Newton Denny Chapelle

SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 4

Deposited Plan

DP449328 (8)

N.S.W. RAILWAYS: CASINO TO BONALBO

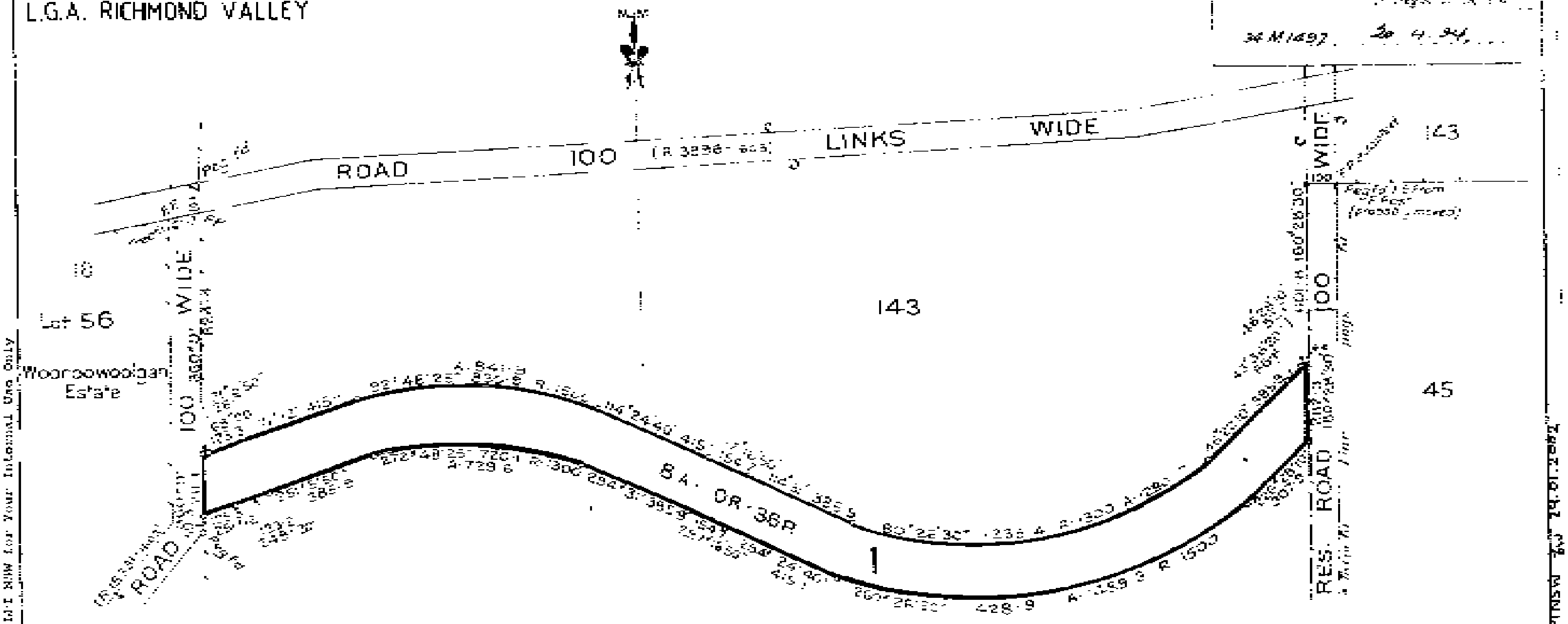
Papers D34/32811
Ref Nos 45
CB 132/67
Tomki Shire
L.G.A. RICHMOND VALLEY

Plan showing within red edging Land resumed for Railway purposes from C.G. Vol: 1748 Fol: 57

SCALE 4 CHAINS TO 1 INCH

Parish of Bundock County of Richmond

Plan approved
For Registrar General
34 M 1497 30.4.34



AZIMUTH FROM RAILWAY CENTRE LINE

Date of Survey 1929.

I certify that the survey represented in this plan was made under my immediate supervision and is correct

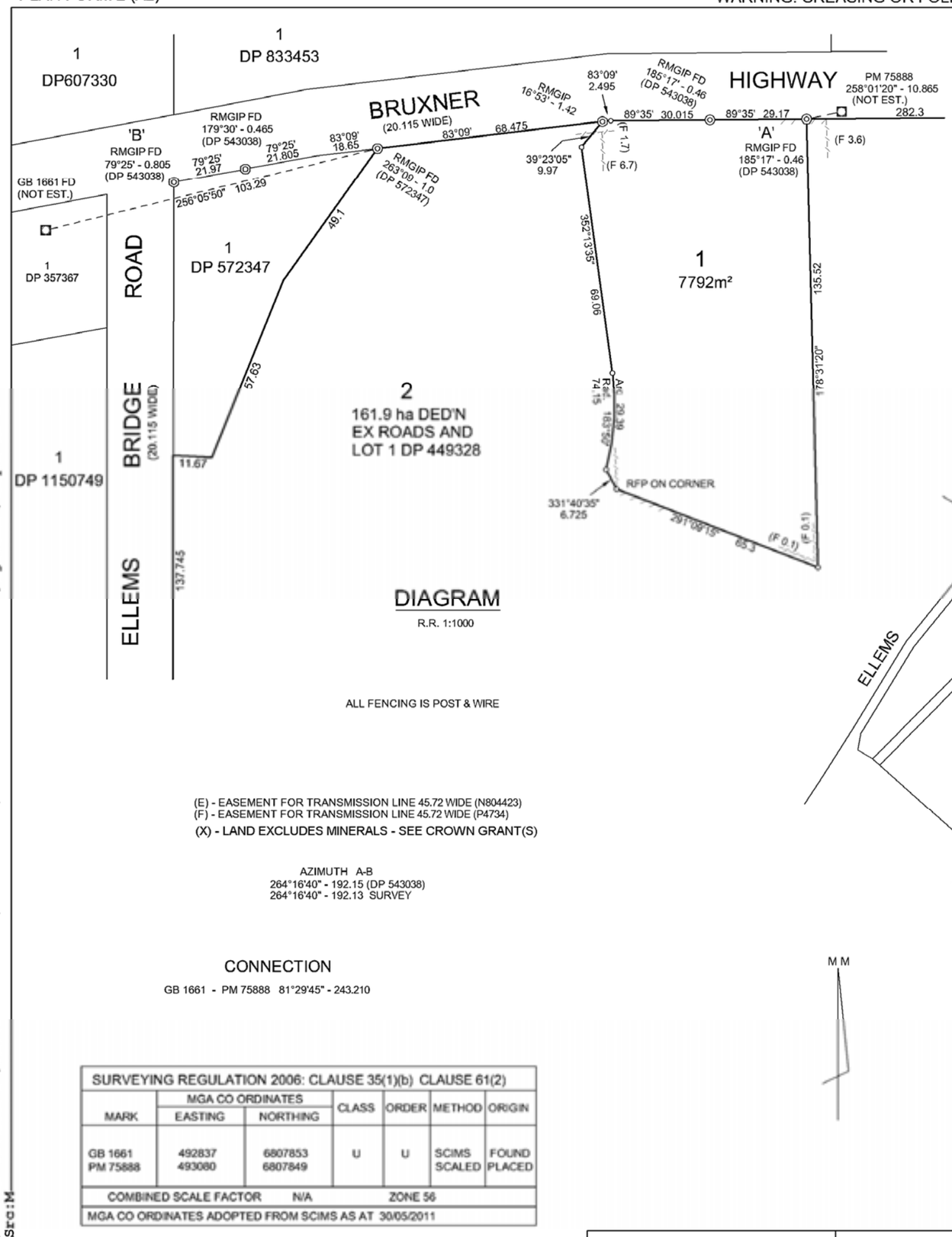
Date 12.3.34.

Registered under the Surveyors Act 1929

This is the plan referred to in the Transfer hereunto annexed from ... to the Commissioner for Railways dated the ... day of ...

Witness

PLAN FORM 2 (A2) WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION ePlan Sheet 1 of 1 sheets



SURVEYING REGULATION 2006: CLAUSE 35(1)(b) CLAUSE 61(2)						
MARK	MGA CO ORDINATES EASTING	MGA CO ORDINATES NORTHING	CLASS	ORDER	METHOD	ORIGIN
GB 1661	492837	6807853	U	U	SCIMS	FOUND
PM 75888	493080	6807849			SCALED	PLACED
COMBINED SCALE FACTOR N/A			ZONE 56			
MGA CO ORDINATES ADOPTED FROM SCIMS AS AT 30/05/2011						

Surveyor: ANTHONY JOHN DENNY Date of Survey: 24TH MAY 2011 Surveyors Ref: 09/493	PLAN OF SUBDIVISION OF LOT 3 IN DP 543038 & LOT 2 IN DP 1150749	LGA: RICHMOND VALLEY Locality: WOODVIEW Subdivision No.: 2011.041 Lengths are in metres. Reduction Ratio 1:7000	Registered 14.11.2011	DP1170052

10 20 30 40 50 60 70 80 90 100 110 120 130 140

Newton Denny Chapelle

SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 5

Richmond Valley Council

Pre-lodgement Correspondence

RICHMOND VALLEY
Valley of Surprises!

Your Reference:
04/102

Councils Reference:
P24653

Telephone enquiries to:

Mr Hession

5 May, 2004

Newton Denny Chapelle
186 Molesworth Street
LISMORE NSW 2480

Dear Sir,

Re- Proposed Subdivision at Ellems Bridge Road, Piora

With reference to the above and further to your enquiry relating to the opportunity to rezone the land described as Lot 2 on DP 572347 and Lot 3 on DP 543038, you are advised as follows.

The subject land is identified within Council's Rural Residential Development Strategy, March 1999. The Staging Plan within the Strategy outlines the subject land as being within the Casino Rural Catchment. It was anticipated in the Strategy that this particular area would be outside of the initial ten year land release area which would expire in 2009. Any amendment to this projected time frame would need to be justified in a formal application to rezone the land, based on an accelerated take-up rate of rural residential land throughout the Richmond Valley over the last 3 to 4 years.

Should you consider proceeding with a formal application to firstly rezone the land prior to developing a rural residential subdivision over the site the following matters are to be addressed for the consideration of Council and the Department of Infrastructure, Planning and Natural Resources. Note that particular emphasis would be placed by Council on one application being applicable to your site and as many of the adjoining parcels as possible so that this location can be considered as a whole in terms of connectivity, future allotment access and configuration and staging of the development.

i) The current and projected supply of and demand for rural residential allotments within the locality generally to the north of the Town of Casino;
ii) Existing land uses within the surrounding catchment (within one kilometre - both upstream and downstream of the subject site);
iii) The extent of clearing of any vegetation proposed to be undertaken on the site and its conservation significance;
iv) Whether there is any record or siting of any endangered or vulnerable species of flora or fauna or habitat which would support such species on the site;

All correspondence should be addressed to:

The General Manager,
RICHMOND VALLEY COUNCIL
Administration Office: 98 Walker Street (Locked Bag 10) CASINO NSW 2470

Telephone: (02) 6660 0300 Facsimile: (02) 6662 5198 email: council@richmondvalley.nsw.gov.au www.richmondvalley.nsw.gov.au
ABN 54 145 907 009

v) The suitability of the soils on site for treatment and disposal of effluent and consideration for the establishment and operation of a centralised package treatment plant to service the development;

vi) An assessment of Bushfire Categories 1 and 3 as outlined on the Richmond Valley LGA Bushfire Prone Land Map;

vii) A concept of how any future linkages are to be established with any contiguous parcels in the locality and whether or not it has been established if there is an opportunity to include parcels which adjoin the subject site in a formal rezoning application;

viii) The projected allotment yield and proposed areas of the allotments planned to be established;

ix) Any plans for the staging of construction and release on to the property market of the proposed estate;

x) Proposed access points external to the site and from within the estate along the proposed road network;

xi) The proximity of the proposed parcels to any existing Intensive animal or other agricultural establishments and any methods such as landscape buffers, to be utilised in minimising impacts from such uses;

xii) The current surface drainage characteristics of the site and the proposed method of containment, polishing (if applicable) and discharge of the stormwater runoff from the estate.

For further information on the above please contact John Hession of Council's Environmental Development Services on 02 66600277 or by email at john.hession@richmondvalley.nsw.gov.au .

Yours faithfully,

Ken Exley

(Director, Environmental Development Services)

ATTACHMENT 6

Traffic Impact Assessment

Newton Denny Chapelle

• JOHN NEWTON B. Surv; M.I.S. Aust. • TONY DENNY B. Surv; (Hons); M.I.S. Aust. • DAMIAN CHAPELLE BTP. CPP.

Traffic Impact Statement

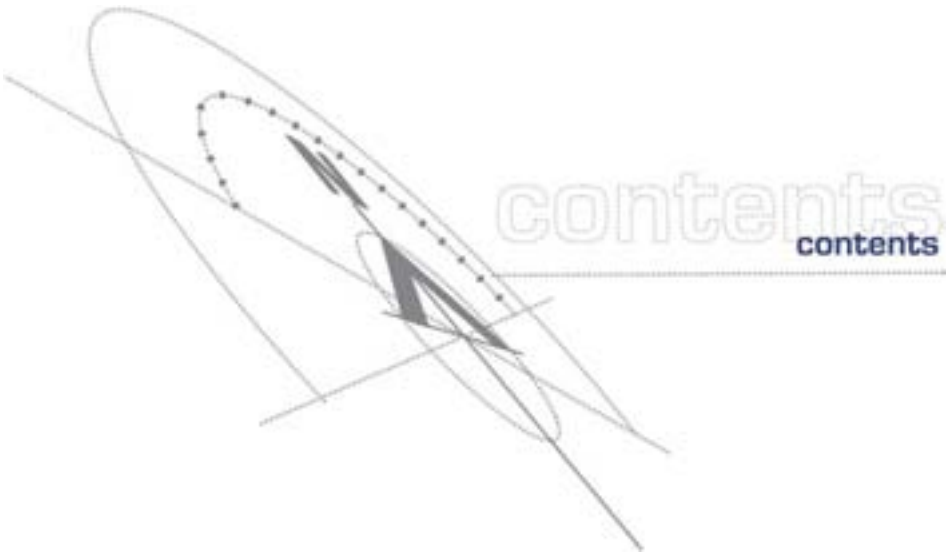
For a Proposed Rezoning Submission
To Enable Future Rural Residential Subdivision
at 25 Ellems Bridge Road, Piora

ON BEHALF OF S LANE

Date: August 2009
Our Ref: 04/102

Newton Denny Chapelle
CONSULTING SURVEYORS & PLANNERS

• Second Floor, 186 Molesworth St, Lismore, N.S.W. 2480 • Phone (02) 6622 1011 • Fax (02) 6622 4088 DX7779 Lismore
• Email office@newtondennychapelle.com.au • Also at: Casino Court, 100 Barker St., Casino N.S.W. 2470 • Phone/Fax (02) 6662 5000



contents

Attachments

Newton Denny Chapelle
CONSULTING SURVEYORS & PLANNERS

1.0 Introduction

The land that is subject of the rural residential rezoning proposal is as shown in Figure 1 – Site Location and is in real property terms as Lot 2 DP 572347 and Lot 1 DP 449328 Parish of Bundock, County of Richmond. The site lands are commonly known as "ORAVIEW" being No. 25 Ellems Bridge Road, Piora and occupy a site area of 150.53ha. The site is located approximately 10km by road west of Casino and has frontage to the Bruxner Highway.

