



A New South Wales Government Initiative



Gerringong to Bomaderry

Princes Highway upgrade

ROUTE OPTIONS DEVELOPMENT

APPENDIX Q - PRELIMINARY CUMULATIVE EFFECTS REPORT

NOVEMBER 2007





Gerringong to Bomaderry Princes Highway Upgrade

Preliminary Cumulative Effects Report

The Roads and Traffic Authority NSW

October 2007

MAUNSELL | AECOM

Gerringong to Bomaderry Princes Highway Upgrade

Prepared for

The Roads and Traffic Authority NSW

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1.0 Background

Maunsell was engaged by the RTA in December 2006 to carry out an Options and Route Selection Study, Concept Development and Environmental Assessment (EA) for upgrading the Princes Highway between 42.6 km to 74.6 km south of Wollongong. Maunsell has engaged a number of prominent sub-consultants to contribute to the delivery of this project.

The work includes development of route options and concept development based on the identified preferred route, environmental assessment, public displays and handover period to allow for finalisation of all activities and reports following the announcement and display of the Preferred Route, the Environmental Assessment and the Conditions of Approval.

The project will provide a bypass of Berry. The northern extremity of the project is in the vicinity of the Mount Pleasant Lookout (north of Gerringong at the termination of the four lane configuration) and the southern extremity of the project is the intersection (roundabout) of the Princes Highway with Cambewarra and Moss Vale Roads at Bomaderry.

Community involvement is a key aspect of this project and will afford the broader community the opportunity to make a demonstrable input to the process and to ensure that the requirements and aspirations of the community will be adequately and appropriately addressed. This is particularly relevant to:

- a) Any potential impacts on rural and residential areas within the study area;
- b) Social and economic impacts;
- c) Accessibility of the road network for local and through traffic;
- d) Potential impacts on water quality;
- e) Potential impacts on wetlands;
- f) Potential impact on flooding;
- g) Potential impacts on land uses;
- h) Threatened flora and fauna species;
- i) Indigenous and non-indigenous heritage;
- j) Visual impact;
- k) Noise; and
- l) Air quality.

Several studies have been undertaken since the early 1990s to identify a preferred route to upgrade sections of the Princes Highway between Kiama and Nowra including a bypass around the town of Berry.

These studies include:

- m) The 1991 Gerringong to Berry Route Study;
- n) 1998 North Street Berry Bypass Corridor; and
- o) 2004/05 Quantm Study from Kiama to Nowra.

Sections of the highway between Gerringong and Bomaderry have a poor accident record and limited safe overtaking opportunities.

Due to the significant changes in traffic, land use and population since 1991, the NSW state government, in March 2006 committed to investigating an area where it is likely a preferred route would be located to upgrade the Princes Highway between Mount Pleasant at Gerringong and Moss Vale/Cambewarra Road at Bomaderry to meet current road standards.

2.0 Objective of report

The objective of this report is to provide an overview of the potential cumulative impacts associated with the upgrade and its interaction with other existing and future planned developments in the study area. This report provides a general, high level discussion of potential impacts and the relevance of cumulative impacts to the construction, maintenance and operation of the upgrade.

This report forms part of the preliminary investigations component of the study and integrates into the route options development process. Specific cumulative effects that may have a bearing on the construction, maintenance and operation upgrade considered include:

- a) Synergistic impacts between individual project impacts (e.g. is the combined impact on water quality and biodiversity greater than the sum of the individual impacts);
- b) Cumulative impacts of the upgrade with other related road developments; and
- c) Cumulative impacts of the upgrade with other non-road developments (existing or planned) in the study area or close vicinity of the upgrade.

3.0 Strategic value of the Princes Highway

The Princes Highway is the main north-south corridor between Sydney and the Illawarra and South Coast Regions. It is a critical link for both passenger and freight transport and is a major route for tourism with significant peaks in holiday periods. The section of the highway between Gerringong and Bomaderry experiences a high rate of accidents with seven fatalities occurring in 2003/04. The two lane undivided road has limited overtaking opportunities, many junctions with rural roads and private uncontrolled accesses.

