

COAST ROAD

WUJAL WUJAL TO CAPE TRIBULATION UPGRADE

ECONOMIC & SOCIAL IMPACT



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Economic and Social Impact



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References

- Cape Tribulation Bloomfield Road Link Study – Road Management Plan, February 2013
- Cape Tribulation Road Link Planning Study – Consultation Report, January 2013
- Captain Cook Highway Strategic Plan Final Report – Prepared by Earth Check for the Queensland Government Department of State Development, July 2015
- Road Safety Audit of Cape Tribulation Bloomfield Road – Michael Tziotis for Douglas Shire Council, October 2007
- Principles & Guidelines for Economic Appraisal of Transport Investment and Initiatives – Transport Economic Appraisal Guidelines – Roads for NSW
- Australian Transport Assessment and Planning Guidelines – PV2 Road Parameter Values – Australian Transport Infrastructure Guidelines – Australian Transport Infrastructure Council
- Cost Benefit Analysis Manual – Road Projects – Queensland Department of Transport and Main Roads

Abbreviations

- AADT Average Annual Daily Traffic
- ABS Australian Bureau of Statistics
- TRA Tourism Research Australia
- CAT. Catalogue



SUMMARY OF MAIN FINDINGS

Background

- The 28 km of road Wujal Wujal to Cape Tribulation is the last unsealed section of the 227 km of coastal roads between Cooktown and Cairns.
- 2016 population in the area north of Cape Tribulation (Wujal Wujal, Bloomfield, Rossville, Cooktown and Hope Vale) was 5,574 (4,336 residents at home and 1,238 visitors).
- Residential population, especially in Cooktown, is growing and visitor numbers growing strongly.
- There is a high Aboriginal population in the area especially in Wujal Wujal and Hope Vale with relatively high unemployment and low workforce participation rates.

Road Development

- Topographical barriers of mountains coming right down to the sea in sections of the coast between Cairns and Cooktown have led to historically slow progress in developing road links with major events being:
 - Construction of the Captain Cook Highway to Mossman in the 1930s;
 - Construction of the unsealed road between Cape Tribulation and Wujal Wujal 1980s;
 - Sealing of the road Daintree River to Cape Tribulation 1990s;
 - Sealing of remaining roads Cooktown to Wujal Wujal 2015.
- The unsealed road section between Wujal Wujal and Cape Tribulation passes all the way through dense forest (mainly rainforest). Some steep sections on the Donovan and Cowie ranges and the Switch Back section restrict use of the road especially by heavy and articulated vehicles.

Existing Traffic

- Lack of recent traffic count data has meant that existing traffic has had to be estimated based on one old 2007 count at the Wujal Wujal end supplemented by surveying among regular users of the road.
- Average annual daily traffic is estimated to be of the order of 115 but varying strongly between the tourist season (150) to low season (80).
- It is estimated that over a half of traffic is tourism related, about a quarter residents, business less than 10% and heavy vehicles less than 10%.

Capital Costs

- Capital costs are estimated at basic sealing \$56 million and with additional works including to improve safety, of the order of \$77 million. The road is currently expensive to maintain and Net Present Value of savings in maintenance costs is estimated at \$6.9 million giving net cost:

Basic sealing \$49 million
With additional works..... \$70 million

Traffic Impacts

- Compared with the interior road, the Coast Road access to Cairns saves distances of:
 - From Cooktown84 km..... (-36%)
 - From Rossville.....92 km..... (-47%)
 - From Wujal Wujal174 km..... (-108%)



- However, for visitors and residents (except from Wujal Wujal and Rossville), the Daintree ferry costs \$15 (one way) and delays of a usual 10 minutes, but higher at some times of day in the peak tourist season.
- Travel time saving compared with the interior road when the road is sealed taking into account usual ferry delays are estimated at:
From Cooktown 0.67 hours
From Rossville 0.77 hours
From Wujal Wujal 1.47 hours
- It is estimated from extensive surveying of households and businesses in the area that when sealed, estimated average traffic over the road will increase.
Residential 30 to 70 a day
Business 10 to 30 a day (mainly from Cooktown)
Tourism 65 to 220 a day
Heavy vehicles 10 to 19 a day
Total 115 to 339 a day
- It is estimated that this will be split:
 - 102 diverted from the interior route (mainly Cooktown residents and business and some tourists who will circuit);
 - 121 generated especially additional tourists to the Cooktown area.
- Road traffic on the interior road is growing strongly and likely to increase with upgrading of the Peninsula Developmental Road. As a result of the sealing of the Coast Road, more tourists will travel to Cooktown and use the interior road one way.

Benefit Cost Inputs

- Benefit cost analysis is carried out over a 30-year period with a discount rate of 4% “real” (ie. equivalent of about 6% nominal at present).
- Underlying natural growth rates of residential population and business traffic is estimated at 2% per annum and for tourism traffic at 3% per annum.
- Based on surveying and travel time checks over the road, travel time savings for existing and generated traffic over the road is estimated at light vehicles 0.33 hours (20 minutes), and heavy vehicles 0.42 hours (25 minutes). Travel time savings for light vehicles diverted from the interior road are:
Cooktown 0.67 hours
Rossville 0.77 hours
Wujal Wujal 1.47 hours
Heavy vehicle diversion saving ex Cooktown is estimated at 1.35 hours.

Quantified Benefits

- Travel time savings are estimated at \$2.1 million per annum, vehicle operating cost savings at \$1.8 million per annum and total \$3.9 million per annum, with a Net Present Value of \$96 million.
- Information on accidents over the five years to 2017 including one fatality, indicates very high average annual cost of \$1.67 million with a Net Present Value of \$42 million.

Allowing for the sealed road to still be less safe due to more winding and steeper sections by a factor of 50% than a sealed road of the standard proposed and at the traffic flow rates estimated, Net Present Value of improvement in safety would be of the order of \$27 million. There has been a sharp rise in crash costs in the last few years and if that continued, the savings could be very much higher.

- Total identified “economic efficiency” savings total is estimated at \$123 million compared with a project cost of \$70 million, giving a Benefit Cost Ratio of 1.76.

Economic Impact/Developmental Benefits

- Economic development benefits would include substantial additional holiday visitor numbers to the area Wujal Wujal to Cooktown with additional expenditure generated estimated at \$25 million per annum in the Cooktown area with a Net Present Value of direct expenditure generated of the order of \$630 million. Construction of additional accommodation facilities would be generated.

Economic Welfare Benefits

- There are prospects of additional tourism flows resulting in reduction of unemployment especially at Wujal Wujal including leading to the possible reopening of the Bloomfield Lodge that had been employing a reported 27.
- It is estimated that creation of 10 jobs in Wujal Wujal would create income and reduce government support expenditure at a level that would justify a \$15 million investment in the road alone.

Social Benefits

- The Kuku Yalanji people traditionally covered the whole coastal area Mossman to Wujal Wujal and there would be substantial benefits in facilitating family and social travel.

Environmental Benefits

- The road passes through an area of World Heritage listed rainforest with immediately offshore coral reefs of the Great Barrier Reef World Heritage area. The sealing of the road will have substantial environmental benefits through:
 - Major reduction of runoff from bare earth of the unsealed road into creeks and potentially out to the coral reefs. (it is estimated that 60,000 cubic meters of fill is put on the road each year to compensate for runoff.)
 - Unbridged “wet” crossings will be eliminated that cause muddying of the water with effects downstream.
 - Elimination during dry months of dust blowing on to and coating surrounding vegetation with detrimental effects.

Impacts on Other Communities

- Potential effects of sealing the road on businesses south of Cape Tribulation including effects on the Daintree Ferry were investigated with a number of interviews undertaken.
- Surveying indicated some concerns about the additional traffic through the area. Of greatest concern was that the additional traffic would result in making the delays at the ferry worse.
- There was an underlying concern (shared by Port Douglas accommodation operators) that the Cape Tribulation area would lose its “end of the line” mystique.
- Traffic generated over the Daintree ferry is estimated to increase from about 11% of total at present to about 27% of total.

- Current indications are that peak times causing delay problems during high tourism months occur northbound 10 – 12noon and southbound 3 – 5pm in the afternoon. Distances and timing of travel indicates that most southbound traffic from Cooktown would not arrive during the peak southbound delay period in the afternoon but northbound traffic leaving Cairns and Port Douglas early in the morning would contribute to delays.
- It is estimated that the sealing of the road will add of the order of 138,000 more persons moving through the Cape Tribulation area per annum, including about 100,000 additional tourists increasing numbers by about a quarter, potentially creating additional business of roadside expenditure, visits to attractions and overnight stays.
- Accommodation businesses in the Cape Tribulation area will change from “end of the line” only, to having a tour base status with opportunity for day trips north to Cooktown and south to Mossman Gorge.
- Increase in business coming through the area could help enhance prospects of achieving deficiencies in grid provision of electricity and mobile phone coverage in the area.
- For 4WD enthusiasts, there will still be the CREB adventure track available.
- Mossman businesses can expect more business through diversion of traffic from the interior route and additional traffic generated.
- For Douglas Shire, the unsealed road is currently their responsibility and there will be an annual saving of maintenance costs of about \$400,000 a year and \$700,000 a year if responsibility for the road was transferred from it. Additional ferry revenue is estimated at about \$600,000 a year.
- Regional impact will mainly be to open up a new dimension to the region’s tourism product of the Cooktown, Laura area.
- It will also reinforce the broad-based economic growth now taking place in the previously remote underdeveloped Cook Shire.

Main Conclusions

- Quantified “economic efficiency” benefits of travel time, vehicle operating costs and safety benefits with Net Present Value of \$123 million are estimated to be a robust 1.76 times a cost of \$70 million.
- On top of this will be substantial “economic impact” benefits including an estimated increase in tourism expenditure in the Cooktown area of \$25 million per annum with a Net Present Value of the order of \$630 million with special economic welfare benefits to Wujal Wujal.
- Although there are some concerns about the Cape Tribulation “end of the line” mystique being lost, businesses in the Cape Tribulation area will benefit from visitor numbers lifting by about 25%.
- The additional traffic will add an estimated additional Daintree Ferry revenue of about \$600,000 per annum and reduce maintenance costs for Douglas Shire by about \$400,000 a year. If responsibility for the road was transferred from Douglas Shire, it would relieve the Shire of an estimated current maintenance cost of \$700,000 a year.
- On top of this again, would be substantial environmental benefits of replacing an unsealed dirt road and “wet” creek crossings with a sealed road, culverts and bridges and social benefits, especially to the Wujal Wujal community.

1. INTRODUCTION

1.1 General

Cook Shire Council and Wujal Wujal Aboriginal Shire Council commissioned Cummings Economics to prepare an economic and social impact assessment and benefit cost analysis of upgrading to sealed standard the currently unsealed 28km section of the Coast Road between Cape Tribulation and Wujal Wujal – the last unsealed section in the road linking north from Cairns to Cooktown. (Maps #1 & #2 show location.)

1.2 Methodology

The study involved collection of information:

- About capital and maintenance costs from Wujal Wujal Aboriginal Shire Council staff and their advisers.
- About current level and composition of traffic on the road from limited traffic counter data available plus interviewing of regular users of the road on this and other issues.
- About impact of likely changes to use of the road if it was sealed through substantial surveying:
 - a) a random telephone survey of 100 households in the affected area about current use by local residents and changes if sealed, with special additional questions to regular road users;
 - b) surveys of tourism businesses in the Cooktown to Bloomfield/Wujal Wujal area about current patterns of visitor usage of the coast and other roads and likely changes if the road was sealed;
 - c) surveys of other businesses in the Cooktown and Bloomfield/Wujal Wujal areas about current business usage including heavy vehicle usage and changes if the road was sealed;
 - d) surveys of other users including coach and tour operators and rental companies about likely impact of upgrading;
 - e) surveys among businesses in the Cape Tribulation/Daintree area about impacts of the upgrading on their businesses.

Previous reports relating to the road section were accessed as background.

Information was sought about potential environmental impacts from Great Barrier Reef Marine Park Authority and Wet Tropics World Heritage Management Authority.

Analysis was carried out using parameters of vehicle operating costs, travel time savings and safety factors as developed by the Australian Transport Infrastructure Council.

1.3 Timing

Surveying was carried out June to November 2017. The assessment is carried out in 2017 dollars.

1.4 Benefit Cost Analysis Parameters

The analysis is based over a two-year construction period followed by a 30-year project period, no residual value and a 4% “real” discount rate with variations tested at 7% “real” and 10% “real”.

1.5 Accuracy

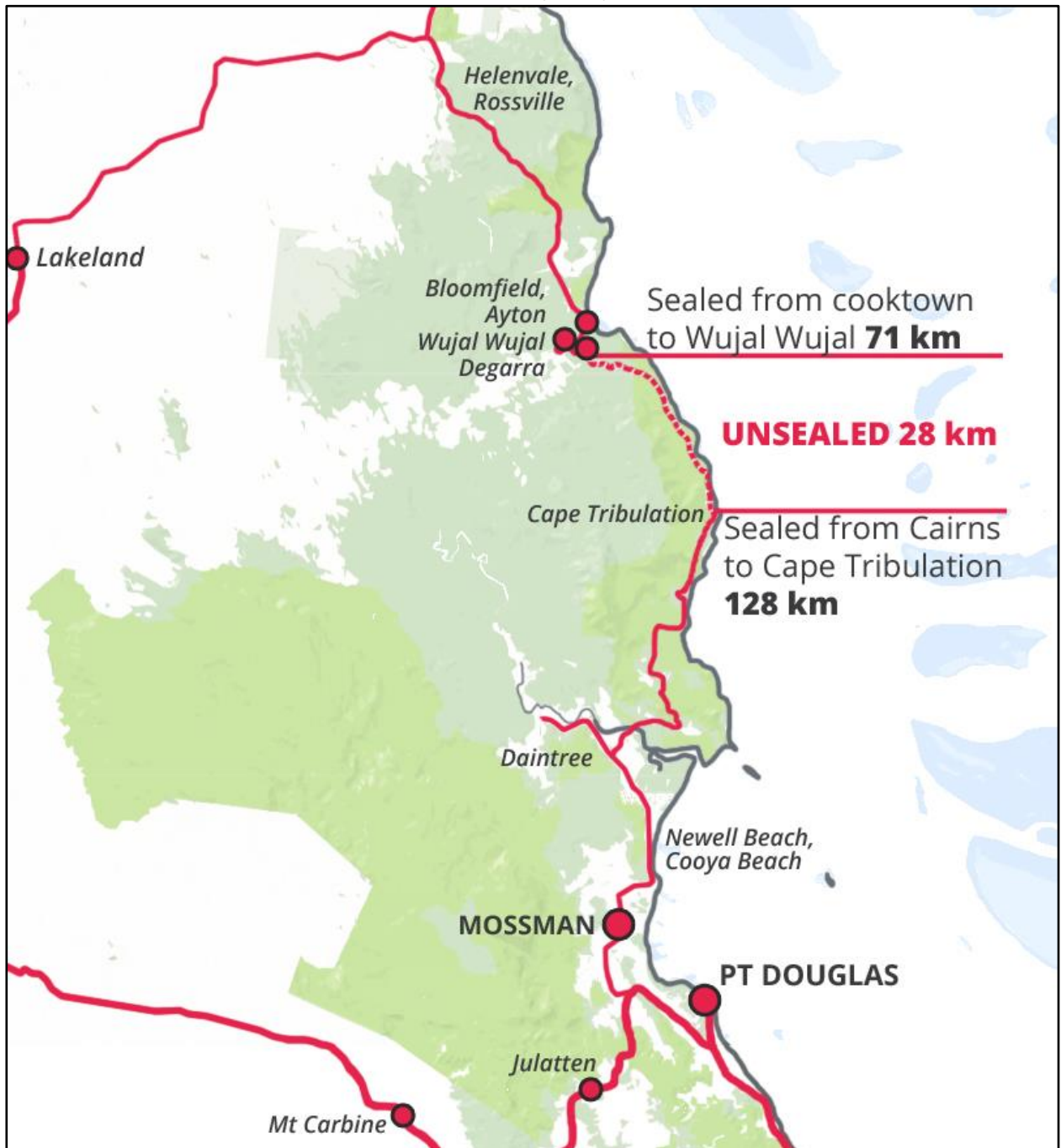
Of necessity, the following analysis is based on a substantial number of estimates. While efforts have been made to research and provide a basis for these estimates, it should be noted that the final benefit cost ratios arrived at, can only be regarded as order of magnitude estimates to assist with decision making in relation to the project.