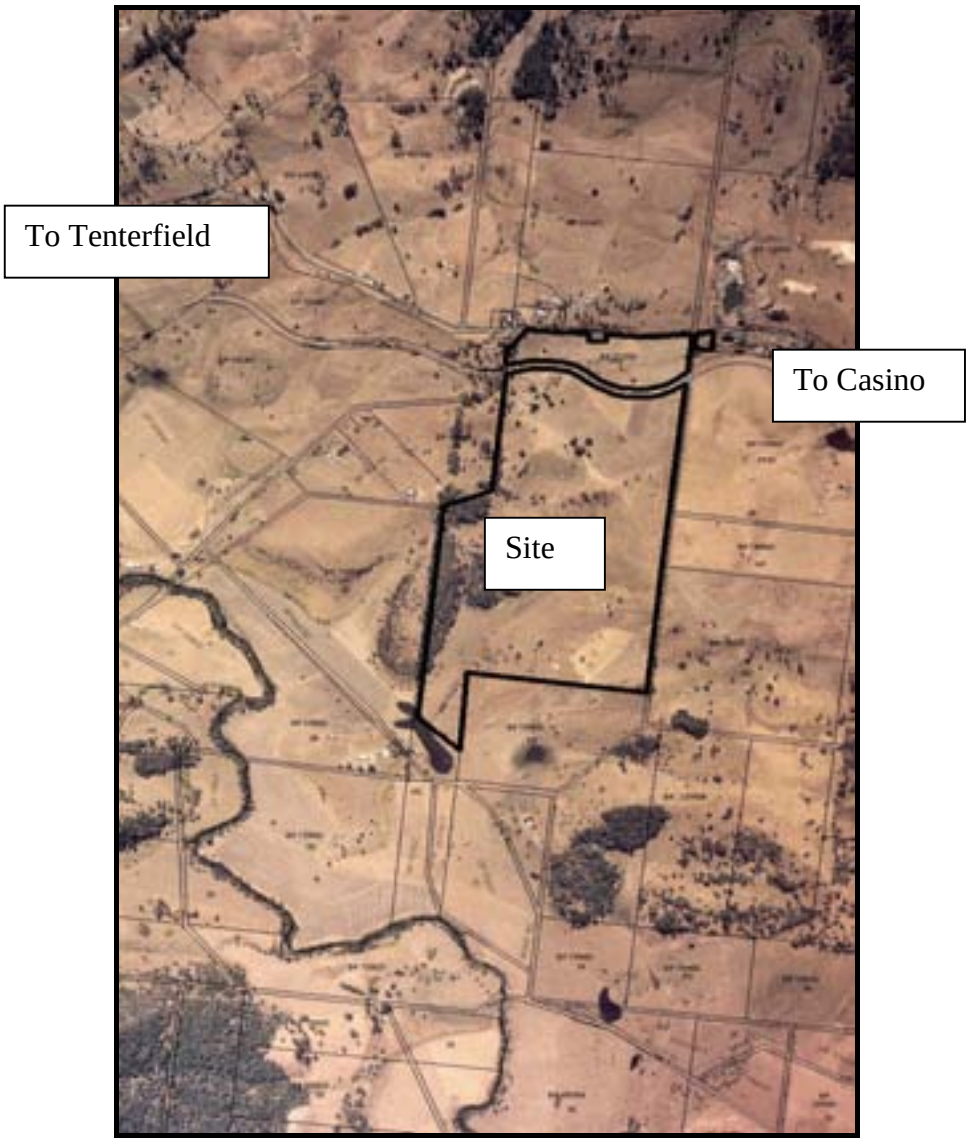


Figure 1 – Site Locality

An existing operational farm holding occupies the site, to which it is now proposed to create a rural residential 31 lot subdivision.

2.0 Past Submissions

This traffic impact statement supercedes past traffic submissions made under cover of previous rezoning submission by Newton Denny Chapelle to which a copy is included in **Attachment 1 – Superseded Traffic Impact Statement (Oct 2006) and RTA Objection Letters.**

This revised Traffic Impact Report has been primarily undertaken to address objections raised by the Roads and Traffic Authority in letter dated 9 January 2007 which required redesign of the subdivision layout to improve intersection sight distance at the Bruxner Highway as concerns were raised as to the adequacy of the existing Ellems Bridge Road intersection.

3.0 The Proposed Development

In general, the development proposal is for a 31 lot rural residential estate to which lot accesses are to be serviced via internal roads with a single point of connection to the Bruxner Highway.

The connection point to the Bruxner Highway has been subject of previous correspondence with both the Roads and Traffic Authority and Richmond Valley Council as to finalisation of a preferred location which demonstrates compliance with the road design standards. This connection is proposed to be approximately 124m east of the existing Ellems Bridge Road intersection so as to provide improved sight distances.

The internal road network and the re-aligned Ellems Bridge Road is proposed to be constructed to a 6m sealed pavement width on an 8m wide formation. Road gradients are mildly undulating with a maximum grades less than 10%. Details of the proposed subdivision layout and road longsections with typical cross sections are shown in **Attachment 2 – Subdivision Layout and Road Longsections.**

4.0 Traffic Generation of the Development

In accordance with Roads and Traffic Authorities (RTA) "*Guide to Traffic Generating Developments*"general, the development would be expected to create a traffic demand at the rate of 9 vehicle trips per day per residence. Given there is an existing operational farm which upon the site, the new number of trips is calculated as 270 trips as per Table 1 below.

TABLE 1 – TRAFFIC GENERATION

USE TYPE	No of Lots	RATE	NUMBER OF TRIPS
Rural Residential	31	9 Vehicles / Day	279
Existing Farm (Credit)	(1)	9 Vehicles / Day	(9)
Sub Total	**30 New Lots**		**270 New Trips**
Total Trips from Site			**279 Trips**

The existing information data sets have shown that Ellems Bridge Road carried 62 vpd in April 1997 with the Bruxner Highway carrying in the order of 1535 vpd in 1990 (at Piora) and 1486 vpd in 2001 measured immediately east of Mallanganee. Allowing for 2% traffic growth factors, it is anticipated that the Bruxner Highway at Ellems Bridge Road intersection would be in the order of 2000 vpd and Ellems Bridge Road of approximately 80 vpd.

5.0 Traffic Directional Split & Intersection Type

With Casino being the most local town centre for retailing, employment and education, it is anticipated that a split of 85% of all vehicles from the development would be having a trip origin or destination in the immediate Casino township locality. Accordingly, the following traffic numbers are used in assessing the adequacy of the intersection of Ellems Bridge Road and the Bruxner Highway.

TABLE 2 – TRAFFIC ASSIGNMENTS

DESCRIPTION	VEHICLES PER DAY	VEHICLES PER PEAK HOUR	APPROACHING/CONFLICTING VEHICLE SPLITS
Bruxner Highway Existing	2000 vpd	200 vph	70% & 30% (140 & 60)
Ellems Bridge Road	80 vpd	8vph	85% & 15% (7 & 1)
Proposed New Rural Residential	279 vpd	28 vph	85% & 15% (24 & 4)

Applying the warrants for rural turn lane provisions from the *Austroads Guide to Traffic Engineering Practice – Intersections at Grade (Figure 6.41)*, the intersection form is required to meet a Type AU configuration adopting Approach Volumes at 200vph and Peak Turning Volumes of 28vph. Given the footprint between type AU and CHR is similar, it is proposed to install a dedicated right turn lane in lieu of a through lane widening.

Details of the intersection layout and sight lines is shown in **Attachment 3 – Intersection Configuration**. It is noted that the RTA have advised that a simple type BAL left turn treatment into the subdivision would be acceptable in lieu of a full left turn lane.

6.0 Other Considerations and Road Closure of Ellems Bridge Road

With the relocation of Ellems Bridge Road to a new alignment onto the Bruxner Highway through the development, it is recognised that the proposed subdivision shall improve the general safety and standard of road (ie sealed) for those Ellems Bridge Road users external of the development. Accordingly, it is proposed that a Planning Agreement be created between the development landowner and Richmond Valley Council that seeks equitably recoup monies for those future developments which may utilise the upgraded intersection. Such planning agreement processes are an opportunity to allow for cost sharing with out the need to create or amend a Section 94 Contributions plan. It is anticipated that such planning agreement would need to be created in conjunction with seeking approval for the engineering designs for the new intersection upgrade.

It is noted that the Roads and Traffic Authority is wishing to have the existing Ellems Bridge Road intersection closed (ie in its current location) so as to prevent people from physically using the road corridor. Such closure would be the responsibility of the Richmond Vallley Council as they are the roads authority that manage the road reserve.

Access for school buses are readily available with the internal layout of the subdivision conducive to a loop travel path configuration or in the alternative, creation of a centralised pick up point (approx 150m south of Bruxner Highway) within the subdivision at the intersection of the proposed re-alignment of Ellems Bridge Road and the internal subdivision service roads.

The proposed development shall be reliant upon the basic public transport provisions which currently service the locality. It is recognised that substantial increases in public transport services and their frequency is very much user dependant. By permitting the development, opportunity exists to increase utilisation of existing services which may in turn lead to improved frequency subject to commercial viability.

It is noted that there is also the individual community transport options for HACC eligible clients (elderly, carers and people with a disabilities) who have no other means of transport. Transport is provided for medical related appointments e.g. doctors, dentists, podiatry, acupuncture, chiropractic, day surgery. Infrastructure

such as bus widening areas and/or shelters would be provided in key locations within the subdivision to be determined by the local government authority when considering the development application.

The NSW Department of Primary Industries raised comment in their response to Richmond River Council (letter dated 10 January 2007) that increased traffic *"could increase risk of collisions with dairy cattle that cross this road as part of routine farm management arrangements"*. It is recognised that the development will provide an increase in traffic by approximately 14%, however this is better described as a peak increase of 28 vehicles per hour. Thereby, if current farm management practice by people fronting the Bruxner Highway is to encourage stock to cross the highway at peak traffic times, this equates to an average of one extra vehicle per 2mins by the development as compared to the current highway traffic peak flows of one vehicle per 20 seconds, hence the extra risk is negligible. It is also noted that users of stock crossing locations are required to ensure suitable and appropriate road signage is in place so that motorists are advised by warning signs so as to reduce risks. This development does not require any further increase to such current signage obligations

.

7.0 Summary

The proposed 31 lot rural residential subdivision is able to satisfy both the Roads and Traffic Authority and Richmond Valley Council design standards on the basis of the following:

(i) Intersection to Ellems Bridge Road is relocated to the east by 124m and constructed to a Type CHR (ie protected right turn bay) standard.

(ii) Internal roads shall be constructed to 6m seal on 8m formation.

(iii) All access of new residences shall be via the internal road network and not direct connections to the Bruxner Highway.

(iv) Provision of bus setdown or pick up areas will be provided within the subdivision in locations as to determined by the local government authority.

Attachment 1

Superseded Traffic Impact Statement (Oct 2006)

and

RTA Objection Letters

Traffic Impact Assessment of Ellems Bridge Road / Bruxner Highway Intersection

Existing Traffic Volumes. A review of existing information data sets have shown that Ellems Bridge Road carried 62 vpd in April 1997 with the Bruxner Highway carrying in the order of 1535 vpd in 1990 (at Piora) and 1486 vpd in 2001 measured immediately east of Mallanganee. Allowing for 2% traffic growth factors, it is anticipated that the Bruxner Highway at Ellems Bridge Road intersection would be in the order of 2000 vpd and Ellems Bridge Road of approximately 80 vpd.

Traffic Generation. The rezoned land would access the Bruxner Highway via Ellems Bridge Road. The development potential is in the order of 23 allotments with upward of 10vpd maximum generation, equates to 230 vpd extra maximum trips. Adopting a peak hour proportion of 10%, an extra 23 vph would pass through the intersection.

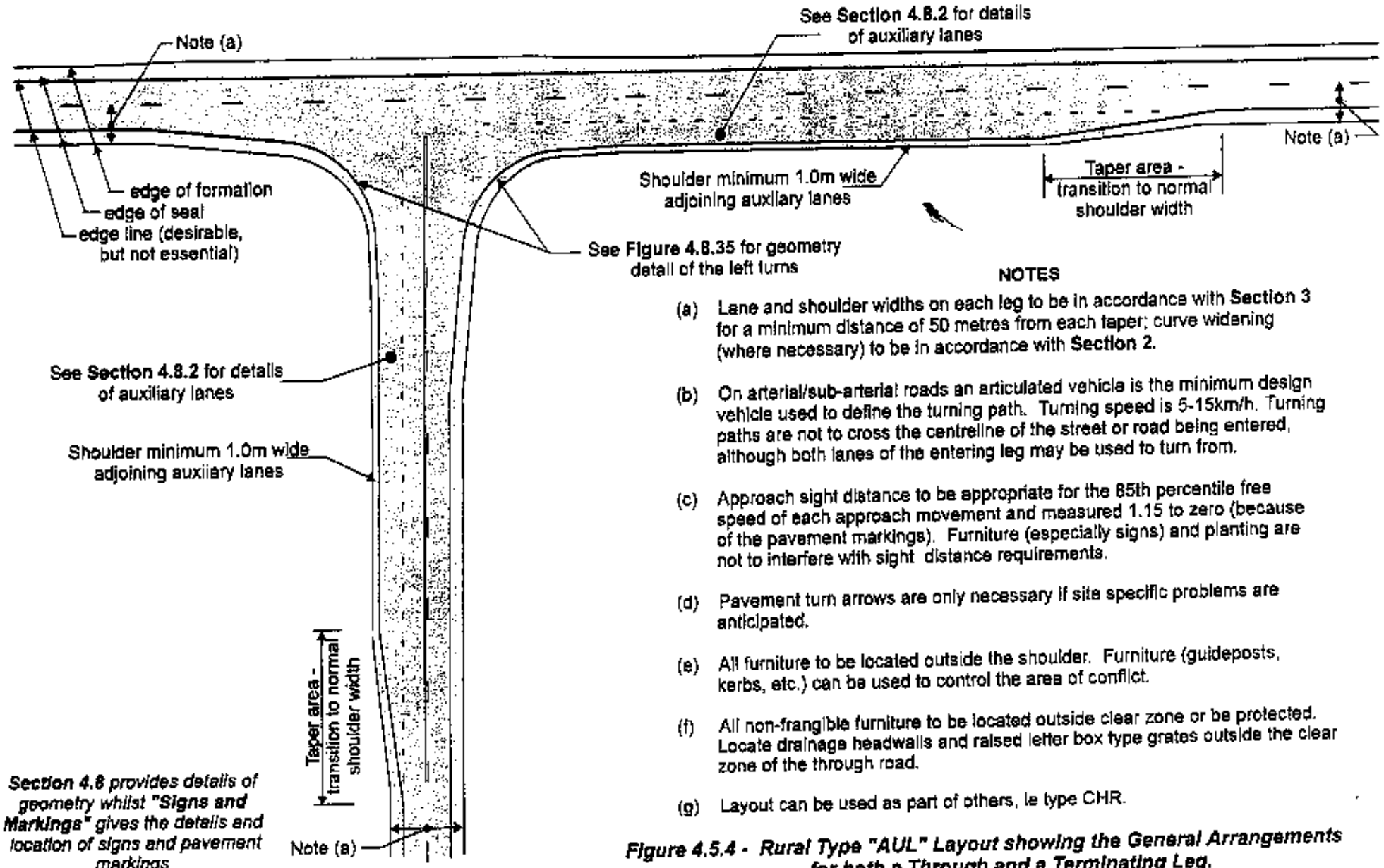
Directional Split. With Casino being the most local town centre for retailing, employment and education, it is anticipated that a split of 85% of all vehicles from the development would be having a trip origin or destination in the immediate Casino township locality. Accordingly, the following traffic numbers are used in assessing the adequacy of the intersection of Ellems Bridge Road and the Bruxner Highway.

