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

Gateway Planning Proposal

To Permit a Proposed Large Lot Rural Residential Subdivision

ON BEHALF OF
D. BENNETT

Site: Lot 4 DP 708496
75 Gregors Road, Spring Grove

Our Ref: 16/231
Date: October 2018

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

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Document Control Sheet

Document and Project Details	
Document Title:	Gateway Planning Proposal
Author:	Luke Fittock
Project Manager:	Damian Chapelle
Date of Issue:	12 October 2018
Job Reference:	16/231
Project Outline:	This document presents a Planning Proposal to rezone part of the land to R5 Large Lot Residential in accordance with the RVLEP 2012.

Document Distribution				
Date	**Status**	**Distribution – Number of Copies**		
		Client	**Council**	**Other**
12/10/18	Final	1	2	0

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Checked by:	L Fittock D Chapelle

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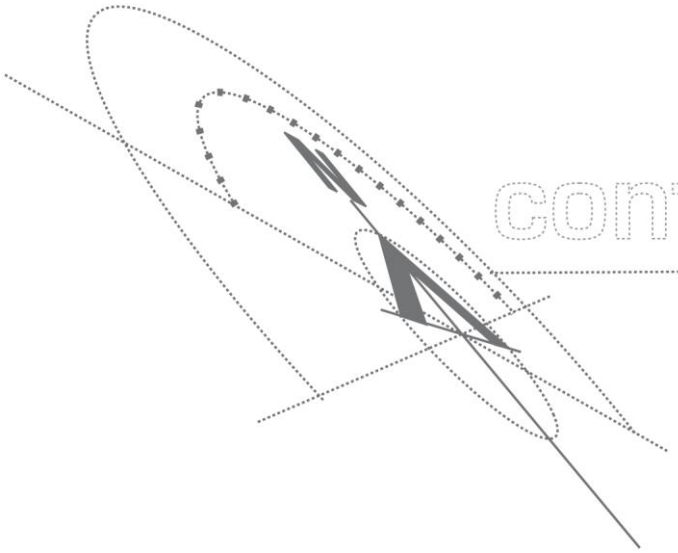
The maps, development plans and exhibits shown in this report are suitable only for the purposes of this report. No reliance should be placed on this information for any purpose other than for the purposes of this report. All dimensions, number, size and shape of lots/buildings as shown on plans in this document are subject to detailed engineering design plans and final survey and may vary subject to conditions of consent issued by Council.

The information contained in this report is based on independent research undertaken by Newton Denny Chapelle. To the best of our knowledge, it does not contain any false, misleading or incomplete information.



contents

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

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Attachment 2 – Richmond Valley Council Correspondence

Attachment 3 – Assessment against State Environmental Planning Policies

Attachment 4 – Assessment against S117 Ministerial Directions

Attachment 5 – Bushfire Threat Assessment Report

Attachment 6 - On-Site Wastewater Feasibility Assessment

Attachment 7 - Statutory Declarations

Attachment 8 - Boolangle LCLC Correspondence & Archaeological Assessment

PLANS

Plan 1 – Location Plan

Plan 2 – Contour Survey

Plan 3 – Site Analysis

Plan 4 – Conceptual Subdivision Plan

Plan 5 – LEP Mapping

1. Background

1.1 Summary of Project

Newton Denny Chapelle has been engaged by *Mr D Bennett* to prepare a Planning Proposal for land identified in the below **Table 1**, being located at 75 Gregors Road, Spring Grove.

This Planning Proposal has been completed in accordance with the Department of Planning & Infrastructure's (now Department of Planning & Environment) guide to preparing Planning Proposals. A Gateway Determination under Section 56 of the Environmental Planning and Assessment Act is sought.

The purpose of the Planning Proposal is to change the town planning provisions applying to Lot 4 DP 708496 to rezone part of the land presently zoned RU1 – Primary Production to R5 – Large Lot Residential in accordance with the provisions of the Richmond Valley Local Environmental Plan 2012. The Planning Proposal also seeks to amend the minimum lot size map to permit the creation of lots with a minimum lot size of 1 hectare within the area to be rezoned with the exception of proposed Lot 1 which proposes a minimum lot size of 2 hectares. A 20 hectare LEP minimum lot size is proposed to facilitate the creation of the residue lot (Lot 19) and to maintain a dwelling entitlement.

As shown in **Plate 1**, the subject land is currently zoned RU1 – Primary Production under the Richmond Valley Local Environmental Plan 2012.

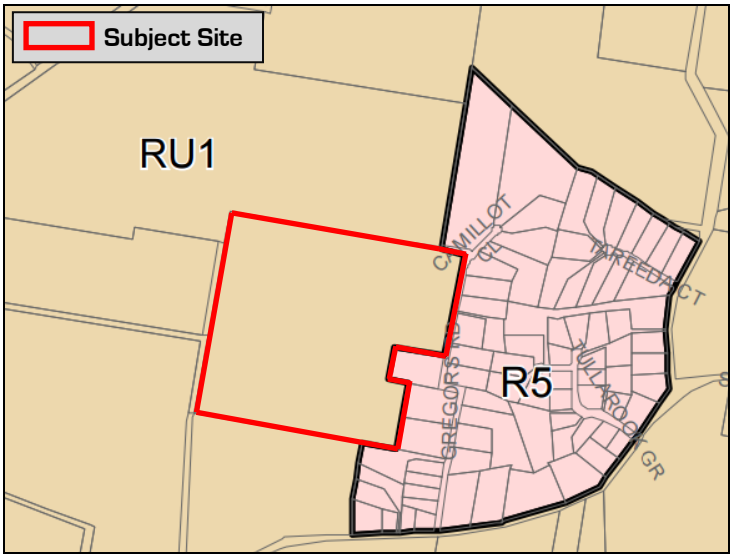


Plate 1: Current land zoning under the Richmond Valley LEP 2012 (Source Richmond Valley LEP 2012)

1.2 Location of Subject Land and the Nature of Surrounding Rural Area

The subject land is located at 75 Gregors Road, Spring Grove as identified on **Plan 1** – Location Plan and also within the below **Plate 2**. **Plate 3** provides a visual illustration of the subject land in the context of an aerial photo.

The land subject to this Planning Proposal is as follows in **Table 1**:

Table 1: Land Subject to the Planning Proposal

Property Address	Property Description
75 Gregors Road, Spring Grove	Lot 4 DP 708496

The Deposited Plan (DP 708496) can be found within **Attachment 1** of this report.

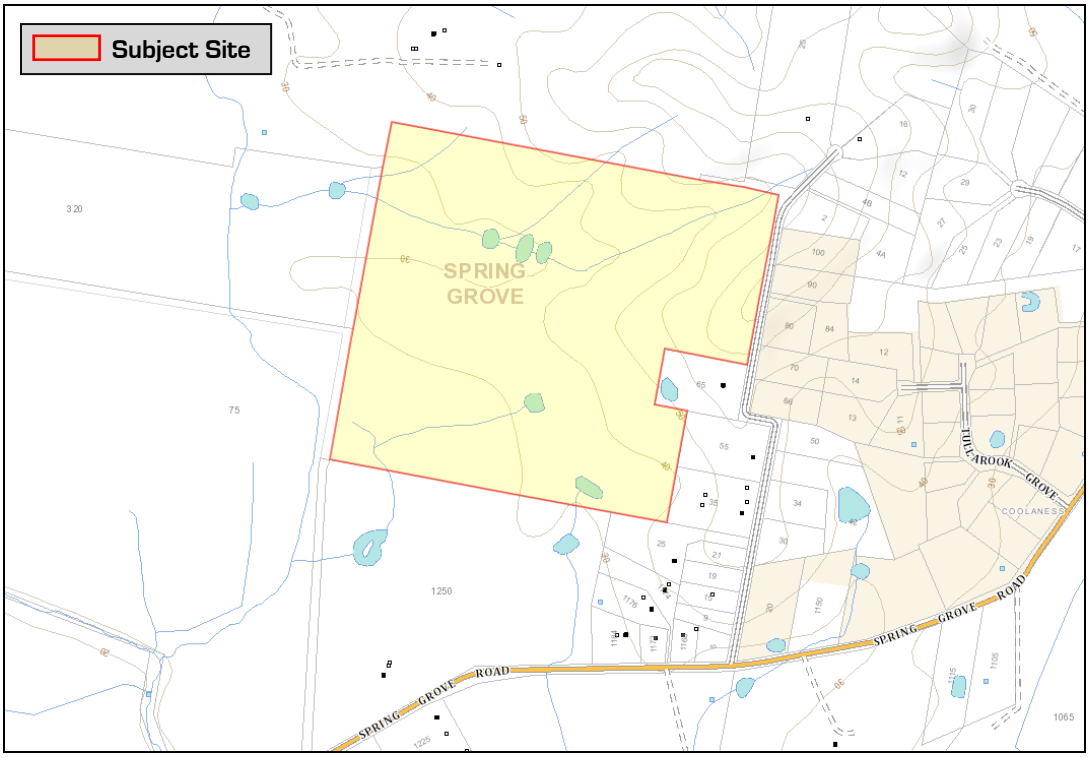


Plate 2: Subject land located at 75 Gregors Road, Spring Grove

(Source LPMA Six Viewer)

Plate 3: Aerial photo of the subject land (Source LPMA Six Viewer)

The property has road frontage to Gregors Road to the east, is currently utilised for cattle farming and contains a number of on-site dams and vegetated areas, with the majority of the land comprising of grassland which is reflective of the grazing use of the site. Further discussion on vegetation can be found within Section C of this report.

The physical features of the site, and topographical details are illustrated within a contour survey in **NDC Plan 2.** The land contains varying degrees of topography comprising a number of drainage gullies throughout the land with a predominant ridge line extending westward from Gregors Road. Contours typically range between 80 metres AHD at the eastern property boundary to RL 20.6 metres AHD within the south western corner being the adopted 1 in 100 year design flood level.

The subject site is located within a precinct that is characterised by a mixture of the following land uses:

- Rural residential development within an R5 Large Lot Residential zone;
- Rural dwellings within RU1 Primary Production zoned allotments;
- Farming activities comprising cattle grazing with cropping also occurring within the wider locality.

1.3 Site Analysis

NDC Plan 3 contained within this report identifies opportunities and constraints relating to the subdivision potential of the land which include:

- Rural Residential strategy line;
- Existing lot boundaries;
- Contours
- Waterways and dams;
- Mapped wetland (RVLEP 2012);
- Vegetation (Source: Google Earth);
- Flood prone land (20.6 metres AHD 1:100 year design flood level);
- Mapped bushfire hazard vegetation (RVC mapping);

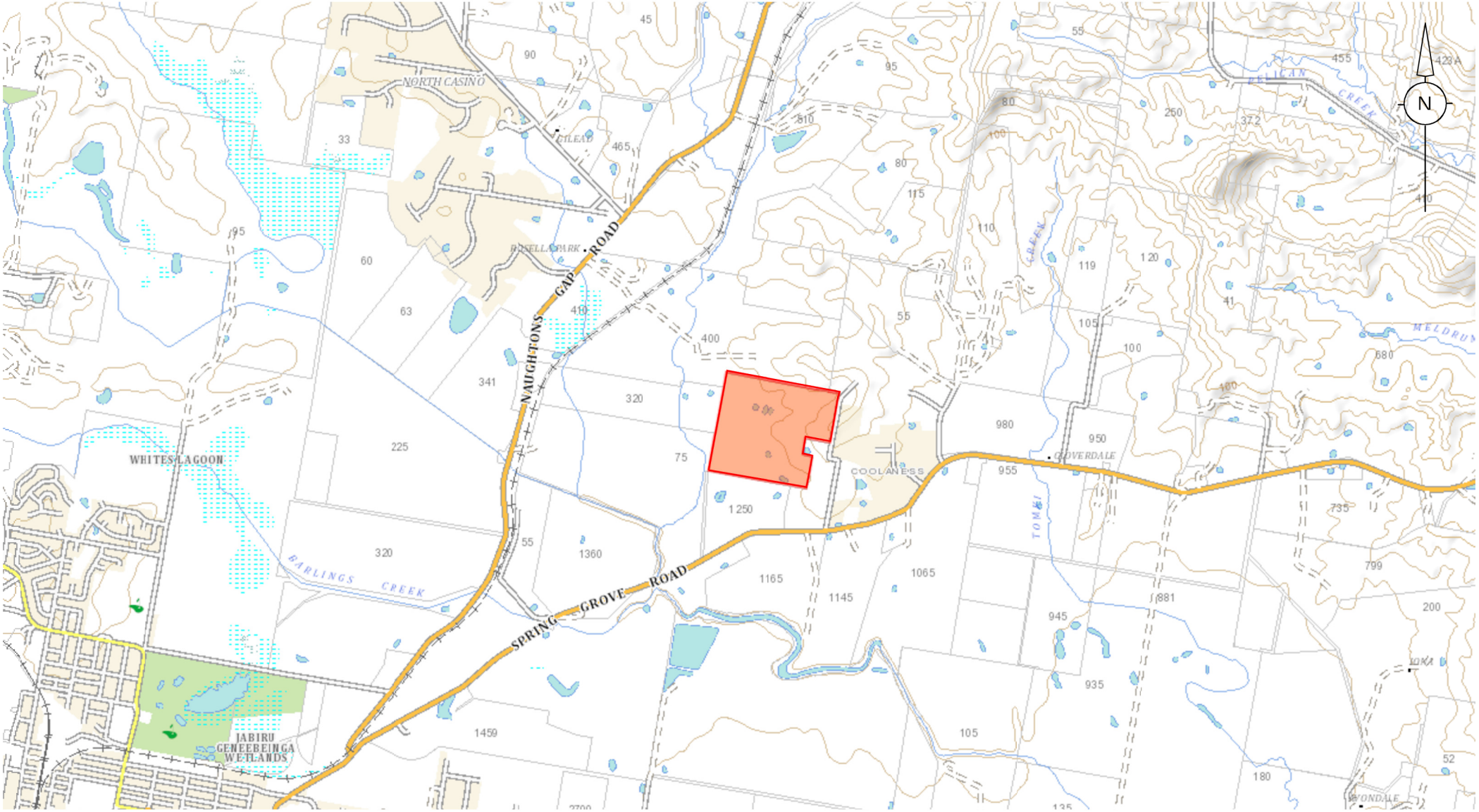
- Road frontage (Gregors Road);
- Surrounding land uses;
- Ground water bore (NSW Government – Department of Primary Industries: Office of Waterhttp://allwaterdata.water.nsw.gov.au/water.stm);
- Mapped Regionally Significant Farmland;
- Area of potential development;
- Power pole locations (identified DBYD);
- Telstra cable (DBYD);
- Water supply easement.

Pursuant to the Richmond Valley LEP 2012, the subject land is **not** mapped as:

- containing acid sulfate soils;
- containing a heritage item;
- being located within a drinking water catchment; or
- containing land identified as a landslide risk.

The conceptual subdivision layout presented at **NDC Plan 4** has had regard to the above constraints.

NDC Plan 4 (REV E) has been prepared to position the building envelope and on-site effluent disposal area within proposed Lot 4 to be clear of the water supply easement. The 5 metre wide water supply easement burdens the land and was created via DP638215. Alternatively, further discussions with benefitted landowners of the easement can be had to determine if the water supply easement can be realigned or extinguished.



LEGEND:

SITE BOUNDARY

SOURCE PLAN: www.maps.six.nsw.gov.au - accessed 25.01.18

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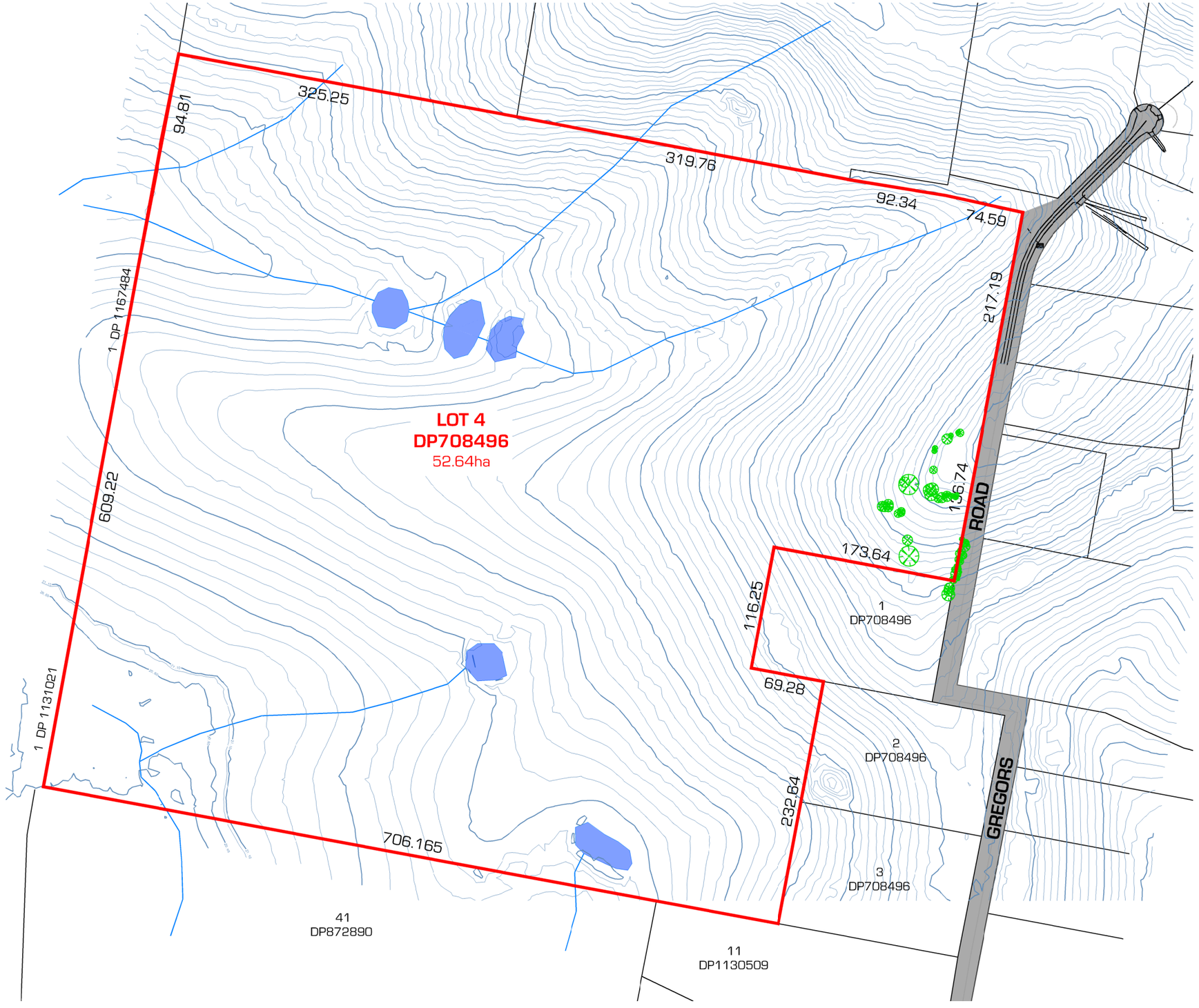
ABN: 86 220 045 469

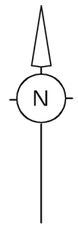
PLAN 1 - LOCATION

CLIENT: DON BENNETT **REV C**

LOCATION: LOT 4 DP 708496
75 GREGORS ROAD
SPRING GROVE NSW

DATE: 25.01.18 REF: 16/231
SCALE: 1 : 4000 @A3 DRAWN: bk





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1cm = 40m
1:4000

LEGEND

- PROPOSED BOUNDARY
- CONTOURS
- EXISTING TREES

SOURCE: LIDAR AND SURVEY BY NEWTON DENNY CHAPELLE

NOTE:
This preliminary layout has been completed in accordance with the instructions provided by Don Bennett. In this respect preliminary desktop data has been used to form this layout. The final layout is subject to the completion of a detailed survey & engineering plans. Accordingly, the conclusions reached within this report may be modified by the author upon the completion of the final design plans & site inspection. Newton Denny Chapelle accepts no responsibility for any loss or damage suffered, however so arising, to any person or corporation who may use or rely on this report.

REV	DATE	AMENDMENT
A	23.05.17	
B	11.01.18	BOUNDARY LOTS 1-3
C	25.01.18	AREA OF POTENTIAL DEV. - DBYD INFO, BDY LOTS 1,2 & 3
D	28.08.18	BDY RESIDUE AND LEP MAPPING
E		

SOURCE PLAN: www.maps.six.nsw.gov.au - accessed 23.05.17

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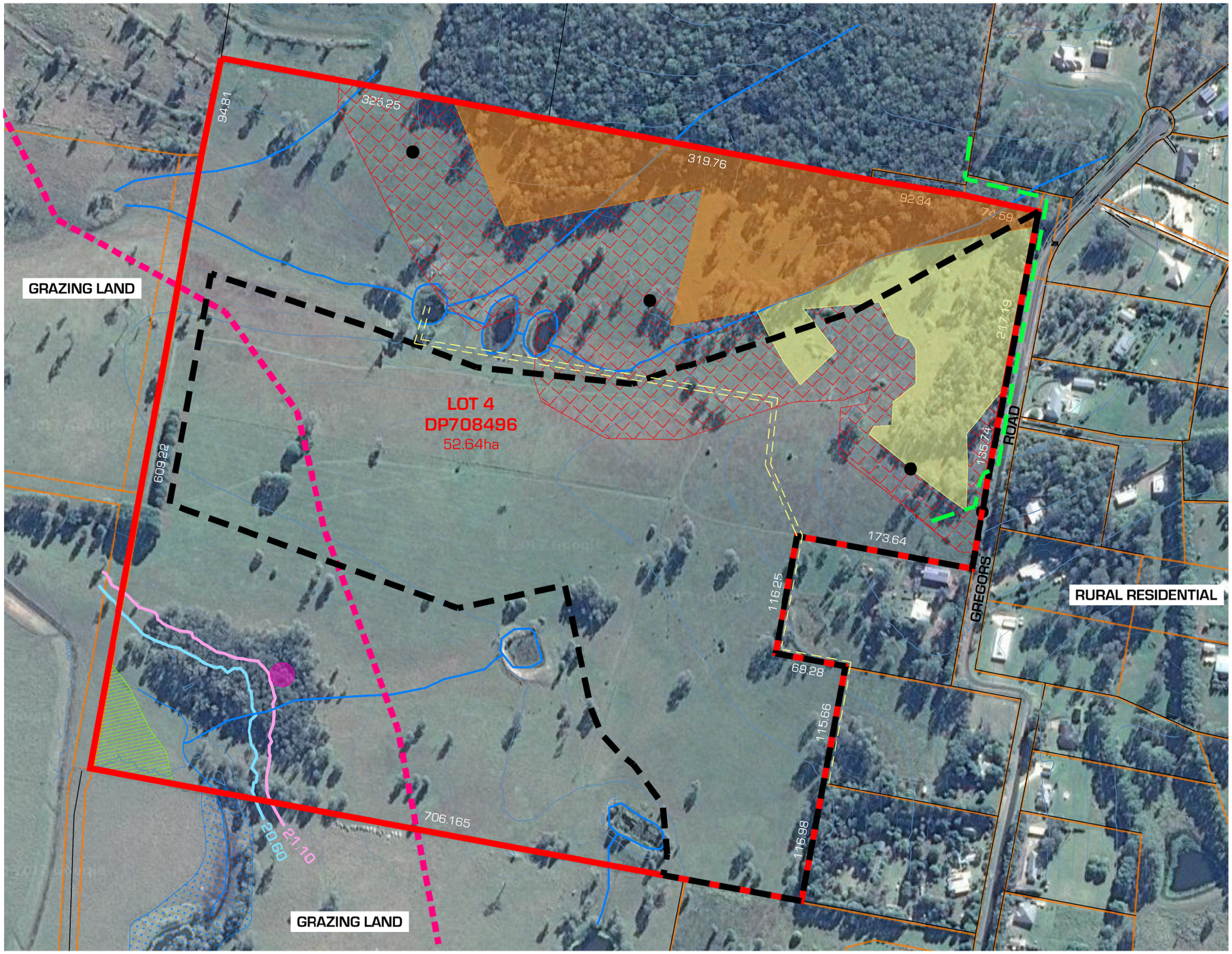
PLAN 2 - CONTOUR SURVEY

CLIENT: DON BENNETT **REV D**

LOCATION: LOT 4 DP 708496
75 GREGORS ROAD
SPRING GROVE NSW

DATE: 28.08.18 REF: 16/231
SCALE: 1 : 4000 @A3 DRAWN: bk



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LEGEND

- SITE BOUNDARY
- CONTOURS - 2m INTERVALS
- WATERWAYS AND DAMS
- WETLAND
- VEGETATION
- GROUNDWATER BORE
- REGIONALLY SIGNIFICANT FARMLAND - SOURCE NORTHERN RIVERS FARMLAND PROTECTION PROJECT Final Map 2005 3 OF 41.
- 1 IN 100 YEAR DESIGN FLOOD LEVEL RL 20.6m AHD - SOURCE RICHMOND VALLEY COUNCIL FLOOD INFORMATION ENQUIRY DATED 12.01.17
- MINIMUM HABITABLE FLOOR LEVEL RL 21.1m AHD - SOURCE RICHMOND VALLEY COUNCIL FLOOD INFORMATION ENQUIRY DATED 12.01.17
- BUSHFIRE PRONE LAND - SOURCE - NORTH EAST QUADRANT DOWNLOAD MAP (RVC)
  - BUSHFIRE VEG. CAT. 2
  - BUSHFIRE VEG. CAT. 1
  - BUSHFIRE VEG. BUFFER 100m
- AREA OF POTENTIAL DEVELOPMENT
- RURAL RESIDENTIAL STRATEGY LINE
- POWER POLE (DBYD)
- TELSTRA CABLE (DBYD)
- 5m WIDE WATER SUPPLY EASEMENT

NOTE:
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E		

SOURCE PLAN: www.maps.six.nsw.gov.au - accessed 23.05.17

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PLAN 3 - SITE ANALYSIS

CLIENT: DON BENNETT **REV D**

LOCATION: LOT 4 DP 708496
75 GREGORS ROAD
SPRING GROVE NSW

DATE: 28.08.18 REF: 16/231
SCALE: 1 : 4000 @A3 DRAWN: bk

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1cm = 40m
1:4000

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LEGEND

- PROPOSED BOUNDARY
- CREEK
- 40m CREEK BUFFER
- INDICATIVE DWELLING ENVELOPE 20m X 20m
- 300m² RESERVE WASTEWATER DISPOSAL AREA
- 300m² PRIMARY WASTEWATER DISPOSAL AREA
- RURAL RESIDENTIAL STRATEGY LINE
- 5m WIDE WATER SUPPLY EASEMENT

NOTE:
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C	25.01.18	AREA OF POTENTIAL DEV. - DBYD INFO, BDY LOTS 1,2 & 3
D	28.08.18	BDY RESIDUE AND LEP MAPPING
E	04.09.18	EASEMENT - WASTE WATER RELOCATED LOT 4

SOURCE PLAN: www.maps.six.nsw.gov.au - accessed 23.05.17

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PLAN 4 - CONCEPTUAL SUBDIVISION

CLIENT: DON BENNETT **REV E**

LOCATION: LOT 4 DP 708496
75 GREGORS ROAD
SPRING GROVE NSW

DATE: 04.09.18 REF: 16/231
SCALE: 1 : 4000 @A3 DRAWN: bk

2. Planning Proposal

Part 1: Objectives and Intended Outcomes

The objective of the Gateway Planning Proposal is to change the town planning provisions applying to Lot 4 DP 708496 to rezone part of the land presently zoned RU1 – Primary Production to R5 – Large Lot Residential in accordance with the provisions of the Richmond Valley Local Environmental Plan 2012.

The Planning Proposal also seeks to amend the Richmond Valley Local Environmental Plan 2012 minimum lot size map to enable the creation of lots with minimum lot sizes of 1 hectare within the area to be rezoned with the exception of proposed Lot 1 which proposes a minimum lot size of 2 hectares due to the restrictive nature of the lot for wastewater disposal.. A 20 hectare minimum lot size is proposed to facilitate the creation of the residue lot (Lot 19) and to maintain a dwelling entitlement.

Intended Outcomes of the Planning Proposal

The aims of the Planning Proposal are outlined below:

1. To increase the rural residential lot yield by enabling additional lots of atleast 1 hectare, 2 hectares (proposed Lot 1), and 20 hectares (proposed Lot 19) within the Northern Sector of the Casino/Rural Catchment District (identified within the Richmond River Rural Residential Development Strategy) of the Richmond Valley LGA;
2. To enable suitable land to be developed for rural residential housing through making efficient use of the land for rural residential purposes and land uses permissible within the R5 Large Lot Residential Zone;
3. To create a residue lot which retains and preserves the natural features and vegetated areas of land within the northern portion and south western corner of the site, which will retain the current RU1 – Primary Production zone.

For the purpose of this Planning Proposal, a conceptual subdivision lot layout has been presented in **NDC Plan 4**.

Part 2: Explanation of Provisions

2.1 Proposed Changes to the Richmond Valley LEP 2012

The land the subject to this Planning Proposal is currently zoned RU1 – Primary Production under the Richmond Valley Local Environmental Plan (RVLEP) 2012, and contains a minimum subdivision lot size requirement of 40 hectares.

The following amendments are required to the Richmond Valley LEP 2012 to enable the subdivision and development of the land for rural residential purposes.

- **Acid Sulphate Soils Map** – No change.
- **Wetlands Map, Riparian Land and Waterways Map** – No change.
- **Drinking Water Catchment Map** – No change.
- **Dwelling Opportunity Map** – Remove proposed R5 zoned land.
- **Heritage Map** – No change.
- **Height of Buildings Map** – No change.
- **Key Sites Map** – No change.
- **Land Application Map** – No change.
- **Land Reservation Acquisition Map** – No change.
- **Lot Size Map (Sheet LSZ-006)** – Application of a 1 hectare minimum lot size and 2 hectare minimum lot size for the area of land proposed to be rezoned in accordance with **NDC Plan 5.** A 20 hectare minimum lot size is proposed to facilitate the creation of the residue lot (Lot 19) and to maintain a dwelling entitlement.
- **Land Zoning Map (Sheet LZN-006)** – Application of an R5 – Large Lot Residential Zone in accordance with **NDC Plan 5**. The RU1 Primary Production zone has been retained to cover the proposed residue Lot 19.
- **Terrestrial Biodiversity Map** – No change.
- **Landslide Risk Map** – No change.
- **Schedule 1 Additional Permitted Uses** – No change.

