectors in Ingham (agriculture and tourism).

4.2. Key changes triggering economic impacts

There are three key changes that trigger economic impacts assessed in this report:

- the construction phase and its impact on the local economy;
- changes in vehicle movements post the establishment of any potential bypass impacting on the turnover of local businesses; and
- the reduction in sugar production due to the acquisition of land for a highway corridor.

These changes are briefly outlined below.

4.2.1. Road construction

AECOM's initial estimates are that the construction cost of a potential bypass would be between \$300 and \$500 million. In addition, the funding is likely to be available under Auslink 3 funding (2016 to 2019) and the construction period would be from April 2016 to December 2019 (i.e. 44 months).

²¹ Note that this base case includes change attributable to direct and indirect effects (first-round flow-on impacts).

4.2.2. Post bypass traffic movements in Central Ingham

The economic risks from a bypass arise where a vehicle uses the by-pass that may have stopped in Ingham and spent money if the bypass did not exist. This is the relevant reduction in vehicle movements for estimating the economic impacts.

Traffic modelling is complex and the data available from vehicle movement surveys only paints part of the picture of vehicle movements. In addition, the traffic modelling undertaken for the broader planning study was primarily focussed on the broader traffic implications of potential bypass options – not the impact on the number of vehicles that would stop and presumably create economic activity in Central Ingham.

It is possible to estimate the approximate reduction in the number of vehicles that *may* have stopped in Central Ingham and created economic activity if it is assumed:

- aggregate traffic counts and estimates prepared by UDP Horman Traffic for Herbert St, Lannercost St and Townsville Rd (near McIlwraith St) are the most representative of the Central Ingham study area²²; and
- the traffic patterns revealed from the origin – destination survey conducted in October 2009 are the best indicator of the proportion of vehicles that definitely pass through Central Ingham that do not stop. These vehicles would be the most likely to use any bypass. The remainder of vehicles from the origin – destination survey either stopped somewhere in Central Ingham or exited Central Ingham at a location that was not covered by an observation point in the survey.²³

Using the UDP Horman Traffic data, MJA has forecasted traffic movements for the Central Ingham study area for 2015 without a bypass (i.e. business as usual) and the reduction in total traffic movements attributable to the bypass. In addition, the reduction in traffic movements have been further separated into estimates of vehicles: that would not have stopped anyway and have no impact on economic activity; and vehicles that might stop somewhere in Central Ingham (and presumably *may* create some economic activity). These estimates are shown in the table below. Key points to note are:

- UDP Horman Traffic estimates show that total traffic movements in the Central Ingham study area are likely to be 3,840 (16%) lower under a bypass scenario. This reduction is the net impact of reductions of 35% in Townsville Rd and 14% in Herbert St, partially offset by a 26% increase in Lannercost St. Movements in Lannercost St are expected to increase as there would be a direct link from the western bypass options that connects to Lannercost St;
- the bulk of the reduction in vehicle movements would be made up of vehicles that do not stop in Central Ingham anyway. This reduction would have no impact on economic activity in Central Ingham;
- reductions in vehicles that *might* stop and may result in economic activity equates to a reduction of around 6% of forecast base case traffic movements for 2015. However, because not all of those vehicle movements would have resulted in economic activity, a 6% reduction in traffic movements would translate to a much lower impact on economic activity.

²² Note. These estimates are based on 2018 modelling. UDP Horman did not estimate movements for 2015.

²³ It is likely that the origin – destination survey captured the vast majority of traffic movements through Ingham and is relatively representative of actual traffic patterns. C Holman. Pers comm.

Table 17: Estimated traffic movements in 2015 (Herbert St, Lannercost St & Townsville Rd combined as the study area)

<i>Item</i>	<i>Vehicles per day</i>	<i>Comments</i>
Without bypass		
Vehicle movements	24,400	UDP Horman Traffic estimate for 2018 adjusted to 2015 using their annual traffic growth rates.
With bypass		
Vehicle movements	20,580	
Total change in vehicle movements – worst case scenario (highly unlikely)	-3,820	UDP Horman Traffic estimate for 2018 adjusted to 2015 using their annual traffic growth rates. This is a net reduction for the study area. Traffic in Lannercost St is actually expected to rise by 26%. This represents a highly unlikely worst case scenario.
Change in vehicle movements that would not have stopped in Ingham anyway	-2,260	MJA estimate based on use patterns revealed by traffic survey. This reduction would have no impact on economic activity.
Change in vehicle movements that <i>might</i> have stopped in Ingham – mid case scenario	-1,560	MJA estimate. This is the reduction in traffic movements that <i>may</i> have an impact on economic activity. This represents a more likely scenario in the absence of any mitigation strategies.

Source: MJA estimates based on UDP Horman Traffic, 2009.

In effect, the reduction in traffic movements in Central Ingham that actually has an impact on economic activity is probably capped at around 1,560 (6% of total movements in Central Ingham). Given that locals are unlikely to change their expenditure patterns because of any by-pass, this reduction is most relevant to economic activity attributable to tourist and other passing traffic. However, a worst case (highly unlikely) scenario was also assessed for illustrative purposes as it directly mirrors the proportional reduction on traffic movements (down 3,820 or 16%) in the study area (estimated by UDP Horman Traffic).

4.2.3. Reduction in sugar production

The establishment of the bypass will require a transport corridor to be established through an area that is primarily under sugar cane production. While the potential corridors were still being investigated at the time of preparing this report and broad zones of interest are being investigated, indicative estimates of corridor dimensions and agricultural production lost directly to the transport corridor are shown in Table 18.

Table 18: Potential areas and number of sugar properties impacted by bypass

<i>Bypass corridor length (m)</i>	<i>Potential bypass (range of estimates of length)</i>		
	<i>12,000</i>	<i>13,500</i>	<i>15,000</i>
Area lost (ha)	120	135	150
Properties directly impacted	18	23	28

Source: AECOM and MJA. 2009.

5. Construction phase economic impacts

This section summarises the likely key economic impacts during the construction phase. It considers the economic activity and employment associated with the construction phase. It also considers the potential economic risks, both positive and negative impacts, to specific sectors of the community.

5.1. Construction expenditure and impacts

The range of construction costs provided by AECOM translates to annual construction costs of between \$96 million to \$137 million per annum over a 40 month period. No detailed estimates of cost breakups (e.g. labour cost, machinery costs, timing) were available from AECOM at the time of completing this report. Therefore, MJA developed estimates of expenditure breakups based on previous economic analyses of road construction costs undertaken by the Bureau of Transport and Regional Economics (BTRE).²⁴ A simple assumption was made that construction costs are evenly spread across the construction period. Estimates for low, medium and high ranges of annual construction costs are shown in Table 19.

