

Planning Proposal

Version 1 – Gateway Determination - January 2014

Planning Proposal to amend WLEP 2010 to permit development for the purposes of a service station and associated retail facilities and a 30 unit Motel on Lot 104 DP 1085033, Boardman Road South, Bowral.

File No: 5901/36

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PLANNING PROPOSAL

**Service Station and Associated Retail Facilities
& Motel Complex for 30 Units**

**Part Lot 104, DP1085033
South-Eastern corner of the intersection of Kangaloon Road
and Boardman Road, East Bowral**



DATE ► June 2013
REPORT NO. ► 4314
PREPARED FOR ► Urban Land and Housing Group
PREPARED BY ► AE&D

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REVISION STATUS

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1.0 Background

Mr. Peter Lowry OAM of Urban Land and Housing Group engaged AE&D Consulting to prepare a Planning Proposal for part Lot 104, DP1085033, being vacant land on the south-east corner of the intersection of Kangaloon Road and Boardman Road, East Bowral.

This Planning Proposal has been prepared in accordance with the requirements of Section 55(3) of the Environmental Planning and Assessment Act 1979 and the Environmental Planning and Assessment Regulation 2000.

It describes the proposed development on the subject site in a concise manner and is supported by a technically sound (competent) assessment of the likely impacts of the proposed development on the existing environment.

The proposal is supported by technically based reports prepared by experienced specialists in their respective fields of practice.

2.0 Introduction

This Planning Proposal Report explains the intended effect of, and justification for, the proposed amendment to the Wingecarribee Local Environmental Plan 2010, to permit the development of a service station and associated retail facilities, and a motel complex for 30 units on the subject site.

The retail facility will embrace a tourist information outlet where Southern Highlands tourist facilities and scenic attributes will be promoted.

To facilitate appropriate assessment, this Planning Proposal Report has been prepared generally in accordance with the relevant Department of Planning and Infrastructure guidelines including 'A Guide to Preparing Local Environmental Plans', and 'A Guide to Preparing Planning Proposals'

It is believed that the proposed development has local strategic merit based upon the demonstrated needs of the East Bowral and Bowral communities, the surrounding rural community and the needs of sub-regional and regional visitors (tourists).

Information provided in support of the planning proposal identifies the environmental (flora), physical (topography/slope and soils), social (heritage style buildings), economic (community retail needs) and site-specific matters (traffic and noise) associated with the proposed development.

It is believed that the level of detail provided in support of the planning proposal satisfies the requirements of the Department of Planning and Infrastructure in the LEP Plan making process (gateway and beyond) and the Wingecarribee Shire Council at the initial assessment stage.

3.0 Planning Proposal Pre-Lodgement Meeting

In accordance with the recommendations of the Department of Planning and Infrastructure outlined in the guideline 'A Guide to Preparing Planning Proposals' (October 2012), a pre-lodgment meeting was held between Mr. Ken Halstead (AE&D Consulting) and with Mr. Mark Pepping, Strategic and Assets Manager of the Wingecarribee Shire Council on Friday 31 May 2013.

The matters discussed at that meeting are shown in Appendix K attached to this report.

It was agreed that recently prepared reports relating to Soils (May 2013) and Flora (May 2013) and the Traffic & Parking Impacts (April 2008), are appropriate and would be necessary in any assessment process.

It was also agreed that retail reports prepared for the Wingecarribee Shire Council in 1995 and 2008 relating to the provision of Retail Facilities-East Bowral, would be accessed and relied upon in the submission of the subject Planning Proposal.

4.0 Objectives and Intended Outcomes of the Planning Proposal

4.1 Objectives

To enable the development of a service station and associated retail facilities on the front portion of the subject site and a motel complex for 30 units on the rear of the subject site (part Lot 104, DP 1085033). The service station and associated facilities will be set-back at least 20 metres from the Kangaloon Road boundary and a 30 metre wide landscaped buffer will separate the service station and associated retail facilities from the motel complex.

Vehicular entry/exit to the site is proposed as follows:

"In order to reduce the number of crossing movements and conflicts at access points it is recommended that entering and exiting movements to and from the site be restricted to left in/left out only on Kangaloon Road. Access from Boardman Road is recommended to be for entry only."

(Reference: A Report on Traffic and Parking Impacts of a proposed service station with a convenience store and motel development. 16 April 2008. TEF Consulting).

4.2 Outcomes

The residents of the East Bowral, South Bowral, South-East Bowral neighbourhoods, as well as the northern end of Burradoo (East) will have access to a retail outlet, which will cater for the day-to-day needs of households.

Residents of these neighbourhoods and tourists entering the Southern Highlands from the east will have access to service station facilities.

Tourists entering the Southern Highlands from the East or those leaving the Bowral CBD will have access to heritage styled accommodation in the proposed motel complex.

An outcome of 'prime' importance is an amendment to the Wingecarribee Local Environmental Plan 2010 that is specific to the land-uses proposed in this 'planning proposal'. This amendment should be framed such that "loopholes" that enable any development other than that proposed, should be eliminated. No 'ancillary' uses should be contemplated or ultimately permitted either.

5.0 Explanation of Provisions

The proposed outcomes, namely the development of a service station, associated retail facilities, and motel complex of 30 units on the subject site, can/will be achieved by amending the Wingecarribee Local Environmental Plan 2010.

The following amendments would be made:

- Amendment of the Wingecarribee Local Environmental Plan 2010 by inserting the appropriate notation in the Table of Amending Instruments, including reference to the relevant NSW Government Gazette notice and date.
- Amending the Wingecarribee Local Environmental Plan 2010 Land Zoning Map as shown in Appendix 'D' of this report.

Amendments to the planning provisions will be specific to the proposed future development and no more.

6.0 Justification

It is the view of the proponent that the planning proposal has local and sub-regional significance and respectfully requests that the Wingecarribee Shire Council (Relevant Planning Authority) give due consideration to the benefits that would accrue to the residents of the Wingecarribee Shire and East Bowral in particular. It is also believed that tourists to the Southern Highlands would derive a benefit from the service station, associated retail facilities and motel complex (for accommodation needs).

At this stage of the Planning Proposal process prior to the Gateway decision by the Department of Planning and Infrastructure (The Department), it is believed that the information contained within the professional technical/planning reports submitted with this application provide sufficient detail for the decision-making process for this proposal.

It is the function of Wingecarribee Shire Council planning professionals to give due consideration to a range of planning criteria in their deliberations based upon the merit of this planning proposal; these should include environmental, social and economic impacts.

This is most appropriate in any town planning exercise and in particular where a new residential land release is proposed, or where a change to an existing Land Use provision is contemplated to accommodate a minor 'rezoning'; it being an important part of determining Constraints to development.

The proponent is mindful of the responsibilities of the Council's planning staff in this process, as well as the Department's 'overarching principles' that guide the preparation of 'Planning Proposals'.

(Ref: A guide to preparing planning proposals, NSW Department of Planning and Infrastructure, October 2012)

One of those principles is:

"The level of justification should be proportionate to the impact the planning proposal will have"

It is the intent of the proponent to provide professional environmental planning information that is appropriate, accurate and responsible. Indeed it has been made abundantly clear by the proponent that appropriate professional reports were to be obtained on crucial issues at the outset. As an experienced professional town planner, I am of the opinion that these reports would ultimately be required at a later stage in the 'Planning Proposal' process, when and if it is to be supported by the Council prior to any 'Gateway' determination.

In this respect the proponent has obtained professional reports to support the proposal, namely Soils, Flora and Traffic management and impact; these are comprehensive and would satisfy the requirements of a major planning investigation. It is this planner's opinion that the requirements for preliminary assessment of this scale of development have been more than satisfied.

Other reports that have been relied upon address economic aspects; these being retail reports originally prepared for the Wingecarribee Shire Council.

The gateway process could result in a requirement that additional (or more detailed) information be provided by the proponent. This may well include the need for a specific report on a particular aspect of the proposal; this may include technically-based studies or outcomes of consultation with Government agencies.

It is not a requirement of this process to provide detailed architectural plans etc. as this forms part of any development application as part of the development control process, should the change in land use be approved by the Department.

6.1 Strategic Planning – East Bowral Neighbourhood Needs

This planning proposal is not the result of any Strategic planning study or report undertaken by the Council, it is nevertheless based upon a survey of the needs of residents of East Bowral, South-east Bowral and South Bowral conducted on behalf of Urban Land and Housing Group in September 2010.

Refer to Appendix 'J' to this report.

6.2 The means of achieving the objectives and intended outcomes

The best means of achieving the objectives and intended outcomes of the proposed project is by the preparation of this planning proposal, the approval of which will be subject to investigation by the NSW Department of Planning and Infrastructure.

The final step in the process is the approval of and notification of the adoption of a Local Environmental Plan (LEP) in the NSW Government Gazette.

The legal drafting of the provisions of the subject LEP must be precise, so that only the proposed land uses are permissible, whereas all 'other' land uses should be prohibited on the subject site. In this process great care would need to be taken to ensure that there are no "loopholes" in the planning provisions adopted.

The existing land Use Zoning within the Wingecarribee Local Environmental Plan 2010 is Zone E3 Environmental Management, which does not permit the proposed land uses, namely:

'Service Station', 'Food and Drink Premises' and 'Hotel or Motel accommodation'.

Refer to Appendix 'L' of this report

7.0 Relationship to Strategic Planning Framework

The Sydney-Canberra Corridor Regional Strategy 2008 (NSW Department of Planning) is a region of significant potential that links Sydney and Canberra. The Wingecarribee Shire local government area is located strategically within this region.

At page 3 the following is included:

"As well as its links to Sydney and Canberra, the region enjoys ready access to Wollongong, the Illawarra and South Coast"

At page 22 the following is included:

"Tourism is a major economic contributor for the Region...Natural and cultural assets create significant tourism attractors including the Region's heritage..... ; and the rural and cultural landscapes, including the Southern Highlands"

It is clear that this Regional Strategy recognizes the unique quality of the Southern Highlands and specifically the Wingecarribee Local Government area, as one that is a significant attraction to tourists, which assists in the economics of the region.

The proposed development, the subject of this planning proposal will contribute to the existing stock of Motel accommodation in the Wingecarribee Shire.

Likewise it will provide local employment in the short-term and long-term.

7.1 Regional or Sub-regional Strategies

From a regional aspect the only applicable Regional Strategy is the Sydney-Canberra Corridor Regional Strategy 2008 (NSW Department of Planning). Reference is made to this in Section 6.3 above.

There are no sub-regional strategies applicable to the subject site or locality.

7.2 Criteria for initial eligibility assessment for the Pre-Gateway review

In accordance with the Assessment Criteria set-out in the Department of Planning and Infrastructure document 'A Guide to preparing planning proposals', the following issues are addressed:

7.3 Does the proposal have strategic merit and:

7.3.1 Is the planning proposal consistent with a relevant local strategy endorsed by the Director-General

The Director General has endorsed the Wingecarribe Our Future Strategic Plan October 2002

At Section 7. 'Future Strategic Challenges' the following statement is included:

"The Council shares the strongly held values of its community that demands the retention and enhancement of high quality natural, rural and built environments. At the same time it acknowledges its responsibilities to provide opportunities for future growth, investment and prosperity for the people it serves now, and for future stakeholders."

The proposed development will contribute to 'future growth' by providing energy (fuel) products, basic retail goods and Motel Accommodation.

It will provide these services for existing residents and future residents.

The proposed development will provide **on-going employment** for residents of the Shire and/or the Bowral-East Bowral locality.

7.3.2 Is the planning proposal consistent with the relevant regional strategy or Metropolitan Plan

The subject planning proposal is **not** subject to any regional or Metropolitan Plan

7.3.3 Can the planning Proposal otherwise demonstrate strategic merit, giving consideration to the relevant Section 117 Directions applying to the site and other strategic considerations (e.g. proximity to existing urban areas, public transport and infrastructure accessibility, providing jobs closer to home etc)

The List of Directions issued by the Minister for Planning under Section 117 of the Environmental Planning and Assessment Act 1979, have been addressed herewith.

7.3.3.1 Employment and Resources

Business and Industrial Zones

Objective (1)(a) "Encourage employment growth in suitable locations"

Whilst the proposed 'planning proposal' is not located within a 'Business' Zone, it nevertheless will "encourage employment growth". Employment will be created during the construction phase and on-going.

7.3.3.2 Environment and Heritage

Environment Protection Zones

The subject site is currently zoned E3 Environmental Management under the provisions of the Wingecarribee Local Environmental Plan 2010.

Objective (1) of this Section 117 Direction states: The objective of this direction is to protect and conserve environmentally sensitive areas.

This Direction at (4) states the following:

"A draft LEP shall include provisions that facilitate the protection and conservation of environmentally sensitive areas."

Should the planning proposal be supported, the provisions of the legally drafted 'specific' local environmental plan must embrace appropriate 'environmental protection' provisions for the subject site. Likewise any development consent issued by the Council must embrace these provisions.

The provision of a 'Water Management Plan' and 'Soil Erosion and Sediment' plan should be conditioned in any future development consent.

Particular attention would need to be given to the control soil erosion in the upper soil layers. (Refer to the Soil report by Dr Pam Hazelton in Appendix E).

The comprehensive soil study of the subject site provided with this 'Planning Proposal' at this early stage would be addressed in the development of the site.

It would be 'normal' practice for such a comprehensive study to be required after the Gateway decision is made.

This Direction at (5) states the following:

"A draft LEP that applies to land within an environment protection zone or land otherwise identified for environment protection purposes in a LEP shall not reduce the environmental protection standards that apply to the land (including by modifying development standards that apply to the land). This requirement does not apply to a change to a development standard for minimum lot size for a dwelling in accordance with clause (5) of Direction 1.5 "Rural Lands"."

Environmental protection requirements that apply to the subject site (land) in the Wingecarribee Local Environmental Plan 2010, would need to be maintained; in this regard the 'site specific' Local Environmental Plan (LEP) for the land subject of this Planning Proposal must embrace those requirements.

It is paramount that water management is of a high priority and must be conditioned in any future development consent.

The site can be serviced by local sewer (waste water) mains.

On-site construction of 'bundings' around fuel storage areas would be a priority and would be conditioned in any future development consent. Likewise the 'tertiary' treatment of water run-off from the service station operations would be appropriately conditioned.

Environment Protection Authority Licensing would be a requirement of any future development consent.

As mentioned above the preparation of a water management plan for the whole development should (must) be conditioned so as to ensure the collection of all rainfall run-off.

It would be wise to require the construction of rainfall run-off detention ponds for the construction period and long-term. This could be a 'water' feature that would attract wildlife, which is the normal outcome.

7.3.3.3 Hazard and Risk

Acid Sulfate Soils

There is no evidence of Acid Sulfate soils on the subject site.

Mine Subsidence and Unstable Land

There is no evidence of either mine subsidence or unstable land on the subject site.

Flood Prone land

The subject site has not been subjected to flooding.

Wingecarribee Shire Council records do not identify the subject site as having been the subject of flooding.

As a qualified civil engineer and town planner that has resided in the Shire since January 1978, I have am not aware of any flooding issues in this locality; in this regard I have a thorough knowledge of flood liable areas within the Shire.

The subject site is approximately 14-15 metres above the water level of the Wingecarribee River at the southern boundary of Lot 104, DP1085033, namely at the southern end of Boardman Road.

Planning for Bushfire Protection

The Bush Fire Risk Management Plan for the Wingecarribee Shire indicates that the subject site is not at risk of Bush Fires.

Reference: Risk Management Plan Map 6, Central East Map.

7.3.3.4 Implementation of Regional Strategies

Objective (1) of this Section 117 Direction states: *"The objective of this direction is to give legal effect to the vision, land use strategy, policies, outcomes and actions contained in regional strategies."*

The Sydney–Canberra Corridor Regional Strategy applies to this locality.

Reference should be made to Section 7.0 of this report.

The proposed development will contribute to 'future growth' by providing energy (fuel) products, basic retail goods and Motel Accommodation.

It will provide these services for existing residents and future residents.

The proposed development will provide **on-going employment** for residents of the Shire and/or the Bowral-East Bowral locality.

The Illawarra Regional Strategy does not apply to the Wingecarribee Shire local government area.

7.3.3.5 Sydney Drinking Water Catchments

Objective (1) of this Section 117 Direction states: *"The objective of this direction is to protect water quality in the hydrological catchment."*

The proposed development will be referred to the Sydney Catchment Authority for its consideration and application of appropriate conditions of consent at the development application stage.

The Wingecarribee Shire Council (Relevant Planning Authority) as part of the 'gateway' process, if satisfied that the 'planning proposal' is justified and that it should proceed, will refer it to the Sydney Catchment Authority.

It will determine that the proponent enters consultations with relevant public authorities including the Sydney Catchment Authority.

This Direction at (3) states the following:

"This Direction applies when a council prepares a draft LEP that applies to the hydrological catchment."

This Direction at (4) states the following:

"A draft LEP shall be prepared in accordance with the general principle that water quality within the hydrological catchment must be protected, and in accordance with the following specific principles:

- (a) new development within the hydrological catchment must have a neutral or beneficial effect on water quality, and*
- (b) new development within the hydrological catchment must not compromise the achievement of the water quality objectives set out in the Drinking Water Catchments Regional Environmental Plan No. 1,*
- (c) future land use in the hydrological catchment should be matched to land and water capability"*

This relates to the preparation of the Draft Local Environmental Plan by the Wingecarribee Shire Council (the Relevant Planning Authority) subsequent to the 'Gateway' process.

This Direction at (4) states the following:

"(5) When preparing a draft LEP that applies to land within the hydrological catchment, council shall:

- (a) include provisions which will achieve or give effect to the principles in paragraph (4), and*
- (b) give consideration to the outcomes of any strategic land and water capability assessment prepared by the SCA, or if such an assessment has not yet been prepared may give consideration to:*
 - (i) the outcomes of an assessment, prepared in consultation with the Sydney Catchment Authority, which is equivalent to a strategic land and water capability assessment, or*
 - (ii) a site-specific assessment prepared in consultation with the Sydney Catchment"*

This relates to the preparation of the Draft Local Environmental Plan by the Wingecarribee Shire Council (the Relevant Planning Authority) subsequent to the 'Gateway' process.

7.4 Does the proposal have site-specific merit and is it compatible with the surrounding land uses, having regard to the following:

- the natural environment (including known significant environmental values, resources or hazards)
- the existing uses, approved uses, and likely future uses of land in the vicinity of the proposal
- the services and infrastructure that are or will be available to meet the demands arising from the proposal and any proposed financial arrangements for infrastructure provision.

Site-Specific Merit - General

The proposed development is located directly opposite the East Bowral neighbourhood unit (residential estate) where it is estimated up to 4,000 residents live. The retail facility will provide for the daily household needs of the residents of this residential area; it will be a facility that that neighborhood unit (residential area) presently lacks.

The Neighbourhood Unit is defined as follows:

*It is a physical environment in which a mother knows that her child will have no busy streets to cross on the way to school, a school that is within easy walking distance from home. **It is an environment in which the resident may have an easy walk to a shopping centre where daily household goods may be bought** and employed persons may find convenient transportation to and from work.*

(Reference: The Urban Pattern, 6th Edition, van Nostrand Reinhold, 1993. Simon Eisner, Arthur Gallion & Stanley Eisner

Whilst there is no primary School in the East Bowral neighbourhood, it was nevertheless proposed when it was first conceived, however deleted as a result of State Government intransigence at the time.

Likewise a Commercial area was proposed by the Council town planners (of which I was one) and was included in the 'final' concept plan, however due to political intervention at the 'local' level it was deleted from the final Local Environmental Plan after it was gazetted. In this regard I believe that the NSW State Planning Authority (at that time) erred in their consideration of the matter.

The residents of East Bowral cannot obtain "daily household goods" anywhere within the existing neighbourhood. This is major deficiency drawback and most certainly signifies less than adequate town planning from the Council of the day. I am not aware that there is any residential estate of the size of East Bowral that does not have a neighbourhood centre comprising a mix of retail shops.

The proposed development will go some way towards addressing this deficiency in town planning of the late 1980's and 1990's.

7.4.1 Is the proposal compatible with the natural environment (including known significant environmental values, resources or hazards)

The subject site is one which has no constraints to development in the physical sense. The site is has a 'gentle' slope towards the Wingecarribee River, namely 0-1.0%, which is most suitable for a commercial site.

The Soils survey (Appendix 'E') revealed as follows:

Soil testing revealed that foundations requiring specific engineering design (which would be the case for heavy structures and/or 2-storey buildings) will need to address shrink/swell (clay).

Dr Pam Hazelton stated the following:

The Flora survey (Appendix 'F') revealed that there were no concerns with regard to the proposed development having regard to ecological communities; the site is not subjected to any Flora constraints.

Dr Anne Clements stated the following:

"Given the low occurrence of native species and dominance of exotic pasture species, there were no National or State listed ecological communities nor listed species recorded nor expected to occur on the Site."

There are no identified resources on the subject site. (Reference: Illawarra Regional Plan 1980).

The subject site is agricultural land historically used for grazing of cattle. The land is not 'prime agricultural land' as was the case for the East Bowral site before its development.

The site is sparsely vegetated with limited native species and pasture grasses.

The subject site has not been affected by floodwaters; certainly there are no records with the Council that indicate any flooding.

The southern end of Lot 104 at the Wingecarribee River is below the 660 metre (above sea level) contour line. The subject site is at a level of 672-674 metres above sea level. The subject site is approximately 14-15 metres above the water level in the Wingecarribee River at the southern boundary of Lot 104, DP1085033, namely at the southern end of Boardman Road.

In terms of a 'green' site it is most suitable for the proposed development the subject of the Planning Proposal.

In summary there are no physical or environmental constraints on the site.

7.4.2 Exiting uses, approved uses, and likely future uses of land in the vicinity of the proposal

Land to the east of the subject site is zoned E3 Environmental Management and is used for grazing cattle.

Lot 4 DP1085033 being the parcel of land that the subject site is to be excised from is likewise Zoned E3 Environmental Management.