Part 3: Justification

Section A – Need for the Planning Proposal

1. Is the Planning Proposal a result of any strategic study or report?

Yes. The Richmond River Shire Council 'Rural Residential Development Strategy (March 1999)' identifies the subject land within Figure 2.3c being a 'Detailed Plan of Suitable Rural Residential Land in the Northern Sector of the Casino/Rural Catchment District' of which is reproduced below in **Plate 4**.

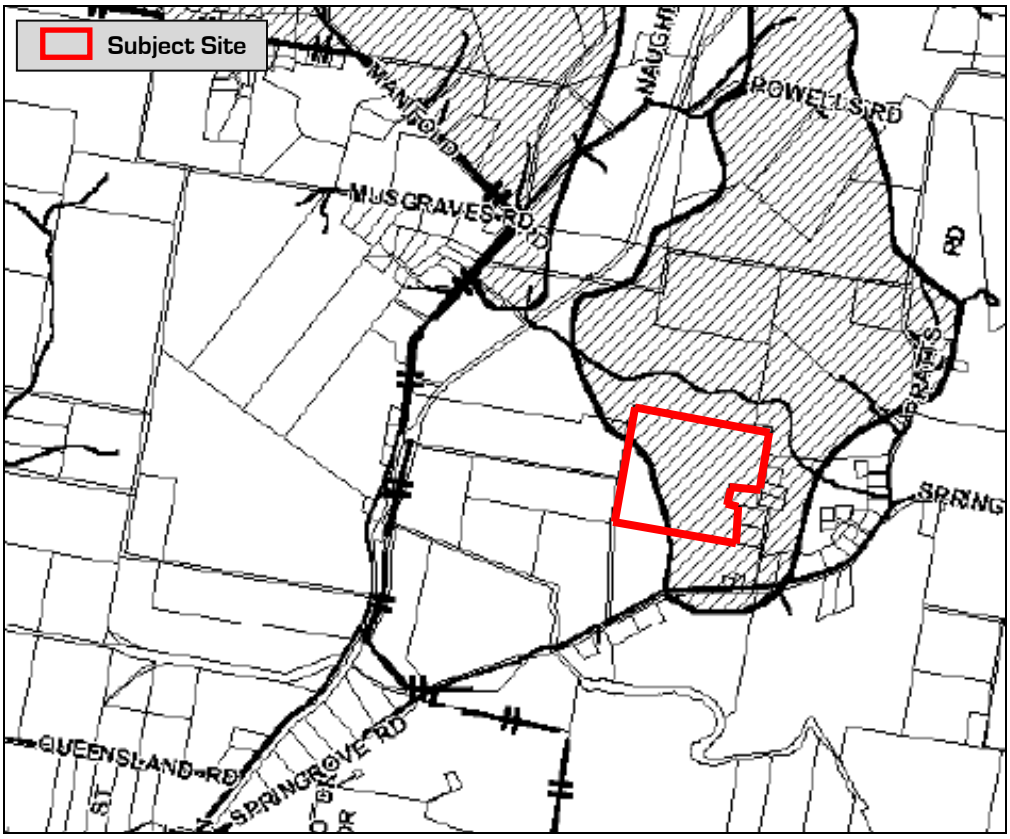


Plate 4: The subject land identified (shown hatched) within the Richmond River Shire Council 'Rural Residential Development Strategy (March 1999)
(Source: Richmond River Shire Council Rural Residential Development Strategy (March 1999))

The Rural Residential Development Strategy is discussed further under Question 4 of this Planning Proposal.

2. Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Yes. In order for a Development Application to be considered for the subdivision and development of the land for large lot (i.e. rural residential) purposes it is necessary to first amend the planning framework applying to the land – being those elements of the Richmond Valley Local Environmental Plan 2012 relating to land zoning and subdivision (minimum lot size).

Section B – Relationship to Strategic Planning Framework

NORTH COAST REGIONAL PLAN 2036

3. Is the Planning Proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy?

The North Coast Regional Plan 2036 has been prepared by the Department of Planning and Environment to manage expected growth in a sustainable manner. The Regional Plan applies to the Far North Coast and Mid North Coast of NSW (being an area which stretches from Port Macquarie in the south to Tweed Heads in the north). The Plan includes Richmond Valley Council and is therefore applicable to the current proposal.

The Regional Plan has a number of Directions of relevance and can be satisfied by the current Planning Proposal:

Direction 3: Manage Natural Hazards and Climate Change

Actions:

3.1 Reduce the risk from natural hazards, including the projected effects of climate change, by identifying, avoiding and managing vulnerable areas and hazards.

3.2 Review and update floodplain risk, bushfire and coastal management mapping to manage risk, particularly where urban growth is being investigated.

3.3 Incorporate new knowledge on regional climate projections and related cumulative impacts in local plans for new urban development.

Comment: The 1 in 100 year flood level for the site is RL 20.6 metres AHD as confirmed by Council which has been plotted on **NDC Plan 2.** The minimum habitable floor level has been adopted at 21.1 metres AHD and future dwelling sites will be located above this level.

A bushfire threat assessment has been completed by Bushfire Certifiers and is contained within **Attachment 5**.

Direction 11: Protect and enhance productive agricultural lands

Actions:

11.1 Enable the growth of the agricultural sector by directing urban and rural residential development away from important farmland and identifying locations to support existing and small-lot primary production, such as horticulture in Coffs Harbour.
11.2 Deliver a consistent management approach to important farmland across the region by updating the *Northern Rivers Farmland Protection Project* (2005) and *Mid North Coast Farmland Mapping Project* (2008).
11.3 Identify and protect intensive agriculture clusters in local plans to avoid land use conflicts, particularly with residential and rural residential expansion.
11.4 Encourage niche commercial, tourist and recreation activities that complement and promote a stronger agricultural sector, and build the sector's capacity to adapt to changing circumstances.
11.5 Address sector-specific considerations for agricultural industries through local plans

Comment: The Planning Proposal does not propose to rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot.

As grazing lands adjoin and surround the subject site and also undertaken on the subject land, this land use has been assessed against Table I11.1 of the Richmond Valley DCP in respect to the proposed dwelling envelopes within the subdivision.

The DCP requires buffer distances from rural dwellings of 50 metres for grazing land. As shown on **NDC Plan 4**, each of the proposed lots have the capacity to locate dwelling sites to comply with the 50 metre setback from

property boundaries adjoining grazing activities.

Direction 24: Deliver well-planned rural residential housing areas

This direction states that "Rural residential development has the potential to conflict with valuable agricultural or environmental land, and it requires access to service and facilities. As such, it needs to be planned strategically.

The Settlement Planning Guidelines: Mid and Far North Coast Regional Strategies (2007) can assist with planning for rural residential development and highlight the issues that need to be considered when identifying additional areas for rural residential housing through a local growth management strategy (or rural residential land release strategy). The guidelines will apply on an interim basis until new land release criteria are finalised.

New rural residential housing will not be permitted in the coastal strip, unless the land is already zoned for this purpose, or is identified in a Department endorsed current or future local growth management strategy (or rural residential land release strategy)."

Actions:

24.1 Facilitate the delivery of well-planned rural residential housing areas by:

- identifying new rural residential areas in a local growth management strategy or rural residential land release strategy endorsed by the Department of Planning and Environment; and
- ensure that such proposals are consistent with the *Settlement Planning Guidelines: Mid and Far North Coast Regional Strategies* (2007) or land release criteria (once finalised).

24.2 Enable sustainable use of the region's sensitive coastal strip by ensuring new rural residential areas are located outside the coastal strip, unless already identified in a local growth management strategy or rural residential land release strategy endorsed by the Department of Planning and Environment.

Comment: Section 7 Settlement and Housing of the Far North Coast Strategy has been reviewed which consolidated and built on previous planning work, including the Northern Rivers Regional Strategy and local council settlement strategies.

Section 7 of the Far North Coast Regional Strategy (FNCRS) identifies that rural residential development will continue as a housing choice for people in the region. The document provides that for land in the non-coastal area, rural residential land release will occur in accordance with existing local rural residential strategies. In this regard and in accordance with the Strategy, the subject site being Lot 4 DP 708496 is identified within the Stage 1 release area of the Richmond River Shire Council Rural Residential Development Strategy 1999.

The proposal is also consistent with the FNCRS Chapter 7 'Settlement and Housing' Rural Residential development outcomes. To this end, rezoning the subject land in the manner proposed within this Planning Proposal will:

- generate a net community benefit in so far as contributing to both the State Government and Local Council housing targets set by the Far North Coast Regional Strategy, as well as contributing to the desired 60/40 target of single to medium density housing;
- be located close to the existing centre of Casino. The RRRDS identifies that the town of Casino provides services and facilities including "supermarkets, banks, Council offices, a variety of general stores and shops, sporting ground and swimming pool, primary and secondary schools, health services, industrial and machinery services and transport infrastructure including road, rail and air" (RRRDS p.13);
- create a residue lot which aims to retain and preserve the natural features and vegetated areas of land within the northern portion and south western corner of the site;
- not rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot.

The community benefit of the rezoning will be realised through the increased lot density and the associated provision of additional housing to service the future population needs of the Richmond Valley LGA. The suitability of the site in respect to land constraints identified in Section 1.3 Site Analysis, together with the conceptual lot layout presented in **NDC Plan 4** will enable a variety of housing designs to be adopted at the Development Application and construction stage.

It is considered that the planning proposal is consistent with the FNCRS Chapter 7 'Settlement and Housing' Rural Residential development actions in the following way:

- Future rural residential land will be released in accordance with the Richmond River Shire Council Rural Residential Development Strategy 1999;
- The proposed rural residential development is not located within a coastal zone defined by SEPP 71.

The proposal has also been reviewed against the *Settlement Planning Guidelines: Mid and Far North Coast Regional Strategies* (2007) with the consistency of the proposal demonstrated as follows:

Land Release:

- The subject site being Lot 4 DP 708496 is identified within the Stage 1 release area of the Richmond River Shire Council Rural Residential Development Strategy 1999.
- The proposal will assist in contributing to the desired 60/40 target of single to medium density housing.

Settlement Form and Hierarchy:

- The development is located close to the existing centre of Casino.
- The subject site is located away from areas identified for urban expansion.
- The proposal strengthens, builds on and is clustered with the existing R5 Large Lot Residential Precinct located immediately east of the subject land.

4. Is the Planning Proposal consistent with the local council's Community Strategic Plan, or other local strategic plan?

i. Richmond River Shire Council Rural Residential Development Strategy 1999

Yes. The Planning Proposal is consistent with the Richmond River Shire Council Rural Residential Development Strategy 1999.

The Richmond River Shire Council Rural Residential Development Strategy 1999 (RRDS) identifies preferred lands that are suitable for rural residential housing which:

(a) are physically capable of supporting rural housing, and

(b) are close to existing settlements which already have services and community facilities, or can otherwise be efficiently and economically serviced, and

(c) are physically suitable for septic effluent disposal, and

(d) are not required or likely to be required for future urban expansion of existing settlements, and

(e) do not comprise prime crop or pasture land, and

(f) are not subject to significant environmental hazards, and

(g) are not of significant value for the conservation of wildlife.

The Northern Sector of the Casino/Rural Catchment District contained within the RRDS identifies the subject land as being available rural residential land based on the required selection criteria for the identification of such land.

However, we note that the western portion of the subject land proposed for rezoning (i.e. part of proposed Lots 8 – 11) is located outside of the area hatched within the Northern Sector of the Casino/Rural Catchment District. It is considered that due to similar land characteristics such as topography and potential dwelling sites located above the 1 in 100 year flood line of 20.6 metres AHD, and on land not constrained by vegetation or regionally significant farmland, the inclusion of this land within the Planning Proposal is considered reasonable. Detailed technical assessments that are to be completed upon receipt of the Gateway Determination will confirm the suitability of the inclusion of this land.

The Conclusion of Section 2.4.3i. of the RRDS identifies the following with respect to the Casino/Rural Catchment District relevant to this application.

> *It is considered that the identified Potential Rural Residential lands within the Casino/Rural Catchment have more that adequate access to a broad range of essential social services. A comprehensive public transportation system creates linkages to education, health and community services as well as open space and recreation located within the town centre. Many extension services, particularly for the aged provide mobile service to both the town centre and surrounding areas".*

The subject land proposed for rezoning is situated within an area identified within the RRDS for closer rural settlement, and therefore contains inherent qualities rendering the land suitable for rural residential purposes. Accordingly, it are these qualities which have resulted in Council identifying the land for future rural residential development.

The Northern Sector of the Casino/Rural Catchment District is identified as a **Stage 1** release area within the Strategy as illustrated in Figure 6.2 of the RRDS and reproduced below in **Plate 5**.

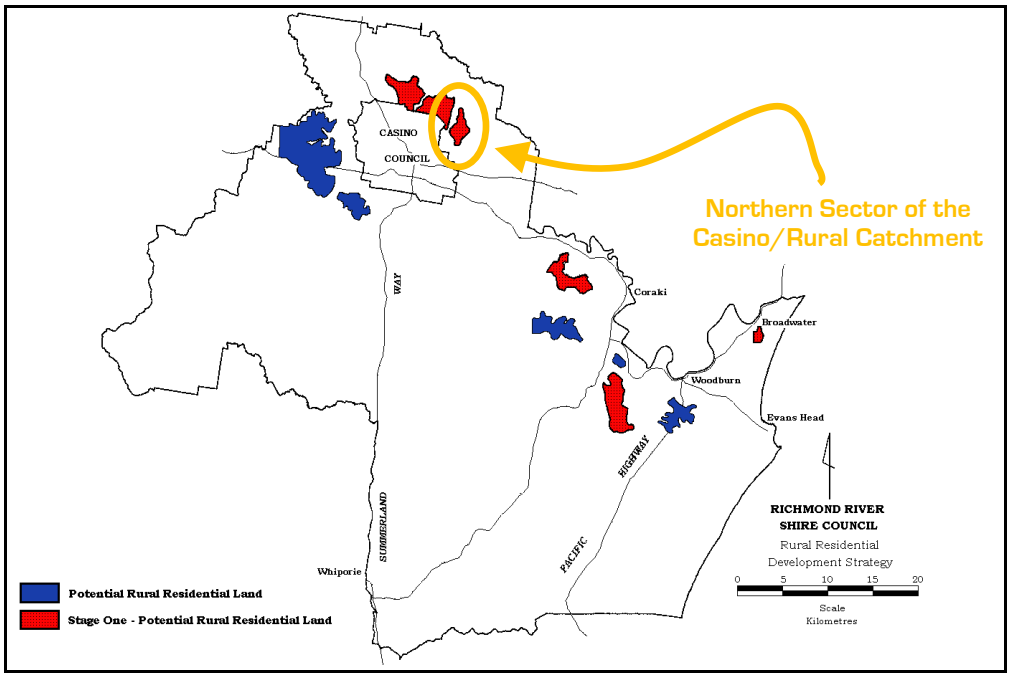


Plate 5 - RRDS Staging Plan **Source:** Figure 6.2 of RRDS (March 1999)

ii. Richmond Valley Council Correspondence dated 24 November 2015

The impetus for the submission of this rezoning application has been

triggered through correspondence issued to the landowner from Richmond Valley Council (Refer **Attachment 2**). In this regard, the previous rezoning application submitted for the land back in 2006 was not progressed due to the large volume of undeveloped rural residential land on the market at that time and low demand for such development.

Due to the time lapse since 2006, demand has increased for rural residential type allotments which has resulted in lot supply dwindling over time. Accordingly, Richmond Valley Council have expressed an interest in revisiting the rezoning of the subject land Lot 4 DP 708496.

5. Is the Planning Proposal consistent with applicable State Environmental Planning Policies?

The Planning Proposal is consistent with the provisions of applicable State Environmental Planning Policies. An assessment of the project against these policies is provided within **Attachment 3**.

6. Is the Planning Proposal consistent with applicable Ministerial Directions (s. 117 directions)?

Comment: The Planning Proposal is consistent with the provisions of applicable S117 Ministerial Directions. An assessment of the project against these requirements is provided at **Attachment 4.**

Section C – Environmental, Social and Economic Impact

7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

A flora and fauna assessment was completed by Aspect North (Ref No. LM040594 Dated April 2005) with respect to a previous rezoning application lodged for the subject site.

The methodology used to carry out the assessment included:

- Review of existing studies within the vicinity of the site
- Search of schedules 1 – 3 of the NSW Threatened Species Conservation Act 1995 and the Dept. of Environment and Conservation (DEC) Atlas of NSW Wildlife to identify threatened species, populations and ecological community, or their habitats recorded on and also within 5km of the subject site;
- Flora and fauna survey with attention to the threatened flora identified within the DEC Atlas search;
- Evaluation of the site's habitat and wildlife corridor value;
- Identification of possible effects of the proposal on existing fauna and flora and ameliorative measures.

Section 3.2 'Site Assessment' of the Aspect North Flora & Fauna Assessment (2005) identified the following:

- The site comprises mostly pasture with isolated and scattered paddock trees and areas of regrowth trees and shrubs. Several clusters of retained regrowth forest was identified occurring near the northern boundary;
- Prior to clearing most of the site would have supported extensive areas of dry sclerophyll forest. The regrowth areas and isolated and scattered paddock trees located adjacent to the northern boundary were described as:
    - North east corner – a small patch of 0.4 hectares of regrowth tree vegetation identified as open forest. The dominant vegetation consisted of dry sclerophyll species comprising Pink Bloodwood (Corymbia intermedia), White Mahogany (Eucalyptus acmenoides), Narrow-leaved Ironbark (E.crebra), with several Forest Oak (Allocasuarina torulosa). No mid storey, minimal ground storey consisting of Breynia (Breynia oblongifolia), Bracken (Pteridium esculentum) and Blady Grass (Imperata cylindrical).
    - Mid way along the northern boundary – Small patch of 0.7 hectares of regrowth trees constituting open forest. The dominant vegetation included White Mahogany, Narrow-leaved Ironbark and Forest Oak. The minimal mid storey comprised of Breynia, Red Ash (Alphitonia excels), Cheese

Tree (Glochidion ferdinandi) and Lantana (Lantana Camara). Minimal ground storey included Basket Grass (Oplismenus imbecillus) and Blady Grass.

- The remainder of the site was dominated by various pasture grasses including Setaria (Setaria spp), Braken, Blady Grass, Couch Grass (Cynodon dactylon) Rhodes Grass (Chloris gayana), Common Crowfoot (Erodium cicutarium) and Fireweed (Senecio madagascariensis) and occasional low growing shrubs including Slender Riceflower (Pimelea linifolia). The area is best described as closed grassland.
- The isolated trees and small clusters of regrowth trees through the site included Pink Bloodwood, White Mahogany, Narrow-leaved Ironbark, Broad-leaved Apple (Angophera subvelutina), Coast Banksia (Banksia integrifolia), Swamp Box (Lophostemon suaveolens) and several Brush Box (L. confertus).
- Several Red Gums (Eucalyptus tereticornis) and small clusters and individual trees of Broad-leaved Paperbark (Melaleuca quinquinervia) occur along the drainage lines and around the dams. Camphor Laurel (Cinnamomum camphora), and Wild Tobacco (Solanum Mauritianum) also occur around several of the dams.
- Several trees appear to have been planted including a single Teak (Flindersia australis) and several Figs (Ficus spp).
- The dams have fringing emergent aquatic vegetation including the Cape Waterlily (Nymphaea capensis).

The following assessment was provided within the Aspect North Flora & Fauna Assessment (2005):

"The site is 52.64 hectares in size and is located off Gregors Road at Spring Grove near North Casino in northern New South Wales. The site has a history of agricultural/pastoral land management practices, which has included the clearing of vegetation for the establishment of pasture, the establishment of farm dams and harvesting of timber. Some regrowth areas and isolated and scattered paddock trees remain.

Due to the site history, field survey by staff of ASPECT north found that the area proposed for residential purposes has a low conservation value as

fauna habitat, it may however provide habitat for relatively common and/or opportunistic faunal species. The regrowth areas along the northern boundary provide habitat for a suite of insectivorous and nectivorous birds and probably for several species of mammals and reptiles. The dams provide habitat for a number of fauna species.

No threatened flora species were located on the site and whilst no threatened fauna species were recorded during the field survey, it was determined that a number of threatened species of fauna may occasionally utilise the site. These species were assessed with regard to the provisions of Section 5A of the Environmental Planning and Assessment Act 1979.

The results of this assessment demonstrate that, if the recommendations of this report are implemented, the development is not likely to result in a significant effect on a threatened species, population or ecological community. Therefore, a Species Impact Statement is not required.

The recommendations include:

- *The areas of regrowth dry sclerophyll open forest near the northern boundary be retained and fenced as appropriate to exclude trampling by domestic stock. A program of weed removal to control Lantana and other weeds to be implemented in these areas.*
- *Isolated and clusters of paddock trees of species native of species native to the area be retained wherever possible for their aesthetic and faunal values;*
- *The five dams along the ephemeral watercourses to be retained and preferably fenced to exclude stock trampling the edges and a program of weed control to be implemented to remove the Camphor Laurel trees in the vicinity of some of the dams; and*
- *Powerlines in the vicinity of the dams be fitted with coloured discs known as 'bird diverters' or 'bird scarers' which serve to make the lines more obvious and so avoid collisions of birds with powerlines.*

Additionally, the criteria contained in SEPP 44 have been addressed and a Koala Management Plan is not required. The proposed development is not likely to result in a significant effect on threatened species, populations or ecological communities as listed in the NSW Fisheries Management Act 1994. Therefore, a Species Impact Statement is not required. The proposed

development is not likely to have a significant impact on a matter of National Environmental Significance as listed, therefore referral to the Environment Minister for approval is not required."

As the current planning proposal provides a modified development footprint to that previously proposed, an updated ecological assessment may be prepared post Gateway determination if deemed necessary by Council.

8. Are there any other likely environmental effects as a result of the Planning Proposal and how are they proposed to be managed?

A range of draft environmental assessment reports were previously prepared by various consultants for the rezoning of the land for rural residential purposes. Whilst those reports identified below have formed the foundations of the information provided within this Planning Proposal, they will need to be updated and completed following the initial Gateway Determination as necessary. Potential impacts are identified and discussed as follows:

a. Soils - Contamination & Acid Sulfate Soils

The subject land is not identified as containing Acid Sulfate Soils pursuant to the Richmond Valley LEP 2012.

A contaminated land assessment investigation was carried out by Aspect North (Ref No. LM040594 Dated October 2005) with respect to a previous rezoning application lodged for the subject site, with the rezoning report addressing SEPP 55 – Remediation of Land. Section 5.3.2 of that report provided the following:

"The Contaminated Site Investigation, which involved collection of a site history by way of interview from the long term landholder, indicates that the subject site has been used exclusively for cattle grazing since 1960 and, prior to this time, dairy farming from 1920. There has been little fertilizer and no persistent chemical use.

It is therefore concluded that land contamination is unlikely as a result of past usage and that the land is suitable for development permissible within the 1(c) zone."

A copy of the previous landowner Statutory Declaration is contained within **Attachment 7** of this report that covers the period up to 1 August 2005, together with a second Statutory Declaration covering the period thereafter through until January 2018.

The second Statutory Declaration provided by the landowner confirms that the site has continued as a grazing property since 1 August 2005.

b. Bushfire

Current mapping obtained from Richmond Valley Council indicates that the land is mapped as being bushfire prone (see **Plate 6**).

A bushfire threat assessment has been completed by Bushfire Certifiers and is contained within **Attachment 5**.

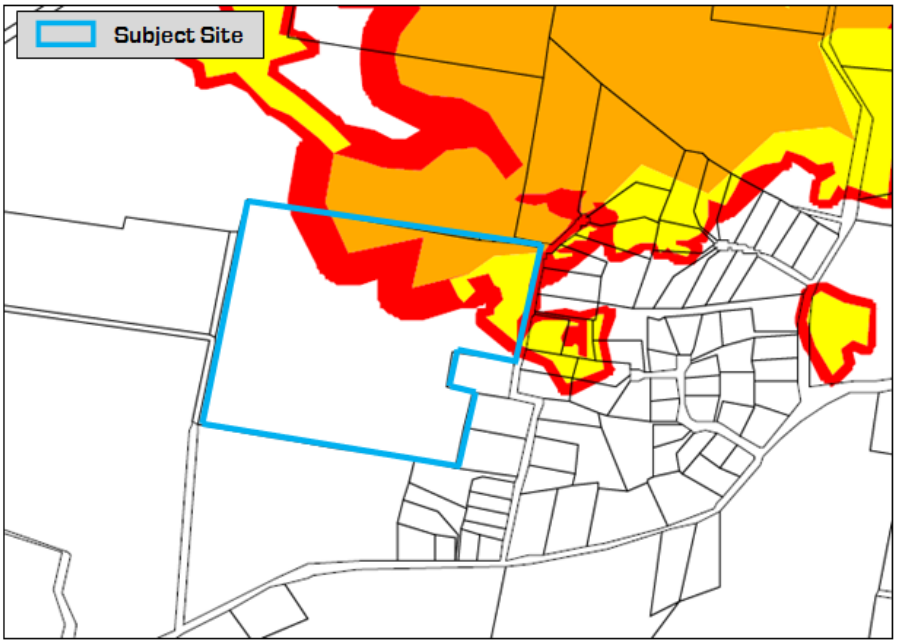


Plate 6: Richmond Valley Council Bushfire Mapping
(Source: Richmond Valley Council website)

c. Buffer Areas (Land Use Conflict)

The introduction of rural residential land uses within a rural area interface may contribute to the creation of conflicting land use issues. Issues commonly raised include offensive noise from farm machinery and cattle, hours of farm activities and spray drift associated with intensive horticulture etc.

To assess the potential of land use conflict from the proposed rural residential development with surrounding land uses, a preliminary assessment has been carried out against the proposed lot layout and Chapter I11 – LUCRA of the Richmond Valley DCP. Chapter 11 reproduces current buffer distance guidelines between conflicting land uses in accordance with best practice principles (Living and Working in Rural Areas – A handbook for managing land use conflict issues on the NSW North Coast).

Chapter 6: Development Control of the referenced Living and Working in Rural Areas' (NSW DPI) handbook is a guideline that contains tables summarising the recommended minimum buffers with the aim to reduce land use conflicts and protect the values of key environmental assets and rural production areas. It is noted that the separation distances in the tables represents a synthesis of existing recommended and best practice minimum buffer distances. These separation distances are reproduced within Council's DCP (Table I11.1).

As grazing lands adjoin and surround the subject site and also undertaken on the subject land, this land use has been assessed against Table I11.1 of the DCP in respect to the proposed dwelling envelopes within the subdivision.

The DCP requires buffer distances from rural dwellings of 50 metres for grazing land.

As shown on **NDC Plan 4**, each of the proposed lots have the capacity to locate dwelling sites to comply with the 50 metre setback from property boundaries adjoining grazing activities.

d. Cultural Heritage

Appendix 6 of the previous rezoning submission prepared by Aspect North (December 2005) contained correspondence from Boolangle Local Aboriginal Land Council (dated18-11-2005) which has been contained within **Attachment 8** of this Planning Proposal.

Appendix 5 of the previous rezoning submission by Aspect North contained an archaeological assessment prepared by Adrian Piper (Heritage Surveys) and Richard Robins (Everick Heritage Consultants Pty Ltd (August 2005) which can also be found within **Attachment 8** of this Planning Proposal. Whilst there were a number of recommendations made within Section 8 of the assessment, it provided that *"As no Aboriginal sites were found and no significance assessment is warranted, specific recommendations on site management are not required".*

The Richmond Valley LEP 2012 mapping does not identify the subject land as containing a heritage item.

e. Soil Landscapes & Effluent Disposal

A wastewater feasibility assessment has been prepared by Greg Alderson & Associates which is contained within **Attachment 6** of this report and identifies the feasibility of the subdivision being serviced with on-site wastewater for future dwellings.

f. Landscape and Visual Value

The landscape and visual character of the locality is rural and rural residential. The predominant land uses comprise rural residential dwellings, rural dwelling houses and cattle grazing activities.

The landscape and visual character of the Gregors Road locality has been substantially transformed and developed for rural residential purposes. Farming land has been transformed and characterised by dwelling houses and associated domestic buildings/structures on rural residential lots with domestic type landscaping.

The subject land is not considered to be highly sensitive or significant in the local visual context.

The size of the conceptual lots are such that there is substantial land available for site landscaping (including domestic gardens and planting of larger trees) in a similar manner to other rural residential estates within the LGA.

g. Stormwater Drainage and Water Quality

A stormwater management plan will be required to be submitted upon finalisation of the Gateway Determination.

The SMP will identify the implementation of the stormwater management measures to achieve the stormwater and sensitive urban design objective of minimising impacts of development on the natural water cycle i.e. WSUD. Measures to be adopted will typically include:

- Installation of rainwater tanks;
- Provision of grass buffers to main gully flow paths;
- Swales in road reserves where grades permit;
- Retention of the large existing farm dams;
- Utilisation of water saving devices within dwellings;
- Implement erosion and sediment controls during construction.

h. Flooding

The 1 in 100 year flood level for the site is 20.6 metres AHD as confirmed by Council which has been plotted on **NDC Plan 3.** The minimum habitable floor level has been adopted at 21.1 metres AHD and future dwelling sites will be located above this level.

Detailed technical assessments to be completed upon receipt of the Gateway Determination will confirm the suitability of the lot layout with respect to flooding.

i. Coastal Hazards

The development is not subject to the SEPP 71 Coastal Policy.

j. Agriculture

Whilst no specific agricultural assessment has been prepared at this stage, the Planning Proposal does not propose to rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland

Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot.

k. Geotechnical Assessment

Pursuant to the Richmond Valley LEP 2012, the subject land is not mapped as containing land identified as a landslide risk.