Map #1: Cape Tribulation to Wujal Wujal Road Link Location



Source: Cummings Economics 2018.

Map #2: Cape Tribulation to Wujal Wujal Road Link Location



Note: Proportion of road Cairns to Cooktown unsealed 28km of 227km, ie. 12%.

Source: Cummings Economics 2018.

2. THE PROJECT

2.1 General

The project involves the sealing of a 28km section of the Coast Road between Cape Tribulation and Wujal Wujal, along with improvements to creek crossings to avoid flooding delays and improvements to steep sections.

It is proposed to seal to seven-metre width along the existing alignment.

The road passes through dense rainforest that at times, restricts light and vision, and side clearance can be relatively narrow. There are sections where this road is curvy. These conditions restrict safe travel speeds.

It should be noted the existing alignment involves three steep sections that currently have been treated with concrete to improve vehicle traction. The steep sections restrict suitability for use by heavy vehicles, especially articulated vehicles, conventional caravans and old underpowered vehicles.

Thus even when upgraded, use of the road will have limitations in terms of speeds and vehicle types with restrictions continuing.

Hold ups can also be experienced at the Daintree Ferry crossing further south affecting travel times and costs over the coastal route. These matters are identified further in Sections 6 and 8.

3. BACKGROUND

3.1 Local Government Areas

The subject section of road lies in Douglas Shire with no residential population in the area along the unsealed section of the road.

Wujal Wujal Aboriginal Shire Council area covering the community and immediately surrounding area is mainly north of the Bloomfield River. From Wujal north is in Cook Shire. North of Cooktown lies the Hope Vale Aboriginal Shire Council area. Map #3 over shows the statistical State suburb areas of Wujal Wujal, Bloomfield, Rossville, Cooktown and Hope Vale.

3.2 The Communities Directly Affected

3.2.1 Main Communities Affected

The communities affected can be grouped into the following.

Bloomfield/Wujal Wujal Area - This consists of two elements:

- a) The Wujal Wujal Aboriginal community
- b) The community of Ayton and some scattered population in the Bloomfield area.

The Rossville/Helenvale Area - There is a scattered small population in this historic tin mining area.

Cooktown - This consists of the township and Shire centre of Cooktown and surrounding rural population, especially along the Endeavour River.

Hope Vale - The Aboriginal community at Hope Vale.

Populations in the area are as follows.

Table #1: 2016 Census Population

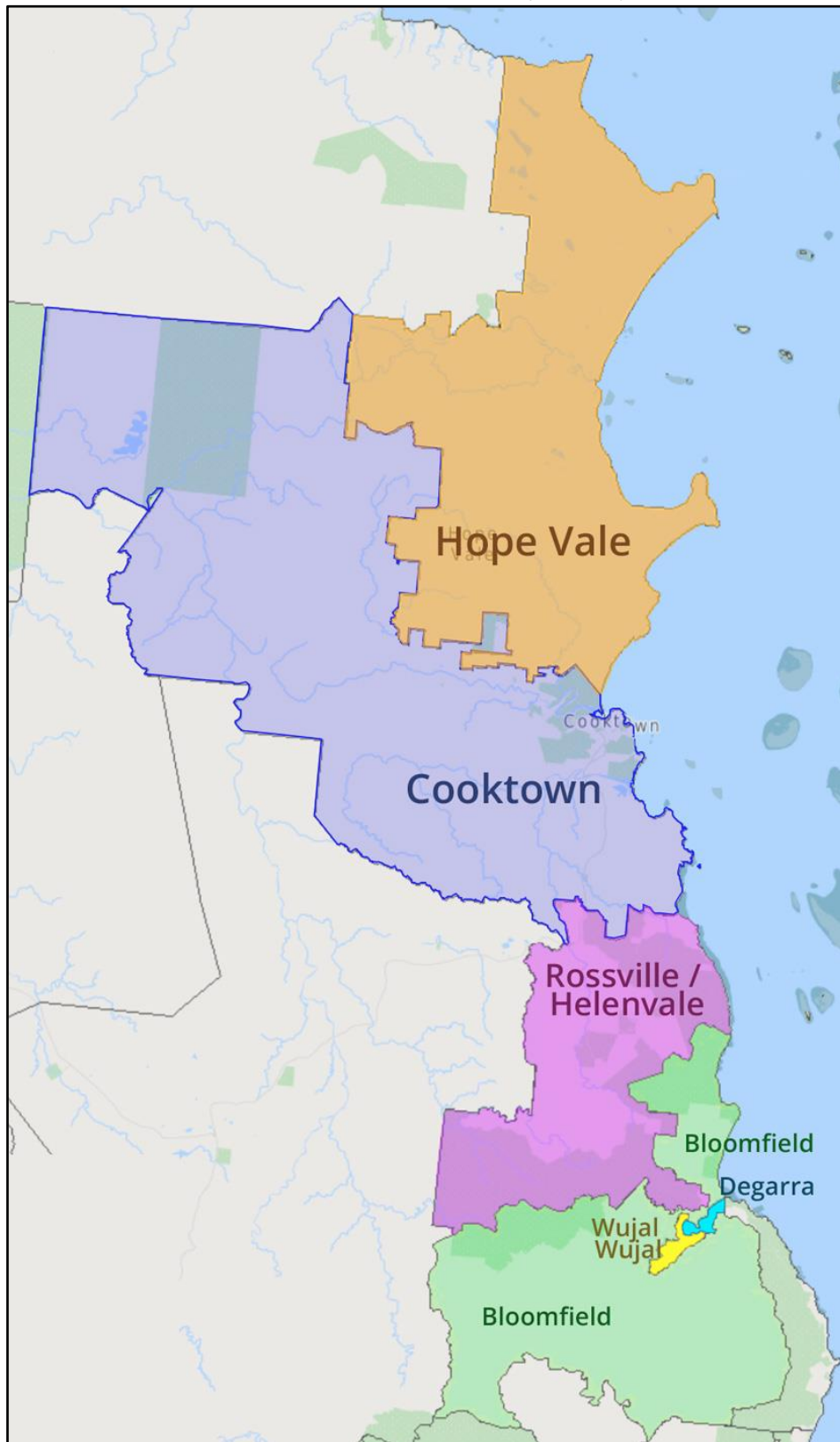
Communities	Usual place of residence	Australian visitors	Est ⁽¹⁾ international visitors
Wujal/Bloomfield	486	63	34
Rossville/Helenvale	204	114	34
Cooktown Area	2,631	786	94
Hope Vale	1,015	111	0
Total	4,336	1,076	162

⁽¹⁾Note: International visitor statistics are not yet available at this level from the 2016 Census. These are from 2011 Census.

Source: Cummings Economics from Australian Bureau of Statistics (ABS), 2011 & 2016 Census.

Thus, residential population in the area based on 2016 Census data was about 4,300. However, census data indicates that at peak visitor population in the area, predominantly domestic visitors is probably of the order of 1,500. (At census time, it was about 1,200.)

Map #3: Communities Affected by the Project



Source: Cummings Economics 2018.

The following table gives population growth over the last inter-censal period.

Table #2: Growth in Residential Population, (Usual Place of Residence), Census 2011-2016

Usual place of residence	2011	2016	Growth	%
Wujal Wujal	270	282	+12	
Bloomfield/Rossville	403	408	+5	
Cooktown	2339	2631	+292	
Hope Vale	1005	1015	+10	
Total	4017	4336	+319	+7.9%
Domestic visitors				
Wujal Wujal	25	22	(-3)	
Bloomfield/Rossville	110	155	+45	
Cooktown	590	786	+196	
Hope Vale	89	111	+22	
Total	814	1074	+260	+31.9%

Source: Cummings Economics from ABS Census data.

The picture is one of solid growth of residential population at an average rate of about 1.5% per annum with Cooktown faster at an average of 2.4% per annum. Visitor numbers recorded rose strongly by about a third, ie. about 6% per annum.

There is a high indigenous population in the area, especially concentrated in Wujal Wujal and Hope Vale but with the other areas also being well above the national average of 2.8%.

Table #3: Indigenous Population, Census 2016

Usual place of residence	No.	% of total population
Wujal Wujal	260	90%
Bloomfield	37	18%
Rossville	28	14%
Cooktown	382	15%
Hope Vale	912	92%

Source: Cummings Economics from ABS Census 2016.

Motor vehicle ownership in households in the Hope Vale and Wujal Wujal communities is comparatively low.

Table #4: Number of Motor Vehicles per Occupied Private Dwelling, Census 2016

Usual place of residence	No vehicle	One vehicle	More than one	Not stated	Average
Wujal Wujal	49%	28%	22%	1%	0.8
Bloomfield	0%	37%	59%	13%	1.8
Rossville	3%	36%	43%	17%	1.3
Cooktown	8%	37%	50%	5%	1.6
Hope Vale	30%	41%	28%	0%	1.1

(Note: cf Australia 1.7.)

Source: Cummings Economics from ABS Census 2016.

Overall, vehicle numbers per household are a bit below national average with numbers in the Aboriginal communities well below national average. However, experience with Aboriginal communities indicates that rather than this indicating a need for a lower standard of road, inability to afford expensive 4WD vehicles in good condition that will handle poor road conditions, makes it important to have roads that can be traversed by cheaper older second hand two-wheel drive vehicles.

This question and the social value of being able to travel in these communities is covered further in Section 7.14 on social impacts.

Census 2016 indicates the following workforce profiles.

Table #5: Workforce Status, Census 2016

Employed	Wujal	Rossville	Bloomfield	Cooktown	Hope Vale	(cf Australia)
Full time	39%	49%	37%	59%	42%	58%
Part time	24%	27%	41%	31%	17%	30%
Away from work	8%	12%	10%	6%	3%	5%
Unemployed	29%	12%	12%	5%	38%	7%
Total	100%	100%	100%	100%	100%	100%
Total workforce	92	92	81	1104	428	
Workforce as % of Population 15 plus	43%	53%	47%	58%	58%	60%

Source: Cummings Economics from ABS, Census 2016.

Apart from Cooktown (that has an average Australian profile), the table indicates relatively low participation in the workforce and high unemployment, especially in the Aboriginal communities.

Main industries of employment in the area were as follows.

Wujal Wujal – very high local government employment 40% and employment services 15% and related services and some health.

Bloomfield/Rossville – as for Cooktown, relatively high employment in local government, schools and hospitals 14%, 9%, 4%, but also in accommodation 11% and supermarkets 6%.

Cooktown – as the shire centre, relatively high employment in local government 12%, education 7%, hospital 7%, but relatively high employment in accommodation 5% and supermarkets 3%.

Hope Vale – very high (42%) in local government, 5% in employment services, education 9%, hospitals 5% and some employment in mining (Cape Flattery silica sand mine) 5%.

The major industries earning income from outside of Cook Shire are the pastoral and farming industries earning about \$100 million a year (ABS and Queensland DAFF information). However, only a small proportion of this relates to the Coast Road.

The agricultural sector has been growing rapidly, especially farming around Lakeland and in the Endeavour Valley and Hope Vale area. Due to restrictions on the Coast Road for heavy freight vehicles, the sector's influence in relation to the Coast Road is mainly felt indirectly through its influence on Cooktown as the Shire's main administrative and commercial centre.

Tourism is estimated to earn in Cook Shire of the order of \$55 million per annum (Tourism Research Australia) (not including some day trippers), and obviously the Coast Road and the area serviced by the Coast Road including in Cooktown itself, plays a major role in this earning pattern. The remainder is especially related to 4WD adventure tourism further north into Cape York.

Mining at Cape Flattery earns of the order of \$44 million per annum (Queensland Mines & Energy 2015-16). However apart from Hope Vale, a significant part of the workforce flies in from Cairns where the company's main office is located.

There is substantial marine sector activity associated with Cooktown valued at about \$24 million per annum with commercial fishing activity accounting for about \$16 million with the remainder mainly tourism related (Cummings Economics for Cooktown Chamber of Commerce 2017).

As the Shire's administrative centre, Cooktown performs a major role as a government centre including education, health and police services and as a commercial and professional services centre.

The economic importance of the road, given limitations on heavy vehicles able to use it, is thus:

- For movement of population between the effected communities and the larger regional service centres of Cairns and subregional centre of Mossman for shopping, health, professional and business services, families, recreation, sporting and cultural activities.
- For vehicle movements associated with the delivery of business services and goods from Cairns and Mossman.
- For tourism purposes.

3.2.2 Other Communities & Areas Affected

Communities in the whole area north of Cairns are potentially affected including Cairns itself, Mossman and the Cape Tribulation and Daintree area and to some degree those communities along the interior road to Cooktown including Mareeba, Mt Molloy, Mt Carbine and Lakeland.

Potential effects on these communities are dealt with in Section 8.

3.3 History of Road Development in the Area

Although the distance from Cairns to Cooktown is about the same as the distance between Cairns and Cardwell, topographical difficulties have resulted in the slow development of transport links between Cairns and centres along the coast to the North.

It was not until the 1930s that the Captain Cook Highway was built along the coast to Mossman using depression era employment funding.

Even then, the narrow nature of the road saw bagged sugar from the Mossman Mill still being sent down the coast to Cairns by coastal "lighters" through to the 1950s. Construction of the bulk sugar terminals in Cairns subsequently resulted in bulk transport by truck.

With only small areas available for cane growing north of the Daintree River and in the Cape Tribulation area compared with the expense of building a bridge over the river and then pushing a cane line through the Alexandra Range and along the coast, sugar production north of the Daintree never developed.

Although in the 1960s and 1970s, there were attempts to grow rice in the Cape Tribulation area, no substantial agricultural development occurred.

Low standard unsealed road access into the area was developed but with low populations being serviced, crossing of the Daintree River remained by ferry.

From the 1960s on, the area north of the Daintree, with heavy rainforests coming down to the beaches, became of interest to alternative lifestylers and with the quaint ferry crossing of the river started attracting day visitors out of Cairns and the growing tourism centre of Port Douglas.

At the other end (Cooktown), the early discovery of alluvial tin in the Rossville area in the late 1800s led to early development of roads south from Cooktown to Helenvale, Rossville and the Shiptons Flat area.

Early attempts to establish sugar growing on the flat areas of the coast north of the mouth of the Bloomfield River did not succeed. The area of flat land was relatively small and transport costs to markets high.

The road linking Helenvale through hilly rainforest area down to the Bloomfield area remained a poor track (in one part only two concrete strips), up until the 1970s.

