



INFRASTRUCTURE SERVICES DIVISION Design & Projects Branch

Contract and Consultant's Brief:
Amendment 'A' – 13 April 2010

Q-PARAMICS TRAFFIC & TRANSPORTATION MICROSIMULATION MODEL OF BOWRAL TOWN CENTRE



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**Wingecarribee Shire Council
Contract and Consultant's Brief:
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Bowral Town Centre**

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1. OBJECTIVES

The aim of this project is to build a Paramics microsimulation model of the existing Bowral Town Centre and then to evaluate possible Scenario Options.

The model must include attributes of the town centre; road, public transport and pedestrian network and accurately reflect the movements and interactions of several key activities over the existing peak 1 hour weekday period which include:

- Traffic
- Parking
- Pedestrian
- Public Transport

Once the base model is completed, a number of Town Centre Scenario Options need to be simulated. Each Scenario Option modeled must be evaluated by the Consultant.

The Consultant will provide Council with documented and simulated visual presentations of the Town Centre operating as it currently exists and post implementation of each considered scenario.

2. PROJECT REQUIREMENTS

Q-Paramics must be used for this project and is referred to in this brief as "Paramics". The model must be calibrated, validated and "fit for purpose" in accordance with this brief and where applicable with the Roads and Traffic Authority of NSW (RTA) "Paramics microsimulation modelling – RTA Manual" (Version 1.0, Issued May 2009), for the existing year (2010) peak weekday period scenario, which will utilise:

1. Council's TRACKS models (provided as part of resource documents)
2. Existing traffic count data, mostly Metro Count "tube" counts (provided in summary as part of the resource documents. Original source data will be forwarded as requested).
3. Council's existing parking inventory and utilization data (included in the TRACKS data and the base data which are provided as part of the resource documents)
4. Council's GIS data (as specified by the Consultant and available upon request)
5. Existing town centre retail studies (provided as part of resource documents)
6. Existing aerial photographs (provided as part of resource documents)
7. RTA existing traffic signal data within the defined Town Centre (provided as part of resource documents)
8. Public transport timetables (available on the Web addresses: www.berrimabuslines.com.au/berrima/public_timetables.php, www.countrlink.info and www.cityrail.info)

It is a requirement of this brief that the Consultant identify and collect all additional data considered necessary, and agreed to by Council, to finalise the model.

The final 2010 weekday peak hour Paramics microsimulation model must be an accurate reflection of activities occurring over the determined typical weekday peak hour throughout the defined study area.

The activities to be included in the model include modelling physical attributes of the town centre, movements and the interactions of several key activities:

- Traffic
- Parking

- Pedestrian
- Public Transport (rail and bus movements)

Modified 2010 year models are also required to enable the assessment of various scenarios (as defined in this brief: Sec 12 Scenario Testing). The scenarios will include possible network changes which will be either physical, or management changes, and combinations of both

Model scenario testing of possible changes (perhaps requiring some specification modification following consultation between the appointed Consultant and Council as outlined in this brief) to the 2010 network is required. The final report needs to describe and define the impacts of the scenario tests and identify likely key benefits and any possible adverse effects. It may be found that the considered Scenario Options could possibly effect only minimal change.

Council needs to be able to interrogate the model, either by further commissioning the consultant, or via future acquisition of Paramics software to enable extraction of key data at intersections throughout the model to enable localized SIDRA analysis.

It is also a requirement that any limitations of modelling must be identified and explained at the time of submitting the fee proposal.

3. LOCATION

Wingecarribee Shire covers an area of 2700 square kilometres and is situated approximately 100km southwest of Sydney. This area is known to tourists as the Southern Highlands of New South Wales. The pattern of development is one of small towns and villages, separated by a semi rural landscape. The main towns are Bowral, Moss Vale, Mittagong and Bundanoon. As well there are smaller villages like Hill Top, Yerrinbool, Colo Vale, Robertson, Berrima, New Berrima, Exeter, Burrawang, Penrose, Wingello, Sutton Forest, Avoca, Fitzroy Falls and Balmoral Village.