Land on the western side of Boardman Road is the site of the Southern Highlands Christian School and is likewise zoned E3 Environmental Management.

Land to the north (of Kangaloon Road) of the subject site is the East Bowral neighbourhood, unit which embraces a number of residential Zones.

It is justified from a town planning viewpoint to conclude that the proposed land use of the subject site is compatible with the surrounding land uses.

7.4.3 Services and infrastructure available in the locality

The subject site is able to be serviced with all services, namely water, sewer, gas, telecommunications and electricity.

Water mains are located within Kangaloon Road and Boardman Road.

Sewer mains are located within the rear of the properties on the northern side of kangaloon Road.

A Gas main is located on the southern side of Kangaloon Road adjacent to the subject site frontage.

Telecommunications (Telstra) cables are located in the Kangaloon Road reserve and Fibre Optic Cables are located within Lot 104 development in the future will need to take great care in this regard.

Electricity is available from overhead cables in both Kangaloon Road and Boardman Road.

7.5 State Environmental Planning Policies

The following State Environmental Planning Policies may be relevant to the proposed development on the site:

7.5.1 State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

Building construction on the subject site must comply with the standards of this SEPP.

7.5.2 State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

All development within the Wingecarribee Shire is subject to the provisions of this SEPP.

The proposed development will be referred to the Sydney Catchment Authority for its consideration and application of appropriate conditions of consent at the development application stage.

The Wingecarribee Shire Council (Relevant Planning Authority) as part of the 'gateway' process, if satisfied that the 'planning proposal' is justified and that it should proceed, will refer it to the Sydney Catchment Authority.

It will determine that the proponent enters consultations with relevant public authorities including The Sydney Catchment Authority.

7.5.3 State Environmental Planning Policy No 64--Advertising and Signage

All development is subject to the provisions of this SEPP.

The aim of this policy is to ensure that signage erected is compatible with the desired amenity and visual character of the area it is located within.

Likewise requires that signage is of high quality design and finish.

Signage would be regulated by way of conditions within a development consent at a later stage.

7.5.4 State Environmental Planning Policy No 44--Koala Habitat Protection

The subject site is **not** affected by this SEPP.

There is no Koala habitat or 'potential koala habitat' on the subject site.

"potential koala habitat" means areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.

The Flora study did not reveal any of the native vegetation listed in Schedule 2 on the subject site.

8.0 Environmental, social and economic impact

8.1 Soil and Flora

The Soil report and the Flora report provide (at this early stage of the planning process) very detailed information for two important environmental planning issues; these issues have been addressed elsewhere in this report.

8.2 Road Traffic Noise

Preliminary Noise tests were undertaken which revealed that the site is not subjected to excessive traffic noise levels.

The proposed motel complex is to be sited on the Boardman Road frontage with a setback of 25-30 metres which further minimizes road traffic noise where traffic noise is minimal and will enable the construction of what are essentially residential.

Preliminary Road Traffic Noise tests were undertaken on Friday 14 and Friday 21 June 2013.

The primary noise levels that are measured are the L_{AF90} (background noise level) and L_{eq} noise level (similar to the L_{10} noise level, namely the noise level exceeded for 10% of the period of measurement).

Testing: Friday 14 June 2013 (Kangaloon Road frontage)

The tests undertaken on 14 June were two (2) periods of 15 minutes, namely from 3.11-3.26pm and 3.27-3.42pm

Background noise levels (L_{AF90}) ranged from 46.0-47.4 dB(A), which were to be expected for a property adjacent to an Arterial road.

The LA_{eq} noise levels ranged from 71.0-71.2 dB(A). These levels would be at the location of the proposed service station and associated retail outlet. These noise levels would reduce by 5-6dB(A) over approximately 30 metres; this being at a location of a building containing the associated retail outlet.

Noise attenuation (reduction) through a building with single glazing would be reduced by up to 18dB(A).

Testing: Friday 21 June 2013 (Boardman Road frontage) at or about the approximate centerline of the motel complex.

The tests undertaken on 21 June were four (4) periods of 15 minutes, namely 8.00-8.15am, 8.15-8.30am, 8.30-8.45am; and 8.45-9.00am.

The highest readings from these four (4) off fifteen (15) minute time periods have been adopted as the existing road traffic noise indicators.

The highest Background Noise level (L_{AF90}) was 48.4 dB(A), which is a low reading at a property boundary adjacent to a local road.

The highest LA_{eq} noise level recorded was 59.2 dB(A). This noise level would be at the location at or about the centerline of any motel complex that is constructed, but at the property boundary (fence). The

proposed motel complex is to be setback 25-30 metres from the Boardman Road property boundary, which would result in a reduction of 5-6dB(A); accordingly the external noise level would be approximately 54 dB(A), which satisfies the provisions of the Guide.

Noise attenuation (reduction) through a building with single glazing would ensure a reduction of up to 18dB(A).

It should be noted that a reduction of 10dBA equates to a 'halving' of the loudness of a noise.

The Environment Protection Authority (EPA) publication 'Environmental criteria for road traffic noise' sets out maximum noise levels for a variety of urban land uses.

Reference to No. 12 in Table 1 at page 9, lists the following type of development:

'Redevelopment of existing local roads': the maximum L_{Aeq} (1 hour) is **55dB(A)**.

The noise levels taken on the morning of Friday 21 June equate to this measurement, namely 4 off 15 minute (consecutive) time periods of measurement.

This equates to a noise measured in a living room in a residential dwelling house.

Refer to Appendix I for Noise Level testing

8.3 Retail Impacts

8.3.1 Rhodes and Thompson Associates 1995

The Wingecarribee Shire Council engaged Rhodes Thompson Associates to undertake a review of the East Bowral release area with respect to the provision of retail facilities in 1995.

The Rhodes Thompson Associates report was both thorough and comprehensive and made specific recommendations to address the shortcomings of the East Bowral neighbourhood unit.

The Council required this assessment as a result of an earlier decision by it to rezone and sell of land "*originally set aside for the area's retail shopping centre.*"

The report embraced the following:

1. A review of East Bowral DCP No. 8 to bring that instrument into line with Wingecarribee LEP1989, as amended by amendment No. 42 of 18 November, 1994;
2. A review of the major road system in terms of the main road system that adjoins the Release and the main distribution roads through the Release;
3. Confirmation that the current projected lot yield is sufficiently accurate and, from available census information, determine the likely future population profile; and
4. Determination of retail floor space provision and location of that floor space.

Reference Page10 of that report "Council/Private Sector – Retail Facilities"

'Without pre-empting the determination as to retail floor space need, we would suggest that there are up to three levels of centres that could possibly be established in the area as:

1. *Corner Store/Convenience Store*
2. *Local Shop Group*
3. *Neighbourhood Centre – anchored by a chain supermarket (e.g. Jewels, Franklins etc.)*

The location of the higher level neighbourhood centre is not as critical given the drawing power of a major supermarket. Advertisingshopping function.

However, the location of the two lower level centres is much more critical to economic viability. These centres do not have the drawing power of a major tenant and depend on their "convenience" to maximise trade from local residents. In addition, every opportunity should be made to tap non resident trade as a subsidy to trading levels.

We would determine that in terms of future planning of the area that the location of retail facilities is of paramount importance."

Reference Page 12 of the report "4. Location"

"Indeed, we would go so far as to suggest that the ideal site (retail facilities) was that area originally zoned for the purpose albeit in land area terms well in excess of actual need. However, given the rezoning and disposal of this land, coupled with the fact that residential development has occurred southwards along Old South Road to Emily Street (and beyond) opportunities to locate the centre along the major desire line and be exposed to non-resident through trade have been removed.

Remaining Opportunities are:-

- 1. Maintaining the main road exposure theme, opportunities now only exist along the southern end of Old South Road from the residential development to Kangaloon Road thence along Kangaloon Road in the vicinity of the Boardman Road intersection.*
- 2. A centre internal to the release area along the Collector Road System maximising exposure to passing trade along the desire lines."*

Reference Page 13 of the report "4.1 main Road Frontage Option – Perimeter Location"

"based on a main road locational approach, we would determine, given the restricted opportunities involved, that the preferred location would be on the corner of Kangaloon Road and Boardman Lane. Of the 2 corners available it is considered that the north western (approach) corner is slightly preferable to the north eastern corner on traffic management grounds."

Reference page 19 of the report "Conclusions"

"Our assessment of the task has led us to the following conclusions:

- 1. The correct location of the centre is critical to its economic viability and thus its ability to adequately service the needs of its population.*
- 2. Of the 2 locational options (perimeter and internal) we conclude that the internal option should be pursued."*

It should be noted that the area suggested for the internal option, namely on the northern side of the intersection of the Emily Street easterly extension Collector Road and Boardman lane, has since been the subject of development.

The perimeter location identified by Rhodes Thompson Associates, namely the north western corner of the intersection of Kangaloon Road and Boardman Road, is now also unavailable due to development of the site.

Refer to Appendix H (i) of this report.

8.3.2 Rhodes Haskew Associates Statement 20 February 2008

Mr. Peter Lowry OAM, Urban land and Housing requested Rhodes Haskew Associates to provide an update to the earlier report by Rhodes Thompson Associates.

This report is titled "Provision of Retail Services – East Bowral, dated 20 February 2008

Refer to Appendix "H (ii) of this report.

Reference Page 2 - penultimate paragraph Consulting Town Planner Mr. Gary Rhodes concludes as follows:

"The East Bowral Release Area is now effectively developed and there is no real likelihood that retail uses can be provided internal to the release. However, given that the anticipated residential population has been achieved the need for local retail facilities remains I am of the view that the main road frontage option identified in my report i.e. Kangaloon Road/Boardman Lane intersection should be considered. I further note that the subject land benefits not only from main road exposure, but also from the additional 'created trade' associated with the western adjoining Southern Highlands Christian School (a sizeable facility catering kindergarten to Year 12). I consider that detailed investigation into the innate retailing opportunities of the site to be appropriate and would recommend such action as part of the LEP review."

Less than impressive town planning decision-making processes undertaken by the Wingecarribee Council, since the late 1980's relating to the East Bowral land release area, have left this unique residential neighbourhood without basic retail shopping facilities.

An opportunity to redress this situation exists at this point in time, in the proposal before Council, namely the development of a Service Station and associated convenience store and adjoining Motel complex.

The proposed development will embrace a style of building type that will fit with the 'heritage' aspects of Bowral.

8.3.3 Traffic Impact

TEF Consulting Report 16 April 2008

TEF Consulting prepared a Traffic Impact Report in April 2008, which was submitted to the Wingecarribee Shire Council when an objection to the proposed land-use in the Draft Wingecarribee Local Environmental Plan 2007 was lodged.

This report is comprehensive and utilizes well known modeling in conjunction with in-the-field traffic counts.

The following are extracts from that report:

2.2 Traffic and parking.

"Traffic counts were conducted at the roundabout near the site on Friday 14 March 2008 between 7:00 am and 6:30 pm. It was found that the morning peak traffic conditions occurred from 8:15 am to 9:15 am and the afternoon peak traffic conditions occurred from 3:00 pm to 4:00 pm. This is consistent with operation times of the neighbouring school.

SIDRA Intersection 3.2 was used to analyse the operation of the roundabout. SIDRA Intersection software is used as an aid for design and evaluation of intersection operation (signals, roundabouts, stop sign controls and give-way sign controls). The results of the analysis indicated that the roundabout currently operates at a Level of Service (LoS) A during both morning and afternoon peak periods.

4.2 Traffic impacts

Based on the results of SIDRA analysis, addition of traffic volumes likely to be generated by the proposed development (based on the worst case scenario) will not affect the operation of the roundabout. The proposed exit driveway will also operate at a good LoS with minimal delays. **Table 1** contains the results of SIDRA analysis for both existing and future conditions for comparison.

5.0 Conclusions and recommendations

1. The proposed rezoning of land known as Part Lot 102, DP 884438, East Bowral is planned for a possible future development of a service station with a convenience store and a motel.
2. Detailed plans of the likely development have not yet been prepared.
3. The site is of sufficient size to allow the design to be compliant with the requirements of relevant Development Control Plans and Australian Standards.
4. The additional traffic generated by the rezoned land will not affect the existing traffic conditions.
5. The proposed development is supportable on traffic engineering grounds.

The proposed layout for access to and exit from the proposed site are shown in the coloured diagram in Appendix G to this report.

The following is taken from the TEF Consulting report:

"In order to reduce the number of crossing movements and conflicts at access points it is recommended that entering and exiting movements to and from the site be restricted to left in/ left out only on Kangaloon Road. Access from Boardman Road is recommended to be for entry only.

Vehicles travelling from the north, south or west will be able to enter the service station from Boardman Road, whilst vehicles travelling from the east may enter from Kangaloon Road. All vehicles will exit to Kangaloon Road. The eastbound exiting vehicles will be able to use the roundabout for turning around. The proposed access points will be also used for the motel.

The proposed access locations have been checked against the requirements of Ausroads (2005)."

TEF Consulting Addendum Report 18 June 2013

TEF Consulting were requested to carry out an update on their 'original' report dated 16 April 2008.

The following statements were made in this report:

Parking Impacts: No change compared with the original proposal

- The site is of sufficient size for parking provision to satisfy Council's requirements

Traffic impacts:

- *Modelling using SIDRA software was carried out.*
- *Possible change since the original assessment – increase in traffic flows in Kangaloon Road.*
Conservative estimate – 5% per year – a total of 34% increase
- *The likely actual increase in traffic flows is far less than the spare capacity.*
Sensitivity analysis was carried out for the overall traffic flow increase and has shown acceptable delays up to 100% increase (refer to Figure 2).

It is evident that the proposed traffic flow treatment proposed by TEF Consulting will give effect to safe and is 'best practice'

Refer to Appendix G of this report

9.0 Community Consultation

A rigorous process of Community consultation will be undertaken by the proponent should the planning proposal be given a clearance through the 'gateway'.

Consultation will be initiated through the East Bowral Ratepayers Association in the first instance, followed by discussions with other 'active' community-based group.

Letterbox drops will be undertaken if considered necessary.

A Needs survey of the East Bowral neighbourhood was undertaken in September 2010.

Refer to Appendix I of this report.

Meetings will be held in the East Bowral Community hall and 'other' selected locations.

The proponent will arrange for individuals to be taken on-site to gain an appreciation for the proposed development.

At that time detailed architectural plans will be made available which will give a very clear picture of the proposal.

The proponent (Mr Lowry takes) the view that effective consultation must take place at an early stage to gain an appreciation of the views of residents in the locality of proposed development.

He takes the view that the proposed development the subject of this planning proposal, is a much needed facility for the residents of East Bowral in particular, as well as the surrounding areas of South Bowral and South-East Bowral; he is of the belief that the residents of the East Bowral neighbourhood unit are at present deprived of these types of retail facilities.

The applicant has already conducted small meetings where the support has been overwhelming.

In the numerous projects put before 'other' local government councils by this applicant, all were enhanced by the community consultation process. One such project in the environmentally sensitive area of East Balmain involved consultative processes over six months with input from the community, which ensured the proposal received unanimous support from the community.

Further examples can be provided to the council if required.

10.0 The Proponent – Peter Lowry OAM

Peter Lowry is presently a Board member of the Sydney Harbour Foreshore Authority, the Sydney Harbour Federation Trust and Chairman of the Leasing & Tenancy Committee SHFT.

Mr Lowry has recently been appointed by the NSW State Government as Chairman 'Designate' of 'Heritage Transport', which will have Statewide responsibility to promote rail transport that has heritage value. He is determined to promote the railway infrastructure associated with the Robertson, Moss Vale and Bowral Railway stations.

Mr Lowry is also a member of the following Boards/Organisations:

- Planning Research Centre, University of Sydney;
- National Institute of Dramatic Art, Ensemble Theatre;
- Seaborn Broughton & Walford Foundation
- Planning Institute of Australia;
- UDIA (Life membership); and
- Law Society of NSW.

Peter was a former Board member of the NSW Division of the National Trust.

He is the owner of the Berrima Bakehouse Motel and the Bundanoon Motel.

Peter has embraced the heritage values of localities where he has undertaken development and has a strong 'track record' on the maintenance of 'Heritage' buildings. His service to the National Trust was highly regarded and valued.

11.0 Conclusion

This Report has addressed the requirements of the NSW Department of Planning and Infrastructure with respect to 'Planning Proposals' (A Guide to Preparing Planning Proposals).

It has addressed issues such as the intended effect of, and justification for, the proposed amendment to the Wingecarribee Local Environmental Plan 2010, to permit the development of a service station and associated retail facilities, and a motel complex for 30 units on the subject site.

The retail facility will embrace a tourist information outlet where Southern Highlands tourist facilities and scenic attributes will be promoted.

The proposal placed before the Wingecarribee Shire Council embraces sound town planning rationale and is considered to be an appropriate land use having regard to the site selected which is on a Main Road and immediately opposite the east Bowral neighbourhood unit.

The proposed land-uses will most certainly service the residents of the locality and in particular address the retail deficiencies within East Bowral.

Residents of the east Bowral area are now forced to travel to the Bowral CBD to satisfy the day-to-day needs of residential land owners.

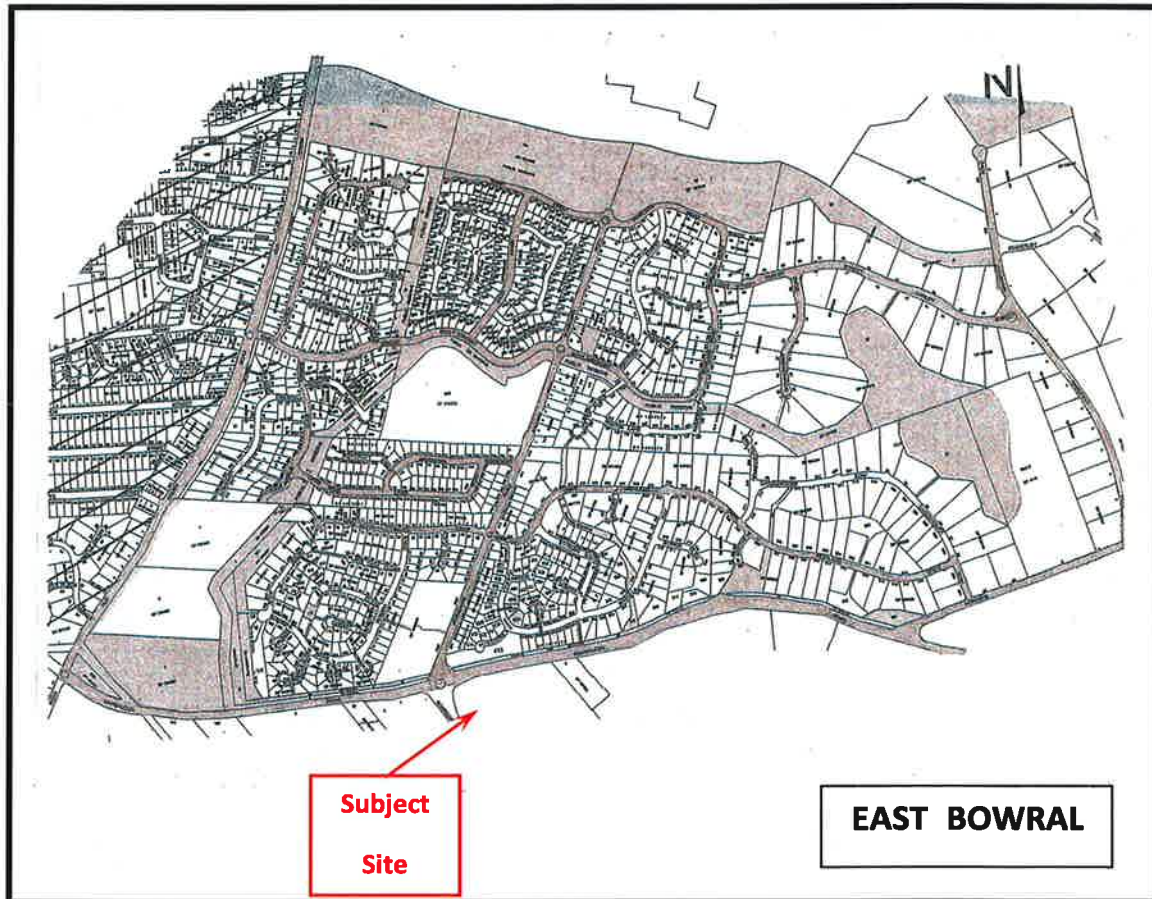
The modern neighbourhood should be much more than a housing estate. It should embody all of the best features of modern residential design, including commercial facilities which are essential to any neighbourhood which hopes to enjoy the advantages of community life; it is a facility which should be convenient for its users.

It is put that this planning proposal is appropriate on the subject site.