Right up to the Second World War, contact between Cooktown and Cairns remained by boat or over circuitous back roads well to the west of the coastal ranges and plateaus.

In the 1950s, Main Roads engineer, D'Arcy Gallop, led a party that bulldozed a more direct interior link north from Mareeba, over the Desailly Range, through the hilly plateau to the north and down the Byrestown Range to Lakeland where it linked with the long established road from Cooktown via Lakeland to Laura.

This road has been progressively upgraded and sealed to Lakeland, and then from Lakeland into Cooktown in the late 90s early 2000s. It has now formed the first section of the Peninsula Developmental Road route to Weipa.

The road development into Lakeland and into Cooktown has provided the basis for very substantial development of Cooktown as a town centre and as a fishing industry base and unloading point for fishing vessels operating further north.

On the coast, a missing link remained between Cape Tribulation and Wujal Wujal.

In the 1980s, Douglas Shire resolved to construct an unsealed road to fill in the missing link. At the time, the decision was highly controversial with the environmental movement but was strongly supported by the Queensland Government of the day. Conservationists set up a blockade at Cape Tribulation to try to stop the construction. However, the road was built.

Since that time, the forest reserves through which it was built have become part of the Wet Tropics World Heritage area.

With increasing number of visitors travelling over the road from the Daintree River to Cape Tribulation and with difficulties developing due to its unsealed condition including dust floating onto the rainforest, unsealed road run off and disturbance and muddying of creek crossings, a decision was made to seal the road and upgrade creek crossings from the ferry to Cape Tribulation in the 1990s.

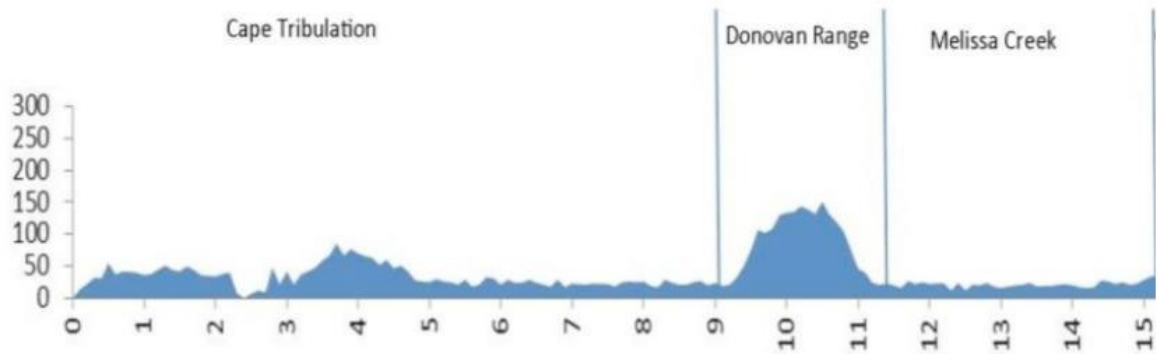
At the other (Cooktown) end of the Coast Road, more recent times have seen Cook Shire upgrade and seal the road through Helenvale to Wujal Wujal (completed in 2015).

When the link between Cape Tribulation and Wujal Wujal was built in the 1980s, it was built quickly to relatively low standard resulting in two types of constraints. A number of creek crossings have remained rudimentary and subject to flooding. In particular, the crossing of the Bloomfield River at the entrance to Wujal Wujal remained a major problem. Apart from a rocky bottom, the river height was affected by coastal tidal movements. More recently, a decision was made by Main Roads to construct a high level bridge across the river.

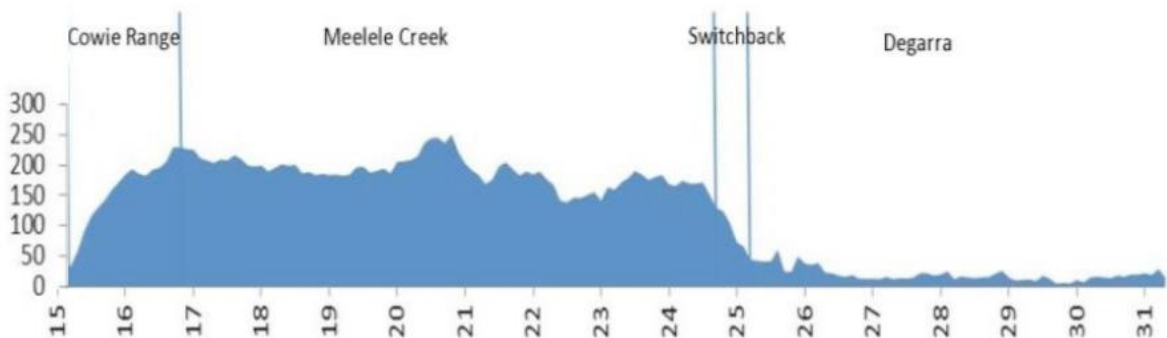
The second constraint has resulted from the alignment which results in some very steep sections (see Diagram #1). To provide better traction, concrete paving has been laid in these sections.

Diagram #1: Bloomfield/Wujal Wujal Steep Sections

Section 1



Section 2



3.4 Previous Reports

The need to further upgrade the road has been the subject of previous submissions and the future of the road has been canvassed in a number of reports:

- Cape Tribulation Road Link – Road Management Plan, Cairns Regional Council and others, Feb 2013.
- Safety Audit of Cape Tribulation – Bloomfield Road, Douglas Shire, Oct 2007.

Photos #1: The road passes through dense Rainforest



4. EXISTING TRAFFIC

No traffic counts' data on the road section between Cape Tribulation and Wujal Wujal was able to be discovered except for reference to a counter on the road just south of the Bloomfield River crossing in 2007. The actual detailed figures have not been able to be discovered. A reference to it in the Link Study indicates that average daily counts ranged from 30 to 160. It could be expected this would have put the yearly average at about 95.

Recent count information was available north of Wujal Wujal at Blackpinch. It indicates recent AADT at about 340.

To help establish more information about level and composition of existing traffic, regular users of the road were identified and as part of extensive surveying of residents, tourist operators and visitors, asked for their estimates of the extent and composition of the existing traffic. Appendix 2 gives details of survey responses from 31 regular users of the Cape Tribulation – Wujal Wujal section. They result in an estimate of an average of about 115 daily traffic movements composed of average 150 during the tourist season and 80 for the rest of the year.

An AADT figure of 115 would be reasonably consistent with the Degarra 2007 readings just south of the Bloomfield bridge, estimated to average about 95 and would imply a growth since then of about 21%, ie. an average of about 2% per annum.

This level of movement (about 40,000 per annum) is also generally consistent with information about the Daintree Ferry traffic (see further reference Section 8). One-way tickets would be mainly those traveling through north of Cape Tribulation and are recorded at about 30,000. The local concessional movements not counted in these numbers would be Wujal Wujal/Bloomfield and Rossville residents. Some of the visitors to north of Cape Tribulation would have purchased two-way tickets. Some of the traffic to and from north of Cape Tribulation would terminate/originate in the Cape Tribulation/Daintree area.

From the regular road users' survey, it is estimated that the traffic is composed seasonally as follows.

Table #6: Estimated Seasonal Composition of Traffic on Cape Tribulation Wujal Wujal Road

Type of vehicle	Tourist Season		Other		Average Yearly	
	%	No.	%	No.	%	No.
4WD	76%	114	75%	61	76%	87
2WD	16%	25	12%	10	15%	18
Coaches	2%	3	3%	1	2%	2
Trucks	6%	8	10%	8	7%	8
Total vehicle	100%	150	100%	80	100%	115
Type of traveller – light vehicles						
Tourist	66%	100	43%	34	57%	65
Business	8%	12	9%	7	8%	10
Residential	18%	27	37%	30	26%	30
Total light	92%	139	89%	71	91%	105
Type of traveller – heavy vehicles						
Coaches	2%	3	1%	1	2%	2
Trucks	6%	8	10%	8	7%	8
Total heavy	8%	11	11%	9	9%	10
Total traveller	100%	150	100%	80	100%	115

The above figures are consistent with a heavy drop off in coaches and 2WDs in the non-tourism period but with trucks fairly constant. In types of travellers, locals are fairly constant, business traffic reflects some drop off in the “other” period of the year but tourists dropping off to almost one-third outside the tourist season.

Photos #2: Vehicles that can use the road are currently restricted



5. CAPITAL MAINTENANCE COSTS

5.1 Capital Costs

The proposed upgrading would be to bring the road up to FNQ ROC Rural Road standard for traffic levels AADT 100 – 999, plus additional works to take the road up to further safety levels.

Taking it to FNQ ROC standard would involve construction to the same standard as the road from Helenvale to Wujal Wujal.

Construction to this level would involve the following specifications;

Road Reserve (flat terrain < 5%).....	20.00m
Road Reserve (undulating/hilly > 75%).....	25.00m
Formation	8.00m
Pavement Width	6.50m
Seal Width	6.50m
Shoulders	0.75m gravel
Desirable Speed Environment.....	100kph
Design Speed for Individual Elements	60kph

Exception to design speeds would be some steep sections (Donovan Ranges 20% and Cowie Range 33%), currently with concrete paving.

Cost to upgrade to this level is estimated at \$2 million per kilometre including taking seal width to 7 metres and culverts over six (6) creeks – total cost estimate \$56 million.

On top of this, additional works as advised by Wujal Wujal Council would involve two-coat seal to Q100 levels, bridge works instead of culverts, more works on steep section, drainage system with pipes and culverts, guard rails, signage and Queensland Transport and Main Roads standard grading.

Estimated cost with additional works (advice by Wujal Wujal Council) is \$70 - \$84 million, averaged at \$77 million.

Apart from reducing travel times and vehicle operating costs, these works would involve a major increase in safety.

5.2 Maintenance Costs

Advice from Wujal Wujal Council indicates savings in maintenance costs would be:

Cost per annum:	
Unsealed	\$700,000
Sealed	\$300,000
Saving.....	\$400,000

Over the project period of 30 years at a 4% per annum real discount rate, NPV (Net Present Value 2017 values) of savings would be \$6.9 million.

5.3 Net Capital Costs

Net Present Value of capital costs are thus put at:

Basic works	approx. \$49 m
With additional safety works	\$70 m

Photos #3: The unsealed road has high annual maintenance costs



6. TRAFFIC IMPACTS ASSESSMENT

6.1 Distance Savings

The following table gives distance savings of using the Coast Road compared with the interior road.

Table #7: Distance Savings - Km

	Interior	Interior via Rex	Coastal	Difference via Kuranda	Difference via Rex
Cooktown					
Mareeba	262.2		197.5	64.7	
Cairns	312.5	297.1	228.2	84.3	
Mossman		240.1	171.1		69.0
Cape Tribulation		309.0	102.2		206.8
Wujal Wujal					
Mareeba	280.9		169.3	111.6	
Cairns	331.2	315.8	157.0	174.2	
Mossman		258.8	100.0		158.8
Cape Tribulation		327.7	31.1		296.6
Rossville					
Mareeba	240.0		210.2	29.8	
Cairns	290.3	274.9	197.9	92.4	77.0
Mossman		217.9	140.9		77.0
Cape Tribulation		286.8	72.0		214.8

Note: Cairns taken as Smithfield roundabout.

Compared with the Coast Road route, the interior route increases the distance of a trip to Cairns by the following distances and percentages:

From Cooktown 84.3 km.....36%
From Rossville..... 92.4 km.....47%
From Wujal Wujal 174.2 km.....108%

Additional distance of the interior route to Mossman is as follows.

From Cooktown 69.0 km.....40%
From Rossville..... 77.0 km.....55%
From Wujal Wujal 158.8 km.....159%

6.2 Ferry Costs

The Daintree Ferry crossing can represent a constraint on traffic along the road. Excluding busy times, normal delay in crossing is estimated at 10 minutes.

It was reported that in the busy periods, time delay can stretch out to of the order of one hour and occur in the peak tourism season between the hours of 10 am – 12 noon for northbound traffic and 3 pm – 5 pm southbound.

Estimated value of time lost in normal times is private travel \$3, business travel \$9. This would stretch up to about \$16 private and \$54 business in peak delay times. On top of the delays, time lost is the ferry charges for “non-concession” users as follows.

	<u>One-way</u>	<u>Return</u>
Car/Ute	\$15.....	\$17
<u>Coaches</u>		
6 – 10 seats	\$16.....	\$30
11 – 20 seats	\$29.....	\$58
21 plus seats	\$46.....	\$90

However, residents of the Wujal Wujal/Rossville area, are regarded as local and exempt.

6.3 Current Travel Speeds and Times

Average speed over the interior road is likely to be higher. The Coast Road even when sealed and creek crossings attended to, will still be slowed by the curving and steep Donovan’s Range, the Cowie Range and Switch Back sections and also generally slower travelling conditions between Cape Tribulation and the Daintree River.

However, on the interior road, the Byrestown Range, Desailly Range, Kuranda Range (or Rex Range) winding sections will also slow traffic.

Travel time over the interior road is estimated at 4.10hrs to travel the 312km from Cairns, representing an average speed of approximately 75km per hour.

Based on surveying and field testing travel times over the Coast Road, speeds are estimated as follows in a light vehicle.

Table #8: Coast Road Current Travel Times & Speeds

	Distance	Travel time	Average speed
Cairns (Smithfield roundabout) to Daintree Ferry	88 km	1 hr 12 mins	73 km/hr
Daintree Ferry to end of bitumen Cape Tribulation	37 km	43 mins	51 km/hr
Unsealed section Cape Tribulation to Wujal Wujal	28 km	45 mins	37 km/hr
End of unsealed section to Cooktown	75 km	1 hr 00 mins	75 km/hr
Total	228 km	3 hr 40 mins	62 km/hr

Apart from the unsealed section, the section from the Daintree Ferry to Cape Tribulation is relatively slow and affected by the relatively slow range sections, speed bumps, lower speed zones and slow moving tourism traffic on the road.

The indications are that even at present, the travel time over the Coast Road from Cooktown to Cairns is shorter than the interior route by about 30 minutes, not including the time delay at the Daintree Ferry.

However, because of the rough nature of the winding unsealed section and creek crossings, only 4WD vehicles can reliably use the Coast Road and costs of vehicle wear and tear over the unsealed road and ferry charges need to be taken into account by motorists deciding to use the coastal route.

While distance factors from Wujal Wujal and Rossville make the coastal route attractive, at present, for Cooktown residents without 4WDs, it is not currently attractive and for those with 4WDs it is marginal and this reflects itself in the relatively small number of trips taken at present by Cooktown residents over the coastal route (see Household Survey, [Appendix 1](#)).

The longer the travel distances and times, the greater the need for refreshment and refuelling stops that add to journey times.

6.4 Other Factors

The household survey (see Appendix 1), indicates that apart from travel distance and times there are other reasons for using the Coast Road more if it was sealed: that it is more scenic and interesting than the interior road and there are safety concerns with the interior road with cattle and pigs and other wildlife. More rest stops available along the coast was also mentioned as making it a more desirable route.

6.5 Travel Time Savings when Sealed

Residents were asked to estimate the savings in time of the coastal route when sealed (see survey details, Appendix 1).

The resulting household survey estimates indicate that the upgrading of the Coast Road compared with the interior route, would save, on average, approximately:

From Cooktown	0.9 hrs
From Rossville/Helenvale.....	1.1 hrs
From Bloomfield/Wujal Wujal	1.5 hrs

These figures are roughly consistent with the distance savings as follows.