Table 19: Estimated annual increase in expenditure during construction period

Inputs	Estimated expenditure (\$ million)		
	Low	Medium	High
Labour costs (primarily salaries and wages)	29	35	41
Materials (construction minerals, concrete, bitumen etc.)	37	45	53
Construction steel products	5	6	7
Transport inputs	3	3	4
Machinery inputs	7	8	10
Other business services	1	2	2
Other expenditure	14	17	20
Total	96	116	137

Source: MJA analysis.

The analysis indicates:

- basic construction materials (construction minerals, cement, bitumen etc.) are the largest cost item, representing around 55% of costs;
- labour is the second highest cost item representing around 30% of total costs. The construction phase would generate between \$29–41 million per annum in additional wages with local residents employed on the project likely to earn a large proportion of the total wages bill; and
- transport, machinery and construction steel inputs represent around 15% of total costs. While this is significant, the expenditure is not likely to benefit the broader Hinchinbrook economy beyond some potential for servicing, transport and the services

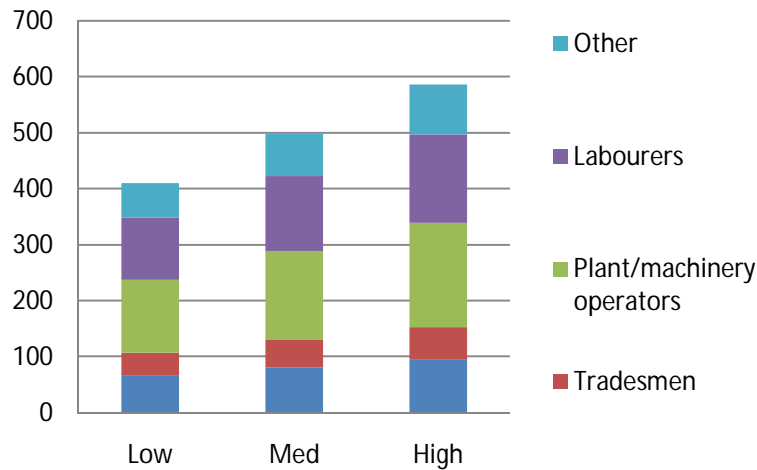
²⁴ BTRE, 1996, *Employment Effects of Road Construction*

associated with these inputs. This is because most transport services and machinery and construction steel inputs would be sourced from outside the region.

5.2. Direct construction employment impacts

It is estimated the construction phase could generate between approximately 410–590 full-time equivalent jobs for the 40 month construction period (Figure 7).²⁵

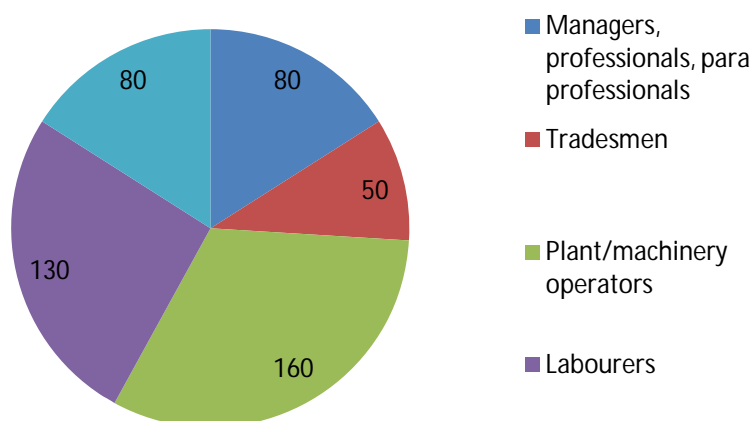
Figure 7: Estimated direct construction jobs



Source: MJA analysis.

The construction phase will require a mix of skills ranging from highly technical engineering skills through to basic unskilled labour inputs. The mix of skill requirements (mid-estimate) is shown in Figure 8.

Figure 8: Overview of skill requirements (mid-estimate)



Source: MJA analysis.

²⁵ The approach used to assess employment and skills requirements also drew on the based on previous economic analyses of road construction undertaken by the Bureau of Transport and Regional Economics (BTRE).

Key points to note include:

- the dominant skill requirement will be for plant and machinery operators (around 32% of the labour requirements);
- labourers form the next largest group (around 26% of total requirements);
- while a significant number of managers, professionals and para-professionals are also required (16% of total labour requirements), many of these roles may be partially undertaken remotely (e.g. from Townsville);
- with the exception of some specialised professional and para-professional skill requirements, there is significant evidence from ABS data and the EBC survey data showing that most of the skills required for the construction phase could be available locally. However, the construction of the bypass could potentially absorb a significant proportion of locally available skilled workers. For example, approximately 160 plant and machinery operators could be required. This would account for around two-thirds of all plant and machinery operators in Ingham; and
- many of the skills required are already in demand within the region and the availability of significant numbers of skilled workers is questionable without a wholesale shift of workers from other employers to bypass construction-related jobs. This is discussed further in Section 5.4.3.

5.3. Flow-on impacts

There will also be flow-on impacts in the local economy as the project purchases inputs from local businesses. The degree to which these flow-on benefits can be captured by local businesses is highly dependent on the competitiveness of local businesses and the purchasing policies of the contractor building the bypass.

Potentially, the major flow-on impact will relate to the influx of workers into the region to work on the construction phase. While the magnitude of this influx is unknown, it could be significant depending on the extent to which locals are unable to fulfil labour requirements.

Using the model of the Central Ingham developed for this report, MJA estimates that for every 1% of the annual construction wages bill spent in the local economy, three to four jobs would be created for the duration of the construction. For example, if 100 of the construction workforce moved to Ingham to work on the project and they each spent 20% of their wages in Ingham, approximately 15 additional jobs would be created for the duration of the construction.

5.4. Potential economic risks

While there are obvious economic benefits from the construction phase, there are also a number of potential economic risks to the Hinchinbrook region associated with the construction phase. This section outlines some of the potential economic risks, while Section 7 outlines strategies to mitigate the risks.

5.4.1. Crowding out local employers and subsequent labour cost impacts

The project could create between 400 and 600 full-time equivalent positions during the construction phase, depending on the specific approach taken by the contractor. While this estimate is based on analysis of national data, AECOM advise that direct employment for the

Tully bypass was significantly lower. While a proportion of these are professional and para-professional roles that may be serviced out of town, there will be up to 60 additional jobs created for tradespeople, up to 190 for plant and machinery operators, and up to 160 labouring and largely unskilled jobs. While these jobs will benefit the community, there is a risk that the region will not be able to supply sufficient skilled labour, significantly increasing competition for local skilled labour (e.g. plant operators operating cane harvesters) and forcing up labour costs.

ABS data from the 2006 Census indicates that unemployment in Hinchinbrook Shire is relatively low (around 180), while in Ingham there were 90 people unemployed.²⁶ In addition, the survey of Ingham businesses conducted by EBC shows that only around 4% of tradesmen, plant and machinery operators and labourers are underemployed (i.e. part-time or casual employees).