Figure 3.1 Wingecarribee Shire

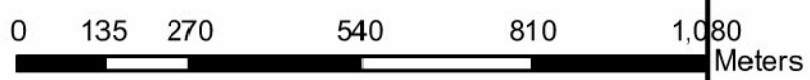
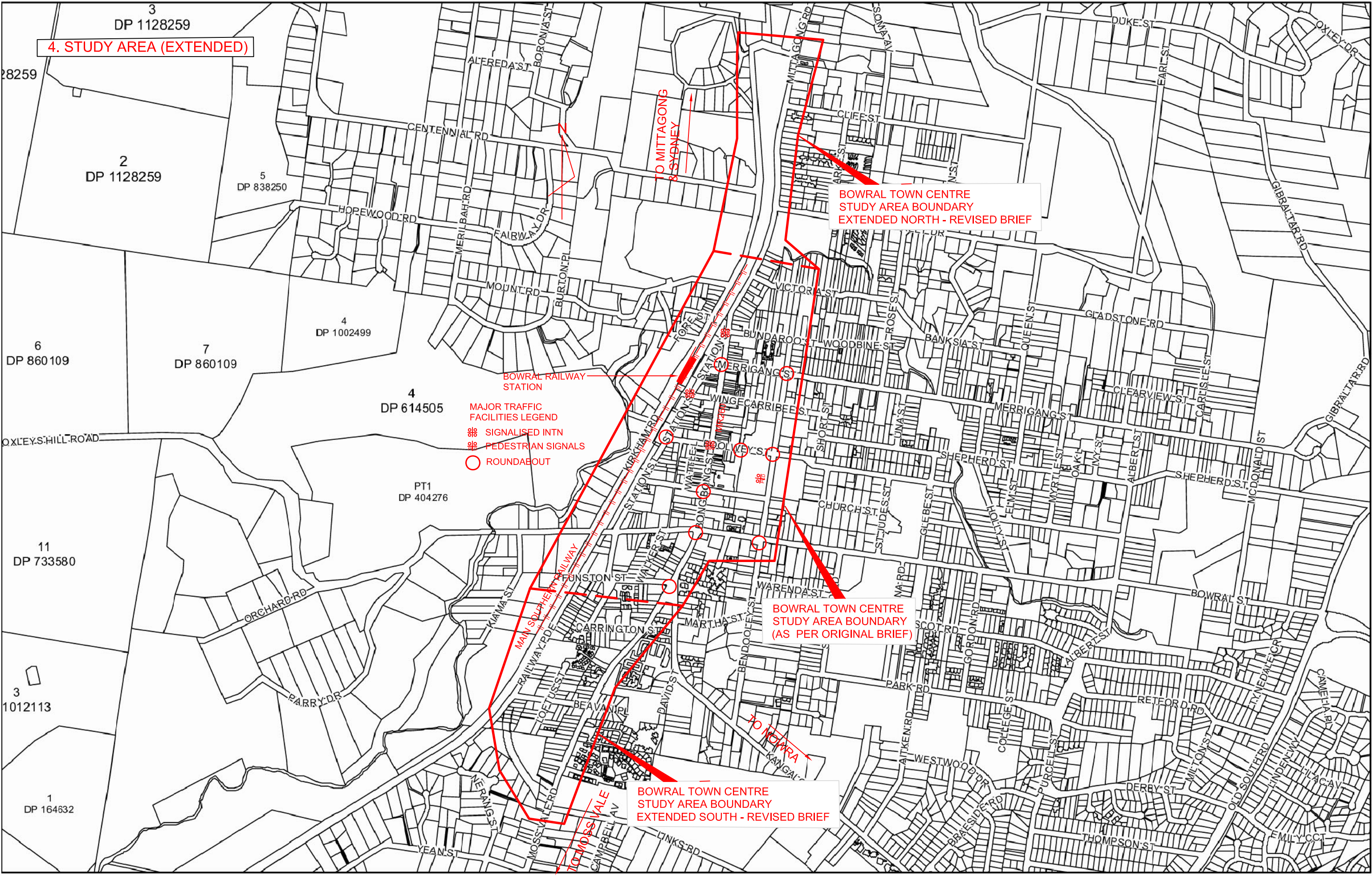


Figure 4.1

Any information (numerical or otherwise), representation, statement, opinion or advice expressed or implied in this publication is made in good faith but on the basis that the council of the shire of Wingecarribee, its agents and its employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any information, representation, statement, or advice referred to above.

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5. BACKGROUND INFORMATION

5.1 TOWN CENTRE OVERVIEW

The Bowral Town Centre is the economic centre of the Wingecarribee Shire. The Town Centre experiences considerable traffic congestion, particularly during the afternoon peak weekday period (the Friday shopping peak, occurs approximately between 3pm and 5pm throughout most school weeks of the year).

