

The Karuah Highway Bypass

Economic and Social Impacts The 5 year report



2009

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Foreword

The report has been edited by Peter Phibbs, Alexa Heidrich and Cole Cooney. The draft impact reports were prepared by graduate students in the Urban and Regional Planning program at the University of Sydney. More particularly the work on the Traffic Survey was undertaken by Le Zhao, King Tat Chow, Matthew Doerr, Luosha Li, Aiyub Torin and Flavio Gerbolini. The work on the Business Survey was undertaken by Niek Bongers, Richard De Jong, Scott Williamson, Cole Cooney, Donna Yoo and Amelia Horn. The work on the Social survey was undertaken by Alexa Heidrich, Miharuo Hosono, Marleen Kleijn, Ian Rutledge, Michael Teoh and Jaime Ustin.

The project was undertaken under the supervision of Professor Peter Phibbs.

Chapter 1

Introduction

Karuah is a town situated in Port Stephens on the banks of the Karuah River. It is about 200km north of Sydney, about 50km north of Newcastle and just north of Raymond Terrace. From the late 1950's Karuah grew as a highway town, with increasing dependence on passing traffic and the delivery of highway services to travellers such as stopovers, fast food, vehicle repairs and fuel.

In late 1996 the NSW State Government announced its work program to upgrade the Pacific Highway. The Roads & Traffic Authority (RTA), as project managers, proposed to identify route options in consultation with the community and progress the planning to the preparation of an Environmental Impact statement for a preferred route. A value management process was used to determine the preferred route that recommended a new outer bypass route option via Horse Island. Throughout the consultation process the community and Port Stephens Council recognized the potential impacts that a bypass would have on Karuah.

The Karuah bypass on the NSW Pacific Highway was opened on September 22, 2004. The bypass was aimed at accommodating projected increases in traffic along the primary north-south transport corridor in New South Wales and alleviating a major bottleneck. As a result of the upgrade, the majority of the almost 10,500 vehicles that passed through the Karuah town centre daily now use an alternative route.

The likely effect of the bypass on Karuah businesses was identified as a 'key and problematic issue' by the Department of Urban Affairs and Planning (DUAP 2001)¹. DUAP believed that Karuah had 'special characteristics' that would exacerbate business and employment impacts in the short-term. In particular, loss of employment was considered a particularly serious problem given that there was little opportunity for re-employment of Karuah residents in neighbouring towns. It was wryly commented that 'in order for the social benefits to the township to be realized, there needs to be a town remaining to experience them'.

A series of studies and business surveys were conducted in Karuah prior to construction of the bypass as part of the impact assessment process (Purdon Associates 1998, Purdon Associates 1999, RTA 1999). The studies identified a high level of business dependence on highway traffic – predicting business closures and substantial decreases in revenue and employment. It was estimated that 12 businesses would close and an additional 9 businesses would suffer a decrease in trade resulting in the loss of 131 jobs or 58 percent of the total employment of Karuah.

To help offset these predicted impacts DUAP stipulated as a condition of development approval a financial contribution of \$200,000 to fund the preparation of an economic recovery plan and a requirement that the effect of the bypass be monitored at 12 month and 5 year intervals.

¹ Now the NSW Department of Planning

This report measures the impact of the bypass, five years after the opening. It was commissioned by the RTA and aims to address the requirements by the consent authority for follow-up monitoring and evaluation. The objective is to quantify the impact of the bypass on traffic volumes and businesses in the Karuah town centre, and to assess the socioeconomic changes that have occurred one year after the opening of the Karuah bypass.

The information obtained will provide the second objective assessment of the economic impacts experienced by Karuah since the opening of the bypass. The first assessment was contained in the study that examined the impacts of the bypass one year after its opening (Rowe and Phibbs, 2005). The findings of this “one year” study included:

- As a town Karuah was highly vulnerable to the economic impacts of the highway bypass. With a small population, a high level of highway dependency, pre-existing socio-economic problems and a dispersed, poorly-defined town centre the prevention of serious bypass impacts in Karuah was always going to be a difficult prospect.
- As a result of the bypass traffic volumes along Karuah’s main street have declined significantly. Traffic surveys indicated that only 14 percent of northbound traffic and 7 percent of southbound traffic now enters Karuah from the new stretch of highway.
- In the twelve months since construction of the bypass, Karuah’s economy has suffered extensively from the loss of highway traffic. Six businesses have closed with another seven reporting a decrease in revenue. As a result, 48 jobs or 21 percent of the total employment in Karuah has been lost, comprising predominantly female, part-time workers. The lost jobs would have represented a supplemental source of income to a number of households and some families would have been affected.
- These impacts are serious but far less serious than originally predicted in the assessment process. The EIS for the bypass had predicted the closure of 12 businesses and the loss of 131 jobs. While it is likely that a number of impacts are still to be felt, it seems that the predicted impacts were inflated somewhat as has frequently occurred with other bypass studies.
- Despite the economic impacts, the majority of Karuah’s population viewed the bypass in a positive light due to the improved amenity in the town centre.
- A survey of Karuah residents indicated that about 78% of respondents considered that the long term effects of the bypass are positive.
- There have been significant positive benefits for two landuses there were located on the old highway- Karuah Primary School and the Karuah RSL. The benefits to the local primary school have included improved safety and reductions in noise. Benefits to the RSL have included an increase in membership numbers, increased ability of the club to support local community groups, a higher profile in the community and ability to sustain pre-bypass employment levels.
- A number of low-key measures have been undertaken at the business level in Karuah to mitigate bypass impacts including increased marketing and increased focus on the local market rather than highway trade. However, a surprisingly large number of businesses had made no adjustments in response to the bypass. This is attributed to insufficient financial resources and a perception that the local Council is responsible for the economic recovery of the town.

The five year study provides an opportunity to investigate whether the trends identified in the one year study have continued, and whether the town has been able to adjust to the significant economic and social impacts identified in the one year study. In addition, the results of this

study will represent one of only several examples of a small town before and after bypass study undertaken in Australia. Small highway towns such as Karuah are particularly vulnerable to bypass impacts yet few studies have attempted to quantify these impacts.

Chapter 2

Karuah before the bypass

This chapter provides an overview of Karuah's economy prior to construction of the bypass and discusses the vulnerability of Karuah to bypass impacts. A review of the studies undertaken prior to bypass construction will also serve to highlight the issues associated with the impact assessment process for bypass developments.

The data in this section is sourced from the ABS (2001) and two economic impact assessment studies undertaken by Purdon Associates that formed the basis for the EIS predictions (1997, 1998). In addition, the *Karuah Community Economic Redevelopment Plan (KCERP)* (2004) compiled by the University of Sydney and the Karuah Community and Economic Redevelopment Committee provides a comprehensive profile of Karuah's pre-bypass economic status. Some data is also obtained from a series of business surveys undertaken by the University of Sydney (2003) although these did not include all Karuah businesses. Interviews with community members were another source of information.

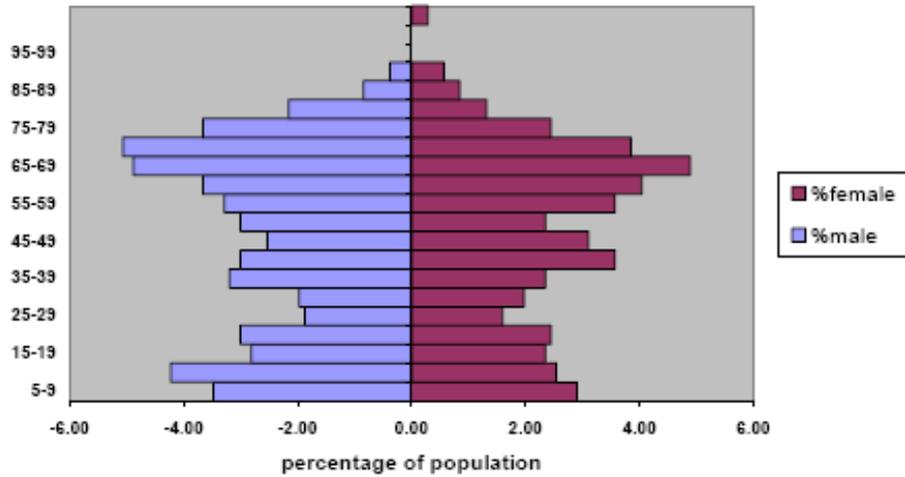
2.1 Karuah's pre-bypass economy

The 2001 Census estimates Karuah's population as 1,070. Port Stephens Council's Urban Settlement Strategy has identified a total capacity in the Karuah/Swan Bay area of 2,000 people, although this is unlikely to be reached before 2021.

KCERP (2004) and Purdon Associates (1998) note that Karuah's population and economy is characterised by the following features:

- A higher than average proportion of people over 60 years of age; 22.2 percent of the total compared to a state-wide average of 16.6 percent. This reflects the increasing immigration of retirees to coastal areas as well as the general ageing of the population nationwide.
- A significantly higher than average proportion of people from Aboriginal and Torres Strait Islander backgrounds; approximately 14.2 percent compared to a state-wide average of 0.12 percent. The majority of the local indigenous population in Karuah is housed in a geographically distinct area – to the west of the highway in an area of land previously used as a mission. The area is administered by a local land council.
- An unemployment rate of 12.9 percent – nearly double the national average.
- 90 percent of employed Karuah residents earn less than the state average of \$610 a week and 80 percent earn less than \$400 per week.

Figure 2.1: Karuah population pyramid



Note: Data sourced from KCERP (2004) based on 2001 ABS data

The number of employed Karuah residents totals 270 persons (ABS 2001), however total employment in Karuah prior to bypass construction was estimated at 227 full and part-time jobs (Purdon Associates 1998). Karuah's location 3 hours from Sydney, 40 minutes from Newcastle and 20 minutes from Raymond Terrace makes commuting relatively easy to Newcastle and to Raymond Terrace.

Figure 2.2: Karuah oyster farm near the foreshore, facing west. Oyster farms in Karuah are clustered along the river, separate from the town centre.



Source: Rowe and Phibbs (2005)

The main sources of revenue in Karuah derive from oyster farming and the servicing of passing motorists. In addition, 2 sawmills on the outskirts of town provide additional

employment and several small-scale employment programs are conducted in the local aboriginal community with the help of grant money – including artefact manufacturing and boat building. These industries represent the ‘basic’ or town-forming component of Karuah’s economy (Klosterman 1990). The remaining businesses in Karuah are non-basic; existing to serve the local community.