5.4.2. Potential accommodation shortfalls and rental price increases

The additional jobs during the construction phase will attract short-term migration into the region. Many of these workers will seek rental accommodation. A brief analysis of currently available residential rental stock within a 20–25 kilometre radius of Ingham shows about only 100 bedrooms are available across the entire residential rental stock.²⁷ ABS building approvals data or any other anecdotal information does not suggest any significant increase in rental accommodation stocks are likely by 2015.

Unless the majority of labour requirements are met by existing residents of Hinchinbrook Shire, there is a risk of excessive demand for rental accommodation during the construction phase driving up rental prices for both temporary and permanent residents. This phenomenon will be similar to that experienced in the Bowen Basin due to mining developments.

In addition, because of the short-term nature of the construction phase, private investment in increasing the accommodation stock is highly unlikely unless it is for temporary accommodation.

However, there are likely to be significant opportunities for the temporary accommodation sector (e.g. cabins within the caravan park) during the construction phase.

A similar analysis of commercial premises indicates that there is probably sufficient available stock for lease or sale to meet the non-accommodation needs (warehousing, office accommodation etc.) for the construction phase.

5.4.3. Crowding out other local construction and construction cost impacts

Hinchinbrook Shire has experienced relatively limited economic development in recent years. The construction of the bypass will be a very significant economic ‘shock’ to the non-building construction sector.

To put the construction costs in perspective, the estimated \$95–136 million per annum expenditure is between 8.4 and 12.1 times the total value of non-residential construction undertaken in Hinchinbrook Shire in the last year.

²⁶ ABS, 2006 Census

²⁷ The 100 bedroom estimate was calculated as the sum of all bedrooms for properties available in Ingham, Cardwell, Lucinda, Mount Fox and Balgal Beach plus all surrounding areas on www.realestate.com.au (search conducted 12 October 2009).

There is a risk that the construction phase will result in a scarcity of civil and earthmoving construction capacity in the region, potentially placing upward price pressures on these services in the region.

6. Ongoing economic impacts

This section outlines the potential ongoing impacts (post-establishment of a potential bypass). It covers:

- impacts identified by businesses through the consultation process and the survey administered by EBC
- estimated impacts attributable to changes in traffic patterns, particularly relating to business turnover, employment, and property values in Central Ingham, and the regional redistribution of business activity
- estimated impacts from losses in cane production areas.

6.1. Impacts identified by stakeholders

During survey interviews, businesses in the Ingham study area were asked their views on the impacts of floods and associated road closures and their perceptions of how a bypass would impact their business turnover. Key findings are outlined below.

6.1.1. Flood impacts

The proposed bypass would provide greater flood immunity to regional tasks (primarily north-south traffic along the Bruce Highway), but flood immunity benefits to businesses may be minimal.

Of the businesses surveyed, approximately 90% reported that their business income decreases when major flooding caused road closures. Approximately 4% reported increased income, and 6% reported no change.

Of the businesses whose income decreased as a result of flooding, 97% reported they lost 100% of their daily business income while road closures were in place. This assumes no access to their business by locals or passing traffic.

Table 20 shows the daily business income lost by businesses in the survey region due to major flooding resulting in road closures. Key points to note include:

- to the extent that any realignment enables local businesses to avoid these costs in future, there will be significant benefits to the business community; and
- the majority (59%) of businesses believe losses in business income are typically less than \$500 per day. This is consistent with other data provided on turnover by participants in the survey.

Table 20: Daily business income lost due to major flooding

<i>Daily income lost</i>	<i>% of businesses</i>
< \$500	59
\$500–\$1,500	16
\$1,500–\$3,000	8
\$3,000–\$6,000	11
\$6,000–\$9,000	1.5
\$9,000–\$20,000	3
\$20,000+	1.5

Source: MJA analysis based on EBC survey data.

6.1.2. Perceived impact of the bypass on trade

Of the businesses surveyed, 58% reported they believed their business income would decrease as the result of the construction of a bypass of the town. Approximately 23% believed their income would not decrease, while 19% were unsure or did not respond.

For those businesses that believed a bypass would reduce their income, Table 21 shows the proportion of annual business income they believed would be lost.

Table 21: Annual business income lost due to bypass (%)

<i>Annual income lost (%)</i>	<i>% of businesses</i>
1–20%	58
21–40%	19
41–60%	19
61–80%	5
81–100%	0

Source: MJA analysis based on EBC survey data.

The main reason for the expected decline in business income (47% of respondents) is the potential loss of tourist and traveller trade. In addition, some businesses also raised concerns regarding the flow on impacts from reduced sales to other businesses that may be more directly exposed to reductions in turnover.

Approximately 67% of businesses surveyed stated they currently benefited from the highway, attracting trade from passing traffic and people, particularly tourists, seeing their business. Highway frontage also provides businesses with high exposure and makes them easy to find.

There were some inconsistencies in survey responses provided by businesses. For example, perceived losses due to the bypass were significantly greater than the current reliance on tourist and other general passing trade. The only rational explanation for this is that the businesses perceive that the bypass would also result in significant loss of local trade.

6.2. Estimated impacts attributable to changed traffic patterns

Based on the traffic data provided by AECOM, data provided by businesses and the economic model developed by MJA, it is possible to estimate a broad range of potential impacts from changes in through-traffic.

6.2.1. Changes in business turnover in Central Ingham

Table 22 shows a range of impacts on the total turnover of businesses in Central Ingham attributable to changes in traffic volume. The estimates are based on a number of assumptions:

- the 2015 base case outlined in Section 4.1 was used;
- sales of goods and services to locals do not change because of the bypass. Rather, locals continue to have the same purchasing behaviour as before the bypass;
- for tourists and other through-traffic, there is a constant relationship between changes in traffic volumes and changes in expenditure; and
- the impacts are calculated as a change in the total value of turnover for the study area (i.e. changes to the estimate of \$144 million for 2015).

The economic impacts of three scenarios were calculated:

- Worst case scenario (highly unlikely).** This is based on a 16% reduction in total traffic in Central Ingham drawn directly from official traffic estimates used for the planning study.
- Mid case scenario (most likely without mitigation strategies).** A more likely scenario that nets out the impact of vehicles that would not have stopped anyway. This results in an estimated reduction in relevant vehicle movements in Central Ingham of around 6%.
- Best case scenario (possible with mitigation strategies).** For the purposes of establishing a best case scenario, a reduction of only 3% is assumed, based on an ability to implement strategies that enhance the appeal of Central Ingham to consumers and travellers.

Table 22: Range of impacts on turnover

Indicator	Estimates of impacts			
	Scenario			
	Base	Best case (possible)	Medium case (most likely)	Worst case (highly unlikely)
Turnover (\$m)	144.1	142.8	141.6	137.6
Turnover (change \$m)	N/A	-1.2	-2.4	- 6.5
Turnover (change %)	N/A	-0.8%	-1.7%	-4.5%

Source: MJA analysis.