Description	Vehicles Per Day	Vehicles Per Peak Hour	Approaching/Conflicting Vehicle Splits
Bruxner Highway Existing	2000 vpd	200 vph	70% & 30%
Ellems Bridge Road	80 vpd	8vph	85% & 15%
New Rezoned Development	230 vpd	23 vph	85% & 15%

Intersection Form. Applying the warrants for rural turn lane provisions from the Austroads Guide to Traffic Engineering Practice – Intersections at Grade, the intersection form is required to meet a Type B configuration or RTA equivalent Type AUR and AUL layout. The current configuration is less than a Type AUR and AUL

layout, hence upgrade works shall be required. The issue is however, the traffic volumes generated by the proposal have only just exceeded the current intersection performance standard, hence greater scrutiny of the staging of the development may well give rise to a delay as to the construction timing of the intersection upgrade. These construction timing matters would need to be reviewed in detail during the development application phase to which current traffic count data and a more rigorous trip assignment process would need to be performed to accurately assess staging of works and their implications.

Summary. Based upon a residential development in the order of 23 allotments, the existing Bruxner Highway intersection with Ellems Bridge Road shall need to become compliant with the minimum Roads and Traffic Authority type AUR and AUL standards. Further assessment during the development application process is required to determine the staged timing of when these upgrade works are required to be implemented.



***Section 4.8** provides details of geometry whilst "Signs and Markings" gives the details and location of signs and pavement markings*

NOTES

(a) Lane and shoulder widths on each leg to be in accordance with **Section 3** for a minimum distance of 50 metres from each taper; curve widening (where necessary) to be in accordance with **Section 2.**

(b) On arterial/sub-arterial roads an articulated vehicle is the minimum design vehicle used to define the turning path. Turning speed is 5-15km/h. Turning paths are not to cross the centreline of the street or road being entered, although both lanes of the entering leg may be used to turn from.

(c) Approach sight distance to be appropriate for the 85th percentile free speed of each approach movement and measured 1.15 to zero (because of the pavement markings). Furniture (especially signs) and planting are not to interfere with sight distance requirements.

(d) Pavement turn arrows are only necessary if site specific problems are anticipated.

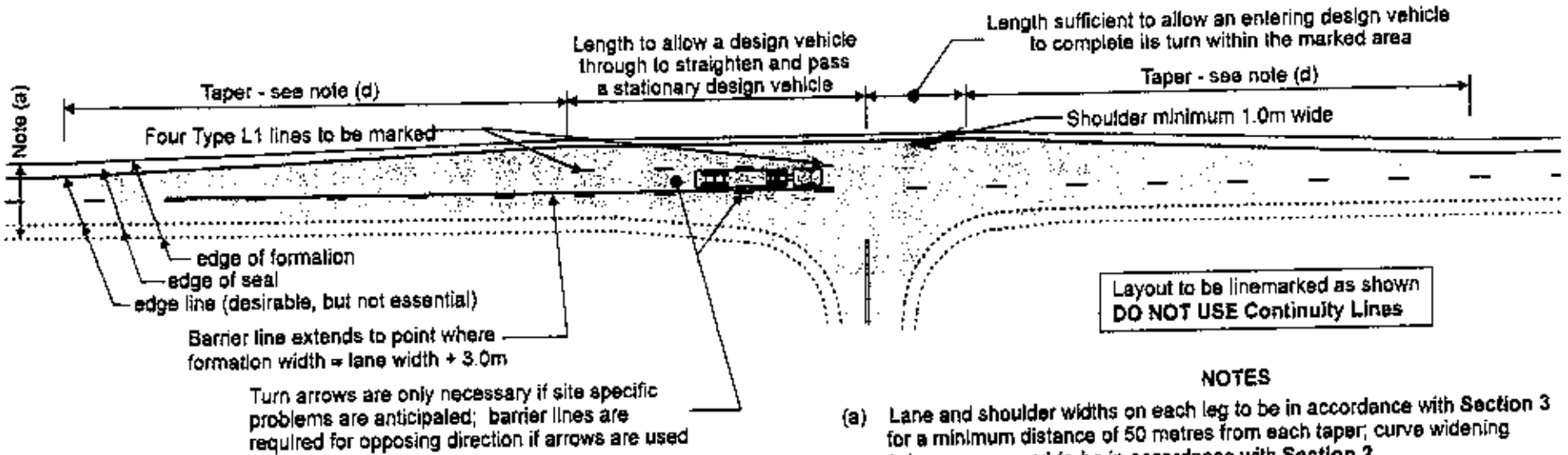
(e) All furniture to be located outside the shoulder. Furniture (guideposts, kerbs, etc.) can be used to control the area of conflict.

(f) All non-frangible furniture to be located outside clear zone or be protected. Locate drainage headwalls and raised letter box type grates outside the clear zone of the through road.

(g) Layout can be used as part of others, ie type CHR.

Figure 4.5.4 - Rural Type "AUL" Layout showing the General Arrangements for both a Through and a Terminating Leg.

This layout is particularly suited to rural areas where high speed, low volume traffic occurs, yet the volume of turning traffic is sufficient to make a conflict likely.



AUR = **AU**xiliary lane **R**ight turn treatment
AUL = **AU**xiliary lane **L**eft turn treatment

This layout is designed to store one design vehicle and allow another design vehicle to pass. Where longer storage is necessary a channelised layout is preferred. Where an auxiliary right turn lane is required on the terminating leg, the "AUL" layout can be used.

***Section 4.8** provides details of geometry whilst **"Signs and Markings"** gives the details and location of signs and pavement marking. Advanced warning signs, alerting drivers to the presence of the intersection, may be required.*

NOTES

(a) Lane and shoulder widths on each leg to be in accordance with **Section 3** for a minimum distance of 50 metres from each taper; curve widening (where necessary) to be in accordance with **Section 2.**

(b) On arterial/sub-arterial roads an articulated vehicle is the minimum design vehicle used to define the turning path. Turning speed is 5-15km/h. Turning paths may cross the centreline of the street or road being entered provided a barrier line is not required for that leg, and traffic volumes make such a manoeuvre appropriate.

(c) Approach sight distance to be appropriate for the 85th percentile free speed of each approach movement and measured 1.15 to zero (because of the pavement markings). Furniture (especially signs) and planting are not to interfere with sight distance requirements.

(d) Taper length determined on basis that some reduction in speed occurs.

(e) All furniture to be located outside the shoulder. Furniture (guideposts, kerbs, etc. can be used to control the area of conflict.

(f) All non-frangible furniture to be located outside clear zone or be protected. Locate drainage headwalls and raised letter box type grates outside the clear zone of the through road

Figure 4.5.3 - Rural Type "AUR" Layout

File No 389.5314:6 08/2.5 NC0883
Michael Baldwin

RTA

The General Manager
Richmond Valley Shire Council
Locked Bag 10
CASINO NSW 2470

SCANNED
11 JUL 2008
Doc. No .....

Richmond Valley Draft LEP Amendment 34 Rural Residential Rezoning Ellems Bridge Road Piora.

Dear Sir

I refer to your letter dated 6 February 2008, your reference T-310 11:CR and apologise for the delay with this response.

The Roads and Traffic Authority (RTA) has examined the proposal forwarded by Newton Denny Chappelle (NDC) in response to the RTA objection to the proposed rural residential rezoning. The RTA would remove its objection provided that:

- The Ellems Bridge Road intersection with the Bruxner highway is relocated according to the plans accompanying the NDC response.
- A Type CHR right turn bay is provided to safely accommodate traffic turning right into the site.
- In lieu of a left turn deceleration lane suggested by NDC and to offset the costs of the right turn lane the RTA would be prepared to accept an AUSTROADS Figure 6.24 Type BAL left turn treatment.
- There will be a requirement for any subsequent development to provide bus bays for school bus pickup and set down. These bus bays will need to be located to eliminate the need for bus passengers to walk across the Bruxner Highway to access the bus service.
- The existing Ellems Bridge Road connection to the Bruxner Highway is closed to traffic once the road relocation is open to traffic.
- The proposed subdivision is designed so that the road traffic noise from the existing Bruxner Highway is mitigated by durable materials in accordance with EPA criteria for new residential developments (The Environmental Criteria for Road Traffic Noise, May 1999).

To cover legislative, construction and environmental requirements the RTA may require the proponent to enter into a Works Authorisation Deed (WAD) to carry out any road construction necessary for the new access. Prior to any construction affecting the Bruxner Highway, the proponent will be required to provide to the RTA for consideration; design plans, a review of environmental factors and pavement design for the works. Any construction works must have an approved Traffic Control Plan prior to commencing. All works affecting the Highway will need to be undertaken by an RTA approved Contractor and be at no cost to the RTA. The need for a WAD will be determined following submission of an application from Council for RTA consideration

File No: 389.5314:6
Your reference: T.310.11 Mr J Hession
Liz Smith

The General Manager
Richmond Valley Council
Locked Bag 10
CASINO NSW 2470

HW16 - Bruxner Highway
Richmond River LEP Draft Amendment No 34 - Rural Residential Rezoning at 25 Ellems Bridge Road, Piora.

Dear Sir

I refer to your letter dated 20 November 2006 regarding the above amendment to the Richmond River Local Environment Plan.

The Roads and Traffic Authority (RTA) objects to the rezoning at this stage. Land should not be rezoned unless it can be clearly demonstrated that safe and efficient access can be achieved. The RTA therefore requests the following information in relation to road safety and network efficiency:

1. It would be appropriate to assess the locations along the site frontage where adequate Safe Intersection Sight Distance (SISD) is available for the prevailing speed limit. It should be noted that the existing junction of the Bruxner Highway and Ellems Bridge Road does not meet the minimum requirement of 250m for SISD. Should a more appropriate location be found, the RTA would pursue the closure of the existing junction, and all new and existing properties would need to be connected to the new junction by the internal road network.

2. A traffic study should be undertaken to determine the impact of the additional volume of traffic generated by this development on the surrounding road network, particularly the Bruxner Highway at this location.

   The traffic study should take into account the key issues relevant to the scale of this proposal as set out in Section 2.3 of the RTA's "Guide to Traffic Generating Developments" (copy attached.). This should at least include information relating to: -

   - Intersection sight distances (see 1. above)
   - The total traffic impact on the road network, including other activities in the area
   - Existing and proposed access conditions and proposed intersection treatment
   - Infrastructure and public transport routes eg. cycleways and buses (including school bus stops)
   - A Section 94 Contributions Plan for improvements to the road network

   Current AUSTROADS standards should be adopted when designing any necessary upgrading of the surrounding road infrastructure. Detailed plans of any roadworks required on the Bruxner Highway should be submitted to the RTA for consideration.

Any roadworks on the Bruxner Highway will be subject to the execution of a Works Authorization Deed (WAD) with the RTA to meet current legislative, environmental and construction requirements. It should be noted that the approvals for the WAD are subject to fees, and this forms part of the Development Application process.

Should you wish to discuss this matter further please do not hesitate to contact Ms Liz Smith at the Grafton Regional Office on 6640 1345.

Yours faithfully

- 9 JAN 2007

Jim Campbell
A/Regional Manager, Northern Region

Attachment 2

Subdivision Layout and Road Longsections

Subdivision Statistics	
No. of New Lots	31
Area of New Lots (Ex. Residue)	49.49 ha
Area of New Road	4.82 ha

NOTE (B) LAND TO BE BOUNDARY ADJUSTED WITH NEIGHBOURING PROPERTY

Note
All dimensions and areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

The boundaries shown on this plan should not be used for final detailed engineers design.

Amendments

Notes :

Design :
Survey :
Drawn : GPR
Approved

Datum : Assumed (2.0m Contour Interval)

Date AUG 2009

0 20 40 60 80 100
1cm = 20m

Scale 1:2000 @ A1

Newton Denny Chapelle
Consulting Surveyors & Planners
Email: office@newtondennychapelle.com.au

Lismore
First Floor Molesworth House
186 Molesworth St, Lismore 2480
T: 66 221011 F: 66 224088

Casino
100 Barker St, Casino 2470
T & F : 66 625000

Client:

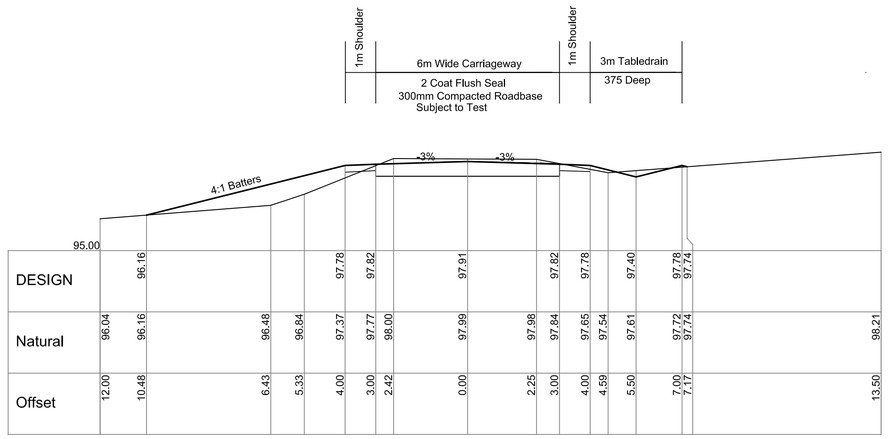
SID LANE
"ORAVIEW"

Project :

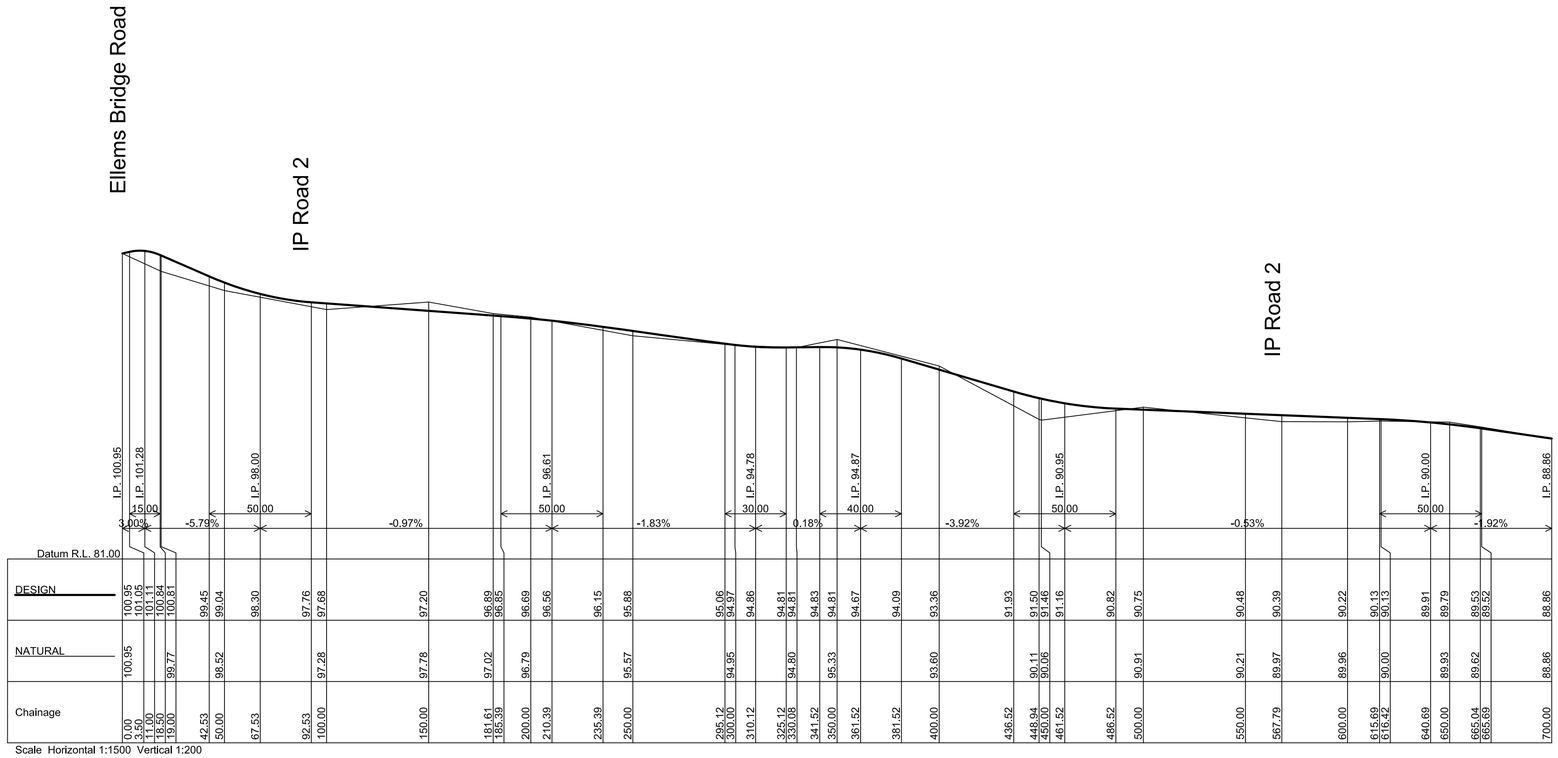
PROPOSED SUBDIVISION
LOT 2 DP 572347 & LOT 1 DP 449328
ELLEMS BRIDGE ROAD - PIORA