The congestion occurs mostly along the Town Centre's major road thoroughfares, in particular, Bong Bong Street (MR260) and Station Street (recently classified as an RTA Regional Road).

Access to the town centre is highly dominated by vehicles (limited bicycle facilities are provided), and pedestrian activity is dominated by people moving about once parked. Transport by bus tends to be dominated by school children and rail is used by some commuters traveling within the Highlands and to Sydney, Campbelltown, Goulburn etc. .

Generally most of the vehicles within the town centre are passenger vehicles, with heavy vehicles mainly found along Station Street and Kirkham Road, accessing the main parts of the Town Centre generally only to service the town's requirements.

The town centre features a rather lengthy (680m long) "strip" shopping centre within a narrow (20m) road reserve. The more heavily utilized shops are located within 2 blocks (between Merrigang St and Boolwey Street – 260m) along Bong Bong Street.

The rail corridor forms a geographical restriction to movement between east and west sides of the town.

The town centre is surrounded mostly by residential housing (a mix of low to medium density housing), with a light industrial area spread along Kirkham Road. The most significant industrial plant is the Bowral Brick works, located to the south west of the study area.

5.2 EXISTING NETWORK MODEL – THE WINGECARRIBEE SHIRE WIDE TRACKS MODEL

To date, all strategic network modelling has been undertaken within the Wingecarribee Shire Wide TRACKS Model. The Shire Wide TRACKS Model is validated at 2008 and includes the latest Australian Census data. Model building and validation reports are included as part of the reference documents.

It must be noted that although the model is suitably calibrated for strategic purposes, the Bowral Town Centre network is not validated in TRACKS to a level suitable for Paramics modelling.

The TRACKS model includes AM, OP (off peak), SP (afternoon shopping/school peak) and 24 hour scenarios for the years 2008, 2010, 2016 and 2031. Please note that the PM Journey to Work/Home peak does **NOT** coincide with the afternoon network peak (as it does in other areas in the Illawarra region). The SP peak, as included in the TRACKS model, was created to ensure that the actual afternoon network peak is modeled.

It should be noted that future year models include the Moss Vale Enterprise Zone (a proposed 640ha industrial development in the north west sector of Moss Vale) and a smaller (100 ha) industrial development, known as the Northern Gateway, to the north of Mittagong. In regard to impact on the Bowral Town Centre, it is considered that modelling in future years may distort the demand on services within the Town Centre. Whilst it is expected that the proposed large industrial zones will have an impact on Town Centres within the Shire, until a more complete understanding of the likely land use within the industrial zones are determined, it is considered that it is more appropriate to utilise the 2008 validated Shire Wide model, as required, for this project.

Council believes that the 2008 validated SP peak is the most suitable starting point, subject to the Consultant's advice, for the creation of the Bowral Town Centre Paramics model.

The 2010 model includes minor additional development throughout the shire overlaid on the 2008 models (i.e. no network changes and no traffic growth, other than that generated by the additional developments where applicable).

The 2010, 2016 and 2031 models include separate heavy vehicle models generating from the proposed industrial zones. The 2016 and 2031 models include possible additional development (residential and industrial) throughout the shire and recommended road infrastructure improvements. It should be noted that Bowral Town centre improvements are not included in the future models.

SIDRA analysis has been carried out at a number of intersections within and around the Moss Vale Enterprise Zone. This data is available upon request.

5.3 BOWRAL TOWN CENTRE TRAFFIC RELIEF ROUTE

Various concept options to provide a Town Centre Traffic Relief route have been developed over the past 20 years.

It is expected that the creation of the Paramics model, as specified in this brief, will provide a better understanding of the interactions of various travel modes, traffic and transport facilities within the town centre and provide a clearer understanding of the underlying issues causing the congestion and the effects of possible changes within the Bowral Town Centre.

Ultimately the Paramics model is expected to either confirm that a town centre by-pass (or traffic relief route upgrade) will be required at some stage, or that other relatively minor changes and improvements may effectively address or ease the primary issue of congestion and town centre access.

The inclusion of one possible traffic relief route option is included in Section 12.1 Scenario Option 3.

5.4 PUBLIC TRANSPORT

Public transport is provided by the rail service (access at Bowral Station north west of the Wingecarribee Street/Station Street signalized intersection) and bus stops mainly located at the Bowral Railway Station (east side) and bus stops near the Boolwey Street/Bendooley Street intersection. Berrima Buslines provides bus services throughout the Shire. Country Link buses provide regular services to adjoining regional areas (e.g. Wollongong and Nowra).