While the alignment is yet to be finalised, the analysis indicates some likely impacts. Key observations include:

- the most likely outcome is a reduction in turnover of around 1.7%;

- because of the dominance of local residents and businesses in the customer base of most businesses in the study area, even large changes in tourism and other through-traffic would result in relatively smaller impacts on total economic activity and employment. For example, the worst case scenario is based in a 16% reduction in traffic volumes, but only results in a 4.5% decline in turnover (down \$6.5 million); and
- given the high reliance of most businesses on local customers for the majority of their turnover, the actual decline in turnover is likely to be less than the decline anticipated by the business community. Table 20 shows that approximately 42% of business operators believe their turnover would decrease by more than 20% if a bypass was constructed. However, based on all businesses surveyed, the financial modelling indicates that a 75% drop in traffic would be required to trigger a 20% fall in total turnover. This is greatly exceeds UDP Horman Traffic's forecast reduction in traffic movements (i.e., down 16%).

6.2.2. Changes in employment

MJA has also modelled the potential impacts on employment in Central Ingham attributable to the bypass shown in Table 23.

Table 23: Range of impacts on employment

Indicator	Estimates of impacts			
	Scenario			
	Base	Best case (possible)	Medium case (most likely)	Worst case (highly unlikely)
Employment	1,454	1,442	1,429	1,388
Change (number)	N/A	-12	-25	-66
Change (%)	N/A	-0.8%	-1.7%	-4.5%

Source: MJA analysis.

Key points to note from the analysis are:

- for this analysis we have assumed that the reduction in employment is directly proportional to reductions in turnover based on ratios indicated by the business survey data. This may overstate the total reduction in labour requirements as many businesses have a core of labour requirements (e.g. managers or minimum staff numbers) that do not change directly in proportion to turnover;
- the indicative reductions in full time equivalent employment in Central Ingham range from around 12 to 66 positions, down between 0.8% and 4.5%;
- the number of individual workers impacted is likely to be greater because around 50% of the workforce are already employed on a part-time or casual basis; and
- each business will establish their own employment strategy based on their unique circumstances and business needs as a result of these changes. However, a likely strategy would be to adjust the hours worked by part-time and casual employees to match the demand for their services. Rather than resulting in outright job losses, the

change in demand for labour requirements may result in higher levels of underemployment rather than unemployment *per se*.

6.2.3. Distribution of impacts in Central Ingham

While reduced turnover will impact on most businesses in Central Ingham to some degree, the impacts will not be uniform across the business community.

Sectors most impacted

The sectors of the economy that are more reliant on through-traffic for revenue will be impacted to a greater degree than others. Analysis of the survey results of businesses in Central Ingham reveals:

- the sector that will be most impacted is accommodation, cafes and restaurants. Of the businesses surveyed, 10 businesses were at least 50% reliant on tourism trade. Of those 10 businesses, 9 were in the accommodation, cafe and restaurant sector;²⁸
- analysis of survey returns shows that virtually all business that are reliant on through-traffic and face a significant downturn in trade have a relatively high proportion of variable costs (particularly labour costs). This means that they can lower their costs to offset reductions in turnover, particularly through reducing input supplies and employment;
- further analysis of the survey returns reveals that at least one small business in the accommodation, cafe and restaurants sector is extremely vulnerable to even relatively small downturns in traffic volumes due to its low level of profitability unless labour inputs can be reduced dramatically;
- the other sector that will be significantly impacted is motor vehicle retailing and services, specifically service stations. These businesses are likely to suffer material reductions in turnover and will need to adjust inputs (including labour) accordingly. However, these business will need to maintain minimum staffing levels to continue to operate; and
- there will also be flow on-effects throughout Central Ingham to other businesses that provide inputs to businesses in the accommodation, cafes and restaurants sector. Analysis of survey data indicates that for every dollar reduction in business expenditure excluding labour costs, average purchases from other businesses in Central Ingham will reduce by 8c (i.e. a flow-on impact of 8%). For motor vehicle retailing and services, the flow-on impact is lower (around 5-6%).

Locations most impacted

An analysis of the location of businesses most reliant on through-traffic predictably shows businesses directly on the current north-south route (particularly Townsville Rd north of Rutledge St and Herbert Street from the Townsville Rd intersection through to Cartwright Street) are most reliant on through-traffic. Key points from the analysis of survey returns for different locations indicate:

- twelve businesses are at least 50% reliant on through-traffic related business (five on Herbert St and seven on Townsville Rd)²⁹; and

²⁸ Note: The absolute figures quoted here are based on the actual survey responses received only. It is somewhat uncertain the degree to which businesses that were not surveyed are similarly at risk.

- only three businesses along the north–south route are at least 50% reliant on tourist turnover *and* have operating profit margins of less than 10%. These businesses are perhaps the most susceptible to reductions in through-traffic. However, further analysis of these businesses shows that two of them have relatively high proportions of variable costs and will be able to lower input costs as turnover decreases.

6.2.4. Broader regional impacts

While this study has concentrated on the impacts in Central Ingham, it is worth noting some of the likely regional distributional impacts.

- **Halifax and Lucinda.** No data is available on the proportion of through-traffic that spontaneously opts for a stopover in either Halifax or Lucinda. However, considering a return trip from the current Bruce Highway alignment to Lucinda is around 37 kilometres, it is reasonable to assume that the numbers are low. Any realignment is unlikely to have any material impact on Halifax or Lucinda;
- **Cardwell and Tully.** For traffic between Cairns and Townsville, alternative stopping points along the Bruce Highway are Cardwell (approximately equidistant between Cairns and Townsville in a coastal location) and Tully (closer to Cairns and the turnoff point for Mission Beach). If through-traffic bypasses Ingham, the economic activity lost by Ingham is likely to translate into gains in either Cardwell or Tully; and
- **Trade and transport disruptions.** The enhanced flood immunity provided by the bypass will provide a significant step towards a more reliable road network along the east coast of Queensland and to relevant inland centres (albeit at a period of the year when the costs of disruptions are likely to be lower). This will provide a number of potential benefits including:
 - freight transport will be more reliable, reducing the likelihood of major disruptions to freight schedules, supply chains, and reducing the need for retailers (e.g. supermarkets) to carry additional stock inventories in the wet season,
 - passenger and tourist disruptions will be lower, reducing the likelihood of major disruptions to the tourism sector in North Queensland and enhancing the reputation of North Queensland as a wet season destination.

6.2.5. Changes in property values

Analysis of survey data for commercial landlords in Central Ingham indicates relatively low gross returns from rental properties at around 4%. This is primarily explained by an oversupply of commercial property, relatively high vacancy rates, and limited economic growth prospects.

