



UPGRADING THE ROUTE BETWEEN COONABARABRAN, PILLIGA AND MUNGINDI

FEASIBILITY ASSESSMENT – FINAL REPORT

**PREPARED FOR WARRUMBUNGLE, NARRABRI AND WALGETT
SHIRE COUNCILS**

By PEECE Pty Ltd

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Abstract

The report looks at the engineering, economic and financial feasibility of upgrading the route between Coonabarabran, Pilliga and Mungindi. This report has been prepared for the three Councils to support a funding application to the State and Commonwealth Governments for upgrading the route.

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SUMMARY

The route connecting Coonabarabran, Pilliga, Burren Junction, Collarenebri and Mungindi comprises a mixture of local, regional and state road sections. Notwithstanding, it is an important north-south route for the local communities and regional industries. The regional industries include a large, diverse and highly productive agricultural sector and a growing road-based tourism industry.

Unfortunately the route has not been upgraded to meet current expectations due to priorities being left to individual Councils rather than based on a regional perspective. This has resulted in three sections still being unsealed and susceptible to disruption during wet weather and flooding.

The feasibility study identified the infrastructure issues that influence the development of the route as well as an assessment of future traffic demand if the route was fully sealed. The Infrastructure Plan identified \$46.12 million of capital works based on the following priority:

- Priority 1 – sealing the existing unsealed roads, widening to accommodate high productivity vehicles and urgent safety works;
- Priority 2 – safety of the road for existing and future traffic once the Priority 1 works have been completed; and
- Priority 3 – rehabilitation of the existing sealed sections that are showing distress and other minor works.

The Plan identified \$32.72 million of high priority works including the three unsealed sections which are shown in Table 1.

Table 1: Description of high priority works

Section	Description	Cost, \$ million
Coonabarabran – Baradine	Widen 8km of narrow seal to accommodate high productivity vehicles	\$3.20
Baradine – Pilliga	Gravel and seal 29km of unsealed road between 41-70 km north of Baradine	\$8.11
	Widen 7.5km of narrow formation on a high embankment 20km north of Baradine	\$2.62
Pilliga – Burren Junction	Gravel and seal 29km of unsealed road between 2-33 km north of Pilliga	\$5.84
Burren Junction – Collarenebri	Urgent safety works to replace floodway deficient guardrail and severe edge and pavement failure	\$1.10
Collarenebri – Mungindi	Gravel and seal 55km of unsealed road between 26-82 km south of the NSW Border	\$11.84
Total		\$32.72

The forecast growth in traffic following the sealing of the route was converted to transport economic benefits which were used with the capital cost in a cost benefit analysis. The benefits exceed the costs for two of the three sections and overall the total benefits exceed the total capital costs, as shown in Table 2.

Table 2: Economic results

Section	Capital Cost	Benefit Cost Ratio @ 7% Discount Rate
Baradine – Pilliga	\$8.11	0.8
Pilliga – Burren Junction	\$5.84	1.1
Collarenebri – Mungindi	\$11.84	1.2
Total/Overall	\$25.79	1.1

The feasibility assessment also explored the various funding sources and proposed a funding arrangement that involved funding from the three levels of government. The proposed funding contributions are shown in Table 3.

Table 3: Proposed funding contributions

Funding Source	Total	%
Commonwealth	\$16,331,000	50%
State	\$11,000,000	34%
Council	\$5,389,000	16%
Total	\$32,720,000	

The financial analysis showed how the project might be funded. Whilst the three Councils are prepared to make a significant contribution from their own sources, the project needs both Commonwealth and State financial support.

1. INTRODUCTION

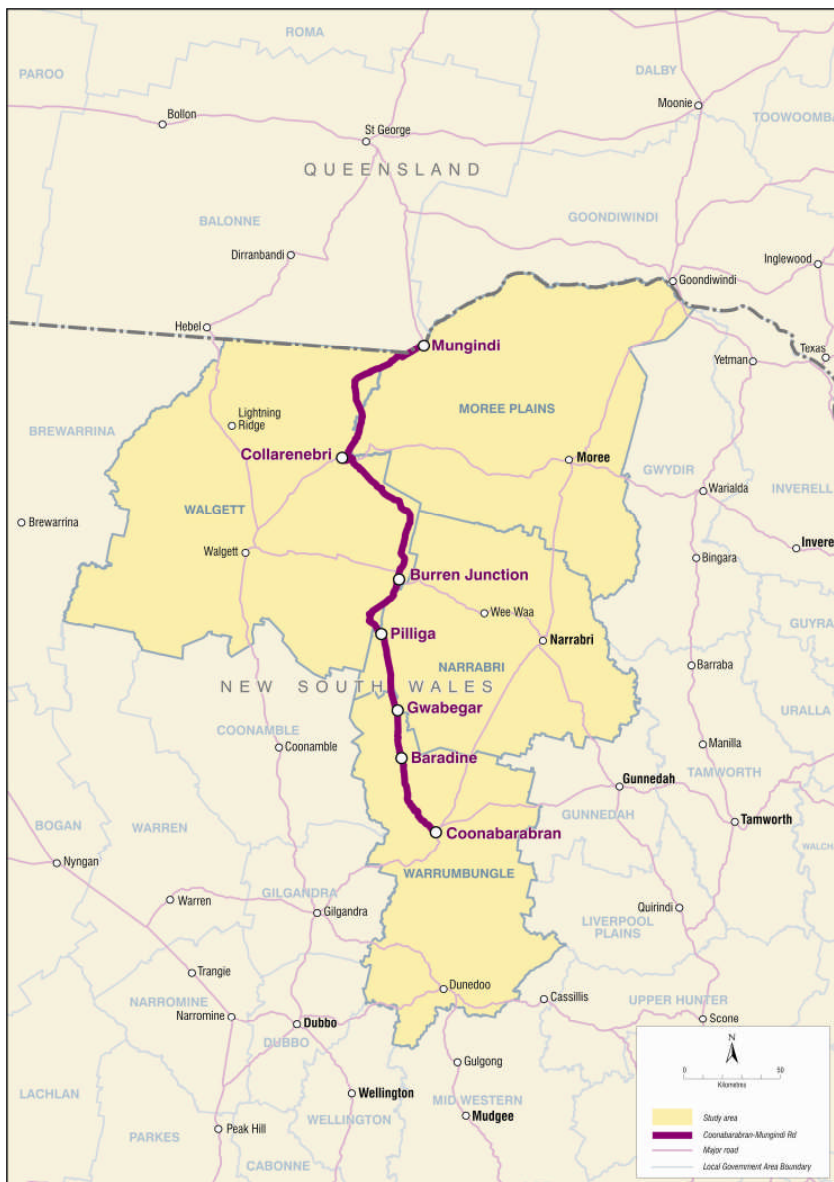
This section provides an introduction to the feasibility study. It describes the various road sections of the route, the three Shires involved and the main centres served by the route.

1.1 Purpose of the Study

Mungindi is located due north of Coonabarabran, as shown in Figure 1.1. Whilst Coonabarabran is in Warrumbungle Shire, the direct route to Mungindi passes through Pilliga in Narrabri Shire, and Burren Junction and Collarenebri in Walgett Shire. Mungindi itself is located in the north-west tip of Moree Plains Shire.

The road has three sections of unsealed road which severely restrict the movement of traffic through its entire length, particularly in times of wet weather.

Figure 1.1: The Study Area



The direct route has not been upgraded to a consistent, safe or accessible standard due to the way the road networks within each of the three Shires have developed over the last 50 years in north-west NSW. Each Council has developed its road network to meet the needs of their respective communities without necessarily taking into account the needs of communities in adjoining Council areas or the transport needs of industries at a regional level.

The purpose of this study is to assess the benefits from upgrading the route to a standard that meets the expectations of the communities and industries that rely on the route for transport.

1.2 Description of the Route

The route is made up of five sections:

1. It commences in the Warrumbungle Shire at the Newell Highway in Coonabarabran and follows Main Road 129 north to Baradine. This section of the route is sealed but has some sub-standard sections.
2. From Baradine it follows Main Road 329 north through Gwabegar and then into Narrabri Shire to Pilliga. This section north of Gwabegar is unsealed.
3. It then enters Walgett Shire on Council Road 7716 in Pilliga before following Bugilbone Road (Shire Road 103) to Burren Junction. The Bugilbone Road section is unsealed.
4. At Burren Junction the route follows a 5 km section of the Kamilaroi Highway (State Highway 29) before heading north along the northern section of Main Road 329 to the Gwydir Highway (State Highway 12) east of Collarenebri and then a further 9 km into Collarenebri. The section is sealed but is showing some pavement distress despite recent construction.
5. The final section follows Main Road 457 from Collarenebri north to the Queensland Border to the west of Mungindi. This section is mostly unsealed.

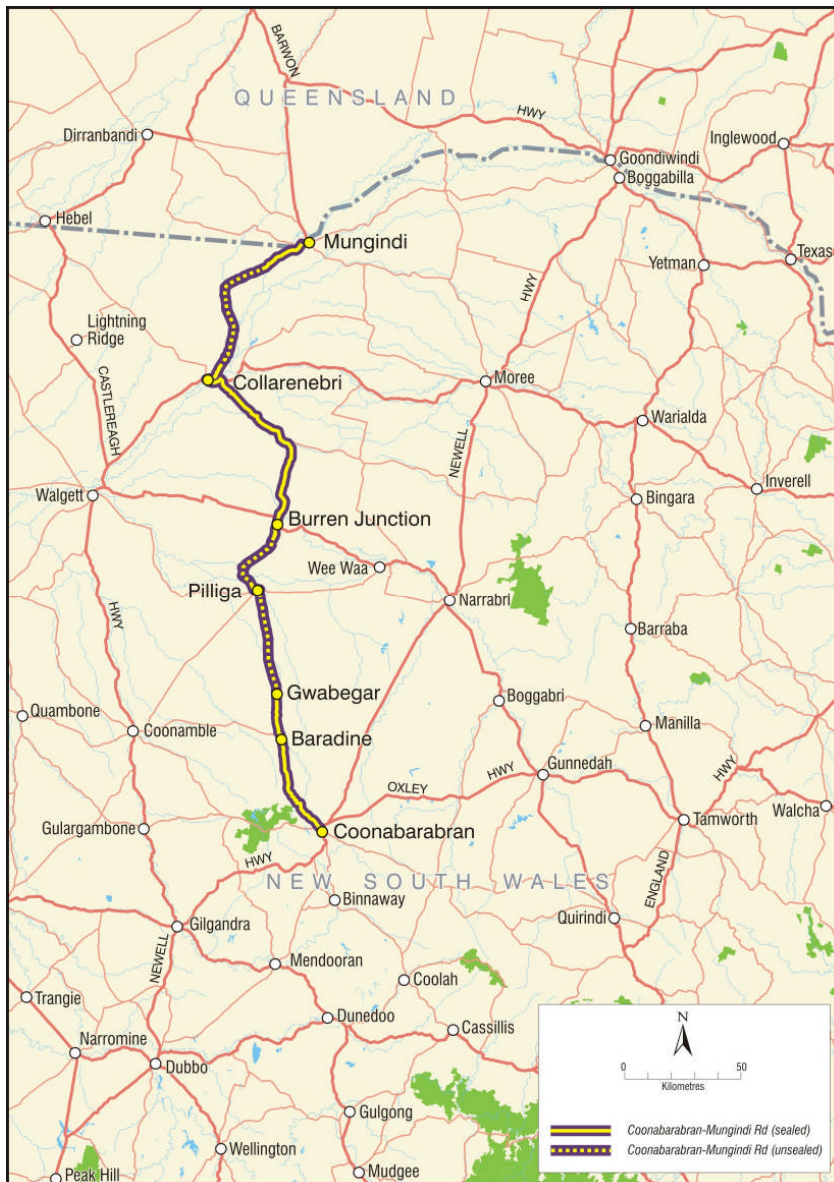
The total length between Coonabarabran and the Queensland Border is 335 km comprising 13 km of State Highway, 282 km of Regional Road and 40 km of local Shire Road.