The NSW Government is committed to the investigation of this section of the Princes Highway to determine a preferred route. This commitment was demonstrated recently by the NSW Treasurer in the 2007/08 budget, when he announced further budget allocation of \$3.4 million towards planning of this upgrade. **Figure 3.1** shows this section of the Princes Highway in its regional context.

3.1 Transport

3.1.1 Existing traffic and transport conditions

The Princes Highway provides the principle road connection between Sydney, Wollongong, the Illawarra and the South Coast to the Victorian border and is an important link for the following purposes:

- a) Commuter route between Sydney, Wollongong and Nowra;
- b) Local route for residents of surrounding smaller towns;
- c) Major tourist route for key destinations including Berry, Nowra and the South Coast with peak traffic on weekends and holiday periods; and
- d) Important freight and bus route, particularly for the South Coast where there are no rail services.

3.2 Freight transport

Currently, the Princes Highway is classified as a B-double route between Wollongong and Nowra. Further upgrades within the study area are expected to increase the attractiveness of the Princes Highway for freight transport.

3.3 Public transport

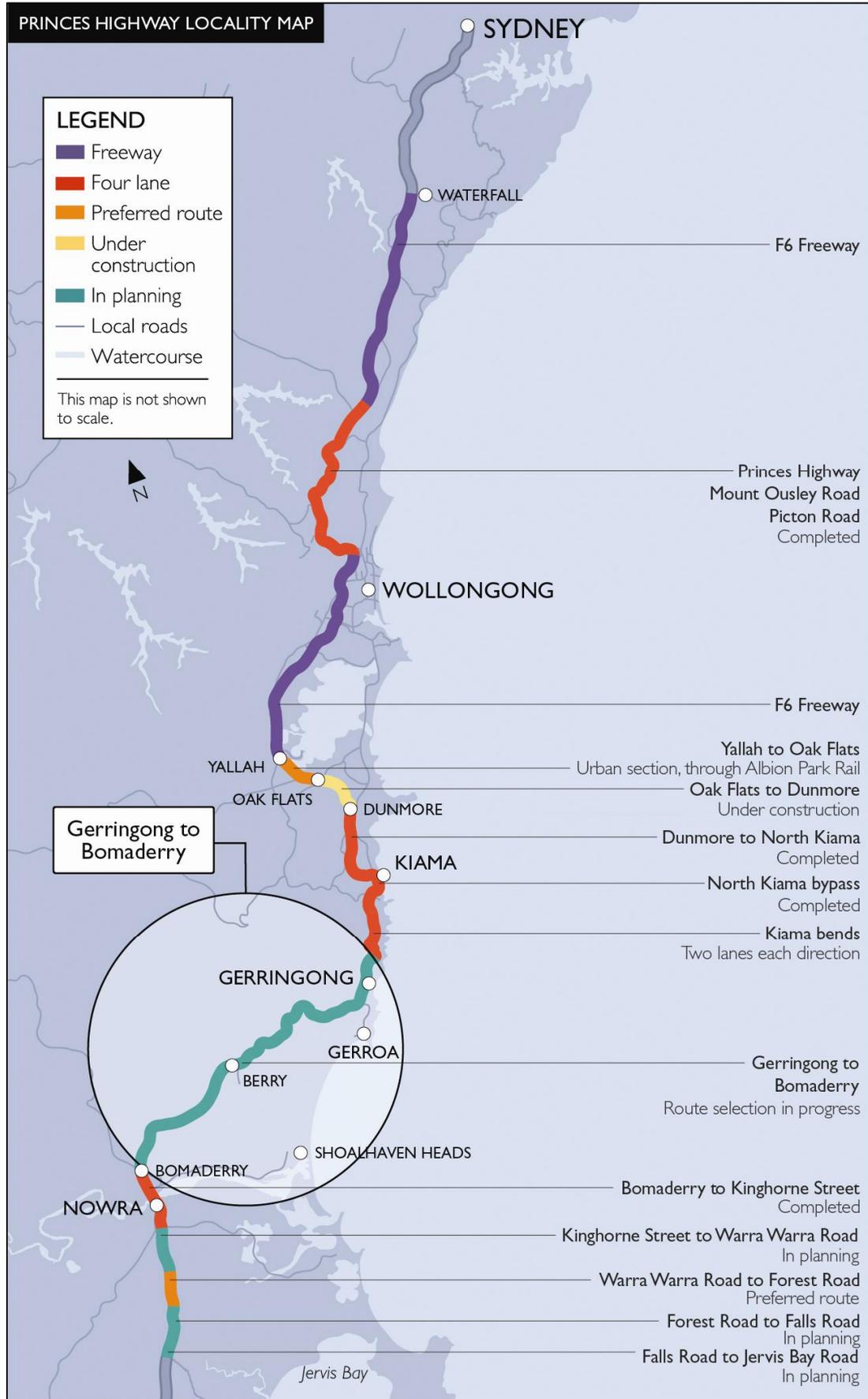
The study area is served by two modes of public transport – bus/coach services and train. Public transport accounts for less than 10 per cent of the mode share in Kiama and Shoalhaven Local Government Areas.