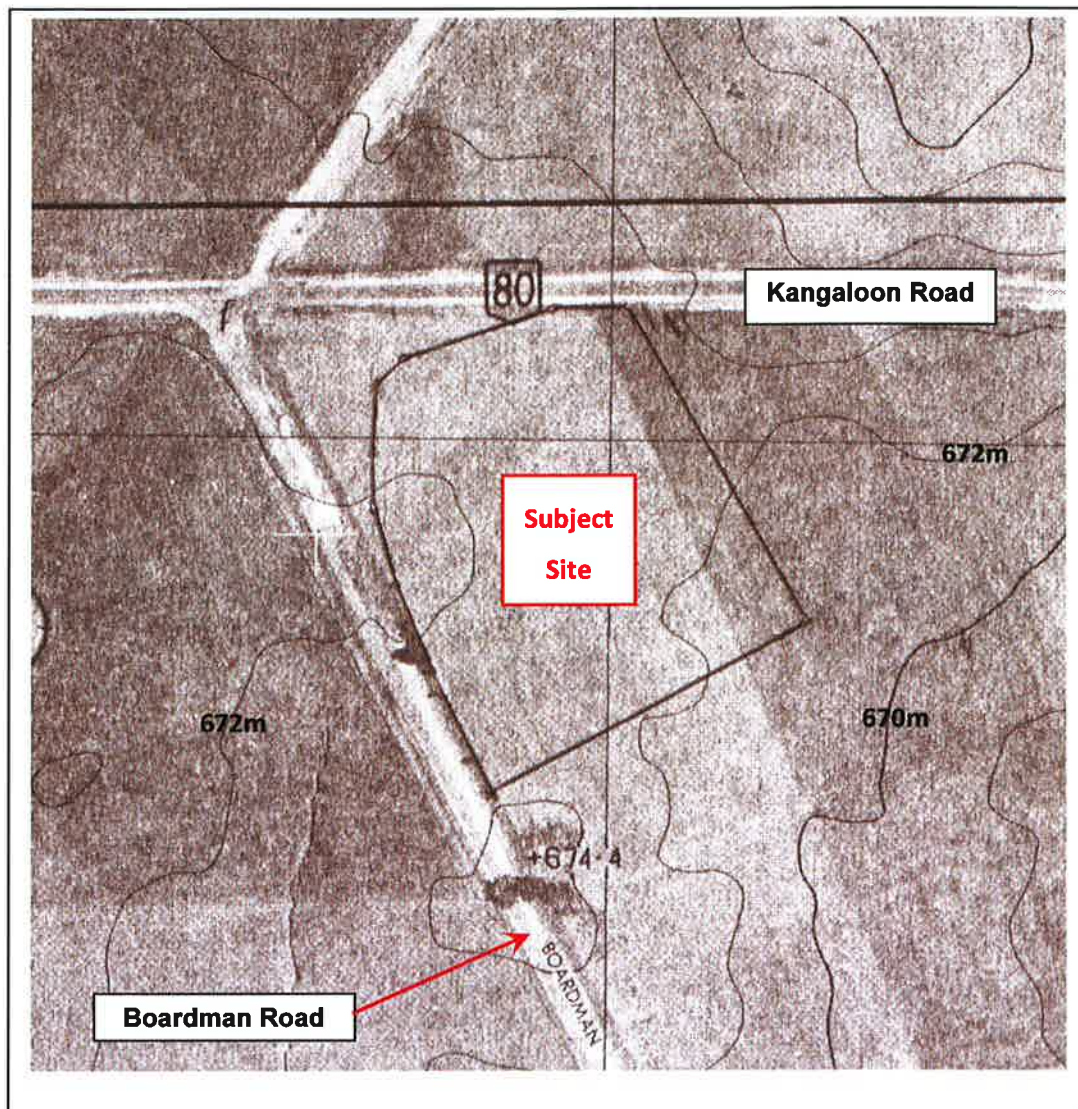
APPENDIX A

**Subject Site
Lot 4, DP1085033
South-Eastern Corner of the
Intersection of
Kangaloon Road & Boardman Road
East Bowral**

EAST BOWRAL NEIGHBOURHOOD LAYOUT



TOPOGRAPHY OF THE SUBJECT SITE



PLAN FORM 2 (APPROVED FORM 3)

Plan Drawing only to appear in this space

SIGNATURES AND SEALS ONLY

COMMON SEAL
MAY 11 2005
A.S.E.
D.C. 103 205

COMMON SEAL
MAY 11 2005
A.S.E.
D.C. 103 205

Department of Lands Approval
I, Robert J. Anderson, in approving this plan certify
that all necessary approvals in regard to the allocation of the land
shown herein have been given.

Signature: _____
Date: _____
Official: _____

Subdivision Certificate
I certify that the provisions of a (100) of the Provisional Planning
and Assessment Act 1978 have been complied with in relation to the
proposed SUBDIVISION of 104 22 66 ha (6604) into 105 lots.

Consent Authority: WINGECARRIBEE COUNCIL
Date of Consent: 15/6/05
Subdivision Certificate No.: 3878/05
Map No.: LUR 1079/04

Subdivision Reference: 104 22 66

Plan Drawing only to appear in this space

104 22 66 ha (6604)

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EB Map



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View looking east-south-east from the Kangaloon Road Frontage



View looking east from the Kangaloon Road Frontage



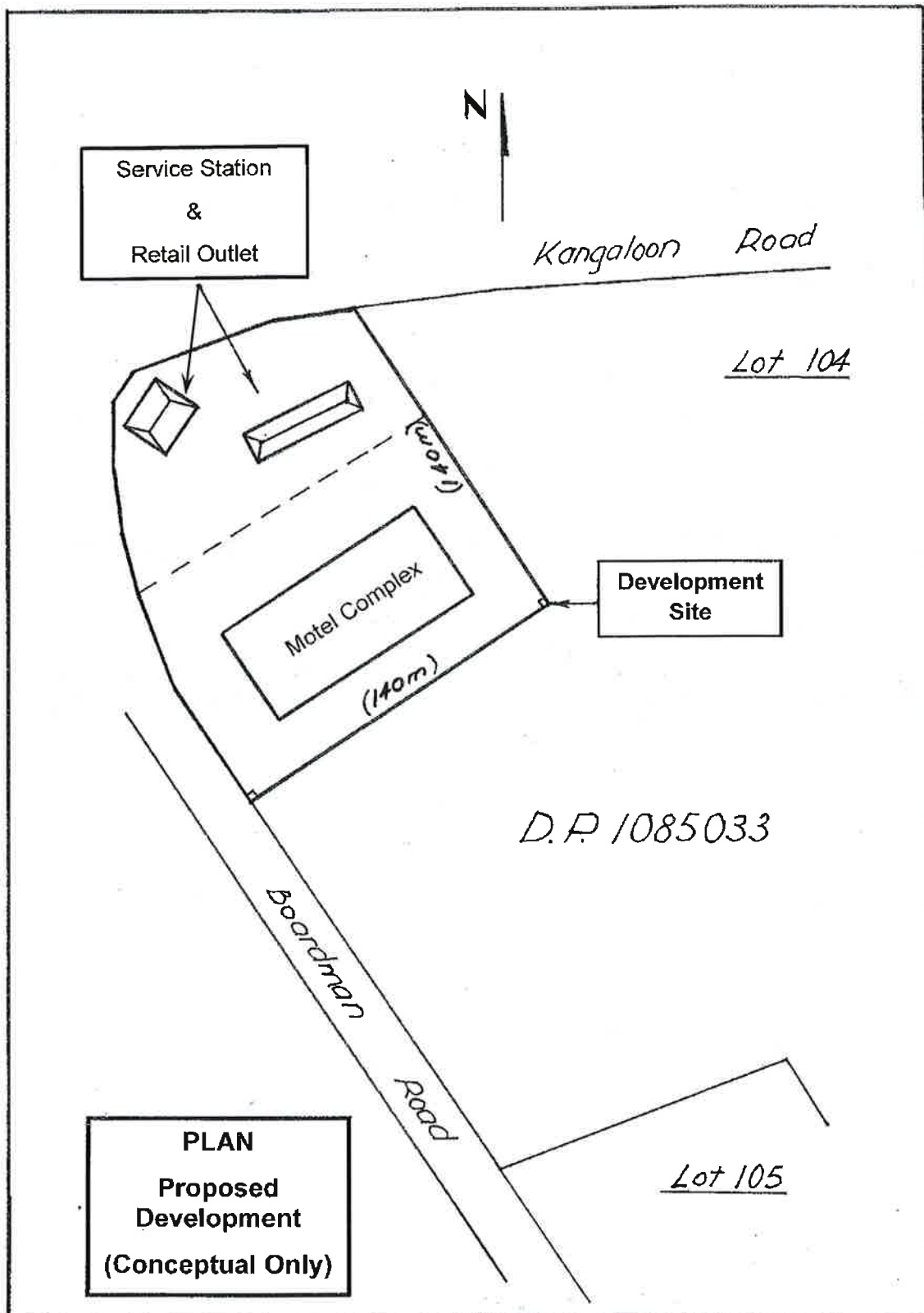
View looking south from the Kangaloon Road Frontage



View looking south-east from the Kangaloon Road Frontage

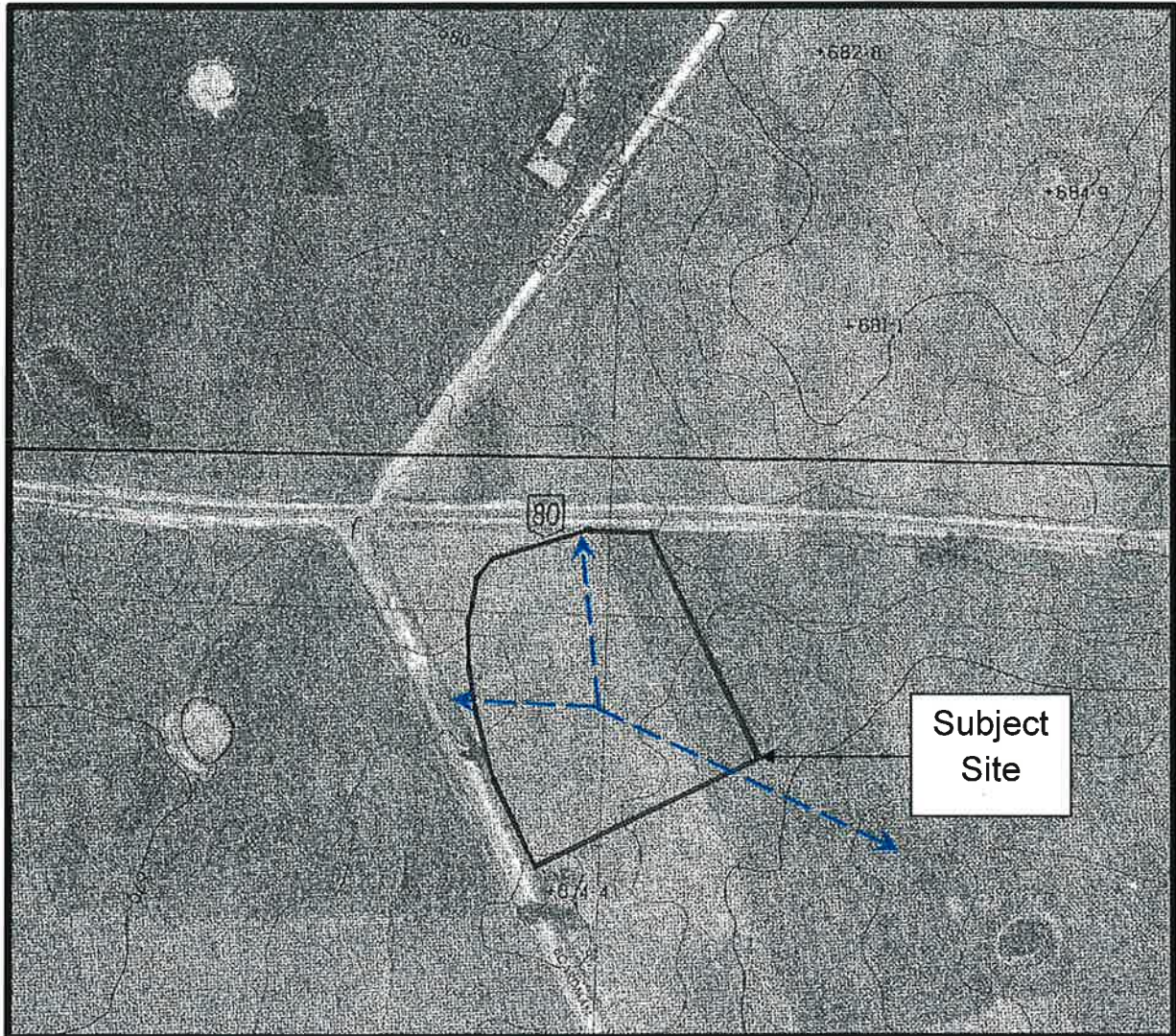
APPENDIX B

Site Plan Showing the schematic layout of the proposed development



APPENDIX C

Engineering Criteria Site Slope & Drainage



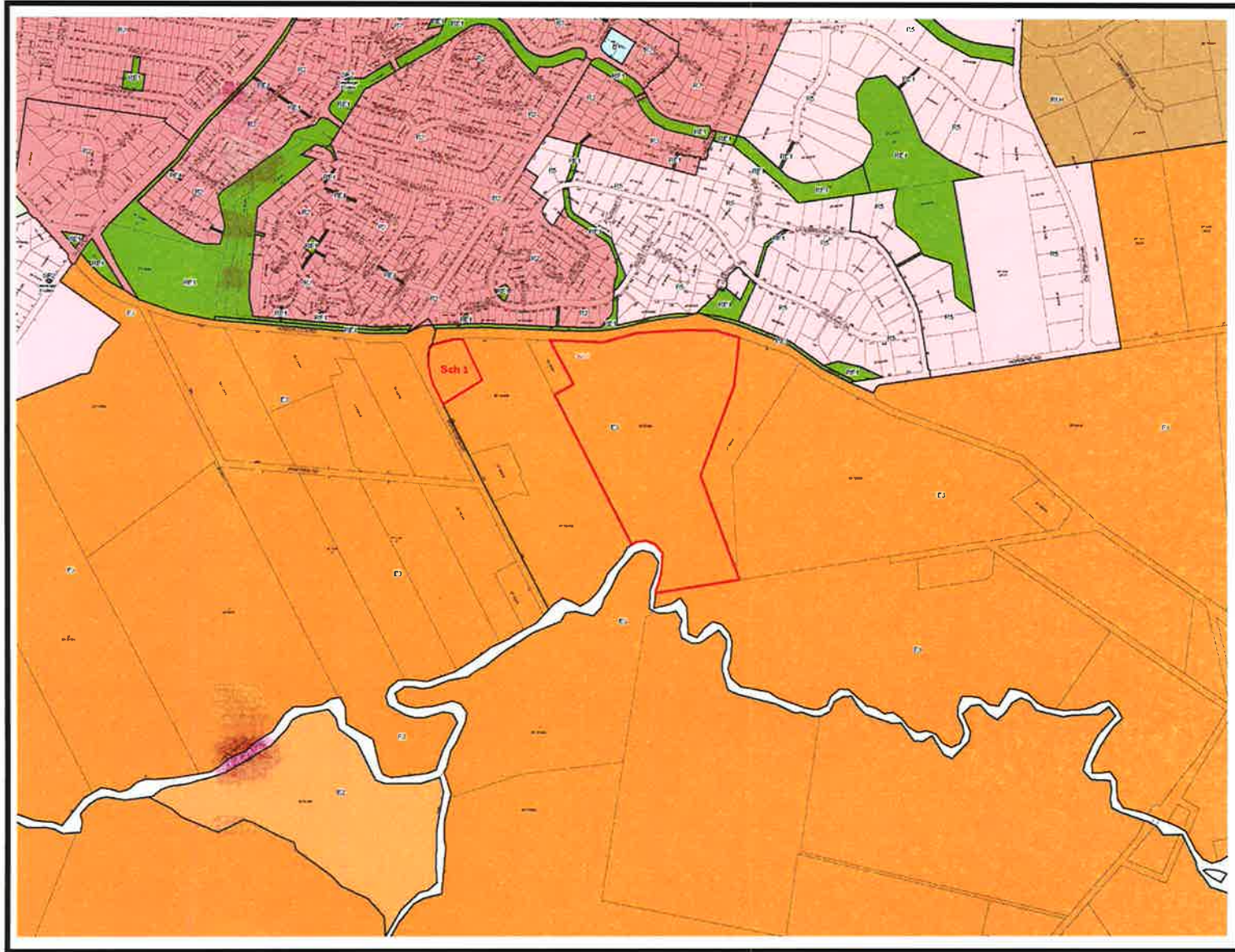
The Subject Site has a minimal slope towards the Wingecarribee River



Direction of Rainfall Runoff

APPENDIX D

**Land Use Map showing proposed amendments to the Land-
Use (Zoning) of the subject site
Part Lot 104, DP1085033**



The subject site will be given a notation of **Sch 1**

APPENDIX E

Soil Investigation Report

**Part Lot 104, DP1085033
Kangaloon Road,
East Bowral**

**Prepared by:
Dr P.A. Hazelton**

PA HAZELTON SOIL SURVEY AND INVESTIGATIONS PTY LTD ABN 5509184062

SOIL INVESTIGATION REPORT

KANGALOO ROAD EAST BOWRAL

Dr PA Hazelton

5/22/2013



Location of Excavated Soil Test Pits on the Subject Site



Photo of Excavation @ Test Pit 1

APPENDIX F

Flora Assessment

Part Lot 104, DP1085033

37 Boardman Road South,

East Bowral

Prepared by: Anne Clements and Associates Pty Limited



ANNE CLEMENTS & ASSOCIATES PTY. LIMITED

(ABN 41 077 242 365, ACN 077-160-939)

Environmental and Botanical Consultants

Office 2, 3 Harbourview Crescent, Milsons Point 2060

PO Box 1623, North Sydney 2059

Phone: (02) 9955 9733, Facsimile: (02) 9957 4343

Email: mail@acabotanic.com

17 May 2013

Flora Assessment:

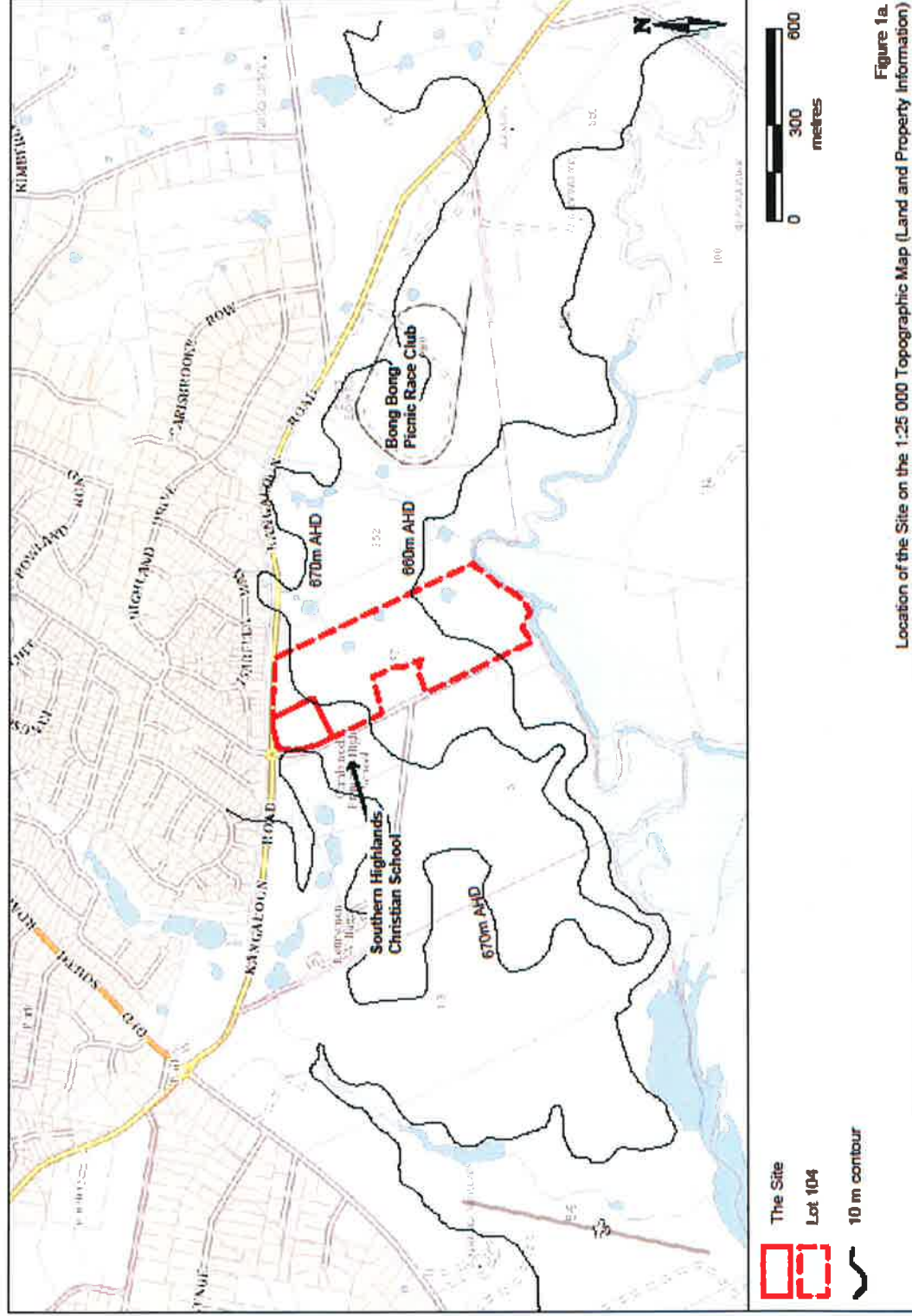
Part of Lot 104, DP 1085033.
37 Boardman Road South, East Bowral.