Table 2.1: Employment Numbers

	Male	Female	Total	
Full-Time	61	37	98	43%
Part-Time/Casual	29	100	129	57%
	90	137	227	100%
Total	40%	60%	100%	

Source: Purdon Associates (1998)

The oyster farming industry is clustered along the banks of the Karuah River. The seasonal, family-based and informal nature of this industry makes total employment difficult to accurately measure. Purdon Associates (1998) and the Karuah Oyster Growers Association estimate that between 30 and 40 people are employed in oyster farming. A visual inspection identified 7 oyster farms along the Karuah foreshore.

Table 2.2: Businesses in Karuah prior to bypass construction

Business Type	No. of Businesses
Petrol Station/Motor Vehicle Repairs	4
Food	3
Restaurant/café/takeaway	3
Accommodation	4
Club/Hotel	3
Oyster Farming	7
Liquor Shop	1
Hardware	1
Newsagent/Post Office	1
Pharmacist	1
Timber mill	2
Boarding Kennels	1
Medical Centre	1
Hairdresser	1
Gift Shop	1
Other retail	4
Total	38

Source: Purdon Associates (1998), with oyster farm information added.

Note: Business categories based on the dominant business type.

Employment resulting from motorist revenue is also difficult to measure accurately since different businesses have reported varying degrees of reliance on highway-related trade. The most reliable pre-bypass figures indicated that 41 percent of all businesses in Karuah were totally or substantially reliant on passing motorists – accounting for approximately 60 percent

of total employment in Karuah (Purdon Associates 1998). These businesses are concentrated in the Karuah town centre along Tarean Street.

Table 2.3: Traffic flow along Tarean Street prior to bypass construction

Period	Two way combined vehicles per day
Annual average daily traffic	10 336 (13 329)
Annual average daily weekday	9 724 (12 539)
Annual average daily weekend day	11 209 (14 459)
Christmas Day	23 277 (30 017)
Boxing Day	22 159 (28 176)

Source: KCERP (2004) based on 1995 RTA data. Figures in brackets indicate projected 2003 traffic volumes based on an increase of 3.7 percent per annum.

2.2 Vulnerability of Karuah to bypass impacts

DUAP noted in 2001 that Karuah has ‘special characteristics’ that set it apart from other towns and increase the likelihood of serious, long-term economic impacts as a result of the bypass. DUAP did not specify what these characteristics were but a cursory analysis of Karuah’s demographic and economic attributes make its’ vulnerability readily apparent.

Specifically, the following factors would have made Karuah particularly vulnerable to bypass impacts:

- *Low population:* studies have consistently found that bypass impacts become more severe as the population of the town decreases. Towns with populations below 5000 people appear to be particularly vulnerable. Karuah’s 2001 population was 1,070 (ABS 2001).
- *Remoteness:* While a number of residents are employed outside of the town, Karuah essentially acts as an independent economic entity with no major linkages to industries outside of the locality. DUAP (2001) noted that ‘opportunities for re-employment in neighbouring towns do not appear highly promising’.
- *A high level of dependency on passing traffic:* Purdon Associates (1998) found that 41 percent of businesses – accounting for approximately 60 percent of total employment - regarded themselves as totally or substantially reliant on highway trade. The 2003 Sydney University survey found that 50 percent of all employees in the town centre were employed in the ‘petrol’ business category.
- *Low urban design quality:* Although Karuah is situated along a river and encompasses areas of scenic beauty, the town centre itself is of low aesthetic quality – consisting primarily of detached and semi-detached retail/residential buildings of minimal heritage significance. The bypassed town ‘success stories’ such as Berrima (BTCE 1994) and Yass (Parolin and Garner 1996a) have well-defined town centres of high architectural quality which contributed to the growth of the local tourism industry following the diversion of highway traffic.

- *Existing community issues:* Before construction of the bypass Karuah was already characterised by above-average levels of unemployment and a low paid workforce. Any decrease in revenue or employment would exacerbate these pre-existing problems.

2.3 Predicted impacts

2.3.1 The Karuah to Bulahdelah Bypass EIS (1999)

The EIS for the Karuah bypass contained a section and a working paper outlining the likely employment and business effects that would be felt in the township. The section was based on studies undertaken by Purdon Associates in 1997 and 1998.

Purdon Associates estimated losses in business revenue and employment through a direct survey of every business in town. Businesses were asked to assess the degree of dependency on highway traffic – on a scale from ‘totally reliant’ to ‘no reliance’. Business owners were then asked to predict the effect of the bypass on the business and the resulting change in employee numbers.

Purdon Associates successfully surveyed almost every business in town but did not survey any oyster farms, relying instead on data from NSW Fisheries. The data obtained in the study formed the basis for the Karuah EIS’s assessment that 12 businesses would close following bypass construction with a decline in business at a further 9. The total number of affected jobs was estimated at 131 (see Table 2.4). This represents 57 percent of the total employment in Karuah

Table 2.4: Predicted effect on businesses from bypass

Effect on Business				
No effect	8	24%		
Closure	12	35%		
Decrease	9	26%		
Increase	5	15%		
Total Responses	34	100%		
Size of Change	Decrease		Increase	
10% or less	1	13%	2	67%
11-20%	1	13%		
21-30%	3	38%		
31-40%	1	13%	1	33%
41-50%	1	13%		
50-99%	1	13%		
Total responses	8	100%	3	100%
Not stated	1		2	
Change in Employees				
No change	15	45%		
Decrease	16	48%		
Increase	2	6%		
Total Responses	33	100%		
Not Stated	1			
Change in Number of Employees				
Decrease	-133			
Increase	2			
Total	-131			

Source: Purdon Associates (1998)

Purdon Associates noted that the bypass would most severely affect highway dependant businesses such as service stations, takeaway shops and food stores. The EIS also mentions in passing that the majority of highway-reliant jobs are part-time or casual and staffed by females.

2.3.2 The Sydney University Study (2003)

The 2003 study undertaken by students from the University of Sydney provided an additional chance to assess business optimism immediately prior to the opening of the bypass. The study was never used as part of the formal assessment process but assisted with the completion of the *Karuah Community Economic Redevelopment Plan (KCERP)* (2004).

A limitation of this study was its lack of completeness, being focused almost exclusively on the businesses clustered in the town centre along Tarean Street – 23 in all. However, as the majority of highway dependant businesses were located in this part of Karuah anyway the study still provided a useful additional source of data.

Businesses were asked to assess the degree of dependency on highway traffic – on a scale from ‘totally reliant’ to ‘no reliance’. Other survey questions aimed to identify employment numbers for business categories and business perceptions as to whether the bypass would have a ‘positive’ or ‘negative’ economic impact.

The most important findings of the Sydney University study were the following:

- 15 business managers or 65 percent of those surveyed considered themselves totally or substantially reliant on highway-derived revenue.
- Almost all of the ‘totally reliant’ businesses were in the food, petrol, restaurant/takeaway or accommodation business categories.
- 39 percent of business owners believed the bypass would have a negative effect on their business.
- 50 percent of the employment in the town centre was in the ‘petrol’ business category. This business category as a group also had the greatest degree of reliance on highway traffic.

Chapter 3

Methodology

Students from the University of Sydney conducted surveys in Karuah in 2003, 2005 and 2009. The 2003 survey was meant to provide some predictions for economic, social and traffic effects of the bypass. The 2005 survey measured reactions and impacts one year after the bypass. Now, five years after the completion of the bypass, four years since the previous community survey, a further round of surveys were undertaken to assess impacts of the bypass. The three surveys undertaken in 2009 were:

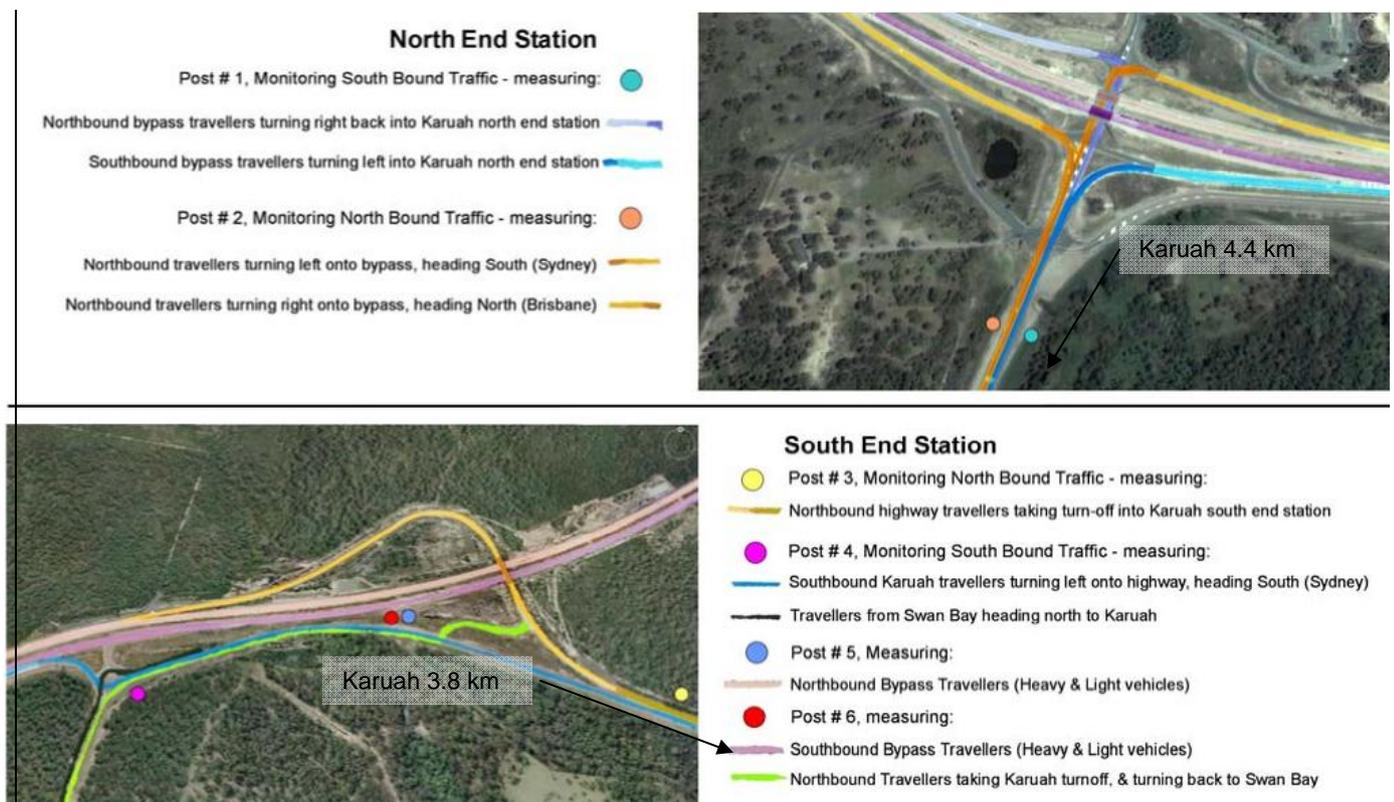
- A traffic survey;
- A business survey and
- A community survey.