The main taxi rank occupies several parking spaces on the eastern side of Bong Bong Street/Wingecarribee Street intersection.

Although not discussed widely amongst the community, issues of transport equity, and access to transport, (such as, for example, better located bus stops, transit lounges, improved pedestrian facilities, etc. which better meet the requirements of access for all) should be considered. Whilst the brief requires that the existing public transport is included in the Paramics model, Scenario 1 requires the inclusion of a transit lounge. The purpose of this is to illustrate to the community how this could function. It is desirable that such a facility might make use of "real time" information to reduce the footprint of the facility. An opportunity may soon exist to incorporate this into a redevelopment of one of the Town's larger shopping precincts.

5.5 PEDESTRIANS

Pedestrian volumes are considerable (which may need to be quantified) throughout the town centre, especially along Bong Bong Street. A number of pedestrians also cross in an "ad hoc" manner along Bong Bong Street, often crossing between slow moving vehicles during peak periods.

Unsignalised marked pedestrian crossings are limited to 3:

- Near the intersection of Bong Bong Street and Wingecarribee Street
- Opposite the old Town Hall in Bendooley Street (south of Wingecarribee Street).
- Mid-block in Banyette Street (near the Bowral Public School).

Other crossings are provided at each of the 4 traffic signals throughout the town (1 of which being pedestrian signals in Bendooley Street at Bowral Public School).

Sub-standard sized refuges are available on legs of several minor roundabouts throughout the town centre. There have been a number of concerns over the interactions of pedestrians and motorists at the roundabout at the intersection of Bong Bong Street and Merrigang Street in particular.

A number of pedestrian paths are provided by arcades and passageways, possibly not well identified (relying upon local knowledge) throughout the town centre.

Pedestrian access between the west and east side of the railway line are provided at Bowral Street (recently completed signalized level crossing with accessible ramps), the Wingecarribee Street rail overbridge (note that lifts have recently been installed at each platform at the station) and a rail underpass (restricted to pedestrians) between Victoria Street and Oxley drive (immediately north of the study area).

A PAMPS was prepared for the Bowral Town Centre in 2000 and is included in the reference documents.

5.6 PARKING

Generally the supply of parking for the “strip” shops along Bong Bong Street (between Bundaroo Street and Bowral Street) is mostly provided by free, time limited, on-street parking (with limited additional off street parking for the “strip” shops). Demand for these spaces is very high.

Larger off-street shopping parking areas (up to 3 hours limit) are provided at the 2 major off street shopping facilities for the Coles and Woolworths outlets located behind Bong Bong Street (bounded by Bong Bong Street, Wingecarribee Street, Bendooley Street and Banyette Street).

Bong Bong Street on-street parking is generally fully utilized during peak periods, whereby a parking space that is vacated is immediately taken up. These parking and un-parking manoeuvres, and associated circulation trips, are considered to be largely responsible for the congestion experienced along Bong Bong Street.

Off-street parking spaces tend to be fully utilized near the town centre, with more remote sites (in particular the lower level of the Woolworths 3 hour carpark and the Aldi customer carpark in Banyette Street, being less utilized). Generally the on-street parking in the surrounding residential areas (approx. from approximately 300m beyond the study area boundary) tends to be lightly utilized even during normal peak periods.

Parking management is restricted to time restrictions with all spaces being “free” to users. ***Please note that discussion regarding the provision of a possible future “pay” for use system was clearly rejected by Council.***

Recent in-house TRACKS parking modelling found that the introduction of a purpose built multi-deck parking station located over 280m walking distance from the town centre (adopting the intersection of Bong Bong Street and Wingecarribee Street as the approximate centre) would be under utilized by people seeking short stay spaces regardless of whether it was a pay for use or “free” system.

The TRACKS modelling of several scenarios indicates that should the opportunity arise to provide additional spaces near the town centre, then these would be well utilized. 2 modeled scenarios indicated that an additional supply of 250 spaces, centrally located, is required to provide up to 20% spare capacity.

It is expected that the refinement of the parking modelling undertaken will be included as part of one of the model scenario options.

The TRACKS model also indicated that although the parking demand could be satisfied, there could be significant adverse impact on some key intersections, likely to significantly reduce operating level of service.

5.7 ROAD NETWORK

The entire Town Centre network is a 50 km/hr zone (with 40 km/hr school zones in the 8am to 9:30am and 2:30pm to 4pm periods).