The bus and coach services that utilise the Princes Highway route, although very limited, comprise of local / regional services as well as catering for long distance travel.

The South Coast rail line links Sydney, Wollongong and North Nowra / Bomaderry, but the use of rail services is limited as the South Coast Line terminates at Bomaderry north of the Shoalhaven River.

There are no direct services from the study area to Sydney and passengers are required to change trains at Wollongong, Dapto or Kiama. Stations serving the study area are located at Gerringong, Berry and Bomaderry.

Figure 3.1: Princes Highway in its regional context



3.4 Walking and cycling modes

There are limited footpaths along the Princes Highway within the study area. Pedestrian volumes are generally low for the majority of the route with the exception in Berry.

In 1996 the Kiama Municipal Council adopted a cycleway plan developed by the Walking Tracks and Cycleways Committee. The plan provided details of cycleways in major towns within the Local Government Area. There are currently no cycle facilities along the Princes Highway in the study area. An off-road cycle route linking Gerringong and Gerroa along Fern Street was completed in 2000 and on road cycleway provisions were recently included in the construction of the North Kiama Bypass.

Within the Shoalhaven Local Government Area, there is unmarked on-road cycle route provision on the Princes Highway between Berry and Bomaderry. This route connects with on-road cycle routes in Bomaderry on Meroo Road and Bolong Road

3.5 Consequence of no action

Should the highway not be upgraded between Gerringong and Bomaderry higher traffic volumes would be experienced on the present route, with increases in travel time and increased vehicle conflicts.

3.5.1 Overall efficiency

Travel times on the Princes Highway within the study area would increase as the level of congestion increases. Delays may be caused by local traffic conflicting with high volumes of through traffic at major destinations such as Berry. Heavy delays would also result in economic impacts, especially to freight and tourist traffic travelling either to local areas or long distance.

Increased delays may also be experienced on local roads outside of the study area such as the Sandtrack, as drivers seek alternate routes between Gerringong and Bomaderry to avoid possible congestion along the existing highway.

3.5.2 Local road safety

The occurrence of crashes is likely to increase with increased traffic volumes especially at major intersections along the route, such as Fern Street and Belinda Street in Gerringong.

More rear-end crashes may also be likely to occur as delays on the Princes Highway continue to increase. Access to and from local roads is expected to become more difficult with increased volumes of through traffic. Drivers may take greater risks to make turns to and from local roads, as gaps in the flow of traffic on the Princes Highway would be less frequent.

There are high pedestrian movements across Queen Street in Berry. Removal of through traffic to a bypass of Berry would dramatically reduce the likelihood of crashes involving pedestrians.

3.5.3 Local and regional growth patterns

Increases in travel times on the highway could reduce the attractiveness of the local area to commercial traffic and the region may suffer economically. For example, freight transport may become more expensive and transport providers may become less likely to service destinations such as Nowra.

3.5.4 Local environmental setting

Heavier traffic levels are likely to result in increased levels of noise and air pollution to properties that are located close to the existing highway network, including those along the Princes Highway in Gerringong and Berry. These impacts may also be experienced along and adjacent to local roads beyond the study area, such as the Sandtrack, as road users seek to avoid the existing Princes Highway and the associated impacts.