The analysis of the impacts on businesses outlined in sections 6.2.1 to 6.2.3 shows that the ongoing impacts of a potential bypass include a reduction in turnover of between 0.8% and 4.5% and that the profitability of many businesses will decrease, reducing their capacity to either pay existing rent rates or to absorb future rent increases.

The reduced profitability, in conjunction with an ongoing oversupply of commercial property after the construction phase will translate into downward pressure on commercial property prices particularly. However, the degree of those decreases will be almost entirely

²⁹ This is likely to be a slight underestimate of the absolute number of businesses as the specific circumstances of businesses that did not participate in the survey are unknown.

reliant on the specific circumstances of individual properties (e.g. whether suitable substitutes exist, location, commercial use etc).

There is likely to be a positive spike in demand (and potentially in rents and prices) during the construction phase. During the post bypass phase, the modest reduction in economic activity is likely to further contribute to the downward trend on demand for commercial premises in the longer term and subsequent impacts on rents and prices.

6.3. Ongoing impact on the agricultural sector

As outlined in Section 4.2.3, a potential bypass is likely to result in a regional loss in the production of sugarcane from an area of between 120 ha and 150 ha, across 18 to 28 properties.

There are approximately 800 individual or family groups that hold a cane production area in the Herbert region, with an average size of approximately 65 ha. Production is predominantly dryland cane, with only a fraction of the total area under production being irrigated. Canegrowers' statistics for the Herbert River district show that the area harvested for sugar in 2007 was around 57,200 ha, producing around 4.3 million tonnes of cane (590,000 tonnes of sugar at a commercial cane sugar ratio of 13.8).

MJA estimated key impacts on sugar production from the bypass and the economic losses associated with a reduction in production based on the following assumptions:

- average production lost is 75 tonnes/ha/annum, based on data for the Herbert Region;³⁰
- long-term gross margins are \$900/ha per annum. Economic analysis undertaken by Waring for the Bureau of Sugar Experimental Stations³¹ was based on a long-term price expectation of \$335/tonne, which for studies in the Ingham area translates to a gross margin of approximately \$900/ha per annum. However, it is acknowledged that gross margins are currently higher than this due to the current sugar price of around \$450/tonne, with short term future prices expected to remain in excess of \$400/tonne for the next three years³²; and
- a market price for cane farms of \$10,500/ha for land with limited improvements is assumed.³³ An average, full acquisition cost of each farm of \$780,000 is assumed based on a 75 ha enterprise.

Table 24 summarises key data from the analysis.

³⁰ Canegrowers, 2009, Industry Statistics. www.canegrowers.com.au. Accessed 19 October 2009.

³¹ Waring. M, 2009, *Researching soil health and economics of two farming systems in the Herbert River district*.

³² QSL, 2009, *QSL Market Report*. 15 October 2009

³³ MJA analysed basic data from 15 cane farms in the Ingham area currently listed on the market on www.realestate.com.au. Accessed 19 October 2009. The average farm size was approximately 75 ha, and cane land with limited capital improvements (i.e. no house or major infrastructure apart from sheds and basic irrigation equipment) was listed at an average price of \$10,500/ha (range \$7,800–\$13,800).

Table 24: Estimated impacts for sugarcane

	<i>Range of impacts</i>		
	<i>Low</i>	<i>Medium</i>	<i>High</i>
Loss of production (tonnes of cane)	9,000	10,100	11,300
Loss of district's total production (%)	0.2%	0.2%	0.3%
Annual value of production lost at current prices (\$)	560,000	630,000	700,000
Annual gross margin lost at \$900/ha (\$)	108,000	122,000	136,000
Market value of land directly lost – land only (\$ million)	1.25	1.40	1.55
Market value of whole farms impacted (\$ million)	14.0	17.9	21.8

Source: MJA analysis.

Key points to note from the analysis include:

- the impact on regional production is not significant. The reduction in regional production (9,000–11,200 tonnes) is less than 0.3% of the volume processed annually at the Herbert River mills. This will not have a material impact on mill viability;³⁴
- the estimated cost of the corridor acquisition, based on a land value of \$10,500/ha, is between \$1.25 and \$1.55 million dollars. However, this is likely to be an underestimate as it does not factor in any additional costs relating to losses in production efficiencies through reducing farm sizes and potentially splitting enterprises;
- if it is not practical to only acquire the land required for the corridor, it may be necessary to purchase complete farms, potentially reconfiguring the remainder of farms not required for the corridor and reselling them on the market as larger more commercially viable enterprises. If this is the case, the acquisition cost could be as high as \$22 million; and
- the reduced production from the sugar cane industry will have a minor impact on the regional economy through reductions in the purchases on inputs for cane production (e.g. chemicals, fuel etc.).

³⁴ The Herbert River mills already have significant excess processing capacity. Less than 4.5 million tonnes of cane is processed through the Victoria and Macknade mills, which have a combined processing capacity of around 6 million tonnes per annum.

7. Maximising opportunities and mitigating risks for the Ingham community

Through the data analysis and the community consultation process, a number of potential opportunities and risks related to the construction and ongoing use of a potential bypass have been identified. This section outlines strategies to help maximise opportunities and mitigate the risks identified in Sections 5 and 6 of this report. This has been done separately for the construction and operating phases of the bypass.

In developing the potential strategies, MJA has concentrated on areas where the Ingham business community can take proactive actions to maximise commercial opportunities and mitigate risks within the broader commercial context within which the bypass will be established.

MJA has assumed that opportunities will only be realised where local businesses can provide appropriate goods and services *and* on a commercially competitive basis. For this reason, the recommended strategies target the needs of business and focus on ensuring:

- contractors building the bypass are fully aware of the capabilities of local businesses to provide inputs. This will increase the likelihood of higher levels of local participation;
- a high degree of coordination for local businesses to ensure local inputs can be increased and local businesses can adequately compete for larger input contracts. This will increase the scope and scale of opportunities for local businesses; and
- providers of secondary inputs (e.g. accommodation) are able to maximise opportunities with minimal disruption to normal operations. This will ensure flow-on impacts are maximised and any negative impacts (particularly local pricing effects) for local businesses and citizens are reduced.

MJA is also aware of the resource constraints available to local businesses and business organisations. Therefore, the strategies outlined are quite specific and achievable without excessive resource requirements.

Tables 25 and 26 identify key opportunities and risks, the sectors most likely to be affected and potential strategies to maximise opportunities or mitigate risks.