A geotechnical assessment may form a condition requirement as part of the Gateway Determination to assess the suitability of the land for future subdivision.

9. How has the Planning Proposal adequately addressed any social and economic effects?

The rezoning of the land for rural residential purposes will have positive social and economic effects, and in particular the development of the land for housing will assist in meeting regional dwelling targets identified within the FNCRS. The community benefit associated with the proposed development will be found in the provision of additional housing to service the future population needs of the Richmond Valley LGA.

The additional following social and economic benefits will be provided:

- **Creation of local employment opportunities through new jobs and multiplier effect on the local economy –** The construction of the subdivision and future dwelling houses will provide an increase in local employment opportunities that will have flow-through effects through tradespeople to suppliers and capacity for increased retail expenditure.
- **Increase in housing supply and choice –** The creation of additional lots will in-turn enable the construction of additional dwellings which may be either owner occupied or leased thereby contributing to the housing stock within the Northern Sector of the Casino/Rural Catchment District
- **Demand for community services in the locality –** It is envisaged that the future residential occupation of any lots created will increase the demand for services in the locality by virtue of the resultant increase in population. The subject site is accessible and within good proximity to Casino which contains a diverse range of community

facilities together with retail, administrative, health, education, transport, open space and sporting services.

Utility services are further discussed below under Question 10.

No social impacts are envisaged in regard to cultural heritage matters having regard to the information provided above under Question 8 – d. Cultural Heritage.

Section D – State and Commonwealth Interests

10. Is there adequate public infrastructure for the Planning Proposal?

a. Sewer

The subject site does not have connection to Council's reticulated sewer supply. As identified above, a wastewater feasibility assessment has been prepared by Greg Alderson & Associates which is contained within **Attachment 6** of this report which identifies the feasibility of the subdivision being serviced by on-site wastewater systems.

A minimum lot size requirement of 2 hectares is proposed for proposed Lot 1 due to the restrictive nature of the lot for wastewater disposal.

b. Water

Reticulated water services are not available in the locality. Under the circumstances, water storage tanks will be provided to each future dwelling house in order to harvest roof water as the primary means of providing a domestic potable water supply and also water for fire-fighting purposes.

NDC Plan 4 (REV E) has been prepared to position the building envelope and on-site effluent disposal area within proposed Lot 4 to be clear of the water supply easement. The 5 metre wide water supply easement burdens the land and was created via DP638215. Alternatively, further discussions with benefitted landowners of the easement can be had to determine if the water supply easement can be realigned or extinguished.

c. Electricity Supply

Consultation will be required to be undertaken with the relevant authority to ensure power supply is adequate to meet the needs of the development at cost to the proponent.

d. Telecommunications

Consultation will be required to be undertaken with the relevant authority to ensure telecommunication capacity is adequate to meet the needs of the development at cost to the proponent.

e. Roads

The conceptual subdivision layout provided at **NDC Plan 4** identifies road connections to Gregors Road to service the lots. A traffic and access report will be required to be prepared upon receipt of the Gateway Determination to assess the capacity of the road network to service the subdivision.

Road Construction & Access Connections

The extent of the proposed internal road only extends to the north western corner of proposed Lot 18 as opposed to the southern boundary. The road design will incorporate a cul-de-sac head.

Any road extension to service future rural residential development within adjoining Lot 41 DP872890 to the south can then be negotiated between the respective landowners.

The conceptual subdivision layout provides an access handle between proposed Lots 4 & 5 from the internal road to the northern portion of the residue lot. Access between the southern portion of the residue lot and the northern portion will also be facilitated via the access handle adjacent to the western property boundary.

NDC Plan 4 (REV E) – Conceptual Subdivision has been designed to reflect the above.

11. What are the views of State and Commonwealth public authorities consulted in accordance with the Gateway Determination?

To be completed following receipt of the Gateway Determination.

Part 4: Mapping

The following changes are proposed to the mapping within the Richmond Valley Local Environmental Plan 2012.

i. **Lot Size Map (Sheet LSZ-006)** – Application of a 1 hectare minimum lot size and 2 hectare minimum lot size for the area of land proposed to be rezoned in accordance with **NDC Plan 5.** A 20 hectare minimum lot size is proposed to facilitate the creation of the residue lot (Lot 19) and to maintain a dwelling entitlement.

ii. **Land Zoning Map (Sheet LZN-006)** – Application of an R5 – Large Lot Residential Zone in accordance with **NDC Plan 5**. The RU1 Primary Production zone has been retained to cover the proposed residue Lot 19.

iii. **Dwelling Opportunity Map** – Remove proposed R5 zoned land.

This Planning Proposal includes a locality plan and aerial photo which clearly identifies the subject site.

Part 5: Community Consultation

The Gateway Determination will specify the community consultation that must be undertaken on the Planning Proposal.

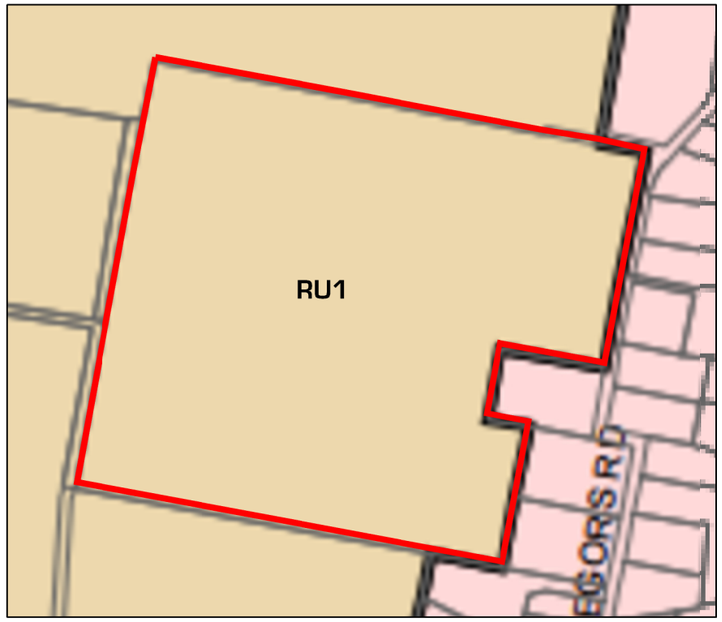
It is expected that the Planning Proposal will be exhibited for a period of 28 days in accordance with standard procedures.

Part 6: Project Timeline

Plan Making Step	Estimated Completion
Council Resolution	TBA
Gateway Determination (Anticipated)	TBA
Government Agency Consultation	TBA
Public Exhibition Period	TBA
Submissions Assessment	TBA
Council adopt Planning Proposal	TBA
Submission of Endorsed LEP to DP&I for finalisation	TBA
Anticipated date plan is made (if delegated)	TBA
Forwarding of LEP Amendment to DP&I for notification (if delegated)	TBA

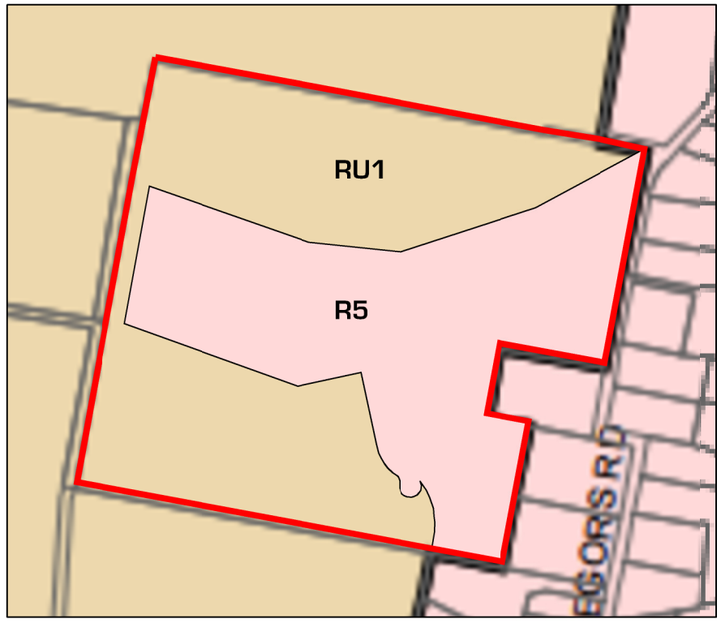
REFERENCES

- A Guide to Preparing Planning Proposals: NSW Planning and Environment 2016.
- North Coast Regional Plan 2036.
- Richmond River Shire Council Rural Residential Development Strategy (March 1999)



EXISTING LAND ZONE MAP

RU1 PRIMARY PRODUCTION



PROPOSED LAND ZONE MAP

RU1 PRIMARY PRODUCTION

R5 LARGE LOT RESIDENTIAL

RICHMOND VALLEY LOCAL ENVIRONMENTAL PLAN 2012 MAPPING

SITE BOUNDARY

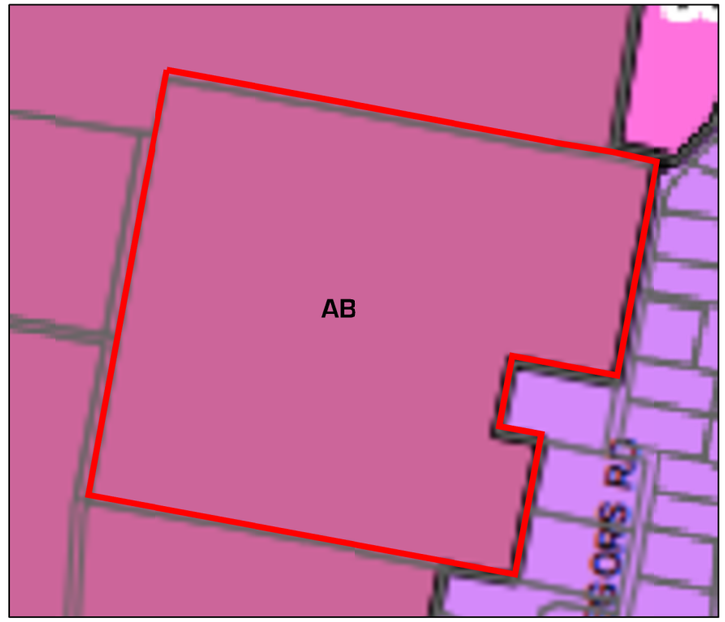
SOURCE PLAN:
www.legislation.nsw.gov.au - Richmond Valley Local Environmental Plan - accessed 25.01.18

- Land zone map - sheet LZN _006
- Lot size map - sheet LZN _006

0 100 200 300 400 500

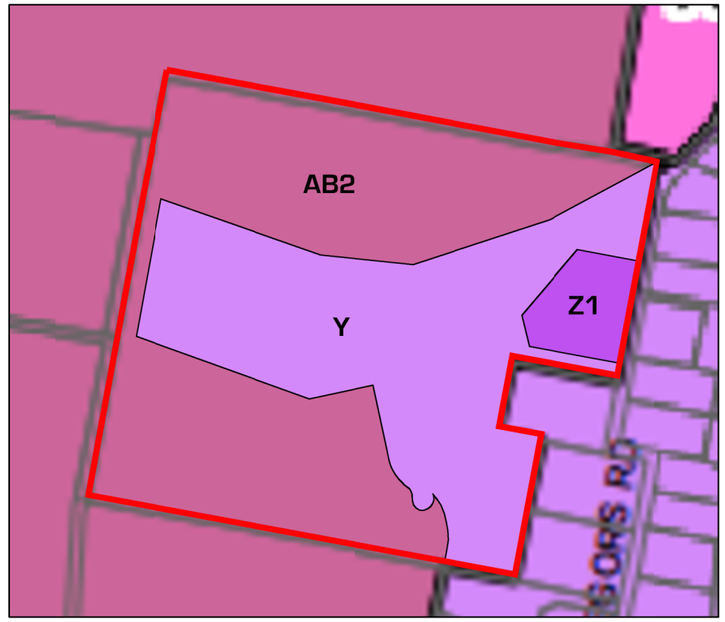
1cm = 100m
1:10000

N



EXISTING LOT SIZE MAP

AB 40ha



PROPOSED LOT SIZE MAP

AB2 20ha

Y 1ha

Z1 2ha

REV	DATE	AMENDMENT
A	23.05.17	
B	11.01.18	BOUNDARY LOTS 1-3
C	25.01.18	AREA OF POTENTIAL DEV. - DBYD INFO, BDY LOTS 1,2 & 3
D	28.08.18	BDY RESIDUE AND LEP MAPPING
E		

SOURCE PLAN: www.maps.six.nsw.gov.au - accessed 23.05.17

k:\jobs\2016\16231 - bennett\planning\planning plans\ndc plans\cad files\16231 - bennet 2 rev d.dwg - plan 5 - lep mapping

Newton Denny Chapelle
Surveyors Planners Engineers
Email: office@newtondennychapelle.com.au
LISMORE 31 Carrington St. Lismore 2480 PH: 6622 1011
CASINO 100 Barker St. Casino 2470 PH: 6662 5000
ABN: 36 220 045 469

PLAN 5 - LEP MAPPING

CLIENT: DON BENNETT REV D

LOCATION: LOT 4 DP 708496
75 GREGORS ROAD
SPRING GROVE NSW

DATE: 28.08.18 REF: 16/231
SCALE: 1 : 10,000 @ A3 DRAWN: bk

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 1

Deposited Plan 708496

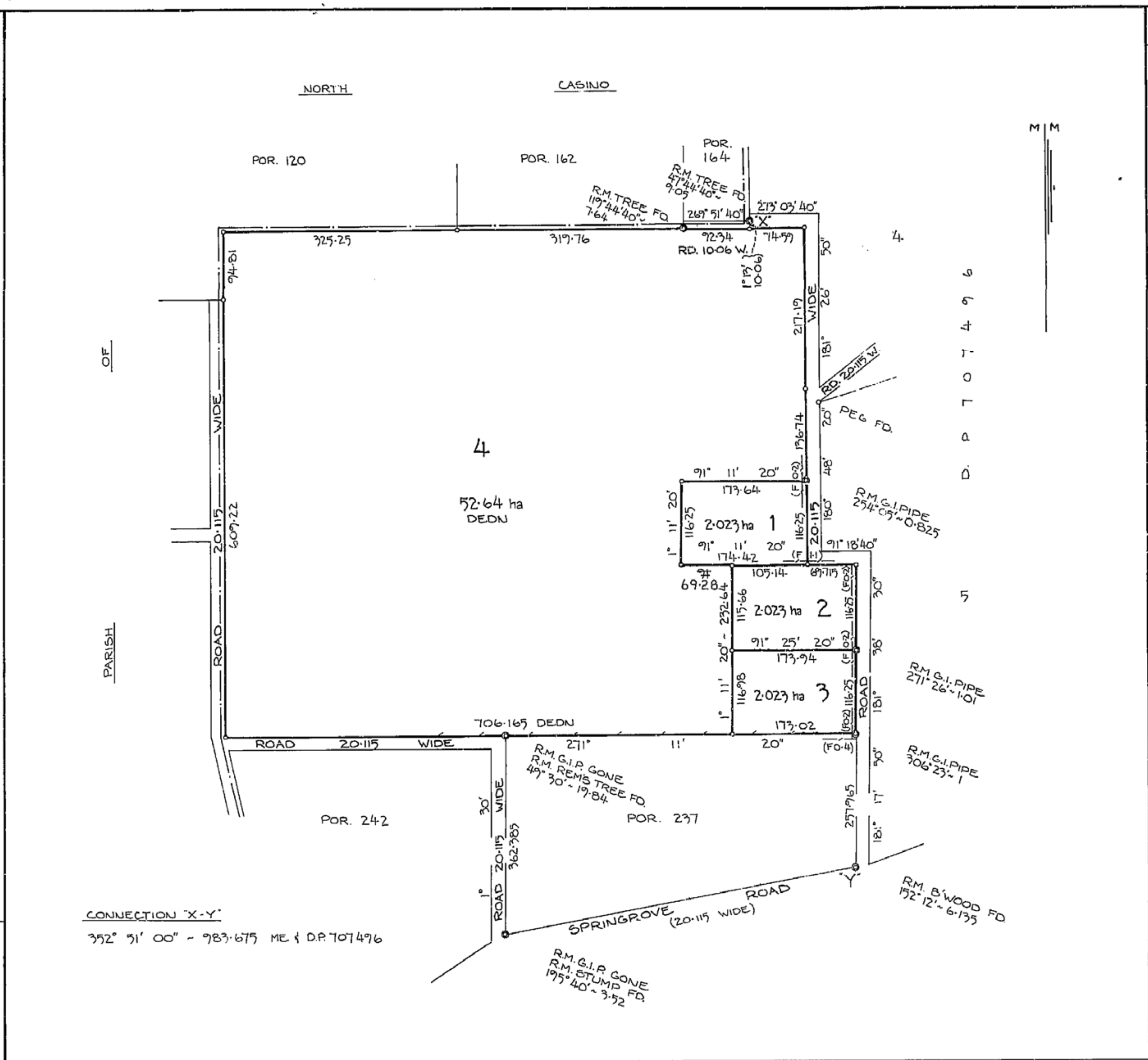
PLAN FORM 2

Plan Drawing only to appear in this space

• OFFICE USE ONLY

Signatures and seals only.

K. Gregor.



D.P. 708496

Registered: 8-11-1984

C.A.: N° 29/1984 OF 11·10·1984

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: PARISH

Last Plan: D.P. 6964#

PLAN OF SUBDIVISION OF LOT 58 D.P. 6964

Reduction Ratio 1: 4000
Lengths are in metres.

~~Mun./~~Shire ~~City~~ RICHMOND RIVER

Locality: SPRINGROVE

Parish: TOMKI

County: ROUS

This is sheet 1 of my plan in ... sheets.
(Delete if inapplicable).

I, LINDSAY IAN WALKER
of HAGGERTY & WALKER, CASINO
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan AS REGARDS LOTS 1, 2 & 3 ONLY
is accurate and has been made ~~*(1) by me~~ (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on † 10TH SEPTEMBER 1984.

Signature L. Walker

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth "X – Y"
*Strike out either (1) or (2). †Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

91 AMENDED TO 69·28 IN REG GEN OFFICE 7·11·1984

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) ~~the requirements of section 34B of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended.~~ ~~†Hunter District Water, Sewerage, and Drainage Act, 1938, as amended.~~

have been complied with by the applicant in relation to the proposed SUBDIVISION
(Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. 29/1984

Date 11th October, 1984

(Signature) ...
Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

Table of mm

M.P.D.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Keith J. ... 17/10/84

SURVEYOR'S REFERENCE: 84/210

I, Bruce Richard Davies, Under Secretary for Lands and Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this day.

8th November, 1984

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 2

Correspondence

Richmond Valley Council

Richmond Valley Council

2015 NSW TRAINING AWARDS

NSW Winner
LARGE EMPLOYER

Council's Reference:

Your Reference:

Telephone Enquiries to: Tony McAteer

24 November 2015

Mr DW Bennett
950 Benns Road
CASINO NSW 2470

Dear Don,

Rezoning Request – Lot 4 DP708496, Gregors Road, Spring Grove

In 2006 you engaged consultancy firm Aspect North to prepare a proposal for your property at Lot 4 DP708496, Gregors Road, Spring Grove, to have it rezoned for rural residential development.

When the rezoning request was lodged Council was not in a position to progress the matter due to the large volume of undeveloped rural residential land on the market at that time, and low demand. Furthermore, Council raised several concerns with Aspect North about the concept subdivision layout to which a response was never received.

Council wishes to revisit your rezoning submission and would like to arrange a meeting with you to discuss this further. If you would like to arrange a meeting you can contact me 02 66600276 or by email at tony.mcateer@richmondvalley.nsw.gov.au .

Yours sincerely

Tony McAteer
Coordinator of Strategic Planning & Environment

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 3

Assessment Against SEPP's

Assessment Against State Environmental Planning Policies

State Environmental Planning Policy	Applies?	Comments
SEPP 1 Development Standards.	N/A	-
SEPP 14 Coastal Wetlands.	N/A	-
SEPP 15 Rural Land-Sharing Communities.	N/A	-
SEPP 19 Bushland in Urban Areas.	N/A	-
SEPP 21 Caravan Parks.	N/A	-
SEPP 26 Littoral Rainforests.	N/A	-
SEPP 29 Western Sydney Recreation Area.	N/A	-
SEPP 30 Intensive Agriculture	N/A	-
SEPP 32 Urban Consolidation (Redevelopment of Urban Land).	N/A	-
SEPP 33 Hazardous & Offensive Development.	N/A	-
SEPP 36 Manufactured Home Estates.	N/A	-
SEPP 39 Split Island Bird Habitat.	N/A	-
SEPP 44 Koala Habitat Protection.	Applies	A flora and fauna assessment was completed by Aspect North (Ref No. LM040594 Dated April 2005) with respect to a previous rezoning application lodged for the subject site. The assessment provided the following: *"Additionally, the criteria contained in SEPP 44 have been addressed and a Koala Management Plan is not required. The proposed development is not likely to result in a significant effect on threatened species, populations or ecological communities as listed in the NSW Fisheries Management Act 1994. Therefore, a Species Impact Statement is not required. The proposed development is not likely to have a significant impact on a matter of National Environmental Significance as listed, therefore referral to the Environment Minister for approval is not required."* As the current planning proposal provides a modified development footprint to that previously proposed, an updated ecological assessment may be prepared post Gateway determination if deemed necessary by Council.
SEPP 47 Moore Park Showground.	N/A	-
SEPP 50 Canal Estate Development.	N/A	-

State Environmental Planning Policy	Applies?	Comments
SEPP 52 Farm Dams & Other Works in Land & Water Management Plan Areas.	N/A	-
SEPP 55 Remediation of Land.	Applies	Reference should be made to the response to Question 8 of the Planning Proposal which addresses land contamination.
SEPP 59 Central Western Sydney Economic & Employment Area.	N/A	-
SEPP 62 Sustainable Aquaculture.	N/A	-
SEPP 64 Advertising & Signage.	N/A	-
SEPP 65 Design Quality of Residential Flat Buildings.	N/A	-
SEPP 70 Affordable Housing (Revised Schemes).	N/A	-
SEPP 71 Coastal Protection	N/A	-
SEPP (Affordable Rental Housing) 2009	N/A	-
SEPP (Building Sustainability Index: BASIX) 2004	N/A	-
SEPP (Exempt and Complying Development Codes) 2008	N/A	-
SEPP (Housing for Seniors or People with a Disability) 2004	N/A	-
SEPP (Infrastructure) 2007	N/A	In addressing Clause 104 – Traffic Generating Development, the development does not seek to create 200 or more lots thereby being below the threshold in Column 2 to the Table in Schedule 3. Concerning Column 3 in Schedule 3, the development does not seek to create 50 lots.
SEPP (Kosciuszko National Park — Alpine Resorts) 2007	N/A	-
SEPP (Kurnell Peninsula) 1989	N/A	-
SEPP (Major Development) 2005	N/A	-
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	N/A	-
SEPP (Miscellaneous Consent Provisions) 2007	N/A	-
SEPP (Penrith Lakes Scheme) 1989	N/A	-
SEPP (Rural Lands) 2008	Applies	The Rural Planning Principles listed in SEPP (Rural Lands) 2008 are considered and addressed within **Attachment 4** against Section 117 Direction 1.5

State Environmental Planning Policy	Applies?	Comments
		Rural Lands. This SEPP provides for the protection of agricultural land that is of State or Regional significance. The Planning Proposal does not propose to rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot.
SEPP (SEPP 53 Transitional Provisions) 2011	N/A	-
SEPP (State and Regional Development) 2011	N/A	-
SEPP (Sydney Drinking Water Catchment) 2011	N/A	-
SEPP (Sydney Regional Growth Centres) 2006	N/A	-
SEPP (Three Ports) 2013	N/A	-
SEPP (Urban Renewal) 2010	N/A	-
SEPP (Western Sydney Employment Area) 2009	N/A	-
SEPP (Western Sydney Parklands) 2009	N/A	-

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ATTACHMENT 4

Assessment Against S117 Ministerial Directions

Assessment Against S117 Ministerial Directions

Section 117 Direction	Applies?	Comments
1. Employment and Resources		
1.1 Business and Industrial Zones	N/A	-
1.2 Rural Zones	Applies	In addressing Clause 4(a) of the Direction: • The Planning Proposal seeks to rezone land zoned RU1 Primary Production to an R5 Large Lot Residential Zone. To address the inconsistency of Clause 4(a) in rezoning land from rural to residential, the following is submitted. • The Planning Proposal does not propose to rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot. • The Planning Proposal is consistent with the Richmond River Shire Council Rural Residential Development Strategy as demonstrated within Question 4 of this Planning Proposal; • The Planning Proposal is consistent with the North Coast Regional Plan 2036 as identified within Question 3 of this Planning proposal, and therefore consistent with *Direction 24: Deliver well-planned rural residential housing areas*.
1.3 Mining, Petroleum Production and Extractive industries	N/A	
1.4 Oyster Aquaculture	N/A	-
1.5 Rural Lands	Applies	The following comments are submitted to satisfy the objectives of the Direction and also clauses (4) and (5): Clause (4) provides that a planning proposal must be consistent with the Rural Planning Principles listed in SEPP (Rural Lands) 2008. *The **Rural Planning Principles** are as follows:* *a) the promotion and protection of opportunities for current and potential productive and sustainable economic activities in rural areas.* *b) recognition of the importance of rural lands and agriculture and the changing nature of agriculture and of trends, demands and issues in agriculture in the area, region or State.*

		c) recognition of the significance of rural land uses to the State and rural communities, including the social and economic benefits of rural land use and development *d) in planning for rural lands, to balance the social, economic and environmental interests of the community.* *e) the identification and protection of natural resources, having regard to maintaining biodiversity, the protection of native vegetation, the importance of water resources and avoiding constrained land.* *f) the provision of opportunities for rural lifestyle, settlement and housing that contribute to the social and economic welfare of rural communities.* *g) the consideration of impacts on services and infrastructure and appropriate location when providing for rural housing.* *h) ensuring consistency with any applicable regional strategy of the Department of Planning or any applicable local strategy endorsed by the Director-General.* Clause (5) provides that a planning proposal must be consistent with the Rural Subdivision Principles listed in SEPP (Rural Lands) 2008. *The **Rural Subdivision Principles** are as follows:* *(a) the minimisation of rural land fragmentation,* *(b) the minimisation of rural land use conflicts, particularly between residential land uses and other rural land uses,* *(c) the consideration of the nature of existing agricultural holdings and the existing and planned future supply of rural residential land when considering lot sizes for rural lands,* *(d) the consideration of the natural and physical constraints and opportunities of land,* *(e) ensuring that planning for dwelling opportunities takes account of those constraints.* The following comments are provided: • The Planning Proposal is consistent with the Richmond River Shire Council Rural Residential Development Strategy as demonstrated within Question 4 of this Planning Proposal. • The subject land proposed for rezoning is situated within an area identified within the RRDS for closer rural settlement, and therefore contains inherent qualities rendering the land suitable for rural residential purposes. Accordingly, it are these qualities which have resulted in Council identifying the land for future rural residential development. The Northern Sector of the Casino/Rural Catchment District is identified as a **Stage 1** release area within the Strategy. Due to the time lapse since 2006, demand has increased for rural residential type allotments which has resulted in lot supply dwindling over time. Accordingly, Richmond Valley Council have expressed an interested in revisiting

		the rezoning of the subject land Lot 4 DP 708496 (refer **Attachment 2**). • The Planning Proposal is consistent with the North Coast Regional Plan as identified within Question 3 of this Planning Proposal. • The Planning Proposal does not propose to rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot. • The relevant site and surrounding environmental aspects, natural and physical constraints have been identified within this report. Environmental technical assessment reports will be completed upon receipt of the Gateway Determination to confirm the suitability of the lot layout. • The proximity of the land to existing residents, combined with the opportunity to afford land use separation grazing buffers to lots adjoining agricultural grazing land will reduce the potential for future land use conflicts. • Social and economic impacts have been identified within this Planning Proposal. • No issues have been identified concerning cultural heritage impacts. • Biodiversity and ecological values of the site have been considered and addressed within Question 7 of this Planning Proposal. • The rezoning will contribute to both the State Government and Local Council housing targets set by the North Coast Regional Plan further to meeting the desired 60/40 target of single to medium density housing. • Services to the development have been considered and addressed within Question 10 of this Planning Proposal.
2. Environment and Heritage		
2.1 Environmental Protection Zones	N/A	-
2.2 Coastal Protection	N/A	-
2.3 Heritage Conservation	N/A	No issues are raised concerning cultural heritage matters having regard to the information provided above within this Planning Proposal under Question 8.
2.4 Recreation Vehicle Areas	N/A	-

2.5 Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEP's	N/A	-
3. Housing, Infrastructure and Urban Development		
3.1 Residential Zones	N/A	-
3.2 Caravan Parks and Manufactured Home Estates	N/A	-
3.3 Home Occupations	N/A	-
3.4 Integrated Land Use and Transport	N/A	-
3.5 Development Near Licensed Aerodromes	N/A	-
3.6 Shooting Ranges	N/A	-
4. Hazard and Risk		
4.1 Acid Sulfate Soils	N/A	-
4.2 Mine Subsidence and Unstable Land	N/A	-
4.3 Flood Prone Land	Applies	The site is mapped as being flood prone. Clause (6) of the s117 direction states that a planning proposal must not contain provisions that apply to the flood planning areas which: (a) Permit development in floodway areas; (b) Permit development that will result in significant flood impacts to other properties (c) Permit a significant increase in the development of that land (d) Are likely to result in a substantially increased requirement for government spending on flood mitigation measures, infrastructure or services, or (e) Permit development to be carried out without development consent except for the purposes of agriculture (not including dams, drainage canals, levees, buildings or structures in floodways or high hazard areas), roads or exempt development. The 1 in 100 year flood level for the site is RL 20.6 metres AHD as confirmed by Council which has been plotted on **NDC Plan 3**. The minimum habitable floor level has been adopted at 21.1 metres AHD and future dwelling sites will be located above this level.
4.4 Planning for Bushfire Protection	Applies	A bushfire threat assessment has been completed by Bushfire Certifiers and is contained within **Attachment 5**.