85 km (25%) of the road is in Warrumbungle Shire, 75 km (22%) in Narrabri Shire and 175 km (52%) in Walgett Shire.

The road continues into Queensland a further 6.2 km to connect with the Carnarvon Highway, 2 km to the north of Mungindi.

Figure 1.2 is a map showing the location of the route from Coonabarabran to the Queensland Border to the west of Mungindi. The three unsealed sections are shown on the map.

Figure 1.2: Location of the Coonabarabran-Pilliga-Mungindi Route



1.3 The Three Shires

The route runs through three shire council areas, namely Warrumbungle Shire in the south; Narrabri Shire in the central area; and Walgett Shire to the north. Information regarding these shires is summarised in Table 1.1.

Table 1.1: Summary information for three Shires

	Shire Council		
	Warrumbungle	Narrabri	Walgett
Administrative Centre	Coonabarabran	Narrabri	Walgett
Other towns on route in Shire	Baradine,	Pilliga, Gwabegar	Mungindi ^a , Collarenebri, Burren Junction
Shire Population			
2001	10,849	14,537	8,328

	Shire Council		
	Warrumbungle	Narrabri	Walgett
2009	10,323	13,693	7,209
AAGR % p.a.	-0.6%	-0.7%	-1.8%
% change 2008 to 2009	+0.8%	+0.9%	+1.2%
Land area (km ²)	12,380	13,031	22,336
Population density persons/km ²	0.8	1.1	0.3
Business function	District service centre	Regional service centre	District service centre
Community services	Self sufficient	Self sufficient	Self sufficient
Type of farming	Mainly dryland	Dryland & irrigated	Dryland & irrigated
Forestry	Significant	Minor	Minor
Mining	Minor	Gas & coal	Opals at Lightning Ridge
Tourism drivers	National Parks & Astronomy	Astronomy & National Parks	Lightning Ridge

a Located just to the north-east of the Walgett Shire boundary in Moree Plains Shire

The main base industries of the three shires focus on cropping and livestock production. However, there are important differences between the shire economies. Warrumbungle Shire does not have significant irrigated cropping, but it has retained a forestry industry (based mainly on milling in Baradine and logging of State Forests) and is extending its tourism industry by promoting nature-based tourism in the Baradine and Pilliga Forest areas.

Narrabri Shire has the largest and most diversified economy, which includes a developing a coal and gas industry. In addition, Narrabri (together with Moree) are the main transport hubs in north-west NSW. Walgett Shire has a very similar agricultural economy to that of Narrabri Shire. It also has an historic opal mining industry at Lightning Ridge which is an important tourism asset for the region.

Both Warrumbungle Shire and Narrabri Shire are serviced by the Newell Highway which is the main inland interstate freight corridor between Melbourne and Brisbane. Walgett Shire lies further to the north-west and is serviced by the Castlereagh, Gwydir and Kamilaroi Highways.

Road train access is an important factor for shires in north western NSW, particularly for longer distance transport of grain, cotton (raw and processed) and livestock. In contrast to the other shires, as well as Moree Plains Shire, Warrumbungle Shire has very limited road train access. Most of the section between Baradine and Coonabarabran has only B-Double access. There is no road train access into Coonabarabran on any roads in the Shire.

The three Shires have a range of health, education and recreation services. In these shires, however, Narrabri would be the only regional centre.

Each Shire has experienced population declines since 2001. This would appear to be caused in large part by poor seasonal and trading conditions in agriculture. Better conditions saw the region's population rise in 2009.

1.4 The Centres Served by the Route

There are seven main centres¹ served by the route. Travelling in a northerly direction from the Newell Highway, they comprise Coonabarabran on the Newell Highway, then Baradine, Gwabegar, Pilliga, Burren Junction, Collarenebri and Mungindi on the Queensland border.

Coonabarabran

Coonabarabran is the administrative centre for Warrumbungle Shire and is located near the centre of the shire. The township has a population of about 2,500 residents. It has national and international recognition as an Astronomy Centre. It has well developed retail services and numerous tourism opportunities, serviced by approximately 60 accommodation facilities in Coonabarabran and surrounding villages. Coonabarabran is a destination as well as a stop-over point for long distance travellers on the Newell Highway. The landscape and national parks of the area are an important attraction. The landscape varies from extensive plains and undulating hills through to the high basaltic plateau of Coolah Tops in the east, and rugged mountain peaks of extinct volcanoes in the west.

Coonabarabran hosts a number of events, some of which are promoted to a broader audience outside the region. Specific events include the Markets on the 4th Sunday of the month, Spring racing, Science in the Pub, Coona Yabby Races, The Bok Lecture, Warrumbungle Arts & Craft, Billy Cart Derby, Veterans Touch Footy Carnival, Crooked Mountain Concert, Coonabarabran Show, North West Equestrian Expo, and the Tour de Warrumbungles Bike Ride.

The shire is an indigenous meeting place for traditional owners, custodians, and members of the Gamilaraay, Wiradjuri, Weilwan and Kawambarai (Werriri) peoples.

Baradine

Baradine is located approximately midway between Coonabarabran and Pilliga. At the 2006 census (2006) it had a resident population of 593.

Baradine provides a number of services including:

- Central School;
- Catholic Primary School;
- Hospital (including accident and emergency, GP and allied health services). Patients are assessed at Baradine Hospital before being sent to Dubbo Base Hospital or other hospitals as necessary;

¹ There some very small villages also located on or near the route including Bugaldie and, Kenebri near Baradine, and Rowena and Pokataroo between Burren Junction and Collarenebri. These villages have populations of less than 50 residents.

- NSW Parks & Wildlife Service; and
- Forests NSW.

School buses travel along the route, picking up children for Baradine Central School from the nearby villages of Kenebri and Gwabegar and properties. There are various school functions, carnivals, combined sports, musical and other events held in Baradine that children attend. In addition, some high school students commute to Coonabarabran from Baradine and the area by school bus.

There is also some commuting for work between Baradine and Coonabarabran.

Baradine has been experiencing a decline in the forestry industry for some years. There were further closures as a result of recommendations of the Brigalow Belt South Bio-Region Assessment on Natural Resources completed in 2005. There is now only one saw mill operating in Baradine processing logs from State Forests. In addition, there are some very small mills processing logs from private properties.

Baradine was also impacted by the closure of the rail service in 2003, which serviced the grain receival depot. All grain is now transported from the depot by truck.

The town is now 're-inventing itself,' by placing greater emphasis on tourism, and searching out new business opportunities for the district, including projects for value adding waste forest and processed timber materials.

Baradine is promoted as the Gateway to the Pilliga Forest, which is the largest native inland forest west of the Great Dividing Range in NSW. The Pilliga Forest Discovery Centre was opened in March 2009 by the NSW National Parks and Wildlife Service and provides important interpretive services for visitors. Visitors can take scenic drives through the forests, use various bird and wildlife watching trails and picnic facilities and see various historic and Indigenous heritage sites and sculpture displays.

The road section from Baradine to Pilliga can be used as part of an alternative route between Coonabarabran and Narrabri. This would become more of a tourism byway if it were fully sealed, and is likely to attract more vehicles towing caravans and camper trailers. Similarly, the route provides an alternative access to Lightning Ridge for tourists, via Pilliga, Burren Junction and Collarenebri, but again it would need to be fully sealed before it could be used regularly by tourists.

Gwabegar

Gwabegar is a village of about 110 residents, located within the Pilliga State Forest.

Gwabegar has a primary school, a modern and well-resourced community centre (Community Link Centre), a multipurpose sports court, a general store, post office and a 'primitive' camping ground.

Historically, Gwabegar had a well developed saw milling industry, similar in size to that in Baradine. However, by 2005, it had only one sawmill drawing logs from State Forests. This mill was closed as a result of the Brigalow Belt South Bio-Region Assessment recommendations. The only remaining forestry activity centres on a firewood business which sells processed residue timbers in the Sydney market.

The town was also impacted by the cessation of rail services between Baradine and Gwabegar in 2001. The grain receival depot was closed about the same time.

Gwabegar can be isolated during wet periods, if the road is closed or becomes difficult to navigate. High road roughness also reduces trip frequency to larger centres such as Narrabri for community events.

There have been major bushfires in the Pilliga Forest. Access for all emergency vehicles from Narrabri, Wee Waa and Coonabarabran will be improved with sealing of the road.

Gwabegar is very reliant on visiting community health services which are contingent on road access. Indigenous residents also travel to medical clinics in Pilliga.

Pilliga

Pilliga is a village of about 120 residents, located near the northern edge of the Pilliga Forest. Pilliga is situated at a five-way junction of roads connecting to Narrabri via Wee Waa (recently sealed), Gwabegar, Coonamble, and Walgett via Burren Junction and via Come-By-Chance.

Pilliga has a range of services, including a small primary school, police station, Post Office, café, pub, a store, and fuel station, and the Community Link and Rural Transaction Centre with attached multipurpose courts. Mail runs are conducted from Pilliga to outlying centres.

A high proportion of the population is Indigenous. The Walgett Aboriginal Medical Services provides a doctor and podiatrist service, as well as mental health and diabetic services to Pilliga and Gwabegar residents. Indigenous residents are resourced through the Closing the Gap program.

The services delivered from Walgett can be affected during wet weather. Also, Community Nurses from Narrabri are not permitted to travel to the area through rain affected areas for safety reasons.

There has been local employment for people working in the cotton industry. However, with the introduction of genetically modified cotton varieties and greater mechanisation, local employment opportunities are declining. As for Gwabegar, there is a need to create new employment opportunities. Pilliga has benefited from the completion of road sealing programs between Coonamble and Wee Waa, which has contributed to the re-opening of the cafe, the fuel station and the town pub.

In 2007, Creating Growth Pty Ltd facilitated the development of the Gwabegar and Pilliga Community Economic Development Strategic Plan to improve their area's economic and social health and vitality. The Plan focuses on three key themes:

- Lifestyle and Youth;
- Business and Economic Development; and
- Visitation and Marketing.

Pilliga has some tourism attractions which are 'visible' to people living outside the region.² The hot artesian mineral water bore baths, for example, provide broader tourism attraction for grey nomads and others. These baths are considered by many to have therapeutic properties, and are being used by more tourists now that road access from Coonamble and Narrabri has been improved. The facility has been recently upgraded by Narrabri Council.

A Bore Baths tourism route is being developed by the Narrabri Tourism and Visitor Centre, which includes the facilities at Pilliga, Burren Junction, Walgett, Lightning Ridge and Moree.

There is also a lagoon between the town and the bore baths near Pilliga, which is popular for canoeing and bird-watching. The lagoon attracts a high diversity of bird species including some coastal migratory birds.