The specific methodologies for each survey is described below.

3.1 Traffic Survey

The bypass, constructed in 2004, has two major all-movement interchanges with no other direct access to Karuah. Observation stations at each interchange were established based on the locations of the interchanges, at the northern and southern ends of town. Figure 3.1 outlines the locations of the six posts used to record the flows of traffic.

Figure 3.1: The North End and South End Stations, and Vehicle Routes Measured



Also illustrated in Figure 3.1 is each of the vehicular routes, or “movements” that were measured in the survey. More individual movements were measured in this survey compared to previous studies, with an intention to provide greater detail on motorist behaviour.

The different measurements included:

- Northbound highway travellers turning into the north end station, thereby visiting Karuah;
- Southbound highway travellers turning into the north end station, thereby accessing Karuah;
- Vehicles leaving Karuah via the northern station and turning left onto the highway (Southbound);
- Vehicles leaving Karuah via the northern station and turning right onto the highway (Northbound);
- Northbound highway travellers turning into the southern station and continuing through to Karuah;
- Northbound highway travellers turning into the southern station and turning to Swan Bay;
- Travellers from Swan Bay heading north to Karuah; and
- Vehicles leaving Karuah via the southern station and turning left onto the highway (Southbound); and
- Northbound bypass travellers; and
- Southbound bypass travellers.

For each movement, the following information was recorded:

- The time of recording;
- The number plate;
- The vehicle type (light/heavy); and
- The direction each vehicle took once entering the highway (northbound/southbound)

3.1.1 Limitations to the Traffic Analysis Survey

The traffic counts for the 2009 Traffic Analysis were conducted on a weekend, and weekly estimates were based upon these counts. In order to obtain a more accurate weekly estimate, it would be necessary to survey traffic on both weekdays and weekends in order to account for different motorist behaviours depending on the day of the week.

The counts for traffic passing through Karuah on 5-6 September 2009 were conducted manually from a series of samples. In weeks 38 and 39 of 2004, traffic volumes were counted using an automated RTA traffic counter.

3.2 Business Survey

The business survey was conducted using a questionnaire to identify the impacts on individual businesses in Karuah after the opening of the bypass. This survey was developed to reassess the implications of the Karuah bypass and subsequent decline in traffic on Karuah’s local business sector. The business survey questionnaire from the previous study

was adjusted to better suit Karuah's present circumstances. An additional question regarding adjustments undertaken in response to the bypass was included to assess whether the adjustments were effective in increasing revenue. A question on the future plans and prospects of each business over the next 5 years was also added to the survey.

The business survey included 12 questions addressing various aspects of each business since the opening of the bypass. These aspects include changes in revenue and operations, employee turnover, general perceptions about the bypass's effect on Karuah's economy and liveability, and finally satisfaction with steps taken by local authorities. These questions were used to obtain both quantitative and qualitative information about the effects of the bypass and its impact on the future of Karuah's business sector. The survey is included in Appendix A.

3.2.1 Limitations of Business Survey Methodology

It is estimated that there are 36 businesses in Karuah. The survey was conducted between 3-5pm on Friday, 4th September and 9am-4pm on Saturday, 5th September 2009. Some of the businesses were closed over the survey period and some businesses did not respond to the survey. In total, 23 businesses were surveyed.

Some of the respondents were employees as opposed to business owners, and consequently were unable to give comprehensive responses about the business operations and revenue. All quantitative answers were simply estimates, which may partially indicate the wide variance in revenue and employee numbers.

As the surveys were done during operating hours, some respondents were handling customers during the questionnaire and were only able to provide very brief responses.

3.3 Community Survey

The community survey was constructed with questions to help identify the impacts of the bypass on the community. Both the 2005 and 2009 surveys had a similar format, consisting of 13 social and community related questions about Karuah.

The surveys were conducted in the form of short interviews, where approximately 70 residents were asked a series of community related questions intended to identify and measure community perceptions of the current community condition, the bypass and the future of the Karuah community. The survey is included in Appendix B.

The survey was undertaken between 3-5pm on Friday September 4, 9 am to 4 pm Saturday September 5 and 9 to 12 midday, September 6.

3.3.1 Limitations of Community Survey Methodology

The intent of the 2009 survey was to survey 100 people. It was not possible to reach this target (73 respondents were interviewed). Moreover, it was not a complete random survey of all Karuah's residents. Rather responses were obtained by approaching people on the main streets of Karuah and in local businesses, including the RSL.

Chapter 4

Impacts of the bypass - 5 years on

This chapter examines the results of the three surveys outlined in Chapter 3. Where possible results are compared with the results of the 2005 survey, undertaken as part of the “one-year” study.

4.1 Traffic

Between 4th and 6th September 2009, a traffic survey was undertaken in Karuah using the methodology outlined in Chapter 3.

In order to perform a detailed analysis, the team assessed the number of possible movements that traffic may take when using the town. From these behaviours, inferences were made regarding whether the individual motorist was:

- (i) a Karuah resident;
- (ii) neighbouring resident;
- (iii) visitor,
- (iv) by-passer, or
- (v) a highway motorist using the alternative route through the town.

A quantitative analysis was created by recording the individual number plates of each vehicle and measuring the duration of each vehicle’s stay in Karuah.

4.1.1 Traffic volumes

The traffic volumes of vehicles passing through Karuah on week 38 and 39 in 2004 were counted by an automated RTA traffic counter (Rowe and Phibbs, 2005) whereas the traffic volume on 4-6 September 2009 were counted manually, from a series of samples.

Table 4.1: Weekly Traffic Volumes before and after the opening of the bypass

Time period	Number of Vehicles – northbound	Number of vehicles – southbound	Total traffic
Week 38 (2004)	48,527	49,946	98,483
Week 39 (2004)	5,216	4,534	9,750
4,5,6 September 2009	65 vehicles per hour on average	80 vehicles per hour on average	145 vehicles per hour on average

Source: Karuah Traffic survey 2009 and Rowe and Phibbs (2005).

The above table indicates a very significant change in Karuah traffic after the bypass was opened. Further analysis of the traffic follows.

4.1.2 Proportion of vehicles coming to Karuah from bypass

As discussed above, the number of cars travelling along the Karuah bypass was recorded in 4 different one-hour intervals throughout the day (9:40-10:40, 11:30-12:30, 15:00-16:00 on Saturday and 11:00-12:00 on Sunday). The table below summarised this data.

Table 4.2: Number of cars only using the bypass

Time Period	Number of Cars-Bypass North Direction	Number of Cars-Bypass South Direction	Total
Sat 9:40-10:40	614	489	1103
Sat 11:30-12:30	591	576	1167
Sat 15:00-15:10	384	424	708
Sun 11:00-12:00	563	774	1337

Source: Karuah Traffic survey 2009

The proportion of vehicles driving along the bypass that drove into or through Karuah can be calculated using the data and traffic information collected from the north and south directions by traffic counters.

Table 4.3: Estimated number of cars per hour travelling along the bypass

Date	Time	Northbound			Southbound		
		Entering Karuah	Leaving Karuah	Bypass	Leaving Karuah	Entering Karuah	Bypass
05-Sep-09	0940 - 1040	60	27	614	85	46	489
05-Sep-09	1130 - 1230	59	39	591	71	25	576
05-Sep-09	1500 - 1600	50	25	384	75	34	424
06-Sep-09	1100 - 1200	89	40	563	88	59	774
Average		53	33	538	80	41	566

Source: Karuah Traffic Survey 2009

The calculation of data for the traffic going south was slightly more complex. As discussed, traffic driving south along the bypass was also measured from the overpass

bridge at the southern end of the freeway. The time required to travel the full length of the bypass between the southern exit and northern exit points was determined to be about 6 minutes (driving at the speed limit), while the time between the northern data collection station and the northern bypass entrance was measured to be about 2 minutes. Bypass traffic heading south counted at the southern data station would therefore be associated traffic driving past the northern data station approximately 4 minutes earlier.

Table 4.4: Proportion of cars driving north into Karuah

Date	Time	Number of cars driving north into Karuah	Number of cars driving north along Bypass	Proportion
05-Sep-09	0930 - 1030	60	614	8.9 %
05-Sep-09	1130 - 1230	59	591	9.1%
05-Sep-09	1500 - 1600	50	384	11.5%
06-Sep-09	1100 - 1200	89	563	13.7%
Average per hour		53	538	9.0%

Source: Karuah Traffic survey 2009

Table 4.4 illustrates the proportion of cars driving north along the Pacific Highway that are estimated to have driven into Karuah instead of continuing ahead along the freeway.

Table 4.5: Proportion of cars driving south into Karuah

Date	Time	Number of cars driving south into Karuah	Number of cars driving south along Bypass	Proportion
05-Sep-09	0930 - 1030	46	489	8.59
05-Sep-09	1130 - 1230	25	576	4.16
05-Sep-09	1500 - 1600	34	424	7.42
06-Sep-09	1100 - 1200	59	774	7.08
Average per hour		41	566	6.75

Source: Karuah Traffic survey 2009

Table 4.5 illustrates the proportion of cars driving south along the Pacific Highway that is estimated to have driven into Karuah. As these two tables demonstrate, on average about 9 percent of cars travelling north on the Pacific Highway drove into the Karuah township while just under 7 percent of cars driving south along the Pacific Highway exited into Karuah. This result is consistent with the findings of a stopper survey that was completed in September 2009, which found that the majority of stoppers in Karuah originated from Sydney.

In comparison to the *Karuah One-Year Report* (Rowe and Phibbs, 2005), the proportion of cars stopping in Karuah is approximately 3% less than in 2005. Based on this data, it appears that a significant proportion of the vehicles travelling along the Pacific Highway are still choosing to visit Karuah following the completion of the bypass. However, this result does not take into account those vehicles entering and or leaving Karuah that are actually residents of the township or nearby, or people visiting residents. In order to determine what proportion of traffic is actually made up of through traffic choosing to stop over in the township, further information is required. This information is discussed in detail in the following sections.