Ref No. 04102_SUBD LAYOUT-AUG09+AERIAL

Sheet of Sheets



TYPICAL CROSS SECTION

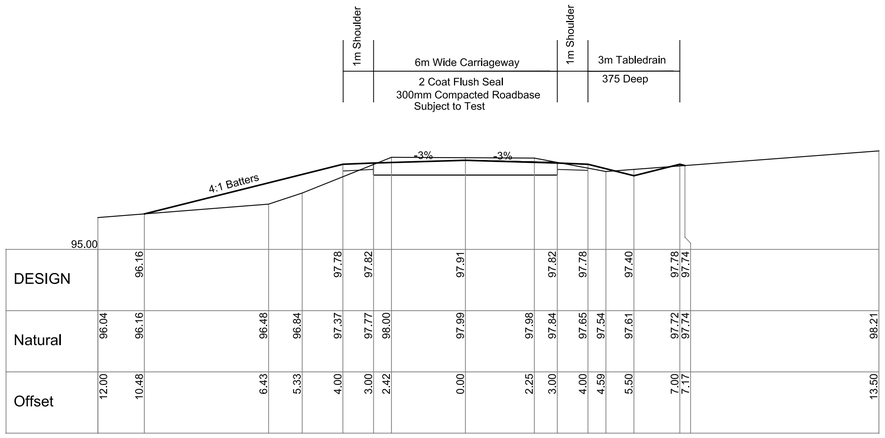


LONGITUDINAL SECTION - ROAD 1

0 2 4 6 8 10
1cm = 2m
1:200

0 15 30 45 60 75
1cm = 15m
1:1500

Amendments	Notes :	Design : GPR Survey : NDC Drawn : GPR Approved Datum : ASSUMED	Date AUG 2009 Scale AS SHOWN	Newton Denny Chapelle Consulting Surveyors & Planners Email: office@newtondennychapelle.com.au	Lismore Suite 1 31 Carrington St. Lismore 2480 T: 66 221011 F: 66 224088 Casino 100 Barker St. Casino 2470 T & F : 66 625000	Client: S Lane 25 Ellems Bridge Road Piora	Project : Plan 3.3B Long Section - Road 1 Lot 1 DP 449328 & Lot 2 DP 572347 Ref No. 04102_PLAN 3.3B_GR-LSECT RD1 Sheet of Sheets



TYPICAL CROSS SECTION

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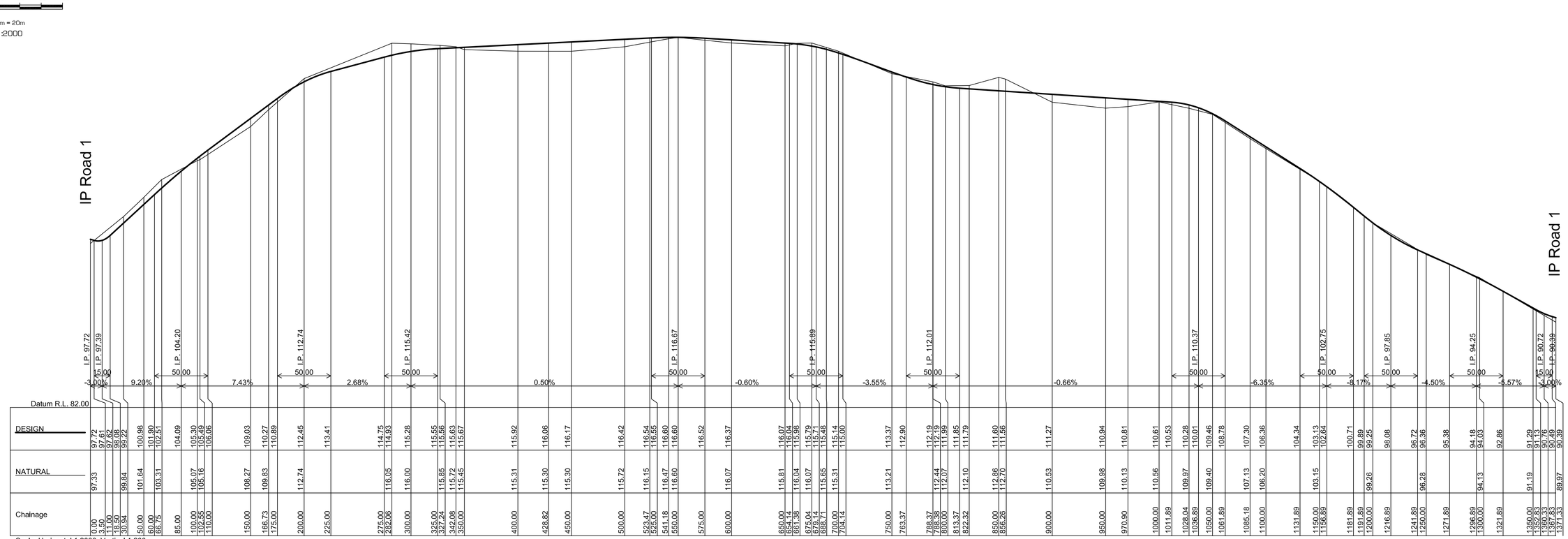
1cm = 2m

1:200

0 20 40 60 80 100

1cm = 20m

1:2000



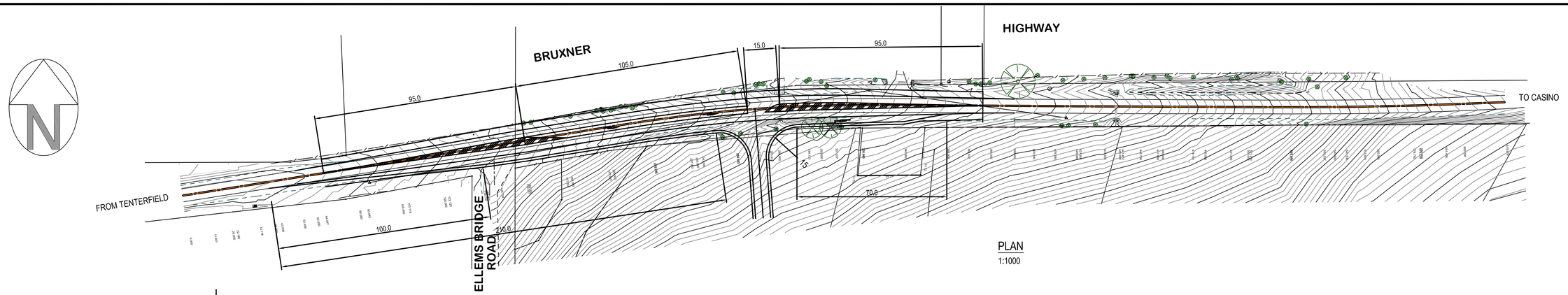
Scale Horizontal 1:2000 Vertical 1:200

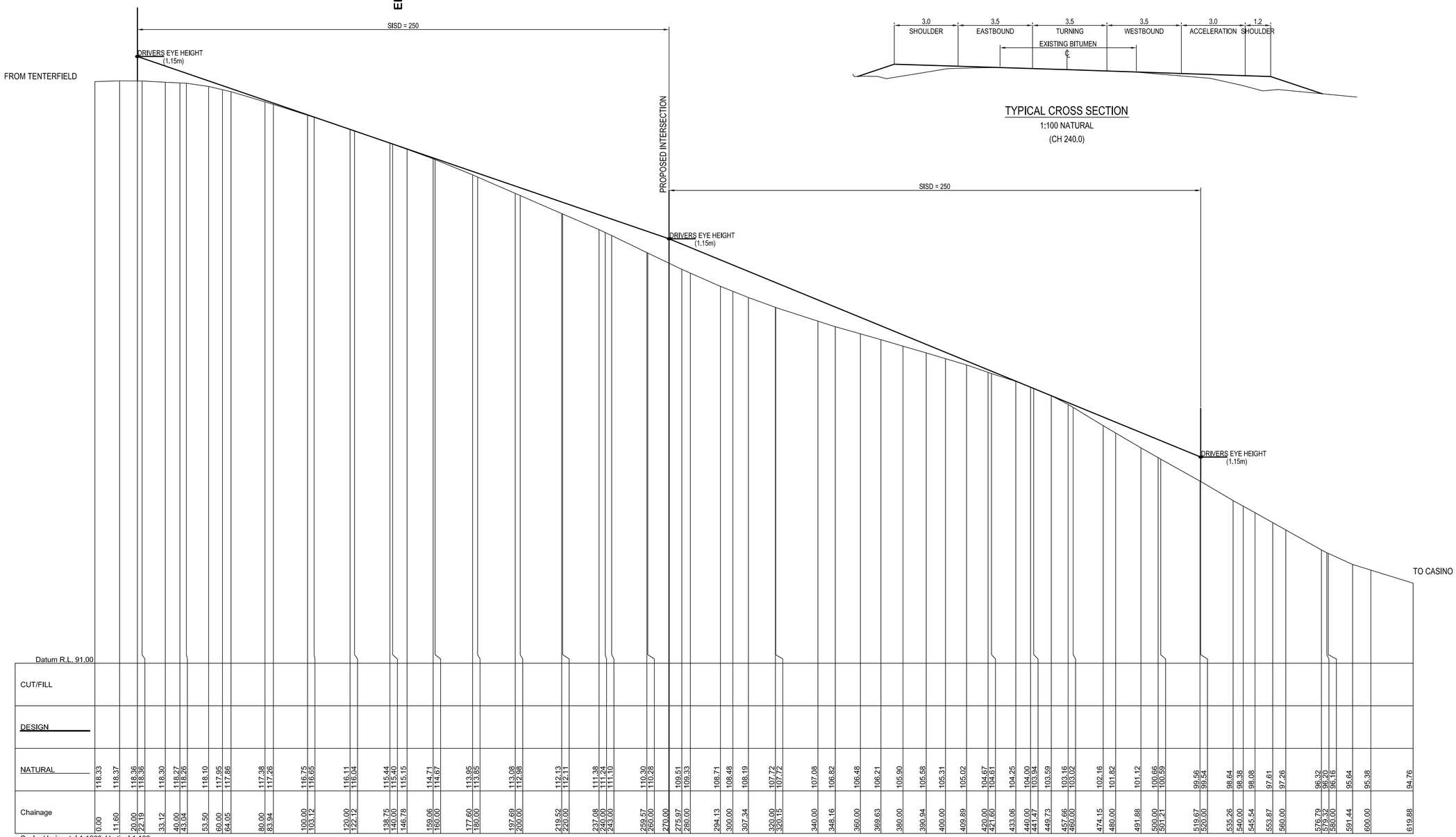
LONGITUDINAL SECTION - ROAD 2

Amendments	Notes :	Design : GPR Survey : NDC Drawn : GPR Approved Datum : ASSUMED	Date AUG 2009 Scale AS SHOWN	Newton Denny Chapelle Consulting Surveyors & Planners Email: office@newtondennychapelle.com.au Lismore Suite 1 31 Carrington St. Lismore 2480 T: 66 221011 F: 66 224088 Casino 100 Barker St. Casino 2470 T & F : 66 625000	Client: S Lane 25 Ellems Bridge Road Piora	Project : Plan 3.3C Long Section - Road 2 Lot 1 DP 449328 & Lot 2 DP 572347 Ref No. 04102_PLAN 3.3C_GR-LSECT RD2 Sheet of Sheets

Attachment 3

Intersection Configurations





PLAN

1:1000

TYPICAL CROSS SECTION

1:100 NATURAL

(CH 240.0)

Datum R.L. 91.00

CUT/FILL																			
DESIGN																			
NATURAL	118.33	118.37	118.36	118.36	118.30	118.27	118.26	118.10	117.95	117.86	117.38	117.26	116.75	116.65	116.11	116.04	115.44	115.40	115.15
Chainage	0.00	11.60	20.00	22.19	33.12	40.00	43.04	53.50	60.00	64.05	80.00	83.94	100.00	103.12	120.00	122.12	138.75	140.00	146.78

CUT/FILL																			
DESIGN																			
NATURAL	114.71	114.67	113.95	113.85	113.08	112.98	112.13	112.11	111.38	111.24	111.10	110.30	110.28		109.51	109.33	108.71	108.48	108.19
Chainage	159.06	160.00	177.60	180.00	197.69	200.00	219.52	220.00	237.08	240.00	243.00	259.57	260.00	270.00	275.97	280.00	294.13	300.00	307.34

CUT/FILL																			
DESIGN																			
NATURAL	107.72	107.72	107.08	106.82	106.48	106.21	105.90	105.58	105.31	105.02	104.67	104.61	104.25	104.00	103.94	103.59	103.16	103.02	102.16
Chainage	320.00	320.15	340.00	348.16	360.00	369.63	380.00	390.94	400.00	409.89	420.00	421.60	433.06	440.00	441.47	449.73	457.66	460.00	474.15

CUT/FILL																		
DESIGN																		
NATURAL	101.82	101.12	100.66	100.59	99.56	99.54	98.64	98.38	98.08	97.61	97.26	96.32	96.20	96.16	95.64	95.38	94.76
Chainage	480.00	491.88	500.00	501.21	519.67	520.00	535.26	540.00	545.54	553.87	560.00	576.79	579.32	580.00	591.44	600.00	619.88

Scale Horizontal 1:1000 Vertical 1:100

LONGITUDINAL SECTION BRUXNER HIGHWAY EXISTING CENTRLINE

Amendments

Notes :

Design : GPR
Survey : NDC
Drawn : GPR
Approved
Datum : Assumed (0.25 Contour Interval)

Date 17/10/2007

Scale AS SHOWN

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Client:
Sid Lane
Rural Residential Rezoning
Piora

Project :
Proposed Type CHR
100 km/h Intersection

Ref No. 04102_C1_PLAN&LSECT

C1

Sheet of Sheets

ATTACHMENT 7

LUCRA

Newton Denny Chapelle

• JOHN NEWTON B. Surv; M.I.S. Aust. • TONY DENNY B. Surv; (Hons); M.I.S. Aust. • DAMIAN CHAPELLE BTP. CPP.