	<u>Distance saving</u>
Cooktown.....	84.3 km
Rossville/Helenvale	92.4 km
Bloomfield/Wujal Wujal.....	174.2 km

If roads were equivalent travel times and average speeds were 80 km/hour, the time saving due to distance would be:

Cooktown.....	0.94 hrs
Rossville/Helenvale	1.03 hrs
Bloomfield/Wujal Wujal.....	1.93 hrs

The question of travel time savings over the Coast Road if it was upgraded was included in the household survey but was also explored in detail among regular users in different types of vehicles. The road formation and distances were analysed from travelling over the road and videos of travel over the road.

Travellers over the road vary in their driving skills and experience with the road condition. The types of vehicles also vary.

Time to travel over the existing unsealed road is estimated (based on responses to surveying actual travel over the road and analysis of video footage), at 45 minutes for a visitor 4WD vehicle to cover the 28 km. This travel time is affected especially by the curvy and steep nature of the road and the creek crossings and represents an average speed of 37 km/hr.

After the road is graded and in good condition, it could have a lower travel time but when in worse condition and during rain periods, it is likely to be longer.

Experienced drivers familiar with the road section will cover the distance in a shorter time, but inexperienced visitors will take longer, with the need to check the running creek crossings. Average travel times during the wet season will be detrimentally affected by the state of the creek crossings.

Of the total of 10 creek crossings, two are bridged and eight unbridged. Of the unbridged, three involved permanently year-round wet crossings. Regular flooding hold-ups were reported to occur at Emmagen and Woobadda Creeks. (The following time savings do not take into account flooding hold up time savings which are treated separately in Section 7.8.)

Interviewing of heavy vehicle drivers indicated that travel time over the road was currently more like one hour, ie. an average of speed of about 28km hour.

Transport and Infrastructure Australia's Transport Assessment Planning Guidelines, give parameters that help estimate what the travelling times would be over the road if it was sealed.

There are two sets of parameters, NIMPAC and HDM.

Profile of the road for estimation of travel time when sealed has been estimated based on three approaches:

- 1) Actual travel over the road
- 2) Examination of video footage of travel over the road
- 3) Estimation from map profile (see Diagram 3).

It is concluded that the road has the following approximate profile:

Straight & flat	2 km
Curvy & flat	6 km
Curvy & moderate slope	11 km
Curvy & steep	5 km
Curvy & very steep	3 km
Very curvy & very steep	1 km
Total	28 km

Unfortunately the Transport Assessment Planning Guidelines' parameters do not cater for the very steep sections in the road and the following parameters are used for travel speed road 5.8 metres width.

	<u>NIMPAC</u>	<u>HDM</u>
	km/hr	km/hr
Straight & flat	100	100
Curvy & flat	90	100
Curvy & moderate slope	81	95
Curvy & steep	57	87
	<u>Notional</u>	<u>Notional</u>
Curvy & very steep	30	30
Very curvy & very steep	20	20

On these parameters, travel time over the road when sealed is estimated at NIMPAC 28 minutes and HDM 22 minutes.

The indications are that the sealing will result in a reduction in travel time by of the order of 20 minutes to about 25 minutes implying an average speed of about 67km hour, ie. faster than the Daintree Ferry to Cape Tribulation area where traffic is slowed with speed limits and speed bumps and slow moving local tourism and residential traffic.

For experienced drivers familiar with the existing road, it could be less but for inexperienced tourism users unfamiliar with unsealed roads and creek crossings, the saving will probably be more.

The indications are that when the road is sealed, taking into account usual ferry delays, the saving in travel time will be about 40 minutes, ie. about 0.67 of an hour from Cooktown.

These are lower than the estimates derived from the surveys (see Appendices 1 & 2).

Revised average estimates of saving are:

From Cooktown 0.67 hrs
From Rossville 0.77 hrs
From Wujal Wujal 1.47 hrs

In relation to heavy vehicles (coaches and trucks), current estimate to travel the section is one hour, ie. an average speed of 28 km/hr, ranging down to 10 – 15 km on the steep curvy sections to 70 km on straight and flat.

With sealing and upgrading of creek crossings, travel time for a medium body truck is estimated to come down to:

NIMPAC 34 minutes 49 km/hr
HDM 39 minutes 43 km/hr

Taking various factors into account, it is estimated that for medium trucks and buses, the travel time will drop from about one hour to 35 minutes with a saving of about 25 minutes or 0.42 of an hour.

6.6 Impacts on Residential Traffic

Section 4 gave estimate of existing traffic on the Cape Tribulation/Wujal Wujal road indicating local light vehicle traffic at an average of about 30 movements a day, ie. about 11,000 a year.

The household survey, Appendix 1 – Section 5.1, indicates that sealing of the Coast Road will result in an estimated increase in traffic as follows with some of the increase expected to be “diverted” from the inland route and some to be new traffic “generated”.

Table #9: Estimated Extra Residential Traffic When Coast Road Sealed

Usual place of residence	Total	(Generated)	(Diverted)
Bloomfield/Wujal Wujal	11	(9)	(2)
Rossville/Helenvale	3	(2)	(1)
Cooktown	26	(0)	(26)
Total	40	(11)	(29)

Table #10: Estimated Total Traffic When Coast Road Sealed

Usual place of residence	Current	Additional	Total when sealed
Bloomfield/Wujal Wujal	18	11	29
Rossville/Helenvale	3	3	6
Cooktown	9	26	35
Total	30	40	70

6.7 Impacts on Business Traffic

The Business Survey (see Appendix 4), indicated that business generated three types of traffic.

- Delivery vehicles
- Visiting business representatives/trades and service vehicles
- Business trips by business owners and staff.

The survey indicated that most of the delivery vehicles were semitrailers and trucks with only 1% using the Coast Road.

Although it was indicated that 85% of delivery vehicles would continue to travel by the interior route, those using the Coast Road were indicated to increase from 1% to 15% of total traffic in this category to the region, especially the lighter truck vehicles making deliveries. This response relates to heavy vehicles (see Section 6.8.4 following).

The Business Survey indicated that about a half of vehicles of sales representatives, trade and service visitors were not 4WD and that the sealing of the Coast Road would see a very large rise in use by this category of traffic indicated to be from 7% to 47%, ie. almost a seven-fold increase.

About a third of business operators recorded they were not traveling for business purposes or were flying, and number of visits generated is much lower than for traffic generated by business reps, trades and service vehicles. However, the indications were that sealing of the Coast Road would result in this type of traffic over it rising three-fold from 15% to 47%.

In establishing the likely increase in business light vehicle traffic, it needs to be recognised that most of the current business traffic over the road estimated at an AADT of 10 is likely to be heavily generated by Bloomfield/Wujal Wujal traffic whereas most of the business survey indicating very large increases in business traffic using the Coast Road related to Cooktown.

Bearing this in mind, estimation of increase in business traffic is moderated to a three-fold increase with it all being “diverted” from the interior route. We thus have business traffic of 10 a day rising to an estimated 30, an increase of 20 a day.

6.8 Impacts on Tourism Traffic

6.8.1 Tourism Appeal

The Captain Cook Highway Strategic Plan, July 2015, observes that the Captain Cook highway and the Coast Road further north to Cooktown is among Australia’s most iconic roads with the potential to be as famous as the Great Ocean Road in Victoria. However, because the section from Cape Tribulation north was unsealed, it was decided to treat its promotion under the separate name of the “Bloomfield Track” as a 4WD adventure section.

The sealing of the last section of the road between Cape Tribulation and Wujal Wujal will facilitate promotion of the route as a whole experience, thus broadening its national and international appeal.

Most importantly, sealing of the Coast Road would allow much of the visitor traffic to Cooktown to complete a circuit, rather than travel to and from via the interior road, adding to the visitor experience.

6.8.2 Tourism Vehicles General

According to Tourism Research Australia, the Cook Shire Cape York region receives about 130,000 visitors a year, almost all domestic (see Table #15 over).

Almost all visit by motor vehicle, although some are in coaches and some by boat. Some also travel straight up and down Cape York and do not visit Cooktown. Some are travellers for business and employment and some are visiting friends and relatives.

Examination of visitor statistics for Cape York SA2, indicates about 60% of visitors recorded are for holiday purposes.

Assuming 80,000 visited the Cooktown area by motor vehicle for holiday purposes would generate (at two per vehicle), average daily traffic of 219 vehicles.

Based on the tourist operators survey (see Appendix 3), it is estimated that the number of holiday visitors will at least double and that 80% will travel one way or the other over the Coast Road with 20% making a return journey. The following works conservatively on a 70% increase rather than a doubling. This works out at the following estimated movements.

Table #11: Average Daily Traffic Tourist Vehicles – Coast Road

	Tourist season	Rest of year	Estimated Total
Current	100	34	65
Increase	205	105	155
Total	305	139	220

Responses by tourist operators indicated that of total movements by visitors to and from Cooktown, those along the Coast Road were 25% one way or another and 75% along the interior road.

It is estimated from the above that of the extra 155 movements a day over the Coast Road, 110 will be new traffic generated and that 45 will be diverted from the interior road.

The additional traffic generated, much of which will circuit via the interior road, will more than offset the diverted traffic and result in a net increase in tourist vehicle movements over the interior road of about 120 vehicles a day.

6.8.3 Tourism Rental Car Operators

At present, rental car operators (see survey results, Appendix 5) indicate that the current state of the road means that two-wheel drive vehicles are barred from operating on the unsealed sections but hired 4WD vehicles are not.

Discussions indicate there is a steady stream of hires for visits to the Cooktown area and the sealing of the road will see:

- a) Some diversion of those currently travelling up and back by 2WD vehicles complete the circuit and travel one way via the coast.
- b) A general increase in vehicles travelling to the Cooktown area in part because of the availability of a circuit.

Rental car operators made the observation that many of those hiring would like to visit both Cape Tribulation and Cooktown but the backtracking involved at present to visit both led to many deciding to visit only Cape Tribulation. Sealing would lead more to visit both. Rental vehicles form part of the current tourist vehicle movements and the rental vehicle growth will form part of the projected increase identified above.

6.8.4 Impacts on Heavy Vehicles

Coaches - Results of survey of coach/tour operators (see Appendix 5), indicates that during the tourist season, there is a total of about three movements a day over the Coast Road and during the rest of the year, about one a day. If the road was sealed, a new operation would generate a further one a day.

Trucks - Much of the truck movement at present is associated with road repair and service vehicles (Shire, Telstra, Ergon and the like). Very little at present is freight delivery but as the business survey has indicated, this small amount is likely to rise strongly in small freight vehicles.

A 100% increase in heavy vehicles is estimated as a result of the sealing.

6.9 Overall Estimated Traffic Increases

Table #12: Estimated Traffic Increases Following Sealing

	Average Daily Traffic		
	Current	After Sealing	Increase
<u>Light Vehicles</u>			
Tourist	65	220	Generated 110 Diverted 45
			Total 155
Business	10	30	Diverted 20
			Total 20
Residents	30	70	Generated 11 Diverted 29
			Total 40
Total Light	105	320	
<u>Heavy Vehicles</u>			
Coaches	2	3	Generated 1
Trucks	8	16	Diverted 8
Total Heavy	10	19	9
Overall Total	115	339	224

This involves an estimated 2.9-fold increase in traffic of 224 additional vehicles of which 102 are estimated to “divert” from the interior road and 122 estimated to be new traffic “generated”.

**Table #13: Road Traffic Average, Annual Daily Traffic (AADT) Traffic Counters
Mulligan Highway at Lakeland**

Year	AADT
2009	386
2010	474
2011	478
2012	479
2013	502
2014	514
2015	544

Source: Department of Transport and Main Roads, Cairns.

Growth over 2009 to 2015 averaged 5.9% per annum and it can be expected that 2018 average daily traffic flow will be around 600.

The preceding analysis provides for 57 non-tourism traffic a day to switch to the Coast Road. However, this is more than offset by the additional generated tourism traffic that will circuit via the interior route and increase traffic on that road net of tourism diversions by about 120 movements a day.

Given the likely impact of the \$200 million sealing works taking place on the Peninsula Developmental Road, it is likely that traffic passing further North on this road is likely to increase also.

7. BENEFIT COST ANALYSIS INPUTS

7.1 Project Period and Residual Values

The project period is taken as 30 years, with no residual value. Construction period is taken to be one year.

7.2 Discount Rate

Standard long-term low risk real interest rate of 4% “real” per annum is used.

It should be noted that real interest rates at present are well below this figure.

7.3 Underlying Growth Rates

Population growth in the catchment area over the past 10 years has been as follows.

Table #14: Population Growth 2006 to 2016, Census Usual Place of Residence

	2006	2016
Cook Shire	3463	4226
Hope Vale	782	918
Wujal Wujal	326	282
Total	4571	5426

Average annual growth was 1.7% per annum.

Vehicle usage has historically been expanding faster than population growth and for calculation of Net Present Value, it is assumed that future growth in vehicle usage averages 2% per annum over the project period for local and business traffic and trucks.

At this rate, a \$1 saving per annum would have a Net Present Value at a discount rate of 4% “real” per annum over a 30-year project period, of \$23.7.

The following table gives growth in visitor numbers in the Cooktown/Cape York region.

Photos #4: Rough road surface slow traffic result in higher operating costs



Table #15: Visitor Numbers to “Cape York”

<u>Year</u>	<u>Domestic</u> <u>'000</u>	<u>International</u> <u>'000</u>	<u>Total</u> <u>'000</u>
1998-99	88	na	na
1999-00	55	na	na
2000-01	65	na	na
2001-02	81	na	na
2002-03	67	na	na
2003-04	82	na	na
2004-05	81	na	na
2005-06	86	8	94
2006-07	67	11	78
2007-08	58	10	68
2008-09	54	13	67
2009-10	103	9	112
2010-11	45	6	51
2011-12	97	7	104
2012-13	91	8	98
2013-14	110	7	117
2014-15	96	8	104
2015-16	137	7	144

Source: *Cummings Economics from Tourism Research Australia.*

The figures are from a sample survey and vary from year to year. Average of the three years 2013-14 to 2015-16 at 122,000 compares with average over three years 2004–2005 to 2007–2008 of 80,000 representing an average annual growth of 5.9% per annum.

With increasing access into the area, growth is likely to continue to be strong and it is assumed for the calculation of Net Present Value of savings, tourism vehicle growth averages 3% per annum over the project period. At this rate, a \$1 saving per annum would have, at a 4% per annum real discount rate over 30 years, a Net Present Value of \$25.74.

7.4 Treatment of Additional Generated and Diverted Traffic

It should be noted that the two types of additional traffic are treated differently in relation to savings.

For “diverted” traffic, the saving in time and vehicle operating costs relates to the comparative time and distances over the whole route.

The travel time savings have been identified in Section 6.6. The vehicle operating costs in this case are taken to be the costs of travel of a large car over the distance saved conservatively assuming the road was of high standard, flat and straight.

For “generated” additional traffic, the theory is that some of this traffic would start to be generated if lesser improvements were made to the road. Normal convention is to bring to account generated amounts at half the saving identified. However, in this case, it can be argued that the major benefit will only take place once sealing of the complete distance occurs, especially for tourist drivers who are unfamiliar with the area and at times are in “hire” vehicles prohibited from driving on unsealed roads.

“Generated” traffic benefits are brought to account at 80% of total.

7.5 Travel Time and Vehicle Operating Cost Parameters

Parameters used to calculate travel time and vehicle operating cost savings are derived from those developed for ATAP (Australian Transport Assessment and Planning), Department of Infrastructure and Regional Development which form the basis for standard parameters used by State road transport authorities. Travel time and vehicle operating cost figures for this assessment are based on those published by Roads for New South Wales, Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives – Transport Economic Appraisal Guidelines – Appendix 4 Economic Parameters Values and Valuation Methodologies – March 2016 Values.