4.1.3 Behaviour of vehicles

The dispersions of trips in Karuah were classified by direction and time period (irrespective of measurement station) and it is presented in Table 4.6 and Figure 4.1 below. From this, it can be summed up that:

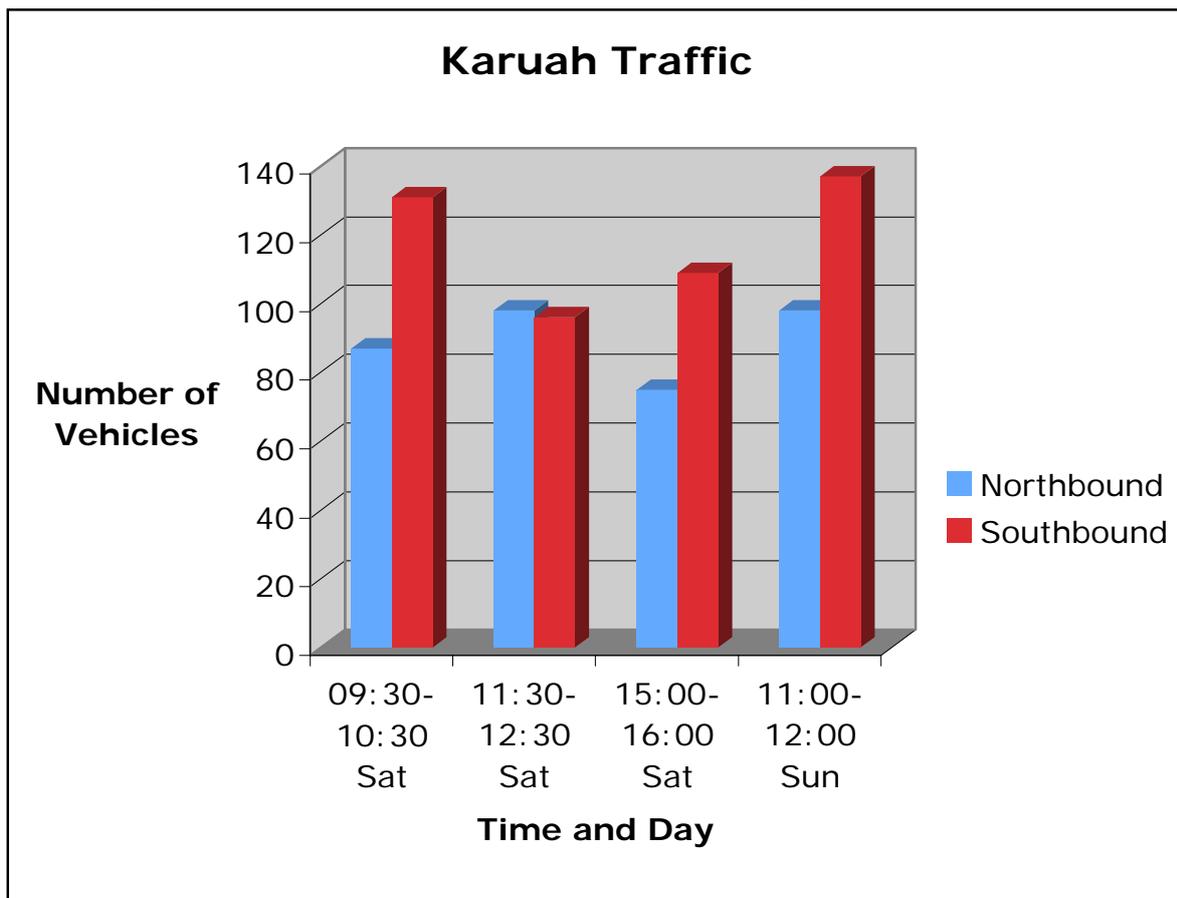
- During the survey periods, between 11am and 12 noon were the busiest times along the road through Karuah. During that period, 59 vehicles travelled in a northern direction and 89 vehicles travelled in a southern direction (calculated for both data stations)
- Average traffic volume going north was 41 vehicles per hour throughout the day and average traffic volumes going south was 53 vehicles per hour (calculated for both data station)

Table 4.6: All traffic recorded in Karuah by time period and direction

Date	Time	Northbound (entering Karuah)	Northbound (Leaving Karuah)	Southbound (Leaving Karuah)	Southbound (Entering Karuah)
05-Sep-09	0930 - 1030	60	27	85	46
05-Sep-09	1130 - 1230	59	39	71	25
05-Sep-09	1500 - 1600	50	25	75	34
06-Sep-09	1100 - 1200	89	40	88	59
Average per hour		65	33	80	41

Source: Traffic survey 2009

Figure 4.1 All traffic recorded in Karuah by time period and direction



Source: Karuah Traffic survey 2009

4.1.4 Classification of trips recorded within Karuah

After detailed assessment of the data and the resulting number plate matches, three main groups can be inferred:

- *Vehicles driving through Karuah* – these are the vehicles that drove in a single direction through the township and stopped. For example, a car that drove north through the south recording station and then north through the north recording station would fall into this category only once. These vehicles are of particular interest as they represent travellers driving along the Pacific Highway that decided to stop in Karuah (assuming they took longer than the approximate 9 minutes required to drive through the town) as opposed to driving along the bypass.
- *Resident vehicles* – these vehicles also drove through more than once during the day but travelled in a variety of directions. In particular, resident vehicles included cars that left Karuah and then re-entered Karuah past one station, as well as vehicles that entered Karuah and then subsequently left Karuah also through the one data collection station.
- *Other vehicles*- these vehicles were only registered once during the day by either of the data collection stations. It is assumed for the purposes of this analysis that these vehicles were also residents of the township that travelled into and/or out of Karuah once but did not return during the data collection period.

Applying this categorisation plan, evaluation of the data found that 59 of the 321 trips recorded were made by vehicles driving one-way through the township. That is, there were 23 vehicles that drove northbound through Karuah to join the bypass and 36 vehicles that drove southbound through Karuah to join the bypass.

For the remaining 262 trips, 83 were categorized as ‘resident’ vehicles- that is – cars that entered and left Karuah past the one station or made multiple trips along the Old Pacific Highway throughout the day. The average number of trips made by each of these vehicles was calculated to be 2.45, meaning that there were about 34 ‘residents’ travelling around the township that day.

The remaining 179 trips did not register a number plate match from either the opposite station or the same counting station. It is unclear what generated these trips and why the proportion of these trips was so high. Since there are only about 1,200 residents in the Karuah region and that 34 vehicles were identified as likely residents, it is plausible to suggest that a proportion of these recordings are the result of data entry or collection errors.

Very few cars were registered driving through Karuah during the 4 hours of data collection. From the 5241 recorded vehicle movements, 43% were going southbound along the bypass and 41% were going northbound. The remaining 16% of vehicles either passed through Karuah or entered and exited through the same side.

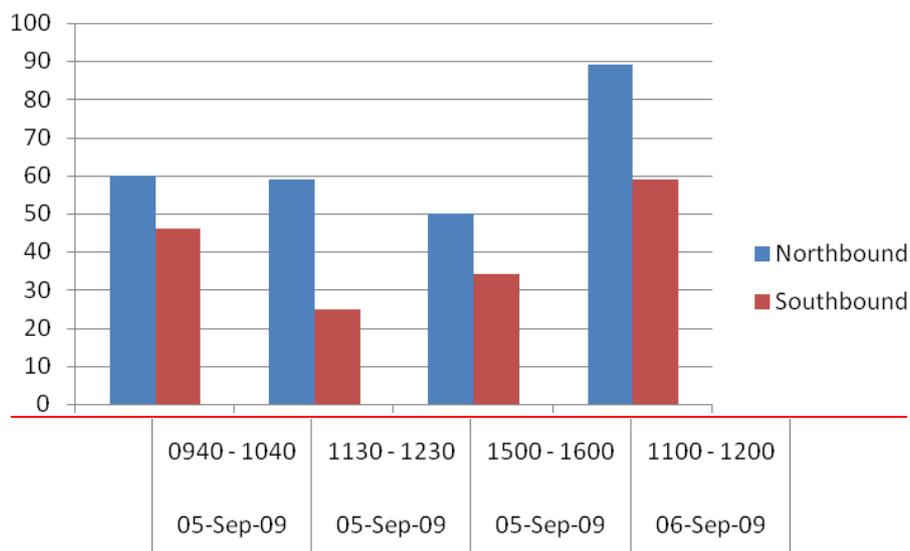
The following table disaggregates these trips by direction and time period (for both data stations). The total amount of vehicles driving into and out of Karuah does not necessarily reflect the amount of vehicles passing through Karuah, they may have entered and exited through the same side. However, it is a good indicator of Karuah’s traffic volumes in comparison to the bypass.

Table 4.7: Traffic driving into and out of Karuah

Direction/Time	Sat 05 Sep 09:40 – 10:40	Sat 05 Sep 11:30 – 12:30	Sat 05 Sep 15:00 - 1600	Sun 06 Sep 11:00 – 12:00
Into Karuah (South side)	46	25	34	59
Out of Karuah (South side)	85	71	75	88
Into Karuah (North side)	60	59	50	89
Out of Karuah (North side)	27	39	25	40
Total Number of Trips	172	194	184	276
Total number of vehicles passing through Karuah	86	97	92	138

Source: Karuah Traffic survey 2009

Figure 4.2: Number of vehicles entering Karuah by time period and direction



Source: Karuah Traffic survey

Using this data and estimates of bypass traffic which were calculated before, it is possible to determine the proportion of vehicles driving along the Pacific Highway bypass that visited Karuah.² These estimates are summarized in Tables 4.8 and 4.9.

Table 4.8: Proportion of bypass traffic through Karuah driving north

Date (1)	Time (2)	Through Karuah(3)	On Bypass (4)	% of Bypass (3)/(4)
05-Sep-09	0940 - 1040	3	614	0.5%
05-Sep-09	1130 - 1230	7	591	1.2%
05-Sep-09	1500 - 1600	8	384	2.1%
06-Sep-09	1100 - 1200	8	563	1.4%
Average per Hour		7	538	1.3%

Source: Karuah Traffic survey

Table 4.9: Proportion of bypass traffic through Karuah driving south

Date (1)	Time (2)	Through Karuah (3)	On Bypass (4)	% of Bypass (3)/(4)
05-Sep-09	0940 - 1040	10	489	2.0%

² Since some vehicles entered Karuah during one hour and left at another hour, vehicle numbers within each hourly period have been estimated by dividing the registered trip count within that hour by two.

05-Sep-09	1130 - 1230	7	576	1.2%
05-Sep-09	1500 - 1600	6	424	1.4%
06-Sep-09	1100 - 1200	13	774	1.7%
Average per Hour		9	566	1.6%

Source: Karuah Traffic survey

As the above tables illustrate, approximately 1.5% of the total traffic flow visited Karuah during the 4 hours of collected data. This holds for traffic entering Karuah from the North and South bypasses. This is considerably less than the 9 percent of vehicles that entered Karuah going north along the bypass and the 7 percent of vehicles that entered Karuah going south, which included residents of Karuah or people specifically visiting residents.