Prepared by:

Dr Anne Marie Clements
Tony Reed
Dr Anne Baumann

Prepared for:

Mr Peter Lowry
Urban land and Housing
Level 4, 55 Clarence Street,
Sydney. NSW 2000







Aerial View of the Subject Site



Boardman Road Boundary of Lot 104, DP1085033



North-Eastern Corner of Lot 104, DP1085033



Kangaloon Road Boundary of Lot 104, DP1085033

APPENDIX G

**A Report on Traffic and Parking Impacts of a proposed
service station with convenience store and Motel
development
Part Lot 104, DP1085033**

Prepared for ULH

**By:
O.I.Sannikov and R.J.Dunn
TEF CONSULTING**

A REPORT ON
TRAFFIC AND PARKING IMPACTS
OF A PROPOSED SERVICE STATION
WITH A CONVENIENCE STORE
AND MOTEL DEVELOPMENT

AT
Part Lot 102, DP 884438,
BOWRAL

Prepared for
ULH

By
O.I. Samikov and R.J. Dunn
TEF Consulting

16 April 2008

8116 Rep 01.pdf

JOB No.: 8116

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A Division of Queensland & New South Wales consulting Pty. Ltd. A.S.N. 65 682 478 143

AN ADDENDUM REPORT
TRAFFIC AND PARKING IMPACTS OF
A PROPOSED MIXED DEVELOPMENT AT
Part Lot 102, DP 884438, BOWRAL

Property address	Part Lot 102, DP 884438, BOWRAL
Client	ULH
Prepared by	O. Sannikov, MEngSc (Traffic Engineering), MIEAust, PEng, MAITPM
Date	18 June 2013
Job No.	8116
Report No.	8116 Rep 02

Item	Report
Previous assessment	A report prepared by TEF Consulting, dated 16 April 2008
Proposal development	No change compared with the original proposal
Parking impacts	No change compared with the original proposal The site is of sufficient size for parking provision to satisfy Council's requirements
Traffic impacts	The original report assessed operation of the nearest intersection of Kangaloon Road and Boardman Road - Modelling using SIDRA software was carried out - Modelling indicated Level of Service A (good with spare capacity) for both AM and PM peak periods for both the existing and after development scenarios - Possible change since the original assessment – increase in traffic flows in Kangaloon Road - conservative estimate – 5% per year – a total of 34% increase - SIDRA analysis was carried out to assess the spare capacity of the intersection based on 2008 traffic flows. - The results are presented in Figure 1. - The results indicate that the intersection of Kangaloon Road and Boardman Road has between 50% and 500% of spare capacity on its approaches (mostly over 150%). - The likely actual increase in traffic flows is far less than the spare capacity. - Sensitivity analysis was carried out for the overall traffic flow increase and has shown acceptable delays up to 100% increase (refer to Figure 2). - There is no necessity to update the turning volume traffic counts at the critical intersection next to the proposed development – it is a considered professional opinion of the author of this report that the results of the capacity analysis based on the current traffic volumes would show satisfactory operation before and after the proposed development.

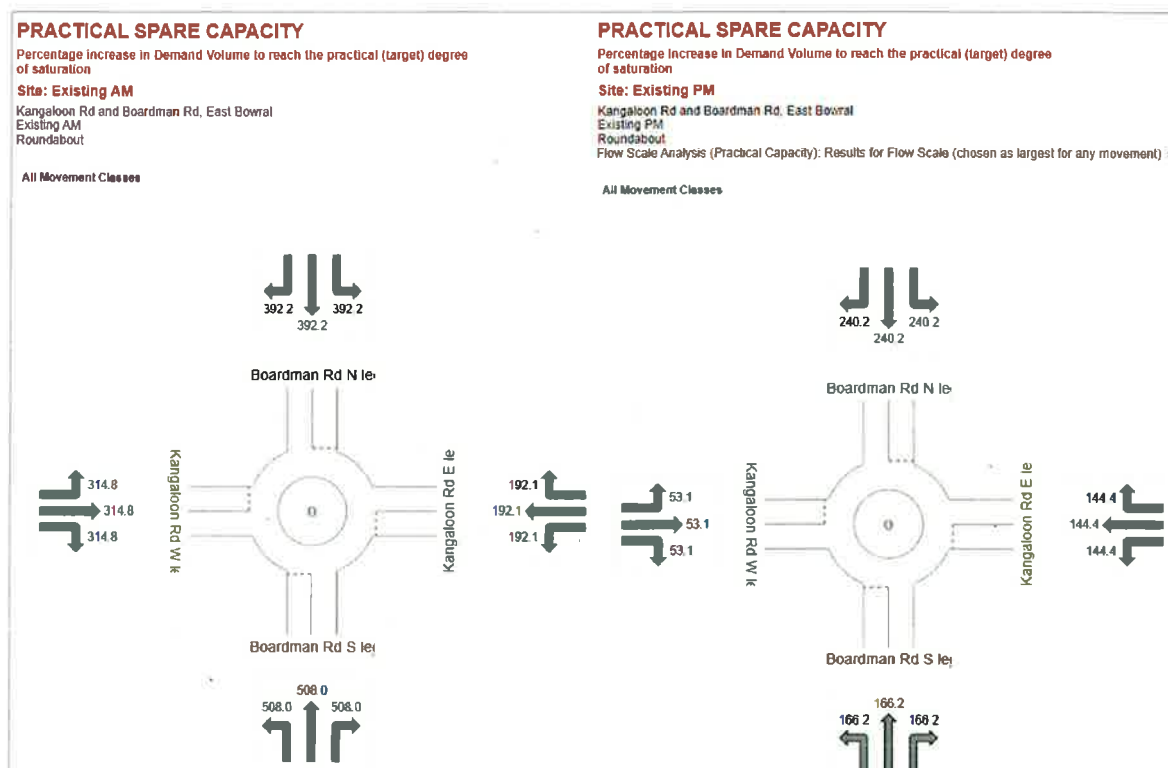


Figure 1. Spare capacity analysis.

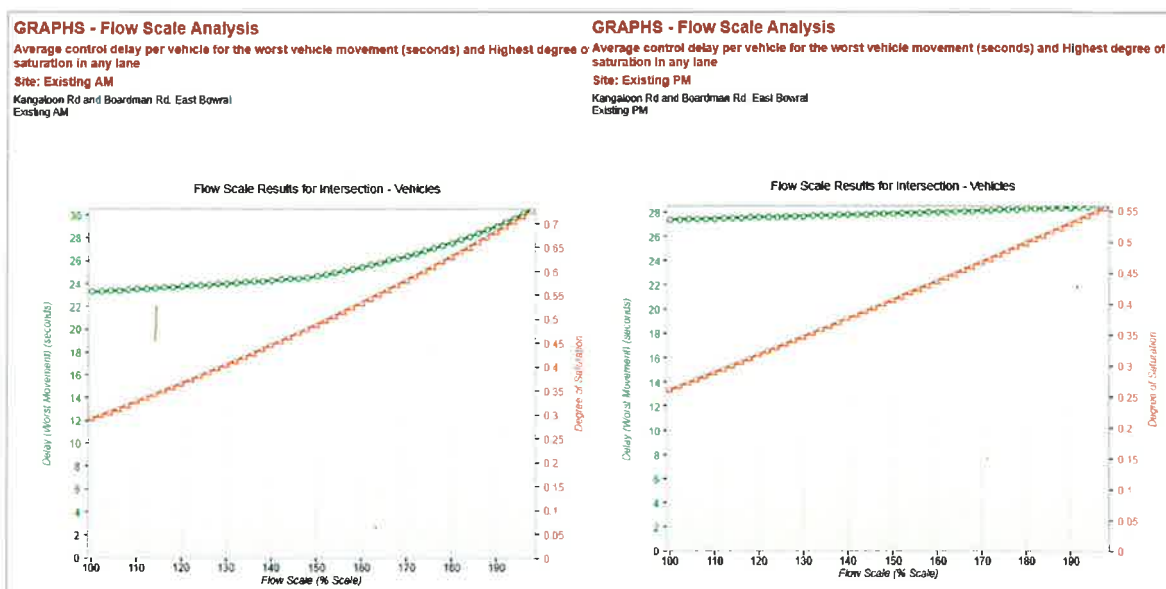


Figure 2. Sensitivity analysis.

APPENDIX H (I)

Provision of Retail Facilities East Bowral (June 1995)

Rhodes Thompson Associates

PLANNING REPORT
PROVISION OF RETAIL FACILITIES
EAST BOWRAL

JUNE 1995

COPYRIGHT: The concepts and information contained within this document is the property of Rhodes Thompson Associates. Use or copying of this document in whole or in part without the written permission of Rhodes Thompson Associates constitutes an infringement of copyright.

APPENDIX H (II)

**Provision of Retail Services
East Bowral
(20 February 1995)**

Rhodes Haskew Associates

20th February 2008

The General Manager

Wingecarribee Shire Council

P.O Box 141

Moss Vale 2577

Dear Sir,

Provision of Retail Services – East Bowral

In June 1995 I prepared, on behalf of Council, a report in assessment of the provision of retail services for the then developing residential area of East Bowral, being the area north of Kangaloon Road and east of (the Old South Road). The need for the review of the then planning controls flowed from Council's decision to rezone and dispose of the land originally planned for a retail centre located in the north western corner of the residential release. This land had originally been zoned (in 1986) Business 3(a) and was intended to provide for the retail needs of new residents of the release. Council's decision to rezone and sell the land was at the instigation of the adjoining major landowner (Redford Park) to the north and outside the boundaries of the release area. The Council's decision did not, therefore, reflect a determination that land for retail facilities was not required.

I have been asked to provide an update of that report as part of a submission to lodged in to the Draft WLEP now on exhibition. In this regard I provide the following:

The locational characteristics of the originally zoned retail site were: -

- It was located at the edge of the release.
- It had extended frontage to the main road system;
- It had the potential to attract trade from the East Bowral Release, as well as, the adjoining population and importantly passing trade along the main road system including tourist trade.

It was my view then, and it remains my view, that the preferred location for retail uses was the site originally zoned for that purpose. Absent that location the two remaining options were: -

- A main road frontage site either along the southern section of Old South Road or along Kangaloon Road up to its intersection with Boardman Lane;
- A release area internal site along the collector road system adjacent to other trade attracting community facilities.

With respect to main road frontage locations I determined that the preferred location would be a site on the corner of Kangaloon Road and Boardman Lane.

With respect to a release area internal location I determined that a site adjoining other community facilities (community uses and active recreation areas) capable of attracting release area external trade was an option. It should be noted here that the success of an internal site was dependant on other uses capable of attracting external trade to the retail centre as the viability of a centre in isolation was questioned.

The internal option was pursued with the site in isolation and unfortunately my concerns as to viability have been confirmed to the extent that the area is not now provided with retail uses capable of providing for the daily and limited weekly needs of local residents. That situation does not suggest a lack of need, but rather economic reality in that a reasonable level of retail services in this situation can only be provided if there is an existing additional trade catchment (main road passing trade) or additional created trade catchment generated from other community facilities that attract trade in themselves.

The East Bowral Release Area is now effectively developed and there is no real likelihood that retail uses can be provided internal to the release. However, given that the anticipated residential population has been achieved the need for local retail facilities remains, I am of the view that the main road frontage option identified in my report i.e. Kangaloon Road/Boardman Lane intersection should be considered. I further note that the subject land benefits not only from main road exposure, but also from the additional 'created trade' associated with the western adjoining Southern Highlands Christian School (a sizeable facility catering kindergarten to Year 12). I consider that detailed investigation into the innate retailing opportunities of the site to be appropriate and would recommend such action as part of the LEP review.

Should you have any enquiries please contact myself on 0418645978 or email grhodes@iprimus.com.au.

Yours faithfully,

Gary Rhodes

Consulting Town Planner

APPENDIX I

Preliminary Noise Survey Lot 104, DP1085033

By:
Ken Halstead
ME(Hons), BE(Hons), Dip.Tech.Eng.,
LGE, LGT&CP, FIPWEA

Date:
Friday 14 June 2013
&
Wednesday 19 June 2013

NOISE SURVEY

Northern Boundary of Lot 104, DP 1085033,

Kangaloon Road, East Bowral.

(Friday 14 June 2013)

Time: 3.11-3.26pm (15 Minute)

Noise Measurement	Noise Level dB(A)
LA_{eq}	71.2
LC_{peak}	103.7
LAF₉₀ (Background Noise level)	47.4
LAF_{Max}	85.4

Time: 3.27-3.42pm (15 Minute)

Noise Measurement	Noise Level dB(A)
LA_{eq}	71.0
LC_{peak}	110.1
LAF₉₀ (Background Noise level)	46.0
LAF_{Max}	88.3

Equipment used: Bruel & Kjaer Hand Held Analyser - Type 2270

Serial No. 2706883. Made in Denmark.

NOISE SURVEY

Location at the site of the proposed motel complex

On Part Lot 104, DP1085033

Noise level measured facing Boardman Road

Boundary of Lot 104, DP 1085033,

(Friday 21 June 2013)

Time: 8.00-8.15am (15 Minutes)

Noise Measurement	Noise Level dB(A)
LA_{eq}	54.9
LC_{peak}	97.8
LAF₉₀ (Background Noise level)	44.5
LAF_{Max}	79.6

Equipment used: Bruel & Kjaer Hand Held Analyser - Type 2270

Serial No. 2706883. Made in Denmark.

NOISE SURVEY

Location at the site of the proposed motel complex

On Part Lot 104, DP1085033

Noise level measured facing Boardman Road

Boundary of Lot 104, DP 1085033,

(Friday 21 June 2013)

Time: 8.15-8.30am (15 Minutes)

Noise Measurement	Noise Level dB(A)
LA_{eq}	55.6
LC_{peak}	94.2
LAF₉₀ (Background Noise level)	48.4
LAF_{Max}	76.3

Equipment used: Bruel & Kjaer Hand Held Analyser - Type 2270

Serial No. 2706883. Made in Denmark.

NOISE SURVEY

Location at the site of the proposed motel complex

On Part Lot 104, DP1085033

Noise level measured facing Boardman Road

Boundary of Lot 104, DP 1085033,

(Friday 21 June 2013)

Time: 8.30-8.45am (15 Minutes)

Noise Measurement	Noise Level dB(A)
LA_{eq}	59.2
LC_{peak}	94.2
LAF₉₀ (Background Noise level)	48.4
LAF_{Max}	76.3

Equipment used: Bruel & Kjaer Hand Held Analyser - Type 2270

Serial No. 2706883. Made in Denmark.

NOISE SURVEY

Location at the site of the proposed motel complex

On Part Lot 104, DP1085033

Noise level measured facing Boardman Road

Boundary of Lot 104, DP 1085033,

(Friday 21 June 2013)

Time: 8.45-89.00am (15 Minutes)

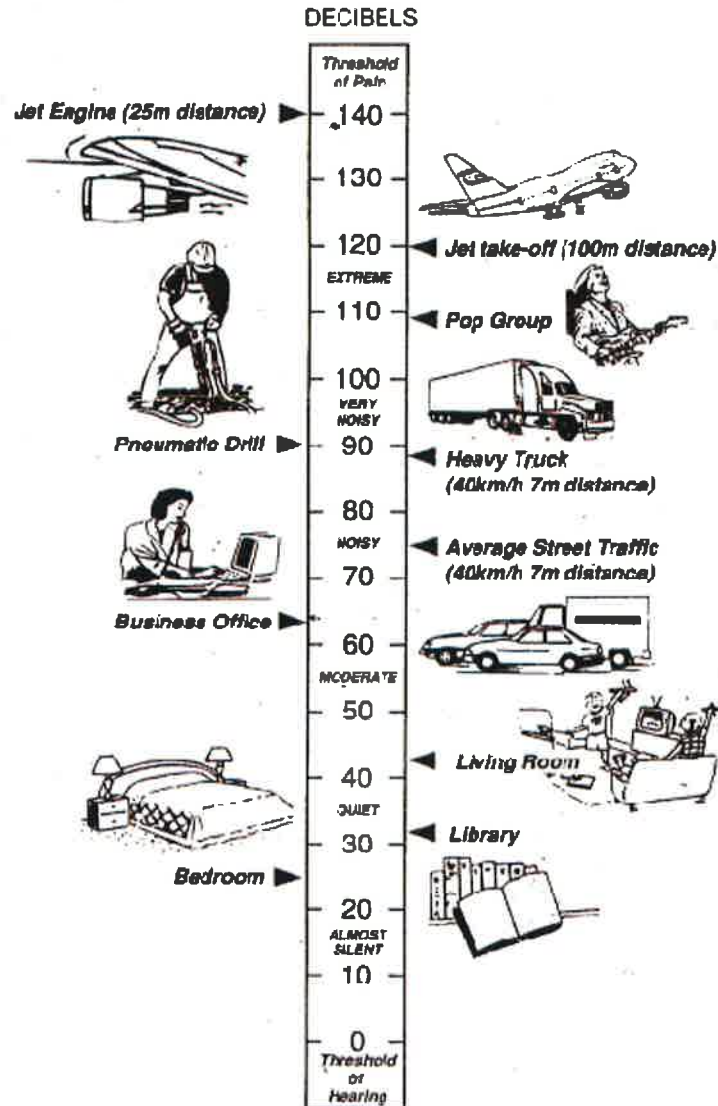
Noise Measurement	Noise Level dB(A)
LA_{eq}	56.6
LC_{peak}	104.1
LAF₉₀ (Background Noise level)	43.3
LAF_{Max}	79.9

Equipment used: Bruel & Kjaer Hand Held Analyser - Type 2270

Serial No. 2706883. Made in Denmark.

The Level of Common Sounds

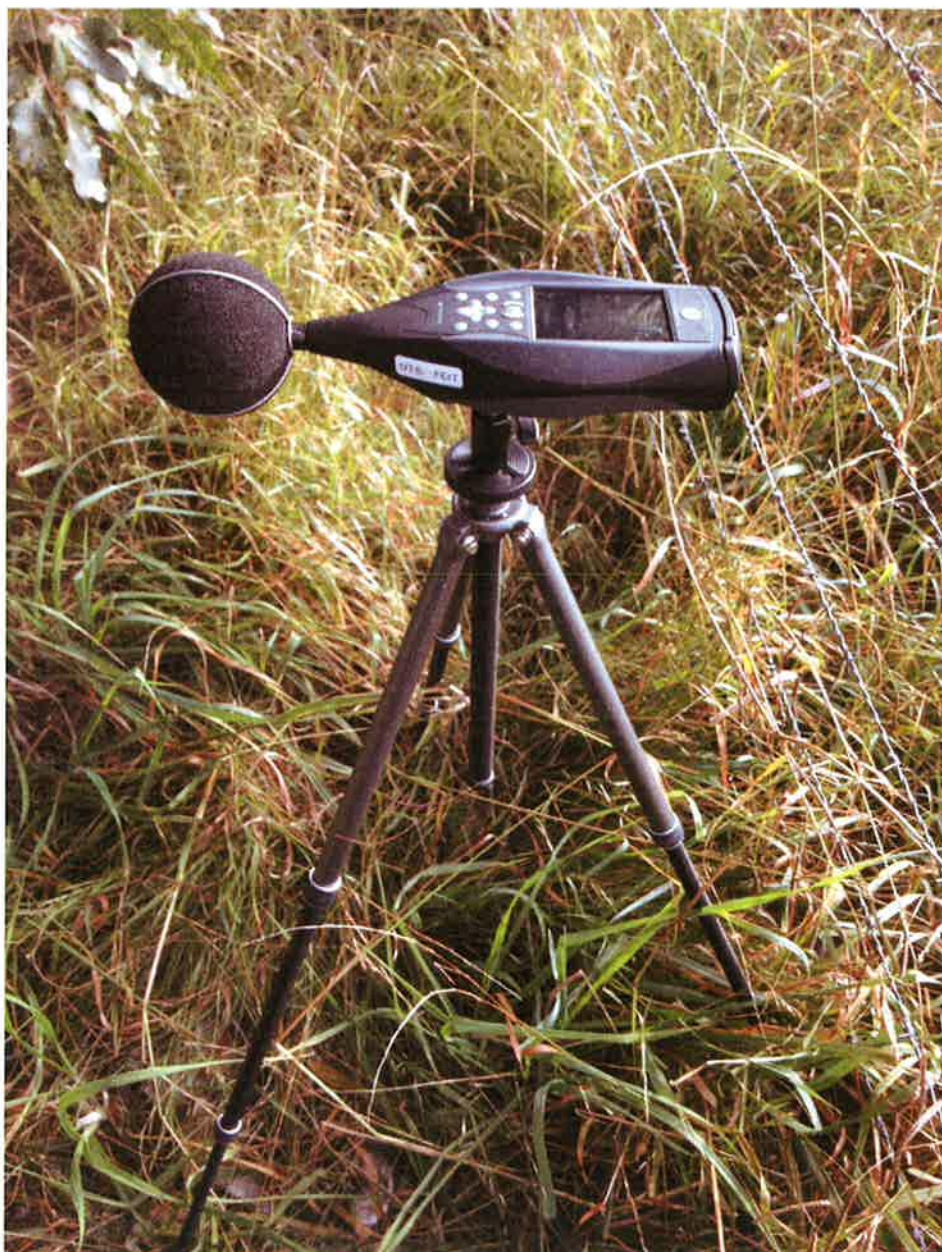
Indicative noise levels in typical situations



NOISE LEVEL METER



Brüel & Kjær Hand Held Analyser - Type 2270



Measuring Noise Levels Friday 21 June 2013

APPENDIX J

Needs Survey

East Bowral, South-East Bowral and South Bowral

Conducted by:

Urban Land and Housing Group

Date:

10 September 2010

Urban Land & Housing Group - Survey									
Results at 10 Sept, 2010									
Service	East Bowral		South East Bowral		South Bowral		TOTALS		
Letterbox Drops	1,168		763		746		2,677		
Surveys Returned	378	32.4%	49	6.4%	81	10.9%	508	19.0%	
No. Of Residents	807		106		155		1,068		Priority
Newsagency	711	88.1%	92	86.8%	125	80.6%	928	86.9%	1
Parking	642	79.6%	98	92.5%	128	82.6%	868	81.3%	2
Supermarket	636	78.8%	84	79.2%	129	83.2%	849	79.5%	3
Pharmacy	569	70.5%	62	58.5%	123	79.4%	754	70.6%	4
Postal Services	567	70.3%	73	68.9%	105	67.7%	745	69.8%	5
Banks	504	62.5%	81	76.4%	102	65.8%	687	64.3%	6
Coffee Shop	499	61.8%	67	63.2%	97	62.6%	663	62.1%	7
Service Station	448	55.5%	74	69.8%	106	68.4%	628	58.8%	8
Take-away Food	467	57.9%	57	53.8%	64	41.3%	588	55.1%	9
Medical Centre	380	47.1%	43	40.6%	80	51.6%	503	47.1%	10
Motel/Restaurant	114	14.1%	18	17.0%	27	17.4%	159	23.1%	11
Hairdresser	234	29.0%	25	23.6%	49	31.6%	308	33.2%	12
Gymnasium	142	17.6%	19	17.9%	27	17.4%	188	20.3%	13
Child Care	119	14.7%	20	18.9%	35	22.6%	174	18.8%	14
Bookshop	118	14.6%	21	19.8%	24	15.5%	163	17.6%	15
Centrelink	72	8.9%	15	14.2%	17	11.0%	104	9.7%	16

**2010 Community Survey-East Bowral Shopping Village.
Have Your Say by 10th of SEPTEMBER, 2010**

When planning the residential development, known as East Bowral, it was recognised that more localised services would ultimately be required. This survey is designed to identify the services residents consider essential. Simply mark "X" in the boxes below to indicate those services you would want in a local shopping village. One of the locations being considered is the south-east corner of Kengabon-Boardman Rds.