Burren Junction

Burren Junction is a village of approximately 150 persons. It is located on the rail branch line between Narrabri and Walgett, and has a Graincorp receival depot.

It has a fuel station, general store, a club, sports ground and a library deposit station. Its Junction City Hotel is a well known venue for touring bands in the Region

It has floodlit bore baths, which are popular with tourists.

The village is on the bird watching map. In 2006 the first Australian record of a Grey-headed Lapwing (a migratory bird native to Eurasia) was reported at Burren Junction.

Events in Burren Junction include the Gyrocopter Get-Together in June and the Burren Junction Flower Show in September. The Bore Rats Bachelor and Spinster Ball is held each year and draws people from outside the region.

Collarenebri

Collarenebri is at the crossroads of the Gwydir Highway from Moree, and the Baradine-Collarenebri Rd. At the 2006 census, the town had a resident population of 478.

The main services at Collarenebri include a Central School, hotel, local radio station specialising in indigenous programming, visitor information centre, and a hospital.

There are cotton gins located in the district at Collymongle Station to the east of the township and at Merrywinebone to the south. Merrywinebone also has a grain receival depot serviced by rail and a cattle feedlot.

Collarenebri has various tourism assets. The internationally renowned Gwydir Wetlands (a RAMSAR site) lies just to the east. It is the habitat for a myriad of significant local and migratory bird species, many of which are classified as threatened or vulnerable. The Barwon River passes near the town, and is known nationally for its fishing. The river also has numerous camping sites.

² The Pilliga Scrub can be a mysterious area and some locals speak of sightings of the Pilliga Yowie!

There are fossicking sites in the area for gemstones including topaz, agate and petrified wood.

Collarenebri has been recorded as a significant site and continues to be so for Indigenous people. There are artefact sites along the Barwon River. Also, there is an Aboriginal cemetery located outside the town which is unique to the area.

Youth services in the Shire are concentrated in Lightning Ridge and Walgett, with limited services in Collarenebri. The town can be isolated during a major flood event.

Mungindi

Mungindi is a border town situated on the Carnarvon Highway, and straddles the Barwon River. At the 2006 census, its population comprised 626 in NSW, and 176 in Queensland. Mungindi has two hotels, one caravan park, two fuel stations, a supermarket, a hospital, health centre, an aged care facility, a Central School and a Catholic Primary School. There are two cotton gins at Mungindi and one grain receival depot at Weemelah to the east of Mungindi.

The town is well equipped with sporting facilities including a golf club and a horse race track. There are a number of events sponsored for Mungindi including a biennial music festival.

1.5 The Industries Served by the Route

The main industries serviced by the route are as follows:

- Livestock – mainly sheep and cattle. Only one cattle feedlot located on the route at Merrywinebone between Burren Junction and Collarenebri;
- Grain – dryland cropping with principal crops being wheat (in winter) and sorghum (in summer);
- Cotton – mainly irrigated except in Warrumbungle Shire;
- Forestry – one regional sawmill at Baradine and logging of Cyprus Pine and Iron Bark in the Pilliga forests; and
- Tourism – mainly passive tourism from private vehicle touring. The main concentration of tourism activity is between Coonabarabran and Baradine.

The relative importance of specific road sections is summarised in Table 1.2.

Table 1.2: Important industries for each section

Section:	Livestock	Grain	Cotton	Forestry	Tourism
Coonabarabran to Baradine	Medium – no road train access	High – Receival depot at Baradine but no rail service	Nil	High – regional sawmill at Baradine	High – linkage between Newell Highway and Pilliga Forest areas
Baradine to Pilliga	Medium because of poor road	Medium – mainly local because of road	Nil	High – major logging	Low because of condition of road. Potentially part of

Section:	Livestock	Grain	Cotton	Forestry	Tourism
	condition	condition		route from State Forests	a tourism byway off Newell Highway via Baradine & Pilliga
Pilliga to Burren Junction	Medium because of poor road condition	Medium Receival depot at Burren Junction	Medium	Minor	Minor. Not part of recognised tourism route
Burren Junction to Collarenebri	High – farm movements & feedlot at Merrywinebone	Very high. Receival depots at Burren Junction & Merrywinebone	High. Cotton gins at Merrywinebone and Collymongle	Nil	Minor. Not part of recognised tourism route
Collarenebri to Mungindi	Medium because of poor road condition	Medium because of poor road condition	Medium. Two cotton gins at Mungindi (one not operating)	Nil	Minor. Not part of recognised tourism route

Agriculture

Agricultural freight movements between farms, major aggregation points (such as saleyards, grain receival depots and cotton gins), ports and domestic markets traverse a wide region serviced by the Coonabarabran – Pilliga – Mungindi route. Statistics are provided in Appendix A for the three Council areas traversed by the corridor as well as the adjacent Moree Plains and Coonamble shires (combined area referred to as the wider region).

Sheep and cattle

The wider region encompassing the five shire areas accounts for about 6-7% of sheep numbers and 11% of meat cattle numbers in NSW.

Regional sheep numbers fell by about 3.5% per annum from approximately 2.6 million head in 2000-01 to 2.2 million head in 2005-06. Meat cattle numbers grew marginally during the same period by 0.5% per annum from about 637,000 to 653,000 head.

Estimates were provided by the local community for dry sheep equivalent turnoff for properties between Mungindi and Collarenebri. This section is approximately 100 km in length and represents about one third of the total road length of the route. Local properties turnoff about 80,000 dry sheep equivalents per annum, which translates to approximately 400 trailer movements annually or some 8 movements per week. Local livestock movements on other sections are expected to be broadly similar on a prorated basis. Also, all sections on this route carry, to varying degrees, intra-regional and inter-regional livestock traffic servicing property, saleyard, and feedlot movements, and direct deliveries of sheep and cattle to meat processors in NSW and Queensland.

The use of saleyards by properties in the region is widely dispersed. However, the main saleyards are located along the Newell Highway (and its northern extension in

Queensland) from Goondiwindi to Dubbo as well as further to the east at Tamworth and Inverell. There is also direct electronic trade in livestock that bypasses saleyards for auction, but can be used for weighing and exchange of ownership.

For centres to the north of Coonabarabran on the Newell Highway, the predominant corridors for transporting sheep and cattle are the Carnarvon, Gwydir and Kamilaroi Highways. These highways provide road train access to saleyards on the Newell Highway. Further to the south, Dubbo is a major centre for sheep sales and processing. Dubbo has road train access via the Castlereagh and Mitchell Highways, but not via the Newell Highway.

The main processing works for sheep are located at Dubbo, Tamworth and Wallangarra (in Queensland), and for cattle, at Inverell and Tamworth. Cattle are also processed in south east Queensland. Similar corridors are used as for saleyard transactions.

More livestock transport would occur on the northern section of the route if it were upgraded as it provides road train access between NSW and Queensland. However, the lack of road train access between Baradine and Coonabarabran and on entry points into Coonabarabran on the Newell Highway and other roads would constrain further increases in long distance livestock traffic on the southern section of the route.

There is one major cattle feedlot located on the route at Merrywinebone. It has a licensed holding capacity for 5,000 head. Management advised they aim to turnoff 600 head per week on a self-replacing schedule, giving 1,200 cattle movements per week. The cattle are transported in B-doubles. On this schedule, cattle transport would generate about 18 B-double movements per week. The cattle are mostly sourced from saleyards at Moree and Narrabri and processed at Tamworth or Brisbane. Feed grain is sourced from adjacent farms. This feedlot uses mainly the section of the route between Burren Junction and Collarenebri.

Grain

From 2000-01 to 2005-06, total grain production in the wider region increased from 1.7 to 2.6 million tonnes or by 8.9% per annum. Production rose mainly because of a rise in productivity per hectare, and to a lesser degree because of an increase in the area cultivated for grain. In 2005-06, this region produced about 19% of total cereal grain production in NSW.

The quantities and direction of travel of grain from farms in the region are highly variable. For the same grade of grain, there are numerous factors which influence transport patterns including the following:

- Seasonal conditions;
- Distance from farm and accessibility to receival depot;
- Marketing agent;
- Handling charges at receival depots;
- Freight rates from receival depot to port;
- Port costs (comparison of Newcastle and Brisbane costs).

Farmers also adopt on-farm storage strategies to optimise the timing of grain sales in various markets.

The main receival depots in use in the region are shown in Table 1.3. The combined storage capacity is about 2.7 million tonnes. All depots, with the exception of Baradine, are serviced by rail.

Table 1.3: Receival depot capacity: main depots, tonnes

Location of receival depots	Tonnes
Thallon (Qld)	342,000
Talwood (Qld)	307,000 ^a
Weemelah	310,000
Merrywinebone	300,000
Burren Junction	130,000
Moree	520,000
Bellata	462,000 ^b
Narrabri	132,000
Walgett	315,000
Baradine	80,000

a Includes 92,000 t (GrainCorp) and 215,000 t (AWB GrainFlow)

b Includes 242,000 t (GrainCorp) and 220,000 t (AWB GrainFlow)

Source: GrainCorp, pers.comm.

GrainCorp has provided average grain haulage estimates by road section, which are shown in Table 1.4. From year to year, however, haulage varies substantially depending on seasons and direction of travel. The highest haulage is on the Burren Junction to Collarenebri section which is serviced by two receival depots with a combined storage capacity of 430,000 tonnes. Nevertheless, some large grain growers in this area transport their export grain to Bellata on the Newell Highway to take advantage of lower rail freight rates. Bellata has both GrainCorp and AWB GrainFlow terminals.

The grain transported to the feedlot at Merrywinebone is supplied by local farms. Trucks hauling this grain only cross the road section between Burren Junction and Collarenebri at various points and do not utilise significant lengths of this road section.

Table 1.4: Estimates of average annual grain haulage by road section

Section	Tonnes p.a.	Semi-trailer equivalent movements per annum	Av.daily STE movements
Coonabarabran to Baradine	70,000	5,600	15
Baradine to Pilliga	20,000	1,600	4
Pilliga to Burren Junction	100,000	8,000	22

Section	Tonnes p.a.	Semi-trailer equivalent movements per annum	Av.daily STE movements
Burren Junction to Collarenebri	350,000	28,000	77
Collarenebri to Mungindi	150,000	12,000	33

STE semi trailer equivalent

Source: GrainCorp

There is relatively high haulage between Collarenebri and Mungindi despite the condition of the road. About 80% is originating from locations outside local farming areas. Local farms produce on average about 30,000 tonnes of grain per annum

Grain haulage on the Pilliga to Baradine section is generally low despite there being a receival depot at Baradine³. Because this receival depot is no longer serviced by rail, some grain produced in the area is hauled directly from farms to Newcastle via Coonabarabran. Grain stored at the Baradine receival depot is mostly hauled by road to Newcastle, but some grain is transported from this depot to the rail head at Burren Junction.

Export grain delivered from farms to the Merrywinebone and Burren Junction depots is largely hauled by rail to Newcastle at the present time. However, with priority being given to coal at the Newcastle Port, the number of slots allocated to grain is likely to decrease, thereby increasing the amount of road transport.

Some of the export grain held in bunker storage is trucked to other receival depots before dispatch for export. Inter-depot transport of grain and grain sold to domestic markets is normally transported by road.