Depending on the selected preferred route, this may be allayed by the upgrade, especially as the upgrade includes a bypass of Berry.

3.5.5 Minimal intervention

Fundamental requirements of this study include the provision of a bypass of Berry and highway alignment meeting the design speed of 100 and 110 km/h vertically and horizontally respectively. Scenarios involving minor improvements only would not meet these requirements and would not provide a satisfactory solution from a strategic, regional, local planning or transport context.

4.0 Regional strategies

The South Coast is experiencing a significant expansion in terms of population and tourism. This is due to an attractive climate, a unique blend of landscape setting and cultural heritage and its growing popularity as a “lifestyle change” destination. The traditional agricultural characteristics of the area are gradually changing the landscape and the economic make-up of the local environs.

The following sections describe the key areas that are identified in planning documents as being locations of urban release, rezoning or planned development that may impact on the ability of such areas to be developed for the upgrade i.e. the location of a preferred route.

4.1 Illawarra Regional Environmental Plan No. 1

Clause 80 of the *Illawarra Regional Environmental Plan 201* states that the objectives for transport and service corridors are:

- (1) *To facilitate the development of a public transport system which enhances the mobility of those without access to private vehicles and provides a reasonable alternative to the private car on key route;*
- (2) *To encourage the development of a satisfactory system of urban, inter-urban and inter-regional links to meet existing and future communication and utility installation need;*
- (3) *To improve road safety and protect public investment in main and arterial roads by the control of adjacent land use;*
- (4) *To facilitate the development of air transport opportunities in the region;*
- (5) *To accommodate private vehicles which are expected to remain an important mode of passenger transport in the region, in planning provisions, and*
- (6) *To reduce the adverse environmental impact of road haulage of extractive materials and other bulk freight.*

Further objectives are defined within the *Illawarra Regional Environmental Plan 201* in relation to minimising waste, and ensuring effective waste disposal, to protecting natural areas (escarpment area, coastal lands, wetlands) and their aesthetic amenity, and to protecting items of environmental heritage within the region.

In order to minimise environmental and cumulative effects, the upgrade needs to demonstrate consistency with the *Illawarra Regional Environmental Plan 201* objectives. Initially, it can be said to be consistent in that the project will provide for effective road transport and due consideration has been given to the potential social, economic, environmental and safety matters through the route selection process. This consideration will continue to integrate into the selection of a preferred route and concept design and environmental assessment of the upgrade.

4.2 State Infrastructure Strategy

The *State Infrastructure Strategy 2006-2007 to 2015-2016* identifies infrastructure projects in the short-to-medium term that, among other things, support population growth and demographic change on the South Coast (Department of Planning, 2007). The Gerringong to Bomaderry Princes Highway Upgrade is one of the projects identified in the strategy, which demonstrates its regional significance and priority for the State Government.

4.3 Regional strategies

The Illawarra and South Coast regional strategies were released in January 2007 outlining the regions objectives for the next 25 years. They are relevant for an understanding of the future plans for the region.

4.3.1 Illawarra Regional Strategy

The Illawarra Regional Strategy recognises the importance of the region's transport networks in supporting economic growth and maximising the efficiency of freight transport.

The Illawarra Regional Strategy recognises Gerringong as a town with small to medium concentrations of retail, health and other services, with lower density residential. The town is reliant on higher order centres for shopping and employment. 'The scale and character of the region's towns will be protected' (Department of Planning, 2007). This is an important consideration for the upgrade in the vicinity of Gerringong and will be a consideration for the access strategy for the town.

4.3.2 South Coast Regional Strategy

The South Coast is dependent on the Princes Highway for connecting communities, supporting economic development and linking to neighbouring regions. "The Princes Highway is a critical north-south link between Sydney, Wollongong and communities along the South Coast down to the Victorian border. The Princes Highway is the primary land transport route servicing the South Coast as the railway does not extend south of Bomaderry in the Shoalhaven Local Government Area" (Department of Planning, 2007).