Table 25: Construction phase: opportunities, risks and strategies

<i>Opportunity or risk</i>	<i>Sectors affected</i>	<i>Strategies</i>
Opportunities		
Direct construction employment and training opportunities. Significant employment opportunities will be created (see Section 5.2).	Skilled and unskilled workers.	<ul style="list-style-type: none"> Using this report as a base, work with potential construction firms to identify likely employment inputs and skill requirements. Make this information available to the community via forums and briefing sessions. Promote relevant training opportunities for unskilled workers in Hinchinbrook Shire to ensure maximum local labour inputs. Once timing of construction is known, establish a central register of people interested in working on the bypass. This should include details on skills and availability. Make the register available to all firms bidding for construction contracts. Once the State announces the project, promote the availability of local labour inputs to prospective contractors. Ensure on the job training and work experience opportunities are maximised. The potential lead organisation could be the Chamber of Commerce.
Direct construction inputs. Significant employment opportunities will be created (see Section 5.2).	Businesses.	<ul style="list-style-type: none"> Using this report as a base, work with potential construction firms to identify likely construction input requirements. Make this information available to the business community via forums and briefing sessions. Develop a capability statement for Hinchinbrook Shire businesses to ensure potential construction contracting firms are aware of the inputs that can be provided by local businesses. Once timing of construction is known, establish a central register of businesses able to contribute directly to the construction effort. This should include details on skills, services and availability. Make the register available to all firms bidding for construction contracts. This should maximise the likelihood of local inputs within bids. Once the State announces the project, promote the availability of local business inputs to prospective contractors. Provide basic training for local businesses on tendering for major construction contracts and sub-contracts (e.g. specific government tendering processes). Maximise the likelihood of success for local sub-contractors through promoting alliance bids. The potential lead organisation could be the Chamber of Commerce.

Opportunity or risk	Sectors affected	Strategies
Indirect inputs. There will be opportunities for indirect inputs such as catering, repairs and maintenance, clothing etc.	Businesses.	<ul style="list-style-type: none"> Using this report as a base, work with potential construction firms to identify likely indirect construction input requirements. Make this information available to the business community via forums and briefing sessions. Undertake a study to identify, in detail, the indirect input requirements for the construction phase (e.g. accommodation, catering, uniforms etc.). Expand the central register of businesses to include those able to contribute indirectly to the construction effort. This should include details on skills, services and availability. Make register available to all firms bidding for construction contracts. The potential lead organisation could be the Chamber of Commerce.
Residential accommodation for construction workforce.	Landlords.	<ul style="list-style-type: none"> Work with the successful contractors to identify residential accommodation requirements (number of beds and likely dwelling structures required). Establish a central accommodation register to coordinate the provision and management of accommodation for the workforce. The potential lead organisation could be real estate industry representatives.
Commercial accommodation for construction businesses.	Landlords.	<ul style="list-style-type: none"> Work with the successful contractors to identify commercial accommodation requirements (number of beds and likely dwelling structures required). The potential lead organisation could be real estate industry representatives.

Opportunity or risk	Sectors affected	Strategies
Risks		
Skilled labour shortfalls. Potential for shortfalls in skilled labour creating risk to local employers and community via price impacts (see Section 5.4.1).	Businesses and skills labour.	<ul style="list-style-type: none"> Promote relevant training opportunities for unskilled workers in Hinchinbrook Shire to ensure skilled labour shortfalls are minimised. Once construction commences, promote on the job training and skills development. Inform the broader community of the risk to ensure they are prepared (e.g. pressures on availability of machinery operators for cane harvesting season). Actively promote Hinchinbrook Shire as a source of skilled employment during construction phase to minimise local skilled labour shortfalls. The potential lead organisation could be the Chamber of Commerce.
Residential accommodation shortfalls will create short term limitations in availability and increase rental prices (see 5.4.2).	Landlords and residential tenants.	<ul style="list-style-type: none"> Using a central accommodation register, ensure available accommodation is fully utilised (i.e. limit empty rooms) to minimise accommodation stock shortfalls and to mitigate price increases. Establish a register of other accommodation available in the region (e.g. boarding, home-stays etc.). In advance of the construction phase, establish other appropriate temporary accommodation (e.g. temporary cabins in caravan parks). The potential lead organisation could be real estate industry representatives.
Construction input shortfalls and price impacts. Shortfalls of construction inputs may increase construction costs across the board (see Section 5.4.3).	Community and businesses.	<ul style="list-style-type: none"> Inform the broader community of the risk to ensure they are prepared. Where there is some degree of discretion for the timing of other non-housing construction (e.g. local government road development), consider rescheduling work to ensure timing does not conflict with bypass construction. The potential lead organisations could be the Chamber of Commerce and Hinchinbrook Shire Council.

Source: MJA.

Table 26: Ongoing phase: opportunities, risks and strategies

<i>Opportunity or risk</i>	<i>Sectors affected</i>	<i>Strategies</i>
Opportunities		
Improved road safety and amenity in Central Ingham	Community and businesses.	<ul style="list-style-type: none"> Consider options for reinvigorating the retail precinct as a more attractive destination for locals and tourists via actions such as landscaping. Enhancing the appearance and reducing traffic in Central Ingham is likely to enhance the attractiveness of major events such as the Italian Festival. It will also provide opportunities for revitalising the central business district of Ingham. Changes to the flood immunity for road users should reduce the likelihood of wet season disruptions to tourists. This provides opportunities for further promoting 'green season' tourism in the region. Install signage prior to start of the bypass and at all exit/access points along the proposed route to alert travellers to Ingham and other tourist destinations off the main highway. The potential lead organisations could be Hinchinbrook Shire and the Chamber of Commerce.
New commercial opportunities on bypass	Business	<ul style="list-style-type: none"> Consider opportunities for establishing new commercial opportunities on the proposed bypass route such as a service station to offset losses of business in Central Ingham. Depending on land use planning along the new alignment, this may not be possible.

Opportunity or risk	Sectors affected	Strategies
Risks		
Reduced turnover. Lower through-traffic will reduce turnover for many businesses (see Section 6.2.1).	Community and businesses.	<ul style="list-style-type: none"> Provide information to businesses to manage transition (e.g. understanding where cost structures can be adjusted to offset lower turnover). Assist business with a high reliance on passing traffic to diversify products and services toward alternative customer bases. The potential lead organisations could be the Chamber of Commerce and Department of Employment, Economic Development and Innovation (DEEDI).
Lower employment. Lower through-traffic will reduce employment levels for many businesses (see Section 6.2.2).	Community and businesses.	<ul style="list-style-type: none"> Provide information to business about how to manage the transition (e.g. understanding how to best utilise labour). Provide training and job search assistance to affected employees. Assess alternatives for the diversification of economic activity and employment opportunity in Ingham. The potential lead organisations, Chamber of Commerce and DEEDI.