Bowral Town Centre is located on the (mostly) 2 lane arterial road running through the shire, which mostly services the shire. The Hume Freeway runs several kilometers to the west of the town and provides the main inter-regional link on the Sydney-Canberra corridor.

Traffic approaching from the north can either pass through the town centre, using Bong Bong Street or use the sign posted Town Centre bypass, Station Street. Traffic routes join again at the main roundabout at Bong Bong Street, Funston Street, Moss Vale Road (MR260 – to Moss Vale) and Kangaloon Road (MR263 – to Nowra). The Town Centre bypass is also signposted on approaches to the roundabout from the south on Kangaloon Road and Moss Vale Road.

Station Street is of varying standard, however predominantly 1 lane in each direction with kerb side parking provided along most of its length. Volumes through the town centre require the capacity provided by both Bong Bong Street and Station Street, with a third parallel local road – Bendooley Street assisting.

Although the road network is of grid pattern, cross intersections are considerably spaced and network options for movements east to west are restricted by the Wingecarribee Street (Corbett) Plaza and the one way movement of Wingecarribee Street between Bong Bong Street and Station Street. Some right turn movements are banned at the key signalized intersection of Bong Bong Street and Boolwey Street.

The Wingecarribee Street rail overbridge provides the main link between the western side of Bowral and the Town Centre. A second access is located to the north of the town, however the right turn back towards the town, at this intersection, is difficult due to the higher opposing traffic on Mittagong Road. The rail overbridge connection between Station Street and Kirkham Street is relatively short and narrow (1 lane in each direction) and controlled by traffic signals on the east side (at Station Street). Sight distance is limited at the western intersection with Kirkham Road due to the bridge abutments.

The signals at the intersection of Station Street and Wingecarribee Street are 3 phase and, whilst delay is reasonable, queue lengths can often extend in each direction on Station Street, however particularly longer on the southern approach with queues up to 350m being common.

Delays for vehicles on the approach to the bridge (especially) from the south on Kirkham Road can be considerable. Queues frequently extend up to 600m during the SP Peak.

One scenario option includes assessing the impacts of possibly duplicating the bridge (providing 2 lanes in each direction), and installing signals at the junction of Wingecarribee Street and Kirkham Road.

The main town centre entry traffic signals, at the intersection of Bong Bong Street and Station Street, are 2 phase and cycle times are relatively short, causing minimal delays on all approaches, however queues on Bong Bong Street often block the roundabout at the intersection of Bong Bong Street and Merrigang Street, which also impacts on pedestrian crossing movements on each leg (as discussed in 5.5 Pedestrians). Vehicles approaching from the north, however, can enter into the Bowral Town Centre (Bong Bong Street) via an unsignalised slip lane.

The intersection of Bong Bong Street and Boolwey Street, which is a key town centre intersection, is signalized and operating with apparent spare capacity for the current volumes in the peak periods. The right turns from Bong Bong Street (north) into Boolwey Street and the right turn from Boolwey Street (west) into Bong Bong Street are banned.

As discussed above (5.6 Parking), recent in-house TRACKS modelling, indicates that town centre management, in particular, parking management and supply is likely to be partly responsible for a degree of the congestion experienced in the town centre. The study modeled a number of scenarios, including modifying time restrictions and providing additional supply (at several locations). It was concluded that well located additional supply and changes to main street time limits would ease the parking situation. However, the TRACKS model also indicated that it may in fact worsen the level of congestion, particularly at the Bong Bong Street/Boolwey Street intersection, due to the limited spare capacity at this intersection, with alternative movements limited due to the restrictive road layout. Preferred options need to be tested in the Paramics model and are included in the Scenario Options.

6. SCOPE OF THE PROJECT – Revised Amendment ‘A’

The study area is defined in Figure 4.1.