Land Use Conflict Risk Assessment

25 Ellems Bridge Road, Piora

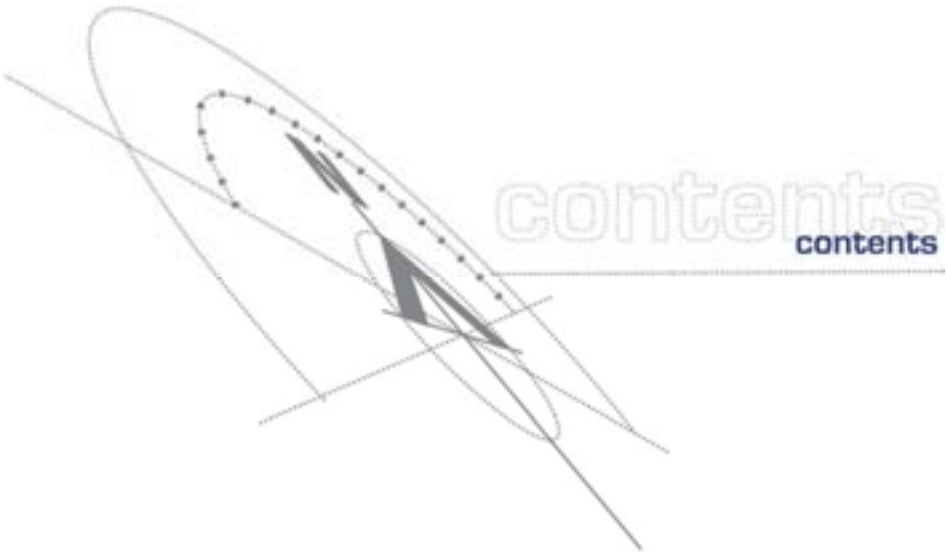
ON BEHALF OF S LANE

Site: Lot 2 DP 1170052
& Lot 1 DP 449328

Our Ref: 04/102
Date: June 2013

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

• P O Box 1138, Lismore, N.S.W. 2480 • Phone (02) 6622 1011 • Fax (02) 6622 4088 DX7779 Lismore
• Email office@newtondennychapelle.com.au • Also at: Cassino Court, 100 Barker St., Casino N.S.W. 2470 • Phone/Fax (02) 6662 5000



contents

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

1.0 Introduction

1.1 Land Use Conflict Risk Assessment (LUCRA)

As evidenced through the minutes of the ordinary meeting of the Richmond Valley Council and as reported to Council 19 September 2006 (refer **Attachment 11** of Planning Proposal), in response to whether the LEP Amendment No. 34 (now being this proposed Planning Proposal) will be compatible/complimentary with surrounding land uses the report states *"Yes. The LEP will be compatible and complimentary to the surrounding land uses. The site was chosen for its locational attributes when preparing the Rural Residential Strategy".*

The North Coast REP, the Far North Coast Regional Strategy and the Northern Rivers Catchment Action Plan require that risk of land use conflict with key resources and rural production be assessed and addressed in future land use change decisions.

To assess and address the potential of land use conflict from the proposed rural residential development with surrounding key resources and rural production, an assessment of land uses within 1km of the subject site has been undertaken in accordance with the North Coast Living and Working in Rural Areas handbook. The LUCRA has assessed the risk from the proposed development and buffers required to reduce the risk of future land use conflict impacts.

This LUCRA has been prepared in response to the Section 117 Directive 1.3. In response to Directive 1.3 and in particular Sub-clause 4(c), as the subject site is located within the 1,000 metre buffer zone to the Woodview/Piora Quarry (ie. 'transition area'), this LUCRA has been prepared with respect to the quarry which demonstrates that the proposed rural residential subdivision is able to co-exist with the quarry. Accordingly, the proposed rural residential subdivision is not considered to result in future sterilisation of the identified resource of Woodview/Piora Quarry.

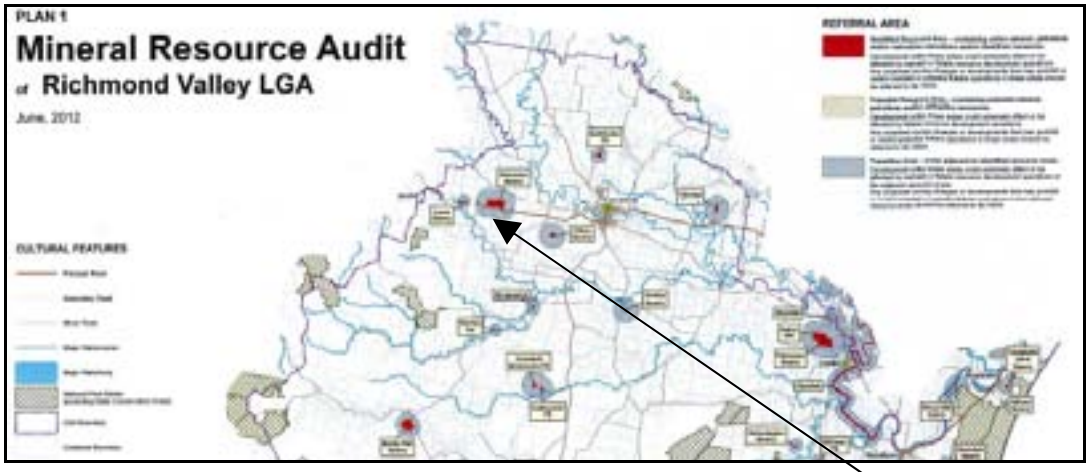


Plate 1 – Woodview/Piora Quarry buffer location

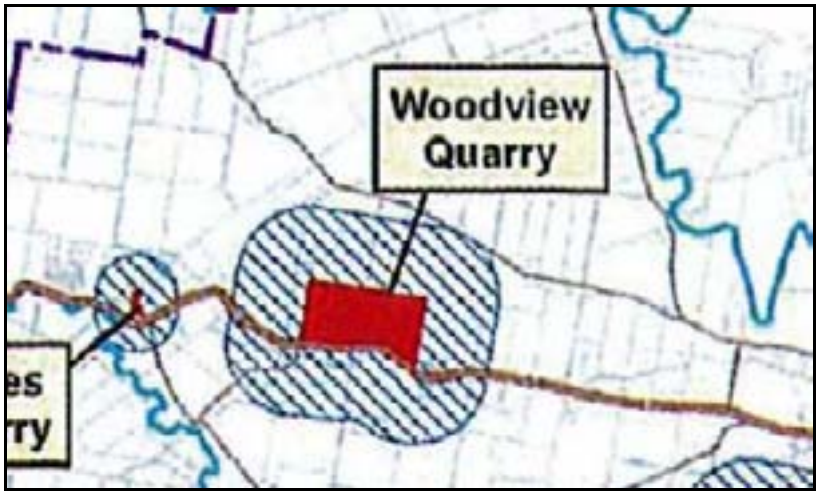


Plate 2 – Woodview/Piora Quarry buffer location

Land Uses Within 1km of the Development Site

In accordance with the guideline 'Living and Working in Rural Areas' *a handbook for managing land use conflict issues on the NSW North Coast* an assessment was undertaken with respect to existing and anticipated land uses within 1km of the development site in all directions north, east, south and west.

The surrounding land uses located within 1km of the development site are clearly documented and illustrated on **Plan 1** and comprise:

- Cattle grazing.
- Rural residential development.
- Extractive Industry (Woodview/Piora Quarry).

Located outside of 1km of the subject land is land to the south approved for an Animal Establishment (poultry farm). Land to the south also contains floodplain lagoons known as Diamond D Lagoon.

Client :

S LANE

25 ELLEMS BRIDGE ROAD
PIORA

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Amendments :

	Date	Changes

Project :

LUCRA PLAN 1
LAND USES WITHIN 1km OF SUBJECT SITE
LOT 2 DP 1170052
ELLEMS BRIDGE ROAD PIORA

Date: 27.05.13
Scale 1:12500
Ref No. 04/102 U

The above land uses are discussed below in further detail including an assessment of the proposed development against the required buffers set out in Chapter 6 ' – Development Control'. An evaluation of risk level through the identification of an associated risk ranking system has also been provided for the grazing land use. Written comments are then provided for the identified rural residential land uses and the extractive industry.

1.1.1 Cattle Grazing (Agriculture)

This section includes information that is in response to the NSW DPI 'Agricultural Issues' (12/1/07) with respect to the adjoining agricultural grazing operations raised under Point 3 of that letter. This letter is contained in **Attachment 10** of the Gateway Planning Proposal.

With respect to those matters raised under Point 1 of the above referenced NSW DPI letter pertaining to additional vehicle trips and potential conflict with dairy cattle collisions, reference should be made to **Attachment 6** of the Gateway Planning Proposal report which provides a Traffic Impact Assessment.

Grazing land is located to the east of the area to be rezoned, to the south (within residue), to the west, and further to the north across the Bruxner Highway. The living and working in rural areas guidelines indicate that a 50 metre separation distance is required from rural dwellings to grazing land.

Although the handbook does recognise the potential for the use of biological or vegetative buffer zones it does not contain specific design specifications for such zones (which aid to reduce the distance of separation buffer distances) for residential uses adjoining grazing land. However it does reference that the Lismore Council Development Control Plan: Chapter 11 – Buffer Areas is a comprehensive buffer DCP and serves as a useful model for avoiding and reducing land use conflict at the interface through the use of planning policy and development control. Accordingly, the measures prescribed within the Lismore DCP Chapter 11 for 'Grazing' have been used to undertake this LUCRA.

The Lismore DCP: Chapter 11 – Buffer Areas provides that residential dwelling sites that adjoin grazing land shall have a minimum 30 metre setback with a minimum 5 metre wide planted buffer along the boundaries adjoining the grazing land.

Plan 2 identifies that scope exists to provide a 30 metre separation distance from the property boundaries adjoining grazing land. Further provision should then also be made for the implementation of a 5 metre wide planted 'biological' buffer adjacent to the property boundaries adjoining the grazing land and wholly contained within the subject land.

Implementation of this buffer would then provide a reasonable level of security against the development of land use conflict from the adjoining grazing activities upon reliance of the above referenced Lismore DCP: Chapter 11 – Buffer Areas.

A review of location of the effluent disposal fields as required pursuant to the wastewater report submitted by BCA Check indicates that adequate areas are still available outside of both the grazing buffers and wastewater disposal fields to accommodate building envelopes within the allotments. It is pertinent to note that previously proposed Lot 7 in previous rezoning submissions has now been consolidated into proposed Lot 8 due to site constraints.

It is acknowledged that the land directly adjoining the proposed rural residential development and currently utilised for grazing purposes is identified as being 'potential future settlement areas' pursuant to the Northern Rivers Farmland Protection Project, and identified within the Richmond River Rural Residential Development Strategy 1999 for rural residential development. In this respect the area of land proposed for rural residential subdivision is not adjoined by farmland identified as having either Regional or State significance.

Risk Assessment for Grazing

As per previous training of professional staff in LUCRA's two components were considered to determine the level of risk, these being:

- Measure of consequence (severity of environmental Impact) using Levels 1 (major), 2 (moderate), 3 (negligible); &
- Probability (measure of likelihood of risk) using Levels A (very likely), B (likely) and C (unlikely).

In terms of the risk assessment ranking matrix, a rank of 25 is considered the highest magnitude of risk that is a highly likely, very serious potential land use conflict. A rank of 13 represents the lowest magnitude of risk, an almost impossible, very low consequence event. In summary, a risk ranking of 20-25 would

Note
All dimensions and areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

The boundaries shown on this plan should not be used for final detailed engineers design.

0 40 80 120 160 200

1cm = 40m
1:4000

500m BUFFER FROM QUARRY

30m SEPARATION BUFFER TO AGRICULTURAL GRAZING LAND (INCLUDING 5m WIDE VEGETATIVE BUFFER)

5m VEGETATIVE BUFFER

2 DP 543038

1 DP 572347

1 DP 1170052

1 DP 1150749

1 DP 806596

27

45 DP 1123300

1 DP101324

BRUXNER HIGHWAY

ELLEMS BRIDGE RD

ROAD 1

ROAD RESERVE TO BE CLOSED

500m BUFFER FROM QUARRY

20.115 WIDE ROAD RESERVE

1 1.32 ha
2 1 ha
3 2.14 ha
4 1.92 ha
5 2.06 ha
6 2 ha
8 3.88 ha
9 1.36 ha
10 1.08 ha
11 1.11 ha
12 1.23 ha
13 1.02 ha
14 1.04 ha
15 1 ha
16 1.46 ha
17 1.21 ha
18 1.04 ha
19 1.2 ha
20 2.24 ha
21 1.67 ha
22 1.66 ha
23 1.53 ha
24 1.77 ha
25 1.53 ha
26 1.19 ha
27
28 1.8 ha
29 2.21 ha
30 3.5 ha
31 1.61 ha
32 1.25 ha

Client :
S LANE
25 ELLEMS BRIDGE ROAD
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Amendments :

	Date	Changes

Project :
LUCRA PLAN 2
PROPOSED LOT LAYOUT SHOWING BUFFERS
LOT 2 DP 1170052
ELLEMS BRIDGE ROAD PIORA

Date: 27.05.13
Scale 1: 4000
Ref No. 04/102 T

normally be considered as an unacceptable risk. A risk ranking of less then 20 would normally be considered as an acceptable risk.

The risk matrix assessment to the adjoining agricultural grazing land identifies a risk ranking of less than 20 thereby providing an acceptable risk level with the proposed rural residential development.

Risk Assessment Matrix

Activity	Identified Hazard	Risk Ranking	Method of Control	Controlled Ranking
Agricultural Grazing	Odour and chemical spray drift resulting from application of chemicals to livestock (treatment for ticks etc)	3C	Separation buffer and vegetation buffer	3C = 13
	Noise (farm machinery/methods used for mustering and loading cattle and vehicles used for the transport of cattle)	3B	Separation buffer and vegetation buffer	3C = 13

Upon consideration of potential land use conflict impacts, the risk level associated with potential land use conflict between the proposed rural residential development and grazing land is deemed **acceptable** ie. less than 20 in the adopted ranking assessment system.

Furthermore, Council acknowledged (11/10/06) that the subject land is comparatively unconstrained as agricultural production in the surrounding area is restricted to grazing which does not present any major incompatibility issues.

1.1.2 Rural Residential

Dispersed rural residential dwellings are located within 1km of the area proposed for rezoning as illustrated on **Plan 1**.

It is submitted that the areas containing these dwellings are located within "available rural residential land" within the Richmond River Rural Residential Development Strategy 1999 for rural residential development, and also identified within "potential future settlement areas' under the Northern Rivers Farmland Protection Project.

The existing and potential rural residential development within the locality will result in a land use commensurate with the proposed rural residential development on the subject land proposed within the Gateway Planning Proposal.