Cotton

Regional cotton production increased by about 1% per annum from 0.89 million tonnes in 2000-01 to 0.93 million tonnes in 2005-06. Productivity increased by 7% per annum during the same period. Over 90% of the cotton (by tonnage) that is produced in the region is irrigated cotton. Very little cotton is grown in Warrumbungle Shire, and no irrigated cotton was reported for this shire in the two reporting years.

Raw cotton is transported from farms to cotton gins. Pricing arrangements vary across gins and by season. Most gins have an upper processing capacity of about 100,000 to 140,000 tonnes. In good seasons, there is greater use of gins further from farms due to a lack of local processing capacity. The main gins in use by farmers are located at or near Mungindi, Boomi, Colleymongle, Merrywinebone, and Wee Waa. Cotton is also processed in Queensland at centres including Dirrinbandi and St George.

³ It was advised that in the current season, about 60,000 tonnes have been transported from the Baradine receival depot to the rail head at Burren Junction. A further 110,000 tonnes have been transported from an area to the west of Pilliga (serviced by the Come-by-Chance road) via Pilliga to Burren Junction. Thus, tonnages on the Baradine to Burren Junction sections can fluctuate to high levels in good seasons.

The gins that are adjacent to the route are those at Mungindi, Colleymongle and Merrywinebone. All cotton lint and cotton seed is hauled by road from these gins.

Estimates are provided in the Table 1.5 for cotton haulage on specific sections of the route for the current season and the annual average over the previous five years.

The main cotton traffic is on the section between Burren Junction and Collarenebri due to movements to and from the gin at Merrywinebone. Total tonnage on this section has been estimated at 176,000 tonnes for the current season. In the previous five years, the annual average haulage was about 61,000 tonnes per annum. On other sections, there is less cotton traffic.

Table 1.5: Haulage of raw cotton and processed lint and cotton seed, current season and average for previous 5 years

	Raw cotton	Processed lint	Cotton seed	Total	Semi-trailer equivalent movements pa	Av. daily STE movements
Current season (2010)						
Coonabarabran to Baradine	0	0	0	0	0	0
Barradine to Pilliga	0	0	0	0	0	0
Pilliga to Burren Junction	25,000	0	0	25,000	2,000	6
Burren Junction to Collarenebri	95,000	37,000	44,000	176,000	14,080	39
Collarenebri to Mungindi	56,000	0	0	56,000	4,480	12
Average per annum last 5 years (excl 2010 season)					Semi-trailer equivalent movements pa	Av.daily STE movements
Coonabarabran to Baradine	0	0	0	0	0	0
Baradine to Pilliga	0	0	0	0	0	0
Pilliga to Burren Junction	3,000	0	0	3,000	240	1
Burren Junction to Collarenebri	33,000	13,000	15,000	61,000	4,880	13
Collarenebri to Mungindi	9,000	0	0	9,000	720	2

Note: all tonnages rounded to the nearest 1,000 tonnes.

Source: Cotton industry sources

Forestry

Baradine Sawmilling Company (a subsidiary of Gunnedah Timbers) operates the only major sawmill along the route at Baradine. The company harvests and mills white cyprus pine under a 20 year Wood Supply Agreement with Forests NSW. This agreement enables the harvesting of 20,000 m³ or approximately 25,000 tonnes of white cyprus pine logs per annum.

The sawmill harvests forest compartments in the Pilliga Forest areas mainly to the north of Baradine. There is also some logging in compartments near Bugaldie, between Baradine and Coonabarabran.

Forests NSW estimated that approximately 60-70% of the logs would enter the Baradine to Pilliga road section at Kenebri. A further 10-15% of log supplies would be drawn from the south east from near Bugaldie, while the remainder would enter Baradine on other roads predominantly from the north east. Approximately 10,000

to 12,000 tonnes of processed timber are transported from Baradine to the Newell Highway via Coonabarabran.

There are no sawmills remaining in Gwabegar, but an operator has a residue log contract of some 5,000 to 6,000 tonnes per annum. The residue logs are transported to Gwabegar via Kenebri on the Baradine to Pilliga section. These logs are mainly processed for firewood and sold in the Sydney market.

There are two to three very small sawmills sourcing logs from private properties in the region. These mills process about 1,000 tonnes of logs per annum.

Estimates for haulage of logs and processed timber are shown in Table 1.6 by road sub-sections.

Table 1.6: Log and processed timber haulage between Coonabarabran and Gwabegar

Road sub-sections:	Logs	Processed timber	Total	Semi-trailer equivalent movements pa	Av. daily STE movements
Coonabarabran to Bugaldie		18,000	18,000	1,440	4
Bugaldie to Baradine		18,000	18,000	1,440	4
Baradine to Kenebri	17,000	6,000	23,000	1,840	5
Kenebri to Gwabegar	6,000	6,000	12,000	960	3

Source: Forests NSW

The tonnages are relatively low, ranging from about 12,000 to 23,000 tonnes per annum. The highest haulage impact is on the road sub section between Kenebri and Baradine.

Tourism

Overview

Tourism activity in the region is generated by private vehicle and coach travellers who visit the region or on overnight stopovers. The most recent statistics from Tourism Australia (Table 1.7) show overnight stay visitor numbers ranging from 67,000 visitors for Walgett Shire to 122,000 visitors for Warrumbungle Shire.

Table 1.7: Overnight visitors: Warrumbungle, Narrabri and Walgett Shires

Shire:	Visitors '000	Visitor nights '000	ALOS (Days)	% car travel	% Multiple stopovers
Warrumbungle	122	223	1.8	94%	63%
Narrabri	105	266	2.5	93%	59%
Walgett	67	298	4.5	81%	50%

Note: 3-4 year average to June 2007

Source: Tourism Australia

The statistics in the table show that a relatively high proportion of visitors to the shires are car travellers who engage in multiple stopovers in the region. The numbers of car groups in this category range from about 14,000 to 36,000 groups per annum.

Further information is provided in Table 1.8 and Figure 1.2 regarding visitor numbers to selected Visitor Information Centres (VICs). Statistics for Lightning

Ridge and Brewarrina are included to provide indicators of potential numbers of visitors touring in areas to the west of the Newell Highway.

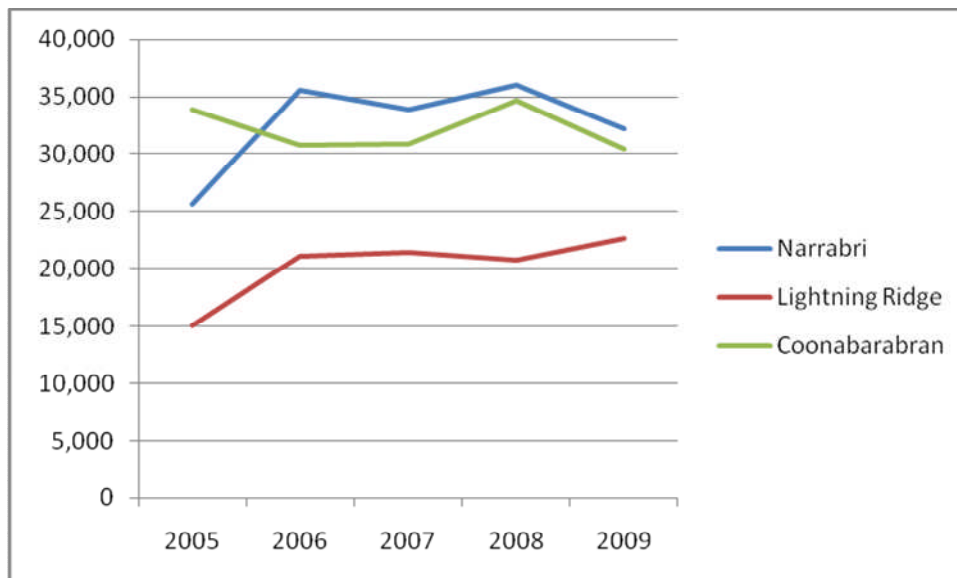
The Outback NSW Tourism Organisation advised that the numbers of visitors recorded at VICs generally represent about 25% of total visitors to their host towns. For Brewarrina, however, it was advised the VIC proportion is much higher at approximately 80% because the centre incorporates an Art Gallery display, and it is also a booking centre for tours of local indigenous attractions including the heritage listed Brewarrina Fish Traps. In addition, Brewarrina is a natural stopover point between Lightning Ridge and Bourke. Based on these proportions, in 2009, total visitor numbers at the host towns listed in the table were about 120,000 to 130,000 per annum for the two towns located on the Newell Highway, approximately 90,000 at Lightning Ridge and 45,000 further to the west at Brewarrina.

Table 1.8: Visitor numbers: Visitor Information Centres

	Narrabri	Lightning Ridge	Brewarrina	Walgett	Coonabarabran
2005	25,612	15,125	N/A		33,891
2006	35,600	21,036	N/A		30,729
2007	33,926	21,469	N/A		30,932
2008	36,030	20,804	N/A		34,629
2009	32,186	22,685	36,000		30,447
AAGR % p.a.2005 to 2009	5.9%	10.7%	N/A		-2.6%
AAGR % p.a.2006 to 2009	-3.3%	2.5%	N/A		-0.3%

Source: Warrumbungle Shire Council;
Outback NSW Tourism Organisation

Figure 1.3: Visitor numbers to Visitor Information Centres



Tourism activity at centres on the route to the west of the Newell Highway

At this stage, the main tourism activity at centres to the west of the Newell Highway on the route is concentrated at the southern end of the route, in the national parks near Coonabarabran, Baradine, and in the Pilliga Forest areas.

Commercial accommodation in the towns from Baradine to Mungindi is shown in Table 1.9.

Table 1.9: Commercial accommodation on route to the west of the Newell Highway

Commercial accommodation	Baradine	Gwabegar	Pilliga	Burren Junction	Collar-enebri	Mungindi	Total
Hotels	2	0	1	1	0	1 ^a	5
Hotel rooms	12	0	2	0		0	14
Cabins			1*	16		9	26
Powered sites	0	0	6	5	0	0	11
Hotel/Motels	0	0	0	0	1	1	2
Hotel rooms	0	0	0	0	16	0	16
Motel rooms	0	0	0	0	12	6	18
Caravan Parks	1	0**	0	0	0	1	2
Cabins	4	0	0	0	0	0	4
Bunkhouses	1	0	0	0	0	0	1
Pavilion	1						1
Powered sites	20	0	0	0	0	21	41
Function rooms	1	0	0	0	0	0	1
Capacity (seats)	150	0	0	0	0	0	150
Bed & Breakfast	1	0	0	0	0	0	1
Rooms	2	0	0	0	0	0	2
Number establishments	4	0	1	1	1	3	10

^a Two Mile Hotel was destroyed by fire in 2009. Currently being rebuilt. Approximately 9 dongas remain at the rear of the hotel. The new hotel may include 2 motel style rooms. * to be built shortly. ** one caravan park in planning
Source: Economic Associates research

There are ten commercial accommodation establishments along this part of the route. Most of the commercial accommodation capacity is in Baradine at Camp Cyprus which has capacity as follows:

- 4 cabins – 96 beds;
- 1 bunkhouse – 280 beds;
- 1 pavilion – 25 double-bed bunks;
- Commercial kitchen and dining capacity for 150 people; and
- 20 powered sites and 53 acres for unpowered camping sites.