A Paramics model of the study area is required. The model must include the existing traffic infrastructure, parking supply (both on street and off street as per the provided parking inventory and as included in the TRACKS models) and pedestrian pathways **within the original Study Area Boundary (not the northern and southern extensions as shown in Figure 4.1).**

The scope of the work includes:

1. Calibrating and validating base year (2010) afternoon traffic peak (known as the SP or Shopping/School Peak, in the provided Shire Wide TRACKS models) of the road network within the study area, with particular attention given to several key unsignalised intersections and roundabouts.
2. Calibrating and validating all traffic signals throughout the study area (4 in total) based on field observations, consideration of RTA provided signal data and in accordance with the RTA Manual “Paramics Microsimulation Modelling” as applicable.
3. Modelling observed and counted pedestrian movements, and their interactions with vehicular traffic on the network throughout the study area during the SP period in the model with particular attention to the:
 - a. Marked crossing on Bong Bong Street at the intersection with Wingecarribee Street
 - b. Marked mid block crossing on Bendooley Street (between Wingecarribee Street and Boolwey Street).
 - c. Pedestrian movements at the roundabout at the intersection of Bong Bong Street and Merrigang Street
4. Modelling time tabled and observed public transport movements during the SP period in the model, in particular the bus movements in Boolwey Street near Bendooley Street and at Bowral Railway Station (adjacent to Station Street). City Rail passenger rail movements need to be included and the Consultant is advised that regular bus services are provided by Berrima Buslines and Country Link.
5. Modelling parking movements (utilisation of supply and parking and unparking movements) during the parking peak period, and in particular observed parking and un-parking manoeuvres in Bong Bong Street (between Bundaroo Street and Bowral Street).
6. Modelling 2 scenario option variations of the calibrated and validated 2010 Paramics model to determine the impacts of the options.
7. Provisional modelling of at least one additional scenario option as defined.

Note: The precise nature of the Scenario Options will be based on the consideration of the provided scenario option outline and advice from the Consultant. The final details of the options must be agreed upon prior to commencement of work on any Scenario.

7. PROPOSED MODEL STRUCTURE

The model must reflect all road network details (at a standard required for microsimulation modelling) within the study area shown in Figure 4.1 (overlayed on the supplied aerial photograph), including (but not limited to):

- All roads and lanes throughout the network (travel lanes, auxiliary lanes, merge/diverge lanes, parking lanes, bi-directional and one way movements)
- Intersection details including approach lanes, auxiliary lanes (length and turn designation), entry or exit restrictions
- Traffic control at intersections (i.e. "Stop", "Give Way"), roundabouts (centre island diameter and circulating width)
- Traffic signals (detectors, phasing and RTA SCATS and other timing data as provided), pedestrian crossings
- On street parking supply and control (duration)
- Off street parking supply and control (duration)
- Bus stops and bus bays
- Taxi ranks
- Pedestrian pathways (i.e. passageways, walkways, malls, ability to walk in both directions on way roadways, etc.)
- Marked pedestrian crossings and facilities (i.e. refuges, including splitter islands at roundabouts)
- Railway station (including all pedestrian access points and pathways)
- Railway pedestrian level crossings

8. MODEL TIME PERIOD

The time period to be modelled is the Weekday SP Peak (over one hour between 3pm and 5pm on Fridays of a non school holiday week) as determined from data.

Please note that additional loading is applied to the network during "Tulip Time" occurring during late September and early October each year. Modelling of data during that period **must be avoided** as it is not typical of more regularly occurring activity in the Town Centre, also traffic management in the town is modified to that normally found.

9. PARAMICS SCATS MODELS

The RTA Manual "Paramics Microsimulation Modelling" should be applied where applicable on this project.

In the Consultant's submission, the Consultant must outline the ability to conform with the RTA Manual's requirements and, if required, how they will simulate the traffic signals within the study area. Regardless, the signal operations should be checked against documented field observations and the RTA controller data (provided).

Consideration of possible benefits of signal co-ordination needs to be carried out between Council, the RTA and the Consultant (this is likely to require a joint meeting of the three parties at RTA offices in Wollongong). If considered suitable, a scenario option (as outlined in Scenario Option 2) may include modelling the effects, and possible benefits, of a local signal co-ordination system.

10. OUTPUTS

Key model outputs will include the measure of system performance, in terms of congestion, queuing and travel times throughout the study area, identifying particular “hot spots” for the peak period.

11. DATA

11.1 DATA COLLATION

It is the responsibility of the consultant to collate available, and specific data collected (as required by the Consultant) and to document and report on that data.

11.2 DETERMINATION OF ADDITIONAL SURVEY DATA

It is the responsibility of the consultant to identify any additional counting, inventory or survey required for the successful validation of this model. In the submission the consultant should review the available data (as outlined in Excel spreadsheets on the supplied Data disc and provide a provisional cost for the collection of additional data). Council’s “tube” data is in MetroCount format, raw data will be provided as requested).