7.6 Travel Time Savings Per Vehicle

Travel time savings in 2017 values are as follows.

Table #16: Travel Time Savings Per Hour

	Value ⁽¹⁾ per hour per person	Average ⁽²⁾ Number of pax	Total per vehicle
Light Vehicles			
Tourist	\$16.59	2.0	\$33.18
Business	\$53.81	1.3	\$69.95
Residents	\$16.59	2.0	\$33.18
Heavy Vehicles			
<u>Coaches</u>			
Driver	\$28.45	1.0	\$28.45
Passengers	\$16.59	10.0	\$165.90
Total Coaches			\$194.35
<u>Trucks</u>			
Driver	\$28.45	1.2	\$34.14
Freight	\$2.12	-	\$2.12
Total Trucks			\$36.26

⁽¹⁾ Note: Parameter values rendered into 2017 dollars.

⁽²⁾ Note: Passenger numbers in parameters for private vehicles of 1.7 is increased to 2 in accordance with survey information.

7.7 Estimation of Travel Time Savings

These travel time saving parameters are applied to the modelled travel time estimates and vehicle flows as developed in Sections 6.5 and 6.9 to provide an estimate of annual savings involved in upgrading the road.

Table #17: Estimated Annual Travel Time Savings

	AADT	Vehicles Per Annum	Hours Saved	Saving Per Vehicle	Saving Per Annum
Tourist Vehicles					
Current	65	23725	0.33	\$10.95	\$259,789
Additional generated	110	40150	0.33	\$8.76	\$352,035
Additional diverted	45	16425	0.67	\$22.23	\$365,128
Total					\$976,952
Resident Vehicles					
Current	30	10950	0.33	\$10.95	\$119,903
Generated	11	4015	0.33	\$8.76	\$35,203
Diverted					
Bloomfield Wujal Wujal	2	730	1.57	\$52.09	\$38,026
Rossville Helensvale	1	365	0.77	\$25.55	\$9,326
Cooktown	26	9490	0.67	\$22.23	\$210,963
Total					\$413,420
Business Vehicles					
Current	10	3650	0.33	\$23.08	\$84,242
Diverted					
Bloomfield Wujal Wujal	2	730	1.47	\$102.83	\$75,066
Rossville Helensvale	1	365	0.77	\$53.86	\$19,659
Cooktown	17	6205	0.67	\$46.87	\$290,828
Total					\$469,795
Heavy Vehicles – Trucks					
Current	8	2920	0.42	\$15.23	\$44,472
Diverted					
Cooktown	8	2920	1.35	\$48.95	\$142,934
Total					\$187,406
Heavy Vehicles – Coaches					
Current	2	730	0.42	\$81.62	\$59,583
Generated	1	365	0.42	\$65.30	\$23,834
Total					\$83,417
Grand total					\$2,130,990

7.8 Benefits of Elimination of Creek Crossing Holdups due to Flooding

The foregoing analysis does not take into account all the impacts of delays occasioned by creek flooding making the road impassable.

The indications from regular travellers of the road (eg. bus services) are that the road is usually closed continuously for scheduled services for two months and 6 to 10 times a year outside of that. Douglas Shire organises to put up notices at both ends when conditions close the road. Closures are reported to be typically for one to two days.

If residents need to travel when the Coast Road is closed, they will divert over the interior route and the impact of sealing and attention to creek crossings is already covered in the analysis, in the estimate of diversions from the interior route when the sealing takes place.

However, the creeks can rise very quickly and surveying indicated that vehicles are often banked up at the creeks waiting for them to subside. No firm estimate was able to be made of how often this occurred and how many vehicles were involved.

While no firm estimate was able to be made of the cost in terms of wasted time of those waiting, it can be expected to be substantial.

7.9 Vehicle Operating Costs (including fuel) Per Vehicle

Vehicle operating cost savings have been calculated using the parameters in Appendix 6 of the Roads for NSW Manual based on 2016 prices and the travel speeds identified in the foregoing section of travel time savings as follows.

Table #18: Estimated Vehicle Operating Cost Savings per Vehicle over 28KM

	Light Vehicles	Heavy Vehicles	
Existing Road ⁽¹⁾	\$20.03	\$32.88	
Sealed Road ⁽²⁾	⁽³⁾ \$14.90	⁽³⁾ \$25.08	
Difference	\$5.13	\$6.80	
Est 2017 Values	\$5.23	\$6.94	

⁽¹⁾ Note: NRM roughness 184

⁽²⁾ Note: NRM roughness 25

⁽³⁾ Note: Equates to 53 cents per km light and 90 cents Km heavy vehicles.

On top of the estimate based on curvature, slopes, travel speeds and roughness, account needs to be taken of the impact of wet creek crossings. In addition, prices in the region are generally above national average. To take these factors into account, a notional 5% is added to totals in Table #19 Summary.

7.10 Estimation of Vehicle Operating Cost Savings

The following table applies the above parameters to the traffic flows identified in Section 6.9.

For "diverted" traffic, the saving is the saving in kilometres involved by an estimated saving per kilometre.

Because of the nature of the Cape Tribulation to Wujal Wujal section and the Coast Road overall, the vehicle operating cost per km would be relatively high compared with the interior road. To take this into account, the vehicle operating cost savings are calculated at a notional 35 cents per km of distance saved (cf Cape Tribulation to Wujal Wujal vehicle operating cost at 53 cents per km).

Table #19: Estimated Annual Vehicle Operating Cost Savings

	AADT	Vehicles Per Annum	Saving Per Vehicle	Saving Per Annum
Light Vehicles - Tourists				
Current	65	23725	\$5.23	\$124,082
Additional generated	110	40150	\$4.18	\$168,309
Additional diverted	45	16425	\$29.42	\$483,224
Total				\$775,615
Light Vehicles – Local				
Current	30	10950	\$5.23	\$57,269
Generated	11	4015	\$4.18	\$16,830
Diverted				
Bloomfield Wujal Wujal	2	730	\$60.94	\$44,486
Rossville Helensvale	1	365	\$32.22	\$11,760
Cooktown	26	9490	\$29.42	\$279,196
Total				\$409,541
Light Vehicles - Business				
Current	10	3650	\$5.23	\$19,090
Diverted				
Bloomfield Wujal Wujal	2	730	\$60.94	\$44,486
Rossville Helensvale	1	365	\$32.22	\$11,760
Cooktown	17	6205	\$32.22	\$199,925
Total				\$275,261
Heavy Vehicles – Trucks				
Current	8	2920	\$6.94	\$20,265
Diverted				
Cooktown	8	2920	\$75.28	\$219,818
Total				\$240,082
Heavy Vehicles - Coaches				
Current	2	730	\$6.94	\$5,066
Generated	1	365	\$5.55	\$2,027
Total				\$7,093
Grand Total				\$1,707,592
Plus Special Cost Allowance of 5% (see Section 7.9)				\$1,792,972

Photos #5: Unbridged creek crossings slow traffic and result in frequent road closure



7.11 Net Present Value of Travel Time Savings and Vehicle Operating Costs

The following applies underlying growth rates to establish Net Present Value of annual savings at a 4% real discount rate over a 30-year project period.

Table #20: Calculation of Travel Time and VOC Saving, Net Present Value ⁽¹⁾

	Tourism Vehicles					Net Present Value
	Annual Savings		Total	Growth rate	Factor	
	Travel time	VOC				
Light Vehicles						
Tourism	\$976,952	\$814,398	\$1,791,350	3.00%	25.74	\$46,109,349
Local	\$413,420	\$430,018	\$843,438	2.00%	23.27	\$19,626,802
Business	\$469,795	\$289,024	\$758,819	2.00%	23.27	\$17,657,725
Heavy Vehicles						
Trucks	\$187,406	\$252,087	\$439,493	2.00%	23.27	\$10,226,991
Coaches	\$83,417	\$7,448	\$90,865	3.00%	25.74	\$2,338,865
Total	\$2,130,990	\$1,792,975	\$3,923,965			\$95,959,732

⁽¹⁾ Note: At 4% discount rate over a 30-year project period.

We thus have economic efficiency travel time and vehicle operating cost savings with a Net Present Value estimated at \$96 million.

7.12 Safety

The following table shows crash levels and casualties over the past five years on the Wujal Wujal to Cape Tribulation road compared with the sealed, well developed section of road Lakeland to Cooktown.

Table #21: Crashes Bloomfield Road Cape Tribulation to Wujal Wujal, 5 years – 2013 to 2017

Crash Severity	2013	2014	2015	2016	2017	Total
Fatal	0	0	0	0	1	1
Hospitalisation	0	0	0	1	1	2
Medical treatment	0	0	0	1	1	2
Minor injury	1	1	0	0	0	2
Total Crashes	1	1	0	2	3	7

Table #22: Crashes Mulligan Highway, Lakeland to Cooktown, 5 years – 2013 to 2017

Crash Severity	2013	2014	2015	2016	2017	Total
Fatal	0	0	0	1	0	1
Hospitalisation	0	1	0	0	2	3
Medical treatment	0	0	0	0	2	2
Total Crashes	0	1	0	1	4	6

Comparative and approximate traffic distances are as follows:

	<u>Distance</u>	<u>Est AADT</u>
Bloomfield Rd - Cape Tribulation to Wujal Wujal	28km.....	115
Mulligan Highway - Lakeland to Cooktown	75km.....	600 ⁽¹⁾

Note ⁽¹⁾: At Trevethan Ck, 2017.

National Guidelines for Transport Management in Australia Road Parameters (PV2) gives estimated costs of crashes by injury type by willingness to pay adjusted to 2017 values.

Fatal.....	\$8,041,313
Hospitalisation	\$83,369
Medical treatment/Minor injury	\$38,780

The following uses the above data to calculate comparable average annual cost per vehicle km of crashes on the two roads over the past five years.

Table #23: Cost of Crashes, 5 Years – 2013 to 2017

Cost of Crashes	Bloomfield Rd Cape Tribulation to Wujal Wujal	Mulligan Hwy Lakeland to Cooktown
Total Cost of crashes	\$8.363 m	\$8.369 m
Average Cost p.a.	\$1.673 m	\$1.674 m
Average Vehicle km p.a.	1,175,300	16,425,000 ⁽¹⁾
Average Crash Cost per Vehicle km p.a.	\$1.423	\$0.102

Note ⁽¹⁾: Based on Queensland Transport & Main Roads AADTs Trevethan Ck.

This gives a cost of \$1.67 million per annum.

Net Present Value of the costs at this level over a 30-year project period at a 4% “real” discount rate, average growth factor as per Table #20, would be \$40.7 million.

While additional traffic will increase risk of accident, if the additional safety works are carried out, a large part of safety benefits would be achieved.

Queensland Transport Cost Benefit Analysis Manual, Road Projects, May 2011, provides annual crash costs for standard roads. Based on tables in Section 4.6, parameters given for a two-lane sealed 6.5 – 7.0 metre road with AADT 339, estimated annual crash costs calculate for a 28 km road to an estimated \$0.390 million. Net Present Value calculates at about \$9.5 million.

The crash rate established for the Lakeland to Cooktown road of \$0.102 per vehicle km works out at a similar figure when applied to an AADT of 339 with the upgraded road at an annual cost of \$0.353 million with NPV of \$8.6 million.

This is for a standard road. Because of curves and steep sections, the Wujal Wujal to Cape Tribulation road is still likely to have a higher accident rate than such a standard road. At a 50% higher crash factor due to the steeper sections, this would indicate a crash NPV of the order of \$13.5 million. On these calculations, the safety NPV of upgrading seems likely to be up around the \$27 million mark.

It should be noted however, from the preceding tables, that the above calculations are on the average of the past five years. It is notable from the preceding tables that the crash rate has risen substantially in the last two years and if this rate was to continue, the safety benefits could be very much higher.

7.13 Other Economic Benefits – Cook Shire and Wujal Wujal

7.13.1 Economic Development Benefits

There will be economic development benefits of impacts of increased tourist visitation to Cooktown and through making Cooktown a more desirable place to live and do business due to better access to regional facilities.

Additional holiday visitors generated by the sealing of the road is estimated at about 55,000. Based on latest Tourism Research Australia data on domestic tourist visitation to Cooktown, this could be expected to generate at an average stay of four nights, some 220,000 additional visitor nights. With an average spend of \$115 per night, total expenditure generated would be about \$25 million a year in the Cook Shire economy with a Net Present Value (3% growth rate) of the order of \$630 million.

As part of the extensive interviewing for this study however, attention was drawn by experienced tourist operators to the opportunities sealing of the road will open up for the Bloomfield/Wujal Wujal community. It is recommended that with the sealing of the road, a developmental plan be instituted for the Wujal Wujal/Bloomfield area. The Kuku Yulanji people have already developed in their homelands the successful Mossman Gorge Tourism Centre. At Wujal Wujal, the art/cultural centre has been established.

As part of a development plan for the area, it has been suggested:

- That the CREB track road, while remaining an unsealed road, be improved into the Roaring Meg falls.
- That road access into lookouts be improved.
- That possibilities of a cruise on the Bloomfield River be promoted.
- That the Bloomfield Lodge be reopened and promoted.

In relation to the Bloomfield Lodge, it should be noted that when it closed, it had 27 persons employed (about 20 local). There is no road access into the lodge. The lodge in the past has operated with guests being flown into the airstrip at Mt Louis Station and taken by car to the Bloomfield River and then by boat into the lodge. This is costly and tends to restrict traffic to the lodge. It is believed that completion of sealing the road access from Cairns will enhance the viability of the Bloomfield Lodge and lead to it being re-opened.

Attention is especially drawn to the high unemployment rates in Wujal Wujal and the opportunity to take special action through appropriate training and investment, to use the opportunities presented by sealing the Coast Road to reduce unemployment levels.

7.13.2 Wider Economic Benefits

Wider economic benefits have been identified for use in transport benefit costs analysis from involving productivity increases due to:

- a) Agglomeration economies
- b) Increased competition
- c) Economic welfare benefits.

Unfortunately, research and modelled parameters for wider economic benefits are only available for major urban areas. However, these factors obviously exist strongly in relation to this road link, especially through productivity efficiencies in providing services from district centres to remote communities. There is also an element of improved competition.

Economic welfare benefits arising from improved employment opportunities are potentially quite large in Aboriginal communities where there is a cultural resistance to moving from the community to access employment.

The prospect of more local employment generated through larger traffic and tourism flows has the prospect of generating productivity gains through people moving from welfare and government support to productive employment.

It is difficult to quantify this. However, the following illustrates possible order of magnitude effects. If the sealing of the road resulted in an extra 10 jobs at a wage of \$60,000 per annum for persons currently unemployed, the productivity benefit would be \$600,000 a year and justify, at a benefit cost ratio of one, an investment of about \$10m in the road upgrading.

If it resulted in a reduction of welfare payments of \$30,000, present value of savings to the government would be of the order of \$5m over the project period.

Photos #6: Current unbridged creek crossings result in muddying water flow down stream



7.14 Social Benefits

Wujal Wujal and Mossman are the main two centres of the Eastern Kuku Yalanji people who are a substantial part of the population in the area. They frequently travel between the two centres for family and cultural reasons. Comparative distances are 96km via the Coast Road and 276km via the interior road.