The South Coast Regional Strategy recognises Nowra / Bomaderry as a major regional centre. "Shoalhaven is projected to grow by an additional 34,000 people, the majority of which will be concentrated in Nowra / Bomaderry, strengthening its role as the major residential, employment and administrative centre for the northern part of the region. Parts of Nowra will be revitalised and consolidated providing residents access to employment, transport and services" (Department of Planning, 2007).

Berry is not recognised in the South Coast Regional Strategy as a major regional centre or major town. This suggests there are no major plans for residential growth in Berry.

4.4 Local settlement and development strategies

4.4.1 Draft Nowra / Bomaderry Structure Plan (Shoalhaven City Council, 2006)

Shoalhaven City Council adopted the Nowra Bomaderry Structure Plan on 24 October 2006. This plan identifies a future western bypass that would connect to the Princes Highway. The bypass does not include the last section of the Princes Highway to the extent of the study area. This has been taken into consideration in selection of the route options.

4.4.2 Shoalhaven – An Enterprising Alternative (An Economic Development Strategy) 2005

The report entitled *Shoalhaven – An Enterprising Alternative, an Economic Development Strategy* (2005) was developed by Shoalhaven City Council, NSW Department of State and Regional Development, the Commonwealth Department of Transport and Regional Services and the Shoalhaven Area Consultative Committee. The upgrade is generally consistent with the Shoalhaven Economic Development Strategy as outlined below.

A key transport focus area identified in Shoalhaven Economic Development Strategy is to “*significantly improve access between Shoalhaven, Sydney, Canberra and Wollongong with respect to movement of goods and people*” (Shoalhaven Economic Development Strategy, 2005). The upgrade will improve access between Gerringong and Bomaderry which will improve access between Sydney and Shoalhaven, and Wollongong and Shoalhaven by improving the efficiency and safety of the route and reducing journey times for both tourist and local traffic.

A key tourism focus area identified in the Shoalhaven Economic Development Strategy is to “*foster higher levels of visitation and increased visitor yield*” (Shoalhaven Economic Development Strategy 2005). The upgrade will improve access and reduce travel times which will have the effect of increasing visitation to the region.

4.4.3 Blueprint Shoalhaven

Blueprint Shoalhaven is a strategic planning instrument funded by three levels of government and acts to guide economic development in the Shoalhaven region whilst supporting local businesses through advice and mentoring. It has the support of the Shoalhaven City Council, the NSW Department of State and Regional Development, the Commonwealth Department of Transport and Regional Services, and the Shoalhaven Area Consultative Committee.

Blueprint Shoalhaven is providing guidance and advice to the Berry Rural Co-operative Society Limited and its eleven dairy farmer shareholders who are driving a project to expand the South Coast Dairy's milk processing factory in Berry's Old Creamery Lane. It will have a secondary role as a tourist attraction where visitors will be able to see and sample several styles of milk as well as flavoured milks, creams, yoghurts and the range of boutique cheeses produced in the plant (source: <http://www.blueprintshoalhaven.com.au/South%20Coast%20Milk.htm> 13 April 2006).

4.5 Planned and future land uses

The Department of Planning has stated (in the project planning focus meeting held prior to inception) that the focus for future development in the area will be on existing villages and not the expansion of settlements into rural lands. This reinforces the current initiatives to protect productive farming land in this area.

Kiama Council has stated that there is no urban growth planned along the Princes Highway corridor (the only urban expansion area being to the south of Gerringong, outside the study area). The Department of Planning Major Development Assessment Branch can provide ongoing updates on the status of any planned developments in the study area.

Shoalhaven City Council has stated that minor development is envisaged around Berry. In this regard, it is assumed that pockets of land on the periphery of Berry will be developed and such areas have been considered as part of the route selection process. Council also suggests that retirement villages south of Berry will be expanded. These developments are discussed further in **Section 4.6** below.

A number of future land use proposals have been identified, that may impact on the upgrade route selection process and have been considered in the generation of route options. These future proposals include:

- a) Future residential development is limited to minor expansion around the Berry township;
- b) The Main Road 92 development and the Nowra / Bomaderry Structure Plan will increase traffic volumes to the highway and will continue to increase the role of Nowra / Bomaderry as the major regional centre;
- c) Ongoing upgrade / maintenance to cabling, power, gas pipeline within existing alignments. This will impact on the services required to be located within the corridor and would be considered at the design stage rather than route selection;

- d) Possible installation of a new electricity transmission line into Gerringong; and
- e) Long term plan for electrification and duplication of the rail line from Kiama to Bomaderry. This may limit the potential for development of a road alignment alongside the railway line. Further discussion with Australian Rail Track Corporation would be required should an alignment alongside the existing rail line be considered.