11.3 COLLECTION OF ADDITIONAL DATA

Prior to the collection of additional data, the consultant shall submit a proposal, outlining the nature of the data required (with a brief purpose outline), who will collect that data, and the cost (which should be identified as a provisional item in the fee submission) to collect the data.

Data should not be collected until Council issues a specific order for that data to be collected. Where appropriate, Council may elect to collect some or all of that data (without cost penalty to Council), meeting the specifications of the consultant, and then provide that data to the consultant without cost penalty.

The consultant should outline any conditions that may be imposed, should Council elect to collect some or all of the data.

Council will not be held responsible for any delays in providing external agency data, however a time limit for the supply of additional data by an external agency must be included in the submission. Any delays beyond that stated in the consultant submission will allow the consultant to claim for extensions of time without cost penalty being imposed.

11.4 EXISTING INTERSECTION VALIDATION – Revised – Amendment ‘A’

For the intersections listed below, the following information is to be provided:

- A comparison of the peak hourly flow for each turning movement against counts.
- A comparison of queuing lengths, by movement as applicable.
- Comparison of intersection delays.
- A comparison of cycle throughput at signalised intersections for each cycle throughout the period.
- Brief commentary about intersection operation.

The intersections requiring the above information are:

1. Bong Bong Street/Station Street (signals)
2. Station Street/Wingecarribee Street (signals)

3. Bong Bong Street/Boolwey Street (signals)
4. Bong Bong Street/Bowral Street (roundabout)
5. Bong Bong Street/Kangaloon Road/Moss Vale Road/Funston Street (roundabout)
6. Bong Bong Street/Merrigang Street (roundabout)
7. Station Street/Boolwey Street (roundabout)
8. Wingecarribee Street/Kirkham Road (priority control)
9. Bong Bong Street/Wingecarribee Street (uncontrolled intersection)
10. Mittagong Road/Kirkham Road
11. Mittagong Road/Cliff Street
12. Mittagong Road/Oxley Drive
13. Kirkham Road/Centennial Road
14. Kirkham Road/Mount Street
15. Kirkham Road/Sherwood Ave
16. Oxleys Hill Road/Kiama Street
17. Moss Vale Road/Links Road

12. SCENARIO TESTING

It is the responsibility of the consultant to model, test and evaluate scenarios and to document and report those scenarios in terms of nature and effect.

It is Council's responsibility to finalise the details of the scenarios to be modelled in a timely fashion (following consideration of any advice, either from the Consultant or the RTA).

Council will request that the RTA provide definition of possible modifications to the signals in the town centre or the creation of a signal system should the consultant believe that a benefit could be derived by testing such a scenario.

12.1 SCENARIO TESTING OPTIONS – REVISED – AMENDMENT 'A'

A scenario testing option is likely to include a number of elements of change, tested in one model variation, and as such will be considered collectively as one scenario option.

Suggested scenario options (subject to discussion with the consultant, minor specification variation and final RTA and Council approval):

Scenario Option 1:

- Provision of 250 additional parking spaces in Oxley Mall Carpark (multi-deck), located in the centre of the area bounded by Bong Bong Street, Boolwey Street, Bendooley St and Wingecarribee St.
- Variation of parking time limits in Bong Bong St between Merrigang St and Banyette St.
- Variation to signal phases at the intersection of Bong Bong St and Boolwey St
- Provision of traffic signals at the intersection of Mittagong Road and Victoria Street.
- Creation of a co-ordinated traffic signal system, including the signals at Bong Bong Street/Station Street, Station Street/Wingecarribee Street and possible signals at the intersection of Mittagong Road/Victoria Street (outlined above).
- Inclusion of changed landuse at the north east and south east corner of the Mittagong Road and Victoria Street intersection (details to be advised).
- Provision of a bus transit lounge at Oxley Mall in Bendooley St

Scenario Option 2:

- Provision of an additional railway overbridge parallel to the existing bridge in Wingecarribee St (see concept plan included in the reference documents).
- Provision of 250 additional parking spaces west of the Wingecarribee Street/Kirkham Road intersection, with access into the carpark from a fourth leg of the intersection, including the additional railway overbridge outlined above (see attached concept plan).
- Provision of traffic signals (associated with the additional bridge and carpark) at the intersection of Wingecarribee St and Kirkham Rd.
- Modification of the existing signals at the intersection of Wingecarribee St and Station St (incorporating the new bridge).
- Creation of a co-ordinated traffic signal system, including the signals at Bong Bong Street/Station Street, Station Street/Wingecarribee Street and possible signals at the intersection of Wingecarribee Street and Kirkham Road (as discussed above).
- Inclusion of increased commercial land use (details to be advised) associated with the 250 space carpark outlined above.
- Inclusion of changed landuse north west of the Kirkham Road / Mount Road intersection (details to be advised).