Table 4.10: Vehicles travelling north entering Karuah vs. vehicles entering from Swan Bay

Date	Time	Entering Karuah from Swan Bay	Total Entering Karuah	% of Vehicles Entering from Swan Bay
5-Sep-09	0940-1040	11	60	18.33%
5-Sep-09	1130-1230	6	59	10.17%
5-Sep-09	1500-1600	7	50	14.00%
6-Sep-09	1100-1200	5	89	5.62%
Average per hour		7	65	11.24%

Source: Karuah Traffic survey

Table 4.11: Vehicles leaving Karuah southbound vs. vehicles entering Swan Bay from Karuah

Date	Time	Entering Swan Bay from Karuah	Total Leaving Karuah	% of Vehicles Entering Swan Bay from Karuah
5-Sep-09	0940-1040	11	85	12.94%
5-Sep-09	1130-1230	19	71	26.76%
5-Sep-09	1500-1600	25	75	33.33%
6-Sep-09	1100-1200	13	88	14.77%
Average per hour		17	80	21.32%

Source: Karuah Traffic survey

Tables 4.10 and 4.11 show that over 15% of all traffic entering and exiting Karuah from the south are travelling to and from Swan Bay. This indicates that a reasonable proportion of Karuah's visitors are Swan Bay residents.

4.1.6 Amount of time that visitors spent in Karuah

During the analysis stage, many vehicles were found to enter and exit Karuah within the hour. With this data it was possible to determine the average amount of time visitors spend in Karuah, as long as it was less than an hour. As the sample generates a bias in favour of short-term visitors, the average amount of time for visitors who spent more than an hour in Karuah cannot be determined.

Table 4.1 summarises the amount of time it took for through traffic to pass between the data collection stations located at either end of Karuah. Only vehicles that were recognized in both ends are taken on account, because non-recognised vehicles may be residents. This table clearly illustrates that of the time period analysed, most vehicles spent between 5-15 minutes in Karuah, and that a relatively high proportion of cars also stopped in Karuah between 15 minutes and 1 hour.

Table 4.12: Length of stay of traffic stopping in Karuah

Traffic driving through	0-5 min	5-15 min	15-30 min	30-45 min	45-60 min	>1 hour
All traffic during collection	7	31	12	4	4	4

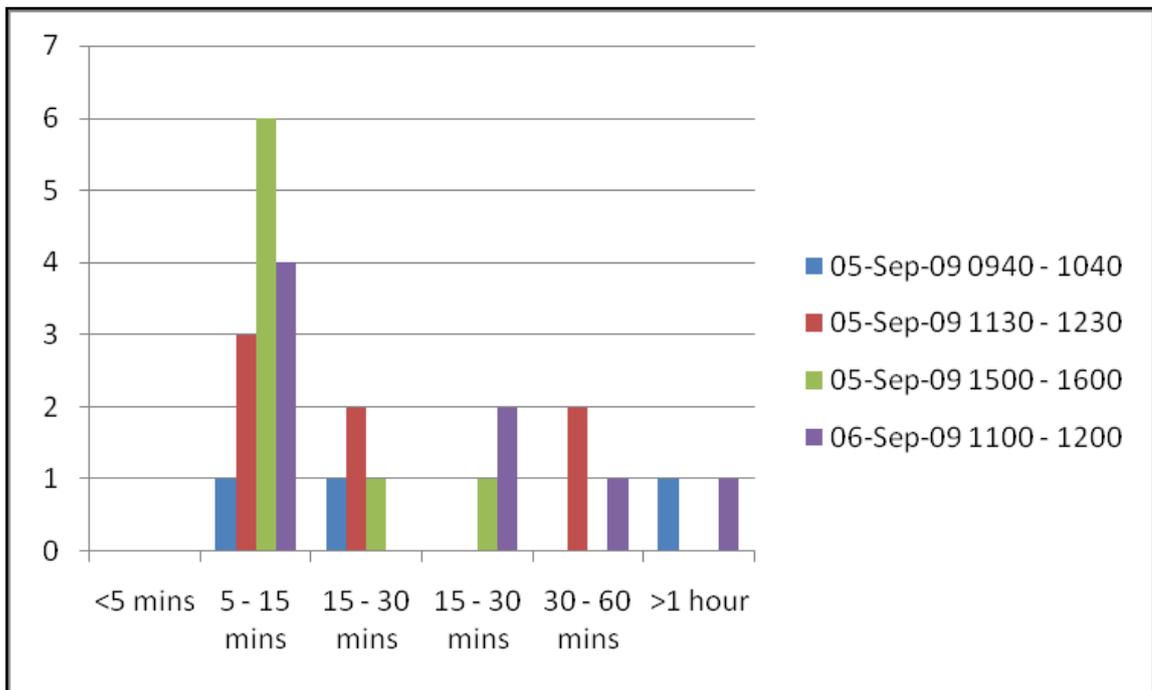
Source: Karuah Traffic survey

The time required to travel between the two data collection points driving at the speed limit was estimated to be around 9 minutes. Accordingly, it can be deduced that:

- Vehicles that took less than 9 minutes drove through Karuah without stopping.
- Vehicles that took between 9 and 15 minutes either did not stop at all, or, most likely, stopped for petrol, a toilet break, or to purchase take away food, but did not consume it in the township.
- Vehicles that took between 15 and 30 minutes most likely used the petrol station and took a while longer to purchase take away food, and consumed it in the township.
- Vehicles that stayed between 30 minutes and 1 hour probably spent time at one of Karuah’s attractions or stopped for a more substantial meal.

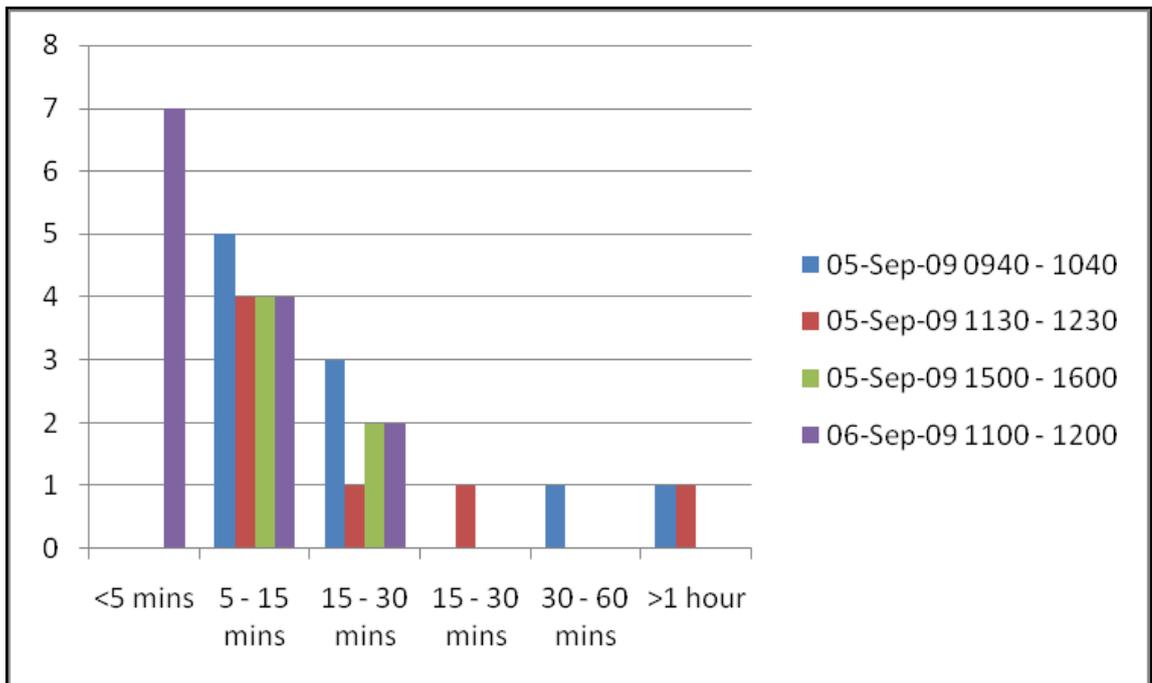
Vehicles that stopped in Karuah for more than an hour were visiting friends, using Karuah’s tourist infrastructure and attractions (e.g. fishing), or having a long substantial meal and/or buying groceries or other products from local businesses.

Figure 4.3: Vehicles driving northbound through Karuah – time spent in Karuah



Source: Karuah Traffic survey

Figure 4.4: Vehicles driving southbound through Karuah – time spent in Karuah



Source: Karuah Traffic survey

The above analysis has highlighted that only a very small proportion of traffic travelling along the Karuah Bypass actually drives through or stops in Karuah, and of those vehicles the majority stay for only a short period of time (upwards of 30 minutes). Compared to previous reports made after the bypass was opened, this percentage is lower. However, previous studies did not differentiate between local traffic and passing motorists, which may explain the lower percentage in the 2009 study.

Possibly many north bound travellers are pushing on and stopping in Buladelah, which is currently not bypassed. It is possible that with the completion of the Buladelah bypass more cars may opt to decide to stop in Karuah.

4.1.7 Conclusion

- As a result of the bypass, traffic volumes along Karuah's main street have declined significantly. Traffic surveys indicated that 9% of northbound traffic and under 7% of southbound traffic now enters Karuah from the corridor.
- The proportion of vehicles travelling along the Pacific Highway route that stop in Karuah is now in the order of 1 to 2%. Karuah has not been very successful at attracting passing travellers into the town.

4.2 Business

Karuah's local businesses provide amenities to the town's residents and passing tourists. Karuah's traditional industries include oyster farming, timber mills, tourist accommodation and motor vehicle services. As part of the RTA's Pacific Highway upgrading program, the Karuah bypass was opened on 22 September 2004 to improve motorists' safety and travel time. Since the opening of the bypass, the businesses of Karuah have been unable to rely on the influx of passing traffic to support their businesses. This survey explores the effects of the bypass on Karuah's business sector.

4.2.1 Impacts

Table 4.13 Change in Karuah's Business Composition

Type of Business	Before Bypass	After 1 Year	Change After 1 Year	After 5 Years	Change After 5 Years
Petrol Station	3	1	-2	1	-2
Motor Vehicle Repairs	1	1	0	1	0
Food	3	3	0	1	-2
Restaurant/Café/Takeaway	3	0	-3	6	3
Club/Hotel	3	3	0	4	1
Oyster Farming	7	7	0	7	0
Timber Mill	2	2	0	2	0
Accommodation	4	4	0	5	1
Other Retail	9	10	1	11	2
Professional Services	3	3	0	4	1
Total	38	34	-4	42	4

Source: Karuah Business surveys 2009, 2005

The results collected in the most recent survey of Karuah's economic contributors, in comparison to those of the previous survey in 2005, illustrate the difference in long and short-term business viability in this particular situation.