5. Regional Planning		
5.1 Implementation of Regional Strategies	N/A	
5.2 Sydney Drinking Water Catchments	N/A	-
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	Applies	The Planning Proposal does not propose to rezone State or Regionally Significant farmland identified within the Northern Rivers Farmland Protection Project Final Map 2005. The rezoning will involve 'Other Rural Land' with the regionally significant farmland contained within the residue lot. The proximity of the land to existing residents, combined with the opportunity to afford land use separation grazing buffers to lots adjoining agricultural grazing land will reduce the potential for future land use conflicts.
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	N/A	-
5.5 Development in the Vicinity of Ellalong, Paxton and Milifield (Cessnock LGA).	N/A	-
5.6 Sydney to Canberra Corridor	N/A	-
5.7 Central Coast	N/A	-
5.8 Second Sydney Airport: Badgerys Creek	N/A	-
5.9 North West Rail Link Corridor Strategy	N/A	-
5.10 Implementation of Regional Plans	Applies	The Planning Proposal is consistent with the North Coast Regional Plan 2036 as identified within Question 3 of this Planning Proposal. As such, the proposal is consistent with *Direction 24: Deliver well-planned rural residential housing areas* of the North Coast Regional Plan 2036.
6. Local Plan Making		
6.1 Approval and Referral Requirements	Applies	No referral or concurrence requirements are proposed within the Planning Proposal.
6.2 Reserving Land for Public Purposes	N/A	-
6.3 Site Specific Provisions	N/A	-

7. Metropolitan Planning		
7.1 Implementation of the Metropolitan Plan for Sydney 2036	N/A	-
7.2 Implementation of Greater Macarthur Land Release Investigation	N/A	-
7.3 Parramatta Road Corridor Urban Transformation Strategy	N/A	-
7.4 Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	N/A	-
7.5 Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	N/A	-
7.6 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	N/A	-

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 5

Bushfire Threat Assessment Report

Bushfire Certifiers

Bushfire Certifiers™

t: 02 6687 7461
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Lennox Head NSW 2478

info@bushfirecertifiers.com.au
www.bushfirecertifiers.com.au

ABN: 95 104 451 210
BCA Check Pty Ltd trading as Bushfire Certifiers

BUSH FIRE ASSESSMENT REPORT

Lot 4 DP 708496

75 Gregors Road Spring Grove

Proposed Land Re-zoning

Prepared for: Don Bennett

Prepared by:
Peter Thornton
BPAD-L3 ACCREDITED PRACTITIONER

Date: 17 October 2018 (amended)

Ref: 17/235

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MFireSafeEng
Building Surveyor MAIBS

DOCUMENT CONTROL

Revision No.	Date	Description	Prepared	Checked	Authorised
A	24.08.2017	Final	Scott Sewell	PJT	Peter Thornton
B	12.02.2018	Final (amended)	Scott Sewell	PJT	Peter Thornton
C	24.10.2018	Building Env.	Peter Thornton	SJT	Peter Thornton

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

This report has been prepared to establish that the land at Lot 4 DP 708496 75 Gregors Road Spring Grove proposed for re-zoning from RU1 – Primary Production to R1 – General Residential is capable of complying with Planning for Bushfire Protection 2006 in consultation with the NSW Rural Fire Service for a future rural residential subdivision.

The report establishes that compliance with the performance criteria of Planning for Bushfire Protection 2006 can be achieved with the re-zoning of the subject property depending on final subdivision bushfire assessment report outcomes.

2.0 INTRODUCTION

2.1 GENERAL

This report has been prepared to establish that the land at Lot 4 DP 708496 75 Gregors Road Spring Grove proposed for rezoning from RU1 – Primary Production to R1 – General Residential is capable of complying with Planning for Bushfire Protection 2006 in consultation with the NSW Rural Fire Service for a future rural residential subdivision.

2.2 PROPOSED RE-ZONING

The re-zoning proposal is to create a future multi-lot residential subdivision. An indicative plan of subdivision is provided in Figure 2.

Indicative lots are shown in the table below.

Lot No.	Area	Lot No.	Area	Lot No.	Area
1	24,218	7	10,874	13	10,088
2	14,597	8	11,698	14	10,134
3	11,040	9	10,586	15	12,255
4	12,193	10	11,030	16	10,322
5	10,010	11	12,469	17	10,736
6	10,615	12	13,424	18	15,292

Figure 1: Location of Lot 4 DP 708496 *NSW Government Six Maps*

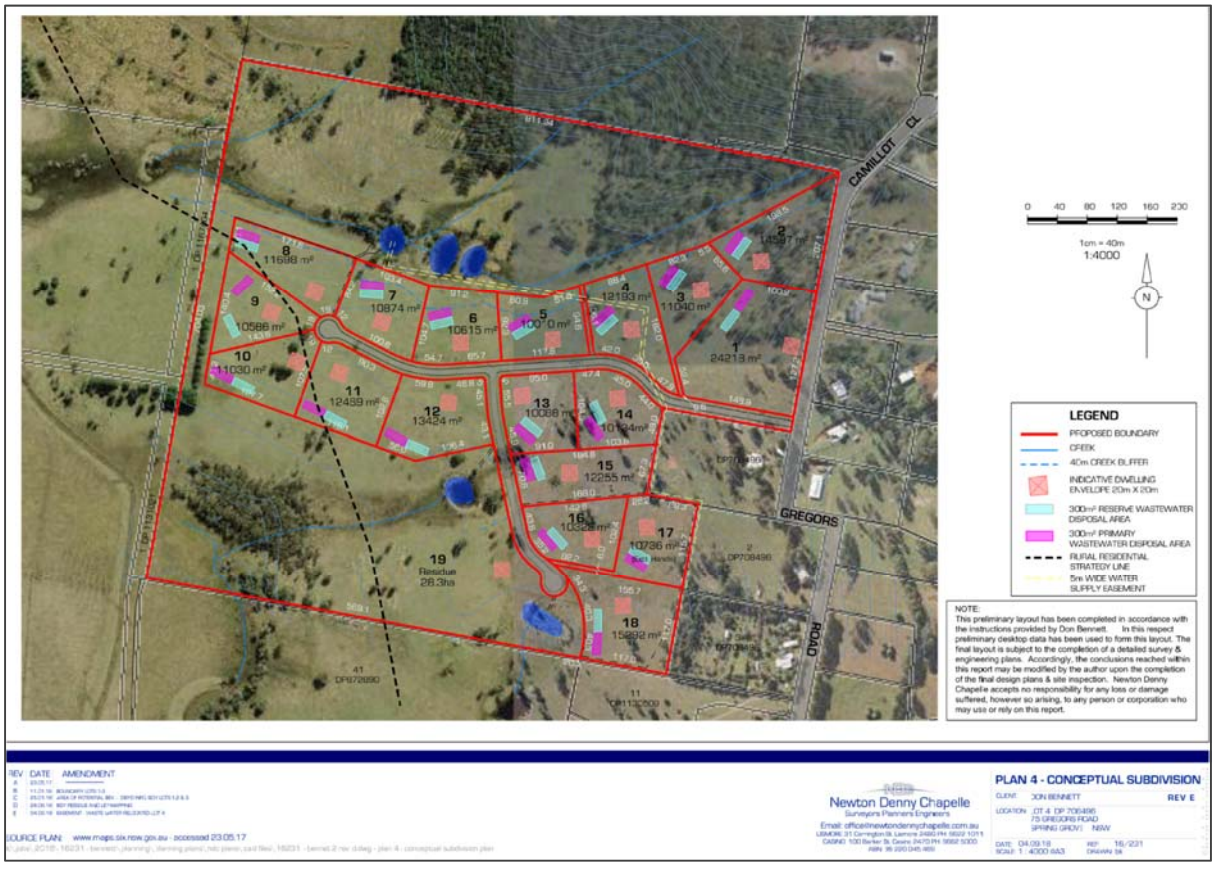

Figure 2: Indicative future plan of subdivision (larger image in Appendix A)

The development application for future subdivision of the land will involve detailed land survey, further detailed bushfire assessment as the subdivision is 'integrated development', an ecological (fauna and flora) assessment, environmental assessments (acid soils, land contamination), design of allotment layout and engineered infrastructure services (roads, water supply, sewerage network, stormwater drainage, electricity and telecommunications), having regard to the above assessments.

Part of the land to be rezoned

3.0 BUSHFIRE THREAT ASSESSMENT AND ASSET PROTECTION ZONES

This bushfire threat assessment was conducted within and 140m beyond the boundary of the subject development area.

The assessment established a number of vegetation communities that are detailed in Planning for Bushfire Protection 2006, being forest vegetation located to the north of potential Lots 2, 3 & 4 and south of Lots 10 & 11 with the remainder of the lots being primarily subject to grassland.

Council's bushfire prone land map as shown in Figure 3 is generally consistent with the current bushfire hazard although the grassland hazards are not mapped and the vegetation on proposed Lots 1, 2 and 3 is mostly cleared as shown in Figure 5.

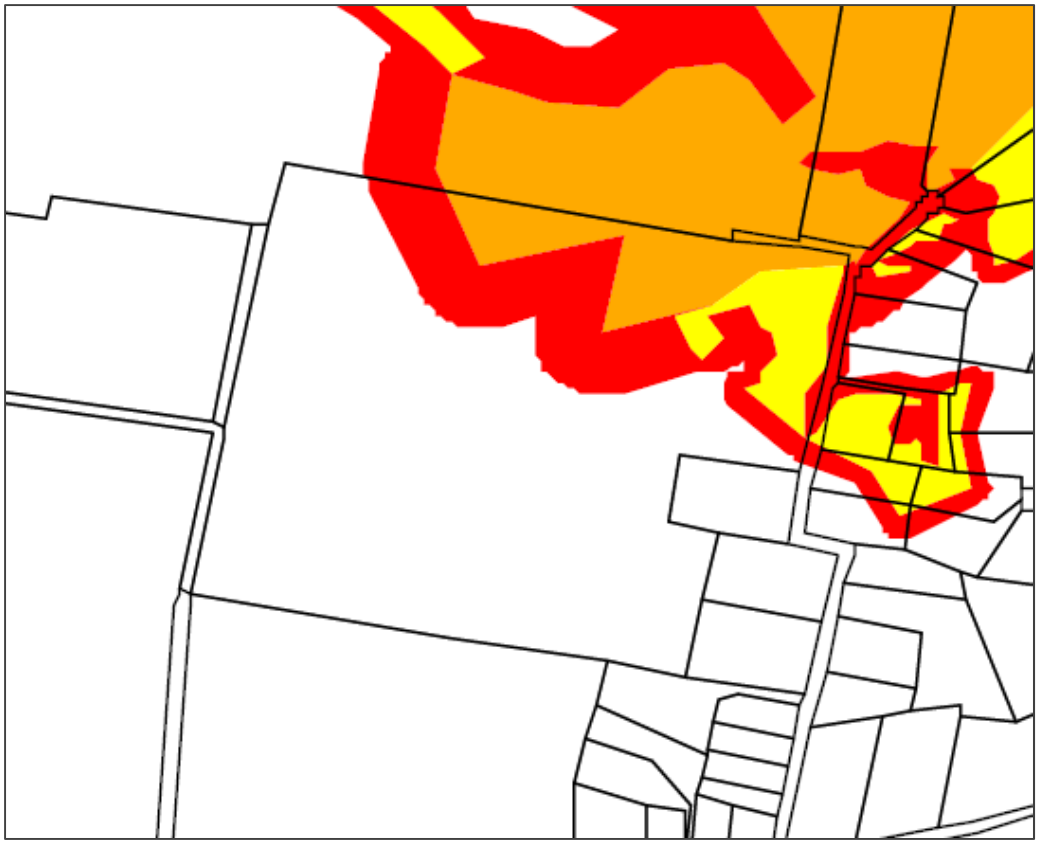

Figure 3: Richmond Valley Council bushfire prone land map

Asset Protection Zones are areas established and maintained to ensure that bushfire fuels are progressively reduced between the development and the bushfire hazard. The asset protection zone incorporates an Inner Protection Area (IPA) having reduced fuel loadings of approximately 3t/ha.

The APZs are to be provided within the subject property boundary where a future building envelope is proposed. Specific details are to be provided with the development application for subdivision.

To the north of potential Lots 2, 3 and 4 is forest on an upslope and will require a 21 metre APZ. Lot 1 has remnant vegetation on a 10-15 degree downslope to the north and east. Confirmation will be required compliance can be achieve although it is noted there are certainly other areas on the site that can comply.

To the north of potential Lots 5, 6, 7 and 8 is grassland and remnant vegetation on an upslope and will require an APZ of 8 or 9 metres.

To the west of potential Lots 8, 9 and 10 is grassland on a slight downslope and will require an APZ of 9 metres.

To the south of potential Lots 10 and 11 is forested wetland on a slight downslope and will require an APZ of 27 metres.

To the south of potential Lot 12 is grassland on a slight downslope and will require an APZ of 9 metres.

To the west of potential Lots 15, 16 and 18 is grassland on a slight downslope and will require an APZ of 9 metres.

To the east of the Lots is residential development.

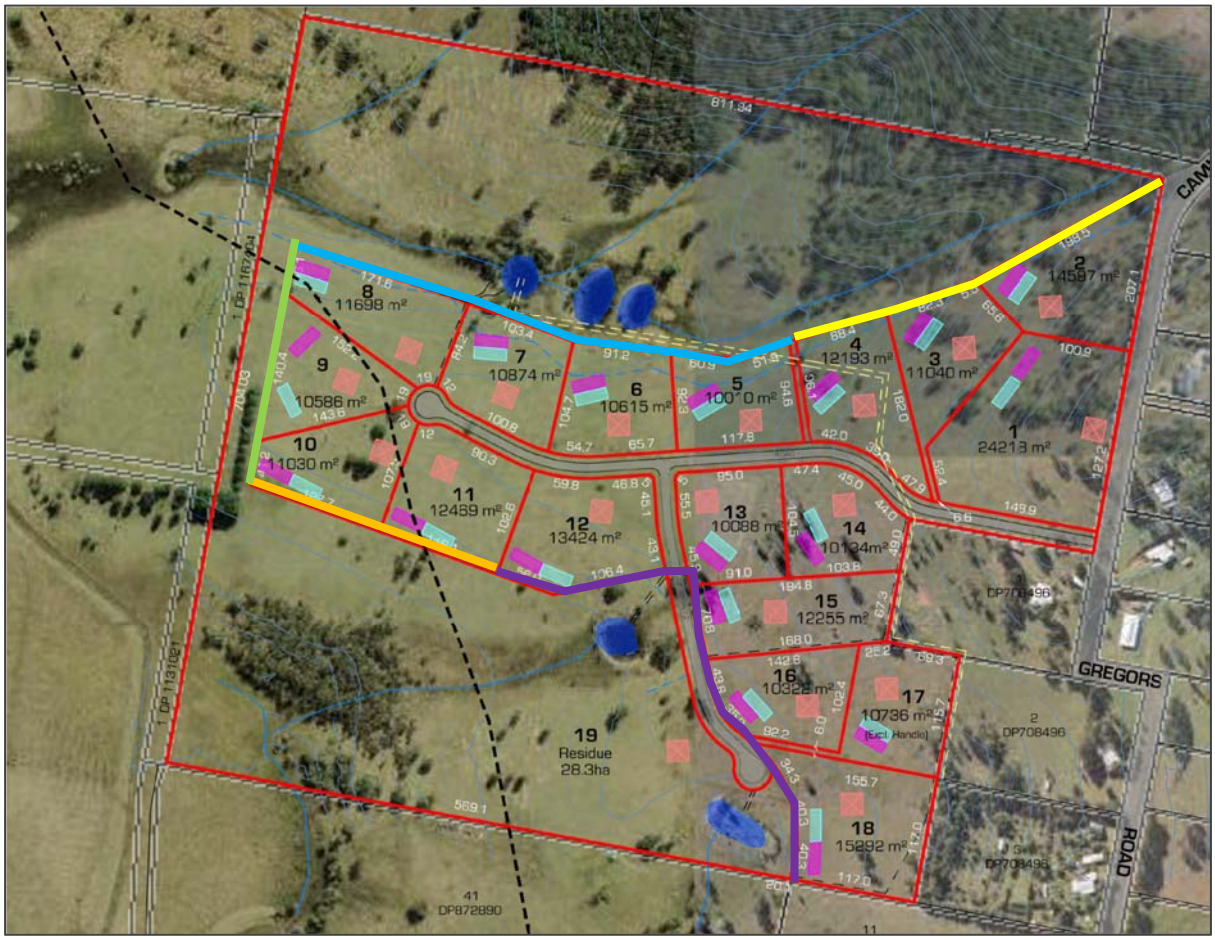

Figure 4: Bushfire threat analysis *Base map: NDC Ref.16/231 Rev E 04.09.2018*

Note – The colour coded APZ locations are indicative only. The final report for subdivision will associate them to the final building envelope location.

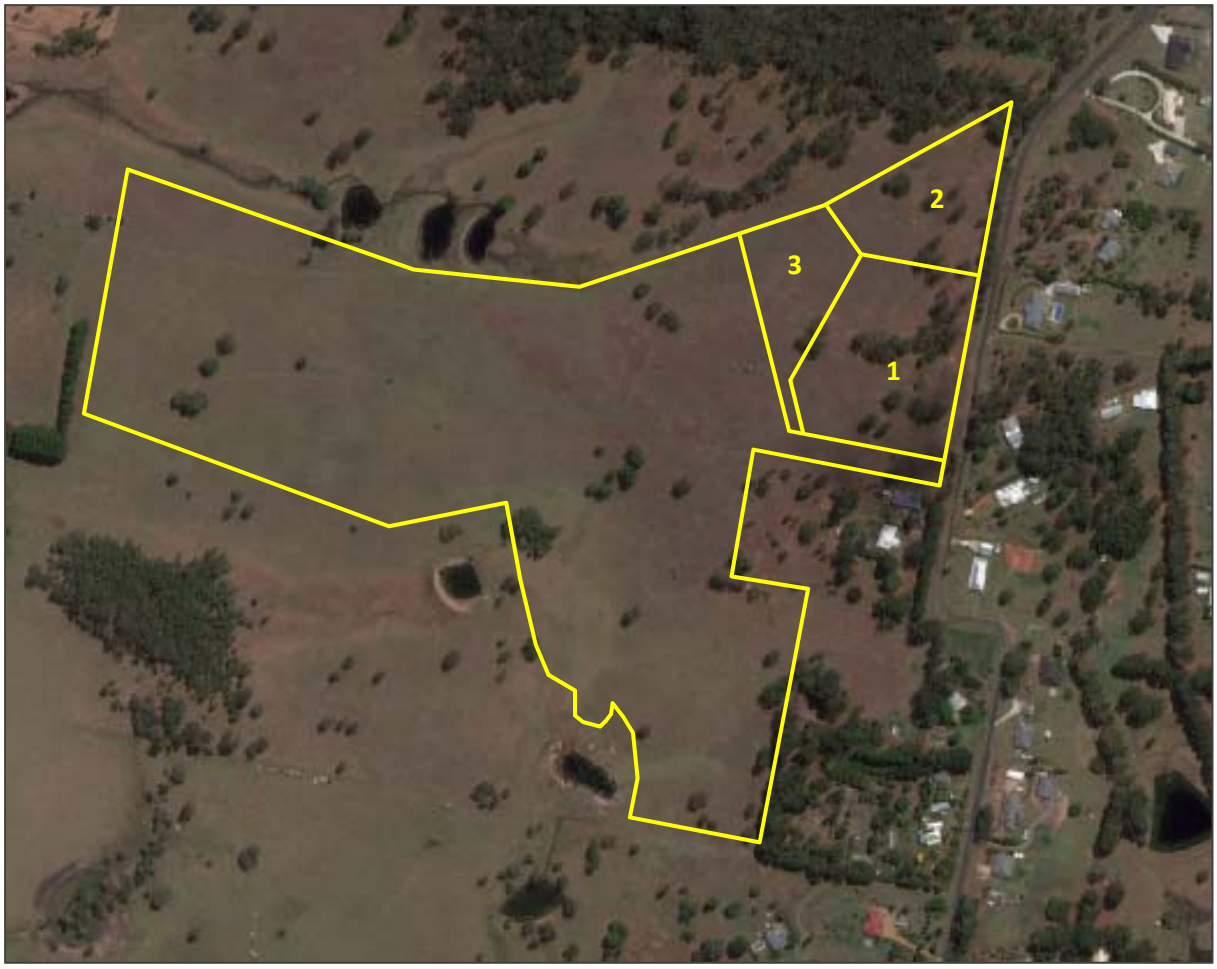

Figure 5: Aerial showing most vegetation cleared on Lots 1, 2 & 3 with a few small clumps of trees remaining *TerraServer, 18.09.2018*

Confirmation will be required that the indicative building envelopes on Lot 1 can achieve asset protection zones consistent with the distance for BAL 29 AS 3959-2009 at a minimum. It is noted that are other areas where it is obvious compliance is capable.

Table 1: Summary of Preliminary Asset Protection Zones required (see map Fig. 4)

LOT NUMBER ON PLAN	VEGETATION	SLOPE (Degrees)	REQUIRED APZ (m)	APZ COLOUR ON PLAN
1	Remnant	10-15$^{0d/s}$	19m	Yellow
2, 3 & 4	Forest	upslope	21m	Yellow
5, 6, 7 & 8	Remnant / grassland	upslope	8-9m	Blue
8, 9 & 10	Grassland	0-5^{o} $^{d/s}$	9m	Green
10 & 11	Forest	0-5^{o} $^{d/s}$	27m	Orange
12, 15, 16 & 18	Grassland	0-5^{o} $^{d/s}$	9m	Purple

*d/s = downslope

All grassland areas within 100m of the residential property boundaries will need a management plan to ensure that they remain grassland in the future and not create a higher vegetative hazard.

Depending on final survey and revegetation there may be potential to identify the grassland at the property interface as being the primary hazard if the revegetation is set further back. This will require specific analysis at subdivision stage with the survey and building envelope location.

It is noted that the majority of the potential lots are not on bushfire prone land.

4.0 CONSTRUCTION STANDARDS AND OTHER PLANNING CONTROLS

The land available for the required asset protection zones will allow construction of future dwellings to be undertaken in accordance with a maximum of BAL 29 AS 3959-2009. The APZs shown will ensure that the future dwellings will not be within the forecast flame zone.

The future use of the rezoned land for residential purposes will require approval of an 'integrated' development application for subdivision under s. 91 of the EP&A Act (requiring the issue of a s. 100B Rural Fires Act bushfire safety authority) and development application/s for any dwellings under s. 4.14 of the EP&A Act (requiring referral to the NSW Rural Fire Service).

5.0 WATER AND UTILITY SERVICES

5.1 WATER SUPPLY

The development is not connected to a reticulated water supply. A future water supply is to comply with s4.1.3 of Planning for Bushfire Protection 2006.

In this instance, the lots are capable of supporting a static water supply of 20,000 litres.

5.2 ELECTRICITY SUPPLY

The development application for future subdivision will investigate and provide details on the electrical supply and design details for compliance with s4.1.3 of Planning for Bushfire Protection 2006.

It is noted that electrical substations should not be located within the flame zone.

5.3 GAS SERVICES

The development applications for future dwellings will provide details of the storage of gas to comply with s4.1.3 of Planning for Bushfire Protection 2006.

6.0 ACCESS

Access will be required to comply with S4.1.3(1) – Public Roads in Planning for Bushfire Protection 2006.

The following performance solutions have been provided in order to gain concurrence of the initial access layout and specification to allow the continuation of planning for the subdivision development application.

6.1 NO PERIMETER ROAD

Although 'perimeter roads' are 'the preferred option' the report considers that given the relatively low bushfire risk to the subdivision being predominantly grassland and rainforest, a perimeter road will not be required and in turn the 8m wide specification is not required.

S4.1.3(1) – Public Roads in Planning for Bushfire Protection 2006 states that a 'perimeter road' is the 'preferred' option to separate bushland from urban areas, however it is acknowledged that other options are permissible. The purpose of the public road system is to:

- Provide fire-fighters with easier access to structures, allowing more efficient use of fire-fighting resources;
- Provide a safe retreat for fire-fighters; and
- Provide a clear control line from which to conduct hazard reduction or back burning.

The performance criterion relating to this section of Public Roads in Planning for Bushfire Protection 2006 is as follows:

> *'Public road widths and design that allow safe access for fire-fighters while residents are evacuating an area'*

The proposed public access road does not traverse mapped bushfire prone land and from a bushfire risk view point the road network will be comparable to subdivisions on non-bushfire prone land.

Following the site inspection, it is noted that the primary hazard to the residential development consists of grassland, small areas of forest and remnant vegetation.
A grassfire fire front generally has a burn out time of 10 -15 seconds at the vegetation interface with little remaining heat yield once the fire front has passed. The effectiveness of

a perimeter road in these locations is considered negligible, it being noted that areas of grassland are currently not mapped as bushfire prone and subdivision on land not mapped as bushfire prone would not need to comply with the requirements of Planning for Bushfire Protection 2006.

The number of occupants likely to evacuate from these roads is relatively low. The roads are to comply with internal road requirements of s4.1.3(1) PBP2006 except where modified as outlined in this report will be adequate to comply with the nominated performance criteria and the intent of PBP2006. All internal roads to comply with Table 4.1 PBP2006 with details required with the development application for subdivision.

6.2 ACCESS ROAD GREATER THAN 200 METRES IN LENGTH

The proposed cul-de-sacs are capable of complying with s4.1.3(1) of Planning for Bushfire Protection 2006 at the dead ends being longer than 200m. The acceptable solutions are as follows;

> *"All roads are through roads. Dead end roads are not recommended, but if unavoidable dead ends are not more than 200m in length, incorporate a minimum 12m outer radius turning circle, and are clearly signed posted as a dead end and direct traffic away from the hazard.*

The length of the access roads is greater than 200 metres from Gregors Road. Consideration has been given to the hazard in that the roads are on land that is not mapped as being bushfire prone and is impacted by grassland. The bushfire risk is considered to be relatively low and it is unlikely that the access will be cut.

7.0 CONCLUSION

The report establishes that compliant asset protection zones can be achieved for a future subdivision of the land to be re-zoned and within the area identified in Figure 2. Compliance with water supply, utilities and construction standards can be assessed at development application stage for the future subdivision and development application for future dwellings.

In this regard, the investigations undertaken for the purposes of this assessment shows that there is potential for compliance with Planning for Bushfire Protection 2006 to be achieved except the access road being greater than 200 metres.

Disclaimer

This report was prepared for the purposes and exclusive use of the stated client to accompany a submission of a re-zoning application of the subject property for future residential Class 1a dwellings only, and is not to be used for any other purpose or by any other person or Corporation. BCA Check Pty Ltd accepts no responsibility for any loss or damage suffered howsoever arising to any person or Corporation who may use or rely on this report in contravention of the terms of this clause.

Reporting has been based on the relevant Council and Rural Fire Service Guidelines; however, recommendations given in this report are based on our site investigation at the time of reporting. In some cases site conditions may change dramatically within a few years due to rapid vegetation re-growth and invading weed species.

APPENDIX A: Indicative Plan of Subdivision

0 40 80 120 160 200

1cm = 40m
1:4000

N

LEGEND

- PROPOSED BOUNDARY
- CREEK
- 40m CREEK BUFFER
- INDICATIVE DWELLING ENVELOPE 20m X 20m
- 300m² RESERVE WASTEWATER DISPOSAL AREA
- 300m² PRIMARY WASTEWATER DISPOSAL AREA
- RURAL RESIDENTIAL STRATEGY LINE
- 5m WIDE WATER SUPPLY EASEMENT

NOTE:
This preliminary layout has been completed in accordance with the instructions provided by Don Bennett. In this respect preliminary desktop data has been used to form this layout. The final layout is subject to the completion of a detailed survey & engineering plans. Accordingly, the conclusions reached within this report may be modified by the author upon the completion of the final design plans & site inspection. Newton Denny Chapelle accepts no responsibility for any loss or damage suffered, however so arising, to any person or corporation who may use or rely on this report.

REV	DATE	AMENDMENT
A	23.05.17	
B	11.01.18	BOUNDARY LOTS 1-3
C	25.01.18	AREA OF POTENTIAL BEV. - DBYD INFO, BDY LOTS 1,2 & 3
D	28.06.18	BDY RESIDUE AND LEP MAPPING
E	04.09.18	EASEMENT - WASTE WATER RELOCATED LOT 4

SOURCE PLAN: www.maps.six.nsw.gov.au - accessed 23.05.17

k:\jobs\2016\16231 - bennett\planning\planning plans\ndc plans\cad files\16231 - bennet 2 rev d.dwg - plan 4 - conceptual subdivision plan

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Surveyors Planners Engineers
Email: office@newtondennychapelle.com.au
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CASINO 100 Barker St. Casino 2470 PH: 6662 5000
ABN: 36 220 045 469

PLAN 4 - CONCEPTUAL SUBDIVISION

CLIENT: DON BENNETT REV E

LOCATION: LOT 4 DP 708496
75 GREGORS ROAD
SPRING GROVE NSW

DATE: 04.09.18 REF: 16/231
SCALE: 1 : 4000 @A3 DRAWN: bk

APPENDIX B: Access – Public Roads s4.1.3(1) PBP2006

Access (1) – Public Roads

Intent of measures: to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

Background

Public roads include the perimeter road and the internal road system of any urban subdivision as well as public roads in rural-residential subdivisions.

A perimeter road is the preferred option to separate bushland from urban areas. Fire trails will only be considered acceptable in exceptional circumstances. This is based on the difficulties and costs associated with maintaining fire trails on private land. A perimeter fire trail cannot be imposed on the adjoining land and should not cross a number of residential allotments.

The perimeter road forms part of the APZ and is required to provide a separation between the building and the boundary of the bush fire hazard.

