

# Northern Area of Eurobodalla Shire Traffic Study TRANSPORT PLAN REPORT



### Prepared for Eurobodalla Shire Council



Good Government, better living

Final Report March 2011

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#### EXECUTIVE SUMMARY

In May 2010, Eurobodalla Shire Council commissioned Cardno to undertake a traffic study of the northern area of Eurobodalla Shire; a key component of this traffic study is the construction of a TRACKS strategic land use/traffic model. Council previously commissioned other consultants to prepare a Paramics micro-simulation model of Batemans Bay CBD concurrently with this TRACKS project and these two studies now complement each other. The TRACKS study ultimately providing clear recommendations for implementable solutions to mitigate existing and future road infrastructure and traffic issues.

The report is set out into five (5) main sections beginning from the existing through to the recommendations that need to be implemented prior to the analysed scenario years of 2020 and 2030. The five parts to this Final Transport Plan are:

- 1) The Current Transport Situation.
- 2) Base Year Modelling (2010).
- 3) Future Year Modelling (2020 and 2030).
- 4) Future Transport Plan.
- 5) Summary and Conclusions.

#### **Strategic Context**

In the greater strategic context, there are several other reports and planning documents which were also considered in detail during this traffic and modelling study; many of these documents have provided input into the modelling land use files for the future models to help determine likely trips in 2020 and 2030 with given land use assumptions in place.

The Moruya Structure Plan adopted by Council in May 2007 set out the growth of the Moruya area to 2031 and includes the urban areas from North Moruya to Moruya and Moruya Heads.

The Greater Batemans Bay Structure Plan, adopted by Council in May 2007 was examined which set out the growth of Batemans Bay to 2031 and includes the urban areas from Maloney's Beach and Surfside, south to Malua Bay.

The Batemans Bay Town Centre Structure Plan was prepared in 2006-2007 and adopted by Council in April 2008; this sets out the growth of the Town Centre to 2031.

The Industrial Land Audit was undertaken to inform a review of the Eurobodalla Rural Local Environmental Plan in conjunction with the Eurobodalla Rural Strategy. The audit provides an inventory of existing industrial land within the shire and investigates the demand for, and sitting of, future industrial land.

The Illawara and South Coast NSW Freight Study was prepared for the Department of Planning to identify and prioritise freight issues affecting the Illawarra and South Coast regions. The study found that constraints within the region are not barriers to economic development but tended to only impact upon operational flexibility.

Eurobodalla Shire Council previously commissioned a traffic micro-simulation model of Bateman's Bay CBD to be built by another consultant, and where appropriate, this micro level modelling work has informed the current and future year TRACKS modelling carried out by Cardno. The traffic volume and parking location and inventory data collected as part of the CBD model has also been utilised in the TRACKS modelling to date.

Other studies were also considered when appreciating the strategic context of this study; more detail is given in the report.

#### **Population and Land Use**

Existing land use zoning within the study area contains residentially zoned land which may not yet have been fully developed and also includes some rural residential land holdings. The majority of the study area contains rural land, mainly consisting of mountainous forested terrain with dairying and other farming activities concentrated on the flatter terrain adjoining the Moruya River. Batemans Bay and Moruya are the major settlements, with the services, facilities and development expected in townships.

The remaining urban residential land is generally located along the coastal route (Beach Road/George Bass Drive) between Batemans Bay and Broulee, with other residential development also located at Moruya Heads and on the northern bank of the Clyde River mouth. Rural residential development can also be found in many of the flatter areas north of Batemans Bay, between Rosedale and Mogo, and between Mogo and North Moruya.

The major commercial centres are Batemans Bay and Moruya town centres; however other lower tier commercial and retail centres also play an important role in the study area.

Batemans Bay is the main commercial centre of Eurobodalla Shire and has the highest concentration of key trip attractors and generators. Facilities and services within the town centre include the Village Centre, the marina, library, hotels and cafes and so on. The concentration of trip attractors and generators is greatest along Orient Street, Perry Street and Clyde Street.

Moruya provides similar facilities to Batemans Bay on a smaller scale. Eurobodalla Shire Council's offices are located adjacent to the Princes Highway/Campbell Street intersection and retail development concentrated along Vulcan Street (Princes Highway) between the river and Campbell Street.