Appendix – Review of social and economic impacts of highway bypasses

EBC has undertaken a literature review of the impacts of existing highway bypasses and the perceived impacts of proposed highway bypasses. The review highlighted a number of key findings about the impacts of highway bypasses:

- Highway bypasses can have both positive and negative impacts on the towns they are bypassing.
- Impacts can be classified as short-term (up to two years after the bypass was completed), medium term (two to five years after bypass completion) and long term (five to ten years after bypass completion).
- Most negative economic impacts are experienced only in the short term, with the positive impacts far outweighing any negative impacts in the medium and longer terms.
- Most negative economic impacts are experienced in the retail sector through a decrease in turnover, particularly highway related businesses such as fuel providers and food outlets.
- In most cases the negative impacts are limited to the short and medium term and are able to be mitigated through improved marketing, signage and business re-structure or re-focus.
- Very few businesses fail due to bypasses and for many businesses, restructure and change of focus results in better turnover than before a bypass.
- Accommodation providers were often not as negatively impacted as anticipated.
- Some accommodation providers experienced an increase in business due to being able to market their quieter location, others were able to mitigate the impacts through marketing and signage.
- Negative economic impacts from highway bypasses are more likely to affect smaller towns (with less than 2,500 people) than larger towns.
- Many other factors other than highway bypasses affect smaller towns.
- Small towns are often already in decline before the impacts of a bypass are felt.
- Most negative impacts can be largely mitigated through prior planning and consultation with businesses likely to be affected.
- Clear exit signage along the bypass, development of a marketable focus for the town and revitalisation of the CBD is essential for the continued health of a recently bypassed town.
- From an overall community perspective the positive impacts generally outweigh the negative in most bypass situations.
- Increased safety, amenity and community cohesion are immediate positive impacts from highway bypasses.
- Bypasses can introduce new business opportunities both along the bypass and in the bypassed town.

The table below summarises the negative impacts associated with highway bypasses and classifies the impacts according to their likely timeframe. Mitigation measures are suggested for addressing them.

Table 27: Bypass Impacts - Negative

<i>Impact description</i>	<i>Timeframe</i>			<i>Mitigation measures</i>
	<i>Short</i>	<i>Medium</i>	<i>Long</i>	
Loss of passing trade – fuel outlets	✓			Improved/extra signage Diversification/restructure Relocation of business to bypass
Loss of passing trade – fast food outlets	✓			Improved/extra signage Diversification/restructure, Relocation of business to bypass Foster local trade
Loss of passing trade – accommodation providers	✓			Improved/extra signage Marketing (e.g. quiet location, town attractions)
Loss of passing trade – retail sector (other)	✓			Attract more local sales by increasing promotions and advertising, diversify product lines, emphasise customer service, change operating hours, improve appearance of premises
Loss of secondary businesses and services (banks, wholesale suppliers, government offices)	✓	✓		Attract more local sales by increasing promotions and advertising, diversify product lines, emphasise customer service, change operating hours
Job losses or reduction in work hours from highway related retail sectors	✓			Creation of new business and employment opportunities along bypass
Road design and construction no longer suited for purpose (e.g lighting, intersection design, parking location, speed limits, road width)		✓	✓	Removal of excess lighting, installation of traffic calming devices (speed humps, road narrowing and chevrons), use of extra road width for streetscaping and changes to parking configurations
Loss of good quality, productive land	✓	✓	✓	Reduction of footprint where possible, leaseback of unused land
Loss of highway frontage to some commercial properties leading to loss in commercial property values	✓			Relocation of businesses, improved marketing and signage, changes to business operation and focus
Increase in noise and vibrations to previously quiet residential and/or rural areas	✓	✓	✓	Installation of noise mitigation where appropriate
Displacement of residents and businesses	✓			Appropriate level of compensation offered
Loss of visual quality (views) to some rural and residential properties	✓	✓	✓	Consider mitigation measures to screen road related infrastructure in areas of high scenic quality

The table below outlines the positive impacts associated with highway bypasses and the likely associated timeframe. The likely causal factors for the positive impacts are described.

Table 28: Bypass Impacts - Positive

Impact description	Timeframe			Mitigation measures
	Short	Medium	Long	
Increased trade – fuel outlets		✓		Improved/extra signage placed on bypass Diversification/restructure
Increased trade – food outlets		✓		Improved/extra signage placed on bypass Diversification/restructure. Foster local trade (more locals eating out)
Increased trade – accommodation providers		✓		Improved/extra signage placed on bypass Marketing (e.g. quiet location, town attractions)
Increased diversity in business		✓	✓	New businesses attracted to CBD (better parking availability, more local patronage)
Increased business turnover for some retail sectors	✓	✓	✓	Increased local business due to improved shopping environment in CBD (less congestion, more parking, more pedestrian friendly)
Reduction in Council road maintenance costs		✓	✓	Reduction in traffic impacts on local road surface and associated road furniture
Improved amenity and aesthetics of CBD	✓	✓	✓	Reduction in traffic noise, pollution and congestion
Main Street improvements		✓	✓	Space for improved parking configurations, and streetscaping. Use of Main Street for street festivals and events possible
Improved pedestrian access and safety	✓	✓	✓	Reduction in vehicular traffic volumes, particularly heavy vehicles, construction of pedestrian crossings and traffic calming devices
Improved mobility and sense of community for local residents	✓	✓	✓	Reduction in through traffic volumes, reduction in heavy vehicles, lower speed limits
Reduced road accidents	✓	✓	✓	Reduction in traffic volumes and congestion and conflicts between highway traffic and local traffic
Reduced traffic congestion and delays	✓	✓	✓	Reduction in traffic volumes in CBD
Improved parking	✓	✓	✓	Increase in on-street parking availability in CBD

Impact description	Timeframe			Mitigation measures
	Short	Medium	Long	
Additional retail turnover during construction phase	✓			Influx of construction workers to a region increases retail turnover during bypass construction period. Construction process results in demand for local products and services (sub-contractors, machinery and equipment, mechanical services etc)
Increase in local employment during construction phase	✓			Bypass construction process generates direct and indirect employment opportunities (demand for labour and local products and services)
Improved emergency access to hospitals	✓	✓	✓	Reduction in traffic congestion can result in shorter response times for emergency services
New business and employment opportunities on bypass	✓	✓	✓	Commercial land value increases in proximity to bypass (prime location for some businesses) and business opportunities exist along new bypass (e.g. for fuel outlets, service centres etc)
Reduced severance within the community	✓	✓	✓	Improved access to schools, health services etc
Improved amenity and safety for residential houses in proximity to old highway	✓	✓	✓	Residential areas located along old highway experienced a better living environment due to decreased noise, pollution, dust and traffic congestion
New residents and businesses attracted to area due to improved road access	✓	✓	✓	

The table below summarises the towns in Australia, the UK and USA which have been bypassed and reviewed in this report. The majority were small rural towns with an agricultural base.

Table 29: Existing Bypasses Reviewed

<i>Town Name and Country</i>	<i>Description</i>	<i>Main Industry</i>	<i>Population³⁵</i>	<i>Year bypassed</i>
Stanthorpe, Aust.	Rural	Agriculture	4,200	Late 1960's
Ross, Aust	Rural	Agriculture and tourism	270	1971
Eumundi, Aust.	Rural	Agriculture and tourism	600	1976
Benalla, Aust.	Rural	Agriculture	9,200	1986
Nambour, Aust.	Rural	Regional centre and agriculture	24,100	1990

³⁵ Estimated at time of bypass.