The purpose of the public road system is to:

- provide firefighters with easier access to structures, allowing more efficient use of firefighting resources;
- provide a safe retreat for firefighters; and
- provide a clear control line from which to conduct hazard reduction or back burning operations.

Roads should provide sufficient width to allow firefighting vehicle crews to work with firefighting equipment about the vehicle.

Where staged development occurs or development operates under an approved Masterplan, the RFS will consider temporary perimeter roading subject to availbility of reticulated water supply.

Table 4.1 provides the minimum widths for public roads that are not perimeter roads for the safe access of fire fighting vehicles in urban areas.

Curve radius (inside edge) (metres)	Swept Path (metres width)	Single lane (metres width)	Two way (metres width)
<40	3.5	4.5	8.0
40-69	3.0	3.9	7.5
70-100	2.7	3.6	6.9
>100	2.5	3.5	6.5

Source: AS 2890.2 – 2002.

Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle)

Figure 4.4 provides the dimensions for the curvature of roads (inner and outer turning circles) to be used for access roads (both public and private) and fire trails.

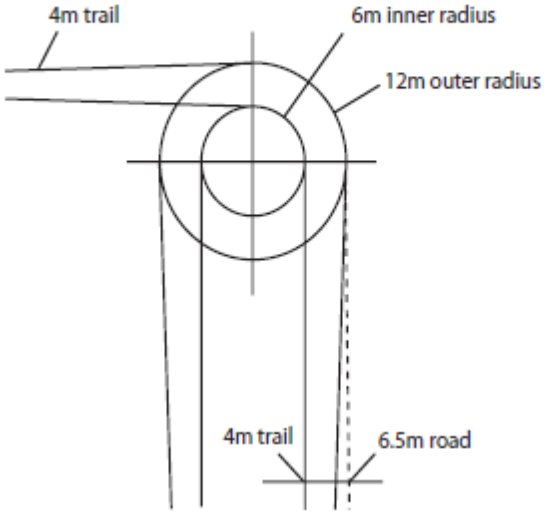


Figure 4.4 Dimensions for inner and outer turning circle radius for (public and private access) roads and fire trails.

Examples of public road access arrangements that do not facilitate bush fire fighting.

Performance Criteria	Acceptable solutions
The intent may be achieved where:	
• firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources)	• public roads are two-wheel drive, all weather roads.
• public road widths and design that allow safe access for firefighters while residents are evacuating an area.	• urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle). • the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas. • traffic management devices are constructed to facilitate access by emergency services vehicles. • public roads have a cross fall not exceeding 3 degrees. • all roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end and direct traffic away from the hazard. • curves of roads (other than perimeter roads) are a minimum inner radius of six metres and minimal in number, to allow for rapid access and egress. • the minimum distance between inner and outer curves is six metres. • maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient. • there is a minimum vertical clearance to a height of four metres above the road at all times.
• the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles.	• the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicate load rating.
• roads that are clearly sign-posted (with easily distinguishable names) and buildings/properties that are clearly numbered.	• public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression. • public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.
• there is clear access to reticulated water supply	• public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression. • one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.
• parking does not obstruct the minimum paved width	• parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or hydrants are located within the parking bays. • public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road.

APPENDIX C: Standards for Asset Protections Zones (RFS 2005)

standards

for asset protection zones

protection

NSW RURAL FIRE SERVICE

STANDARDS FOR ASSET PROTECTION ZONES

INTRODUCTION

For thousands of years bush fires have been a natural part of the Australian landscape. They are inevitable and essential, as many Australian plants and animals have adapted to fire as part of their life cycle.

In recent years developments in bushland areas have increased the risk of bush fires harming people and their homes and property. But landowners can significantly reduce the impact of bush fires on their property by identifying and minimising bush fire hazards. There are a number of ways to reduce the level of hazard to your property, but one of the most important is the creation and maintenance of an Asset Protection Zone (APZ).

A well located and maintained APZ should be used in conjunction with other preparations such as good property maintenance, appropriate building materials and developing a family action plan.

WHAT IS AN ASSET PROTECTION ZONE?

An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows suppression of fire;
- an area from which backburning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.

WHAT WILL THE APZ DO?

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the asset;
- damage to the built asset from intense radiant heat; and
- ember attack on the asset.

WHERE SHOULD I PUT AN APZ?

An APZ is located between an asset and a bush fire hazard.

The APZ should be located wholly within your land. You cannot undertake any clearing of vegetation on a neighbour's property, including National Park estate, Crown land or land under the management of your local council, unless you have written approval.

If you believe that the land adjacent to your property is a bush fire hazard and should be part of an APZ, you can have the matter investigated by contacting the NSW Rural Fire Service (RFS).

There are six steps to creating and maintaining an APZ. These are:

1. Determine if an APZ is required;
2. Determine what approvals are required for constructing your APZ;
3. Determine the APZ width required;
4. Determine what hazard reduction method is required to reduce bush fire fuel in your APZ;
5. Take measures to prevent soil erosion in your APZ; and
6. Landscape and regularly monitor in your APZ for fuel regrowth.

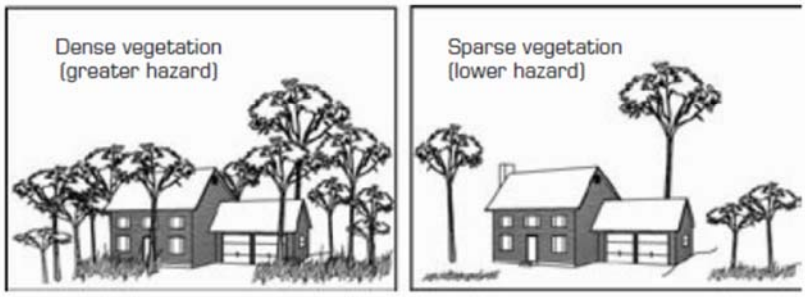
STEP 1. DETERMINE IF AN APZ IS REQUIRED

Recognising that a bush fire hazard exists is the first step in developing an APZ for your property.

If you have vegetation close to your asset and you live in a bush fire prone or high risk area, you should consider creating and maintaining an APZ.

Generally, the more flammable and dense the vegetation, the greater the hazard will be. However, the hazard potential is also influenced by factors such as slope.

- A large area of continuous vegetation on sloping land may increase the potential bush fire hazard.
- The amount of vegetation around a house will influence the intensity and severity of a bush fire.
- The higher the available fuel the more intense a fire will be.



Isolated areas of vegetation are generally not a bush fire hazard, as they are not large enough to produce fire of an intensity that will threaten dwellings.

This includes:

- bushland areas of less than one hectare that are isolated from large bushland areas; and
- narrow strips of vegetation along road and river corridors.

If you are not sure if there is a bush fire hazard in or around your property, contact your local NSW Rural Fire Service Fire Control Centre or your local council for advice.

STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ

If you intend to undertake bush fire hazard reduction works to create or maintain an APZ you must gain the written consent of the landowner.

Subdivided land or construction of a new dwelling
If you are constructing an APZ for a new dwelling you will need to comply with the requirements in *Planning for Bushfire Protection*. Any approvals required will have to be obtained as part of the Development Application process.

Existing asset
If you wish to create or maintain an APZ for an existing structure you may need to obtain an environmental approval. The RFS offers a free environmental assessment and certificate issuing service for essential hazard reduction works. For more information see the RFS document *Application Instructions for a Bush Fire Hazard Reduction Certificate* or contact your local RFS Fire Control Centre to determine if you can use this approval process.

Bear in mind that all work undertaken must be consistent with any existing land management agreements (e.g. a conservation agreement, or property vegetation plan) entered into by the property owner.

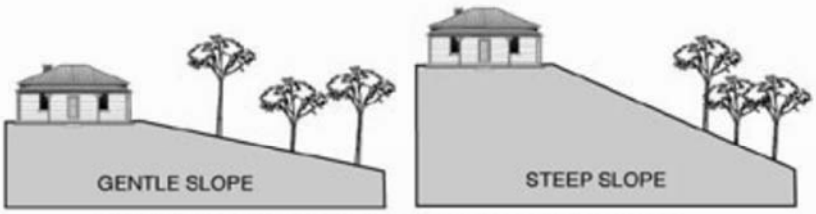
If your current development consent provides for an APZ, you do not need further approvals for works that are consistent with this consent.

If you intend to burn off to reduce fuel levels on your property you may also need to obtain a Fire Permit through the RFS or NSW Fire Brigades. See the RFS document *Before You Light That Fire* for an explanation of when a permit is required.

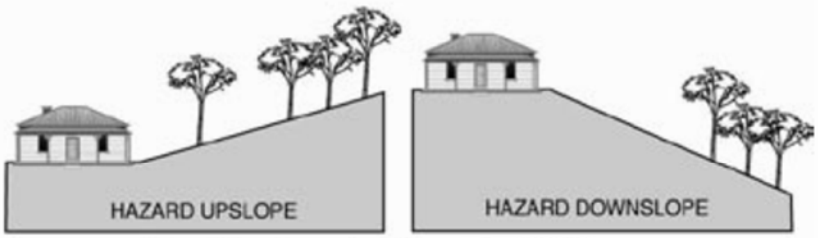
STEP 3. DETERMINE THE APZ WIDTH

The size of the APZ required around your asset depends on the nature of the asset, the slope of the area, the type and structure of nearby vegetation and whether the vegetation is managed.

Fires burn faster uphill than downhill, so the APZ will need to be larger if the hazard is downslope of the asset.



Gentle slopes require a smaller APZ distance than steep slopes



A hazard downslope will require a greater APZ distance then a hazard upslope of the asset

Different types of vegetation (for example, forests, rainforests, woodlands, grasslands) behave differently during a bush fire. For example, a forest with shrubby understorey is likely to result in a higher intensity fire than a woodland with a grassy understorey and would therefore require a greater APZ width.

A key benefit of an APZ is that it reduces radiant heat and the potential for direct flame contact on homes and other buildings. Residential dwellings require a wider APZ than sheds or stockyards because the dwelling is more likely to be used as a refuge during bush fire.

Subdivided land or construction of a new dwelling
If you are constructing a new asset, the principles of *Planning for Bushfire Protection* should be applied. Your Development Application approval will detail the exact APZ distance required.

Existing asset
If you wish to create an APZ around an existing asset and you require environmental approval, the Bush Fire Environmental Assessment Code provides a streamlined assessment process. Your Bush Fire Hazard Reduction Certificate (or alternate environmental approval) will specify the maximum APZ width allowed.

For further information on APZ widths see *Planning for Bushfire Protection* or the *Bush Fire Environmental Assessment Code* (available on the RFS website), or contact your local RFS Fire Control Centre.

STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REQUIRED TO REDUCE BUSH FIRE FUEL IN YOUR APZ

The intensity of bush fires can be greatly reduced where there is little to no available fuel for burning. In order to control bush fire fuels you can reduce, remove or change the state of the fuel through several means.

Reduction of fuel does not require removal of all vegetation, which would cause environmental damage. Also, trees and plants can provide you with some bush fire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns. Some ground cover is also needed to prevent soil erosion.

Fuels can be controlled by:

1. raking or manual removal of fine fuels
Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter) and bark should be removed on a regular basis. This is fuel that burns quickly and increases the intensity of a fire.

Fine fuels can be removed by hand or with tools such as rakes, hoes and shovels.

2. mowing or grazing of grass
Grass needs to be kept short and, where possible, green.

3. removal or pruning of trees, shrubs and understorey
The control of existing vegetation involves both selective fuel reduction (removal, thinning and pruning) and the retention of vegetation.

Prune or remove trees so that you do not have a continuous tree canopy leading from the hazard to the asset. Separate tree crowns by two to five metres. A canopy should not overhang within two to five metres of a dwelling.

Native trees and shrubs should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.

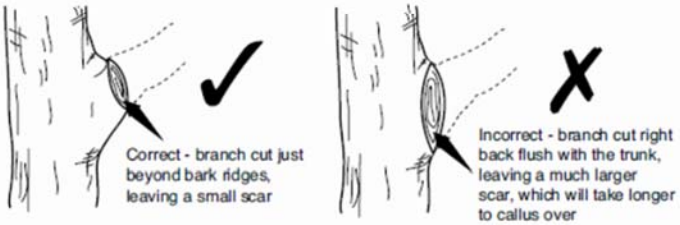
When choosing plants for removal, the following basic rules should be followed:

1. Remove noxious and environmental weeds first. Your local council can provide you with a list of environmental weeds or 'undesirable species'. Alternatively, a list of noxious weeds can be obtained at **www.agric.nsw.gov.au/noxweed/;**
2. Remove more flammable species such as those with rough, flaky or stringy bark; and
3 Remove or thin understorey plants, trees and shrubs less than three metres in height

The removal of significant native species should be avoided.

Prune in acordance with the following standards:

- Use sharp tools. These will enable clean cuts and will minimise damage to the tree.
- Decide which branches are to be removed before commencing work. Ensure that you maintain a balanced, natural distribution of foliage and branches.
- Remove only what is necessary.
- Cut branches just beyond bark ridges, leaving a small scar.
- Remove smaller branches and deadwood first.



There are three primary methods of pruning trees in APZs:

1. Crown lifting (skirting)
Remove the lowest branches (up to two metres from the ground). Crown lifting may inhibit the transfer of fire between the ground fuel and the tree canopy.

2. Thinning
Remove smaller secondary branches whilst retaining the main structural branches of the tree. Thinning may minimise the intensity of a fire.

3. Selective pruning
Remove branches that are specifically identified as creating a bush fire hazard (such as those overhanging assets or those which create a continuous tree canopy). Selective pruning can be used to prevent direct flame contact between trees and assets.

Your Bush Fire Hazard Reduction Certificate or local council may restrict the amount or method of pruning allowed in your APZ.

See the *Australian Standard 4373 (Pruning of Amenity Trees)* for more information on tree pruning.

4. Slashing and trittering
Slashing and trittering are economical methods of fuel reduction for large APZs that have good access. However, these methods may leave large amounts of slashed fuels (grass clippings etc) which, when dry, may become a fire hazard. For slashing or trittering to be effective, the cut material must be removed or allowed to decompose well before summer starts.

If clippings are removed, dispose of them in a green waste bin if available or compost on site (dumping clippings in the bush is illegal and it increases the bush fire hazard on your or your neighbour's property).

Although slashing and trittering are effective in inhibiting the growth of weeds, it is preferable that weeds are completely removed.

Care must be taken not to leave sharp stakes and stumps that may be a safety hazard.

5. Ploughing and grading
Ploughing and grading can produce effective firebreaks. However, in areas where this method is applied, frequent maintenance may be required to minimise the potential for erosion. Loose soil from ploughed or graded ground may erode in steep areas, particularly where there is high rainfall and strong winds.

6. Burning (hazard reduction burning)
Hazard reduction burning is a method of removing ground litter and fine fuels by fire. Hazard reduction burning of vegetation is often used by land management agencies for broad area bush fire control, or to provide a fuel reduced buffer around urban areas.

Any hazard reduction burning, including pile burns, must be planned carefully and carried out with extreme caution under correct weather conditions. Otherwise there is a real danger that the fire will become out of control. More bush fires result from escaped burning off work than from any other single cause.

It is YOUR responsibility to contain any fire lit on your property. If the fire escapes your property boundaries you may be liable for the damage it causes.

Hazard reduction burns must therefore be carefully planned to ensure that they are safe, controlled, effective and environmentally sound. There are many factors that need to be considered in a burn plan. These include smoke control, scorch height, frequency of burning and cut off points (or control lines) for the fire. For further information see the RFS document *Standards for Low Intensity Bush Fire Hazard Reduction Burning*, or contact your local RFS for advice.

7. Burning (pile burning)
In some cases, where fuel removal is impractical due to the terrain, or where material cannot be disposed of by the normal garbage collection or composted on site, you may use pile burning to dispose of material that has been removed in creating or maintaining an APZ.

For further information on pile burning, see the RFS document *Standards for Pile Burning*.

In areas where smoke regulations control burning in the open, you will need to obtain a Bush Fire Hazard Reduction Certificate or written approval from Council for burning. During the bush fire danger period a Fire Permit will also be required. See the RFS document *Before You Light that Fire* for further details.

STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION

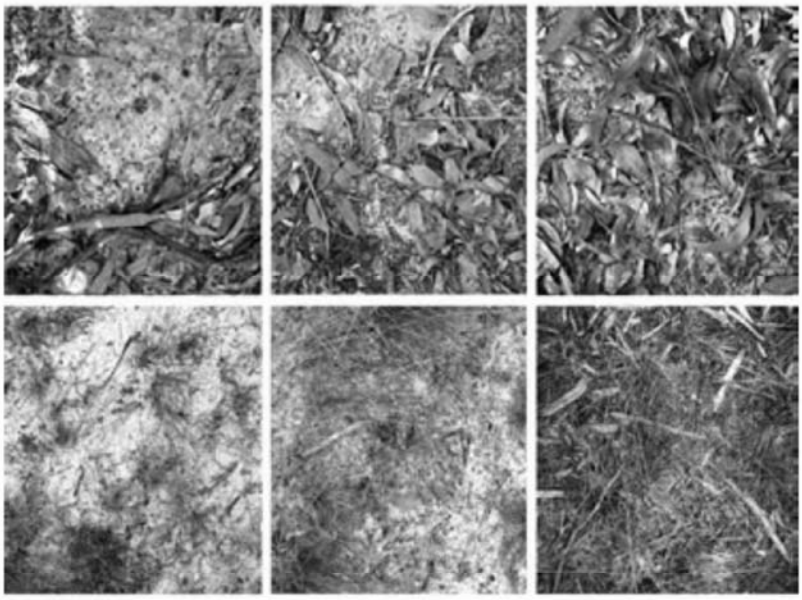
While the removal of fuel is necessary to reduce a bush fire hazard, you also need to consider soil stability, particularly on sloping areas.

Soil erosion can greatly reduce the quality of your land through:

- loss of top soil, nutrients, vegetation and seeds
- reduced soil structure, stability and quality
- blocking and polluting water courses and drainage lines

A small amount of ground cover can greatly improve soil stability and does not constitute a significant bush fire hazard. Ground cover includes any material which directly covers the soil surface such as vegetation, twigs, leaf litter, clippings or rocks. A permanent ground cover should be established (for example, short grass). This will provide an area that is easy to maintain and prevent soil erosion.

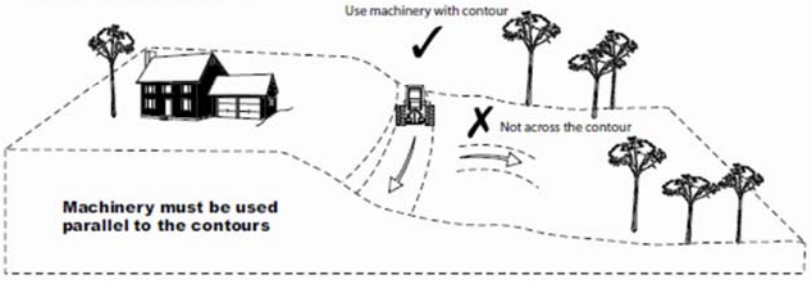
When using mechanical hazard reduction methods, you should retain a ground cover of at least 75% to prevent soil erosion. However, if your area is particularly susceptible to soil erosion, your Hazard Reduction Certificate may require that 90% ground cover be retained.



50% **75%** **100%**

Ground Cover

To reduce the incidence of soil erosion caused by the use of heavy machinery such as ploughs, dozers and graders, machinery must be used parallel to the contours. Vegetation should be allowed to regenerate, but be managed to maintain a low fuel load.

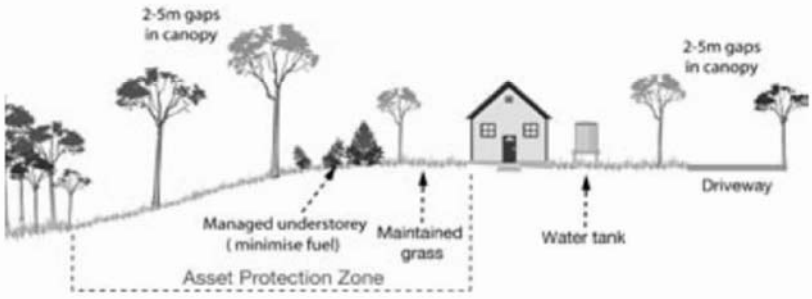


STEP 6. ONGOING MANAGEMENT AND LANDSCAPING

Your home and garden can blend with the natural environment and be landscaped to minimise the impact of fire at the same time. To provide an effective APZ, you need to plan the layout of your garden to include features such as fire resistant plants, radiant heat barriers and windbreaks.

Layout of gardens in an APZ
When creating and maintaining a garden that is part of an APZ you should:

- ensure that vegetation does not provide a continuous path to the house;
- remove all noxious and environmental weeds;
- plant or clear vegetation into clumps rather than continuous rows;
- prune low branches two metres from the ground to prevent a ground fire from spreading into trees;
- locate vegetation far enough away from the asset so that plants will not ignite the asset by direct flame contact or radiant heat emission;
- plant and maintain short green grass around the house as this will slow the fire and reduce fire intensity. Alternatively, provide non-flammable pathways directly around the dwelling;
- ensure that shrubs and other plants do not directly abut the dwelling. Where this does occur, gardens should contain low-flammability plants and non flammable ground cover such as pebbles and crush tile; and
- avoid erecting brush type fencing and planting "pencil pine" type trees next to buildings, as these are highly flammable.



Removal of other materials
Woodpiles, wooden sheds, combustible material, storage areas, large quantities of garden mulch, stacked flammable building materials etc. should be located away from the house. These items should preferably be located in a designated cleared location with no direct contact with bush fire hazard vegetation.

Other protective features
You can also take advantage of existing or proposed protective features such as fire trails, gravel paths, rows of trees, dams, creeks, swimming pools, tennis courts and vegetable gardens as part of the property's APZ.

PLANTS FOR BUSH FIRE PRONE GARDENS

When designing your garden it is important to consider the type of plant species and their flammability as well as their placement and arrangement.

Given the right conditions, all plants will burn. However, some plants are less flammable than others.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage the ground fire to spread up to, and then through, the crown of the trees.

Plants that are less flammable, have the following features:

- high moisture content
- high levels of salt
- low volatile oil content of leaves
- smooth barks without "ribbons" hanging from branches or trunks; and
- dense crown and elevated branches.

When choosing less flammable plants, be sure not to introduce noxious or environmental weed species into your garden that can cause greater long-term environmental damage.

For further information on appropriate plant species for your locality, contact your local council, plant nurseries or plant society.

If you require information on how to care for fire damaged trees, refer to the Firewise brochure *Trees and Fire Resistance; Regeneration and care of fire damaged trees*.

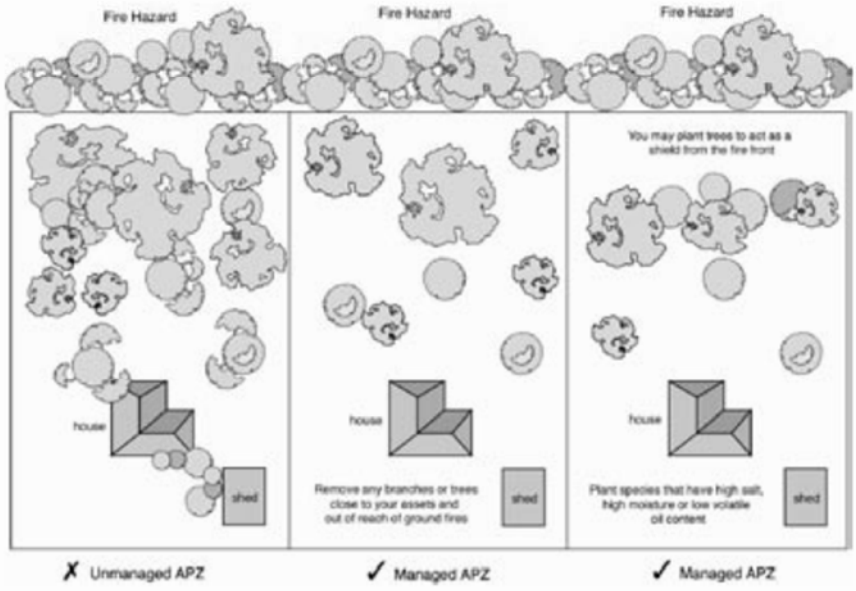
WIND BREAKS

Rows of trees can provide a wind break to trap embers and flying debris that could otherwise reach the house or asset.

You need to be aware of local wind conditions associated with bush fires and position the wind break accordingly. Your local RFS Fire Control Centre can provide you with further advice.

When choosing trees and shrubs, make sure you seek advice as to their maximum height. Their height may vary depending on location of planting and local conditions. As a general rule, plant trees at the same distance away from the asset as their maximum height.

When creating a wind break, remember that the object is to slow the wind and to catch embers rather than trying to block the wind. In trying to block the wind, turbulence is created on both sides of the wind break making fire behaviour erratic.



HOW CAN I FIND OUT MORE?

The following documents are available from your local Fire Control Centre and from the NSW RFS website at **www.rfs.nsw.gov.au.**

- Before You Light That Fire
- Standards for Low Intensity Bush Fire Hazard Reduction Burning
- Standards for Pile Burning
- Application Instructions for a Bush Fire Hazard Reduction Certificate

If you require any further information please contact:

- your local NSW Rural Fire Service Fire Control Centre. Location details are available on the RFS website or
- call the NSW RFS Enquiry Line 1800 679 737 (Monday to Friday, 9am to 5pm), or
- the NSW RFS website at **www.rfs.nsw.gov.au.**

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Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 6

On-Site Wastewater Feasibility Assessment

Greg Alderson & Associates

Greg Alderson & Associates

Chartered Professional Engineers and Scientists

On-Site Wastewater Management Feasibility Assessment

Proposed Rural Residential Subdivision at Lot 4 DP 708496, 75 Gregors Road, Spring Grove

For: Don Bennett
Report No: 17223_ww Rev B.docx
Date: 4th September 2018

Greg Alderson & Associates

Chartered Professional Engineers and Scientists

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Document Information

Project name	Proposed subdivision Springrove
Reference	17223_ww.docx
Revision summary	Revision A 2/2/18 Revision B 4/09/18

TABLE OF CONTENTS

1. INTRODUCTION

Greg Alderson and Associates have been commissioned by Don Bennett to prepare an on-site wastewater management feasibility report to assist Richmond Valley Council in assessing a development application for a proposed subdivision of Lot 4 DP 708496, 75 Gregors Road, Spring Grove. The report describes the site, the tests and calculations undertaken to determine if wastewater management is feasible for the proposed new allotments.

The onsite wastewater management systems modelled in this report are representative of a 'worst case scenario'. This is to ensure that the proposed dwelling envelopes within each allotment are not restrictive to wastewater management and can support wastewater management systems without causing unacceptable risk to human health and the environment.

1.1. Scope of Investigation and Assessment

A field investigation was undertaken to identify site constraints, map soil profiles and determine potential restrictions of the management of wastewater. In order to determine the potential of the proposed subdivision at the site, the assessment was modelled using the Richmond Valley Council's Wastewater Model (2015).

The report is based on the potential of the each proposed lot accommodating 5 people and the following factors:

- Duplex soil types (Nammoona & Yorklae Var A);
- Five person dwelling;
- AWTS secondary treatment, 20% nitrogen removal;
- Subsurface Irrigation field for disposal;
- Light & medium clays.

The use of secondary treatment and subsurface irrigation is discussed in more detail later in the report. The use of this treatment and disposal method for assessing feasibility is due to the duplex soil type and requiring a larger dispersal area therefore allowing for a conservative sizing.

1.2. Site Constraints

The following constraints relating to on-site wastewater treatment and disposal are present at the site:

- Flood prone land to the south west (this area is not part of the rural residential area);
- Duplex soils which consist of a medium clay subsoil in areas of the proposed subdivision;
- Setback to dam, gullies and licensed ground water bores;
- Shallow soils in parts of the proposed subdivision.

2. SITE DESCRIPTION

The subject property is approximately 52.64 ha in area, however the proposed rural residential subdivision is about 24.5 ha of this property as presented on the plan by Newton Denny Chapelle 16/231 (date: 23.05.17). The proposed rural residential area is within the higher portions of the site, with elevations ranging from approximately 26m AHD to 80 m AHD, and generally consists of the flood free areas of the site. Topography of the proposed rural residential area consists of spur running off a ridge in the east of the property down to the west of the property, with parallel drainage lines to the north and south of the spur.

No buildings are present on the property however a dilapidated windmill and numerous dams are present.

Exhibit No. 1 shows the entire property in its regional context and **Exhibit No. 2** presents dwelling site locations.

2.1. Vegetation

The proposed rural residential area is grazed by cattle and consists of pasture grasses with the occasional scattered paddock tree. The trees do not pose a problem to wastewater management as it would be expected that suitable area will be provided for wastewater that does not require the removal of vegetation.

2.2. Slope

The proposed rural residential area of the site has a gentle gradients of 6-15% and therefore this does not pose a problem for wastewater management.

2.3. Aspect

The aspect of each of the allotment varies due to the spur having both southerly and northerly apects. The aspect is not considered to be a restriction at the site due to the gentle gradient and unrestricted areas that can manage wastewater.

2.4. Geology and Soil

The rural residential area is located on the Grafton Formation, consisting of sandstone, siltstone, claystone, coal, tertiary gravels (gravel, sand and sandstone) (Morand, 1994). Morand (1994) presents that the majority of the proposed rural residential areas is on the Yorklea variant ‘a’ & Nammoona soil landscapes. Using the Richmond Valley Council On-site Sewage Management Strategy (RVC-OSMS) the soil description and location indicate that the soil would be classified as Sandy Duplex Soils as described in Table 4 of RVC-OSMS. These landscapes are described as follows:

The Yorklea variant ‘a’ soil landscape is summarised as below (from Morand, 1994):

Soils:	Moderately well drained yellow earths on crests
Geology:	Grafton formation: sandstone (lithic and quartz) with siltstone, claystone and coal.
Variant a:	Extremely to very low relief (2-10 m) slopes 2-5%
Limitations:	highly erodible, hardsetting, dispersible, slowly permeable, seasonaly water logged soils of low fertility
Permeability:	moderate to high in topsoil and slow in subsoil.