Scenario Option 3 – Revised – Amendment ‘A’ (note - This is no longer a provisional item and is required):

- Inclusion of all the changes outlined in Scenario 2 (with the exception of the signals at Bong Bong Street and Station Street which will be changed to a roundabout as outlined below).
- Provision of 4 travel lanes on Station Street between Bowral Street and Bong Bong Streets, including the provision of a 2 lane roundabout (removal of existing traffic signals) at the intersection of Station Street and Bong Bong Street (see concept plan in the resource documents)
- Provision of 2 lanes following the eastern side of the railway between Bowral Street (a roundabout has been detailed) and Funston Street, then following Railway Pde (which will be widened) to Loftus Street, then following a road reserve between Loftus Street and Moss Vale Road, forming a roundabout at Links Road. Geometric details of this route have been created and form part of the resource documents)

Further options may be required and this will be negotiated with the successful consultant as additional work during the consultancy period. Consultants are invited to submit proposals (and indicative costs) at the submission stage. Please note that Council will not be obligated to engage the consultant for scenario testing beyond the 2 detailed.

13. KEY OUTPUTS

Key outputs will be measures of system performance, in terms of congestion, queuing and travel times. The models (including base and scenario options) must identify areas where congestion is most serious and report on queuing and delay.

14. HOLD POINTS

At the completion of the creation of the base Paramics model, a draft report and an electronic copy of the model shall be submitted to Council. Council will then request the RTA to review the model and should the model not meet the required standards, then the consultant shall rectify the model at no additional cost to Council or the RTA.

Upon approval of the base 2010 model by the RTA, then scenario option testing can be undertaken.

15. MODEL DOCUMENTATION

A detailed report is required to be prepared for:

- base model development, with sufficient detail to enable an experienced third party Paramics consultant to rebuild the base model
- validation and calibration including comprehensive user documentation for Council, RTA officers and future commissioned consultants that may be required to use or build on the base model and or the modelled scenarios
- commentary on town management as a whole and the integration of traffic, pedestrian activity, parking and public transport

16. CONSULTANT REQUIRED DELIVERABLES

Council requires:

- A detailed project timeline outlining each stage and estimated timeframe for the development of the Paramics base model and scenario option models
- Final electronic and paper copies of all raw and processed data, both of existing data that has been utilised and data collected specifically for the project
- Electronic copies on computer disc of all final Paramics base and scenario models created and developed. The Paramics models should include full electronic models (which can be accessed and further developed by Council, the RTA or commissioned consultants in the future) and also electronic viewing models which can be accessed through Paramics viewing software
- Final model building, calibration and validation reports (both electronic and hard copy – in colour where required)
- Scenario option testing reports, detailing the changes made to the model and interpretation of the post scenario Paramics model, detailing the expected impacts (positive, negative or neutral) to the study area network. All reports to be provided in PDF format on computer disc.
- Presentation of the base model and scenario options to Council

17. RESOURCE DOCUMENTS ON SEPARATE COMPUTER DISC

1. Illawarra Regional TRACKS Model – electronic copy
2. Wingecarribee Shire Wide TRACKS model – electronic copy
3. Wingecarribee Shire Wide TRACKS model – model building report
4. Wingecarribee Shire Wide TRACKS model – deficiency report
5. Bowral Town Centre – TRACKS parking validation and scenario options – electronic copy
6. TRACKS Parking options – presentation to Council – Microsoft “Powerpoint” file
7. Bowral PAMPS
8. Available Shire Wide Traffic volumes (“Excel” file) – note that raw “MetroCount” data is available for specific sites upon request.
9. Existing parking inventory and utilization (8am, 9am and 12pm) data (“Excel”) for the Bowral Town Centre
10. “Draft” Wingecarribee Retail Analysis (Bowral Town centre) Traffic Impact Assessment – Maunsell/Aecom – September 2006

11. Wingecarribee Retail Analysis (Final Report) – SGS - September 2006
12. Aerial photograph of the Bowral Town Centre – electronic (jpeg) copy
13. Bowral Town Centre “Draft” LEP Map
14. Various town centre conceptual infrastructure proposals