At Baradine, Camp Cyprus caters for large groups, such as school tours and conferences. The opening of the Pilliga Forest Discovery Centre in March 2009 has boosted patronage at Camp Cyprus. The centre is attracting about 4,000 visitors

per year from outside the local area. Management envisages there is potential for developing additional market segments including coach tours and visiting school groups. An important complementary attraction is an indigenous and non-indigenous sculpture display at Dandry Gorge, located some 33 km to the east of Baradine. The Dandry Gorge facilities were opened in August 2010.

Further to the north, there is limited commercial accommodation capacity. There are only six commercial accommodation establishments, including three hotels, two hotel/motels, and one Caravan Park. Most travellers stay in free camping areas such as the camping area adjacent to the bore baths at Pilliga.

Visitors from the south are referred in Baradine to attractions at Pilliga, but the unsealed road sections to the north of Baradine restrict travel, particularly for travellers using light sedans or towing caravans and camper trailers. The main attractions at Pilliga⁴ are the bore baths, a lagoon and walking trails, and the free camping area.

Completing a road sealing program between Baradine and Pilliga would create a fully sealed by-way looping from the Newell Highway at Coonabarabran and reconnecting at Narrabri via Baradine, Pilliga and Wee Waa. Promotion of this by-way would benefit local tourism businesses.

The bore baths at Pilliga are especially popular with tourists because they are open throughout the year and their water temperature, at approximately 37°C, is lower than at some other baths in the region. Unofficial estimates indicate that visitor numbers have increased from about 4,000 per year prior to the sealing of road sections between Coonamble and Wee Waa, to about 18,000 per annum since the program was completed.

Sealing sections along the entire route would also provide an access-way through Mungindi to the Queensland border⁵.

Various attractions further to the north include the following at:

- Burren Junction - bore baths, which are open for part of the year;
- Collarenebri - fishing on the Barwon River, which is promoted as one of the best inland fishing locations in Australia (the Gwydir Wetlands); and
- Mungindi: annual horse racing and camp drafting events, Mungindi Show, Mungindi Music Festival (biennial) and Mungindi Art Show (biennial).

To complement road improvement works, more tourism product and events would need to be developed and promoted to visitors to encourage them to deviate from the Newell Highway and other major road corridors in the region.

⁴ Gwabegar hosts a regular Lifeline Fun Day which attracts outside visitors. The township is also of historical interest.

⁵ Travellers could also visit Lightning Ridge via unsealed connecting shire roads between Collarenebri and Mungindi, but the main access for light traffic will remain via the Castlereagh Highway between Walgett and Dirranbandi.

2. BENEFITS OF IMPROVED ROAD ACCESS

This section provides a general overview of the benefits that improved road access will provide to the agricultural and transport industries and community life.

2.1 Local Communities

The general consensus amongst the local communities is that route has a number of deficiencies. They include:

- The road is not trafficable during and following periods of wet weather. Personal, business, educational and community activities are disrupted to vary degrees when it rains.
- Local residents on properties and towns are constantly providing assistance to motorists who 'get bogged' or 'slide off the road' when roads are wet.
- The road is easily damaged if the road is used before the road dries out following rain. The road then becomes unsafe for long periods for both local and through traffic.

2.2 Farm Productivity

As a guide to potential changes in farm productivity, the impacts of sealing sections between Rowena and Burren Junction were examined. The sealing program was completed in 2009. The research indicated that there have not been any major changes in farming practices or logistics per se since the road was sealed, but there have been some indirect benefits of using the sealed section, including:

- Lower risk of bruising of finished cattle being transported to meatworks from a local cattle feedlot;
- Provision of more options for transporting farm products directly to markets or to aggregation points such as cotton gins, saleyards, and grain receival depots;
- Reduced delays and costs associated with transporting farm supplies, harvesting equipment⁶ and farm vehicles;
- Improved access during wet weather enabling farmers to conduct business during these periods in local towns and other business centres; and
- Lower repair costs for vehicles travelling regularly on the previously unsealed sections.

In a submission to Walgett Shire Council prior the sealing of the Rowena to Burren Junction section, it was reported that farmers were prepared to pay a premium of

⁶ Headers can be driven on this route. For movement along the Newell Highway, it is a requirement that they are transported on trucks.

approximately \$20 per hectare for land with a sealed road access⁷. A small property with sealed road frontage has recently been sold at a much higher premium.

In areas which are serviced by relatively long sections of unsealed road, farmers experience problems accessing trucks for contract cartage. If these sections were sealed, they expect more trucks to become available. This might lead to small decreases in freight rates.

2.3 The Transport Industry

The northern section of the road between Collarenebri and Mungindi provides a strategic freight route for vehicles coming from the south-west and western regions of NSW and often originating from further afield such as South Australia. These vehicles currently use the road during dry weather but are unable to use it during and following rain. Upgrading this section of the road to an all-weather standard would introduce benefits to the freight industry, including:

- Shorter routes for some interstate transport;
- Alternate route to Newell Highway for some oversize vehicles, such as those transporting mining equipment to Queensland;
- Improved access to grain silos and railheads; and
- Increased economic activity for the centres served by the route.

2.4 Tourism

The southern section of the road is part of a tourist route linking the Warrumbungle Mountains at Coonabarabran, the natural artesian bore baths at Pilliga and the Mt Kaputar Nature Reserve at Narrabri. Tourists driving normal two-wheel drive vehicles, as a general rule, do not drive significant distances on unsealed roads; the potential of this tourist loop will not be realised whilst the section between Gwabegar and Pilliga remains unsealed.

It is of note that the section between Pilliga and Wee Waa was sealed in 2009 which means that the entire length between Pilliga and Narrabri is now sealed. This leaves the 28 km unsealed section between Gwabegar and Pilliga as the only unsealed section of the tourist loop.

Tourism is also being promoted to the north of Pilliga. The 32 km unsealed section between Pilliga and Burren Junction is a constraint for tourists travelling north to Lightning Ridge and to see the rich bird life of the Gwydir Wetlands and historical sites in the Barwon and Gwydir river systems.

⁷ There have been very few property sales to test this proposition. One small property has been sold at a much higher premium for cropping land. Access to a sealed road was reported to be major factor.

2.5 Road Safety

Poor road conditions have created unsafe driving conditions for local communities, tourists and transport operators. However the safety of the road is not limited to the unsealed sections. Sealed sections where the formation width is narrow or the pavement deformed or where there are bridges that are too narrow, present a safety issue for all those who use the road.

Whilst the section between Coonabarabran and Gwabegar is sealed, it still contains a number of unsafe features, including:

- Narrow formation width on steep embankment 20km north of Baradine; and
- One lane bridge at Baradine Creek, 2 km south of Gwabegar

3. TRAFFIC FORECASTS

This section summarises the current road conditions and traffic volumes and the future forecasts used for the feasibility assessment.

3.1 Current Road Conditions

The route from the Newell Highway at Coonabarabran to the Queensland border west of Mungindi is 335 km long and can be divided into five sections as shown in Table 3.1.

Table 3.1: Description of the route

Section No	From – To	Total Length, km	Unsealed Length, km	Issues
1	Newell Highway at Coonabarabran to Baradine	45.7	0	Some sections with narrow formation width create an unsafe road environment Significant one lane timber bridge
2	Baradine to Pilliga – Wee Waa Road at Pilliga	69.8	28.8	The unsealed section north of Gwabegar has a layer of good quality gravel within a wide road reserve. Upgrading this section to a sealed standard could be done at a competitive cost, although providing adequate drainage will increase the costs
3	Pilliga to Kamilaroi Highway at Burren Junction	40.2	29.2	The terrain is flat and gravel is scarce. A key to upgrading this section will be the pavement design but is unlikely to be inexpensive. Many areas in this section are low lying, further increasing the cost of a suitably robust pavement
4	Burren Junction to Collarenebri	92.4	0	The section between the Kamilaroi Highway and Rowena was sealed in 2009 using a geo fabric seal technique but is showing signs of deformation near the edges as a result of recent rain
5	Collarenebri to Queensland border west of Mungindi	87.1	55.2	The section is generally well formed throughout its length and only requires a gravel layer on top of the black soil formation. However good quality gravel is scarce and the cost will be high
	Total	335.2	115.7	

Whilst the unsealed road conditions provide a constraint on traffic movements, bridge width is also a concern on the existing sealed sections. In particular the one lane bridge over Baradine Creek 2km south of Gwabegar is a serious safety risk and needs replacement with a two lane structure.

The same could be said about the sections of narrow formation between Coonabarabran and Gwabegar, particularly those on a high embankment. The narrow formation itself creates an unsafe condition, but the consequences of an accident would be compounded by the high embankment. In this section, there is minimal shoulder width and the lane width itself is being eroded as edge breaking occurs due to the lack of a formation supporting it.

3.2 Current Traffic

The traffic data comes from several sources. One source is the NSW Roads and Traffic Authority who have estimated the 2004 AADT for those roads that form part of their regional road system. These estimates are based on traffic counts across the entire year for a number of years prior to 2004 and estimating the 2004 traffic count using the historical trend line.

The other source is the short-term traffic counts undertaken by Walgett Shire Council in 2005 and 2009. These counts have not been adjusted for monthly variations over the year but are more recent than the RTA figures. The combined table of traffic counts is summarised in Table 3.2.

Table 3.2: Current traffic counts

Section No	Location	Date of Count/Year of Estimated AADT	Average AADT (double axles)
1	1.5 km north of Newell Highway	2004*	980
	9.5 km north of Newell Highway	2004*	810
	24 km north of Newell Highway	2004*	560
2	1 km north of Baradine	2004*	285
	37.4 km north of Baradine	2004*	210
	South of Pilliga – Wee Waa Road	2004*	135
3	North of Pilliga towards Bugilbone	Oct 2009	[105]
4	4 km north of Burren Junction	2004*	120
	South of Rowena T/O	Oct 2005	[65]
	South of Moomin T/O	Sept/Oct 2009	[85]
5	South of Gwydir Highway near Pokataroo	2004*	145
	0.5 km North of the T/O to Lightning Ridge	2004*	440
	8 km North to Lightning Ridge T/O	2004*	45
	North of Lightning Ridge T/O	Aug 2009	[55]

* Counts estimated by RTA

Shire counts are estimates of vehicles per day rounded to nearest 5 VPD.

[] Shire counts are estimates of vehicles per day (VPD) rounded to nearest 5 VPD.

The Council vehicle counts also provided information on the type of vehicles using the road. The vehicle classification data is summarised in Table 3.3.

Table 3.3: Vehicle classification data

Section No	Location	Cars	Rigid Trucks	Semi trailers	Multi articulated
3	North of Pilliga towards Bugilbone	81%	9%	5%	5%
4	South of Rowena T/O	69%	21%	5%	5%
	South of Moomin T/O	83%	12%	5%	5%
5	North of Lightning Ridge T/O	69%	7%	13%	11%

Note: %'s rounded

3.3 2010 base estimates for average vehicles per day

Estimates of average vehicles per day were compiled by analysing two-axle count statistics from the NSW RTA, together with NSW RTA vehicle count estimates where available, and vehicle count data provided by the Shire Councils. Base estimates for 2010 are provided in Table 3.4.