No issues are raised with the proposed development and surrounding existing and anticipated rural residential development. The risk level associated with potential land use conflict between the proposed development and existing and anticipated rural residential development is deemed **acceptable.**

1.1.3 Extractive Industry (Woodview/Piora Quarry)

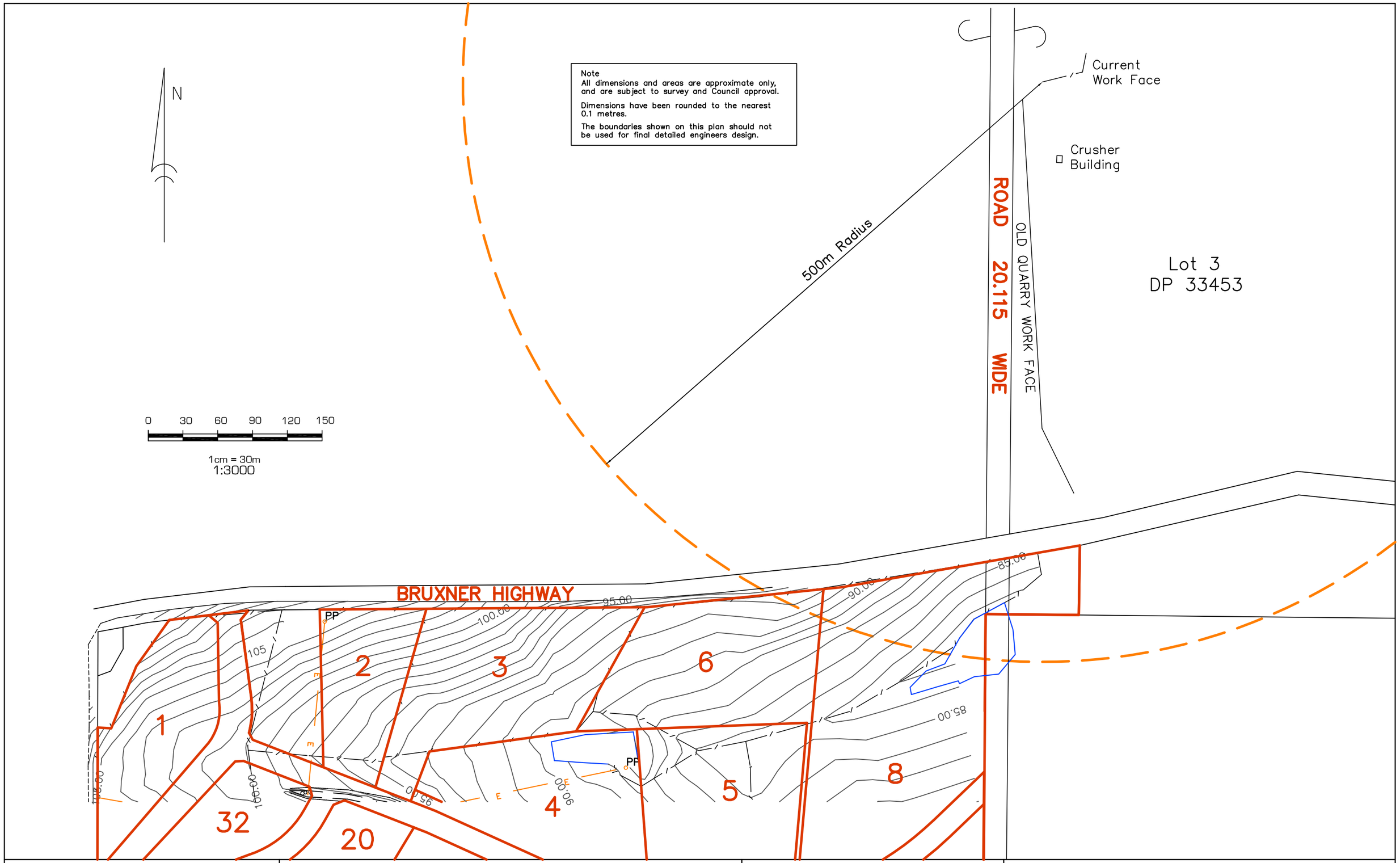
The objective of this section is to provide sufficient information to demonstrate that the proposed rural residential subdivision and Woodview/Piora Quarry can co-exist with no displacement of quarry activities or reduction of the mineral resource. This section includes information that is in response to the NSW DPI "Mineral Resource Issues" (12/1/07).

As per the introduction of this LUCRA document, in response to the Section 117 Directive 1.3, in response to Directive 1.3 and in particular Sub-clause 4(c), as the subject site is located within the 1,000 metre buffer zone to the Woodview/Piora Quarry (ie. 'transition area'), this LUCRA has been prepared with respect to the quarry which demonstrates that the proposed rural residential subdivision is able to co-exist with the quarry. Accordingly, the proposed rural residential subdivision is not considered to result in future sterilisation of the identified resource of Woodview/Piora Quarry.

Richmond River Shire Council granted development consent for the Woodview/Piora Quarry (DA 62/89) on 31/1/90 on land known at the time as part portion 143, Parish of Bundock with an approved capacity of winning up to 50,000m^3 per annum.

The working face of the quarry at the time of survey is located within a central portion of the property with the current working face identified on **Plan 3** contained within this report.

The Mineral Resource Audit (Richmond Valley LGA) forwarded by Council to Newton Denny Chapelle indicates the Woodview/Piora Quarry is recognised as a **regionally significant resource**. It contains a basalt rock type with its commodity identified as hard rock aggregate. Its resource amount is stated in the direction as about 1,750,000 tonnes with a life of operation expected beyond 40 years. The



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Amendments :

	Date	Changes

Project :

LUCRA PLAN 3
QUARRY BUFFER AREA
LOT 2 DP 1170052

Date: 27.05.13
Scale 1:3000
Ref No. 04/102 U

quarry was taken over by Richmond Valley Council and at the time the direction was made, was only producing some overburden but has potential to produce 30,000–40,000 tonnes per annum for 40 years.

Name: Woodview Quarry
Operator: Richmond Valley Council
Commodity: Course aggregate
Rock Type: Basalt
Status: Operating – continuous
Comment: Resource approximately 1.75M tonnes. Potential to produce 30 000 – 40 000 tonnes per annum for over 40 years.

A meeting was held with a representative of Newton Denny Chapelle, Senior Council Engineer, Mr Paul Radnidge, and previous quarry operator, Mr Brian Cooper, 14/8/09. Discussions related to existing quarry operations and potential future quarry development including expansion, intensification and associated modifications to quarry layout. As a result it was advised during this meeting that the quarry in today's context extends over land now known as Lot 3 DP 833453. Council officers advised that the quarry is also used to create rural blend used for road maintenance, and this may together with the overall quarry operation and output result in the quarry potentially producing up to 240,000 tonnes per year (both product and overburden). The site is to be progressively rehabilitated to ensure that exhausted quarry faces do not form adverse visual components of the immediate rural landscape, this is discussed later in this section.

General Operations

The issues associated with quarry operations which have the capacity to result in land use conflict with rural residential development generally relate to noise and dust emissions, and vibration impacts from blasting, further to possible visual impacts to the public domain and surrounding properties. The basic activities undertaken within quarry operations relate to:

- Clearing and grubbing of vegetation generally using dozers and loaders;
- Topsoil removed and stockpiling;
- Extraction;
- Blasting;
- Crushing and screening;
- Stockpiling of product;
- Transport of product.

With respect to general noise management of the quarry, Council officers advised that updated modern equipment is used in the day to day quarry operations and in normal circumstances this equipment would be regularly inspected and licensed as required. This adoption of **best practice management** by the quarry operators will reduce the potential for noise conflicts with surrounding rural residential development (including the subject proposal) thereby reducing reason for complaint by surrounding residents and any resultant displacement of quarry activities.

Newton Denny Chapelle have been informed by the proponent that seismic testing has been conducted in the past on land within vicinity of the quarry. Mr Paul Radnidge's (Manager Civil Operations – RVC) recollection of the events is that seismic testing of an adjoining property was conducted approximately 15 years ago in response to a complaint received by a resident 1.5km away from the quarry. Council advised the seismic results indicated that the impacts were unlikely to cause any damage to the residence or associated structures of the said property of the complainant. Despite the complainant not being consoled, the seismic testing demonstrated that the complaint did not result in any interruption or reduction in quarrying operations associated with the Woodview/Piora Quarry.

Governing the day to day operations of the quarry, the following conditions were imposed on the original consent notice 62/89 to preserve the amenity of surrounding residents:

1. *Establishment of a vegetation screen along the highway frontage.*
2. *The applicant is to obtain State Pollution Control Commission approval and licences to operate the quarry.*
3. *Blasting must not exceed the maximum blast over pressure level of 115dB (linear) and a peak ground vibration velocity of 5mm/sec when measured to the nearest affected residence pursuant to the State Pollution Control Commission.*
4. *Testing of the blast overpressure and peak ground vibration velocity by the State Pollution Control Commission.*
5. *Implementation of dust control measures pursuant to State Pollution Control Commission requirements.*
6. *Rehabilitation of the quarry site at the completion of quarrying operations or when requested by Council or the Soil Conservation Services.*

The above measures will continue to preserve the amenity of the surrounding rural properties and would reasonably be expected to preserve the amenity of future residents in the proposed rural residential subdivision consequently reducing potential for land use conflict. Since the imposition of the above management measures governing the surrounding amenity, more recent legislation that would aim to protect the amenity of surrounding properties to ensure both the quarry and rural residential development could co-exist includes for instance the POEO Act 1997 and the Industrial Noise Policy (NSW EPA, 2000) which establishes noise criteria that aims to protect the community from excessive intrusive noise impacts and preserve the amenity of existing surrounding development.

Blasting (noise & vibration impacts)

The NSW DPI – "Living and Working in Rural Areas" guideline generally requires a recommended buffer distance of 1,000 metres for rural dwellings from blasting activities. Having regard to the location of the land approved for the quarry development, it is acknowledged that blasting activities will occur within 1km of the proposed rural residential development. Notwithstanding this, the below information is provided to justify that both the Woodview/Piora quarry operations and the proposed rural residential subdivision can co-exist post approval of this Gateway Planning Proposal and subsequent Development Application.

The previous quarry operator advised that blasting was undertaken by appropriately experienced personnel who hold appropriate State and Federal licences and authorities. It is estimated blasting occurs between 2–4 times per annum.

Concerning blast noise and vibration management associated with the quarry, for each blast the quarry operator monitors noise, air blast over pressure and ground vibration at two points on the quarry site. The two monitoring locations are established to the east and south of the current working face. Council's records to date have not recorded any complaints from properties located immediately south of the Bruxner Highway from blasting activities thereby reasonably suggesting that those properties south of the highway – as this proposed rural residential subdivision is located – are not adversely affected by impacts resulting from noise, air blast overpressure or ground vibration. The introduction of this LUCRA acknowledges a previous complaint 15 years ago from a property located 1.5km away from the quarry. The introduction provides " Newton Denny Chapelle have been informed by the proponent that seismic testing has been conducted in the past on land within vicinity of the quarry. Mr Paul Radnidge's (Manager Civil

Operations – RVC) recollection of the events is that seismic testing of an adjoining property was conducted approximately 15 years ago in response to a complaint received by a resident 1.5km away from the quarry. Council advised the seismic results indicated that the impacts were unlikely to cause any damage to the residence or associated structures of the said property of the complainant. Despite the complainant not being consoled, the seismic testing demonstrated that the complaint did not result in any interruption or reduction in quarrying operations associated with the Woodview/Piora Quarry".

In light of the above information including the conditions imposed on the original quarry consent, it is reasonable to submit that no adverse impacts will be generated on this proposed rural residential development. It is therefore considered that future quarrying operations would not be a reason for complaint by future residents of the proposed subdivision estate that may otherwise lead to a displacement of quarry activities.

Crushing (noise and dust impacts)

The Woodview/Piora Quarry does not operate a fixed crushing plant but rather uses a mobile crushing plant. Although the frequency of use of the crusher is dependent on demand, it is understood crushing/screening may be undertaken intermittently throughout the year, and anywhere up to 9 months of the year. Current crushing activities of hard rock are generally undertaken in the crater of the quarry with the faces of the quarry acting as a mitigation tool for noise escaping from the quarry site.

Noise – As detailed above, no noise complaints have been lodged to Council regarding current or previous quarry activities from residents located immediately on the southern side of the Bruxner Highway to the quarry.

The NSW DPI – "Living and Working in Rural Areas" guideline generally requires a recommended buffer distance of 500 metres for rural dwellings from quarry activities not involving blasting. In satisfying this aspect to the LUCRA guidelines, previous Council correspondence dated 4 November 2004 (refer **Attachment 8** of the Gateway Planning Proposal) required a separation distance of 500 metres be considered from the nearest working face of the quarry to the closest building site within the estate.

Newton Denny Chapelle have previously undertaken survey work to determine the 500 metre required buffer distance from the nearest working face of the quarry.

Plan 3 in this LUCRA illustrates the 500 metre buffer distance which only impacts on part of proposed Lots 6 & 8. It is submitted that areas are available within proposed Lots 6 & 8 that are outside the 500 metre buffer distance that are considered suitable for future dwelling sites. Preliminary assessment identifies areas capable of containing building envelopes with a minimum area of 400m^2 (ie. 20m x 20m). It is noted that previously proposed Lot 7 in pervious rezoning submissions has now been consolidated into proposed Lot 8 due to site constraints.

All other proposed allotments are located outside of the 500m quarry buffer.

Should the quarry operations extend laterally either east or west, or move closer to the southern boundary of the quarry land, it is reasonable to suggest that through the quarry operations complying with those development conditions outlined above (quarry consent 62/89) together with the existence of the POEO Act 1997 and the Industrial Noise Policy (NSW EPA, 2000) protection will be given to the surrounding residents from excessive intrusive noise impacts thereby preserving the amenity of the surrounding environment. It is therefore considered that future quarrying operations would not be a reason for complaint by surrounding residents and any resultant displacement of quarry activities.

Dust - Discussions with Council representatives on 14/8/09 indicated that no dust issues have been generated by quarrying operations upon surrounding residents and no complaints had been lodged to Council in this aspect. Should any issues arise in the future, a watering system would be implemented to minimise any dust emissions from the site.

A previous odour report undertaken by Pacific Air & Environment (dated 14 December 2004) for the poultry farm located at Benn's Road to the south of the development is currently held by Council as it was lodged for previous assessment purposes for that development. The assessment provided an understanding of local wind conditions and the predominant winds for the locality. The location conditions were modelled using a recognised meteorological model (TAPM) in conjunction with available regional data.

The assessment provides information detailing local wind conditions in the Piora locality and indicates that in the early morning winds occur most frequently from the west-northwest through southwest and later in the morning from the west moving through south to east. By afternoon and evening periods winds tend to

come from directions between south-east and north-east. Overall, the wind rose diagrams indicate that light winds dominate the locality as opposed to stronger winds.

It is therefore submitted that the pattern of local wind conditions reduces the potential for dust generated impacts from northerly winds heading south towards the proposed rural residential estate particularly as light winds dominate the locale.

Given there is no history of dust issues or complaints from surrounding residents of this nature, the pattern of local wind conditions together with the conditions imposed on the original quarry consent outlined above, it is reasonable to suggest that no dust impacts will be generated on the proposed rural residential development. It is therefore considered that future quarrying operations would not be a reason for complaint by surrounding residents and any resultant displacement of quarry activities.

Haulage (Traffic/Noise Impacts)

Information provided from Council officers indicated that traffic generated by the quarry operations would be split approximately 90/10 in terms of direction of travel. In this respect 90% of traffic would leave the quarry site and head east along the Bruxner Highway, with only a small percentage of 10% heading in a westerly direction. The access to the quarry is located east of the subject land proposed for subdivision resulting in only 10% of traffic generated from the quarry actually being driven directly past the proposed rural residential estate.

With respect to noise impacts from traffic utilising the Bruxner Highway, reference should be made to the noise assessment prepared by Tim Fitzroy & Associates as contained within **Annexure 1** of this LUCRA report.