The Nammoona soil landscape is summarised as below (from Morand, 1994):

Soils:	Deep (100-150cm), well-drained red earths and red podzolic soils and moderately deep (70-100cm), moderately well-drained brownish red podzolic soils on crests and slopes. Shallow to moderately deep (<100cm) imperfectly drained yellow podzolic soils in lower relief areas.
Geology:	Grafton formation: sandstone (lithic and quartz) with siltstone, claystone and coal.

Limitations:	highly erodible, hardsetting, moderately dispersible soils of low fertility with localised shallow occurrences.
Permeability:	moderate to rapid.

A geotechnical investigation undertaken across the area of the proposed rural residential subdivision by ASPECT north (Ref: LM040594, Date: 12 April 2005). Eight boreholes were excavated under their investigation. A general soil description of the area proposed as rural residential allotments is top soils consisting of grey to brown sands with clay content increasing with depth. Generally soil profiles were considered to be highly permeable as sand material dominated the soil texture to a depth of 1.0m. A typical bore log of the sites soils is given in Table 1.

Table 1: Typical borehole borelog

SOIL DESCRIPTION							
Horizon	**Depth (mm)**	**Texture**	**Structure**	**Colour**	**Coarse Fragments**	**Soil pH**	**Dispersive Class**
	0 100 200 300 400 500 600 700 800 900 1000	Loose sand Clayey sand to clay loam	Single grained, earthy. Loose when exposed Weak to moderate structure	Greyish brown Brown	None observed	5.0-5.5 (Morand, 1994)	Not dispersive Dispersive

One borehole (No. 5) in the ASPECT north geotechnical investigation showed 0.4m of silty sand overlying brown medium clay with orange mottling. This borehole was located in the western area of the proposed subdivision. Therefore to provide a robust standard for assessing the feasibility of the proposed subdivision medium clays will be used in the feasibility modelling. A copy of the ASPECT north geotechnical report is attached as Appendix A.

Borehole 1 of the ASPECT north geotechnical investigation showed a soil depth of 0.1m before rock was struck. This borehole was taken in the elevated eastern side of the property. This is concerning for proposing wastewater disposal in the area therefore staff of this office excavated a further 16 boreholes in the eastern area of the property to determine the extents of shallow soils. The extent of area determined to have a soil depth of less than 1.0m is shown on Exhibit No. 2 and the lot layout has been arranged accordingly to ensure that each allotment has sufficient area with suitable soil depths for on-site wastewater disposal.

2.5. Flooding

Flooding is not an issue in the areas of the proposed rural residential subdivision. The lowest point of the proposed subdivision is approximately 6m above the level of the adjacent low lying land.

2.6. Site Constraints, Sensitive Locations and Proposed Best Practice

The potential site constraints are proximity to groundwater bores, dispersive soils, shallow soils in the eastern area of the property and medium clay soils in the western areas of the proposed subdivision. However, these soils also are slightly acidic and the subsoils have dispersive tendencies. These soils are typical to the Richmond Valley Council LGA and hence typical amelioration measures can be applied as part of the construction of these disposal areas (as required for at the dwelling construction stage).

2.6.1. Soil acidity

Increased acidity affects cation exchange capacity and can lead to deficiencies in calcium and magnesium while mobilising aluminium, which is toxic to plant growth. Lime can be applied to the disposal field area at the time of constructing the individual wastewater management systems for the future dwellings. A recommended liming rate is suggested of 0.4 kg/m²to raise the pH by about 1pH unit, and this will enable plants to take up nutrients within the wastewater.

2.6.2. Dispersive Soils

The subsoils at the site are naturally dispersive and the application of wastewater which can contain sodium will further aid in the potential degradation of the soil profile, especially where evapotranspiration/absorption beds may be used. Gypsum is to be added to the soil also to prevent soil structure degradation at a rate of about 0.5kg/m²over the disposal field area at the time of construction for the dwellings.

2.6.3. Groundwater bores

Council's policy is that a 250m buffer is required between groundwater bores and wastewater disposal areas. There are four registered groundwater bores/wells within 250m from the proposed new allotments created by the proposed subdivision. A scientific approach can be used to determine if the actual separation distance proposed between the groundwater bores and proposed allotments is sufficient and will not lead to contamination of the water drawn from the bores. The ‘Estimate of the Setback Distance’ from the following equation as sourced from Cromer *et al* (2001) is used to determine if the proposed encroachment is acceptable and will not cause a health risk to the water drawn from the bore.

Figure 1 shows the location of the four groundwater bores/well and brief details sourced from the NSW Office of Water 'Work Summary' for each bore/well. It can be seen that no details were recorded on the Work Summary for GW018119 & GW304140 therefore no setback calculations can be undertaken for these. The groundwater bore to the south east of the subject allotment (GW064341) is approximately 160m up gradient from the closest disposal area created by the proposed subdivision however there are already a minimum of 13 existing disposal areas servicing existing surrounding dwellings that are within 250m of this groundwater bore. Therefore the presence of two additional wastewater disposal areas receiving secondary treatment over 160m down slope of the bore is not considered to create an unacceptable risk to human health.

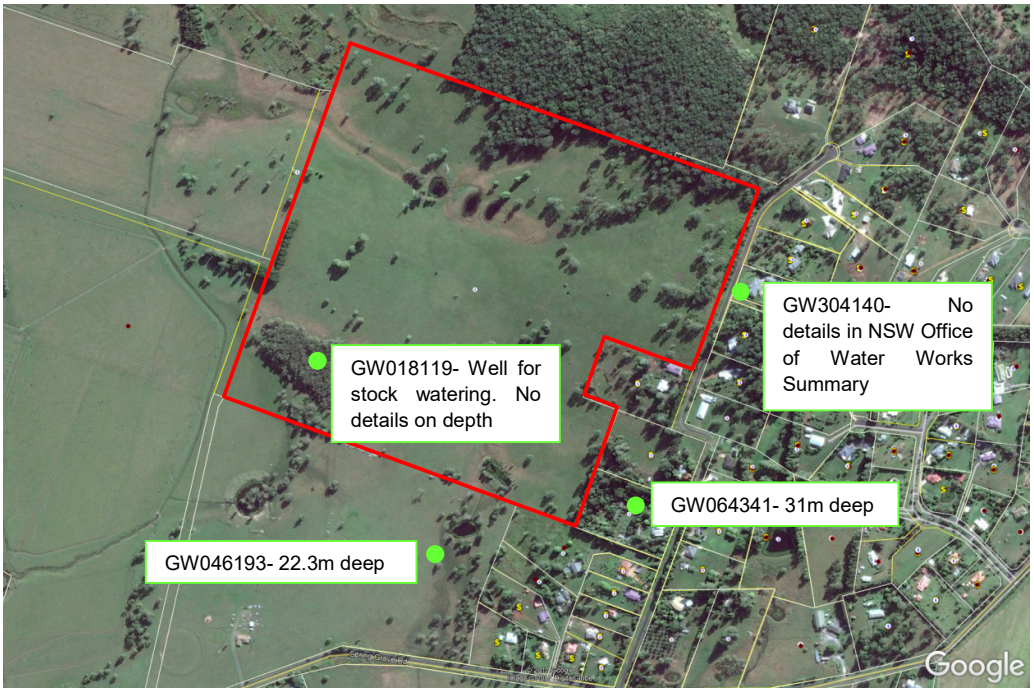

Figure 1. Groundwater bores within 250m of the proposed allotment disposal areas.

Groundwater bore GW046193 is located down slope of the proposed rural residential allotments. There are already 4 existing wastewater disposal areas up slope and within 250m of this groundwater bore and the creation of the proposed rural residential subdivision will result in potentially an additional wastewater disposal area within the 250m setback to this bore. As this bore is down slope of the proposed subdivision it is the bore most susceptible to being contaminated, and therefore this bore is subjected to pathogen modelling.

A scientific approach can be used to determine if the actual separation distance proposed between the rural residentail allotment wastewater disposal areas and the groundwater bore is sufficient and will not lead to contamination of the water drawn from the bore. The 'Estimate of the Setback Distance' from the following equation as sourced from Cromer *et al* (2001) is used to determine if the proposed encroachment is suitable and will not cause a health risk to the water drawn from the bore.

<u>Well setback distance</u>

This distance represents the distance effluent travels down into and across the water table before its viral count is reduced to the level recommended by the World Health Organisation (WHO).

The calculation to determine this distance is seen below.

Dg = (t – dv.P/K) / (P/(K.i))

Where:

Dg	=	required setback distance
t	=	time (days) for viral die off to occur in soil
dv	=	distance wastewater travels to reach groundwater
P	=	Effective porosity of soil
K	=	Saturated hydraulic conductivity (permeability) of soil
i	=	groundwater gradient

The equation values of this site are as follows:

t = 20 days (magnitude of 3 and temperature of 15°C)
dv = 19.3 m
P = 0.05
K = 0.1 m/day
i = 0.06

According to the bore setback distance equation the setback distance required is **≈1.24 m**.

The Radius of Influence

This represents the radius of influence a bore exerts on the water table. It is calculated using the following equation:

r = 1.5[(KHt/S)^0.5]

Where:

r = radius of influence in metres
K = Saturated hydraulic conductivity (permeability) of the soil in m/day
H = Depth of bore and distance below ground level in meters
t = Pumping time in days
S = Specific yield as a fraction

The equation values of this site are as follows:

K Permeability = 0.05 m/day
H Thickness of water = 1.53 m
S Specified yield = 0.05 %
t Time pumped = 5 days (t)

However, prior to calculating the radius of influence the following equation must be satisfied:

t = (Kt)/(SH) >= 1

Radius of Influence of a Bore

Where: $r = 1.5[(KHt/S)^{0.5}]$

Which is reasonably valid for t=Kt/SH>= 1.0
Kt/SH = 3.27

As this equation is greater than 1, the radius of influence can then be calculated:

Radius of Influence 4.15 m

The total required distance between the bore and the disposal area is:

The setback distance of **1.24m** + the radius of influence of **4.15m**

Total buffer required = **A distance of 5.4m**

As there is approximately 200m existing between the closest proposed OSMS disposal field created by the proposed rural residential subdivision and this bore it is considered that on-site wastewater servicing the proposed rural residential subdivision does not pose an unacceptable risk to the bores water quality. A copy of the Groundwater Works Summary for this bore is attached to this letter.

3. WASTEWATER MANAGEMENT

3.1. Introduction

For the purpose of determining that the proposed allotments are not restrictive to wastewater treatment and disposal, modelling of disposal areas is based on a theoretical five person dwelling. Furthermore, the wastewater management system modelled in this report will incorporate an AWTS for secondary treatment providing 20% nitrogen removal and a Sub Surface Irrigation (SSI) field for disposal. Generally the sites towards the eastern section of the property are shallower soils and therefore wastewater disposal area modelling was undertaken using a soil depth of 1.0m. Due to the arrangement of the proposed lots around these shallow soils it is anticipated that evapotranspiration/absorption beds could be utilised for disposal as determined by detailed investigations for each individual allotment at the stage when Section 68 applications for the installation of OSMS's are being prepared.

Building envelopes are nominated on the attached Exhibit No. 2.

3.2. Volume of Effluent

Based on the Richmond Valley Council On-Site Wastewater Management Model (single rural household) a household with standard water saving devices on roof water supply will use 120L/person/day. To allow for a conservative figure, 5 persons has been used for the modelling. Hence the modelled wastewater flow from the proposed sites will each be **600L/day.**

3.3. Nutrient Loadings

The Environment and Health Protection Guidelines (1998) and Council's Strategy requires that wastewater disposal systems are to be designed on the most limiting factor of either hydraulicor nutrient loadings. The nutrients of concern include phosphorus and nitrogen.

3.3.1. Nitrogen

The expected chemical forms of nitrogen include ammonia, nitrite and nitrate. Although Nitrate is readily taken up by plants it is very mobile and will move through the soil profile and has the potential to leach to groundwater. A 20% nitrogen reduction has been calculated with the use of the AWTS, allowing the export of 15kg/year of nitrogen from each site (based on the Richmond Valley Council model 2015).

Further reduction would be expected if the following components were used at the site:

- Compost toilet;
- Subsurface flow wetland;
- AWTS with greater TN reduction than 20% as nominated on each AWTS's NSW Ministry of Health accreditation certificate.

These could achieve in excess of 50% TN reduction.

3.3.2. Phosphorous

The forms of phosphorous after treatment within the AWTS are orthophosphate, polyphosphate and organic phosphate. EPA (1995) state that the orthophosphates are available immediately for biophysical reactions in the soil/plant system, the availability of polyphosphates is limited by their hydrolysis which proceeds very slowly in most soils. Organic phosphates are broken down biologically to polyphosphates and then to orthophosphates. Phosphorous is removed from effluent through biological, chemical and physical process in soil with minor uptake by vegetation.

Further reduction would be expected if the following passive systems were used at the site:

- Compost toilet;
- Subsurface flow wetland

These would achieve in excess of 10% TP reduction.

3.4. Modelled Treatment of Wastewater

It is proposed that all wastewater from the modelled theoretical dwelling is collected for secondary treatment within an AWTS system with the disposal field being sub-surface drip irrigation.

4. ON-SITE DISPOSAL OF WASTEWATER

4.1. Disposal Area Calculation

In order to ascertain the size of the disposal areas required to be nominated in the proposed allotments the Richmond Valley Council On-Site Sewage and Wastewater Management Strategy was used. This model determines the required area in accordance to the most limiting factor, being nitrogen, phosphorous or hydraulic loadings.

The most limiting factors found at the site have been used for modelling the wastewater disposal area size to be reserved on each proposed allotment. This includes the smallest sized proposed allotment, The shallowest soils provided by the proposed lot layout and the heaviest clay texture found across the proposed subdivision area. May proposed allotments will exhibit much better conditions for on-site wastewater management than that modelled for this assessment. The following parameters were used for sizing the required wastewater disposal area for each allotment.

- 10010 m^2 (smallest proposed allotment)
- All buffers achieved
- 5 people
- Roof water (120L/person/day)
- AWTS (20%) treatment
- Conservative 1m to bedrock
- Subsurface irrigation
- Duplex soils
- Medium to heavy clays

The area required for each of the loadings is as follows:

Area Required for Hydraulics:	**296.6 m^2**
Area Required for Nitrogen:	0.0 m^2
Area Required for Phosphorous:	260.0 m^2

4.2. Disposal Areas

Wastewater disposal area modelling shows that each proposed allotment needs to accommodate a primary and reserve wastewater disposal area of 296.6m^2. The proposed lot layout shown in Exhibit 2 shows that these required wastewater disposal areas can be accommodated and therefore the proposed subdivision can be supported by Council from a wastewater management and disposal perspective. For simplicity the primary and reserve disposal areas shown in Exhibit No. 2 are 10m x 30m giving a 300m^2 area.

It is noted that the location and type of OSMS nominated in this feasibility assessment may change in the future. Section 68 applications submitted for future dwellings within the proposed subdivision may nominated site specific OSMS designs suitable for the size and layout of dwelling proposed.

4.3. Maintenance

The chosen OSMS's for the future dwellings may require a service contract depending on which treatment system (eg. AWTS) is utilised and a maintenance program will be required for the specific wastewater management system adopted. Detailed maintenance plans will be required at Section 68 stage.

5. CONCLUSION

It is proposed that a 18 lot Torrens title rural residential subdivision will be created from Lot 4 DP 708496, 75 Gregors Road, Spring Grove. Each allotment (plus residual allotment) will require an on-site sewage management system for managing wastewater generated from future dwellings with the proposed subdivision.

The site was assessed to determine site constraints to on-site wastewater management and disposal. It was found that numerous drainage lines existed on the site, groundwater bores were present on surrounding properties, medium clay soils were present in the west of the site and shallow soils were present in the eastern area. All these limitations are addressed in this assessment and it is concluded that the proposed subdivision is feasible from an on-site wastewater management perspective.

the final design of on-site wastewater management systems servicing the future dwelling will be subject to dwelling DA specific Section 68 applications. OSMS's different to that used for modelling disposal areas in this feasibility assessment may be adopted if suitable, such as passive design OSMS's. This will be subject to individual lots, dwelling sizes and layouts.

6. References

Australian Standard AS 1547 - 2012 *Disposal Systems for Effluent from Domestic Premises.*

Environment Protection Authority, Dept. of Local Government, Department of Land & Water Conservation and NSW Department of Health (1998).*Environment and Health Protection Guidelines - On-Site Wastewater Management Systems for Domestic Households*.

Morand, D.T. (1994). *Soil Landscapes of the Lismore - Ballina 1:100,000 Sheet* Map, Soil Conservation Service of NSW, Sydney.

Richmond Valley Council (2001) *On-Site Sewage & Wastewater Management Strategy.*

End of Report

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JP:MW

Ref: LM040594

12 April 2005

General Manager
Richmond Valley Council
Locked Bag 10, Casino
2470

Dear Sir or Madam:,

RE: GEOTECHNICAL INVESTIGATION AT LOT 4, DP708496, 75 GREGORS ROAD, SPRINGROVE, NSW

We wish to advise that we have undertaken a preliminary geotechnical investigation for the proposed rural residential subdivision at the above site. This report has been compiled to investigate the following issues:

- Site classification in accordance with AS2870-1996, "Residential Slab & Footings";
- Subsurface conditions and bearing pressures;
- Suitable footing systems; and
- Excavation and earthworks requirements.

1.0 SITE INVESTIGATION

1.1 TOPOGRAPHY

The site is located approximately 18 km Northeast of Casino at 75 Gregors Road, Springrove NSW. The site is approximately 52.3 ha, predominantly cleared with mature eucalyptus trees fringing on the northern boundary of the property. The existing vegetation primarily consists of open grassland utilised for grazing with a number of eucalyptus saplings remaining.

The site consists of relatively flat land along the south western boundary but is predominantly undulating terrain with a large hill rising 80m above sea level to the Eastern boundary. This hill falls away at varying gradients (5-20%) to the West. Towards the northern section there is an intermittent waterway flowing west feeding three medium size dams then flowing through the property and spilling out to marshy land, estimated elevation of 20 to 25m AHD. Two other dams are located in the mid Southern section of the lot. No evidence of mass movement, subsidence or erosion was noted. Drawing SK1 shows the site location.

1.2 FIELDWORK

The fieldwork consisted of a general site visual assessment and eight soil sampling locations at which soil classification was undertaken from boreholes and dynamic cone penetrometer testing carried out. Results from the tests were logged by two experienced technical officers from Aspect North and are documented in the attachments. Test locations are shown on the Site Layout Plan SK2 included with this report. Flood prone land located in the South Western portion of the block (approximately 9 ha) was not sampled as it is likely to be excluded from the proposed development.

2.0 SITE CLASSIFICATION

All areas investigated across the site can be described as having one of the following classes of soil:

- **Class A (Stable Site)**
  Borehole 1

- **Class S (Slightly Reactive Site)**
  Borehole 7

- **Class M (Moderately Reactive Site)**
  Borehole 2,3,4,5,6,8

Site classification and designation are in accordance with AS2870-1996 "Residential Slab and Footings". Site classification assumes that all footings for the proposed subdivision are founded in natural ground and that the site is consistent with the results from tests undertaken.

3.0 SUBSURFACE CONDITIONS AND BEARING PRESSURES

The subsurface characteristics of the different soil profiles encountered on the site can generally be described as follows:

A weak soil layer was encountered at a depth of between 200mm through to 1000mm at all sample sites except borehole location one where Sandstone rock was encounter at a depth of 100mm. Poorly graded sand layers were loose and very dry with the deeper sandy clays being friable and moist.

Class A

Single grained silty sandy mixed with organic matter – grey brown to a depth of 100mm where a sandstone bedrock layer encountered and the borehole was terminated at 100mm.

Class S

Grey silty sand - single grained to a depth of 350mm. This was followed by poorly graded single grained white\grey sand to a depth of 1500mm with increasing moisture with depth.

Class M

Poorly graded grey brown single grain silty sand topsoil (some organic matter), to a depth of between 100mm to 400mm, overtopping a layer of loose red\brown silty clayey sand to a depth of between 400mm to 1000mm. This was followed by a red\brown light sandy clay with generally low plasticity to a depth of 1500mm.

- Groundwater was not encountered during testing.

- Individual lot assessment will need to be undertaken to classify soil within proposed building envelopes at construction certificate stage but indicative maximum allowable bearing pressures are provided below for the identified soil types beneath surface:

Class A (Stable Site)

Maximum allowable bearing pressure for footings founded in sandstone is 300 kPa.

Class S (Slightly Reactive Site)

Maximum allowable bearing pressure for footings founded in soils of this type is 100 kPa from a minimum depth of 400mm.

Class M (Moderately reactive Site)

Maximum allowable bearing pressure for footings founded in soils of this type is 100 kPa from a minimum depth of 600mm (or 200mm beyond the depth of weak layer, whichever is greater) below the existing surface unless rock encountered prior.

A detailed borelog is included with this report (indicating dynamic cone penetrometer results at 200mm intervals).

4.0 SUITABLE FOOTING SYSTEMS

This site is suitable for all building styles, designs and materials provided the footings are designed in accordance with AS2870-1996 "Residential Slab and Footings", accepted engineering principles and practices and the relevant site classification. A detailed design should be prepared for each proposed building site by a practicing Structural Engineer, which addresses potential differential settlement (in particular the provision of suitable articulation joints for masonry needs to be considered).

Fill under any proposed building slabs is to be spread in layers not exceeding 150mm and compacted to minimum 95% dry density (as per AS1289 Standard Method).

Site classifications assume that any footings for proposed buildings are founded in natural ground. Footings must be maintained in accordance with the CSIRO Brochure "Guide to Home Owners of Foundation Maintenance and Footings Performance". To help control extreme ground movement, this office recommends that trees (or shrubs) planted closer to the footings than 1.5 times the trees mature height are to be avoided or removed if existing.

5.0 EXCAVATION AND EARTHWORKS

It is our recommendation that the following be adhered to in relation to construction on any building site in the proposed rural subdivision:

5.1 EARTHWORKS

- All cut and fill for the proposed works to be kept to a minimum. Any cut or fill heights greater than 1200mm should be referred to this office for further advice.

- Batter slopes should be limited to 1 in 3 fill and 1 in 1.75 cut.

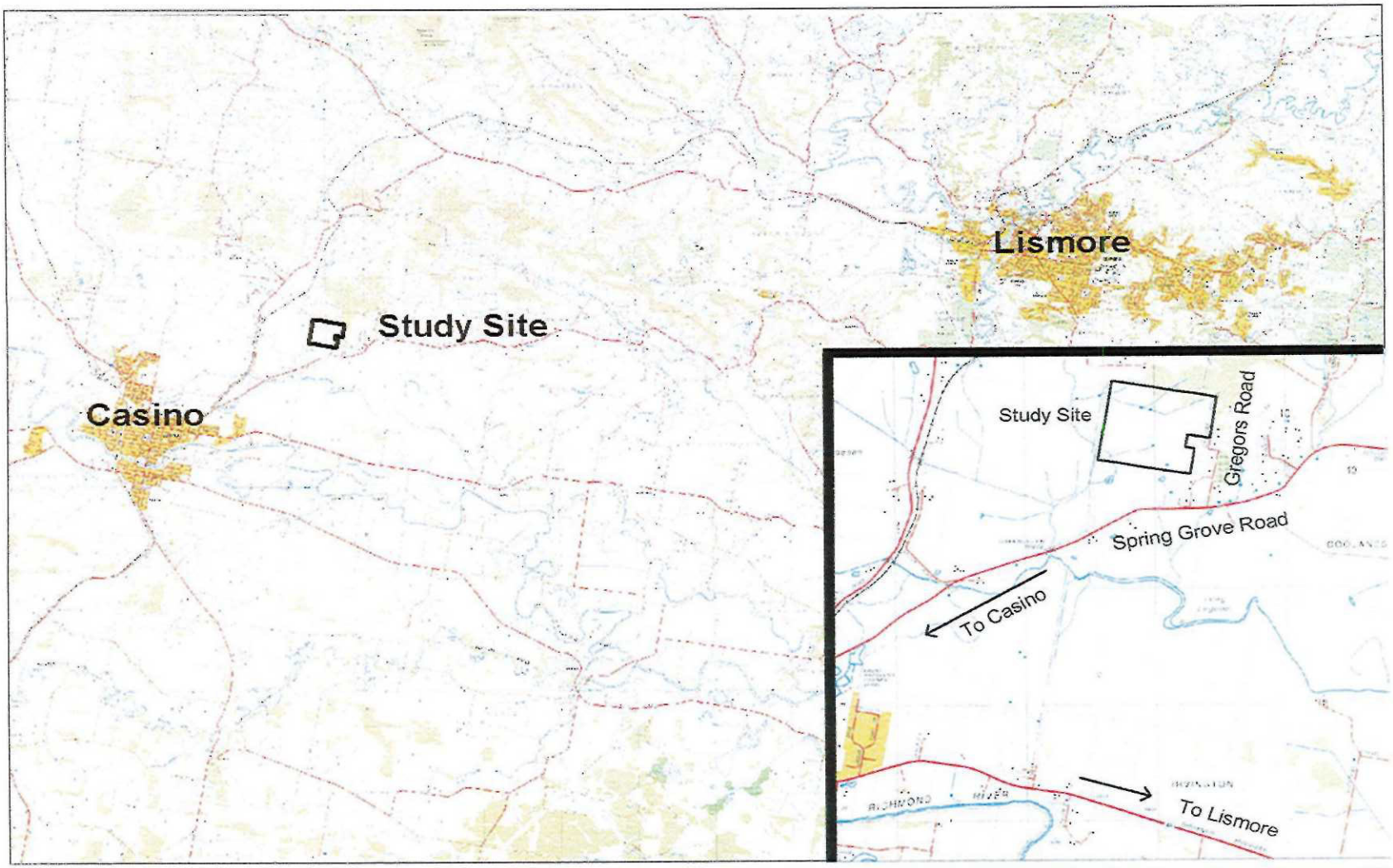
- All retaining walls greater than 1200mm high be engineer designed.

5.2 SITE DRAINAGE

- All storm water discharges to be at the toe of batters or into a piped system.

- Any springs found during construction should be excavated and a drainage layer placed prior to backfilling with engineered fill. The subsurface water is to be discharged into a piped system.

- Surface runoff should be diverted around building platforms and above any cut batters to a suitable discharge point below the building platforms.