There are also significant industrial lands are located in the following areas Yarragee (west Moruya), North Moruya and Cranbrook Road in Batemans Bay. A site adjacent to the George Bass Drive/Beach Road junction at Surf Beach has been earmarked for future development as a bulky goods/light industrial complex.

#### **Existing Network Performance**

In order to assess the performance of the existing road network and to validate the strategic model good quality traffic data was required. Council provided historical data and undertook some new counts at key mid-block locations. Additional peak period traffic data was obtained for use in this study. A specialist traffic counting firm was appointed to undertake a number of different surveys. The following survey data was collated for use in this study:

- Mid-block classification counts.
- Number plate surveys used for.
- Solution Surveys.
- Travel Time Surveys.
- **u** Intersection turning volume counts.

The major road network in the study area consists of the following key routes:

- Princes Highway.
- Sings Highway.
- Beach Road/ George Bass Drive/North Head Drive.
- Sullendulla Drive.
- Science Street/Orient Street/Old Princes Highway.
- Tomakin Road.

- Dunns Creek Road/Tallgums Way.
- **u** Broulee Road.
- Sampbell Street/Araluen Road.
- South Head Road.

Additionally, there are numerous intersections within the model area and 37 of those were assessed for performance as were numerous mid-block locations and rural roads. The results showed LoS A, B or C being achieved at all locations, clearly indicating that operational performance of the road infrastructure is currently satisfactory with some spare capacity.

Traffic volumes along the Princes Highway vary significantly between Batemans Bay and Moruya. The highest average daily traffic (ADT) volumes (14,125 vpd) were observed south of the Clyde Bridge. South of Batemans Bay volumes ranged from approximately 7,500 to 8,300 vpd.

RTA crash data was supplied by Council for the study area for the five year period from 2004 to 2008. This data was used in a crash investigation of the existing road network. Generally crash data is categorised as; tow-away, injury and fatality. These crash statistics along with traffic volume counts (where available) were used to calculate crash rates, casualty rates and fatality rates. Whilst Princes Highway had the highest number of crashes, South Head Road had the highest severity index.

The local bus services consists generally of a spine service, running from Batemans Bay to Moruya via Batehaven and George Bass Drive; and two local services serving Surfside/Batemans Bay/Catalina and Long Beach/Maloneys Beach. Services are irregular and infrequent, and operate only during daylight hours on Weekdays, Saturdays and Public Holidays. No Sunday services are provided. The network is designed to fulfil community service obligations, such as providing access for non-drivers to essential services.

#### **Modelling the Current Situation**

As part of the current situation assessments a TRACKS model of the Eurobodalla Shire study area was built and validated to robust standards. This model also provides a foundation upon which future options can be tested and solutions implemented. TRACKS is a modelling software which enables the study area transport network to be constructed at the strategic level so as to produce a good representation of current conditions and then test future possibilities for operational feasibility before ever implementing them on the ground.

The study area represented in this strategic traffic model is located in the northern section of Eurobodalla Shire. The area is generally defined by the suburbs of Long Beach and Maloney's Beach to the North, Moruya to the south, the coastline to the east and the Princes Highway to the west.

The Eurobodalla Shire TRACKS Model has been built to provide a good representation of average conditions in the study area for the base year of 2010 in non peak season conditions. It is not intended to represent peak seasonal conditions when the residential population swells significantly. Included in the model area are the townships of Bateman's Bay to the north and Moruya to the south and the areas in between, generally east of the Princes Highway.

The model was built by including the road network as it exists and a zone system based on land uses. Extensive land use data was converted to trip productions and attractions and trip distribution was undertaken using the doubly constrained GRAVITY module within TRACKS. Trip assignment was undertaken using the ASSIGN module within TRACKS and the assignment process was carried out until convergence was achieved and equilibrium reached.

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The model was then robustly calibrated and validated whereby the outputs from the model emerged as being statistically solid representations of the existing situation. The modelling validation results show a model which is robustly validated in the AM and PM, to exceed the industry standards.