All respondents to this survey, who include their contact details, are automatically entered in the lucky draw for the chance to win a "\$200 Fuel Voucher

- | | | | | |
|--|--|---|--|---|
| ☐ Ample Parking | ☐ Take-away Food | ☐ Motel/Restaurant | ☐ Centrelink | ☐ Bookshop |
| ☐ Supermarket | ☐ Coffee Shop | ☐ Medical Centre | ☐ Child care center | ☐ OTHER..... |
| ☐ Service Station | ☐ Banks/ATM | ☐ Pharmacy | ☐ Hairdresser | |
| ☐ Newsagency | ☐ Postal Services | ☐ Centrelink | ☐ Gymnasium | ☐ Number of adults in your household |

Address:..... Town:..... Post Code:.....

Name:(optional)*..... Tel: (optional)*.....

Email: (optional)*.....

*Entry for the draw for a chance for one person to win a \$200 Fuel Voucher is subject to contact details being provided.

This survey is the initiative of Urban Land and Housing Group Pty Ltd, PO Box 576, Bowral, NSW 2576. Web: www.ulh.com.au
Winners name will be published in Southern Highlands News, Public Notices section, 18th September 2010.

Survey Forms provided

Delivery Address:
PO Box 576
BOWRAL NSW 2576

**No stamp required
if posted in Australia**



**Urban Land & Housing
Community Survey
Reply Paid 576
BOWRAL NSW 2576**

APPENDIX K

Record of Pre-Lodgment Meeting

**Held at:
Wingecarribee Shire Council**

**Present:
Mr. Mark Pepping
Strategic and Assets Manager
Wingecarribee Shire Council
&
Ken Halstead
AE&D Consulting**

**Date:
(Friday 31 May 2013)**

MEETING HELD ON FRIDAY 31 MAY 2013

@ Wingecarribee Shire Council

Re: Planning Proposal on Part Lot 104, DP 1085033.

South-Eastern Corner of Kangaloon Road and Boardman Road, East Bowral.

Present: Mr. Mark Pepping (Strategic and Assets Manager) Wingecarribee Shire Council and Mr. Ken Halstead (on behalf of AED Consulting for Urban Land & Housing).

Issues listed that were duly discussed:

1. Reports recently obtained for the 'Planning Proposal', namely:
 - a. Soil Investigation Report (Dr. Pam Hazelton).
 - b. Flora Assessment Report (Anne Clements & Associates Pty. Limited).
2. Previous reports to be re-submitted:
 - a. Traffic and Parking Impacts (TEF Consulting) – with update statement.
3. Previous Reports to be relied upon:
 - a. Provision of Retail Facilities - East Bowral, Rhodes Thompson Associates, June 1995.
 - b. Provision of Retail Services - East Bowral, Rhodes Haskew Associates (Update on 1995 Report) 20 February 2008.
4. LEP Plan Making process, including a review of the Department of Planning and Infrastructure publication 'A Guide to Preparing Planning Proposals'.
 - a. It was agreed that this meeting would satisfy the requirements of the statement in the publication, namely: *"It is recommended that proponents and RPA's work together to agree on the range and scope of information necessary. This is best done via a pre-lodgement meeting"*.
 - b. In this case the Relevant Planning Authority is the Wingecarribee Shire Council.
5. Gateway Review process: A brief discussion was undertaken on this process.
6. 2010 Community Survey – East Bowral Shopping Village (Urban Land and Housing Group Pty Ltd).
 - a. This survey was undertaken by letterbox drop of 2,677 residents in East Bowral, South-East Bowral and South Bowral.
 - b. It was agreed that a 19% response rate (508) was above that normally expected.
7. Gantt Chart for the subject Planning Proposal: The estimated 'Timeline' was discussed.
8. It was agreed that selected Heritage style Motels operating in NSW would be inspected by AED Consulting, prior to deliberating upon an architectural style adopted for the Motel component of the 'Planning Proposal' for the subject site (part Lot 104, DP1085033).
9. It was agreed that some form of 'perspective' drawings (maybe architectural) should be included in the Planning Proposal.

APPENDIX L

Wingecarribee Local Environmental Plan 2010

Land Use Table (Zone E3 Environmental Management) & Dictionary (Part)

LAND USE TABLE

Zone E3 Environmental Management

1 Objectives of zone

- To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.
- To provide for a limited range of development that does not have an adverse effect on those values.
- To encourage the retention of the remaining evidence of significant historic and social values expressed in existing landscape and land use patterns.
- To minimise the proliferation of buildings and other structures in these sensitive landscape areas.
- To provide for a restricted range of development and land use activities that provide for rural settlement, sustainable agriculture, other types of economic and employment development, recreation and community amenity in identified drinking water catchment areas.
- To protect significant agricultural resources (soil, water and vegetation) in recognition of their value to Wingecarribee's longer term economic sustainability.

2 Permitted without consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations

3 Permitted with consent

Airstrips; Aquaculture; Bed and breakfast accommodation; Community facilities; Dairies (pasture-based); Dual occupancies (attached); Dwelling houses; Environmental facilities; Farm buildings; Farm stay accommodation; Flood mitigation works; Health consulting rooms; Helipads; Home businesses; Horticulture; Information and education facilities; Places of public worship; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Secondary dwellings; Signage; Viticulture; Water storage facilities

4 Prohibited

Industries; Multi dwelling housing; Residential flat buildings; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

DICTIONARY

"food and drink premises" means premises that are used for the preparation and retail sale of food or drink (or both) for immediate consumption on or off the premises, and includes any of the following:

- (a) a restaurant or cafe,
- (b) take away food and drink premises,
- (c) a pub.

Food and drink premises are a type of **"retail premises"** --see the definition of that term in this Dictionary.

"highway service centre" means a building or place used to provide refreshments and vehicle services to highway users. It may include any one or more of the following:

- (a) a restaurant or cafe,
- (b) take away food and drink premises,
- (c) service stations and facilities for emergency vehicle towing and repairs,
- (d) parking for vehicles,
- (e) rest areas and public amenities.

"hotel or motel accommodation" means a building or place (whether or not licensed premises under the *Liquor Act 2007*) that provides temporary or short-term accommodation on a commercial basis and that:

- (a) comprises rooms or self-contained suites, and
- (b) may provide meals to guests or the general public and facilities for the parking of guests' vehicles,

but does not include backpackers' accommodation, a boarding house, bed and breakfast accommodation or farm stay accommodation.

Hotel or motel accommodation is a type of **"tourist and visitor accommodation"** --see the definition of that term in this Dictionary.

"service station" means a building or place used for the sale by retail of fuels and lubricants for motor vehicles, whether or not the building or place is also used for any one or more of the following:

- (a) the ancillary sale by retail of spare parts and accessories for motor vehicles,
- (b) the cleaning of motor vehicles,
- (c) installation of accessories,
- (d) inspecting, repairing and servicing of motor vehicles (other than body building, panel beating, spray painting, or chassis restoration),
- (e) the ancillary retail selling or hiring of general merchandise or services or both.

APPENDIX M

Heritage Style Buildings Service Station & Associated Retail Facilities (Examples Only)



Heritage Architecture Type 1



Heritage Architecture Type 2



Heritage Architecture Type 3



Heritage Architecture Type 4

APPENDIX N

**Heritage Style Buildings
Motel Complex
30 Units
(Examples Only)**



Motel Units



Motel Units



Building containing a restaurant



Building containing a heated swimming pool

APPENDIX O

Land Owner's Authorization

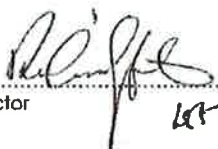
12 Bellevue Gardens.
Bellevue Hill.
NSW. 2023.

I hereby authorise Peter Lowry to make a planning proposal to Wingecaribbee Shire Council in respect of

Part Lot 104 DP 1085033

on the behalf of

Matife Pty Limited


Director
And 15 July, 2013

Clewer Nominees Pty Ltd


Director
July 1, 2013.

**A TRAFFIC AND PARKING
IMPACT ASSESSMENT
FOR THE PLANNING PROPOSAL -
A SERVICE STATION AND A MOTEL
ON
LOT 104 DP 1085033,
KANGALOO ROAD
EAST BOWRAL**

Prepared for
Urban Land & Housing

By
O.I. Sannikov
TEF Consulting

Report Document Control

<i>Title</i>	A TRAFFIC AND PARKING IMPACT ASSESSMENT FOR THE PLANNING PROPOSAL - A SERVICE STATION AND A MOTEL ON LOT 104 DP 1085033, KANGALOOON ROAD EAST BOWRAL
<i>Date</i>	11 December 2013
<i>Author(s)</i>	O.I. Sannikov
<i>Client</i>	Urban Land & Housing
<i>Job No.</i>	13049
<i>Quality Control Reviewer</i>	S.E. Samuels
<i>Keywords</i>	Traffic/ parking/ impact/ service station/ convenience store/ motel/ Kangaloon Road/ Boardman Road/ East Bowral
<i>Disclaimer</i>	This report is believed to be true and correct at the time of writing. It is based on the information and data provided by the client and other relevant organisations during preparation. TEF Consulting does not accept any contractual, tortuous or other form of liability for any consequences arising from its use. People using the information in the report should apply and rely on their own skill and judgement to a particular issue they are considering.

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1 INTRODUCTION

Report title	A traffic and parking impact assessment for the planning proposal - a service station and a motel on Lot 104 DP 1085033, Kangaloon Road East Bowral
Client	Urban Land & Housing (ULH)
Background information used for preparation of the present report	- indicative plans of the proposed development prepared by ULH - previous report for the same proposal prepared by TEF Consulting in 2008 - comments on the original proposal provided by NSW Roads & Maritime Services (RMS) in a letter dated 6 November 2013 (refer to Appendix A) - traffic, parking and other relevant information collected by TEF Consulting at and near the development site - information collected by TEF Consulting at similar facilities previously - other documentation - refer to Section 6 References of the present report.

2 EXISTING TRAFFIC AND PARKING SITUATION

2.1 Site description

Site location	Street address	LOT 104 DP 1085033, Kangaloon Road, East Bowral
Existing land use	• Development site • Surrounding land uses	• Refer to Figure 1. • Vacant land • Low density residential to the north • Mostly rural to the east west and south • A school is located on the western side of Boardman Road some 150 to 250 m south of its intersection with Boardman Road.
Existing site access	• No vehicular or pedestrian access provided at present.	

2.2 Traffic conditions

Existing conditions	• Refer to Figure 2. • Frontage roads ◦ Kangaloon Road ▪ Classified road - State Road 261 under the control of RMS NSW ▪ 70 km/h speed limit • 80 km/h to the east of the site • 40 km/h during school drop off and pick up hours ▪ One lane in each direction of travel with narrow shoulders ▪ No parking opportunities ◦ Boardman Road ▪ Local road ▪ “No through” road; ends near Wingecarribee River some 900 m south of the roundabout with Kangaloon Road ▪ 60 km/h speed limit • 40 km/h during school drop off and pick up hours ▪ One lane in each direction of travel with unformed gravel & grass verges ▪ No parking opportunities (although vehicles can over and park on the verges)
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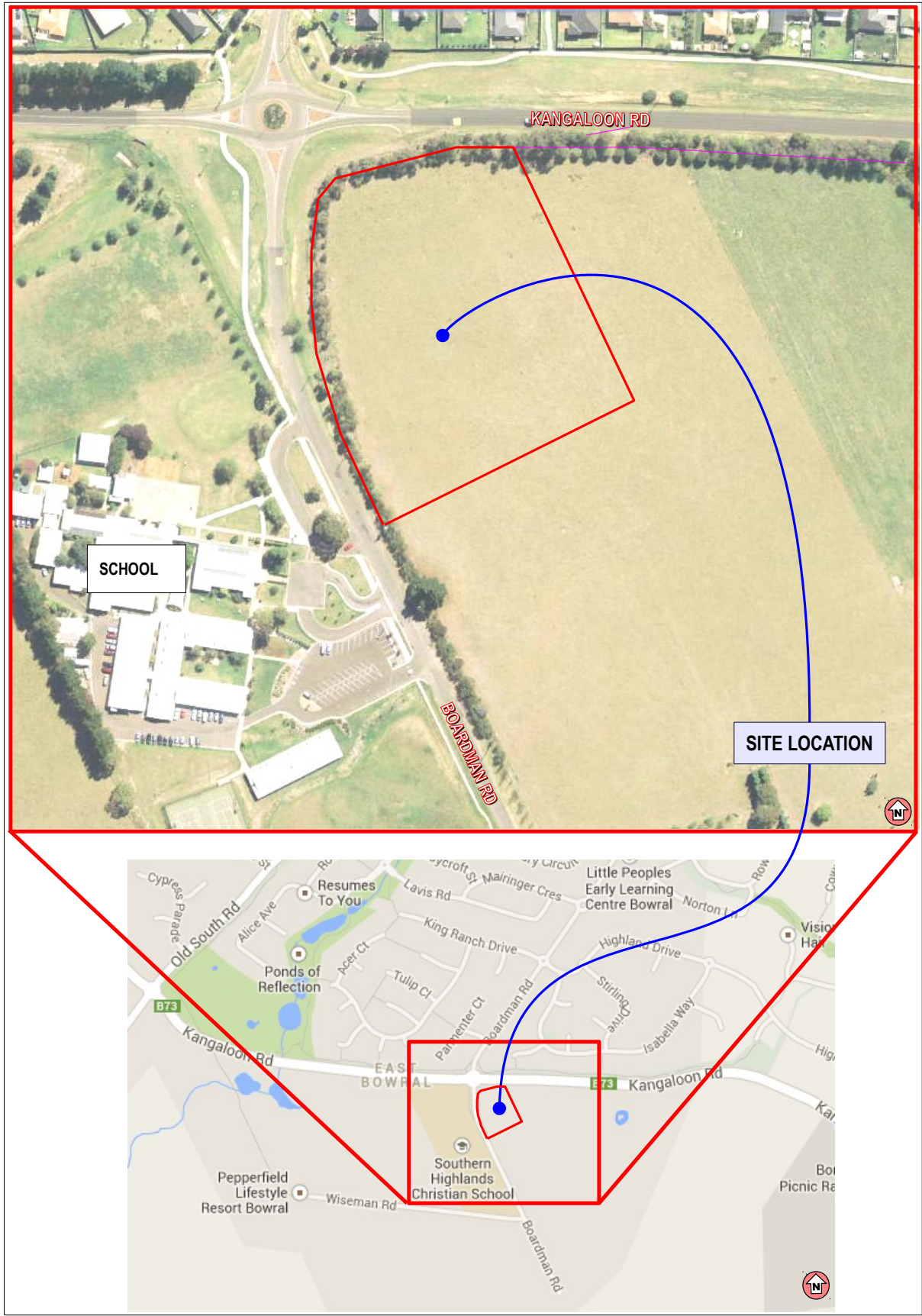


Figure 1. Site location.

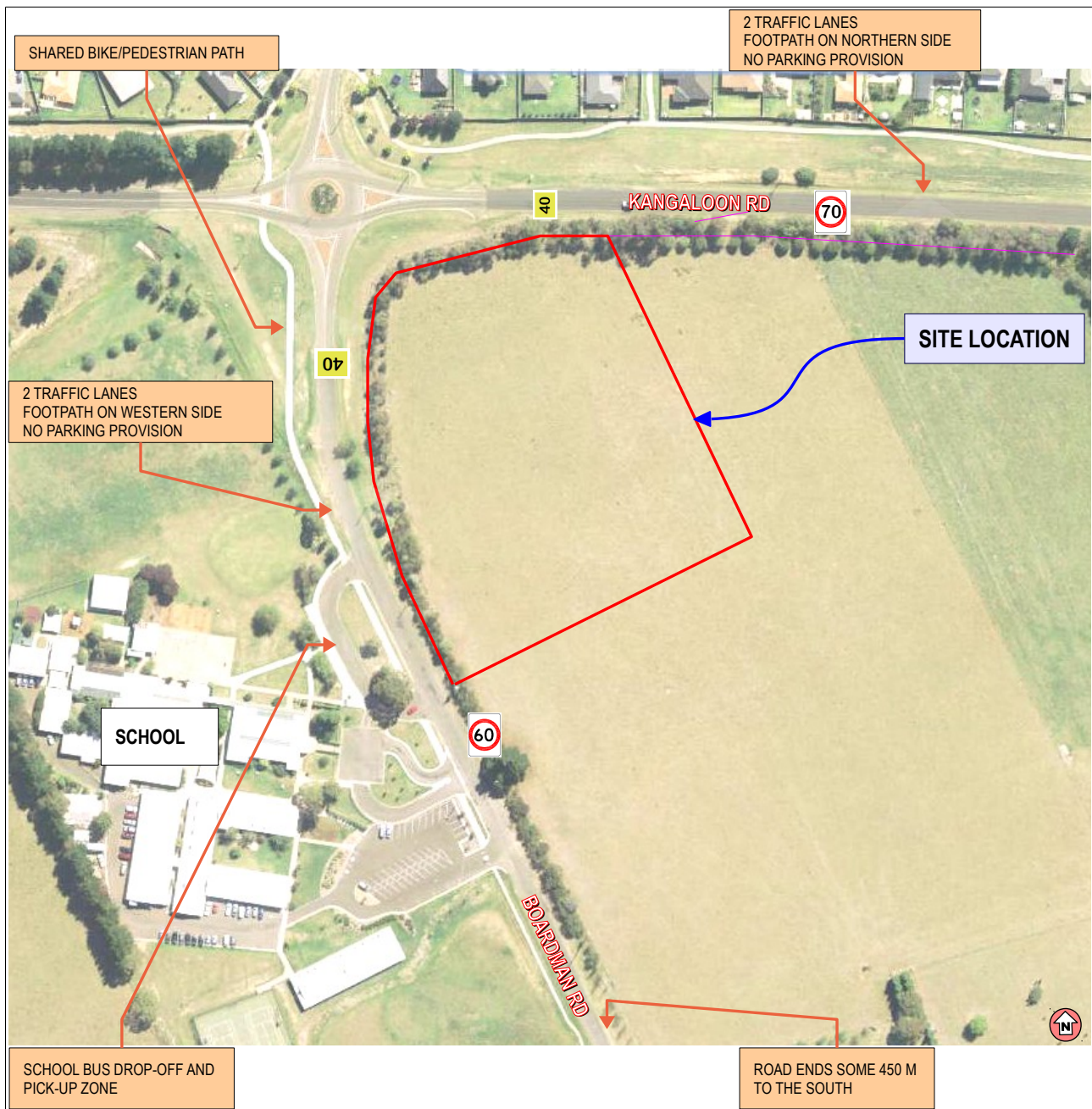


Figure 2. Existing traffic conditions.

**Existing conditions
(continued)**

- Key intersection
 - Kangaloon Road / Boardman Road
 - On the corner of the development site
 - Roundabout
 - Central island diameter -16 metres
 - Single 7-8 metre wide circulation lane (suitable for articulated vehicles)
 - Splitter islands on each approach

Intersection traffic volume counts

Location	Kangaloon Road / Boardman Road
Dates / Days of the week	Tuesday 27 November 2013 (afternoon) Wednesday 28 November 2013 (morning)
Time period (AM)	07:30 to 10:30 peak hour occurred between 08:00 and 09:00
Time period (PM)	14:00 to 18:30 peak hour occurred between 15:00 and 16:00
- Refer to Figure 3. - Refer to Appendix B for detailed results.	

Intersection operation

- | | |
|-----------------------|---|
| • Modelling software | • SIDRA Intersection 6.0 Plus |
| • Result of modelling | • Shows good operation (Level of Service B) for both AM and PM peak hours |
| | • Refer to Table 2.1 |
- results of modelling of the intersection operation are included in **Appendix B** to the present report

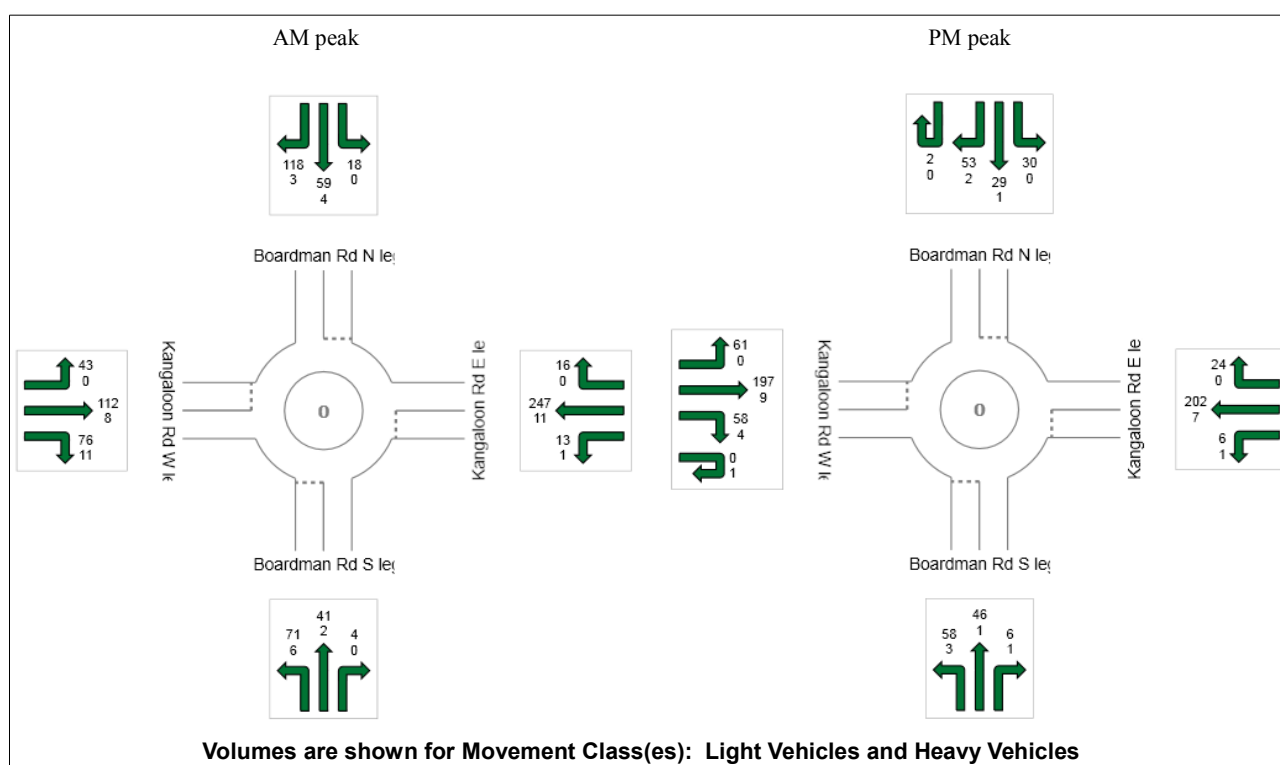
**Figure 3. Existing peak hour traffic volumes.**

Table 2.1. Results of intersection operation modelling – existing conditions.