Many of the Kuku Yalanji people have low incomes and struggle to own and maintain 4WD vehicles to a standard needed to travel safely over the existing road in most weather conditions.

It is difficult to put a monetary figure on the social value of improved linking of the two Mossman and Wujal Wujal branches of the Eastern Kuku Yalanji. However, the indication from census data is that the total indigenous population in Douglas Shire and Wujal Wujal recorded in the 2016 Census was 1155.

To some extent, the travel time and vehicle operating cost for travellers between the two communities and estimated increases in local vehicle movements out of Wujal Wujal already bring to account some of the value.

In a submission to the 2015 Road Link study, the following points were recorded:

“.....it is reasonable expectation in 21st Century Australia that communities such as Wujal Wujal and Mossman would be linked by a sealed road, and that this would likely contribute to ‘Closing the Gap’ outcomes through improved access, safety and reduced travel costs for local Indigenous people.

Road construction also provides an opportunity for employment for local Indigenous people, who currently face very high unemployment levels. Jabalbina requests that agencies working to upgrade the Cape Tribulation use their best endeavours to employ Eastern Kuku Yalanji traditional owners in road improvement works wherever possible.”

7.15 Environmental Benefits

The Coast Road passes through a section of the Wet Tropics World Heritage Area with high conservation value. This section also adjoins a section of the Great Barrier Reef World Heritage Area close offshore of high conservation value.

The current unsealed state of the road leads to a number of implications for environmental values.

- 1) Runoff from bare earth into the creeks and potentially out to the coral reefs.
- 2) The unbridged “wet” creek crossings where vehicles cause muddying of the creeks downstream.
- 3) Dust in dry conditions blowing on to the surrounding vegetation.

It was reported that some 60,000 cubic meters of fill put on the road each year, results in runoff into the surrounding areas, especially down the creeks and into the Great Barrier Reef lagoon.

Inquiries of Wet Tropics Management Authority and Great Barrier Reef Marine Park Authority revealed no definitive research that quantifies unsealed road impacts on the environment and benefits of sealing in relation to this or other comparable sections of road.

The following quote from the Cooperative Research Centre (CRC) for Tropical Rainforest Ecology and Management however indicates a concern with the issue.

“Erosion Problems on Unsealed Roads – *“The erosion of road surfaces impacts on the environment in a number of ways. In the rainforest, road surfaces can be a source of rapid rainfall run-off leading to the transportation of particles into rivers and streams which subsequently affects water quality and impacts on biota. Resource and road management authorities within the Wet Tropics World Heritage Area (WTWHA) are greatly concerned regarding the operation and management of roads within the region.” Source: Research Paper from Measuring Erosion on Unsealed Roads through the Rainforest.*

Anecdotal information indicates that the question of containing environmental damage played a role in WTMA seeking funding for sealing the Daintree to Cape Tribulation section of the Coast Road.

Although the Great Barrier Reef Marine Park Authority have not carried out studies relating to potential runoff from the unsealed Cape Tribulation/Wujal Wujal road, they are obviously concerned with the issue and referred to studies in the Normanby Basin identifying runoff from unsealed roads. However, this work does not address and seek to quantify the benefits in reduced runoff from sealing roads.

There can be no doubt that the sealing of the Coast Road will have environmental benefits in reducing the foregoing impacts. However, we have not been able to discover research that enables us to quantify this saving.

A particular aspect of these benefits relates to creek crossings. Attention is drawn to the Tachalbadga Creek Crossing

A submission to the 2015 Link Study was made by the Jabalbina Yalanji Aboriginal Corporation that links environmental with heritage values..

“Jalunji clan traditional owners have advised that the existing unsealed Bloomfield Track crossing at Tachalbadga Creek is damaging the cultural heritage values of a culturally significant pool immediately downstream of the Bloomfield Track. The cultural heritage value of the pool is strongly linked to its natural clear blue appearance, which is diminished by silt from tyres washing into the pool, giving it a cloudy appearance. The Eastern Kuku Yalanji Indigenous Protected Area Stage 2 Plan of Management – Jalunji-Warra Land and Sea Country includes an action to work with stakeholders to seal this crossing to restore the cultural value of this significant site. There is also a broader, general concern amongst traditional owners that silt from unsealed creek crossings along the road corridor may damage the natural and cultural values of the lower creeks and fringing reefs.”

The current unsealed state of the road leads to large amounts of dust being generated during the dry season that lodges on surrounding vegetation. This is not good for the health of the vegetation along the road. It is visually distressing and inconsistent with the presentation of the area as a World Heritage area.

Photos #7: In the dry season foliage along the road gets covered in dirt



8. IMPACTS ON OTHER COMMUNITIES

8.1 General

The changes in traffic over the Cape Tribulation/Wujal Wujal section of the Coast Road will have effects on other communities, especially those along the coast south to Cairns, over which there will be increased traffic and those along the interior route from which some traffic could be diverted.

8.2 Daintree/Cape Tribulation Area

8.2.1 General

Sealing of the last section of the Coast Road is likely to significantly increase traffic on the road south of Cape Tribulation.

Information gathering was undertaken to seek to establish the degree to which this might impact on:

- a) Road traffic in the area, especially impacts on the Daintree Ferry;
- b) Business in the Daintree/Cape Tribulation area.

8.2.2 Impact on Road Traffic in the Daintree/Cape Tribulation Area

Daintree Ferry statistics give a picture of the amount of traffic that passes to and from the area north of the Daintree River.

Douglas Shire statistics record vehicle movements over the Ferry that generate revenue.

Local residents have "concession" cards with movements not recorded.

The following table gives estimated traffic to and from north of the Daintree River not including concessional movements.

Table #24: Non-concessional Vehicle Movements, Daintree River Ferry, 2004-05 (est) 2017-18

	(Non-concessional) No.	
2004-05	224,911	
2005-06	215,213	
2006-07	222,506	
2007-08	225,548	
2008-09	223,169	
2009-10	215,450	
2010-11	195,517	
2011-12	196,934	
2012-13	207,875	
2013-14	194,874	
2014-15	199,969	
2015-16	237,486	
2016-17	238,641	
(Est) (2017-18) ⁽¹⁾	233,743	

⁽¹⁾ Note: Based on 5 months to November 2017.

The table indicates that non-concessional (mainly visitor traffic) fell after 2008-09 through to 2014-15. There was a leap in 2015-16 of about 18%.

Since then, the indications are that they have gone into a no growth pattern and remained between 230,000 and 240,000, ie. at a level marginally (about 5%) above those being recorded 2005-06 to 2008-09.

To obtain total traffic, it is necessary to add the “concessional” traffic which has been advised to be of the order of 8,500 a month, ie. about 100,000 a year.

In the latest full financial year available (2016-17), this would result in an estimated traffic flow at the Daintree Ferry of 341,000 a year which would work out at an average annual daily traffic flow of 934.

It is likely that local movements within the Daintree/Cape Tribulation area would push this flow up well over 1,000 in the Cow Bay/Dewar area, but come back down in the Cape Tribulation area below 900.

Current traffic over the Cape Tribulation/Wujal Wujal section of the road is estimated to be of the order of 115 per day average (see Section 4, Table #6).

Some of this traffic originates from or terminates north of the Daintree River. At the Daintree Ferry, traffic to/from north of Cape Tribulation is probably accounting for about 11% of total movements.

It is estimated that sealing the section Cape Tribulation to Bloomfield will see traffic increase over that section by something of the order of 224 movements a day. Allowing for some of this to be to/from the area north of the Daintree River, this increase would result in traffic over the ferry increasing by about 200 a day to about 1154. The increase would take the proportion of traffic being accounted for by the road north of Cape Tribulation to about 27% of total.

8.2.3 Impact on Cape Tribulation Area Tourism

Based on the Daintree River Ferry statistics for 2016-17 (and on the assumptions that average number of persons in cars/utes is two, motorbikes one and multiday tickets (being mainly business), is one), current visitors to the Daintree/Cape Tribulation area is estimated to total about 400,000 per annum (about 170,000 in buses, 230,000 in cars/utilities/motorbikes, etc.).

Tourist vehicles travelling over the Cape Tribulation/Bloomfield section at present is estimated at 24,000 per annum and at an average of two persons per vehicle, total would be about 48,000 visitors a year, ie. about 12% of total visitors to the Cape Tribulation area of approaching 400,000 a year. Additional tourist visitor vehicles, if the road is sealed, are estimated to be of the order of 155 with some 45 being diverted from travelling both ways over the interior route and 110 being additional visitors to the Wujal Wujal to Cooktown area. This translates at two persons per vehicle at 33,000 a year diverted and 80,000 new visitation generated, total about 113,000 a year.

It is likely that of the estimated 80,000 generated, some may have visited the Daintree/Cape Tribulation area without the sealing of the Cape Tribulation/Wujal Wujal section. Estimated additional tourist numbers to the Daintree/Cape Tribulation area is thus probably of the order of 100,000.

On top of this would be the “local” and business traffic that is estimated to be:

Business	Diverted	8,800 pa (1.2 persons per vehicle)
Residents (Wujal to Cooktown)	Diverted	21,000 pa (2 persons per vehicle)
	Generated.....	8,000 pa (2 persons per vehicle)
Total		37,800 pa



Most of the residents being “diverted” will be Cooktown residents using the Coast Road in preference to the interior route.

We thus have a total of about 138,000 persons a year moving through the Daintree/Cape Tribulation area, about 100,000 additional tourist visitors and about 38,000 business traffic and Wujal Wujal to Cooktown residents. This would result in an estimated potential increase in number of people visiting through the area increasing by the order of a quarter.

8.2.4 Daintree River Ferry Capacity

A question raised in relation to the Cape Tribulation/Daintree area related to the impact on the delays being experienced at times of the year at the Daintree River Ferry.

Daintree Ferry has a capacity of 27 cars with a cycle of about 11 minutes to load, cross, unload and cross back when traffic volumes are low. When traffic volumes are high, this is likely to increase to 15 minutes to allow additional loading and unloading time, implying four cycles, 8 trips an hour and a capacity of about 200 vehicles an hour.

The ferry operates from 6am to 12 midnight. Assuming 90% of traffic occurs between 6am and 6pm, the following table calculated average hourly traffic based on monthly ferry data for 2016-17. Based on 2016-17 peak July traffic flows, average hourly day time traffic flow would have been 148 per hour.

Table #25: Estimated Hourly Day Time Traffic, Daintree Ferry

		Est average day time traffic
2016	July	148
	August	136
	September	121
	October	114
	November	93
	December	89
2017	January	87
	February	62
	March	75
	April	100
	May	94
	June	115

The inability of the ferry to cope with volumes in July and August occurs 10.00 am to 12 noon northbound and 3.30 pm to 5.00 pm southbound due to the large amounts of traffic coming out of Cairns and Port Douglas on day trips into the area and back again.

It can be seen that the ferry currently has a capacity problem at peak hours in July and August.

If the Cape Tribulation to Wujal Wujal section is sealed, comparative travel times from various centres to the ferry are as follows.

From	Distance	Travel time	Arrival time if depart 9.00 am
Cairns	88 km	1 hr 20 min	10.20 am
Wujal Wujal	65 km	1 hr 10 min	10.10 am
Cooktown	140 km	2 hr 20 min	11.20 am

Assuming that traffic will be about evenly split northbound and southbound, less than half of it would be a potential addition to the peak queues – that leaving Cairns or Port Douglas to go north in the morning and that coming down from Cooktown leaving in the early afternoon.

Residential and business traffic who know the pattern are likely to vary times to avoid the problem.

Thus, the impact on peak queues is likely to be substantially less than the total additional traffic generated of about 16%.

8.2.5 Impacts Cape Tribulation Area North of the Daintree River

Interviews were conducted with a number of key businesses in the Cape Tribulation/Bloomfield area.

The interviews identified four type of businesses with varying interests.

- Accommodation businesses of different types.
- Attractions mainly dependent on day trippers out of Port Douglas and Cairns (although local accommodation supplies part of their market).
- Service businesses oriented especially to visitors, eg. retail, food & drink, fuel.
- Businesses servicing local residential and business needs including trades and other services.

The greatest concern of attractions servicing the day tripper trade was the prospect of adding to the “ferry” delays.

They did not see the additional visitor traffic travelling north of Cape Tribulation as providing substantial additional business.

There is an underlying concern (shared with Port Douglas accommodation), that the Cape Tribulation area would lose its “end of the line” mystique and become just another attraction area along the coast north to Cooktown.

The accommodation businesses however, are clearly in a position where, the sealing of the section through to Wujal Wujal changes the dynamics of the area through being able to be used as a base for “day trippers”. With the road sealed, Wujal Wujal, Rossville area and Cooktown would come within a day trip range for coaster buses and visitors own cars, as well as being in a position to offer day trips south to Port Douglas, Mossman Gorge, etc. Tours to the south out of the Daintree/Cape Tribulation area have the advantage of passing over the Daintree Ferry southwards at a time when there is limited southbound traffic and coming back northward without delay. Accommodation businesses can expect to pick up some business from visitor traffic touring up and down the coast from Cooktown. It can thus be expected that accommodation business in the Cape Tribulation north of the Daintree area will experience more business. This additional business will in turn add business to the local day tripper attractions that does not add to the ferry queues.

Tourism service support businesses such as shops, restaurants, eateries are likely to gain some increase in business from the passing traffic and from additional overnight accommodation business.

Overall, it is likely that the net effect on the Cape Tribulation area north of the Daintree River will be for an initial marginal increase in business, but increasing as the benefits of repositioning accommodation in the area to become a tour base are realised over time.

For businesses servicing the general community of residents and businesses, their major concern is lack of basic services in the area such as mains electricity and mobile reception. The build-up over time that will come from additional visitors in the area passing through and staying overnight will help achieve better services.

One point that was brought out in the interviewing, was that the money being spent on excessive cost of maintaining the unsealed Cape Tribulation/Wujal Wujal section of the Coast Road compared with if it was sealed, would be better spent in improving services in the Cape Tribulation area. This was especially important if responsibility for that section of the Coast Road could be passed to an entity other than Douglas Shire.

8.2.6 Impacts Douglas Shire South of the Daintree River

Accommodation south of the Daintree River promotes day trips to the Daintree/Cape Tribulation area as part of their offerings, and there is concern that a sealed road to the north may have an effect of increasing traffic through the area including impacts on ferry queues and on the “end of the line” image of the area.

Concerns were also expressed that the sealing of the Coast Road section, Cape Tribulation to Bloomfield, would affect the appeal to 4WD enthusiasts. There are two flows to consider.

- 1) 4WD adventure drivers who stay in the Port Douglas/Daintree area to complete a circuit of the CREB track and the Bloomfield track.
- 2) 4WD adventure drivers passing north to Cooktown and south from Cooktown.

Circuit drivers will still have the CREB track that is the more extreme adventure route. Apart from the steep sections that are currently sealed with concrete, the Cape Tribulation/Wujal Wujal section is mainly an unsealed road in relatively good condition and not a real adventure challenge at present.

In relation to through 4WD adventure travellers passing north to Cooktown, the CREB adventure track is available to them and roads further north. As identified above, the Cape Tribulation/Wujal Wujal road is not a substantial challenge.

For businesses and services in Mossman, the sealing of the Cape Tribulation to Wujal Wujal section will result in more residents from the Wujal Wujal, Rossville, Cooktown area accessing shopping and services as opposed to travelling via the interior route to Cairns.

Direct benefits to Douglas Shire Council will be from two directions.