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DRAWN: MS
APPROVED:
DATE: 10/02/05
COGO FILE | ATT... FILE(S)

SCALE AT A4:
N.T.S
UNITS ARE IN METRES

LGA: RVC
LOCALITY: CASINO

ASPECT north

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Planning
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Consultancy
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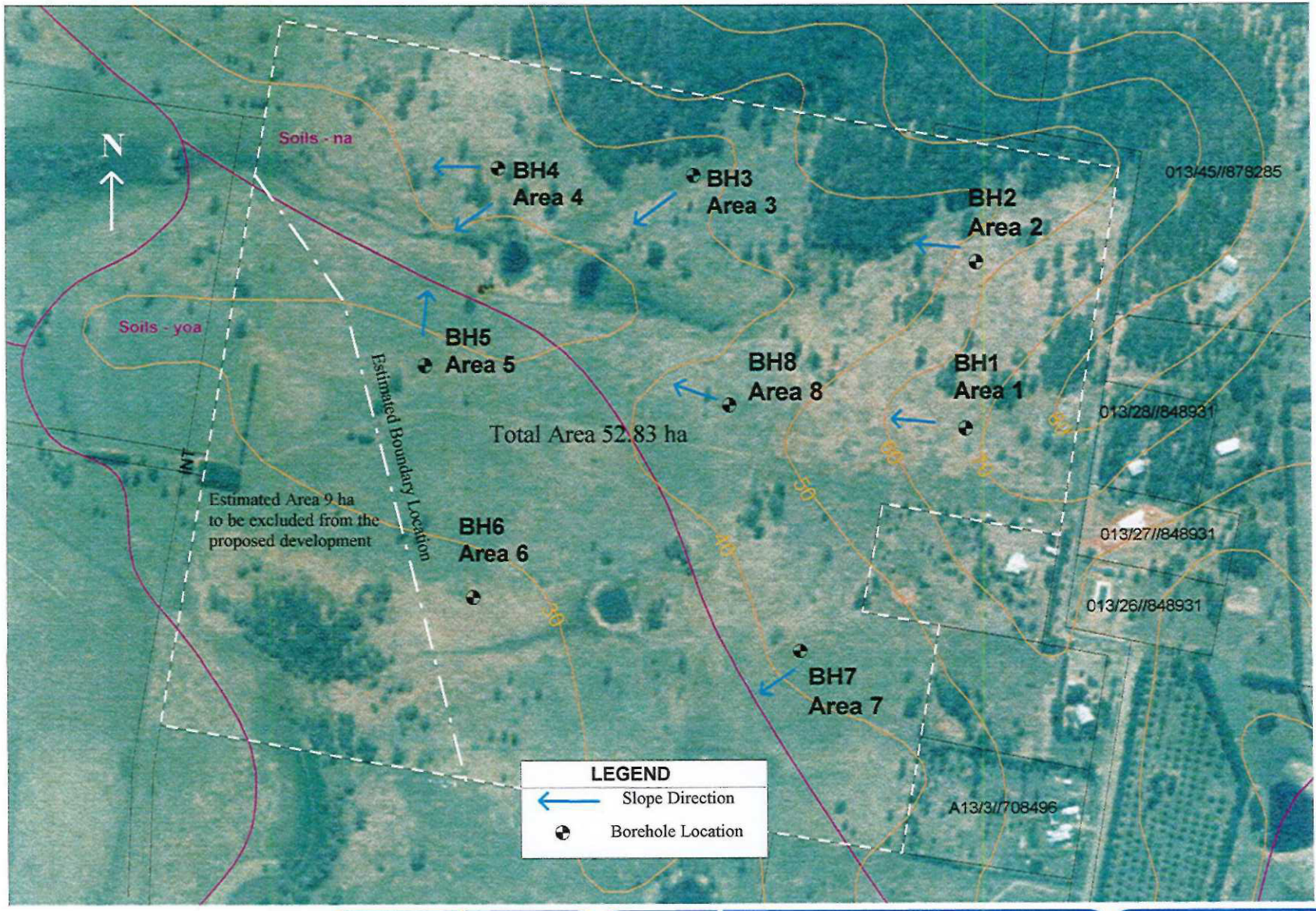
email: info@aspectnorth.com.au
so at: BALLINA & TWEED HEADS

BENNETT

SITE LOCATION PLAN
LOT 4, DP708496, 75 Gregors Road, Springrove, NSW DRWG No: LM040594 / SK1



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SCALE AT A4:
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Also at: BALLINA & TWEED HEADS

BENNETT

SITE LAYOUT PLAN
LOT 4, DP708496, 75 Gregors Road, Springrove, NSW DRWG No: LM040594 / SK2

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 1 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
3				0.1		SM	SINGLE GRAINED SILTY SAND MIXED WITH ORGANIC MATTER - GREY\BROWN	D	VL	
12							SANDSTONE BEDROCK LAYER ENCOUNTERED			
T				0.5			Terminated @ 100mm			
				1.0						
				1.5						

SOIL CLASSIFICATION SYMBOLS

GP	Poorly graded Gravel
GW	Well graded Gravel
GM	Gravel, Silt or Sand fines
GC	Gravel, Clay fines
SP	Poorly graded Sand
SW	Well graded Sand
SM	Silty Sand
SC	Clayey Sand
ML	Silt, low liquid limit
CL	Clay, low-medium plasticity
CH	Clay, high plasticity
OH	Organic Clay, high plasticity
Pt	Peat

WEATHERED ROCK CLASSIFICATION SYMBOLS

EW	Extremely Weathered
HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
F	Fresh

MOISTURE STATUS

D	Dry
M	Moist
W	Wet

DCP SYMBOLS

T	Terminated
R	Refusal

CONSISTENCY/DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
Fb	Friable
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 2 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
				0.1		SM	POORLY GRADED SAND\SILTY GREY BROWN	D	VL	
5										
4				0.5		SP	POORLY GRADED LOOSE SAND	D	L	
3										
3				1.0		CL	LIGHT SANDY CLAY	D	S	
9										
8										
8				1.5			Terminated @ 1.5m			
10										
8										

SOIL CLASSIFICATION SYMBOLS

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MOISTURE STATUS

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M	Moist
W	Wet

DCP SYMBOLS

T	Terminated
R	Refusal

CONSISTENCY/DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
Fb	Friable
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 3 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
6				0.1		SM	POORLY GRADED SILTY SAND - GREY	D	L	
4										
2				0.5						
2						CL	LIGHT SANDY/SILTY CLAY - DARK BROWN	D	S	
3				1.0						
5										
8										
9				1.5						
12							Terminated @ 1.5m			
15										
T										

SOIL CLASSIFICATION SYMBOLS

GP	Poorly graded Gravel
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HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
F	Fresh

MOISTURE STATUS

D	Dry
M	Moist
W	Wet

DCP SYMBOLS

T	Terminated
R	Refusal

CONSISTENCY/DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
Fb	Friable
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 4 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
6				0.1		SM	SILTY GREY SAND WITH SOME ORANGE MOTTLING	D	L	
4										
3				0.5						
3						SC	CLAYEY SAND - BROWN/GREY LOW PROPORTION OF CLAY LOW - NO PLASTICITY	D		L
3				1.0						
6										
12										
15				1.5						
18							Terminated @ 1.5m			
T										

SOIL CLASSIFICATION SYMBOLS

GP	Poorly graded Gravel
GW	Well graded Gravel
GM	Gravel, Silt or Sand fines
GC	Gravel, Clay fines
SP	Poorly graded Sand
SW	Well graded Sand
SM	Silty Sand
SC	Clayey Sand
ML	Silt, low liquid limit
CL	Clay, low-medium plasticity
CH	Clay, high plasticity
OH	Organic Clay, high plasticity
Pt	Peat

WEATHERED ROCK CLASSIFICATION SYMBOLS

EW	Extremely Weathered
HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
F	Fresh

MOISTURE STATUS

D	Dry
M	Moist
W	Wet

DCP SYMBOLS

T	Terminated
R	Refusal

CONSISTENCY/DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
Fb	Friable
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 5 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
5				0.1		SM	GREY\BROWN SILTY SAND SOME ORANGE MOTTLES	D	L	
6										
6				0.5		CL	LIGHT - MEDIUM CLAY - BROWN WITH ORANGE MOTTLING, WELL STRUCTURED MEDIUM PLASTICITY	D	F	
4										
6										
10				1.0						
15										
19				1.5						
20							Terminated @ 1.5m			
R										

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Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 6 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
2				0.1		SM	SILTY SAND - GREY\BROWN	D	L	
1										
2				0.5		SC	CLAYEY SAND - GREY\BROWN	D	MD	
4										
8										
10				1.0		CL	SANDY CLAY - TAN BROWN WITH ORANGE INCLUSIONS	M	S	
14										
18				1.5			Terminated @ 1.5m			
19										
T										

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Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 7 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
5				0.1		SM	GREY SILTY SAND - SINGLE GRAINED	D	L	
4										
2				0.5		SP	POORLY GRADED SINGLE GRAINED WHITE\GREY SAND INCREASING MOISTURE WITH DEPTH	D ⇩ M	L	
3										
4				1.0						
3										
6										
10				1.5						
14							Terminated @ 1.5m			
15										
T										

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D	Dense
VD	Very Dense

Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

BORELOG
(For Geotechnical Assessment)

ASPECT north

Reference: LM040594

PROJECT: Geotechnical Site Assessment

Date: 23.02.05

LOCATION: Lot 4, DP708496, 75 Gregors Road, Springrove, NSW

Borehole No: 8 of 8

CLIENT: D.W. Bennett

Dynamic Cone #1	Dynamic Cone #2	Dynamic Cone #3	Ground Water	Depth (m)	Graphic Log	Soil Symbol	Soil Description (soil type, colour, plasticity, particle characteristics, other)	Moisture Status	Consistency / Density	Hand Penetrometer (kPa)
7				0.1		SM	SINGLE GRAINED GREY\BROWN SILTY SAND	D	L	
5										
3				0.5		SC	LIGHT CLAYEY SAND - RED\BROWN	D	L	
4										
4				1.0						
8						CL	LIGHT SANDY CLAY - RED\BROWN LOW PLASTICITY	D	S	
9										
10				1.5						
8							Terminated @ 1.5m			
11										
T										

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VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

Logged by: M.S

Equipment Type: Dynamic Cone Penetrometer / 75mm Hand Auger

Checked:

RVC On-site Wastewater Model (Single Rural Households) OSmodel170115.xls
Printed 18-10-2017

		Default	User-defined
Client	Don Bennett		
Address	Spring Grove		
Site	Block size (m2)		10010
	Buffer (m) from land application area t stream	>100	
	Water (L/p.d) from Roof water harvesting	120	
	Persons		5
	☐ Internal wastewater sources split? ☐ Multiple households? How many?		
Wastewater components/system	Toilet ☑		
	Bathroom ☑		
	Laundry ☑		
	Kitchen ☑		
	Total wastewater flow (L/d) [needs caution if user-defined]	600	
Treatment system	Secondary: AWTS		
	Nitrogen removal %	20%	
	Maximum N allowed to go down from system (kg/yr)	15.00	
Land application	Land application type Subsurface drip irrigation		
	Design depth of root zone (mm)	300	
Soil information	Morand code (examples) Duplex Soils= ck		
	Phosphorus sorption (kg/ha.m)	8000	
	Depth to water table or bedrock (for P calcs) (m)		1
	Texture/structure Med. to heavy clays - strong. Structure		
	DIR (mm/d)	3.875	
Area calculations	Hydraulic area (m2) (or override with SSI industry estimate)	296.6	
	Nitrogen area (m2) [allowing export of 14.26 kg/yr]	0.0	
	Phosphorus area (m2)	260.0	
	Required land application area (m2)	**296.6**	
			20.0%

Source: NSW LPI Spatial Information Exchange (2017) Date Project No. 17223_ww.docx Scale: NTS	**GREG ALDERSON AND ASSOCIATES** **ABN 58 594 160 789** 43 Main Street Clunes NSW 2480 Phone: (02) 6629 1552 Email: office@aldersonassociates.com.au	**Exhibit No. 1.** **SITE LOCATION** Lot 4 DP 708496, 75 Gregors Road, Spring Grove

5m Easement for water

300m² reserve wastewater disposal area

300m² primary wastewater disposal area (boundary buffers achieved)

Building envelope

40m buffer area to drainage lines

Area with soil <1.0m deep

Z:\JOBS\17223_Bennett\17223__ww.dwg
Tab: Layout1

GREG ALDERSON & ASSOCIATES
ABN 58 594 160 789
43 Main Street Clunes NSW 2480
Ph: 02 6629 1552 Fax: 02 6629 1566
E: office@aldersonassociates.com.au
Web: aldersonassociates.com.au

Client: Don Bennett

Site address: Lot 4 DP 708496
75 GREGORS ROAD, SPRINGROVE

PROPOSED SUBDIVISION LOT LAYOUT

Drawn: DB	Source: Base plan from Newton Denny Chapelle (Ref: 16/231) & imagery from NSW LPI Globe	EXHIBIT NO: 2	Date: 4-09-18
Scale: 1:1000 at A3	Original Size: A3	Project: PROPOSED SUBDIVISION	Revision: B
Job Number: 17223	Drawing Number: 17223__ww.dwg		

NSW Office of Water
Work Summary

GW046193

Licence: 30BL102387 **Licence Status:** ACTIVE

Authorised Purpose(s): STOCK
Intended Purpose(s): STOCK

Work Type: Bore open thru rock
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:** 22.30 m
Completion Date: 01/06/1975 **Drilled Depth:** 22.30 m

Contractor Name:
Driller:
Assistant Driller:

Property: N/A **Standing Water Level (m):**
GWMA: - **Salinity Description:**
GW Zone: - **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	ROUS	ROUS.060	237
Licensed:	ROUS	TOMKI	Whole Lot //

Region: 30 - North Coast **CMA Map:** 9540-3N
River Basin: 203 - RICHMOND RIVER **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6809882.0 **Latitude:** 28°50'19.3"S
Elevation Source: (Unknown) **Easting:** 509020.0 **Longitude:** 153°05'32.9"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure

Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Threaded Steel	-0.20	12.40	152			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
19.80	21.30	1.50	Fractured	-0.20		1.08			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	3.05	3.05	Clay Yellow	Clay	
3.05	7.62	4.57	Sandstone Yellow Soft Some Hard	Sandstone	
7.62	11.58	3.96	Sandstone Yellow Grey	Sandstone	
11.58	19.81	8.23	Sandstone Grey	Sandstone	
19.81	21.34	1.53	Chert White Water Supply	Chert	
21.34	22.25	0.91	Sandstone Grey	Sandstone	

Remarks

***** End of GW046193 *****

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 7

Statutory Declarations

Donald Bennett

Statutory Declaration

"I, (Full Name) DONALD WILLIAM BENNETT

of (Address) SHANNONBROOK VIA CASINO Post Code: 2470.

(Occupation) FARMER in the State of New South Wales, do solemnly and sincerely declare the following in relation to land at GREGERS ROAD SPRING GROVE

1. *What are all known land uses, including the current uses, to which the site has been put?*

PART OF SOLDIERS SETTLEMENT GRANT.
BEEN USED FOR CATTLE GRAZING SINCE 1920,
KNOWN TO BE USED FOR DAIRY FARMING SINCE
1920

2. *Is the applicant aware of uses to which properties adjoining the site have been put? If so please specify.*

YES - USED FOR CATTLE GRAZING

3. *Do any of the uses on the subject land or adjoining land correlate with the potentially contaminating activities set out in Schedule 1 (attached)?*

YES - AGRICULTURAL GRAZING WITH LIMITED
FERTILIZER USE.

4. *If the answer to question 3 is yes – has there been any testing or assessment of the site and if so, what were the results?*

NO - NO PERSISTENT CHEMICAL USE

5. *Is the applicant aware of any contamination on the site, or adjoining site?*

NO

6. *What remediation work, if any, has taken place in respect of contamination which is or may be present on the site or an adjoining site?*

N/A.

and I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the ***Oaths Act, 1900***.

Declared at LISMORE this 1 day of AUGUST 2005

D W Bennett
Declarant (Signature)
(This must only be signed in the presence of the JP)

Before me:

Speers J.P.
(Signature of JP)

JANELLE SPEERS
(Print Full Name of JP)

116770
(NSW Registration Number)

Penalties for False Statutory Declarations
The *Oaths Amendment Act 1986* provides that if a Statutory Declaration is made to gain material benefit and the offence is dealt with by indictment the penalty is up to 7 years imprisonment. If dealt with summarily then the penalty is up to 2 years imprisonment and/or a fine of 100 penalty units ($11,000). If the offence is swearing a false declaration that does not involve material benefit, the penalty is up to 12 months imprisonment and/or a fine of 50 penalty units ($5,500).

Statutory Declaration

OATHS ACT 1900, NSW, EIGHTH SCHEDULE

I, Donald William Bennett , do solemnly and sincerely declare that
[name of declarant]

the land located at 75 Gregors Road, Spring Grove (Lot 4 DP 708496) has only been used for cattle grazing purposes in terms of an agricultural land use since 1st August 2005.

and I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1900*.

Declared at: Lismore on 30 Jan 2018
[place] *[date]*

DW Bennett
[signature of declarant]

in the presence of an authorised witness, who states:

I, Frangi Spilsbury , a JP NSW 220 940 ,
[name of authorised witness] *[qualification of authorised witness]*

certify the following matters concerning the making of this statutory declaration by the person who made it: *[* please cross out any text that does not apply]*

1. *I saw the face of the person *OR* ~~*I did not see the face of the person because the person was wearing a face covering, but I am satisfied that the person had a special justification for not removing the covering, and~~

2. ~~*I have known the person for at least 12 months~~ *OR* *I have confirmed the person's identity using an identification document and the document I relied on was Drivers Licence
[describe identification document relied on]

[signature of authorised witness] 30.01.18
[date]

Frangi Jean Spilsbury
NSW JP 220940

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

ATTACHMENT 8

Boolangle LALC Correspondence & Archaeological Assessment

North Casino Archaeological Report

August 2005

Prepared by:
Adrian Piper
Heritage Surveys
54 The Quarterdeck
Tweed Heads NSW 2485

Richard Robins
Everick Heritage Consultants Pty Ltd
PO Box 146
Red Hill QLD 4059

An Archaeological Assessment of
Lot 4 DP 708496,Gregors Road, North Casino N.S.W.

A Report to

Aspect North for Don Bennett

August 2005

Adrian Piper
Heritage Surveys
54 The Quarterdeck
Tweed Heads NSW 2485

Richard Robins
Everick Heritage Consultants Pty Ltd
47 Arthur Terrace
Red Hill QLD 4059

TABLE OF CONTENTS

FIGURES

TABLES

SUMMARY AND RECOMMENDATIONS

Summary

The report presents the results of an archaeological assessment, at Lot 4 DP 708496, Gregors Road, North Casino. It is proposed that planners Aspect North on behalf of its client Mr. D. Bennett make an application to Richmond Valley Council to rezone the subject land from 1 (b1) Rural (Secondary Agricultural Land) to 1 (c) Rural Residential (Richmond River LEP 1992). The site consists of 48.4 ha of open forest and grazing land.

The environmental context of the study area is outlined in Section 2. A major factor influencing the assessment is the observation that there has been extensive rock and soil disturbance across almost all of the hillcrest and slopes due to tree clearing and there is extensive bioturbation on the lower slopes. These factors can be expected to have had a highly destructive impact upon Aboriginal sites, should they exist. Section 3 outlines broad cultural features of the areas Aboriginal inhabitants. The people of the Casino area were part of the wider linguistic group, the Bundjalung. They spoke the Galibal dialect and included in their territory the area between the McPherson Range and tributaries of the Richmond River to the south, and the Richmond Range to the west and the Tweed and Mackeller Ranges to the east.

A review of written material sources (Section 4.2) concluded that there was only one previous study in the vicinity of the study area, to provide information that would indicate types of sites or potential locations. A search (Section 4.3) of the N.P.W.S. Aboriginal Heritage Information Management System (AHIMS) found only nine sites within the Casino 1:25000 map sheet. These are chiefly mythological sites indicated in Table 1. The nearest recorded site is a small stone scatter (#04-4-0104-Spring Grove 1) in the adjoining property, 230 metres north west of the north western boundary of Lot 4. Other sites are bora/ceremonial areas 4.5 kilometres to the north and 5.6 kilometres to the south west. The Bentley area, 5.0 to 6.0 kilometres to the north contains a bora/ceremonial area and natural

mythological site. The remaining sites are approximately ten kilometres to the east. There were no registered sites that would be impacted by the proposed rezoning. Given the type of terrain and previous surveys in other parts of the Richmond and Clarence River valleys a predictive model was proposed (Section 4.4) that suggested the following types of sites had a potential to occur - open campsites, quarries, axe grinding grooves, scarred trees and isolated artefacts.

The field inspection was carried out by Robins and Piper with the assistance of the Casino Boolangle L.A.L.C. Sites Officer, Mr. Brendon Torrens on 19th August, 2005. No Aboriginal cultural heritage evidence was found during the survey.

Recommendations

- It is usual and N.S.W. DEC practice to commend a cautionary statement to the developer and contractors that under the N.S.W. National Parks and Wildlife Act 1974 (Section 90) it is an offence against the Act for a person who without obtaining the consent of the Director General, knowingly destroys, defaces or damages or knowingly causes or permits destruction or defacement or damage to a relic or Aboriginal place.

- If in the process of subsequent development of the above land it is believed Aboriginal cultural materials are exposed, works at or adjacent to the location should cease and the Regional Office, Coffs Harbour or District Office Alstonville, of the N.S.W. DEC and the Casino Boolangle L.A.L.C. must be contacted as soon as possible. The Regional Archaeologist or a Sites Officer will advise as to the appropriate course of action to follow. Works must not proceed without authorisation of the N.S.W. DEC and the Casino Boolangle L.A.L.C..

- There are no further archaeological or Aboriginal cultural heritage issues to be addressed in regard to the rezoning as proposed, of Lot 4 DP 708496, Gregors Road, Spring Grove, Casino.

1. INTRODUCTION

The following report presents the results and outcomes of an archaeological assessment for Aboriginal sites and relics at Lot 4 DP 708496 Spring Grove, Gregors Road, North Casino (Figure 1).

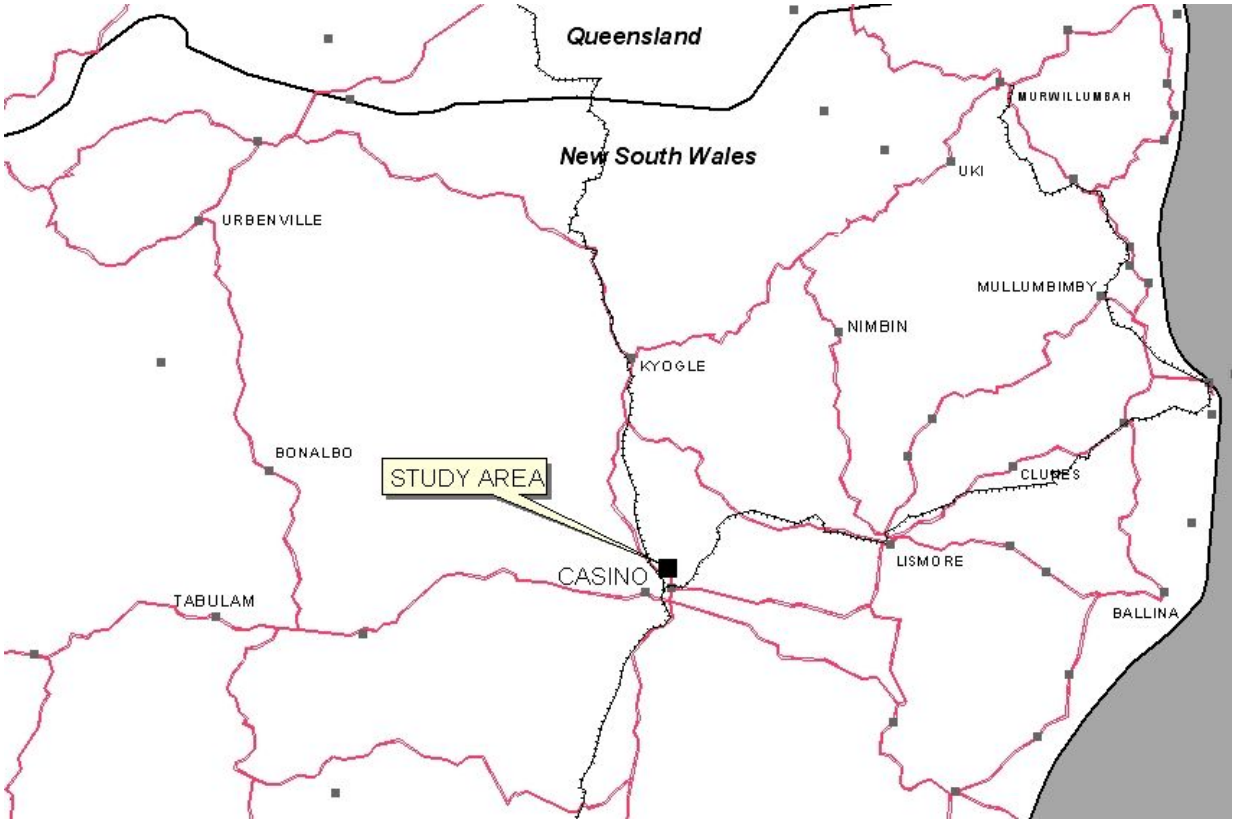

Figure 1: Regional Context of Study Area

1.1 Location

The property is located c 5.0 km north east of the town of Casino accessible via Naughtons Gap Road, Spring Grove Road and Gregors Road (Figure 2).

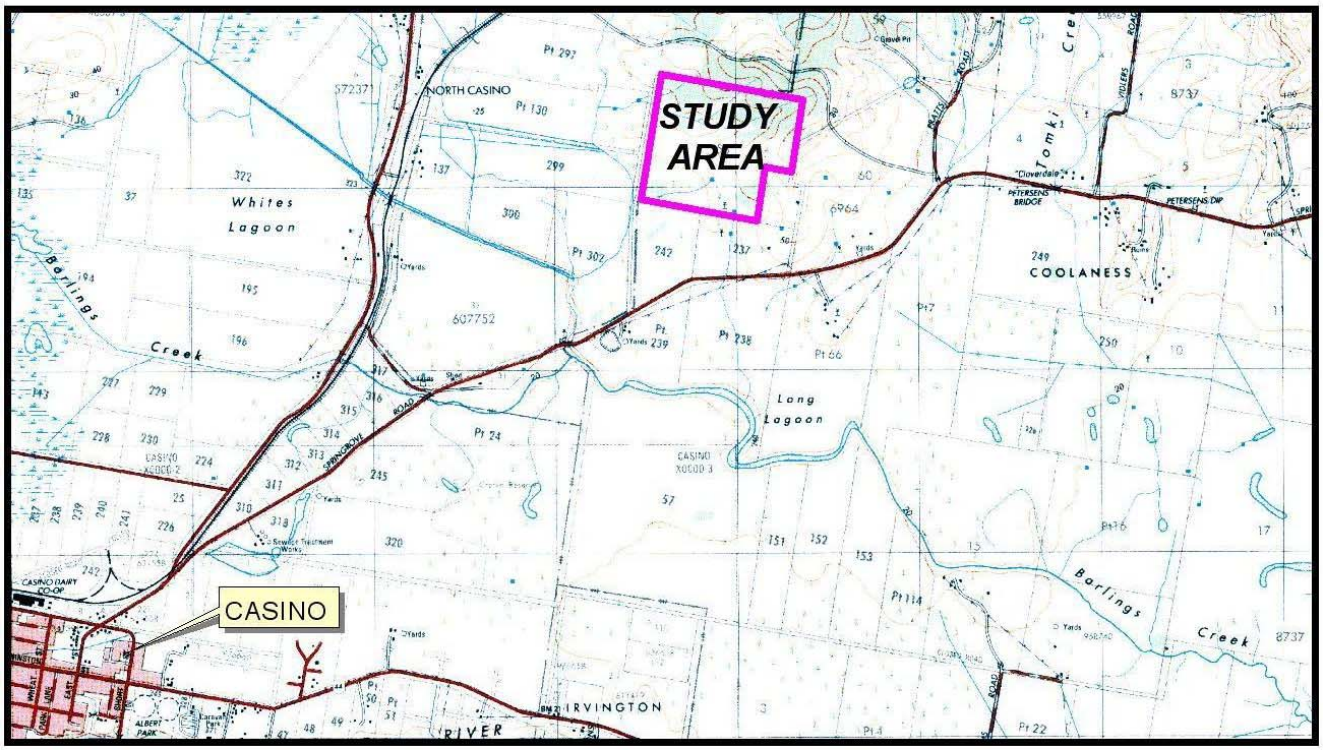

Figure 2: Location of Study Area

1.2 Development Proposal

It is proposed that ASPECT NORTH on behalf of its client Mr. D. Bennett make application to Richmond Valley Council to rezone the subject land from 1 (b1) Rural (Secondary Agricultural Land) to 1(c) Rural Residential (Richmond River LEP 1992) (Figure 3). The site consists of 48.4 hectares of open forest and grazing land.

Figure 3: Proposed rezoning Lot 4 DP708496

2. ENVIRONMENTAL CONTEXT

The site is located on the southern slopes of a northwest-southeast trending spur of the Ellengowan Hills. The extensive floodplains of the Richmond River commence at the foot of the ridge and the River itself is located 3.5 km to the south. The main body of the Ellengowan Hills lies directly to the north.

Figure 4: Study area looking south

Lot 4 is situated almost entirely within the Namoona Soil Landscape. Relief is 30-50 m, and the maximum height is 80m AHD. The property is substantially cleared but would have originally been in tall open woodland with native grasses (Figure 4). In parts of the gullies in the lower slopes, melaleuca grow. The property has been extensively cleared. The remnant vegetation consists of dry sclerophyll forest species dominated by pink bloodwood and white mahogany, ironbark, tallow wood, bloodwood, brushbox and stringybark (Figure 5). There was a thick cover of grass (Figure 6). Land uses have been cattle grazing and forestry. It was first cleared in the 1920's of timber for railway sleepers, and again in the late 1980's for pasture.

Figure 5: Cleared wooded area on the edge of the eastern slope of the westernmost ridge

The geology is sandstone with siltstone, claystone and coal. Soils are predominantly reddish loamy sands on the upper slopes graduating to dark brown loamy sands on the lower slopes. In parts of the upper slopes the underlying sandstone outcrops. There is extensive evidence of rock and soil disturbance across almost all of the hillcrest and slopes due to recent and past land clearing (Figure 7).

The site comprises south-facing hillslopes with three low ridges and two gullies. The site has been substantially cleared, except for a stand of timber on the edge of the westernmost ridge and adjacent gully. This has been recently partially cleared. Two dams have also been constructed in this gully. The subdivision proposal does not include these dams. Another dam has been constructed in the eastern gully. A cement header tank has been constructed on the central ridge above the dams. The property has been fenced into several paddocks. A slab for a house has been constructed at the top of the slope.

Figure 6: Ground cover

Figure 7: Surface disturbance from clearing

3. CULTURAL CONTEXT

3.1 Territories

The Aboriginal people of the Casino area were part of a wider linguistic group, the Bundjalung which included about twenty dialects spoken between the Clarence and Logan Rivers extending west to Tenterfield (Crowley 1978:1). The concentration of Bundjalung dialects to the north compared to the fewer dialect groups of the adjoining southern Kumbainggiri led Crowley to suggest that the Bundjalung areas may have been colonised earlier than the Kumbainggiri allowing a greater number of dialects to develop. Crowley also suggested that coastal Bundjalung dialects varied significantly from inland Bundjalung dialects (Crowley 1991). Joshua Bray, a settler on the Tweed River travelled from the coast to the inland Bundjalung dialect country of the Upper Richmond and found that "The language of the Aborigines is sometimes completely different thirty miles away" (Bray 1899:193). The Casino area was occupied by people speaking the Galibal dialect. The Galibal dialect group occupied the area between the McPherson Range in the north, tributaries of the Richmond River (Shannon Brook & Mongogare Creek) to the south, the Richmond Range to the west and the Tweed and Mackellar Ranges to the east (Crowley 1978). Land belonged to clan groups whose boundaries had been established in mythology (Creamer 1984). A group of families might make up a clan or 'horde' which was a land holding group occupying a distinct territory. These clan territories have been described on the coastal plain by Ainsworth (1922) on the lower Richmond and Bray (1901) for the coastal and upper Tweed Valley. A loose confederation of clan groups recognised a wider social and linguistic association. Tindale (1974) places the Galibal dialect group within the territory of the 'Badjalang' which included the greater part of the Clarence and Richmond River floodplains.

3.2 Settlement and Movement

The few sources available suggest that clan groups would remain within a defined territory scattered in smaller family groups, which may combine at times of seasonal abundance, or for specific purposes such as ceremonial occasions or for the resolution of disputes. The few sources available suggest that contact between coastal groups may have been more frequent than for inland groups. Bray wrote that "The Coodjinburra tribe inhabiting the coast used to mix very much with the Ballina Richmond River blacks" (Bray 1901:9). However one writer suggests contact between inland groups may have been as frequent. "Often the Lismore tribe would send messages over to the Clarence or the Tweed tribes … should the invitation be accepted the whole tribe from the Tweed or Clarence would journey to the Richmond … for perhaps a month" (Flick 1934:2).