Many of those who have failed to adapt have begun to see the impacts of reduced business in the medium term, inevitably closing within 5 years of the bypass opening. A surprising factor has been the establishment of several new businesses, of which many seem to be retail and restaurants, which cater to niche markets. This portion of the economy has, according to the results of the latest survey grown substantially in the last few years. This is perhaps an indication of business owners narrowing the scope of what is now viable and where opportunities exist in the Karuah economy, without reliance on passing traffic.

4.2.2 Revenue

Of the major businesses in Karuah, it was found that six of the eight major operators have recorded decreases in profit since the inception of the bypass. Several of these were significant decreases, of between 10 and 70%. This comparison, while somewhat bleak, represents an improvement in percentage revenue loss by operators in 2004, with some reporting up to a 90% decrease for this initial period following the bypass opening. Much of

this can be seen as a direct outcome of the bypass, with fewer passing motorists consuming good and services in the town. This impact appears to be softening though, as operators begin to establish viable alternatives in a slower economy.

Despite a majority of these results recording decreases in profit, the overall attitude of optimism still exists amongst business owners, with none outlining concerns over future business viability. This was a recurrent theme throughout interviews and perhaps is attributed to the ongoing push for reinvention within Karuah and the laid back, small town way of life.

4.2.3 Employment

Karuah has lost many jobs since the opening of the bypass. Because business revenue often directly corresponds with the amount of jobs available, it is reasonable to expect that with a loss of revenue comes a loss of jobs. Part-time jobs have been more affected than full-time jobs. The loss of revenue suffered by many of Karuah’s businesses has created greater job instability, especially for part-time employees.

Figure 4.14: Estimated Job Differences in Karuah (2003-2009)

Type of Business	FT Male	FT Female	PT Male	PT Female	Unknown (due to business closures)	Total
Petrol Stations	0	0	-13	-8	-20	-41
Food	0	0	3	2	0	5
Restaurant/Café/Takeaway	-1	-3	0	0	-7	-11
Club/Hotel	1	0	0	2	0	3
Accommodation	1	2	3	6	0	12
Other	3	2	1	-7	-2	-3
Total	3	1	-6	-5	-28	-35

Source: Karuah Business surveys

According to the surveys, Karuah has suffered a total loss of 35 jobs since the opening of the bypass. The survey undertaken in 2004 indicated that 48 jobs had been lost in the year since the bypass. This indicates that while Karuah’s employment rates have decreased overall since the bypass, there has been some growth, namely in the accommodation and food industries.

Petrol station and restaurant employment continues to suffer the most, with a loss of 52 jobs since the opening of the bypass. These businesses were particularly reliant on passing traffic. Only 7 of these 52 jobs (86%) lost have occurred in the past four years, indicating that the businesses suffered primarily within the first year of the opening of the bypass.

As discussed in the following section, businesses that have made effective adjustments have been able to stabilise themselves better than their competition, while some businesses that did not make adjustments quickly went out of business.

4.2.4 Adjustments

Of those businesses surveyed, it is clear that those who have been willing to adjust to the inevitable change brought about by the bypass, have been those who survived.

Common changes have included increasing advertising, changing products/services and adjusting employment levels. Each of these strategies have been implemented by both the Karuah RSL and the Mobil Service Station, which are amongst the most prosperous businesses in town. The butcher and caravan park have also taken measures to promote their businesses and pursue opportunity for expansion. The caravan park has upgraded facilities to acquire a 3.5 star rating and the butcher has built a reputation as a boutique shop, providing specialty products not available at mainstream outlets. This has an effect of appealing to a market beyond the limited scope of Karuah.

Figure 4.5: Mobil Roadhouse



The Mobil Roadhouse has utilised successful operational adjustments in order to remain lucrative. The other two petrol stations in Karuah closed within a year after the opening of the bypass. (Editors, 2009)

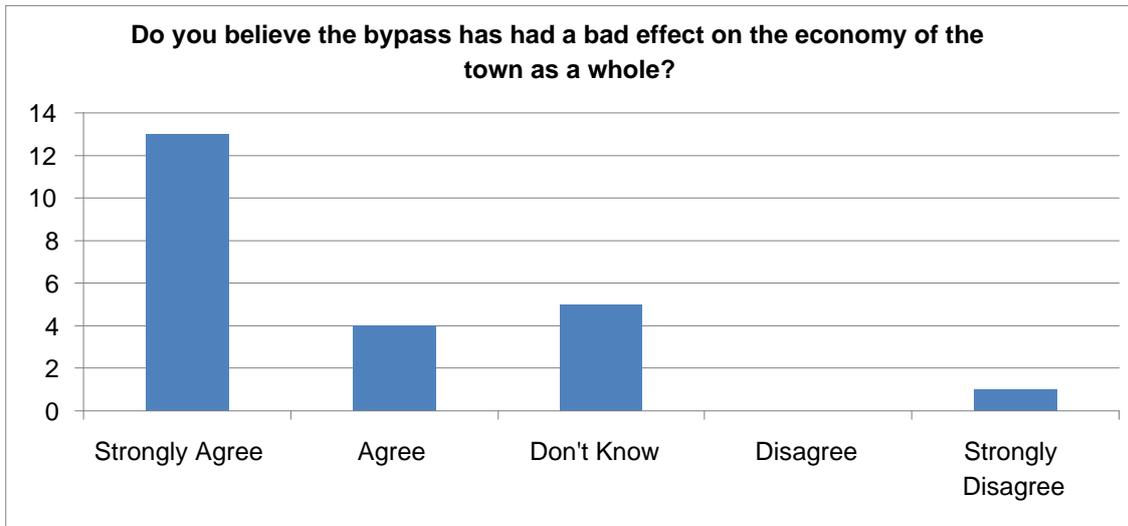
Overall effective management has been paramount to survival, where those who have embraced the opportunity to change and adapt are seeing the economic benefits in the long term.

4.2.5 Business Perceptions

Nearly 74% of respondents to the business survey felt that the Karuah Bypass has had a negative effect on the town's economy. Only one respondent disagreed with the statement. This particular business was only one of two that has indicated an increase in revenue since the bypass.

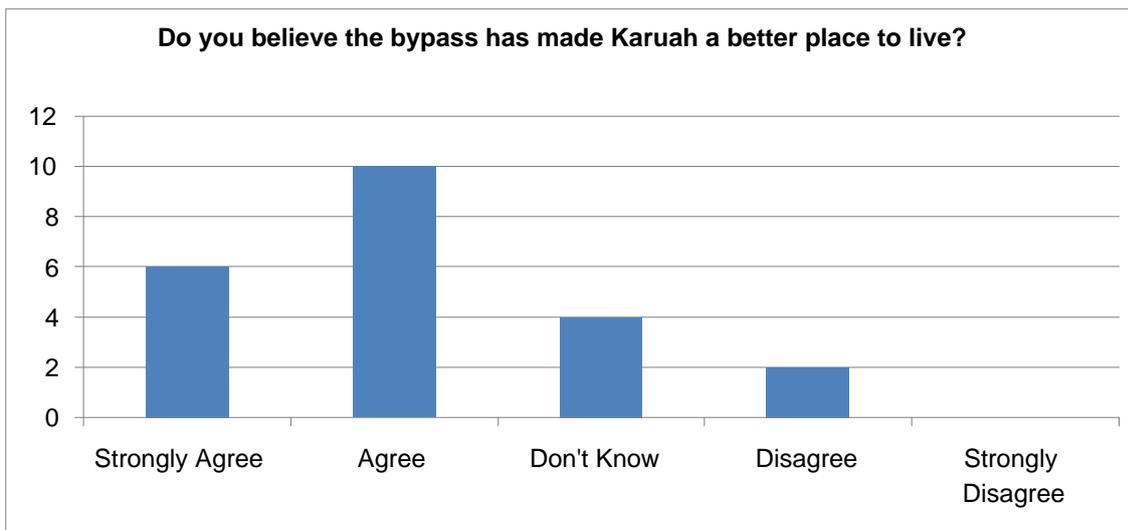
This result indicates that business owners share a common attitude that the bypass has negatively affected the economy of the town.

Figure 4.6: Respondents' Attitudes Toward the Bypass's Effect on Karuah's Economy



Source: Karuah Business survey 2009

Figure 4.7: Business Owners' Attitudes Toward the Bypass's Effect on Karuah's Liveability



Source: Source: Karuah Business survey 2009

Nearly 73% of respondents felt that Karuah has become a better place to live since the opening of the bypass. Many respondents stated that the reduced traffic noise and local use of the main street have made Karuah more pleasant.

Despite the perception that the bypass has negatively affected Karuah's economy, the overwhelming majority of respondents felt that Karuah had become a better place to live overall. This demonstrates the positive attitude of Karuah's business owners, despite the bypass's adverse economic effects.

These sentiments are consistent with the findings of the *Karuah Bypass* one year report (Rowe and Phibbs, 2005).

4.2.6 Local Authorities

The Port Stephens Local Council has been proactive since the bypass was first announced in working with the community and the RTA to attempt to mitigate the effects of the bypass. The Council was a major partner in the development of the Karuah Community and Economic and Redevelopment Plan and its subsequent implementation and updates. Council was responsible for establishing Karuah Working Together Inc and was responsible for engaging the Town Centre Co-ordinator. Council also established and continues to convene Council's Karuah in-house Working group.

Council's Economic Development Unit has been working with the Karuah Working Together Committee and the Chamber of Commerce on number of events including the Karuah River of Music Festival.

Council's work has been supported by a number of initiatives by the NSW Department of State and Regional Development.

Despite these efforts, a significant number of respondents indicated that they were not satisfied with steps taken by local authorities in response to the bypass. The major issues for dissatisfaction were the lack of signage and promotions, the lack of foreshore facilities, and the median strip on Tarean Road.

- **Signage/Promotions**

The biggest issue raised by respondents was the need for greater signage promoting services in Karuah. Some respondents viewed the RTA as an obstacle for providing more signage, and felt that they should be able to erect their own. Additionally, respondents felt that Karuah should be promoted as a good tourist and fishing destination.

- **Foreshore Facilities**

Respondents indicated dissatisfaction with Port Stephens Council in upgrading the boat ramp and providing better foreshore facilities. Many stated that nothing was being done despite Council's promises, while others simply felt that it was taking longer than originally estimated.³

- **Tarean Road Median**

While a few respondents indicated that the installation of a median strip on Tarean Road improved the design of the main business district, many were concerned about the design. Some stated that money spent on the median could have been used for investing in local businesses or community services. Some respondents felt that the turning lane that previously existed was more functional and that the median now prevents them from doing u-turns.

³ Council has made substantial progress on upgrading the boat ramp. Major studies have been completed as well as consultation with key stakeholders. Council is currently seeking additional funding through the Marine Infrastructure Program.