- a) Reduction of the currently high maintenance costs on the Cape Tribulation to Wujal Wujal section (estimated to be of the order of \$400,000 per annum), and possible complete removal of this burden if road responsibility passes from Douglas Shire (estimated saving \$700,000 per annum).
- b) Additional ferry revenue.

Some of the additional traffic generated over the ferry will be by concession holder residents in Wujal Wujal and Rossville and businesses with special arrangement. Estimated additional daily paying traffic is expected to be of the order of 130 providing an additional revenue of the order of \$600,000 a year. Total potential direct budget effect for Douglas Shire is thus estimated at over \$1 million a year.

8.2.7 Regional Impact

From a regional perspective, completion of sealing of the Coast Road will have two major effects.

In relation to tourism it will help bring into full play, tourism product of the Cooktown district to the region's tourism offerings. This includes:

- The addition of a further area of rainforested coastline, rivers, waterfalls, beaches, and additional points of access to the reef.
- Aboriginal community of Wujal Wujal directly on the road and involved in tourism offerings.
- The historic tin mining area of Rossville and the Lions Den Hotel and Black Mountain.
- Historic Cooktown including its association and that of the whole coastline of the area with Captain Cook's ground breaking voyage of discovery and the Palmer gold rush 100 years later.
- Lakefield National Park.
- The Lakeland new farming area.
- Laura and the globally significant Quinkan Art Galleries.
- The Palmer River and Outback atmosphere of the interior road.

The second major effect relates to general development.

Historically, the development of the Cooktown district has been hindered through being cut off from the major population centres to the south around Cairns by the difficulties of transport brought about by the block of high mountain ranges extending from far inland and coming right down to the sea. The development of the inland route and its sealing in relatively recent times has seen development taking place in agriculture and fisheries as well as tourism.

While sealing of the last section of the Coast Road will not provide a route for heavy transports, it will continue the process of improvement in access for light vehicles.

Cooktown area boomed in the late 1800s, but the retreat of mining saw this remote tropical area go into steep decline. Cut off by coastal mountains from the populated areas further south, compensating development of agricultural industries failed to occur. However, all that has been changing. The area is not poor in underlying resources. With transport improvements brought about by the development of a sealed interior route, agriculture and tourism are growing strongly from a small base. Cooktown is developing a strong marine industries sector. All this is reflected in population growth which over the past decade, has been among the fastest in the region.

Table #26: Population Growth Rate - Hinterland Local Government Areas, TNQ, 2006–2016

Hinterland LGA Areas, TNQ	%	
Weipa	38%	
Cook Shire	22%	
Mareeba	18%	
Douglas	15%	
Torres	12%	
Tablelands	9%	
Cassowary Coast	3%	
Other Tropical North Queensland	10%	

Sealing of the last 28km section of the Coast Road can be expected to further reinforce and help extend this strong growth pattern.

9. BENEFIT COST ANALYSIS AND CONCLUSIONS

9.1 Benefit Cost Analysis

The following analysis is broken into a number of parts. The first part gives a quantified benefit cost analysis.

Table #27: Summary of Net Present Value of Quantified Benefits & Costs

Benefits – Travel Time & Vehicle Operating Costs		
Light Vehicles		
Tourism	\$46.1 m	
Residents	\$19.6 m	
Business	\$17.7 m	
Heavy Vehicles		
Trucks	\$10.2 m	
Coaches	\$2.3 m	
Safety	\$27.2 m	
Total	\$123.1 m	
Cost		
Capital cost	\$77.0 m	
Less NPV maintenance cost reduction	-\$7.0 m	
Total	\$70.0 m	
Benefit Cost Ratio	1.76	

The indications are that the quantified benefits including potential substantial safety benefits would be well above the projected costs.

Benefit cost ratio would be at 7% (real), discount rate 1.23 and at 10% (real) discount rate 0.92.

On top of the quantified economic efficiency benefits are substantial additional benefits as follows.

9.2 Other Benefits

9.2.1 Developmental Benefits

Surveying in the community and among tourism operators indicated a belief that sealing the Coast Road as proposed would lead to major growth in holiday purpose tourism visitation in the Cooktown area. In the foregoing analysis, we have estimated a 70% increase. Estimated additional income from tourism spending in Cook Shire is put at \$25 million a year. Over a 30-year project period, this additional income would have a discounted (4% real) Net Present Value of about \$630 million.

A 70% increase in tourism into the Cooktown area would trigger off substantial capital investment in accommodation and other facilities.

9.2.2 Wider Benefits

There are definite benefit likely to occur through the potential to reduce the high level of unemployment in Wujal Wujal. This is difficult to assess. However, if 10 new jobs were created at \$60,000 per annum, this alone would have a productivity benefit with a Net Present Value of the order of \$10m over the project period and save on welfare payments with a Net Present Value of the order of \$5m.

9.2.3 Environmental Benefits

There are obvious environmental benefits of sealing the road with a consequent reduction in soil runoff in an area of very high environmental values in the World Heritage Rainforests and the close inshore World Heritage Great Barrier Reef.

The upgrading will be of special benefits in eliminating unbridged “wet” creek crossings where vehicles cause downstream turbidity and through reduction of dust effects on the health of rainforest fringing the road.

9.2.4 Social Impacts

Of particular importance is the social value of sealing the road to the Kuku Yalanji people whose traditional area covers Mossman and Wujal Wujal leading to strong family and social ties between the two communities.

The strong Aboriginal population in the area with low levels of incomes find it difficult to afford new 4WD vehicles to cope with unsealed roads and tend to only be able to afford second hand two-wheel drives. Sealing roads has strong benefits for those in rural areas on low incomes.

The sealing of the road will further reduce an atmosphere of isolation in the Cooktown area leading to a greater willingness of population and workforce to locate in the area.

Appendix 1: Household Survey





COAST ROAD

Wujal Wujal to Cape Tribulation Upgrade

Economic and Social Impact

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June 2017

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1. INTRODUCTION

1.1 General

As part of the research behind the Economic and Social Impact Study into sealing the section of road between Wujal Wujal and Cape Tribulation – the last unsealed section of the Coast Road between Cairns, Mossman and Cooktown, a telephone survey was conducted of a random sample of households in the Cooktown, Rossville and the Bloomfield, Ayton Wujal Wujal area.

1.2 Methodology

The survey was conducted by telephone using a set questionnaire of a random sample of households identified by telephone numbers listed in a community directory. Up to three call backs were made.

1.3 The Questionnaire

The questionnaire was in two parts. The first part was for households. A second part was proceeded with to gain further impressions about traffic on the road if the respondent was found to be a regular user of the road.

1.4 Timing

The survey was conducted in mid-2017.

2. SAMPLE CHARACTERISTICS

2.1 Total Sample

Results of the survey were monitored, and with the survey producing consistent results, was terminated at a sample of 101.

2.2 Location

Location of respondents was as follows.

Table #1: Location of Respondents

Area	No.	%
Cooktown	58	57%
Helenvale	23	23%
Bloomfield/Wujal	20	20%
Total	101	100%

This compares with population distribution.

Table #2: Population Distribution

Area	No.	%
Cooktown area	3344	83%
Helenvale area	204	5%
Bloomfield/Wujal area	482	12%
Total	4030	100%

Source: Census 2016, usual place of residence.

Thus to equate the sample with population, there is a need to adjust the survey results with weighting by the following factors.

Cooktown area	1.46
Helenvale	0.22
Bloomfield/Wujal	0.60

3. CURRENT TRAVEL PATTERNS

3.1 Frequency of Travel

Table #3: Frequency of Travel on Coast Road Over Year

Times Travel Per Year (one way or other)	No.	%
0	55	55%
2	3	3%
3	2	2%
4	9	9%
5	3	3%
6	3	3%
8	1	1%
10	1	1%
12	7	7%
13	1	1%
15	2	2%
24	5	5%
26	3	3%
27	1	1%
50	1	1%
52	1	1%
144	1	1%
312	1	1%
Total	100	100%

Those not traveling the Coast Road were:

Cooktown	72%
Rossville/Helenvale	52%
Bloomfield/Wujal	10%
Total Average.....	55%

Average number of times travelled per annum was as follows.

Bloomfield/Wujal	30
Rossville/Helenvale	12
Cooktown area	2

Taking into account relative populations, total times travelled per annum per person is:

	Person trips
Cooktown	3334 x 26,668
Rossville/Helenvale	204 x 122,448
Bloomfield/Wujal	482 x 3014,460
Total	4020 x 623,576

This calculates to vehicles per day of:

Cooktown	9
Rossville	3
Wujal	18
Total	30

3.2 Type of Vehicle Used on Coast Road

Table #4: Type of Vehicle Used

Vehicle	No.	%
4WD	45	94%
Sedan	2	4%
Motorbike	1	2%
Total	48	100%

Some 94% were 4WDs.

3.3 Number of Persons per Vehicle

Table #5: Persons Per Vehicle

Per Vehicle	No.	%
1	7	7
2	30	60
3	1	3
4	4	16
5	3	15
14	1	14
Total	48	115

Excluding the one that said 14, average was 2.1.

3.4 Where Travel Coast Road To

Table #6: Where Usually Travel Coast Road To

	Tonnes IPS
Cairns	44
Mossman/Port Douglas	14
Cape Tribulation	7
Innisfail	1
Total	66

A number were multiple and Cairns and further south accounted for about 70% and Cape Tribulation/Mossman 30%.

3.5 Purpose of Trip

Table #7: Purpose of Trip

Purpose	No.	%
Shopping	42	28%
Business	28	19%
Visiting friends & relatives	25	17%
Health	33	21%
Professional	16	11%
Airport	3	2%
Education	1	1%
Total	148	100%

Trips tend to be multipurpose with leading reasons shopping, health and business.

4. TRAVEL OVER INTERIOR ROAD

4.1 Current Travel

Table #8: Times Travel Interior Road per Year (one way or other)

Travel interior road per year	No.	%
0	11	11%
1	2	2%
2	12	12%
3	6	6%
4	13	13%
5	2	2%
6	9	9%
8	5	5%
9	3	3%
10	10	10%
12	6	6%
13	1	1%
14	2	2%
15	2	2%
16	3	3%
20	2	2%
24	3	3%
25	1	1%
26	1	1%
30	1	1%
36	2	2%
52	1	1%
65	1	1%
144	1	1%
Total	100	100%

Only 11 said they didn't use the interior road and of these, 9 were from Bloomfield/Wujal and 2 from Rossville/Helenvale.

Average trips per annum were Cooktown 13, Helenvale 8 and Bloomfield/Wujal 6.

Applying these to population gives the following estimates of trips per annum and estimated trips per day.

	Person trips	Est Daily Vehicle Movements
Cooktown	3334 x 13	43,342
Rossville/Helenvale	204 x 8	1,632
Bloomfield/Wujal	482 x 6	2,892
Total	4020 x 12	47,866

Thus, over the area, twice as many are currently travelling over the interior road, especially under the influence of Cooktown residents.

Ratio for Bloomfield is 5 coastal to 1 interior and Rossville/Helenvale 1.5 coastal to 1 interior.

4.2 Type of Vehicle – Interior Road

Table #9: Type of Vehicle, Interior Road

Area	Percent
4WD	71%
Sedan	27%
Motorbike	20%
Total	100%

Whereas only 6% of local vehicles travelling the Coast Road were sedans or motorbikes, some 27% were indicated on the interior road.

4.3 Where Travel To Over Interior Road

Table #10: Where Travel To Over Interior Road

	No.
Cairns	81
Mareeba/Tablelands	56
Mossman/Port Douglas	8
Innisfail/Babinda	3
Georgetown	1
Townsville/South	11

Many had multiple destinations with Cairns, Mareeba/Tablelands leading but few to Mossman/Port Douglas.

4.4 Reason for Trip Interior Road

Table #11: Reason for Trip Interior Road

	No.	%	% of sample
Shopping	73	26%	72%
Business	47	17%	46%
Visiting friends & relatives	65	23%	64%
Health	56	20%	55%
Professional	37	13%	36%
Other	4	1%	4%
Total	282	100%	100%

Among other were for airport travel and, one to tow horse float and one school.

Most trips were multipurpose with shopping and visiting friends and relatives leading, but with health, business and professional services high.

5. EXTRA USE OF COAST ROAD IF SEALED

5.1 Total Extra Trips

Respondents were asked, if the road was sealed, how many extra trips over the Coast Road they would take.

Table #12: Extra Trips per Year over Coast Road

Extra Trips per Year	No.	%
0	23	23%
1	5	5%
2	6	6%
3	3	3%
4	14	14%
5	3	3%
6	5	5%
8	6	6%
9	3	3%
10	6	6%
12	4	4%
13	1	1%
15	1	1%
16	1	1%
20	5	5%
24	5	5%
26	1	1%
27	1	1%
35	2	2%
36	1	1%
48	2	2%
52	1	1%
100	1	1%
Total	100	100%

The information indicates that annual extra trips per respondent over the Coast Road will average 18 from Bloomfield/Wujal, 12 from Helenvale area and 6 from Cooktown.

Adjusted for population gives additional trips as follows and estimated vehicles per day.

	<u>Person trips</u>	<u>Est Daily Vehicle Movements</u>
Cooktown	3334 x 6	20,004
Rossville/Helenvale	204 x 12	2,448
Bloomfield/Wujal	482 x 18	8,678
Total	4020 x 7.8	31,230

5.2 How Many Trips Switch to Coast Road from Interior Road

Table #13: Trips Switch from Interior Road

Travel Coast instead of Interior per year	No.	%
0	39	39%
1	5	5%
2	11	11%
3	6	6%
4	11	11%
5	3	3%
6	6	6%
8	2	2%
9	2	2%
10	3	3%
12	2	2%
13	2	2%
15	1	1%
16	1	1%
20	3	3%
24	2	2%
69	1	1%
Total	100	100%

Analysis of the data indicates that the following extra trips over the Coast Road will be diversions from the interior road adjusted for population.

	<u>Person trips</u>	<u>Est Daily Vehicle</u> <u>Movements</u>
Cooktown	3334 x 6	20,004
Rossville/Helenvale	204 x 3	612
Bloomfield/Wujal	482 x 3	1,446
Total	4020 x 5.5	22,062

5.3 Implications for Vehicle Movements

The following table analyses the implications of the upgrading for usage of the coast and interior road by local residents.

Table #14: Summary of Impacts on Estimated Daily Vehicle Trips by Locals by Area over the Coast and Interior Roads – trips per annum

	Bloomfield/Wujal (per respondent)	Rossville (per respondent)	Cooktown (per respondent)	Average adjusted for population
COAST ROAD				
Current	18	3	9	30
Additional	11	3	26	40
(Generated)	(9)	(2)	(0)	(11)
(diverted)	(2)	(1)	(26)	(29)
New Total	29	6	35	70
INTERIOR ROAD				
Current	4	2	59	65
Diverted	(-2)	(-1)	(-26)	(-29)
New Total	2	1	33	36

We thus have average trips per day over the Coast Road by local residents rising from 30 to 70, ie. more than a doubling, and the trips over the interior road generated by locals falling from an average of 65 to 36. The responses indicate in relation to the Coast Road as follows.

Extra generated	11
Diverted	29
Total	40

The indicated results would be for the switch out of Cooktown to result in slightly more local vehicles travelling over the Coast Road as over the interior road.

5.4 Why the Changes

The following seeks to group and summarise the comments given by those who would not use it more and those who would use it more if sealed.