Populations are difficult to estimate with any confidence. It is clear that large groups did assemble for specific occasions, perhaps frequently. Sullivan collated the following instances. "In 1853, 200 to 300 gathered at Ballina for the oyster season (Ainsworth n.d.:18), 600 gathered at Lismore for a tribal fight (ibid), 300 at Woodburn (Gollan n.d.:5), and at Tintenbar (Sullivan 1978:105). Bray saw 600 camped on Wollumbin Plain (Murwillumbah) (Bray 1901:9). It has been assumed that populations of four hundred for the coastal groups and two hundred for the riverine groups… would give a population of around 2,500 between the Evans River and the border…a density of less than two square miles per person (Belshaw 1978: 72). It has been suggested that, "…areas of rainforest may have been uninhabited or inhabited irregularly" (Belshaw 1978:73). The extent to which the rainforests of northern N.S.W. were actually occupied, traversed or selectively exploited for food and raw materials remains a question for further research.

A number of models have been proposed to account for the systematic use of the hunter gatherer environment of northern N.S.W. and southern QLD. Movement took place within territories in response to the availability of food supplies and across group territories for purposes of ceremonial occasions and tribal conflicts in addition to the seasonal abundance of food sources. However it has been suggested that movement in the coastal river valleys does not seem to have been

caused by food shortages as such, rather to take advantage of different food types (Belshaw 1978:75). A review of sightings of Aboriginal coastal groups led Coleman (1982) to suggest that movement took place in a north-south manner for social purposes (ceremonial, tribal fights etc.) rather than to procure foods or raw materials. McBryde (1974 and 1976) argues for a seasonal movement of people between the coast in summer exploiting marine foods and hunting inland in winter. On the ethno-historical evidence McBryde suggested that some seasonal movement was usual and that the basic subsistence economy of hunting, fishing and gathering was neither static, nor completely migratory, but characterised by movement between the coast and the foothills (McBryde 1974:337). A number of early references note seasonal movement on a limited scale. Bray (1923) states that the Lismore "tribe" used to go to Ballina at the mouth of the river. Sullivan (1964:20) recorded that inland groups were allowed to come to the Tweed coast for a time. The archaeological evidence for movement in the coastal river valleys is less conclusive (McBryde 1974: 338).

Movement within a clan territory in response to local conditions or availability of different food sources also occurred. Aborigines at Byron Bay often shifted camps but seldom moved far from a flying fox camp (Anon.n.d.b:1). Bundock noted that on the upper Richmond flying fox were taken more easily in wet weather (Bundock 1898:4-5). Moehead recorded that near Lismore the Richmond Aborigines, "…camped on the river flats until the rain set in and would then retire to the hills" (Moehead, nd:1). At Ballina Ainsworth describes movement over the short distance between the beaches and the 'big scrub' a distance of only a few kilometres. He suggests that Aborigines of east and west Ballina were scattered in small groups combining at times of abundant food resources: "… the tribe usually camped in divisions at different places except during the oyster season when they assembled unitedly at Chickiba, on North Creek …" (Ainsworth 1922:30) "The blacks in the month of September each year flocked to the beaches for salmon fishing" (Ainsworth 1922:30). To which or both of these events the Aborigines of the Casino area attended we cannot say with any certainty.

An exception to normal movement practices across tribal boundaries was that documented by Petrie (1932) and Bundock (1898). Bundock recorded the movement of the Richmond River Aborigines to the Bunya Mountains, "… every third year or so … under a sort of 'Truce of God'… for the blacks went through each other territories unharmed" (Bundock 1898). In this case Bundock was referring to the Aborigines of the Wyangarie area on the upper Richmond approximately 37 kilometres north of Casino.

3.3 Economy - Material Culture

The most detailed analysis of material culture has been that undertaken by McBryde (1978). The region of the Tweed, Richmond and Clarence Rivers would seem to form a distinct unit. This is particularly so in the case of fishing technology. The multi-pronged fishing spear and the shellfish hook are both absent from this region, and fish were caught in nets or speared in the shallows (McBryde 1978:187). Spears were single pointed fire hardened weapons (Dawson 1935:22), of both a lighter and heavier variety (Byrne 1946:3). The woomera or the spear throwing stick were not used in this region (Dawson ibid). The range of materials is considered wider than central Australian tribes, with fewer all purpose items, few composite tools and a number of specialised ones. This may reflect a more sedentary life style in a rich environment requiring fewer specialised tools (McBryde 1978:187). The stone tool element in the material culture was small and unspecialised. The archaeological evidence suggest changes to a simpler stone technology took place only centuries before European settlement. The stone tools in use immediately prior to European settlement, "… show little typological sophistication and did not demand highly skilled craftsmanship" (McBryde 1978:198).

The most balanced and comprehensive description of material culture in the Lismore and Casino districts are those by Bundock. Only Miss Bundock approached the ideal of maintaining detailed records of economic activities, and of equipment in use of manufacture (McBryde 1978:187).

The resources of sub-tropical rainforests were used extensively in the technology of the Richmond, which is heavily dependent on wood and bark fibre (McBryde 1978: 197). Rainforest timbers were used to manufacture spears, a variety of clubs, shields, boomerangs and digging sticks. Bark was used for containers and shelter. Stone axes are referred to by Dawson (1935:22) and Byrne (1946:2). Fishing nets and rope was made from twine spun from the flame tree (Byrne ibid). Fishing nets were made a couple of yards long with a stick at each end. They were used individually or in combination with many of the same type (Seymour 1976:67). Bundock (1898) and Ainsworth (1922) describe the same type of nets used for game drives in rainforests and for cod fishing in summer. Descriptions of diet for inland groups emphasise terrestrial animal foods with little emphasis on vegetable foods. Bundock wrote of the Richmond River Aborigines "For game they had opossums, many varieties of kangaroo and wallaby, snakes, bandicoots, porcupine and flying foxes… birds… a good deal of fish in summer and large mussels" (Bundock 1898). The description would appear to include animals found in both rainforests and perhaps more open grasslands. Vegetable foods included a "… sort of bread from the beans of the Morton Bay chestnut and from the roots of the large arum (called by the Blacks congevois) (Bundock 1898). While congevoi is a rainforest plant the Moreton Bay chestnut is normally only found growing on watercourses.

4. ARCHAEOLOGICAL CONTEXT

4.1 Prehistory

Evidence for Aboriginal occupation of northern N.S.W. and QLD dates to the height of the last glacial maximum (c.20, 000 BP). At Wallen Wallen Creek on North Stradbroke Island an occupation phase has been dated from 20560 ± 250 BP (years before present) to relatively recent times. Analysis of faunal material from the site suggests an economy initially based upon the hunting of terrestrial fauna, later changing to one based upon a reliance on marine fish and shellfish. This probably reflects changing local ecologies caused by gradual rises in sea levels during the late Pleistocene (Neil and Stock 1986).

Coastal sites in northern N.S.W. all date within the Holocene period; the earliest being a shell midden at the base of Sextons Hill on the Tweed River. The site indicated an occupation phase between 4700 BP and 4200 BP (Appleton 1993: 43). Faunal material included a predominance of oyster, cockle and whelk by volume, in addition to remains of pademelon, kangaroo, bream, whiting, flathead and schnapper. The artefactual content exhibited few diagnostic traits and only four artefacts appeared to be of a deliberately manufactured shape (ibid:17-18). A previous excavation of a shell midden 2.5 km upstream indicated a basal date of 605 ± 90 BP. A column sample revealed compacted fish bone remains, notably schnapper at the lower levels, with a greater content of shellfish in the upper levels. Bone points were also recovered. The conclusion drawn by the investigator was that the diet initially based upon fish and possibly terrestrial fauna changed to one more reliant upon shellfish possibly reflecting gradual siltation of the Tweed River to a mud flat ecology (Barz 1980).

Archaeological evidence for the Richmond River suggests that conditions suitable to the exploitation of estuarine food resources occurred relatively recently (Bailey 1975, Rich 1994). A shell midden on Chickiba Creek was found to have accumulated between 1750 BP and c 1850 AD (Bailey 1975:52). Shell samples from the Angels Beach area are dated between c 530 BP and 810 BP with one

sample at c 900-1000 BP (Rich 1994:195) Stone material was assessed on technological grounds to date within the past 2000 years (ibid:161). Bailey's basal date of 1750 BP suggests that the resource rich environment may not have been available at an earlier time, for any more than small groups (Rich 1994). By contrast, the Tweed River estuarine site was in use c 3000 years earlier (Appleton 1993).

In spite of the high volumes of shell contained in estuarine shell middens, researchers have been cautious in assessing the contribution of shellfish to the annual economy (McBryde 1974, Bailey 1975, Appleton 1993). Estuarine middens typically contain a predominance of oyster over species of cockle and whelk. The North Creek midden (Site B 1) excavated by Bailey, was composed 98% by weight of oyster, although some 18 species of other molluscs occurred in small numbers (Bailey 1975:46). Terrestrial foods included pademelon, wallaby, possum and bandicoot. Marine fish include flathead and bream (ibid:65). Stone artefacts and remains of mammal and fish bone were sparsely represented throughout the deposits (ibid:46). Given the population estimates for the area (Ainsworth 1922, Belshaw 1978:22). Bailey concluded oysters would contribute not more than 10% to the annual economy, and that if the site were used exclusively or predominantly for oyster consumption, then occupation could not have lasted for more than a matter of days (Bailey 1975:57).

The excavation of an estuarine shell midden at Wombah on the Clarence River contained an occupation phase between c 3260 years BP at the time of European contact. The midden was 90% oyster by volume, fish bone and terrestrial animal bone was rare which suggested the function of the site was based almost entirely on the gathering of shellfish, notably oyster. The midden at Wombah produced a small assemblage of uniface pebble tools, flake and blade artefacts comparable to those of other Clarence Valley sites (McBryde 1974:290). The small amount of cultural and faunal material, apart from shell, suggested a specialised economic activity reflecting short sporadic occupation of the site, seasonal visits lasting for only a few months (ibid:288). With the support of calorific evidence from the North Creek midden on the Richmond River and population estimates, Bailey

narrowed the time frame for such visitations to the B1 site at least, to only a few days in an annual cycle (Bailey 1975:57).

The earliest occupation site for a riverine location comparable to the study area is the Seelands rock shelter on the Clarence River which contained an occupation phase from circa 4500 BC - 1600 AD (McBryde 1974b Table 1). The analysis of plant remains suggested a vegetation mosaic of open dry sclerophyll on elevated ground with corridors of rainforest along water courses (McBryde 1974:327). Analysis of faunal remains for the upper levels of the site indicated wallabies, possums and bandicoots provided the greater part of the meat diet (Wakefield in McBryde 1974: 360). Other animal remains included echidna, native cat, kangaroo, fruit bat, mussels, tortoise and catfish. McBryde noted a number of clear distinctions between the riverine Seelands site and the coastal midden at Wombah on the Clarence estuary. The Seelands artefact assemblage is more diverse, greater in quantity with strong evidence for the manufacture and maintenance of stone tools, minimal at Wombah. The biological material at Seelands reflects a broad-based economy exploitive of a number of micro environments, in contrast to the narrow base at Wombah, shellfish. The archaeological evidence suggested contact between the riverine site and the estuary at both sites and evidence for winter occupation in the presence of emu eggshell at Seelands, while a dependence on oysters at Wombah would suggest occupation in late spring or summer (McBryde 1974 b : 8-9).

4.2 Previous studies

There appears to be only one other study in the immediate vicinity of the study area, which can provide information on potential types of sites or potential locations. Indeed for the entire Casino 1:25000 map sheet only nine sites are recorded. A study by Piper (2004:26) located a low density scatter of stone artefacts on a low ridge approximately 230 metres north west of the study area. Unlike the coastal zone where development impacts are greatest and Aboriginal cultural heritage assessments are numerous and widespread, the Casino area has

remained an essentially rural environment, free of intensive residential or industrial development. The few sites recorded to date maybe as much a reflection of the lack of systematic archaeological surveys as the lack of archaeological sites. The Sites of Significance Survey Team recorded a large number of ceremonial, spiritual and natural mythological sites between 1974 and the nineteen eighties. These include natural mythological sites, bora ceremonial areas, increase sites (djurbils) and various other types of sites of which details remain confidential. The majority of these sites are located in the northern regions of the Galibal territory. A member of the team described the concentration of sites in the Bundjalung tribal area as, "… one of the densest concentrations of sites of significance to Aboriginal people in New South Wales" (Creamer: correspondence NPWS 1979).

4.3 NSW DEC. Aboriginal Heritage Information Management System (AHIMS)

The following table lists the results of a search for registered Aboriginal objects and Aboriginal places in the NSW Department of Environment and Conservation, Aboriginal Heritage Information Management System (AHIMS). Grid references are not provided here, as some information relating to these sites is confidential. The search area covers the entire Casino 9540 - 3 N, 3rd Edition 1:25000 sheet.

The types of site located through surveys for strictly archaeological sites throughout the region include open campsites, scarred trees, quarry sites, rock shelters, axe grinding grooves and ochre deposits.

The closest site to the study area is an open campsite (# 04 -4 - 0104) called Spring Grove 1, 230 metres north west of the study area. Site # 04 - 4 - 0008 is about c. 4.5 km to the north, site # 04 - 4 - 0025 is c. 5.7 km to the south west, site # 0 4 - 4 0006 is c. 6.2 km to the north and site # 04 - 4 - 0014 is c 5.4 km to the north. The remaining four sites are located in excess of 10 kilometres to the east. All of the recorded sites with exception of two artefact scatters, are bora/ceremonial or natural mythological sites.

There are no registered sites on the current database that are impacted in any way, by the proposed rezoning of Lot 4 DP 708496, North Casino.

Table 1: NSW DEC AHIMS Site

NSW DEC NO.	LOCATION	TYPE
04 – 4 - 0006	Bentley	Bora/Ceremonial
04 – 4 - 0007	Tuncester	Bora/Ceremonial
04 – 4 - 0008	Bungabbee Bentley	Bora/Ceremonial
04 – 4 - 0010	Bob Durrabbin's Jurraveel : Tuncester	Natural Mythological
04 – 4 - 0014	Bentley	Natural Mythological
04 – 4 - 0023	Parrots Nest Hill	Natural Mythological
04 – 4 - 0025	Casino : Bora Ground	Aboriginal Place Bora/Ceremonial
04 – 4 - 0096	Fri	Artefact
04 4 – 0104	Spring Grove	Artefact scatter

4.4 Potential site types in the study area

As stated in the previous section there is little information from previous reports or site information that would indicate possible archaeological site types or locations where archaeological material might be found. However given the type of terrain and previous work in other parts of the Richmond and Clarence River valleys the following type of sites have a potential to occur.

4.4.1 Open campsites

They are usually found in elevated situations adjacent to wetlands, creeks or rivers. They can be found on level sections of hill/ridge crests. Archaeological evidence at

open campsites is usually stone artefactual material, but may include remains of shellfish. A recorded site may consist of as little as two artefacts within 50 metres of each other or dense concentrations of stone artefacts, ochre, bone and shell. A high concentration of shell would serve to classify the site as a midden.

The Spring Grove study area contains low hills suitable as locations of open campsites, therefore a potential exist for their discovery. This was borne out to a degree by the location of open campsite (#04-4-0104) in the property adjoining the present study area to the north west (Piper 2004:26).

4.4.2 Quarries

These sites include places at which stone was extracted from rock outcrops for manufacturing as artefacts and also the associated places where at least the initial stages of manufacturing (reduction processes) occurred (NPWS Handbook 1997 : Site Recording : Section 6).

The majority of recorded quarry sites to date in the Richmond Tweed area have been coastal sites where outcrops of greywacke have been 'excavated' and removed to other locations. Artefacts produced from this material include edge ground axes, bevelled pounders and scrapers.

The dominant rock type in the study area is sandstone, which is unsuitable for use for flaked stone implements and for edge ground axes. The sandstone on the property is highly weathered and unsuitable for either *in situ* use for axe grinding or for quarrying for grindstones. Therefore it is unlikely the study area contains bedrock suitable as a quarry material. However, were intrusions of quartzite to occur within the sandstones these may have been used for raw material suitable for flake artefacts.

4.4.3 Axe grinding grooves

Grinding grooves are usually found on hard sandstone sheets or flat sandstone boulders adjacent to water.

4.4.4 Scarred trees

Scarred trees result from the removal of bark for use as covering, shields, containers and canoes. There may also be carved trees where the bark has been removed and geometric patterns incised on the tap wood. Scarred tree sites are rare due to the extent of tree clearing and the natural aging and collapse of such trees.

As most of the trees have been logged or cleared, and only a few old trees remain standing, the site is unlikely to contain scarred trees.

4.4.5 Isolated artefact finds

These sites consist of single artefacts, which may have been discarded due to breakage, lost or randomly discarded during tool fabrication. They are commonly found on elevated areas where campsites may have existed, on transit routes or locations where tool maintenance or artefact manufacture took place away from a campsite.

4.4.6 Natural mythological sites and ceremonial areas

These types of sites cannot be predicted and their choice of location is a matter of cultural choice known only to the Aboriginal individual or group of select individuals at that time. The landscape would have contained many such sites prior to European contact. This is reflected in the large numbers of this type of site that

remain. No doubt the knowledge of many other such sites has gone with the passing of the 'knowledge holders'. With the exception of one site of consisting of an isolated stone artefact, and another with three stone artefacts, the remaining sites, on the Casino 1:25000 mapsheet, are bora/ceremonial or natural mythological sites.

5. CONSULTATION – CASINO BOOLANGLE L.A.L.C.

The Lot 4 DP 708496 study area is within the area administered by the Casino Boolangle Local Aboriginal Land Council. It was arranged with Ms Linda Stewart, Co-ordinator of the Land Council that Mr. Brendon Torrens would represent the Land Council and assist with the field inspection. The field inspection was carried out on 19th August, 2005. The outcomes of the Casino Boolangle L.A.L.C's deliberations and recommendations will be forwarded separately.

6. FIELD SURVEY

6.1 Method

The field inspection was carried out on foot. Orientation to the study area was achieved by reference to aerial mapping supplied by ASPECT NORTH (Figures 3). As the study area is reasonably large it was considered the most practical approach was to identify the topographic features where archaeological materials were most likely to occur and concentrate most attention on those areas. This proved to be the low hills and its major sub-element hillcrests and hillslopes in the western portion (approx. 50%) of the property (Figure 8). A systematic search in a grid pattern was considered unsuitable given the irregular distribution of areas with high surface visibility. Therefore the inspection was carried out by examining all exposed surface areas and a sample of the heavily grassed areas.. It was apparent that a large proportion of the area has been disturbed by heavy machinery, due to land clearing and forestry practices. These had moved large volumes of surface rock and earth. Trees considered mature enough were inspected for tree scarring or carving. Photographs were taken as a record of the landform features of the area, to indicate varying degrees of surface visibility. Notes are made of the degree of surface visibility, the area of surface visibility, ground and tree cover and other relevant information eg land use disturbance.

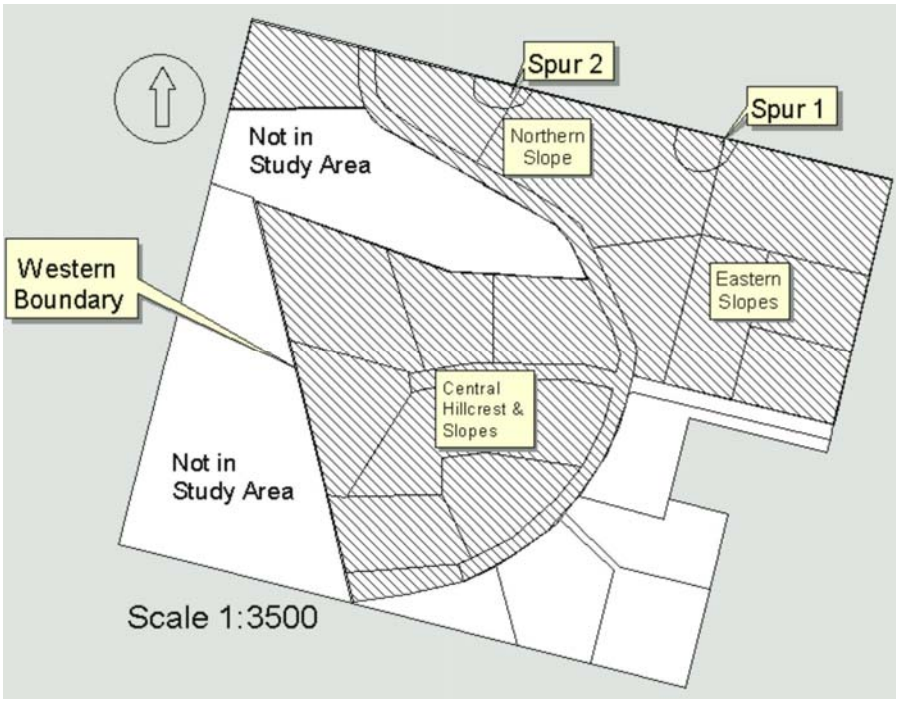

Figure 8: Areas of Lot 4 DP708496 inspected

Prior to the field survey the Department of Environment and Conservation AHIMS Site database had been searched on 25th May 2004 and the 9th July 2004. This incorporated the entire Casino 1:25000 mapsheet. No sites were indicated within the study area. The closest recorded sites were an artefact scatter (# 04 – 4 - 0104) 230 metres north west, and a Bora/Ceremonial site (# 04 - 4 - 0008) at c. 4.4 km to the north and a Natural Mythological site (# 04 - 4 - 0014) c. 5.4 km to the north (Table 1:20).

6.2 Constraints to the effectiveness of the survey

The study area for ease of description is divided into two main landform elements under the broader description of low hills. The landform elements are termed spur 1 and spur 2 within which upper and lower slopes are recognised as a sub-element. Estimates are given of the approximate areas of each landform element. Elements with › 80% surface visibility are noted in Figure 9 and Table 2. Major factors influencing the assessment were the extensive rock and soil disturbance across almost all of the hillcrests and slopes due to tree clearing and the extreme soil disturbance in the sandy soils of the lower slopes carried by ants (Figure 10).

Table 2: Elements with › 80% surface visibility

Unit	Feature	Area (Ha approx)
1	Spur 1 (Block Part 1, 19, 20, 21)	8.68
	Upper slopes (Blocks Part 1 & 19)	2.3
	Lower slopes (Block 19, 20, 21)	6.38
2	Spur 2 (Blocks Part 1, 2-18)26.92	26.92
	Upper slopes (Block Part 1, 2-5)	6.81
	Lower slopes (Blocks 6-18)	20.11

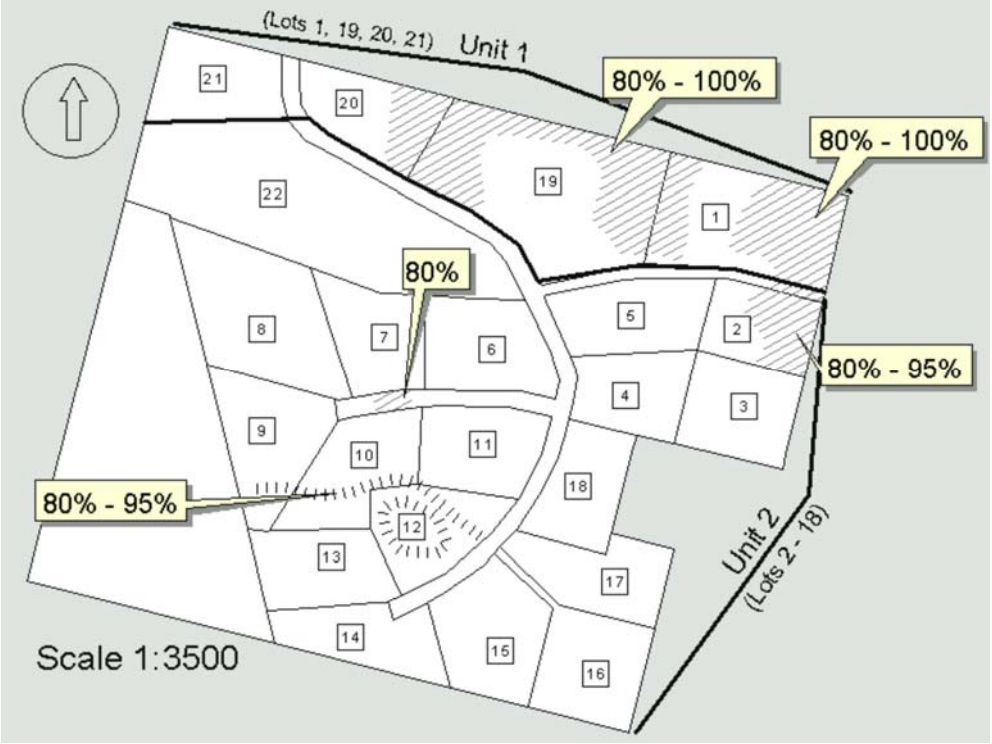

Figure 9: Areas with › 80% surface visibility

Figure 10: Action of ants turning over the soil. Note orange soil from the B1 horizon

A brief description of the conditions affecting the detection of archaeological materials is as follows:

Unit 1 Dry sclerophyll open woodland and open grasslands dominated by pink bloodwood and white mahogany.

Ground cover:	Pasture grasses, bladey grass.
Soils:	Very loose, sandy, high quartz content.
Slopes:	Upper slope – moderate 10% - 32%) Lower slopes – gentle 3%-10%.
Surface exposure:	c 50% (Upper slope) 20% (Lower slope)
Surface visibility ranges:	80% - 100%.
Type:	Land clearing, differential grass growth and leaf litter cover.

Unit 2 Dry sclerophyll open grass lands.

Ground cover:	Pasture grasses, bladey grass.
Soils:	Loose sandy soils. High degree of bioturbation.
Slope:	Upper slopes – moderate 10% - 32% Lower slopes – gentle 3% - 10%
Surface exposure:	C 10% (upper slopes) 5% (lower slopes)
Surface visibility:	C 80% - 95%
Type:	Land clearing, differential grass growth, cattle pads, tanks.

6.3 Survey Coverage

Table 3 indicates the extent to which survey data provides sufficient evidence for an evaluation of the distribution of archaeological evidence across the study area. An evaluation of survey coverage provides a measure of the potential of each of the landform units to reveal archaeological evidence. This procedure is in accordance with the N.S.W. N.P.W.S. Aboriginal Cultural Heritage Guidelines for Archaeological Survey Reporting, Appendix 4. The figures in Table 3 do not provide an exact percentage of ground area but a reasonable estimate.

Table 3: Survey Coverage Table

Survey Unit	Landform Element	Area (Ha)	Exposure %	Area of Exposure (Ha)	Visibility %	Area for Detection	% L F for Site Detection
1	Upper slopes	2.3	50	1.10	90	1.00	45.0
	Lower slopes	6.3	20	1.26	90	1.10	18.0
2	Upper slopes	6.8	10	0.68	90	0.60	9.0
	Lower slopes	20.0	5	1.00	85	0.85	4.0

Unit 1: Total area for detection 24%
Unit 2: Total area for detection 5.4%

6.4 Results of the assessment

No cultural material was found on Lot 4 on DP 708496, Gregors Road, Spring Grove, Casino.

7. SIGNIFICANCE ASSESSMENT

The N.S.W. National Parks and Wildlife Act (1974) recognises the principle of significance as a means of placing a type of importance/value upon Aboriginal sites. The significance of a site or sites from surveys of this kind is defined in terms its cultural/social value and scientific/archaeological value. The purpose of defining significance is that it forms a necessary basis for making recommendations on the management of sites (N.P.W.S. 1997:24). The ultimate aim is to preserve a group of sites, which will permanently remain as a representative sample of all types of sites and environmental contexts in the region. The site or sites may have significance to the Aboriginal community, the scientific and or archaeological community, wider public interest groups or combinations of each.

As no Aboriginal sites were found an assessment of cultural/social significance or archaeological significance is not warranted.

8. RECOMMENDATIONS

The following recommendations are based upon:

- The field inspection and its results (Section 6.4, 6.5);
- Consultation with Casino Boolangle L.A.L.C. (Section 5 and Appendix A); and
- The significance assessment (Section 7).

As no Aboriginal sites were found and no significance assessment is warranted, specific recommendations on site management are not required. The following recommendations are of a cautionary nature.

Recommendations

- It is usual and N.S.W. DEC practice to commend a cautionary statement to the developer and contractors that under the N.S.W. National Parks and Wildlife Act 1974 (Section 90), it is an offence against the Act for a person who without obtaining the consent of the Director General, knowingly destroys, defaces or damages or knowingly causes or permits destruction or defacement or damage to a relic or Aboriginal place.
- If in the process of subsequent development of the above land it is believed Aboriginal cultural materials are exposed, works at or adjacent to the location should cease and the Regional Office, Coffs Harbour or District Office Alstonville, of the N.S.W. DEC and the Casino Boolangle L.A.L.C. must be contacted as soon as possible. The Regional Archaeologist or a Sites Officer will advise as to the appropriate course of action to follow. Works must not proceed without authorisation of the N.S.W. DEC and the Casino Boolangle L.A.L.C..
- There are no further archaeological or Aboriginal cultural heritage issues to be addressed in regard to the rezoning as proposed, of Lot 4 DP 708496, Gregors Road, Spring Grove, Casino.

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Mr Brendon Torrens Aboriginal Site Officer for Casino Boolangle LALC met with Mr Adrain Piper Archaeological Consultant and the property owner on the 19th of August, 2005.
The field inspection took place on the property (19th August 2005), at Lot 4 DP 708496, Gregors Road, North Casino and no visual or physical evidence of Aboriginal Cultural Heritage was found during the survey.
As stated by Mr Adrain Piper in his report, we the Casino Boolangle LALC recommend that if in the process of construction or associated works, where Aboriginal sites or relics are found, works at and adjacent to the material must stop. ***The Casino Boolangle LALC Aboriginal Sites Officer*** must be contacted as soon as possible, to advise on the next appropriate course of action. **Works must not proceed without authorisation of Casino Boolangle LALC and Junbung Elders.**

Brendon Torrens
Aboriginal Sites Officer
Casino Boolangle LALC

B T Walker
Coordinator
Casino Boolangle LALC

18-11-2005