The Department of Planning has made it clear, within the recently released regional strategies (and also at the aforementioned planning focus meeting), that there are no new towns proposed within the study area. Further, no new residential development will be supported by the Department of Planning unless part of a structure plan. To date, there are no publicly available structure plans for lands within the study area apart from the Nowra / Bomaderry Structure Plan.

4.5.1 Other future land use considerations

'Grand Pacific Drive' is a tourist drive that extends from Sydney to Wollongong and beyond. Beyond Wollongong tourists have the opportunity to extend their trip to the Shoalhaven via Fern Street, Gerroa Road and Bolong Road ('the Sandtrack'). The impact of Grand Pacific Drive will be further assessed through later stages in the project.

There are a number of current and proposed developments within the study area. Some current proposals include:

- a) Crooked River Golf Club at Foys Swamp; and
- b) A caravan park in the Toolijooa area.

The impact of these proposals will be further assessed through later stages in the project to integrate with the selection of a preferred route.

4.6 Planned future residential developments

Residential growth is planned in Gerringong and south of Gerringong (Kiama Council, Planning Focus Meeting 2006). There are also two significant residential developments in the study area, both of which have current development consent from Shoalhaven City Council. These are:

- a) Huntingdale Estate and Graham Park Land Release Area; and
- b) The Arbour, Berry Retirement (seniors living) Development.

These two sites are described below.

Huntingdale Estate and Graham Park, located on the Princes Highway immediately west and south west of Berry has recently received development consent (circa 2004). This area of land has not as yet been developed, but the initial works, comprising road and roundabout works, have been undertaken. The land is for sale, as advertised by Ray White Real Estate Newcastle (September 2006).

The Arbour, Berry is a recently approved retirement (over 55 years of age) village development with an area of 18 ha and situated on the east side of the Princes Highway immediately to the south west of Berry. The development generally comprises freestanding three bedroom homes as well as a range of nursing facilities, open space and communal facilities.

Both of these future planned developments have been and will continue to be considered as the project progresses through the selection and concept design of a preferred route and associated interchanges and accesses to the township of Berry.

5.0 Synergistic effects

Synergistic impacts are those that occur when, by acting together, separate elements produce a greater effect than would be produced if they acted separately. For example a chemical substance may have an adverse impact on water quality, but when combined with different pH levels in that water, the chemical may have an increased or decreased environmental impact.

It is not expected that there would be significant synergistic effects that would determine the location of the preferred route. However all environmental impacts have been considered during the route selection process and some of those that may have an impact during construction and operation are discussed below.

5.1 Water quality

There would be potential for cumulative impacts on water during construction. If the upgrade were constructed concurrently with other developments in the area, there would be a potential for adverse cumulative or synergistic impacts to occur including sedimentation of waterways or runoff of pollutants into sensitive aquatic habitats.

Stringent environmental controls would be implemented during construction in accordance with the RTA's Water Policy and the RTA's Code of Practice for Water Management. With these measures in place, cumulative adverse effects on water quality are expected to be minimised.

5.2 Air quality

There is the potential that emissions (hydrocarbons and nitrogen oxides) may be temporarily increased during construction caused by increased traffic and the operation of heavy plant and equipment. This may have the potential to combine with other pollutant sources in the study area to result in increased photochemical smog formation.

However, given the relatively minor potential increases in the emissions and the lack of major sources of pollutants required to react with hydrocarbons and nitrogen oxides to form photochemical smog (hydrocarbon storage facilities, spray painting operations etc.), the negative cumulative impacts on air quality would be minor.

One of the objectives of the upgrade is to provide an improved horizontal and vertical alignment compared to the existing Princes Highway. Improved road geometry is expected to have a positive impact on the environment by increasing vehicle efficiency and travel times and generally reducing emissions to the atmosphere e.g. truck engines labouring up steep inclines will produce more emissions than one travelling along a more efficient alignment.