Table #15: Summary of Why Would Not Use Coast Road More

			Mentions
COAST ROAD Negative	Narrow	6	26
	Rough	6	
	Dangerous	3	
	Winding	3	
	Slow	2	
	Slippery	1	
	Erosion	1	
	Ferry wait	1	
	Ferry cost	1	
	Too hard	1	
	Don't like	5	
INLAND ROAD Positive	Open	1	5
	Quicker	1	
	Straight	1	
	Easier		
	Quicker to Townsville	1	
OTHER	Only have 2WD	1	3
	Leave to adventure tourist	1	
	Personal	1	
TOTAL			34

Table #16: Summary of Why Would Use Coast Road More

	Mentions
Better scenery/ More picturesque/Newer	18
Shorter	12
Quicker/Better	12
Only use inland road if coast wet/Closer	8
More economical/especially fuel	7
Would improve present situation/Can't use at present	5
Safer/Inland road cattle, pigs/animals/Coast safe	4
Travel to Cape Trib/Port Douglas	2
Would avoid ferry peaks/ferry costs \$14	2
Inland boring/tiring	2
Stop 4WD bullies tearing up the road	1
Other	4
TOTAL	77

6. CHANGES IN TIME TO TRAVEL COAST ROAD

6.1 General

Respondents were asked if the Coast Road was sealed, what the time savings would be compared with:

- a) The Coast road at present
- b) The interior road.

The following table analyses the responses by area.

Table #17: Estimated Time Saving

	Bloomfield/Wujal	Helenvale	Cooktown
(a) Coast Road sealed over Coast Road unsealed	1.1 hrs	1.3 hrs	1.0 hrs
(b) Coast Road sealed over interior road	1.5 hrs	1.1 hrs	0.9 hrs

Note: It would appear there was some confusion in responses to (a) above resulting in abnormally high savings being quoted. Separate analysis is carried out in the main report to more closely define likely actual savings.

7. VISITING FRIENDS AND RELATIVES VISITORS

7.1 General

Respondents were asked how many visitors a year they had who used:

- a) The Coast Road
- b) The interior road,

and how many are likely to switch from the interior road to the Coast Road if it is sealed.

Table #18: Number of Visitors a Year – Use Interior Road

Times a year	No.	%
0	4	4%
1	2	2%
2	5	5%
3	1	1%
4	6	6%
5	1	1%
6	2	2%
10	6	6%
12	1	1%
15	1	1%
20	3	3%
22	1	1%
30	1	1%
48	1	1%
Not stated	65	65%
Total	100	100%

**COAST ROAD – Wujal Wujal to Cape Tribulation Upgrade
Economic and Social Impact – Household Survey**

Table #19: Number of Visitors a Year – Use Coast Road

No. of visitors	No. of respondents
0	59
1	2
2	2
3	3
4	7
5	4
6	7
7	?
8	2
9	1
10	5
12	1
15	1
20	5
30	1
45	1
Total	102

Some 58% received no visitors using the Coast Road. Total visitors recorded was 389. Average was 3.0.

Table #20: Visitors Change from Interior Road to Coast Road

How many Visitors Change	No.	%
1	2	2%
2	4	4%
4	5	5%
5	4	4%
6	5	5%
7	3	3%
8	2	2%
10	3	3%
12	1	1%
15	1	1%
20	2	2%
45	1	1%
Not stated	67	67%
Total	100	100%

The indications from the survey are that households in the area receive about 3.0 visiting friends and relatives over the Coast Road, 3.9 over the interior road, ie. 6.9 per annum. The indications are that of the interior road visitors, 2.6 per household would divert to the Coast Road, ie. about two-thirds making new visitation rate:

Via Coast Road.....5.6
Via Interior Road.....1.3
Total.....6.9

In terms of vehicle movements, this translates into an estimate for 1800 households as follows.

	<u>Vehicle trips per day</u>
COAST ROAD	Current..... 7
	Additional if sealed 6
	New Total 13
INTERIOR ROAD 10
	Less diverted to coast-6
	New Total 4

Note: With about 1800 households in the area, this would represent about 12,400 visits a year and at an average of two persons involved, total about 24,800 visitors.



Appendix 2: Regular Users Survey





COAST ROAD

Wujal Wujal to Cape Tribulation Upgrade

Economic and Social Impact

Regular Users Survey

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June 2017

1. INTRODUCTION

1.1 General

As part of surveying of households, tourism and businesses in the area, regular users of the Cape Tribulation Wujal Wujal Road were identified and interviewed with a view to helping establish the current usage of the road, especially in light of the lack of traffic counter information and to estimate how sealing the road might affect travel times over it.

Some 31 interviews were completed.

The following reports on the responses of this group to the household survey questions as well as the special additional questions asked specifically to this group.

The interviewing was carried out in June 2017.

2. SPECIAL QUESTIONS – CURRENT DAILY TRAFFIC NUMBERS & COMPOSITION

2.1 Estimated Current Daily Traffic Numbers

Respondents were asked to estimate current daily traffic movements:

- a) During the tourist season;
- b) Over the rest of the year.

The following summarises the results.

Table #1: Estimated Daily Traffic Numbers – Tourist Season

Traffic Numbers	Respondents
50	1
60	1
100	4
125	1
150	11
200	2
210	1
225	2
250	2
Total	23

Modal group is 150. Average is 154.

Table #2: Estimated Daily Traffic Numbers – Rest of Year

Traffic Numbers	Respondents
20	1
30	1
45	1
50	6
60	3
70	1
80	1
100	5
120	1
150	1
180	1
190	1
Total	23

COAST ROAD – Wujal Wujal to Cape Tribulation Upgrade Economic and Social Impact – Regular Users Survey

There was no clear modal group but with mentions highest 50 or 100. Average was 80.

Taking the two periods equally would calculate to an average annual figure of 117.

2.2 Types of Vehicles

Respondents were asked what proportion of different types of vehicle were on the road.

Based on the responses, it is estimated that proportions are as follows.

Table #3: Types of Vehicles

	Tourist Season.		Other		Average Year	
	%	No.	%	No.	%	No.
4WD	75%	112	75%	60	75%	86
2WD	10%	15	9%	7	10%	12
Coaches	10%	15	4%	3	8%	9
Trucks	5%	8	12%	9	7%	8
Total	100%	150	100%	80	100%	115

2.3 Types of Travellers

Respondents were asked to estimate the proportion of types of travellers on the road.

Based on the responses, the following estimates composition.

Table #4: Types of Travellers

Type of traveller – light vehicles						
Tourist	66%	100	43%	34	57%	65
Business	8%	12	9%	7	8%	10
Residential	18%	27	37%	30	26%	30
Total light	90%	139	89%	71	91%	105
Type of traveller – heavy vehicle						
Coaches	2%	3	1%	1	2%	2
Trucks	6%	8	10%	8	7%	8
Total Overall	100%	150	100%	80	100%	115

The responses give an estimate only. However, they are consistent in that they show a fairly constant stream of locals during the year, a moderate drop off in business traffic but tourist traffic dropping to almost one-third in the non-tourism time of the year.

3. OTHER QUESTIONS

3.1 Location

The regular Coast Road users lived mainly in Bloomfield/Wujal and Rossville/Helenvale

Table #5: Regular Coast road Users - Residents

	No.	Total sample	% of sample
Bloomfield/Wujal	16	20	80%
Rossville/Helenvale	10	23	43%
Cooktown	5	58	9%

Thus, most of the Bloomfield/Wujal respondents were regular users of the Coast Road.

3.2 Frequency of Travel

Table #6: Number of Times Travel Per Annum

	No.
Once a month or less	16
Over once a month & up to twice a month	6
Over twice a month to weekly	6
More than weekly	2

One travelled daily.

Average for this group was 114 times a year.

3.3 Type of Vehicle

Some 30 mentioned 4WD with two sedan and 1 motorbike.

3.4 Numbers in Vehicle

Some 68% said two, but one said 14. Average was 2.5.

3.5 Where Travel To

For this group, Cairns was predominant (30 mentions), but Mossman and Cape Tribulation recorded 5.

3.6 Travel Interior Road

For this group, travelling interior road was low at an average of 4.5 times a year which was much lower than for the whole household sample of Cooktown 13, Rossville/Helenvale 8 and Bloomfield/Wujal Wujal 6.

Appendix 3: Tourist Operators Survey





COAST ROAD

Wujal Wujal to Cape Tribulation Upgrade

Economic and Social Impact

Tourist Operators Survey

(Summary Report)

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CUMMINGS ECONOMICS
ABN: 99 734 489 175

Ref: J2938
July 2017

1. INTRODUCTION

1.1 General

As part of the surveying in the Cooktown, Helenvale and Wujal/Bloomfield communities, a survey was carried out during July 2017 among tourism operators and some retail operators with a heavy exposure to visitor traffic.

1.2 The Questionnaire

The questionnaire used is available on request.

1.3 Sample

The sample consisted of 9 businesses (2 Wujal/Bloomfield, 1 Helenvale and 6 Cooktown).

2. SCALE OF VISITOR TRAFFIC

While the question of numbers of visitors and visitor vehicles was asked, some could not respond and there would have been some duplicated usage.

Estimates of number of visitors per vehicle ranged from 2 to 3.5 with an average of 2.6.

3. TYPES OF VEHICLES AND VISITORS

3.1 Types of Vehicles

Most Cooktown tourist businesses recorded 70 – 85% 4WD (average 77%), although one attraction recorded only 30% but recorded a high level of caravans and coach traffic. In Wujal/Bloomfield and Helenvale, proportion of visitors' 4WDs was about 90%.

Caravan parks recorded a high percentage of caravans as might be expected and other types of accommodation reported low, along with in Wujal/Bloomfield and Helenvale. Attractions in Cooktown indicate that 40 – 60% of their business comes from caravan travellers and 10 – 30% from coach business.

3.2 Types of Visitors

Average was about 75% leisure visitors but with friends and relatives being about 10% and business about 15% with some types of accommodation and Bloomfield/Wujal higher having a higher proportion of business visitors.

4. USE OF COAST ROAD

4.1 Current Use of Coast Road

Responses in Bloomfield/Ayton were 90 – 100% Coast Road with 30 – 50% one way and 50 – 60% both ways.

In Cooktown, responses ranged from 20 – 70% with average about 40% (30% one way, 10% both ways).

4.2 If Coast Road Sealed

Responses to, "What additional visitor traffic will come to Cooktown if Coast Road was sealed?" indicated that overall traffic would at least double and that if sealed, about 80% of the traffic would use the Coast Road mainly one way.

4.3 By Hire Cars

Most could not answer question about hire cars.

Appendix 4: Business Survey





COAST ROAD

Wujal Wujal to Cape Tribulation Upgrade

Economic and Social Impact

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ABN: 99 734 489 175

Business Survey

Ref: J2938

June 2017

1. INTRODUCTION

1.1 General

As part of the research behind the Economic and Social Impact study into sealing the Wujal Wujal to Cape Tribulation section (the last unsealed section of the Coast Road between Cairns, Mossman and Cooktown), a survey was conducted of a sample of 29 businesses in the Cooktown to Wujal Wujal area as part of investigations into traffic likely to be generated through sealing the last section.

1.2 Methodology

The survey was conducted by telephone using a set questionnaire of a random sample of businesses identified by telephone numbers listed in a Community Directory. Up to three call backs were made.

1.3 The Questionnaire

The questionnaire distinguished between three types of business movements:

- 1) Deliveries of goods to businesses.
- 2) Visits by sales representatives/trades/services, etc.
- 3) Outward travel generated by business owners/staff.

1.4 Timing

The survey was conducted in September/October 2017.

2. DELIVERIES TO BUSINESSES

2.1 Overall Deliveries Generated

Deliveries per year ranged from one to 2000, ie. about 6 a day. Median was 300, ie. about one every business day including Saturday. Nodal group was one a day. Average was 337 a year.

2.2 Route of Delivery

Almost all (99%) were via the inland and only 1% via the coast.

2.3 Type of Vehicle

Almost all were trucks/semis with a few car/4WD vehicles..

2.4 Where From

Table #1: Where From

Area	No.	%
Cairns alone	24	86%
Cairns plus another centre	3	11%
Tolga	1	3%
Total	28	100%

Cairns dominated. There were one mentioned from Mossman (1%).

2.5 Carriers

Up to four different carriers were used with the following mentioned.

Tuxworth	24
Follomont	10
Woods	4
Cooktown Coolers	2
DNR.....	2
Local.....	1
Tropical Cooktown Removalist.....	1
Trans North.....	1

2.6 Change if Coast Road Sealed

On average, inland road still dominated at 87% but coast road increased from 1% to 13%.

3. BUSINESS REPRESENTATIVES/TRADES/SERVICES, ETC

3.1 Types of Visits

Some 6 (20%) said none.

Mentions were:

Business reps	18
Government	3
Trades	3
Other	1

Most were business reps.

3.2 Number of Visits

Number of visits per year varied from 1 to 120 (ie. over two per week).

Average was 23 a year, ie. about one every two weeks.

3.3 Type of Vehicle Used

Table #2: Type of Vehicle Used

Vehicle	Mentions
4WD	12
All wheels	1
Car	15
Ute	1
Small	1
Truck	1

Almost all were light vehicles with car exceeding 4WDs.

3.4 Where From

Table #3: Where From

	Mentions
Cairns	23
Mareeba	1
Brisbane	2
Townsville	2

All said Cairns but some said Cairns plus another place.

3.5 Route Used

Some 93% used the inland route and 7% the coast road.

3.6 Route used if Coast Road Sealed

It was estimated that 53% would travel on the inland route with 47% on the coast route, ie. 6.7 times the current indicated level.

4. TRAVEL FOR BUSINESS PURPOSES

4.1 Purpose of Visit

Table #4: Purpose of Visit

	Mentions	
Business	11	
Business meetings	2	
Course training	3	
Stock/Parts/Supplies	4	
Fly	3	
Don't travel for business	6	

About 30% fly or don't travel for business.

4.2 Number of Trips

Average of those travelling was 12 a year, ie. about once a month. Over the whole sample, it was 8.4 a year.

4.3 Route Used

Average was 85% inland and 15% coastal.

4.4 Type of Vehicle Used

Cars just exceeded 4WDs.

4.5 Where Travelled To

Table #5: Where Travelled To

	Mentions	
Cairns	20	
Mareeba	1	
Mossman	1	
Port Doublas	1	

Cairns was mentioned by all.

4.6 Route if Coast Road Sealed

Some 53% was indicated to be inland and 47% coastal indicating a large rise in the coastal travel from 15% to 47%, a 3.1-fold increase.

Appendix 5: Coach, Tour Operators & Rental Cars Surveys





COAST ROAD

*Wujal Wujal to Cape
Tribulation Upgrade*

**Economic and
Social Impact**

***Coach,
Tour Operators &
Rental Car
Surveys***

(Summary Report)

Ref: J2938
October 2017

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1. INTRODUCTION

Telephone surveys were carried out among three coach operators, five tour operators and four rental car companies. Much of the information supplied was commercial-in-confidence.

2. CONCLUSIONS

Coach & Tour Operators

It is estimated that at present there are of the order of 8 per week movements over the road, one way or the other, one a day during the low season and with tour operators, 20 a week during the tourist season, ie. three a day.

When sealed, there was an indication of an increase of six a week, ie. about one a day.

Rental Cars

Of the four interviewed, two do not allow their vehicles on unsealed roads. Those two that did indicated that inland use would be two to three times Coast Road and during the dry season, but if sealed, users would circuit.

It was commented that Europeans particularly wanted to visit both Cape Tribulation and Cooktown and had to choose.

The link would enable them to visit both.