In terms of safety and potential for conflict between quarry traffic and traffic from the proposed subdivision as raised by the NSW DPI, the proposed rural residential development is designed so no lots have direct access to the Bruxner Highway and will utilise a single access point through the provision of an internal road system. This reduces the potential points of conflict within the road network between private vehicles and haulage trucks. Regarding traffic impacts, further reference should be made to the Traffic Impact Assessment contained within **Attachment 6** of the Gateway Planning Proposal.

Visual Impacts

The land subject to the quarry operations (Lot 3 DP 833453) ranges in levels generally from RL 60 metres to RL 110 metres. Higher elevated portions of the land generally range between RL 100 metres to RL 110 metres and exist within the site's western areas and also within the south-eastern corner. The land subject to this rezoning application ranges in levels between RL 85 metres to RL 110 metres being at a similar level to the quarry site. The NSW DPI has subsequently raised concerns that the quarry is within the view shed from parts of the proposed subdivision which may exacerbate the risk of objections to quarrying based on aesthetic considerations.

Notwithstanding the position of the DPI, it is expected that future residents and/or owners of allotments within the rural residential estate will be aware of the existence of the quarry operations. However, a number of measures are discussed below that will reduce the potential of adverse visual impact of the quarry from properties within the proposed estate thereby reducing the chance of objections and complaint from residents in this regard:

- It is reasonable to expect that land purchase and occupation within the estate will be undertaken on a 'buyer beware' basis on the understanding that Woodview/Piora Quarry is operational to the north across the Bruxner Highway;
- Previous quarry operator, Mr Brian Cooper, has advised that the southern ridgeline adjacent to the Bruxner Highway will not be excavated for quarrying purposes and will remain at its full height between RL 100 to RL 110 metres. The working face towards the southern edge of the quarry site adjacent to the Bruxner Highway will therefore be directed in a northerly fashion and be obscured from view from the allotments within the proposed estate.
- The retention of the ridge adjacent to the southern property boundary in its natural state will further be embellished through vegetation screen planting to aid in screening the view shed of the quarry from the south. This is a requirement of Condition (b) of the original quarry consent 62/89 which requires the "*establishment of a vegetation screen along the highway frontage*"
- Exhausted areas of the quarry will be rehabilitated in a progressive manner which is understood to include vegetative landscaping measures to ensure that exhausted quarry faces do not form adverse visual

components of the surrounding rural landscape. The rehabilitation of the quarry is governed by the consent Condition (j) of the quarry consent 62/89 which requires *"rehabilitation of the quarry site at the completion of quarrying operations or when requested by Council or the Soil Conservation Services".*

- Scope will exist within the property boundaries of the rural residential lots to allow for future residents to undertake their own level of landscape planting to further assist in retaining visual privacy which is common practice within rural residential lots of this nature.
- Council have already acknowledged (11/10/06) that the subject land is comparatively unconstrained by stating that the *"aspect and amenity of the subject land is aesthetically pleasing with the benefit of a scenic rural outlook from the site"*. This indicates Council have not previously raised concerns of the possible view shed into the quarry site from the proposed estate.

1.2 Land Uses Outside 1km of the Development Site

Located outside 1km of the area of land proposed for rezoning, is land to the south-west comprising an Animal Establishment (Poultry Farm) and land to the south which comprises Diamond D Lagoon.

This section includes information that is in response to the NSW DPI "Fisheries Issues" and Point 2 of the "Agricultural Issues". The NSW DPI letter is contained in **Attachment 10** of the Gateway Planning Proposal.

a) Diamond D Lagoon

Firstly, it is noted that the Fisheries Division raises no objection to the proposal but notes that the southern and lowest portion of the property contain floodplain lagoons known as Diamond D Lagoon. As floodplain lagoons are an important fish habitat, the NSW DPI recommends there be appropriate efforts to maintain flood ways to the lagoon by siting infrastructure and services for the proposed development in a manner so as to avoid obstruction of water flows.

NSW DPI provide that the establishment of a riparian buffer to minimise the impact of the development on aquatic habitats is also important, particularly

so, as the lagoon which has a limited assimilatory capacity is positioned down slope of the development. NSW DPI policy with regard to aquatic habitat buffers requires:

> *"Terrestrial areas adjoining freshwater, estuarine or coastal habitats be carefully managed in order to minimise land use impacts on these aquatic habitats. As a precautionary approach, foreshore buffer zones at least 50 metres wide should be established and maintained, with their natural features and vegetation preserved. Such buffer zones may need to be fenced or marked with signs. The width of these buffer zones may need to be increased to 100 metres or more where they are adjacent to ecologically sensitive areas"*

The proposed development satisfies the required buffer distances prescribed above given the location of the proposed rural residential development is located approximately 1km north of the area identified as Diamond D Lagoon as measured from the 'Mummulgum' topographic map (9440-2N). An appropriate riparian separation buffer will be provided to the lagoon from the proposed rural residential allotments well in excess of the required 100 metres.

Appropriate riparian buffers have been identified and provided to watercourses flowing to the flood plain lagoon from future location of effluent disposal fields servicing the lots. The "On-site Sewage Considerations Report" prepared by BCA Check and contained within **Attachment 2** of the Gateway Planning Proposal considers and addresses all site and soil limitations to minimise any detrimental impacts on the sensitive environment and amenity of the area.

b) Animal Establishment (Poultry Farm)

This section includes information that is in response to the NSW DPI 'Agricultural Issues' (12/1/07) with respect to the meat chicken farm to the south raised under Point 2. The NSW DPI letter is contained in **Attachment 10** of the Gateway Planning Proposal.

Issues raised by NSW DPI were that the meat chicken farms located on land to the south could be a source of odour or noise. The relationship and potential risk of conflict between the chicken sheds and the subdivision should be addressed and be demonstrated that the proposed rural living and nearby chicken sheds can co-exist.

Development Consent/Construction Certificate has now been granted for the meat chicken farm situation on land described as Lots 128 & 129 DP 755602. The chicken sheds are located in excess of 1.5km to the south of the proposed rural residential development.

The Living & Working in Rural Areas handbook prescribes a maximum separation distance of 500 metres from poultry sheds and waste storage areas to rural dwellings. As noted above, the proposed rural dwellings will be in excess of 1.5km of the meat chicken sheds thereby satisfying the buffer requirement.

As existing rural dwellings are located to the south of the proposed land to be rezoned and are within closer proximity to the chicken sheds than the subject land, it is not unreasonable to suggest that no additional impacts will be generated on this proposed development that would not otherwise be associated with these other rural residential lands given this site is further away from the chicken sheds.

To demonstrate that the poultry farm and surrounding rural residences can co-exist, an odour assessment was undertaken by PAE in December 2004 to support the approval of the poultry sheds (prior to their existence) on Lots 128 & 129 DP 755602. This report was furnished to and is now held by Richmond Valley Council. Certain recommendations were made within Section 9 of the report prepared by PAE – the incorporation of one or more of the suggested odour mitigation measures (that have been adopted by the proponent during the construction process of the poultry farm) reduce the impacts of the farm and, coupled with good management practices, minimise the risk of adverse odour impacts on the surrounding environment.

Based on the available separation distance that can be provided from future dwellings to the poultry sheds satisfying relevant LUCRA guidelines, together with the adopted mitigation measures to the chicken sheds as recommended previously by PAE, no land use conflict issues are raised with the proposed development and the poultry farm to the south. Therefore, the risk level associated with potential land use conflict is deemed **acceptable.**

2.0 Conclusion

This LUCRA assessment provides the basis for a land use management plan which *Learmonth et al* (2008) prescribes as a useful tool in managing possible land use conflict. Emphasis within this LUCRA has been placed on the potential impacts created by the proposed rural residential subdivision and surrounding land uses both within 1km of the development site and outside of 1km.

The LUCRA completed for the proposed development has encompassed the best practice guidelines produced by *Learmonth et al* (2008) in *Living and Working in Rural Areas – A Handbook for Managing Land Use Conflict on the NSW North Coast.*

This LUCRA document in association with the Gateway Planning Proposal clearly articulates the proposed rural residential subdivision development and possible land use conflict issues. In addressing these matters, it is concluded the proposed development is capable of being undertaken and the risk level associated with potential land use conflict with surrounding land uses is deemed **acceptable**.

Based on the completion of the LUCRA, we support the approval of the Gateway Planning Proposal in respect to the subject land as presented.

Newton Denny Chapelle

SURVEYORS PLANNERS ENGINEERS

ANNEXURE 1

Noise Impact Report

Tim Fitzroy & Associates

tim fitzroy & associates
environmental health environmental education environmental auditing

11 March 2009
Ref No: 0117

Mr. Sid Lane
C/o Peter Williams
Newton Denny Chapelle
PO Box 1138
LISMORE NSW 2480

Dear Sid,

RE: Proposed Rezoning Lot 2 DP572347 and Lot 1 DP 449328 25 Ellems Bridge Road Piora

At your request we have conducted a desktop noise assessment of the road traffic noise impacts from the Bruxner Highway on the proposed rezoning at Lot 2 DP 572347 and Lot 1 DP 449328, 25 Ellems Bridge Road Piora. It is our understanding that the rezoning application to Richmond Valley Shire Council is to enable its future subdivision and development for rural residential purposes.

We understand that Richmond Valley Shire Council have requested that you support your application with a desktop noise assessment report in accordance with

- *The Environmental Criteria for Road Traffic Noise (NSW EPA May 1999)*

In addition we are advised that the Roads and Traffic Authority submitted that the proposed subdivision should be designed so that the road traffic noise from the existing Bruxner Highway is mitigated by durable materials in accordance with EPA criteria for new residential developments in the *Environmental Criteria for Road Traffic Noise (NSW EPA May 1999)*

A brief outline of the process undertaken is provided below:

1. A desktop review of the rezoning submission, site photographs, proposed rezoning plans, traffic study and on site wastewater reports
2. Discussions with Mr. Peter Williams (NDC Development Engineer)
3. A desktop assessment of the rezoning submission in accordance with the EPA criteria for new residential developments near existing arterial roads (Environmental Criteria for Road Traffic Noise NSW EPA 1999).
4. Based on a review of the above information a prediction of future road traffic noise impacts from the Bruxner Highway on future residents of the

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proposed rural residential subdivision was undertaken using the CoRTN (Calculation of Road Traffic Noise) Model (Department of Transport UK 1998); and

5. This letter detailing the findings has been produced for submission to Richmond Valley Shire Council.

DESKTOP REVIEW

The following documents were researched as part of this desktop review:

- Rezoning Submission to Enable a Future Rural Residential Subdivision Version B (Newton Denny Chapelle October 2006)
- Subdivision Layout, Sid Land *Oraview* (Newton Denny Chapelle February 2004)
- On-Site Wastewater Layout (BCA Check, 6 April 2005)
- Letter entitled Richmond Valley Draft LEP Amendment 34 Rural Residential Rezoning Ellems Bridge Road Piora (Roads & Traffic Authority, 11 July 2008)
- Local Traffic Study (undated)
- Photographs of Lot 2 DP 572347 (P Williams 2008)

1. Rezoning Submission

Newton Denny Chapelle has been engaged by Mr Sid Lane to act as Town Planning consultants with respect to the preparation of a rezoning submission to Richmond Valley Shire Council. The objective of this application is to rezone part of the land described as Lot 2 DP572347 and Lot 1 DP 449328 Parish of Bundock, County of Richmond, being No. 25 Ellems Bridge Road, Piora so as to enable its future subdivision and development for rural residential purposes.

The property is described in real property terms as Lot 2 DP 572347 and Lot 1 DP 449328 Parish of Bundock, County of Richmond. (see **Plan 1 NDC 2007)**.

Lot 2 is irregular in shape with a frontage of approximately 760m to the Bruxner Highway. Lot 2 also has frontage to Ellems Bridge Road and a total area of147.2ha. Lot 1 comprises an old railway reserve that meanders in an east to west direction through to the north of Lot 2. Lot 1 has an area of 3.328ha.

The locality is characterised by a mixture of agricultural uses (predominantly cattle grazing), scattered rural dwellings and stands of vegetation. The site is located approximately 10 km by road west of the Casino CBD.

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The development site is characterised by undulating topography, being dissected by a number of gullies and drainage lines. Site gradients range from 5% to 15%.

Ground levels on the site range between RL 85m and RL 110m. The proposed dwelling sites will be located on land with levels greater than RL 90m to 110m.

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Plate 2.1: Aerial photo of the subject land within the context of the surrounding western sector of the Casino/rural catchment.

That part of the land that is subject to rezoning has been completely cleared and is now dominated by open pasture (containing a range of common pasture grasses and pasture weeds) and paddock trees (many of which appear to have been planted).

The large paddock trees include Strangling fig (Ficus watkinsiana), Small-leaved fig (Ficus obliqua), Moreton Bay fig (Ficus macrophylla), Small-fruited fig (Ficus hillii), Jacaranda (Jacaranda mimosiifolia) and Forest red gum (Eucalyptus tereticornis). Hoop pine (Araucaria cunninghamiana), Red cedar (Toona ciliata), Blackbean (Castanospermum australe) and Silky oak (Grevillia robusta) occur in proximate areas.

2. Conceptual Subdivision Layout

A conceptual subdivision layout has been prepared for that part of the site that is proposed to be rezoned and accompanies this rezoning submission. **Plan Plan 3.3** prepared by Newton Denny Chapelle illustrates a conceptual subdivision layout for part of the subject land comprising 31 lots. These lots would be developed for rural residential purposes and range in area from 1ha to 5.31ha (excluding the residual rural lot) with an average lot size of 1.55ha.

The subdivision design is responsive to the provisions guiding separation distances to gullies for wastewater disposal, bushfire hazard separation/asset protection zones and topographical provisions relating to maximum grades for dwelling sites. The alignment of the east-west internal road generally accords with the alignment of the disused railway reserve and will provide a direct connection to the adjoining property to the east.

3. On Site Wastewater Layout

A preliminary Onsite Wastewater layout for each of the lots was originally prepared by BCA Check for 23 lots. The aim of the On-Site wastewater layout was to establish the capacity of the allotments to assimilate wastewater and to identify constraints inclusive of slope, soil type, groundwater and surface water buffers to natural features and proposed boundaries.

The Onsite Wastewater layout identifies the dam and natural gully as areas that require a 100 metre and 40 metre buffer respectively from any proposed on site wastewater land application area.

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4. Letter from the Roads & Traffic Authority (RTA)

The letter from the RTA highlights the need for the applicant to consider the potential noise impacts of the existing Bruxner Highway on the proposed subdivision. Reference is made to the Environmental Criteria for Road Traffic Noise (NSW EPA May 1999). The RTA comments refer to the use of durable products in future building design top ensure compliance with the EPA noise criteria for new residential, developments.

5. Traffic Study

An extract from the local traffic study for the rezoning submission is provided below

Existing Traffic Volumes. *A review of existing information data sets have shown that Ellems Bridge Road carried 62 vehicle per day in April 1997 with the Bruxner Highway carrying in the order of 1535 vpd in 1990 (at Piora) and 1486 vpd in 2001 measured immediately east of Mallanganee. Allowing for 2% traffic growth factors, it is anticipated that the Bruxner Highway at Ellems Bridge Road intersection would be in the border of 2000 vpd and Ellems Bridge Road of approximately 80 vpd.*

Traffic Generation. *The rezoned land would access the Bruxner Highway via Ellems Bridge Road. The development potential is in the order of 23 allotments with upward of 10 vpd maximum generations, equates to 230 vpd extra maximum trips. Adopting a peek hour proportion of 10%, an extra 23 vpd pass through the intersection.*

Based on the revised 32 lot rezoning submission for with upward of 10 vehicles per day maximum generation, would equate to 320 vpd extra maximum trips.