Figure 4.8: Median Strip on Tarean Road



The median on Tarean Road was installed to improve the street design. However, some respondents felt that the money spent on the median could have been invested elsewhere.

Source: Editors, 2009

4.2.7 Future of Businesses in Karuah

Many business owners are optimistic about the future of their businesses and Karuah as a whole despite the economic conditions. The majority of respondents felt that their businesses would slowly expand over the next five years. They expected that new housing developments would increase Karuah's population, which would in turn provide more customers⁴.

4.2.8 Conclusion

As a result of the above analysis, there are several recurrent themes that can be concluded from the survey of businesses in Karuah:

- Effective and adaptive management is the key to business survival:

The town has effectively reached a transition period. Businesses have either embraced the change as an opportunity to reinvent themselves or, alternatively, risked continuing operations in an inevitably contracting economic climate. The example of the strongest businesses in Karuah have been a testament to this theme.

⁴ Two respondents stated that they did not intend to continue running their businesses for the next five years. One intended to retire soon, while the other planned on selling the business within the next year and moving out of town.

- More action needed from Government

The attitude of blaming the local authorities for problems sits firmly within the Australian psyche, and the attitude within Karuah is no exception. Amongst many of the town inhabitants, the lack of proactive provision to support economic feasibility of businesses in Karuah seems to be a recurrent theme within the results. The apparent lack of signage on the highway is noted by businesses as a major oversight by authorities, while the new median strip has its detractors.

- Cautious optimism:

Whilst businesses certainly have a depressed view of how their region has performed following the implementation of the bypass, there exists a certain optimism amongst business owners. None of those interviewed believed they would struggle to be in operation in five years, many foreseeing expansion. The majority of owners acknowledged that Karuah is an increasingly liveable town in the absence of traffic.

4.3 Social Impacts

Many social aspects of life in Karuah have been affected by the bypass. Residents were interviewed to assess their feelings about the impacts of the bypass, Karuah's future prospects, and the economic prospects of the town. This section also reports on the roles of Port Stephens Council in positively facilitating changes to the area.

4.3.1 Survey Demographics

With regard to the demographic differences between the 2005 survey results and the 2009 survey results, the percentage of males and females interviewed remained fairly consistent. In 2005, 54% of respondents were males and 46% were females. In 2009, 59% of respondents were male and 41% of respondents were females.

With regard to age, there were more significant changes in the results. In 2005 there was an equal split of those interviewed between the ages of 40-49 and those aged over 70. In 2009, the majority of respondents were aged over 70⁵.

More than 61% of respondents stated that they either lived alone or did not have any children living with them.

4.3.2 Survey Results

The first question asked respondents how long they had lived in Karuah. The results are shown in Table 4.15.

Table 4.15 Length of time lived in Karuah

Length of time in Karuah	2003	2005	2009
Under 1 year	13%	7.5%	4.1%
1-3 years	13%	15%	6.8%
3-6 years	11%	23.6%	15.1
7-10 years	12%	6.5%	12.3%
More than 10 years	51%	47.3%	61.6%

Source: Karuah Social Survey. Q1 HOW LONG HAVE YOU LIVED IN KARUAH?

The survey results reflect the fact that a large proportion of Karuah's population are long term residents.

Of those interviewed in 2009 that had moved to Karuah in the last 6 years, 46% indicated their reason for moving was work related, for 30% it was family related, and 23% of respondents indicated their reason for moving to Karuah was for the purpose of retirement.

⁵ It is important to note that the interviewers did not ask the respondents their ages, but made a deduction based on their physical appearance.

Table 4.16: Intention to live in Karuah in the long term.

Long term intention to live in Karuah	2003	2005	2009
Yes	87%	81.7%	82%
No/Undecided	13%	18.3%	18%

Source: Karuah Social survey: Q2. DO YOU INTEND TO LIVE IN KARUAH IN THE LONG TERM?

In relation to the intention to respondents to live in Karuah in the long term, the 2009 results were almost identical to the 2005 results and very similar to the 2003 results.

Age was the most likely indicator of people's decision to stay in Karuah long term. Of those who were aged 60 and over, 89% of them intend to stay long term. Of those aged 59 and under, 75% intend to stay long term. In the 2005 survey, within the younger age bracket, significant proportions of the respondents did not intend to stay long term.

The findings indicate that younger respondents, particularly those in the working age category, are less likely to stay long term. This is consistent with the findings from the previous surveys. A possible reason for this could be that since the construction of the bypass, employment opportunities have become increasingly less available and young people are forced to move to metropolitan areas to gain education, skills and well paying jobs.

Table 4.17: Attracting more residents to Karuah

Responds	2003	2005	2009
Yes	65%	74.2%	73%
No	25%	15%	19%
Don't know	10%	10.7%	8%

Source: Karuah Social Survey Q3. DO YOU WANT TO ATTRACT MORE RESIDENTS TO KARUAH?

About the same percentage of respondents want to attract residents to Karuah in 2009 as in 2005, although both these figures were a small increase on 2003.

Table 4.18: Karuah’s most positive attributes.

Most Positive Attributes	2003	2005	2009
Rural setting	6%	7.5%	17%
Sense of community (people)	26%	7.5%	23.2%
River	51%	33%	24.3%
Fishing	5%	4.3%	18.3%
Location	10%	Did not ask	3%
Combination of community & other (river, fishing, etc)	Did not ask	12.9 %	Did not ask
Combination of other attributes & excludes community	Did not ask	27.9	Did not ask
Other (sewer, bypass coming, very quiet)	Did not ask	2.2%	6.7%
Not applicable	Did not ask	4.3%	Did not ask
Other	Did not ask	Did not ask	6.7%

Source: Karuah Social survey: Q4. WHAT DO YOU CONSIDER TO BE KARUAH’S POSITIVE ATTRIBUTES?

Respondents were asked to identify Karuah’s most positive attributes. One feature of the responses shown in Table 4.18 is that there is an increasing sense of the positive value of the rural setting since the bypass has been completed.

Table 4.19: Long-term effects of the bypass on Karuah

Long-term effects	2003	2005	2009
Negative	15%	10.7%	10%
Positive	70%	78.4%	51%
Nothing will change	9%	5.3%	15%
Don’t know	9%	4.3%	24%

Source: Karuah Social survey:Q5. WHAT DO YOU THINK WILL BE THE LONG-TERM EFFECTS OF THE BYPASS ON KARUAH?

The results in Table 4.19 show that since the base year of 2003, proportionately fewer residents view the long-term effects of the bypass on Karuah as negative. Although only 5.3% of the respondents in 2005 answered that the bypass will leave Karuah largely unaffected, the most recent value of 15% answered nothing will change. This difference may be a result of residents feeling there would be negative long-term effects had found that this might not be the case, as five years after the bypass they found their lives remained unchanged.

The large percentage of respondents (24.6%) who responded they did not know what the long-term effects of the bypass would be may be a result of 26% of respondents having moved to Karuah after the construction of the bypass or having only lived there one year after its completion (Q1). As a result, their minimal ‘exposure’ to the bypass may not have qualified them answering negative or positive.

Table 4.20: Greatest prospects for future economic development of Karuah

Greatest prospects	2003	2005	2009
Oyster farming	15%	4.3%	6.5%
More residents	9%	9.6%	15.7%
More shops	4%	2.1%	15.1%
Chicken farming	4%	1%	0%
Retirement village	8%	3.2%	17.7%
Tourism	44%	12.9%	21.2%
More people stopping	4%	2.1%	7.2%
Don't know	13%	3.2%	7.2%
Other	Not an option	4.3%	9.2%
Combinations of above	Not an option	57%	Not an option
Total (figures are rounded up)	101%	100%	99.8%

Source: Karuah Social survey: Q6. WHERE DO YOU THINK THE GREATEST PROSPECTS LIE FOR THE FUTURE ECONOMIC DEVELOPMENT OF KARUAH?

The opinions of Karuah residents have changed and evolved since 2003, when estimates indicated that the major opportunities for economic development were associated with oyster farming and tourism. In 2005, tourism was still paramount, though a majority of residents (57%) thought that a combination of prospects was the best method. This had an impact on other percentages that year. In 2009, tourism remained the top priority to increase economic activity, closely followed by building a retirement village and to see more shops, residents and general activity. Oyster farming was amongst the lowest prospects of the 2009 options. Clearly, residents want to see the town's business and economy grow and to improve quality of life for residents.

Table 4.21: Attracting more business or industry to Karuah

Attracting more industry or business	2003	2005	2009
Yes	70%	72%	68%
No	26%	17.2%	22%
Don't know	2%	9.6%	10%
Don't care	Not an option	1%	Not an option

Source: Karuah Social survey: Q7. DO YOU WANT TO ATTRACT MORE INDUSTRY OR BUSINESS TO KARUAH (AND SURROUNDS)?

The percentage of residents wanting to attract more industry or business to Karuah has remained consistently strong overall survey periods. The most recent value of 68% in favor

of economic expansion provides an overall theme of desiring economic expansion or development and correlates with the 73% of respondents who would like to see Karuah's residential numbers grow. Overall, these figures show that the implementation of the bypass has had no discernible effect on the desires for more industry/business in the town.

These figures provide evidence that residents both understand and desire an increase in industry or business in order to foster local economic development.

Table 4.22: Knowledge of economic plans or schemes to assist the economic development of Karuah

Heard of any Plans or Schemes?	2009
Yes	37%
No	63%

Source: Karuah Social survey: Q.8 HAVE YOU HEARD OF ANY PLANS OR SCHEMES TO ASSIST THE ECONOMIC DEVELOPMENT OF KARUAH?

Question 8 in the survey was asked to ascertain whether news of the plans of the Port Stephens's Council had reached the residents of Karuah. The majority of residents did not know if or how Council was involved in the economic development of Karuah. The Council has made efforts to reach out to residents regarding community development, but it does not seem to have reached the majority of residents surveyed.

4.3.3 Survey Comments

Many of the interviewees agreed that the bypass was bad for the small business of Karuah, but a plus for the community. The town was much quieter and had much less traffic, which was seen as an additional benefit. Some residents were concerned about the role of the Local Government in assisting with the transition period after the opening of the bypass.

4.3.4 The Role of Port Stephens Council

Karuah is one of the many towns incorporated in the Port Stephens Council area. Since the Karuah bypass was installed, Council has worked to help the community through the transition following the opening of the bypass.

One of the significant accomplishments from the council is the construction of the Children's Playground by the river which has become a popular stopping spot for travellers.