	AM							PM						
	AVD	LOS	DS	Queue	Movement			AVD	LOS	DS	Queue	Movement		
Kangaloon Rd / Boardman Rd Existing	15.2	B	0.29	12.7	KR	WB	T	15.4	B	0.26	11.7	KR	EB	T

Legend:

		EB	Eastbound
KR	Kangaloon Rd	WB	Westbound
BR	Boardman Rd	NB	Northbound
		SB	Southbound
T	Through movement	AVD	Average delay, sec
R	Right hand turn	LOS	Level of Service
L	Left hand turn	DS	Degree of saturation
		Queue	85th %-ile, metres

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout
A	< 14	Good operation
B	15 to 28	Good with acceptable delays & spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity; at signals, incidents will cause excessive delays; Roundabouts

2.3 Car parking provision and demand

Off-street parking provision

- The site is not yet developed

On-street parking provision

- No parking provision exists
- No kerbs provided, parking is only possible on road shoulders and verges
 - Only limited short term parking is possible

3 PLANNING PROPOSAL

Development components

- Details of the proposed development for the rezoned land have not yet been prepared as the project is still in its early planning stages.
- Detailed design will be a subject of a separate development application once the land has been rezoned, however it is intended that the development will comprise the following land uses
 - A service station with integrated Convenience store
 - A motel with some 30 units
 - Sufficient number of car parking spaces will be made available
 - Refer to **Figure 4**.

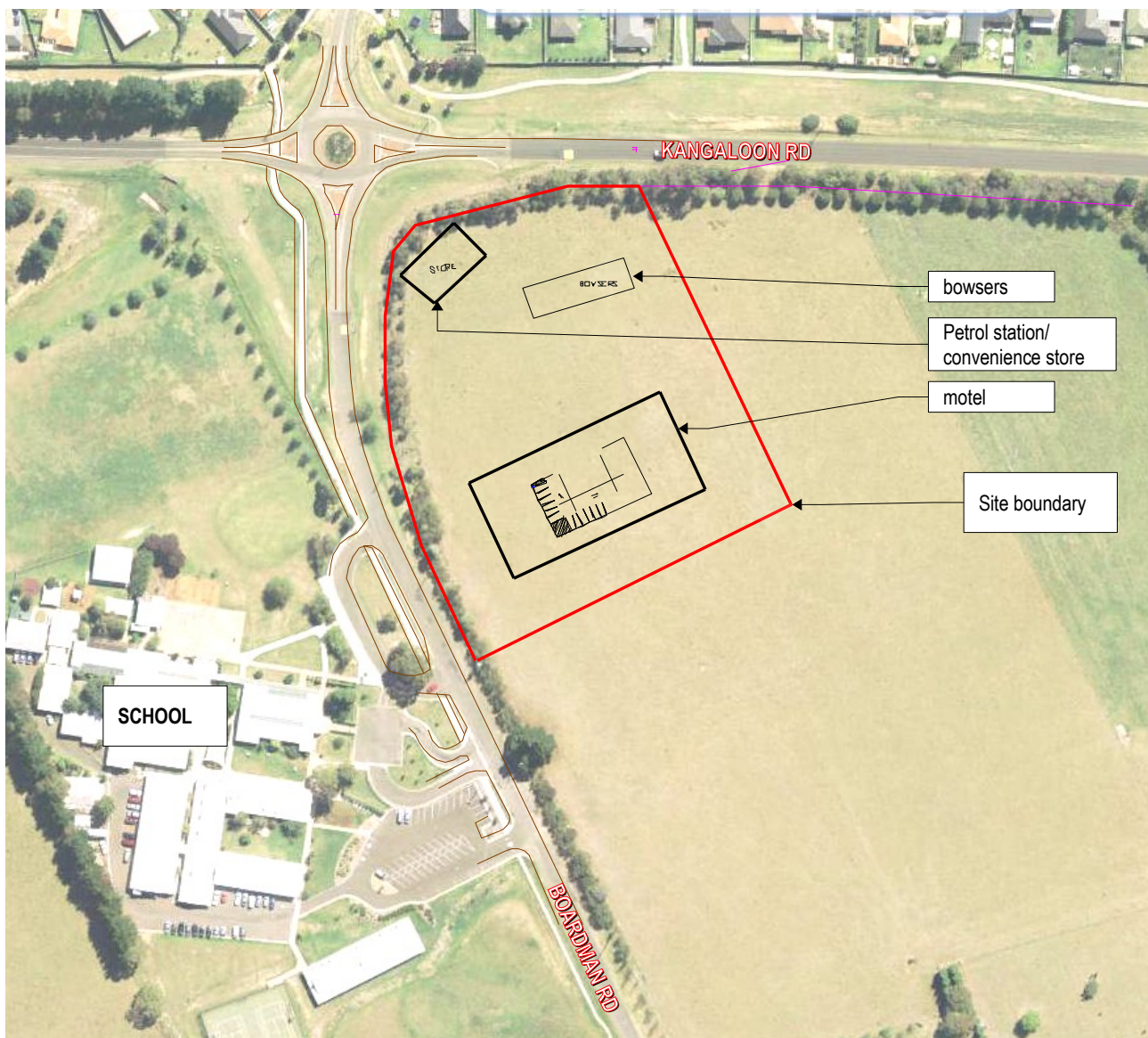


Figure 4. Proposed development (preliminary plan).

4 IMPACTS OF THE PROPOSED REDEVELOPMENT

4.1 Parking impacts

Existing status of planning

- Plans for the proposed development are only indicative
- No architectural design has been yet carried out
- Development site is of substantial size
 - Moreover, the boundaries of the site, designated for the development, are flexible.
- Undoubtedly, parking provision based on the Council's requirements will be achievable in the final site design.
- Design of the proposed car parking areas, when prepared, shall comply with the provisions of AS/NZS 2890 series.

4.2 Access Design

RMS requirements

- Issued in a letter dated 6 November 2013 (refer to **Appendix A**)
 - reference number PN1756030, 5901
- The following sections of the present report deal with specific RMS requirements
 - The order of the RMS requirements have been changed from that in the letter

4.2.1 Locations of access points

RMS requirement(s)

- *“The concept design proposes three access points, each adding an additional conflict point to the network. RMS seeks to reduce the number of accesses to the classified road network and generally does not support direct access to a classified road where practical alternate local road access is available. Therefore, RMS would not object to all access to the subject site via Boardman Road.”*

Proposal

- Although the point made by the RMS is acknowledged, the author of this report is of the opinion that a single point of access from Kangaloon Road is imperative for the development functioning satisfactorily.

4.2.2 Deceleration lane

RMS requirement(s)

- *“If direct access from Kangaloon Road is pursued, RMS is willing to consider left in only to the subject site from Kangaloon Road subject to a median being constructed on Kangaloon Road, of an appropriate length and a minimum width of 1.2m, to physically restrict any right turn and a deceleration lane westbound being provided of an appropriate length determined by traffic modelling and designed in accordance with Austroads standards. This access would need to be supported by a satisfactory entry arrangement on Boardman Road that caters the flow of traffic through the site, does not cause queuing issues and caters for pedestrian desire lines.*

Proposal

- It is proposed to provide a direct access point from Kangaloon road
 - **Left turn in only** as per the RMS requirements
 - A 1.2 m wide **median** is now proposed (refer to **Figure 5** for concept design)
 - Detailed design will be developed at the Development Applications Stage

- A deceleration lane westbound is proposed
 - Based on requirements of “Austroads Guide to Road Design - Part 4a: Unsignalised and Signalised Intersections” (AGRD04a)
 - Section 5.3 / Table 5.2 of AGRD04a
 - Design speed of approach – 70 km/h
 - Design speed of exit curve – 20 km/h
 - Proposed length of deceleration lane – 70 m (including taper)
 - Taper length – 23 m (refer to Table 5.1 of AGRD04a)
 - Refer to **Figure 5**
 - There is sufficient space on the site to provide for satisfactory flow of traffic through the site
 - Subject to the detailed design at the DA stage; this can be a Condition of Consent issued by Council
 - No queuing is expected for entering vehicles

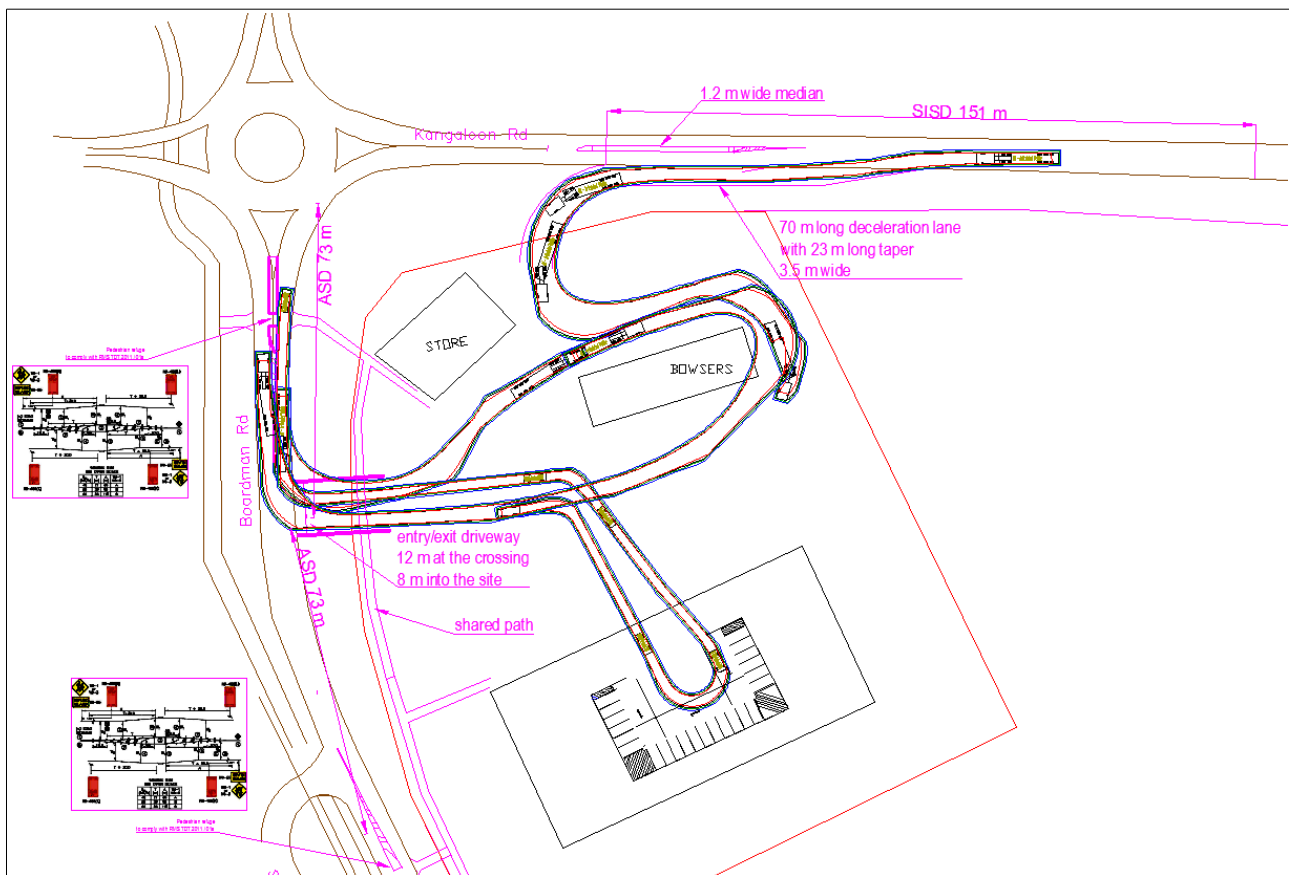


Figure 5. Concept plan of the development with design components recommended by RMS.

4.2.3 Access to / from Boardman Road

RMS requirement(s)	“All egress from the site would need to be via Boardman Road and the roundabout at the intersection of Boardman Road and Kangaloon Road. RMS objects to the proposed egress from the subject site direct onto Kangaloon Road.”
	“Any access to the subject site from Boardman Road should not interfere with the entry or exit of the school bus zone.”
Proposal	- A single two-way access driveway is proposed in Boardman Road - Refer to Figure 5 - Conceptual design and location subject to detailed design at the DA stage - Designed to accommodate a 19 m long articulated vehicle (AV) - Approximately in the middle between the school bus drop off exit and the new pedestrian refuge island (refer to Section 4.2.4 of the present report) - Note that only up to 3 buses deliver / pick up school children at the school bus zone at any one time - The number of school bus movements is very minimal (5-6 per hour) and confined to the school drop-off and pick-up periods - All buses are contained within the separated school bus zone during drop-off and pick-up - No interaction with the school buses is envisaged

4.2.4 Pedestrian crossing opportunities

RMS requirement(s)	“A pedestrian crossing opportunity would need to be provided on Boardman Road at the roundabout intersection with Kangaloon Road, by extending the existing traffic island.”
Proposal	- It is proposed to construct a pedestrian refuge island by extending the existing roundabout traffic island - Refer to Figure 6 - Design shall comply with RMS Technical Direction TDT 2011/01a (refer to Appendix C) - Pedestrian path shall connect to the site's internal pedestrian paths and to the existing path on the western side of Boardman Road
RMS requirement(s)	“A pedestrian crossing facility would need to be provided south of the access to the subject development on Boardman Road to reduce pedestrian/vehicle conflicts and facilitate students crossing between the school opposite and the subject site.”
Proposal	- It is not recommended that such a secondary crossing facility was created. - Such a facility would be not on the intended desire line through the site (it will not travel directly to the convenience store but rather to and past the motel) - The other proposed facility, south of the roundabout, as part of the extension of the roundabout splitter island, will cater for all students' crossing needs in a safe manner - The limited length of the site frontage does not lend itself to comfortably create an additional conflict location within close distance from the other crossing facility, amongst driveways on both sides of the road. - Regardless of the above, a pedestrian crossing facility can be created as requested; this could be effected by a Condition of Consent at the DA stage. - Refer to Figure 7 for concept design and location.

- An appropriate crossing facility for the existing combination of traffic conditions and likely pedestrian demand is a refuge island.
- Design shall comply with RMS Technical Direction TDT 2011/01a.

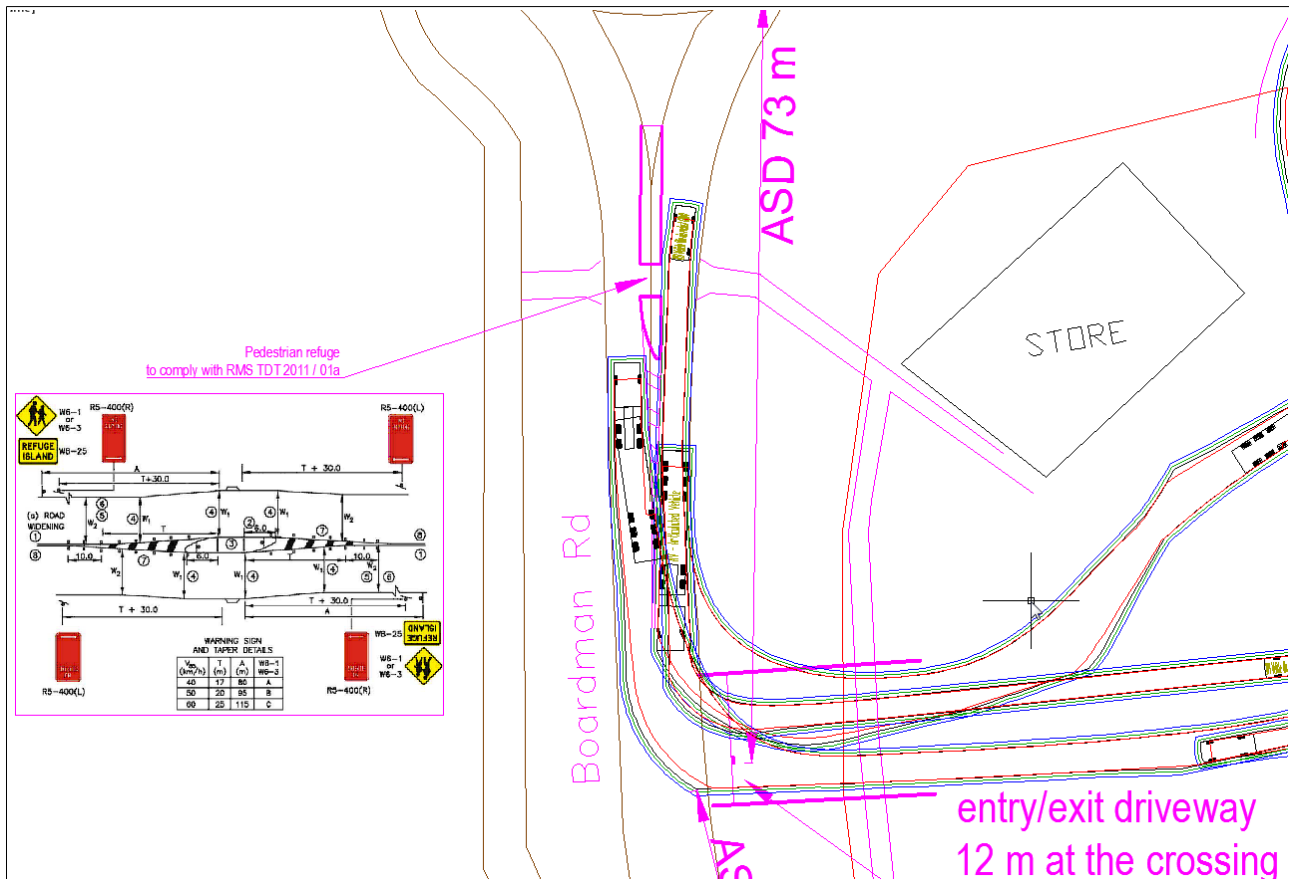


Figure 6. Concept plan of a refuge island south of the roundabout.

4.2.5 Shared path along the frontages

RMS requirement(s)

- “A shared path would need to be provided along the frontages of the subject site to Boardman Road and Kangaloon Road, linking to existing pathways.”

Proposal

- It is not quite clear what existing pathways are referred to in the RMS requirement
 - there are no existing pathways to connect to on the eastern side of Boardman Road
 - there are no existing pathways to connect to on the southern side of Kangaloon Road
- A connection is proposed to the existing pathway on the western side of Boardman Road as described in **Section 4.2.4** of the present report
- An indicative location of the shared path is shown in **Figure 5**.
 - Subject to the detailed design at the DA stage

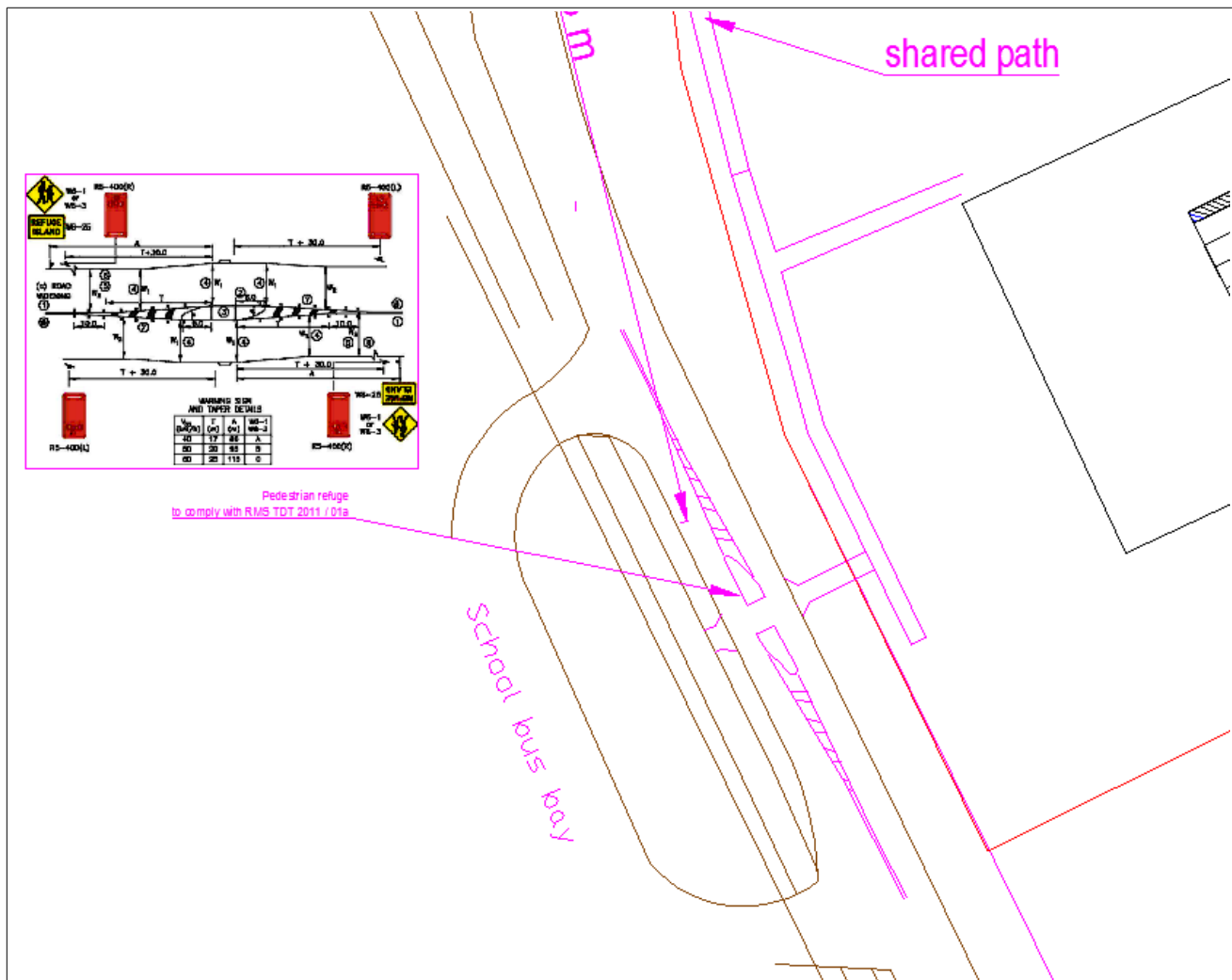


Figure 7. Concept plan of a refuge island south of the proposed site entry.