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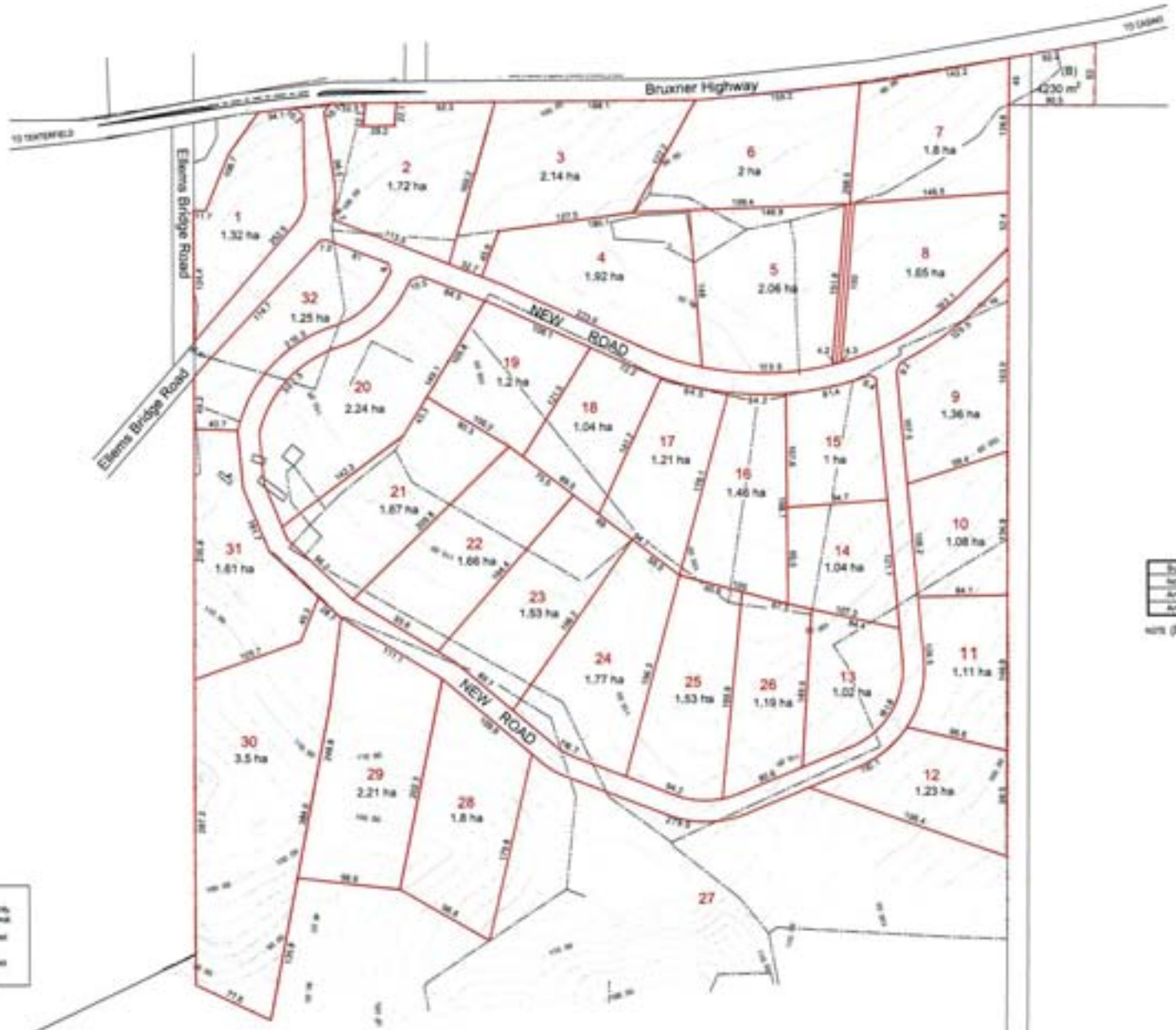

Subdivision Statistics	
No. of New Lots	31
Area of New Lots (Ex. Roadlive)	65.45 ha
Area of New Road	4.82 ha

NOTE (B) LAND TO BE BOUNDARY ADJUSTED WITH NEIGHBOURING PROPERTY

Note:
All dimensions and areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

The boundaries shown on this plan should not be used for final detailed engineers design.

Newton Denny Chapelle
Consulting Surveyors & Planners

SID LANE
"ORAVIEW"

PROPOSED SUBDIVISION
LOT 2 DP 572347 & LOT 1 DP 449328
ELLEMS BRIDGE ROAD - PIORA

6. Review of Photographs

A review of photographs of the subject site (see below) illustrates the undulating nature of the Bruxner Highway and subject site. The photographs illustrate the existing pasture and scattered trees and do not identify any noise obstructing features.

Photograph 1 **Taken at northeast corner of Proposed Rezoning Site from edge of Bruxner Highway (P Williams 2008)**

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Photograph 2 **Looking towards south towards site from Bruxner Highway (P Williams 2008)**

DISCUSSIONS WITH PETER WILLIAMS (NDC)

Peter Williams advised that the conceptual subdivision plan for the proposed rezoning included a minimum building line setback of 20m metres to the Bruxner Highway. It was intended to adopt this building setback without the provision of an acoustic wall/mound.

The 20 metre setback has been proposed due to the existing site constraints identified through the onsite wastewater assessment which required a 40 metre setback to the gully and 100 metre setback to the dam.

Mr Williams advised that due to local topographical features noise impacts from the local quarry were not envisaged to affect the proposed rezoning or future rural residential subdivision. In addition Mr Williams advised that discussions with Richmond Valley Council's Technical Officer, Mr Michael McKenzie confirmed that the percentage of heavy vehicle movements along

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the Piora section of the Bruxner Highway range from 12% to 15% of total traffic flow.

ENVIRONMENTAL CRITERIA FOR NOISE

The Environmental Criteria for Road Traffic Noise (NSW EPA 1999) provides a framework that guides the consideration and management of traffic noise issues associated with new building developments near existing roads. The framework embodies a non-mandatory performance-based approach. The criteria are applied as targets, but recognize that there will be situations where planning strategies are not feasible in order to comply with the nominated criteria.

The Environmental Criteria for Road Traffic Noise (NSW EPA 1999) provides a number of criteria for assessment of noise amenity for existing and future residence near existing or proposed roads. The noise criteria are dependant on the road type and the receiver type and are split into a day and night period from 7am to 10pm and 10pm to 7am respectively. The values presented as criteria levels are intended to preserve amenity appropriate to the land use.

The Environmental Criteria for Road Traffic Noise (NSW EPA 1999) provides criteria for a range of land uses including metropolitan, rural, residential and sensitive land use. The proposed development is classified as 'residential' and the Pacific Highway as a freeway/arterial road in accordance with the criteria (NSW EPA 1999).

New residential development adjacent existing freeway/arterial road criteria

The noise criteria set out in the Environmental Criteria for Road Traffic Noise (NSW EPA 1999) for 'new residential land use developments affected by freeway/arterial road traffic noise', as applicable to the subject development, is presented below in **Table 1.**

Table 1 Noise Criteria

	Day (7am – 10pm)	Night (10pm – 7am)
'New residential land use developments affected by freeway/arterial traffic noise'	$L_{Aeq(15hr)}$ 55	$L_{Aeq(9hr)}$ 50

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The proposed rezoning and conceptual rural residential subdivision falls into the noise criteria identified in **Table 1**.

CALCULATION OF ROAD TRAFFIC NOISE

Road traffic noise modelling was conducted using the "CoRTN" (Control of Road Traffic Noise) method produced by the UK Department of Transport 1988. For CoRTN calculation sheets refer to **Attachment A** of this letter report.

The predicted free-field L_{Aeq} 24hr noise level in 2019 at 20m (proposed front building line) from the nearest lane of the Bruxner Highway is 72 dB(A). The predicted noise levels at the subject site are above the criteria set out in the NSW EPA Environmental Criteria for Road Traffic Noise (1999) for both day (7am to 10pm) and night time (10pm to 7am) periods. The night time noise criteria is L_{aeq} 55 (See **Table 1**). In order to achieve a night time noise criteria at the subject site without noise mitigation measures it is estimated that dwellings would have to be located 140 metres from the edge of the Bruxner Highway.

Assessment in accordance with the criteria indicates that the 55 dB (A) criteria for new residential development adjacent existing freeway or arterial roads during the day and night time period can only be practically complied with through the installation of effective building shell treatments.

Consideration of traffic noise impact upon residential dwellings is best assessed using the design internal noise levels prescribed by Australian Standard AS2107:2000 "Acoustics – recommended design sound levels and reverberation times for building interiors". Given the local of the proposed subdivision, the criteria, extracted from Table 1 of AS2107:2000, provided in **Table 2** below, are relevant;

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Table 2 Internal Noise Level Criteria

Type of occupancy/activity	*Recommended design sound level, L_{Aeq} dB(A)*	
	Satisfactory*	**Maximum****
RESIDENTIAL BUILDINGS		
Houses and apartments near major roads-		
Living areas	35 dB(A)	45 dB(A)
Sleeping areas	30 dB(A)	40 dB(A)
Work areas	35 dB(A)	45 dB(A)

**The satisfactory design sound level is the level of noise that has been found to be acceptable by most people for the environment in question and also not to be intrusive.*

***The maximum design sound level is the level of noise above which most people occupying the space start to become dissatisfied with the level of noise.*

The appropriate noise criterion for the assessment of road traffic noise impacts on proposed residences fronting Bruxner Highway is 40 dB(A) external to the façade, considering a noise attenuation of 5 dB(A) through an open window to achieve the 35 dB(A) internal noise criterion for sleeping areas.

Based on the CoRTN assessment the likely future noise levels at the residential facades at 20mteres from the road edge (Bruxner Highway) are:

- Resultant noise level at façade Adopt 72* dB(A) Leq

*Note: This figure represents the most conservative traffic noise measurements predicted.

The resultant noise level at the residential façade exceeds the external criteria of 40 dB (A) by 32 dB (A). As a consequence to meet the internal noise levels identified in Table 2 of AS2107:2000 the external façade of the residence will be required to provide a sound transmissions loss of at least 32 dB(A), i.e. design internal noise level of 35 dB(A) with a predicted external noise level of 72 dB(A).

The rating of sound insulation in buildings and of building elements now relates to a "Weighted Sound Reduction Index (Rw)" that replaces the previous "Sound Transmission Class (STC)". This was changed in

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amendment No. 6 to BCA 96. The weighted sound reduction index is a single number value which describes the overall acoustic performance of a construction system. It is a measure of the degree of acoustic separation or noise reduction that can be expected of a wall, floor or roof.

Standard Brick Veneer Construction	Rw 36
Roof Ceiling (standard roof construction with 50mm polyester in void)	Rw 36
Glazing (10.38mm laminate glass) in acoustic grade frame	Rw 36

Provision of air conditioning or sealed mechanical ventilation is required to all noise affected habitable rooms to allow occupants to close external windows and doors. The installed plant should not reduce the acoustic performance of the building shell. Dwellings fitted with 10.38mm glass windows or double glazing and air-conditioning will permit windows/doors to be closed and internal amenity to be maintained as a matter of choice for future occupants.

Having modelled the predicted noise levels from the existing highway on the conceptual rural residential subdivision it is recommended that one of two options is employed:

The first option is to ensure that the

- all dwellings are setback a minimum of 140 metres from the road edge of Bruxner Highway for noise attenuation to comply with the 'New residential land use developments affected by freeway/arterial traffic noise' without the need for noise mitigation measures

The second option

- is to provide a minimum 20 metre building setback from the Bruxner Highway to dwellings (to meet onsite wastewater management constraints) ensuring that the residences are designed with living and bedroom areas placed furthest from the road. The building must be designed to achieve a "Weighted Sound Reduction Index (Rw) of 32.

If you have any enquiries regarding this correspondence do not hesitate to contact me on ph 02 66 28 38 37 or email tim@timfitzroy.com.au

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Yours faithfully
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Tim Fitzroy
Environmental Health Scientist

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Technical Guides - Calculation of Road Traffic Noise 1988

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This software has not been subjected to NPL's Quality Assurance procedures.
No warranty or guarantee applies to this software, and therefore any users should satisfy themselves that it meets their requirements.

Revision History

This model implements most of the procedure detailed in the Calculation of Road Traffic Noise (CRTN - ISBN 0 11 550847 3) issued by the Department of Transport in 1988. The aim has been to provide a basic platform for calculating road traffic noise levels for non-complex situations. The model is limited where for example; a separate calculation will be needed to take account of any complex arrangements of reflecting surfaces, as only a simple reflective correction is implemented here. Where consideration is to be given to situations where low traffic flows occur, it will be necessary to make specific reference to CRTN. In such cases, a further correction is generally needed, which is not implemented here. Copies of CRTN are available from The Stationery Office.

The results from this calculation method may now be converted to the new EU noise indices. Please see the DEFRA website for further information.

Stage 1 - Divide the road scheme into segments

Divide the road scheme into segments such that the variation of noise within the segment is small.

Stage 2 - Basic Noise Level

Calculate the basic noise level at a reference distance of 10m away from the nearside carriageway edge for each segment.

Time Period	☐ Hourly L_{10} ☑ 18 Hour L_{10}	
Total Vehicle Flow	2000	(Veh/Hour : Veh/18 Hour) help
Speed	100	(km/h) - Estimated from the road class? ☐
Heavy Vehicles	15	(%)
Gradient	3.3	(%) ☑ Upward flow help
Road Surface	Impervious	help

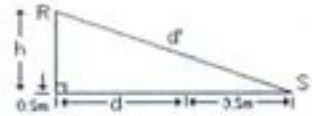
Calculate 68.1 dB(A)

Stage 3 - Propagation

Assess for each segment the noise level at the reception point taking into account distance attenuation and screening of the source line.

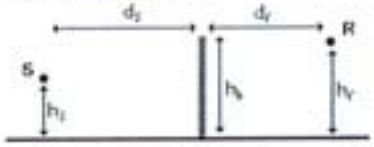
help

Distance d (From edge of NS Carriageway)	21.0	(metres)	
Source/Receiver Height Difference h	3.5	(metres)	



☐ The view of the road IS obscured ☑ The view of the road is NOT obscured

Barrier Dimensions



In meters

d_s	8.5
h_s	0.5
d_r	37.0
h_r	4.0
h_b	3.0

Absorbent Ground Cover	60% to 89% (I=0.75)	
Average Path Height	2.25	(m)

Calculate -3.8 dB(A)

Stage 4 - Site Layout

Correct the noise level at the reception point to take into account site layout features including reflections from buildings and facades, and the size of the source segment.

Include a correction for the receiver facade	☑	
Angle of View	120	(degrees)
Total angle of reflective surfaces (opposite)	45	(degrees)

Calculate 1.3 dB(A)

Corrections

If the road scheme contains low traffic flow (50 q 200 veh/h or 1000 Q 4000 veh/18-h day) then an additional correction may be required.

Low Traffic Flow Correction -0.1 dB(A)

The total for this segment can now be calculated from those values above

Calculate Total 65.5 dB(A)

Stage 5 - Combine contributions from all segments

Combine the contributions from all segments to give the predicted noise level at the reception point for the whole road scheme.

Add up all of the segment totals: the final number should be rounded to the nearest whole number (0.5 being rounded up). Also, remember that the screening and reflection corrections applied here are the simple ones defined by CRTN. Sections 34 and 35 of CRTN should be consulted where a more complex arrangement of reflective surfaces is to be considered.

The combined running total for all segments is calculated as described

Updated each time a segment total is calculated. Segments 1

Predicted noise level 72 dB(A)

Reset

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