5.3 Transformation of the area

The introduction of new road in existing greenfield areas combined with the impact of vegetation removal during construction may have a combined negative visual impact on the region from some view points. For example the view from the Mount Pleasant lookout in the north of the study area may be impacted by the introduction of an upgraded highway.

Potential visual impacts however are expected to be relatively temporary during construction and by incorporating landscaping themes and the implementation of urban design principles that are in keeping with the open rural characteristics of the study area, including the use of locally endemic vegetation, the scenic quality of the proposed upgrade would be minimised.

5.4 Ecologically Sustainable Development and resource conservation

5.4.1 Consideration of the principles of Ecologically Sustainable Development

Pursuant to the commitment to ensure that major road developments are consistent with the principles of Ecologically Sustainable Development, these principles have been integrated into the identification and evaluation of alternatives for the upgrade.

These Ecologically Sustainable Development principles are recognised as a part of the route selection and evaluation process through the integration of ecological, social and economic considerations into the decision making processes for route selection.

This has included significant input into the route selection process by sustainability and environmental specialists, not just the consideration of engineering and economic requirements.

The principle of conservation of biological diversity and ecological integrity has been taken into consideration by developing a range of options which aim to maintain or enhance the range and health of native plants and animals in the study area.

Maps showing areas of high conservation significance were produced for consideration during the route options selection process and these areas were avoided as much as possible in route selection. In addition, each potential route was weighted according to its ecological significance.

The precautionary principle has been taken into account by, wherever possible, avoiding areas of high conservation significance rather than proposing mitigation measures that were not absolutely sure of success.

Inter-generational and intra-generational equity have been considered by the route options selection process by including social and community issues in the assessment and avoiding areas of high impact. In addition, the impact of each route on the use of scarce resources has been considered in conjunction with other environmental, engineering and economic criteria.

Improved valuation and pricing of environmental resources has been addressed by considering environmental, social and engineering / cost issues with an equal weighting when developing route options.

Additionally, the consideration of Ecologically Sustainable Development principles will continue to be a feature throughout subsequent stages of the project including the value management process and the development of an optimum engineering design outcome, and consideration of environmental, social and economic issues in the environmental assessment and concept design of a subsequent preferred route.

5.4.2 Construction resources and materials

The construction of the upgrade would require a number of different materials including:

- a) Earthworks materials;
- b) Pavement materials;
- c) Concrete;
- d) Aggregates for concrete;
- e) Sand; and
- f) Water.

The majority of route options have been designed to generally balance the cut and fill volumes, which would eliminate or reduce the amount of material that needs to be imported to the site and transported around the site. Effectively, balancing cut and fill would reduce the resources required for the project.

The material in the cuttings is expected to be suitable for fill embankments. Route options traversing large areas of flood plain or low-lying areas may need to import general fill material.

Material from excavations would be variable in quality although the preliminary geotechnical studies have shown that sufficient quantities of material won from excavations should be suitable for use in embankments as general fill.

Transport of imported materials would be via local roads and the existing Princes Highway and impact on the existing highway and the local road network will vary depending on whether an on or off-line route is selected as the preferred route.

6.0 Summary

There are a number of potential cumulative effects associated with the upgrade that may have an impact on the selection of a preferred route. These impacts are largely associated with planned development and land use and existing regional planning strategies.

In line with the project objectives it is expected that the construction of the upgrade would provide a number of beneficial long term or cumulative effects on a local and at a regional level. These effects would include:

- a) Improved safety for road users;
- b) A reduction in travel times;
- c) Greater efficiency in transport tasks;
- d) Generation of economic growth associated with improved efficiency in travel times; and
- e) Improved air quality in the region and long term reductions in emissions associated with improved road efficiency and reduced travel times.

These potential impacts have been identified through the preliminary assessment and have been integrated with the route selection process as documented in the Route Options Development Report.

The subsequent stages of the project will continue to consider cumulative effects through the value management process and concept design and this preliminary report will be developed further and included in the environmental assessment of the preferred route.