Table 3.4: 2010 base estimates for average vehicles per day by vehicle type

Section	Total	Cars	Rigid trucks	Semi trailers	Multi-articulated
Coonabarabran - Baradine ^a	500	438	30	30	2
Baradine-Pilliga ^b	115	97	10	4	4
Pilliga – Burren Junction ^c	105	85	10	5	5
Burren Junction – Collarenebri ^c	85	66	11	4	4
Collarenebri – Mungindi ^b	55	38	4	7	6

Notes:

(a) NSW RTA vehicle count estimates

(b) derived from NSW RTA two-axle count statistics

(c) Council vehicle counts

The NSW RTA statistics indicate growth rates in the last 5 years of broadly 0.5% per annum.

3.4 Traffic impact of road improvements

Sealing the rough and often impassable sections between Baradine and Burren Junction and also between Collarenebri and Mungindi would contribute to various network effects on traffic volumes, which, initially, would lead to some stepwise increases in traffic. A higher overall growth rate is also expected to follow the road

improvements in the longer term. Upgrading the route, particularly fully sealing the route, will allow it to become more integrated into a long distance travel network.

Impacts are expected to vary along the route. Between Coonabarabran and Baradine, it is not anticipated that there would be any major traffic changes initially because the road is already fully sealed. Also, there are no plans at this stage to allow road trains to operate on this section. However, there would be traffic safety benefits if narrow, high curvature segments were widened.

Between Baradine and Pilliga, there is potential for more recreational travel, because 'grey nomads' visit both Baradine and Pilliga, but are discouraged from travelling between the two centres because of the condition of the road. Once this section is fully sealed, promotion of a tourism byway or loop between Coonabarabran and Narrabri via Baradine and Pilliga would assist to stimulate recreational traffic. The traffic between Wee Waa and Pilliga is approximately 140 vehicles per day. It is anticipated that traffic would rise initially on the Baradine to Pilliga section to approximately the same level.

The section between Pilliga and Burren Junction has subsections which are unsealed. It would attract more heavy vehicle traffic to access the rail head and the grain receipt depot at Burren Junction. More recreational travel could also use this section. A small initial rise to 120 vehicles per day is possible.

Between Burren Junction and Collarenebri the section is fully sealed. It caters mainly for local farms and intra-regional transport for agri-business facilities at Merrywinebone (cattle feedlot, cotton gin and grain receipt depot). More long distance traffic would be attracted to this section if the sections to the north of Collarenebri and to the south of Burren Junction were sealed. The network impact should raise traffic to about 120 vehicles per day.

The most significant initial percentage traffic impact of full sealing is likely on the Collarenebri – Mungindi section. Currently, due to the condition of the road it caters mainly for local traffic and only for opportunistic long distance traffic when the road is in reasonably good condition. The highway traffic that traverses this route at Mungindi to the north and Collarenebri to the south is approximately 400 vehicles per day. More road train traffic would use this section as part of a western route between NSW and Queensland. This would include long distance traffic passing between the Mitchell Highway to the south of Warren and Mungindi on the Queensland border.

There would also be more traffic between the north-west region in NSW and Queensland. If this section were fully sealed it would provide a network link between the Gwydir and Carnarvon Highways. Traffic should rise initially to a level similar to the traffic on the section between Pilliga and Wee Waa of approximately 140 vehicles per day.

Traffic growth on the Newell Highway and other highways traversing the region are generally in the order of 2% per annum. Traffic diversion to the Coonabarabran-Pilliga-Mungindi route should lead to an increase in the underlying growth rate. A long run average growth rate of about 1.5% per annum appears possible. It has

been assumed that the underlying growth rate would remain at about 0.5% per annum without any substantial road improvements.

The initial impact of the road works and the subsequent traffic growth used in the cost benefit analysis is summarised in Table 3.5.

Table 3.5: Initial and longer term traffic impacts of proposed road improvements

Section	Initial impact	Traffic growth p.a.	Comment
Coonabarabran – Baradine	No change	1.5%	Road is fully sealed
Baradine – Pilliga	140	1.5%	Benefit from sealing works. Promotion of tourism loop between Coonabarabran and Narrabri via Baradine and Pilliga is possible
Pilliga – Burren Junction	120	1.5%	Benefit from sealing works. Improved access to Walgett and Lightning Ridge
Burren Junction – Collarenebri	120	1.5%	Section already fully sealed, but pavement is deteriorating.
Collarenebri – Mungindi	140	1.5%	Fully sealing this section would integrate it with the road network on both sides of the Queensland border.

4. INFRASTRUCTURE ISSUES

This section deals with the issues relating to the provision of road infrastructure.

4.1 Access for High Productivity Vehicles

Road train access is not currently permitted south of Baradine because some sections are down to a 5.5m seal width. This is quite restrictive to road trains seeking access to Coonabarabran from areas west of Baradine towards Coonamble. Road trains are permitted north from Baradine to Gwabegar but then restricted because the road is not sealed from there to Pilliga.

Whilst B-doubles are permitted along the road between Baradine and Coonabarabran, road trains comprise a significant amount of the high productivity vehicles in the area particularly to the west of Baradine. The widening of the narrow sections of the existing sealed section between Baradine and Coonabarabran is therefore a priority for high productivity vehicle access.

4.2 Opportunities for Staged Development

The length of the route and the distribution of the unsealed sections and other Priority 1 sections across the three Council areas, provides ample opportunity for staging of the works. Commencement of sealing works on areas where minimal design works are required e.g. the Mungindi to Collarenebri section could occur whilst longer lead time works such as the replacement of the timber bridge over Bugildie Creek could be efficiently planned designed and constructed.

Limited funding may prompt the need to stage-construct parts of the route so as to maximise the benefits within the available funding.

4.3 Availability of Road Making Material

There is a limited availability of road making materials, principally pavement quality gravels, along the entire route. Even through the hilly sections between Coonabarabran and Baradine there is little suitable road making material and even less in the flat black soil plains north of Pilliga.

Quality gravel is currently being hauled in excess of 100km even for the southern end of the route. This has a significant impact on the cost of construction. Compounding this situation is the need for a thicker pavement (i.e. requiring more gravel per kilometre) on the black soil plains than in the hillier southern areas for the same volume of traffic.

4.4 Vehicle Loading

The overloading of vehicles significantly impacts on the life of a road pavement; typically doubling the load results in 16 times the pavement damage. Many of the pavements along the flat black soil plains are relatively thin or have been

constructed using low cost techniques such as fabric seals, which are particularly sensitive to overloading, during periods of prolonged wet weather and saturated ground conditions.

The management of overloading is critical to this route as it is to most rural local roads with heavy traffic loadings and seasonal rain patterns.

5. INFRASTRUCTURE PLAN

This section outlines the proposed Infrastructure Plan and the cost benefit analysis of sealing the three unsealed sections of the route.

5.1 Capital Works Plan

The capital works plan identified three priorities or works:

- Priority 1 is the sealing of the existing unsealed roads, widening to accommodate high productivity vehicles and urgent safety works
- Priority 2 is the safety of the road for existing and future traffic once the Priority 1 works have been completed
- Priority 3 is the rehabilitation of the existing sealed sections that are showing distress and other minor works

A description of the proposed works is included in Table 5.1 and summed by priority in Table 5.2. Figure 5.1 shows the location of the various priority works.

Table 5.1: Description of proposed works

Section	Priority	Description	Cost, \$ million
Coonabarabran – Baradine	1	Widen 8km of narrow seal to accommodate high productivity vehicles	\$3.20
Coonabarabran – Baradine	2	Minor safety works including replacing 300m of chain wire fencing and repairing shoulders	\$1.73
Coonabarabran – Baradine	3	Rehabilitation of existing sealed sections	\$2.53
Baradine – Pilliga	3	Rehabilitation of existing sealed sections	\$1.04
Baradine – Pilliga	1	Widen 7.5km of narrow formation on a high embankment 20km north of Baradine	\$2.62
Baradine – Pilliga	2	Replace the existing single lane timber bridge over Baradine Creek at 38.2km north of Baradine (i.e. south of Gwabegar)	\$2.40
Baradine – Pilliga	1	Gravel and seal 29km of unsealed road between 41-70 km north of Baradine (i.e. Gwabegar to Pilliga)	\$8.11
Baradine – Pilliga	2	Minor safety works including intersection with Pilliga-Wee Waa Road	\$0.17
Pilliga – Burren Junction	3	Rehabilitation of existing sealed sections	\$0.67
Pilliga – Burren Junction	1	Gravel and seal 29km of unsealed road between 2-33 km north of Pilliga	\$5.84

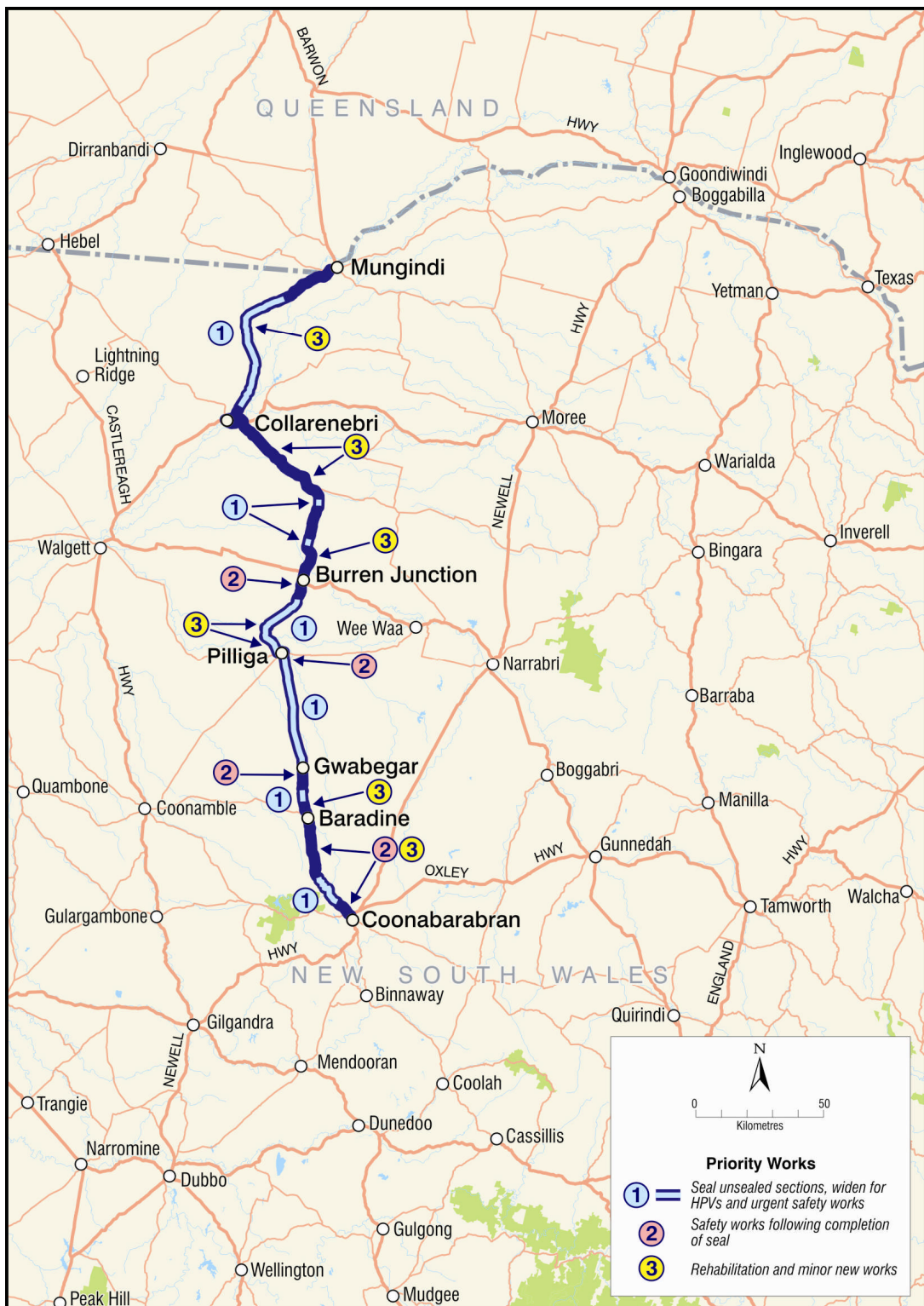
Section	Priority	Description	Cost, \$ million
Pilliga – Burren Junction	2	Safety works including improvements at railway crossing, signs etc	\$0.51
Burren Junction – Collarenebri	1	Urgent safety works to replace floodway deficient guardrail and severe edge and pavement failure	\$1.10
Burren Junction – Collarenebri	3	Rehabilitation of existing sealed sections	\$4.34
Collarenebri – Mungindi	1	Gravel and seal 55km of unsealed road between 26-82 km south of the NSW Border	\$11.84
Collarenebri – Mungindi	3	Reseal existing sealed sections	\$0.02
Total			\$46.12