Town Name and Country	Description	Main Industry	Population	Year bypassed
Goulburn, Aust.	Rural	Regional centre and agriculture	23,000	1992
Goondiwindi, Aust.	Rural	Agriculture	4,300	1992
Mittagong, Aust.	Rural	Tourism	5,670	1992
Euroa, Aust.	Rural	Agriculture	2,800	1992
Wangaratta, Aust.	Rural	Agriculture	25,400	1993
Cooroy, Aust.	Rural	Timber	1,800	1994
Yass, Aust.	Rural	Agriculture and rural service centre	5,500	1995
Kyneton, Aust.	Rural	Agriculture	3,750	1995
Yandina, Aust.	Rural	Agriculture	500	1997
Whitchurch, UK	Rural	Agriculture	7, 000	1992
Market Harborough, UK	Rural	Agriculture	16,000	1992
Petersfield, UK	Rural	Agriculture	15,000	1992
Wadebridge, UK	Rural	Agriculture	5,000	1993
Berkamsted, UK	Rural	Agriculture	17,000	1993
Dalton in Furness, UK	Rural	Agriculture	11,000	1993
Great Barford, UK	Rural	Agriculture	1,800	2006
Roxton, UK	Rural	Agriculture	2,859	2006
Wentworth, Canada	Rural	Agriculture and regional centre	908,007	Pre 2004
Chippewa Falls, USA	Rural	Agriculture	12, 925	2005
Warwick, USA	Rural	Agriculture	172	Pre 1998
Arcadia, USA	Rural	Agriculture	362	Pre 1998
Stonewall, USA	Rural	Agriculture	527	Pre 1998
Wellston, USA	Rural	Agriculture	971	Pre 1998
Davenport, USA	Rural	Agriculture	1009	Pre 1998
Chandler, USA	Rural	Agriculture	2,644	Pre 1998
Holdenville, USA	Rural	Agriculture	5,343	Pre 1998
Tecumseh, USA	Rural	Agriculture	5,856	Pre 1998
Hugo, USA	Rural	Agriculture	5,974	Pre 1998
Idabel, USA	Rural	Agriculture	7,278	Pre 1998
Ada, USA	Rural	Agriculture	15,313	Pre 1998
Okmulgee, USA	Rural	Agriculture	13,981	Pre 1998
McAlester, USA	Rural	Agriculture	17,074	Pre 1998
Durant, USA	Rural	Agriculture	13,187	1975
Independence, USA	Rural	Agriculture	6,392	Unknown
Webster City, USA	Rural	Agriculture	8,572	Unknown
Cherokee, USA	Rural	Agriculture	7,004	Unknown
Red Oak, USA	Rural	Agriculture	6,210	Unknown
Glenwood, USA	Rural	Agriculture	5,002	Unknown
Decorah, USA	Rural	Agriculture	7,703	Unknown

Town Name and Country	Description	Main Industry	Population	Year bypassed
Elkader, USA	Rural	Agriculture	1,592	Unknown
Centre Point, USA	Rural	Agriculture	1,591	Unknown
Newton, USA	Rural	Agriculture	15,292	Unknown
Bellevue, USA	Urban	Regional Centre	104,000	Unknown
Canandaigua, USA	Rural	Agriculture	10,750	Unknown
Various other USA towns (Ames, Chariton, De Witt, Marshalltown, Nevada, Sedan)	Rural	Agriculture	Various	Unknown

Note: This list comprises the majority of *existing* bypasses which were reviewed by EBC. It is not intended to be exhaustive as some of the literature reviewed was based on bypasses for which individual details were not given.

The literature also referred to the perceived issues associated with a number of proposed bypasses (proposed at the time of publishing) some of which may since have been completed but for which post-bypass information was not available. The table below provides a list of the proposed bypasses which were also reviewed in Australia, England and the United States.

Table 30: Proposed Highway Bypasses Reviewed

Town Name and Country	Description	Main Industry	Population³⁶	Year bypassed
Woolgoolga, Aust.	Rural	Agriculture	4, 526	2007
Kew, Aust.	Rural	Agriculture	949	2006
John's River, Aust.	Rural	Agriculture	439	2006
Kempsey, Aust.	Rural	Agriculture and regional centre	10,306	2006
Dunstable, UK	Rural	Agriculture and regional centre	33,805	2005
Houghton Regis, UK	Rural	Agriculture	17,000	2005
Antigonish, Canada	Rural	Tourism	4,750	2004
Durant, USA (first bypassed in 1975, second bypass proposed)	Rural	Agriculture	13,187	2001
Kingston, USA	Rural	Agriculture	Unknown	2001
Soper, USA	Rural	Agriculture	Unknown	2001
Valliant, USA	Rural	Agriculture	Unknown	2001
Madill, USA	Rural	Agriculture	Unknown	2001
Boswell, USA	Rural	Agriculture	Unknown	2001

³⁶ Approximate at study date.

References

- Connell-Wagner. (2007). Pacific Highway Upgrade: Sapphire to Woolgoolga Landuse, Planning and Socio-economic Working Paper. NSW Roads and Traffic Authority, Australia.
- David Burress. (1996). Impacts of Highway Bypasses on Kansas Towns. Kansas Department of Transportation. United States of America.
- GVA Grimley. (2005). Assessment of the Development Implications of the Dunstable Northern Bypass. Highways Agency and Government Office for the East of England, Birmingham, England.
- Highways Agency, Department of Transport. (2006). A421 Great Barford Bypass Traffic Impact Study Report: Post Opening Project Evaluation. England
- Johnathon.C.Comer and G.Allen Finchum. (2001). Business Impacts of Highway Bypasses. Department of Geography, Oklahoma State University. Papers and Proceedings of the Applied Geography Conferences Volume 24.
- Margaret Chase and Kent Gustavson. (2004). Economic Impacts of Highway Bypass Development on Communities. Department of Transportation and Public Works. Province of Nova Scotia, Canada.
- Maunsell McIntyre Pty Ltd. (1998). Bruce Highway Ayr – Home Hill – Brandon Bypass Study: Economic Impact Study. Main Roads, Queensland Australia.
- NSW Roads and Traffic Authority (2006). Pacific Highway Kempsey to Eungai – Environmental Assessment. NSW, Australia.
- Ove Arup. (2006). Pacific Highway Upgrade – Moorland to Herons Creek Environmental Impact Statement. NSW Roads and Traffic Authority. Australia.
- Sivaramakrishnan Srinivasan and Kara Maria Kockelman. (2002). The Impacts of Bypasses on Small and Medium Sized Communities: An Economic Analysis. Journal of Transportation and Statistics. Vol 5 No.1