#### Future year TRACKS Modelling

Future year models were built to represent the future years of 2020 and 2030, in both the AM and PM Peak periods. The AM and PM peak periods are for 0800-0900 in the morning and 1600-1700 in the evening. The Eurobodalla Shire TRACKS Base Models were built to provide good representations of the average conditions in the study area for the base year of 2010 in non-peak season conditions, and similarly, the 2020 and 2030 models also represent the non-peak season time of the year.

In the 2020 and 2030 future year modelling some significant changes were made to the model road network and also the land use files. All of these were based on forecasts and the best available information in the case of Land Use files. The following network upgrades were included in the 2020 TRACKS model, as identified in the current Paramics model of Batemans Bay Town Centre. Paramics is a micro-simulation software, developed specifically to assess networks and junctions in finer detail compared to strategic modelling software. Paramics modelling upgrades include:

- Intersection of the Princes Highway with Beach Road increase length of right turn bay.
- Intersection of the Princes Highway with North Street increase length of right turn bay.
- Intersection of Beach Road with Perry Street Signalise with the inclusion of a right turn bay for vehicles turning into Perry Street from Beach Road.
- Intersection of Beach Road with Orient Street upgrade by providing a right turn lane for vehicles turning right into Orient Street (S) and a left turn lane for vehicles turning left into Orient Street (S).
- Intersection of Beach Road with Flora Crescent upgrade by providing a right turn and left turn lane for access to Flora Crescent.
- Intersection of North Street with Perry Street signalise.
- **u** Intersection of Museum Place with Camp Street signalise and re-align so that it forms a cross roads.

The following network upgrades were included in the 2030 TRACKS model, as identified in the current Paramics model of Batemans Bay Town Centre:

Signalise intersection of the Princes Highway with the Old Princes Highway, with the inclusion of two through northbound lanes on the Princes Highway.

The following network upgrades were included in the 2030 TRACKS model and were based on the 2020 TRACKS model outputs. The following list of road network upgrades were included in the 2030 model in addition to those included in 2020:

- Princes Highway two lanes in the southbound direction between Berrima Parade and Kings Highway.
- Princes Highway two lanes in each direction between Kings Highway and Clyde Street, including the duplication of the Clyde River Bridge.
- Princes Highway two lanes in the northbound direction between Clyde Street and North Street.
- Princes Highway two lanes in the northbound direction between Burkes Lane (Mogo) and Cranbrook Road (Batemans Bay). While much of this length already has two northbound lanes, consideration should be given to providing additional lengths where possible.
- Princes Highway implement clearways along the Princes Highway on approach to the intersection with Church Street (Moruya) to provide additional capacity.
- Princes Highway signalise intersection of Princes Highway with Queen Street (Moruya).



The 2020 and 2030 models were developed both with and without the proposed South Batemans Bay Link Road. The Link Road was modelled as an extension to Glenella Road that provided a link between George Bass Drive and the Princes Highway. It included an extension of Herron Road that connected to the new Link Road.

The intersection of The Link Road and the Princes Highway was positioned at the current location of the Ridge Road intersection south of Batemans Bay. The models were developed to allow movement to/from the north only at this new junction with the Princes Highway as it is understood that this is the current proposal. The results indicated that the Link Road provided an alternative route for vehicles travelling to/from the southern suburbs of Batemans Bay and helped to reduce traffic along sections of Beach Road.

A sensitivity test was also conducted that allowed all movements to occur at this proposed new junction. The model showed an increase in traffic along the link road due to the additional allowed movements.

A full list of recommendations are provided in Section 4.

#### **Results**

With the above mentioned upgrades, plus others in Section 4, in place the 2020 and 2030 models generally operate well in terms of capacities. It should be noted that without these upgrades, the required LoS could not be maintained resulting in significant delays throughout the model particularly in the higher populated areas. There are some junctions where LoS E and F occur and in most of these cases it is as a result of delays on a medium or minor approach to a major junction. Mainline flows along Princes Highway and George Bass Drive generally experience a good LoS.

#### Limitations

While the scope of this work was for the average weekday during the non-tourist season, some cursory 90<sup>th</sup> percentile checks were also carried out for sensitivity testing. This sensitivity testing was not comprehensive however and in order to ascertain a true representation of the likely issues in current, 2020 and 2030 peak tourist season, it is recommended that further tests be carried out using an updated version of this TRACKS model.