Table 5.2: Summary by priority

	Priority			Total
	1	2	3	
Coonabarabran – Baradine	\$3.20	\$1.73	\$2.53	\$7.46
Baradine – Pilliga	\$10.73	\$2.57	\$1.04	\$14.34
Pilliga – Burren Junction	\$5.84	\$0.51	\$0.67	\$7.02
Burren Junction – Collarenebri	\$1.10	\$0	\$4.34	\$5.44
Collarenebri – Mungindi	\$11.84	\$0	\$0.02	\$11.87
Total	\$32.72	\$4.81	\$8.60	\$46.12

The Priority 1 projects should be undertaken over a five year period whilst the Priority 2 and 3 projects should be completed over the period of Year 5 to Year 8 (inclusive).

Figure 5.1: Location of priority works



5.2 Cost Benefit Analysis: Priority 1 road pavement projects

A cost benefit analysis on the three unsealed sections was undertaken by comparing project cases (with improvement) with their base cases (no major improvement).

The main benefits comprise reductions in vehicle operating costs due to less wear and tear on vehicles, lower travel time costs (passenger and freight) because the proposed road improvements will allow higher safe travel speeds and lower vehicle accident costs. The underlying assumptions of the analysis are set out in Tables 5.3 and 5.4.

Table 5.3: General assumptions

Project life (incl construction period)	30 years
Residual value at end of project life	40% of capital cost
Period of construction	3 years
S curve for construction cost	
Year 1	20%
Year 2	60%
Year 3	20%
Full benefits to commence in:	Year 4
Real discount rate % p.a.	7% (4% & 10%)

Note: (4% & 10%): outer bound real discount rates for sensitivity testing

Table 5.4: Specific assumptions for road subsections

Sections	Collarenebri to Mungindi		Pilliga to Burren Junction		Baradine to Pilliga
	Gravel	Earth	Gravel	Earth	Gravel
Existing pavement type	Gravel	Earth	Gravel	Earth	Gravel
Width (m)	> 4.5m	> 4.5m	> 4.5m	> 4.5m	> 4.5m
Terrain	Flat	Flat	Flat	Flat	Flat
Curvature	Straight	Straight	Straight	Straight	Straight
Proposed change	PG to GS	E to GS	PG to GS	E to GS	PG to GS
Vehicles per day (2010)	55	55	105	105	115
% HV	31%	31%	19%	19%	16%
Traffic composition					
Private car	49%	49%	56%	56%	59%
Business car	20%	20%	25%	25%	25%
Heavy commercial	20%	20%	14%	14%	12%
Road Train	11%	11%	5%	5%	4%
Total	100%	100%	100%	100%	100%
Growth rate					
Base case	0.5%	0.5%	0.5%	0.5%	0.5%
Project case (after initial impact)	1.5%	1.5%	1.5%	1.5%	1.5%
Traffic after improvement (VPD)	140	140	120	120	140
Safe free speed (kph)					
Base case	60	80	60	80	60
Project case	100	100	100	100	100

Note: E = earth; PG = poor gravel; PS = poor seal; GS = good seal

Results of the cost benefit analysis

The results of the cost benefit analysis are summarised in Table 5.5.

The total cost for the proposed Priority 1 pavement improvement program is approximately \$25.8 million. This program would upgrade unsealed segments to a 9m sealed width pavement standard.

The overall benefit cost ratio is 1.1 when a benchmark real rate of discount of 7% per annum is applied, showing that the project would be marginally economically viable. The real economic return would be approximately 7.7% per annum, based on the stated underlying assumptions.

The highest benefit cost ratio is for the section between Collarenebri and Mungindi and lowest between Baradine and Pilliga. However, traffic benefits of these sub projects are dependent to a degree on completing the sealing program throughout the length of the route. A greater project benefit would be obtained if the subprojects were completed within the first three years of the pavement improvement program.

Table 5.5: Results of Cost Benefit Analysis

Road sections	Capital cost \$m	Existing pavt type(s)	Length (km)	Present values at 7% p.a. real rate of discount
Baradine to Pilliga				
Capital cost (undiscounted)	\$8.110	G	28.8	
Discounted net capital costs \$m*				\$6.664
Discounted benefits \$m				\$5.431
Net present value \$m				-\$1.233
Benefit cost ratio				0.8
Pilliga to Burren Junction		G,E	29.2	
Capital cost (undiscounted)	\$5.840			
Discounted net capital costs \$m*				\$4.799
Discounted benefits \$m				\$5.448
Net present value \$m				\$0.650
Benefit cost ratio				1.1
Collarenebri to Mungindi		G,E	55.2	
Capital cost (undiscounted)	\$11.844			
Discounted net capital costs \$m*				\$9.732
Discounted benefits \$m				\$11.569
Net present value \$m				\$1.837
Benefit cost ratio				1.2
Total				
Capital cost (undiscounted)	\$25.794		109.1	
Discounted net capital costs \$m*				\$21.195
Discounted benefits \$m				\$22.448
Net present value \$m				\$1.253
Benefit cost ratio				1.1

Note: Net capital costs allow for netting out the residual value at the end of the project period. G = gravel; E = earth

Sensitivity analysis

The project was subject to sensitivity analysis by testing for adverse changes in capital costs and benefits and applying real discount rates of 4%, 7% and 10% per annum. The results are set out in Table 5.6.

At the benchmark real rate of discount of 7% per annum, the project shows a benefit cost ratio of unity when the capital costs are increased by 10% or when the economic benefits are reduced by 10%, which indicates the project is reasonably robust. With the combined impacts of the higher capital costs and lower economic benefits, the benefit cost ratio decreases to about 0.9.

At the lower discount rate of 4% per annum, the project shows a benefit cost ratio greater than unity when the adverse changes to capital costs and revenues are combined.

At the higher discount rate of 10% per annum, the project would not be economically viable under any scenarios. Capital costs would need to be reduced by at least 20% before the project would be viable under normal assumptions.

The proposed road improvements could generate a higher traffic response, which would raise benefits and the economic viability of the project. In particular, greater traffic diversion from neighbouring highways to the Mungindi to Collarenebri section would generate higher traffic benefits. The analysis also does not capture potential benefits from providing an alternative north-south road freight route for the Newell Highway during periods when traffic is disrupted by floods and bushfires.

Table 5.6: Results of sensitivity analysis

Road sections:	Real discount rate		
	4%	7%	10%
Baradine to Pilliga			
Benefit cost ratio			
(1) No change in assumptions	1.4	0.9	0.6
(2) 10% increase in capital costs	1.1	0.7	0.5
(3) 10% decrease in benefits	1.1	0.7	0.5
(4) 2 & 3 combined	1.0	0.7	0.5
Pilliga to Burren Junction			
Benefit cost ratio			
(1) No change in assumptions	1.8	1.1	0.8
(2) 10% increase in capital costs	1.6	1.0	0.7
(3) 10% decrease in benefits	1.6	1.0	0.7
(4) 2 & 3 combined	1.4	0.9	0.7
Collarenebri to Mungindi			
Benefit cost ratio			
(1) No change in assumptions	1.9	1.2	0.8
(2) 10% increase in capital costs	1.7	1.1	0.8
(3) 10% decrease in benefits	1.7	1.1	0.8

Road sections:	Real discount rate		
	4%	7%	10%
(4) 2 & 3 combined	1.5	1.0	0.7
Total			
Benefit cost ratio			
(1) No change in assumptions	1.6	1.1	0.8
(2) 10% increase in capital costs	1.5	1.0	0.7
(3) 10% decrease in benefits	1.5	1.0	0.7
(4) 2 & 3 combined	1.3	0.9	0.6

6. FINANCIAL PLAN

This section outlines the proposed Financial Plan, which includes a mix of Commonwealth, State and Council sources.

6.1 Funding Sources

There are a number of funding sources for upgrading the route from the three levels of government. They are:

- Commonwealth Government – the recently announced \$1 billion Regional Development Australia Fund, which will operate from 1 July 2011;
- State Government though – the proposed \$100 million Infrastructure NSW Fund and the RTA’s Block Grant and REPAIR Program; and
- Council sources – the Commonwealth’s Roads to Recovery allocation (R2R) and Financial Assistance Grants (FAGs) including the dedicated roads component and Council’s own rate revenue.

The Commonwealth’s dedicated roads component of the FAGs is intended as road funding for local government and is distributed by the NSW Grants Commission in accordance with a road needs assessment formula.

The Commonwealth’s Road to Recovery allocation is also based on a formula similar to that developed by the NSW Grants Commission but funding is made directly to Councils and not through the State Government. In the case of the three Councils, the R2R allocation is approximately 52% of the FAGs dedicated roads funding.

These two funding sources are direct Commonwealth grants to Councils for local roads. They are effectively a Council source of funds.

The RTA’s Block Grant and REPAIR Program are State funding sources aimed at assisting Councils with the maintenance and upgrading of State declared regional roads. This contrasts with the Commonwealth R2R funding which is primarily aimed at local roads but which at Council’s discretion can be allocated to regional roads.

The REPAIR Program funding is based to projects prioritised at the regional level by the RTA and Councils. Councils are required to match the RTA funding.

The 2010-11 funding to each of the three Councils from the R2R, RAG Roads Component, RTA Block Grant and REPAIR Programs are shown in Table 6.1.

Table 6.1: Current funding levels

Council	Annual Funding (2010-11)			
	R2R Funding	FAG Roads Component	RTA Block Grant	REPAIR Program
Warrumbungle	\$1,095,000	\$2,095,000	\$2,307,000	\$0
Narrabri	\$1,034,000	\$1,974,000	\$1,018,000	\$0
Walgett	\$935,000	\$1,787,000	\$2,067,000	\$300,000
Total	\$3,064,000	\$5,856,000	\$5,392,000	\$300,000

Regional Development Australia

The Commonwealth has allocated \$1 billion to its Regional Development Australia Fund (RDAF). Guidelines for applications to the fund can be found on the Department of Regional Australia, Regional Development and Local Government website⁸.