4.2.6 Sight distances

RMS requirement(s)	“Safe Intersection Sight Distance needs to be provided at all new access points in accordance with Austroads Guide to Road Design - Part 4a: Unsignalised and Signalised Intersections Table 3.2, in both directions.”
Proposal	- Requirements of the RTA Supplement to AGRD04a shall be taken into account - Safe Intersection Sight Distance (SISD) is required to be provided on major roads - This applies to Kangaloon Road only - For 70 km/h design speed and 2.0 second reaction time SISD is 151 m. - This sight distance can be easily provided on the eastern approach to the site (available sight distance 250 m) - Refer to Figure 5 - Boardman Road is a local road and an Approach Sight Distance provision will be sufficient for access points in Boardman Road - For 60 km/h design speed and 2.0 second reaction time ASD is 73 m. - This sight distance can be easily provided on both approaches to the site - Refer to Figure 5

4.2.7 Revised traffic analysis

- “A revised traffic analysis should be carried out to account for the changes to the access arrangements. This analysis should be based on 100% occupancy of the motel to reflect a worst case scenario.”
- Refer to **Section 4.3** of the present report.

4.3 Traffic

4.3.1 Traffic generation rates

- Calculated based on
 - Traffic generation rates provided in the RTA (2002) Guide to Traffic Generating Developments (RTA Guide)
 - Taking into account the latest update of survey data and trip generation analysis for service stations released in September 2013 (prepared by TEF Consulting on behalf of NSW RMS) – refer to **Appendix C**
 - Proposed land uses
 - Motel
 - 30 units
 - PM peak hour traffic – 0.4 trips per unit at 100% occupancy
 - Total number of trips – $30 \times 0.4 = 12$
 - AM peak hour traffic – assumed to be the same as PM – 12 trips
 - Service station
 - Details of the proposed design are not yet available
 - RTA Guide Trip generation recommended to be calculated using formulae based on
 - AM Peak Hour - $Y = 0.2815X_2^2 + 14.047X_2 + 16.715$
 - Where Y is the total number of trips (in + out)
 - X_2 is the number of service channels (number of approaches to pumps)
 - PM Peak Hour - $Y = 0.0205X_1 + 88.52$
 - Where Y is the total number of trips (in + out)
 - X_1 is the total site area in m^2
 - Total number of trips (including passing traffic)
 - AM peak – 111 (based on assumed 6 service channels typically)
 - PM peak – 212 (based on approximate service station site area of 6,000 m^2)
 - The additional number of trips generated by the service station will be less than that calculated above.
 - As a worst case scenario, it has been assumed that 50% of trips made to the service stations will be additional to the existing traffic.
 - The additional number of trips (in + out) is thus estimated as follows
 - AM peak – 56
 - PM peak – 106

4.3.2 Traffic distribution

- Estimated based on the existing traffic distribution by direction at the roundabout of Kangaloon Road / Boardman Road, with the following exceptions
 - Additional traffic to and from the southern end of Boardman Road is estimated to amount not more than 10% of the total traffic generation due to this road being a dead-end road.
 - All westbound traffic from Kangaloon Road is expected to enter the site via the new entry east of the roundabout.
- Entering and exiting traffic has been proportioned as follows
 - Service station
 - 50% incoming / 50% outgoing trips in both peak hours
 - Motel
 - 20% incoming / 80% outgoing trips in AM peak hour
 - 50% incoming / 50% outgoing trips in PM peak hour
- Refer to **Figures 8 and 9.**

4.3.3 Intersection operation with additional traffic

- Modelling software
- Result of modelling
- SIDRA Intersection 6.0 Plus
- Shows good operation (Level of Service B) for both AM and PM peak hours
- Virtually no change compared with the existing situation
- Refer to **Table 4.1**

Table 4.1. Results of intersection operation modelling – existing conditions and with additional traffic.

	AM					PM				
	AVD	LOS	DS	Queue	Movement	AVD	LOS	DS	Queue	Movement
Kangaloon Rd / Boardman Rd Existing	15.2	B	0.29	12.7	KR WB T	15.4	B	0.26	11.7	KR EB T
Kangaloon Rd / Boardman Rd After dev-t	15.3	B	0.3	12.9	KR WB T	15.6	B	0.29	13.4	KR EB T

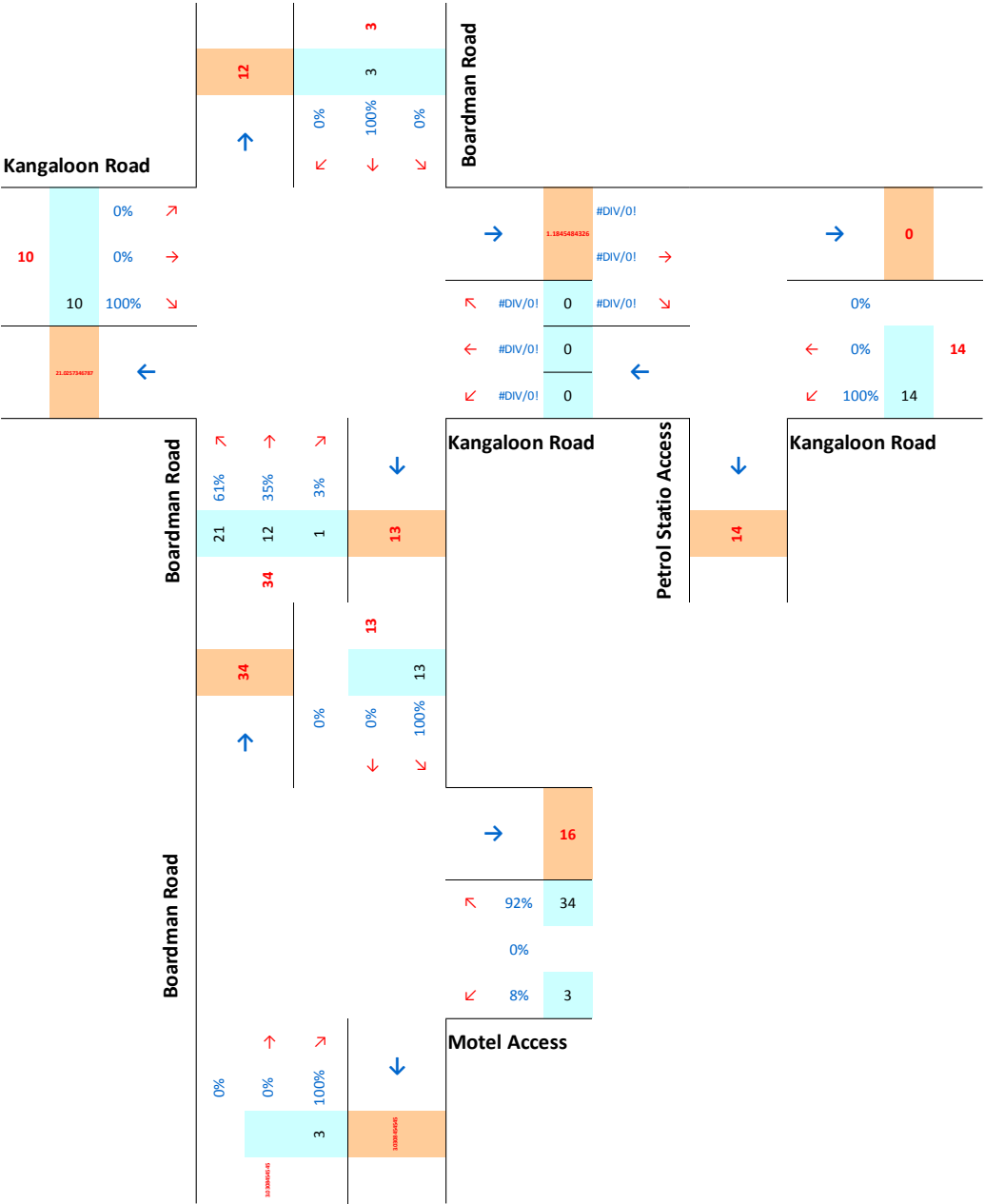


Figure 8. Additional traffic volumes - AM peak hour.

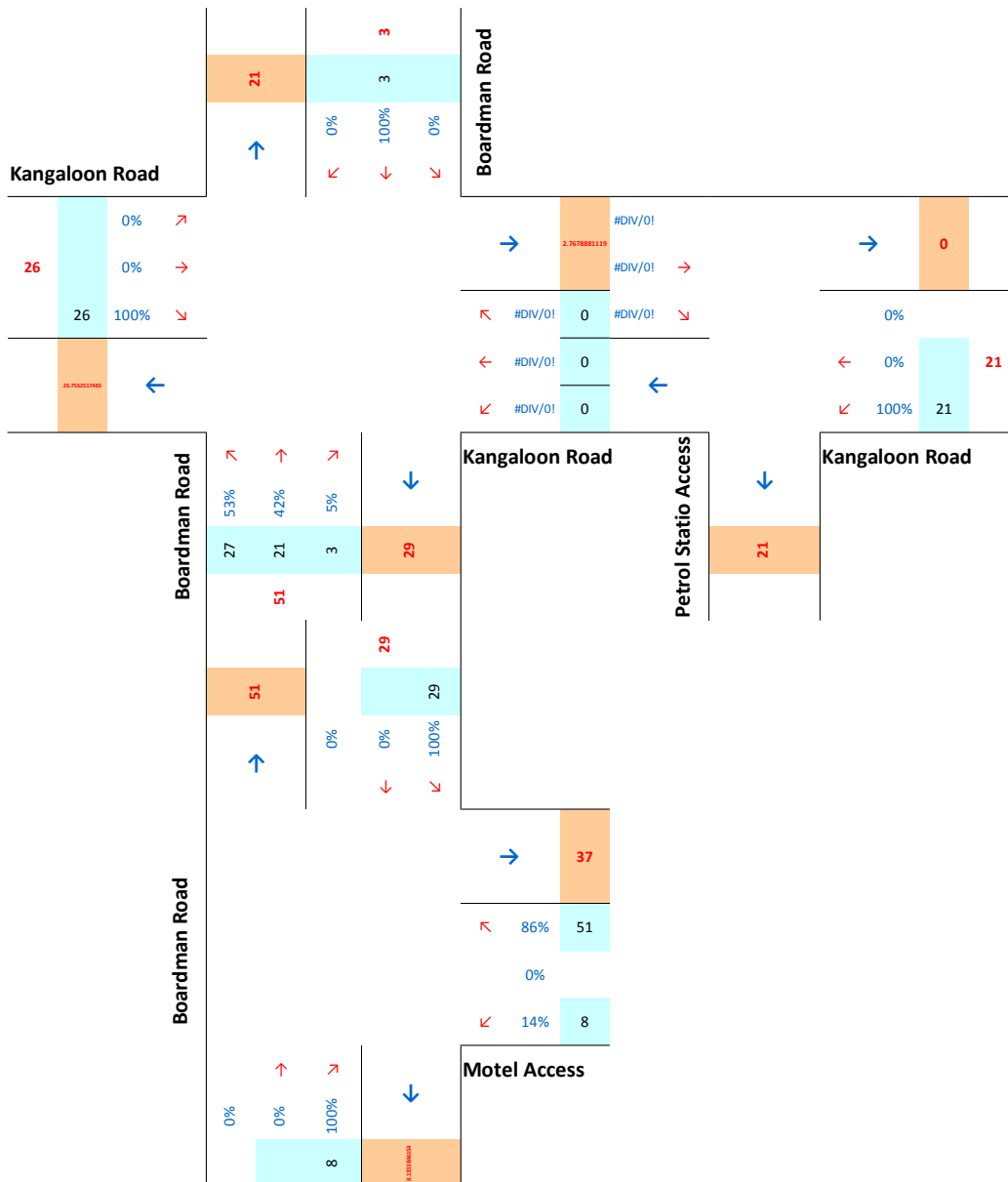


Figure 9. Additional traffic volumes - PM peak hour.

5 CONCLUSIONS

Proposal

- The proposed rezoning of land known as Lot 104 DP 1085033, East Bowral is planned for a possible future development of a service station with a convenience store and a motel.
- Detailed plans of the likely development have not yet been prepared.

Car parking provision

- The site is of sufficient size to allow the design to be compliant with the requirements of relevant Development Control Plans and Australian Standards.

Traffic impacts

- Additional traffic generated as a result of the proposed development will not have a negative effect the operation of the street network and of the nearest intersection.

Conclusion

The proposal is supported on traffic engineering and parking grounds.

6 REFERENCES

- RTA (2002) Guide to Traffic Generating Developments.
- NSW RMS (2013) Trip Generation Surveys - Service Stations - Analysis Report. Prepared by TEF Consulting
- Austroads (2010) Guide to Road Design Part 4A : Unsignalised and Signalised Intersections
- RTA Supplement to Austroads Guide to Road Design Part 4A (2009) : Unsignalised and Signalised Intersections
- TEF Consulting (2008) A report on traffic and parking impacts of a proposed service station with a convenience store and motel development at Part Lot 102, DP 884438, Bowral. Report 8116 Rep 01.
- Australian/New Zealand Standard AS/NZS 2890.1:2004 Parking facilities - Off-street car parking.
- Australian Standard AS 2890.2-2002 Parking facilities - Off-street commercial vehicle facilities.

Appendix A

A letter from NSW Roads & Maritime Services

Our Ref: STH13/00188
Contact: Andrea Boes 4221 2771
Your Ref: PN1756030, 5901



Transport
Roads & Maritime
Services

The General Manager
Wingecarribee Shire Council
PO Box 141
Moss Vale NSW 2577

Attention: Susan Stannard

**WINGECARRIBEE SHIRE COUNCIL – PLANNING PROPOSAL – LOT 104 DP 1085033,
MR261, KANGALOO ROAD, EAST BOWRAL – PROPOSED SERVICE STATION & MOTEL**

Dear Sir/Madam

Reference is made to your letter dated 9 September 2013 regarding the subject planning proposal forwarded to Roads and Maritime Services (RMS) for consideration.

RMS has no objections to the proposed amendment to Wingecarribee Local Environment Plan 2010 to permit a service station and motel development on the subject site, subject to the provision of access arrangements to the satisfaction of RMS for any future development, and provision by the developer of appropriate works to manage the traffic impacts and safety impacts associated with the development.

RMS has reviewed the submitted information and objects to the proposed development in its current form. In this regard the following comments are provided for your consideration:

- RMS notes that Kangaloon Road is a state classified road and the subject site has frontage to Boardman Road, which is a local unclassified road. The concept design proposes three access points, each adding an additional conflict point to the network. RMS seeks to reduce the number of accesses to the classified road network and generally does not support direct access to a classified road where practical alternate local road access is available. This is supported by Clause 101 of the State Environmental Planning Policy (Infrastructure) 2007 and is intended to ensure that development does not compromise the safety or efficiency of the classified road network. Therefore, RMS would not object to all access to the subject site via Boardman Road.

Roads & Maritime Services

- If direct access from Kangaloon Road is pursued, RMS is willing to consider left in only to the subject site from Kangaloon Road subject to a median being constructed on Kangaloon Road, of an appropriate length and a minimum width of 1.2m, to physically restrict any right turns, and a deceleration lane westbound being provided of an appropriate length determined by traffic modelling and designed in accordance with Austroads standards. This access would need to be supported by a satisfactory entry arrangement on Boardman Road that caters for vehicles travelling from the north, south and west, and an internal layout that facilitates the flow of traffic through the site, does not cause queuing issues and caters for pedestrian desire lines.
- All egress from the site would need to be via Boardman Road and the roundabout at the intersection of Boardman Road and Kangaloon Road. RMS objects to the proposed egress from the subject site direct onto Kangaloon Road.
- A revised traffic analysis should be carried out to account for the changes to the access arrangements. This analysis should be based on 100% occupancy of the motel to reflect a worst case scenario.
- Safe Intersection Sight Distance needs to be provided at all new access points in accordance with Austroads *Guide to Road Design – Part 4a: Unsignalised and Signalised Intersections* Table 3.2, in both directions.
- Any access to the subject site from Boardman Road should not interfere with the entry or exit of the school bus zone.
- A pedestrian crossing opportunity would need to be provided on Boardman Road at the roundabout intersection with Kangaloon Road, by extending the existing traffic island.
- A pedestrian crossing facility would need to be provided south of the access to the subject development on Boardman Road to reduce pedestrian/vehicle conflicts and facilitate students crossing between the school opposite and the subject site.
- A shared path would need to be provided along the frontages of the subject site to Boardman Road and Kangaloon Road, linking to existing pathways.

It should be noted that RMS will not provide the approvals required under the Sections 138 of the Roads Act, 1993 to the development in its current form.

Upon Council's determination of this matter, it would be appreciated if Council could forward a copy of the Notice of Determination to RMS within the appellant period for advice and consideration.

If you have any questions please contact Andrea Boes on 4221 2771.

Yours faithfully



Rob Reynolds
Road Safety and Traffic Manager
Network Management, Southern Region

6 NOV 2013

Roads & Maritime Services

Appendix B
Results of traffic counts and SIDRA modelling

No. 13049

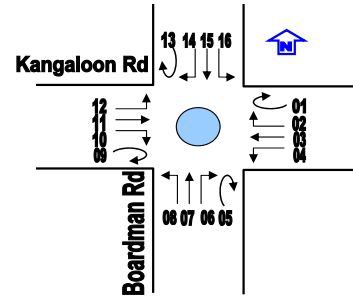
CLIENT ULH

DATE 28.11.2013

DAY

LOCATION east bowral

WEATHER fine



OBSERVERSAK

FROM		TO	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		TOTAL
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16:00	-	16:15	-	-	6	1	46	1	-	-	-	-	-	2	2	-	5	-	-	1	1	51	1	21				15				1	5		159
16:15	-	16:30	-	-	4	-	31	-	4	-	-	-	-	-	2	-	4	-	-	1	-	51	3	17	-	-	-	2	1	1	-	5	-	126	
16:30	-	16:45	-	-	4	-	26	-	-	-	-	-	-	-	1	-	1	-	-	3	-	71	5	29	1	-	-	12	-	-	-	10	-	163	
16:45	-	17:00	-	-	8	-	30	5	-	-	-	-	-	-	1	-	1	-	1		2		45		27			21		1		4	1	147	
17:00	-	17:15	-	-	3	-	39	2	-	-	-	-	-	-	4	-	1	-	-		2		46	3	31	1		11		1		8		152	
17:15	-	17:30	-	-	4	-	40	1	-	-	-	-	-	-	-	-	1	-	-	-		49	4	22	1			7	1	1		11	1	143	
17:30	-	17:45	-	-	2	-	26	1	-	-	-	-	-	-	-	-	-	-	-	1	-	53	-	27	-	-	-	14	-	-	-	6	-	130	
17:45	-	18:00	-	-	5	-	38	2	-	-	-	-	-	-	2	-	3	-	-		1		29		28	2		13		1		4		128	
18:00	-	18:15	-	-	4	-	35	3	-	-	-	-	-	-	-	-	1	-	-		1		37		26	3		16		1		6		133	
18:15	-	18:30	-	-	5	-	34	-	-	-	-	-	-	-	1	-	1	-	-			38	1	18				14				5		117	
TOTAL			0	0	89	2	678	33	13	1	0	0	8	3	61	1	91	5	1	1	82	7	716	29	309	9	2	0	185	4	42	2	99	2	2475

MOVEMENT SUMMARY

Site: Existing AM

Kangaloon Rd and Boardman Rd, East Bowral
Existing AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Boardman Rd S leg											
1	L2	81	7.8	0.142	10.8	LOS A	0.8	5.8	0.56	1.35	51.9
2	T1	45	4.7	0.142	8.8	LOS A	0.8	5.8	0.56	1.35	51.9
3	R2	4	0.0	0.142	15.2	LOS B	0.8	5.8	0.56	1.35	51.9
Approach		131	6.5	0.142	10.2	LOS A	0.8	5.8	0.56	0.67	51.9
East: Kangaloon Rd E leg											
4	L2	15	7.1	0.291	10.2	LOS A	1.8	12.7	0.52	1.31	52.7
5	T1	272	4.3	0.291	9.4	LOS A	1.8	12.7	0.52	1.31	52.7
6	R2	17	0.0	0.291	13.1	LOS A	1.8	12.7	0.52	1.31	52.7
Approach		303	4.2	0.291	9.7	LOS A	1.8	12.7	0.52	0.66	52.7
North: Boardman Rd N leg											
7	L2	19	0.0	0.193	7.4	LOS A	1.1	7.7	0.43	1.29	42.8
8	T1	66	6.3	0.193	6.5	LOS A	1.1	7.7	0.43	1.29	42.8
9	R2	127	2.5	0.193	12.0	LOS A	1.1	7.7	0.43	1.29	42.8
Approach		213	3.5	0.193	9.9	LOS A	1.1	7.7	0.43	0.65	42.8
West: Kangaloon Rd W leg											
10	L2	45	0.0	0.199	7.7	LOS A	1.2	8.8	0.24	1.15	52.9
11	T1	126	6.7	0.199	8.0	LOS A	1.2	8.8	0.24	1.15	52.9
12	R2	92	12.6	0.199	13.2	LOS A	1.2	8.8	0.24	1.15	52.9
Approach		263	7.6	0.199	9.7	LOS A	1.2	8.8	0.24	0.57	52.9
All Vehicles		909	5.3	0.291	9.8	LOS A	1.8	12.7	0.42	0.63	49.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 10 December 2013 1:40:59 PM