Council also contributed to the conversion of the ex-BP station to a community centre and visitor's centre. Council purchased the land and tried to develop it for commercial use, but when that failed an opportunity arose to form a community centre for the people and tourists of Karuah. Council is also continuing to work on improving the boat ramp on the Karuah River. Though it has been a long process, Council has completed a number of studies and funds are beginning to become available. Construction should commence soon. The delays

are associated with the complexities of tidal issues and the need to consult with key stakeholders.

Council is commencing a strategic planning review for Karuah. This review will consider the capacity for residential growth in Karuah, both within Post Stephens and in Great Lakes Shire. The utilisation of the existing commercial zoned land will be part of this review. Strategies to support and expand the economic and community development work already underway in Karuah will be considered. Further economic and community development activity will support future residential development. The review has the capacity to consider the various reports undertaken in relation to Karuah. Council is also looking to update the existing Development Control Plan (DCP) for Karuah (2007).

Though Council has undertaken a number of projects to help Karuah, they are aware of the negative attitudes of some residents about Council's role "post by-pass". This is partly because of the community's unrealistic expectations about the time it takes for implementation given the need for relevant studies and consultation with a range of stakeholders.

4.3.5 Conclusion

This section has sought to provide a succinct overview of the social impacts the Karuah bypass has had on residents. As the final section in a three-part assessment on the Karuah bypass, its contents represent the five-year outcomes and impacts on the town's community. The findings of this section aim to provide a direct comparison of data collected in the proceeding two reports, compiled in 2003 (one year before the bypass) and 2005 (one year after the bypass). However, analyzed independently, the data collected for this section represents a concise summary of community sentiment about the bypass and its impact on their community.

The most important findings of this report are:

- Less than 10% of residents consider the long-term effects of the bypass to be negative, and more than half consider the bypass to provide some benefits. Positive effects related to the bypass include an increase in overall safety for residents, and a positive impact on amenity, given the large reduction of noise and traffic pollution.
- There remain strong opinions amongst the community that there is a shortfall in economic activity in the town that needs to be addressed. Karuah must work to develop economically to better support and keep residents.
- There is a substantial economic opportunity available to the town in transforming it into a tourist destination. Respondents also stated that natural factors (rural setting, the river and fishing) were the most positive attributes of the town (60%) that could contribute to its success as a tourist destination.
- Some respondents expressed negative sentiments towards the council and its efforts to improve Karuah's economic situation. This may reflect a lack of understanding about the normal delays in project implementation. About two-thirds of respondents stated they had no knowledge of plans or schemes designed to assist the economic development of Karuah. Perhaps this demonstrates the need for a better

communications strategy to keep residents up to date about the efforts of Port Stephens Council and other government authorities.

Five years after its opening, the bypass continues to have a substantial effect on residents of the town. These findings highlight areas of concern that residents in Karuah as well as a variety of Government agencies must address. The challenge for the future is addressing these concerns and producing successful outcomes.

Chapter 5

Conclusion

The evidence presented in this report makes it clear that the bypass has had a significant effect on Karuah. While it was previously dependent on highway traffic for its viability, that same traffic caused disruption and inconvenience to local residents. Local use of the main road has proven to be a positive outcome of the bypass. Residents are reported to walk more for exercise, because of the quiet and peaceful environment that now exists. The primary school has also benefited from the bypass. Teachers are able to keep windows open in their classrooms without hearing disruptive traffic noise. Students are able to play outdoors in a safer environment. These positive changes are a testament to the benefits of reducing traffic in a highway town.

While Karuah's residents have enjoyed improvements in liveability due to reduced noise and traffic businesses relying on passing motorists have suffered considerably. Petrol stations, accommodation, and food services have had the most negative outcomes, with business closures, decreased revenues, and considerable reductions in employment. Whilst there has been a downturn in Karuah businesses the downturn hasn't been as severe as was predicted and there are signs now of some businesses successfully adapting to the changed circumstances. Indeed, businesses that made adjustments in response to the bypass were found to have better outcomes than businesses that did not make adjustments. As Karuah is no longer servicing many passing motorists, businesses need to focus on the local and regional population for support. Effective management, expanded services, and increased advertising have proven to be the most pivotal aspects of profitable businesses in Karuah.

Port Stephens Council has assisted with the redevelopment of Karuah through a number of projects, including installing the median on Tarean Road, building the playground near the riverfront, funding a new childcare centre, the boat ramp upgrade, and other projects. However, many residents expressed dissatisfaction with Council's contributions. This exemplifies a divide between residents' expectations and Council's ability to meet them. It also highlights residents' lack of awareness in regard to the amount of time it often takes for projects to be approved and implemented, as well as the limited funds and capacity of Council. Unfortunately, many problems that have resulted from the bypass are out of Council's control, and are therefore not easily mitigated. As government bodies are often the easiest to be assigned blame, Council has had to endure much negative criticism as a result of the bypass. This is likely to continue until the economic situation in Karuah improves and more business opportunities are created.

Such opportunities may arise as Karuah's population increases, something that Council expects to see in the near future. The population in Karuah has actually decreased in the last census period (from 2001-2006)⁶. As the bypass was opened in late 2004 and the business survey indicated that the some of the short term economic impacts have eased, it will take the 2010 census to provide a proper indication of the bypass's effect on Karuah's population.

⁶ Using the Urban Centre/Locality of Karuah, the 2001 census reports a population estimate of 1069 compared to 858 persons in 2006. Note however that some of this change may be the result of some census boundary changes

According to local property experts⁷, new housing developments in Karuah should foster more growth over the long-term. While average property prices rose substantially from 2003-2007, they have since levelled out and returned to 2003's prices. Decreases in average property values in Raymond Terrace and Nelson Bay shows that this trend is not out of step with the general Port Stephens area, and this decline could in part be attributed to a downturn in the housing market. Nevertheless, the recent decline in Karuah's property prices is more significant than these other local centres. Rogers indicated that small towns often suffer more during periods of economic decline because of their limited ability to attract new residents.

The effects of the bypass on Karuah offer lessons for future towns that undergo bypassing. Local businesses are imperative to the viability of any small town's economy.

- Towns that have a reputation for offering good ancillary highway services will keep that reputation after being bypassed. Good food, clean toilets, decent accommodation, and roadside attractions can serve as good incentives for drawing motorists and tourists into the town. Having this reputation prior to the implementation of a bypass can prove to be a valuable asset. Continued word of mouth can help to maintain a town's tourist facilities even after being bypassed.
- Highway signage is important. It alerts motorists of the facilities that the bypassed town has to offer, including petrol, food, parks, motor vehicle service repairs, and other such roadside amenities. Motorists are more likely to stop when signage is frequent. Many residents in Karuah felt that Pacific Highway signage was not sufficient.
- Businesses need to adapt quickly to any change in the dynamics of the town and their customer base in order to remain self-sufficient. Making operational adjustments, offering new services, and increasing advertising can have significant positive effects on local businesses. This may also promote healthy competition and cooperation amongst local businesses, which often helps to sustain a market.

In summary, Karuah has both benefited and suffered as a result of the bypass. The most profoundly negative aspect of the bypass is its effect on Karuah's business sector and, consequently, its economy. While many businesses in Karuah have been slow to react to changes in the marketplace, future bypassed towns can learn from this. An economy that can reduce its dependence on passing trade, coupled with a pleasant and relaxed atmosphere, can create an attractive and worthwhile place to live and visit.

⁷ Howard Rogers, Property Manager for Global Property International in the Port Stephens region

Appendices

Appendix A. Business Survey

1. Describe your business

- Restaurant/Café/Takeaway
- Accommodation
- Food
- Club/Hotel
- Petrol Station/Motor Vehicle Services
- General Retail
- Timber Mill
- Professional Services
- Oyster Farm
- Other.....

2. Were you the owner of this business before the opening of the Karuah bypass on September 22, 2004?

- Yes
- No

3. How many employees worked here before the opening of the bypass including you?

	<i>Male</i>	<i>Female</i>
<i>Full-time</i>
<i>Part-time/casual</i>

4. How many employees work here now?

	<i>Male</i>	<i>Female</i>
<i>Full-time</i>
<i>Part-time/casual</i>

5. How has the bypass affected your business revenue?

- No Effect
- Decrease by%
- Increase by%

6. Do you believe the bypass has had a bad affect on the economy of the town as a whole?

- Strongly Agree
- Agree
- Don't Know
- Disagree
- Strongly Disagree

7. Do you believe the bypass has made Karuah a better place to live?

- Strongly Agree
- Agree
- Don't Know
- Disagree
- Strongly Disagree

8. Has your business made any adjustments in response to the bypass?

- No adjustments
- Increased advertising/promotion
- Changes to products/services offered
- Other.....

9. Did your business improve after the adjustments?

- Yes Decrease by%
- Increase by%
- No

10. Are you satisfied with the steps taken by local authorities in response to the bypass?

- Yes
- No
- No opinion

11. What additional steps would you recommend that local authorities make in response to the bypass?

.....
.....
.....
.....
.....

12. How do you see the future of your business in the next 5 years?

.....
.....

Appendix B. Social/Community Survey

Economic and Social Impacts of the Karuah Bypass



Karuah Community Survey SEPTEMBER 2009

Hi, I'm from the University of Sydney and I am doing a survey about the Karuah bypass:
Do you live in Karuah or the surrounding region?

YES	
NO	

If NO, then what is your reason for being here? and, END SURVEY

1. How long have you lived in the Karuah region?

Under 1 Year	
1-2 years	
3-6 years	
7-10 years	
Over 10 Years	

1b. If under 6 years, why have you moved to Karuah?

family	
work	
retirement	
other	

2. Do you intend to live in Karuah in the long term?

YES	
NO	
Don't Know	

3. Do you want to attract more residents to Karuah?

YES	
NO	
Don't Know	

4. What do you consider to be Karuah's positive attributes? (mark all that apply)

Rural Setting	
River	
Fishing	
Sense of Community (people)	

Other: _____

5. How has the Karuah Bypass effected you?

Negative	
Positive	
Nothing Change	
Both	
Don't Know	

5a. Explain:

6. Where do you think the economic opportunities lie for Karuah? (mark all that apply)

Oyster Farming	
Chicken Farming	
More Residents	
More Shops	
Retirement Village	
Tourism	
More People Stopping	
Don't Know	

Other: _____

7. Do you want to attract more industry or businesses to Karuah and surroundings.

YES	
NO	
Don't Know	

8. Have you heard of any plans/schemes to assist the economic development of Karuah?

YES	
NO	

9. Age group

Under 19	
20-29	
30-39	
40-49	
50-59	
60-69	
70 and over	

10. Sex

Male	
Female	

11. Do you have any children living at home with you?

YES	
NO	
Live alone	

12. Where do you work?

Karuah	
Sydney	
Newcastle	
Raymond Terrace	
Other (specify)	

13. Any other comments you would like to make about the bypass?

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