These guidelines indicate that \$100 million of Commonwealth funding will be allocated in a first tranche to approved projects. Applications for the first tranche will close on 13 May 2011. There will be a second tranche of projects with applications invited later in 2011.

Projects must have the backing of the local Regional Development Australia committee, which for the Coonabarabran – Mungindi Route is the Orana RDA committee based in Dubbo. Therefore all project proposals must align with the RDA Regional Plans, which in turn must be endorsed by the local Councils.

RDAF will provide funds from between \$500,000 to a maximum of \$25 million for projects. However the total funding for a project must include sources other than the Commonwealth except in extenuating circumstances. For those projects over \$5 million, matching funding from other sources is a requirement.

The aims of the RDAF are as follows:

- Support local identified needs,
- Delivery of sustained economic and social development in regional towns,
- Remove barriers or provide incentive for investment in regional Australia,
- Integrate programs and investment from the three levels of government,
- Provide opportunities for involving the private sector, and
- Address specific areas of disadvantage in regional Australia.

Councils are eligible to apply for funding either in their own right or as part of a consortium.

Funding is available for projects which are predominantly capital in nature, such as new infrastructure and upgrades to existing infrastructure.

Applications can only be made for projects that are “investment ready” that is ready to proceed within 6 months of signing a funding agreement with the Commonwealth.

The Commonwealth component of the funding must be completed within a 3 year period over the 2011-12 to 2013-14 financial years.

The guidelines outline four assessment criteria for funding applications:

1. Extent to which the project leverages funding from a variety of sources
2. Extent to which the project will contribute to and sustain regional economic growth and/or extent to which the project will provide community benefit

⁸ <http://www.regional.gov.au/regional/programs/files/RDAFguidelines11march.pdf>

3. Sustainability and ongoing viability
4. Demonstrated capacity to implement and maintain the project

Any application for funding must be supported by a strong business case that addresses the four assessment criteria.

Infrastructure NSW Fund

In the lead up to the recent State election, the then opposition leader announced that they would establish a professional and independently chaired body called Infrastructure NSW to improve the identification, prioritisation and delivery of critical public infrastructure across the State⁹.

This body would develop a 20-year strategy detailing major infrastructure projects costing over \$100 million and a detailed 5-year Infrastructure Plan to underpin the 20-year strategy.

Regional groups of Councils could package their regional road needs into a project exceeding \$100 million, which could be used to provide funding for projects such as the Coonabarabran – Mungindi Route. Ideally the Councils should align their projects with those in the relevant RDA Regional Plan so that it complements any funding from the RDAF.

The focus for this fund is to introduce efficiencies into the delivery of projects by bulking them up to increase their critical mass. This process may in fact leverage contributions from the private sector.

One of the roles of Infrastructure NSW will be to liaise with Infrastructure Australia and presumably with Regional Development Australia.

6.2 Recommended Funding

The proposed funding plan for funding the Priority 1 projects over 5 years is summarised in Table 6.2. It is based on the following three assumptions:

- The Council contribution to be 33% of the Commonwealth's Regional Development Australia Fund allocation;
- A State allocation from the Infrastructure NSW Fund that will allow the State and Council contributions to match the Commonwealth allocation; and
- Council's combined contribution of about \$1 million per year.

It is proposed that the upgrading be undertaken over 5 years starting from 2011-12 from the three levels of government. The Commonwealth would be asked to fund \$16.330 million or 50% of the project, with the other 50% being provided by the State Government (34%) and the three Councils (16%).

The Commonwealth's contribution would have to be expended in the first 3 years to meet the conditions of their grant and it is proposed that the Councils' contribution be maintained at a fixed level over the five year period.

⁹ http://www.barryofarrell.com.au/index.php?option=com_k2&view=item&task=download&id=55

The proposed cash flow is shown in Table 6.3. The Commonwealth should be asked to provide \$5.443 million each year over 3 years and the three Councils combine to provide \$1.077 million per year over the 5 year period. The State Government would fund the balance, which would amount to \$1.029 for each of the first 3 years but increase to \$3.956 for years 4 and 5.

Table 6.2: Proposed Funding Sources for Priority 1 projects

	Funding Source			
	Common-wealth	State	Council	Total
Capital Projects				
State Road	\$0	\$0	\$0	\$0
Regional Road	\$11,939,850	\$11,000,000	\$3,940,150	\$26,880,000
Local Road	\$4,390,977	\$0	\$1,449,023	\$5,840,000
Total	\$16,330,827	\$11,000,000	\$5,389,173	\$32,720,000
Per cent of total	50%	34%	16%	

Table 6.3: Proposed Cash Flow

Funding Source	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Commonwealth	\$5,443,609	\$5,443,609	\$5,443,609	\$0	\$0	\$16,330,827
State	\$1,029,326	\$1,029,326	\$1,029,326	\$3,956,012	\$3,956,012	\$11,000,000
Council	\$1,077,835	\$1,077,835	\$1,077,835	\$1,077,835	\$1,077,835	\$5,389,173
Total	\$7,550,769	\$7,550,769	\$7,550,769	\$5,033,846	\$5,033,846	\$32,720,000

7. MAIN FINDINGS

This section outlines the main findings of the feasibility assessment.

The feasibility assessment shows that there are significant benefits from upgrading the route between Coonabarabran, Pilliga and Mungindi. The benefits range from improved and reliable access to and within the region, including:

- Potential for increased tourist activity at a number of important centres serviced by the route;
- Improved efficiencies in farm productivity as a result of more reliable movement of agricultural products and livestock; and
- Greater social amenity for connecting communities in the region and improved road safety for locals and visitors.

The Infrastructure Plan identified \$46.12 million worth of work required to bring the route to an appropriate standard for the region. \$32.72 million was identified as high priority.

The high priority projects included three sections where the road would be upgraded to a sealed standard. The benefits exceeded the costs for two of the three sections and overall the total benefits exceeded the total costs.

The feasibility assessment explored the various funding sources and proposed a funding arrangement involving the three levels of government. The proposed cash flow meets the Commonwealth requirement for a 3 year funding period and the Councils requirement for a uniform contribution over the 5 year period.

The following conclusion can be drawn for the feasibility assessment:

- The upgrading costs were significant but not excessive
- The transport economic benefits exceeded the costs
- The proposal has the support of the three Councils who are prepared to allocate a significant amount of funding from their own sources
- The proposal has the strong support of the local communities who live on the route
- The work can be funded from existing funding sources with the support of the Commonwealth and State Governments

APPENDIX A – Agricultural statistics

Livestock – sheep and cattle

2000-01	Sheep & lambs - total number (1,000)	Meat cattle
New South Wales	40,887	5,786
Warrumbungle Shire (A)	777	179
Coonamble (A)	571	108
Moree Plains (A)	299	145
Narrabri (A)	217	97
Walgett (A)	732	108
Subtotal	2,597	637
% of NSW	6%	11%
2005-06		
New South Wales	32,146	5,862
Warrumbungle Shire (A)	652	203
Coonamble (A)	452	95
Moree Plains (A)	229	177
Narrabri (A)	180	105
Walgett (A)	664	73
Subtotal	2,177	653
% of NSW	7%	11%
Growth 2000-01 to 2005-06		
New South Wales	-4.7%	0.3%
Warrumbungle Shire (A)	-3.5%	2.6%
Coonamble (A)	-4.5%	-2.6%
Moree Plains (A)	-5.2%	4.0%
Narrabri (A)	-3.7%	1.8%
Walgett (A)	-1.9%	-7.5%
Subtotal	-3.5%	0.5%

Source: ABS Agricultural Commodities, Small Area Data, Australia, 2000-01, 2005-06

Grain production

2000-01	Cereals for grain - total area (ha)	Number of establishments	Cereals for grain - total production (t)	Tonnes per ha
New South Wales	5,062,355	13,176	12,270,336	2.4
Warrumbungle Shire (A)	69,293	360	131,704	1.9
Coonamble (A)	182,893	224	213,939	1.2
Moree Plains (A)	495,402	458	692,850	1.4
Narrabri (A)	174,832	374	253,771	1.5
Walgett (A)	333,123	253	403,738	1.2
Subtotal	1,255,543	1,669	1,696,002	1.4
% of NSW	25%	13%	14%	56%
2005-06				
New South Wales	5,715,964	13,389	13,484,699	2.4
Warrumbungle Shire (A)	69,220	401	159,311	2.3
Coonamble (A)	188,438	215	323,378	1.7
Moree Plains (A)	634,328	462	1,178,568	1.9
Narrabri (A)	156,917	345	372,226	2.4
Walgett (A)	351,215	223	561,287	1.6
Subtotal	1,400,118	1,646	2,594,770	1.9
% of NSW	24%	12%	19%	79%
Growth rates: 2000-01 to 2005-06				
New South Wales	2.5%	0.3%	1.9%	-0.5%
Warrumbungle Shire (A)	5.1%	0.2%	11.2%	5.8%
Coonamble (A)	-2.1%	-1.6%	8.0%	10.3%
Moree Plains (A)	0.0%	2.2%	3.9%	3.9%
Narrabri (A)	0.6%	-0.8%	8.6%	8.0%
Walgett (A)	1.1%	-2.5%	6.8%	5.7%
Subtotal	2.2%	-0.3%	8.9%	6.5%

Source: ABS Agricultural Commodities, Small Area Data, Australia, 2000-01, 2005-06

Cotton production

	Cotton - total area (ha)	Number of establishments	Total cotton production (t)	Total production tonnes per ha	Cotton - irrigated - area (ha)	Total irrigated production (t)	Total irrigated production tonnes per ha	Irrigated area as % of total area	Irrigated production as % of total production
2000-01									
New South Wales	350,628	639	1,580,367	5	298,370	1,497,387	5	85%	95%
Warrumbungle Shire (A)	867	4	443	1	0	0	-	0%	0%
Moree Plains (A)	134,390	155	569,812	4	108,417	526,883	5	81%	92%
Narrabri (A)	60,807	155	315,281	5	52,015	298,990	6	86%	95%
Walgett (A)	29,178	40	152,145	5	24,815	149,760	6	85%	98%
Subtotal	196,064	314	885,535	5	160,432	825,874	5	82%	93%
% of NSW	56%	49%	56%		54%				
2005-06									
New South Wales	197,465	406	1,261,506	6	168,863	1,200,814	7	86%	95%
Warrumbungle Shire (A)	240	1	613	3	0	0	0	0%	0%
Moree Plains (A)	84,532	119	531,449	6	66,855	489,075	7	79%	92%
Narrabri (A)	45,543	109	296,774	7	40,501	287,276	7	89%	97%
Walgett (A)	18,380	32	98,455	5	15,377	95,397	6	84%	97%
Subtotal	148,455	260	926,678	6	122,733	871,747	7	83%	94%
% of NSW	75%	64%	73%		73%	73%			
Growth 2000-01 to 2005-06									
New South Wales	-11%	-9%	-4%	7%	-11%	-4%	7%		
Warrumbungle Shire (A)	-23%	-24%	7%	38%					
Moree Plains (A)	-9%	-5%	-1%	8%	-9%	-1%	9%		
Narrabri (A)	-6%	-7%	-1%	5%	-5%	-1%	4%		
Walgett (A)	-9%	-4%	-8%	1%	-9%	-9%	1%		
Subtotal	-5%	-4%	1%	7%	-5%	1%	7%		

Source: ABS Agricultural Commodities, Small Area Data, Australia, 2000-01, 2005-06