SIDRA INTERSECTION 6.0.15.4263

Project: C:_WORK\13049 - Kangaloon Road, East Bowral - ULH\13049_modelling\13049 sidra\13049 Kangaloon Rd and Boardman Rd - Copy.sip6

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: Existing PM

Kangaloon Rd and Boardman Rd, East Bowral
Existing PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Boardman Rd S leg											
1	L2	64	4.9	0.118	10.0	LOS A	0.6	4.5	0.47	1.25	52.4
2	T1	49	2.1	0.118	8.1	LOS A	0.6	4.5	0.47	1.25	52.4
3	R2	7	14.3	0.118	14.5	LOS A	0.6	4.5	0.47	1.25	52.4
Approach		121	4.3	0.118	9.5	LOS A	0.6	4.5	0.47	0.63	52.4
East: Kangaloon Rd E leg											
4	L2	7	14.3	0.213	9.3	LOS A	1.2	8.7	0.37	1.17	53.5
5	T1	220	3.3	0.213	8.5	LOS A	1.2	8.7	0.37	1.17	53.5
6	R2	25	0.0	0.213	12.2	LOS A	1.2	8.7	0.37	1.17	53.5
Approach		253	3.3	0.213	8.9	LOS A	1.2	8.7	0.37	0.59	53.5
North: Boardman Rd N leg											
7	L2	32	0.0	0.117	7.7	LOS A	0.6	4.4	0.46	1.30	43.1
8	T1	32	3.3	0.117	6.8	LOS A	0.6	4.4	0.46	1.30	43.1
9	R2	58	3.6	0.117	12.3	LOS A	0.6	4.4	0.46	1.30	43.1
9u	U	2	0.0	0.117	14.3	LOS A	0.6	4.4	0.46	1.30	43.1
Approach		123	2.6	0.117	9.7	LOS A	0.6	4.4	0.46	0.65	43.1
West: Kangaloon Rd W leg											
10	L2	64	0.0	0.261	7.8	LOS A	1.6	11.7	0.28	1.14	53.4
11	T1	217	4.4	0.261	8.1	LOS A	1.6	11.7	0.28	1.14	53.4
12	R2	65	6.5	0.261	13.3	LOS A	1.6	11.7	0.28	1.14	53.4
12u	U	1	100.0	0.261	15.4	LOS B	1.6	11.7	0.28	1.14	53.4
Approach		347	4.2	0.261	9.1	LOS A	1.6	11.7	0.28	0.57	53.4
All Vehicles		844	3.7	0.261	9.2	LOS A	1.6	11.7	0.36	0.59	51.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 **Site: After development AM**

Kangaloon Rd and Boardman Rd, East Bowral
After development AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Boardman Rd S leg											
1	L2	103	6.1	0.180	10.8	LOS A	1.0	7.5	0.58	1.38	51.8
2	T1	58	3.6	0.180	8.9	LOS A	1.0	7.5	0.58	1.38	51.8
3	R2	5	0.0	0.180	15.3	LOS B	1.0	7.5	0.58	1.38	51.8
Approach		166	5.1	0.180	10.3	LOS A	1.0	7.5	0.58	0.69	51.8
East: Kangaloon Rd E leg											
4	L2	15	7.1	0.295	10.3	LOS A	1.8	12.9	0.53	1.33	52.6
5	T1	272	4.3	0.295	9.5	LOS A	1.8	12.9	0.53	1.33	52.6
6	R2	17	0.0	0.295	13.2	LOS A	1.8	12.9	0.53	1.33	52.6
Approach		303	4.2	0.295	9.8	LOS A	1.8	12.9	0.53	0.66	52.6
North: Boardman Rd N leg											
7	L2	19	0.0	0.198	7.5	LOS A	1.1	7.9	0.44	1.30	42.8
8	T1	69	6.1	0.198	6.6	LOS A	1.1	7.9	0.44	1.30	42.8
9	R2	127	2.5	0.198	12.1	LOS A	1.1	7.9	0.44	1.30	42.8
Approach		216	3.4	0.198	9.9	LOS A	1.1	7.9	0.44	0.65	42.8
West: Kangaloon Rd W leg											
10	L2	45	0.0	0.211	7.8	LOS A	1.3	9.5	0.27	1.16	52.6
11	T1	126	6.7	0.211	8.0	LOS A	1.3	9.5	0.27	1.16	52.6
12	R2	102	11.3	0.211	13.3	LOS A	1.3	9.5	0.27	1.16	52.6
Approach		274	7.3	0.211	10.0	LOS A	1.3	9.5	0.27	0.58	52.6
All Vehicles		959	5.0	0.295	9.9	LOS A	1.8	12.9	0.45	0.64	49.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY



Site: After development PM

Kangaloon Rd and Boardman Rd, East Bowral
After development PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Boardman Rd S leg											
1	L2	93	3.4	0.169	10.1	LOS A	0.9	6.7	0.49	1.29	52.2
2	T1	72	1.5	0.169	8.1	LOS A	0.9	6.7	0.49	1.29	52.2
3	R2	11	10.0	0.169	14.5	LOS B	0.9	6.7	0.49	1.29	52.2
Approach		175	3.0	0.169	9.6	LOS A	0.9	6.7	0.49	0.64	52.2
East: Kangaloon Rd E leg											
4	L2	7	14.3	0.220	9.5	LOS A	1.2	9.0	0.40	1.20	53.3
5	T1	220	3.3	0.220	8.7	LOS A	1.2	9.0	0.40	1.20	53.3
6	R2	25	0.0	0.220	12.4	LOS A	1.2	9.0	0.40	1.20	53.3
Approach		253	3.3	0.220	9.1	LOS A	1.2	9.0	0.40	0.60	53.3
North: Boardman Rd N leg											
7	L2	32	0.0	0.124	7.9	LOS A	0.7	4.8	0.49	1.32	43.0
8	T1	35	3.0	0.124	7.0	LOS A	0.7	4.8	0.49	1.32	43.0
9	R2	58	3.6	0.124	12.4	LOS A	0.7	4.8	0.49	1.32	43.0
9u	U	2	0.0	0.124	14.5	LOS B	0.7	4.8	0.49	1.32	43.0
Approach		126	2.5	0.124	9.8	LOS A	0.7	4.8	0.49	0.66	43.0
West: Kangaloon Rd W leg											
10	L2	64	0.0	0.291	8.0	LOS A	1.9	13.4	0.33	1.18	52.8
11	T1	217	4.4	0.291	8.2	LOS A	1.9	13.4	0.33	1.18	52.8
12	R2	93	4.5	0.291	13.5	LOS A	1.9	13.4	0.33	1.18	52.8
12u	U	1	100.0	0.291	15.6	LOS B	1.9	13.4	0.33	1.18	52.8
Approach		375	3.9	0.291	9.5	LOS A	1.9	13.4	0.33	0.59	52.8
All Vehicles		928	3.4	0.291	9.5	LOS A	1.9	13.4	0.40	0.61	51.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix C

Extracts from relevant Standards, guidelines and reports

4 SUMMARY

The former Roads and Traffic Authority (RTA, now Roads and Maritime Services) published its Guide to Traffic Generating Developments (“Guide”) in the mid-1990s. The trip generation and parking requirement data in the Guide is becoming increasingly out-of-date. The Guide contains trip generation and parking demand information derived from a 1979 survey of ten Service Stations across greater Sydney. Half of the sites were self-service, and half offered the then-traditional driveway service. A number of changes have occurred since then in terms of service stations’ mode of operation, services offered and size. Given these changes, there is now a need to validate (or otherwise) the 1979 trip generation and parking demand data for Service Stations, to assist with traffic impact assessment and planning.

Nine (9) sites within the Sydney Metropolitan Area (SMA) and one (1) site outside SMA on a major highway were selected in consultation with RMS Project Manager.

There were no technical issues with the conduct of the surveys, except obtaining permissions from the service station operators and collecting information about the year when the station was opened.

Surveys of trips generation were carried out in March-May 2013, outside school holidays. Classification counts of vehicles entering and leaving the sites were undertaken at each site generally between 6 am and 7 pm on Monday, Tuesday, Wednesday or Thursday. Site 1 was chosen for a special survey where the entering and leaving traffic was counted for each 24 hours over a full 7-day period, to establish daily and hourly visitation patterns.

4.1 Average rates

A review of the data revealed a number of observations

- The surveys were undertaken at service stations with the floor space varying from 182.5 m² to 481 m² and with the total site area varying from 988 m² to 11,030 m².
- Slightly higher station trip rates were observed during the PM peak on the adjacent road than during AM peak.

The results of the analyses for both peak hour and daily trips rates indicated high values of standard deviation in all cases for vehicle trips. The base data was therefore regarded as wide-spread. The average rates are thus not recommended to be used for predicting the trip generation because of wide prediction intervals around the mean estimated values.

4.2 Regression analysis

The trip generation rates were then analysed in terms of their dependency on a number of variables, using linear and non-linear regression analysis. The interrogated variables are listed below.

- total building GFA
- convenience store GFA
- total site area
- number of pumps
- number of service channels
- number of seats in the fast food area (where applicable)
- petrol price

The regression analysis showed that the number of trips generated by the service stations showed good level of correlation with some variables, as summarised in **Table 4.1**.

Table 4.1 Trip generation relationships

	Variable	
	X_1 = Total site area, m ²	X_2 = Number of service channels
Variable range	988 m ² to 11,030 m ²	4 to 12
Y = Total daily vehicle trips		$Y = 29.042X_1^2 + 222.58X_2 + 1668.3$ $R^2=0.87$
Y = Peak 1-hour vehicle trips (in+out)	No reliable relationship has been found	
Y = Vehicle trips (in+out) during AM peak hour on adjacent road		$Y = 0.2815X_1^2 + 14.047X_2 + 16.715$ $R^2=0.80$
Y = Vehicle trips (in+out) during PM peak hour on adjacent road	$Y = 0.0205 X_1 + 88.52$ $R^2=0.84$	

Although no reliable relationships has been found between the site parameters and the peak 1-hour vehicle trips, the latter have been found to be closely related to the total daily vehicle trips ($R^2=0.91$). The following equation may be used to estimate the peak 1-hour trips from the total daily trips.

$Y = 0.0819 X + 46.302$, where

Y = Peak 1-hour vehicle trips (in+out)

X = Total daily vehicle trips

In summary, the analysis of data highlighted the following facts:

- Average trip rates should not be utilised for planning purposes.
- Good linear and non-linear relationships were established between the number of total daily and AM and PM peak trips and two independent variables: the total site area and the number of service channels.
- Peak 1-hour vehicle trips can be reliably estimated from the total daily trips.

4.3 Special survey

A special 7-day / 24-hour survey designed to establish daily and hourly visitation patterns revealed the following.

- The trip generation on Saturday and on Sunday between 9 am and 4 pm was generally greater than that on the weekdays.
- Of the weekdays, Monday and Friday were the busiest days, whilst daily trip generation values on Tuesdays, Wednesdays and Thursdays were generally lower than those on Monday and Friday by 10% to 23% for the day totals.
- Generally, peak trip generation occurred in the late morning and early afternoon on all days except Monday when the peak was closer to the evening.

- One-hour peak trip generation levels on Tuesday and Wednesday were the closest to both the weekday average and the 7-day average.

4.4 Comparison with 1979 data

- Of the dependent variables, the number of peak hour vehicle movements is the only one which was studied both in the previous and the present Studies.
- The 1979 data indicates a steeper increase of the peak hour trips with the increase of the site area. However, overall the 2013 peak hour trip generation rates were found to be much greater than those in 1979 for the comparable range of the independent variable (1,110 – 4,570 m²).
- It is noted that in the 1979 Study no reliable dependency was found between the trip generation statistics and the number of service channels, whereas the present Study has found this independent variable to provide reliable estimates.
- The trip generation relationships based on the 1979 data are considered to be out-dated and are not recommended for further use.

Technical direction

For traffic and transport practitioners

POLICY – GUIDELINES – ADVICE



Transport
Roads & Traffic
Authority

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TDT 2011/

01a

PEDESTRIAN REFUGES

(Supplement for narrowing or widening of roads at Pedestrian Refuges)

BACKGROUND

The provision of safe and effective pedestrian facilities is an integral component of the RTA's commitment to facilitating and encouraging people to walk as a healthy alternative to using cars, especially for short trips.

This *Technical Direction* deals with pedestrian refuge design that incorporates options for road widening or road narrowing (kerb extension) at refuge islands as appropriate and can be applied consistently to a variety of road cross sections across NSW. Separate pedestrian refuge designs have been prepared for two lane two-way and four lane two-way roads.

Details of pedestrian refuges not requiring road widening or road narrowing can be found in Australian Standard AS1742 and the relevant RTA Supplement.

OBJECTIVES

The objectives of this *Technical Direction* are:

- To provide clear guidance for the design of pedestrian refuges with road widening or road narrowing (kerb extension) throughout NSW; and
- To improve consistency in the design and appearance of pedestrian refuges throughout NSW

SCOPE

This *Technical Direction* applies to the design and construction of all new Pedestrian Refuges throughout NSW requiring road widening or road narrowing (kerb extension).

Distribution List:

Director, Infrastructure Services; Director, Commercial Services; Director, NSW Centre for Road Safety; Traffic Management and Road Safety staff; and Traffic Signal design staff.

For further enquiries

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Amendment: Usage of TD clarified. Minor corrections made to Figures 2 & 4
Approved: R W O'Keefe Mgr Traffic Policies, Guidelines & Legislation / June 2011
RTA/Pub. 11.190

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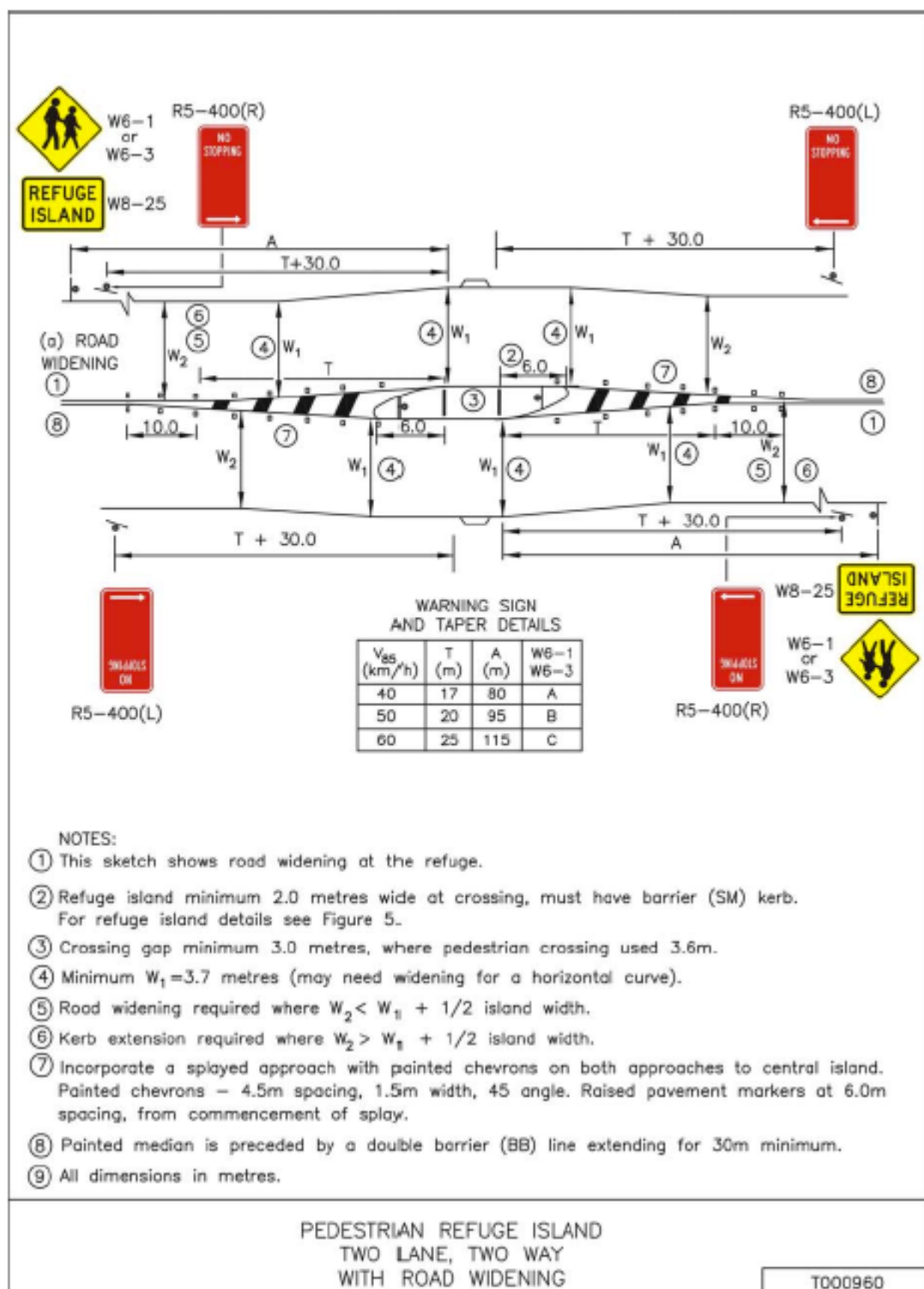


Figure 4

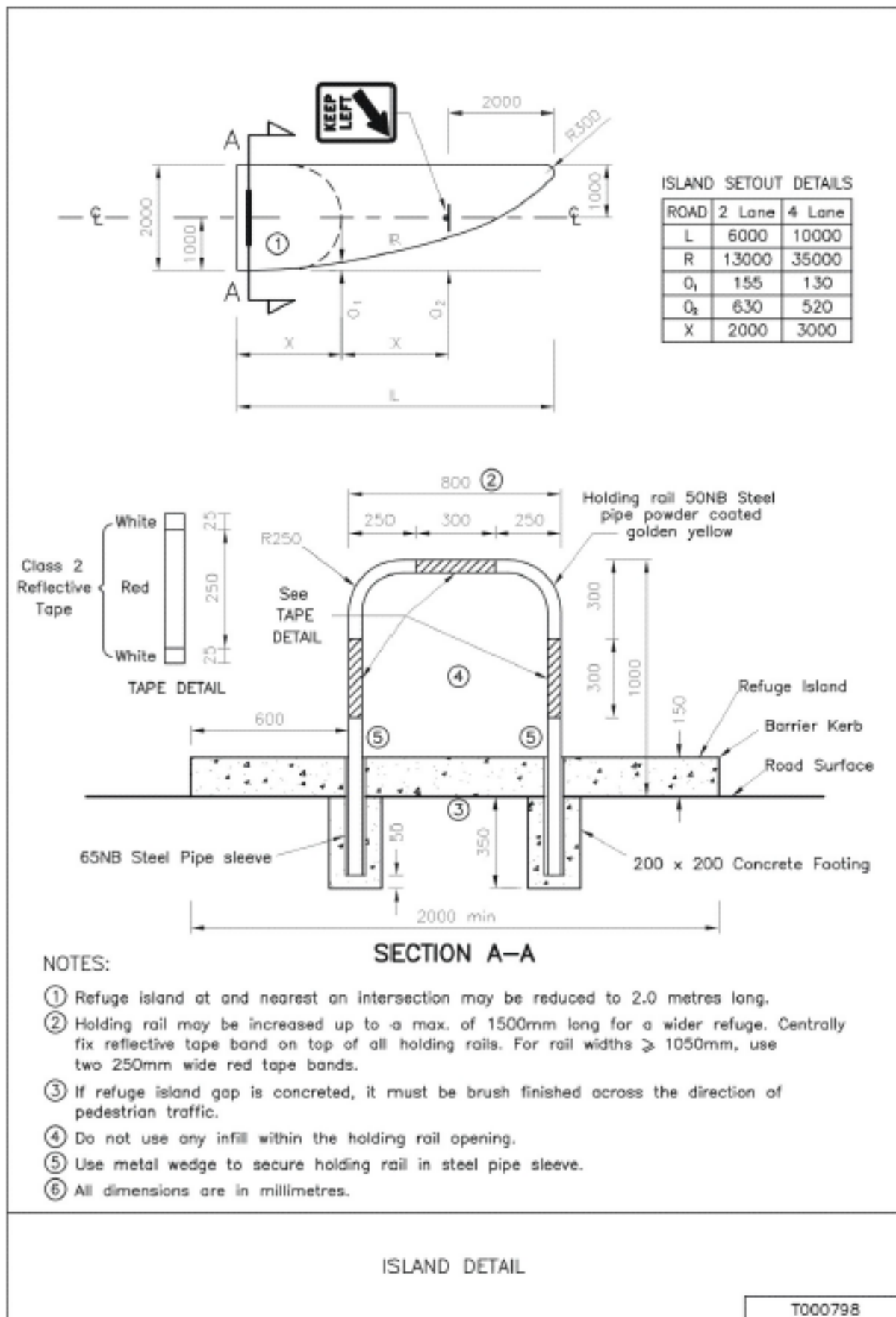


Figure 5