PLANNING PROPOSAL

1023 CRESCENT HEAD ROAD
CRESCENT HEAD

S H ASHLEY & G M HARVEY

DECEMBER 2015
(updated March 2016)

GEM PLANNING PROJECTS
ADVICE · NEGOTIATION · RESULTS

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1. Introduction

Planning Proposal

Proposal: Amend the Minimum Lot Size map as it applies to the land from AA2 (8ha) to Z3 (4ha) minimum lot size.

Property Details:

1023 Crescent Head Road,
Crescent Head
Lot 41 DP 1098163

8.002 ha

Applicant & Owner: S. H. Ashley & G. M. Harvey

2. Subject Site

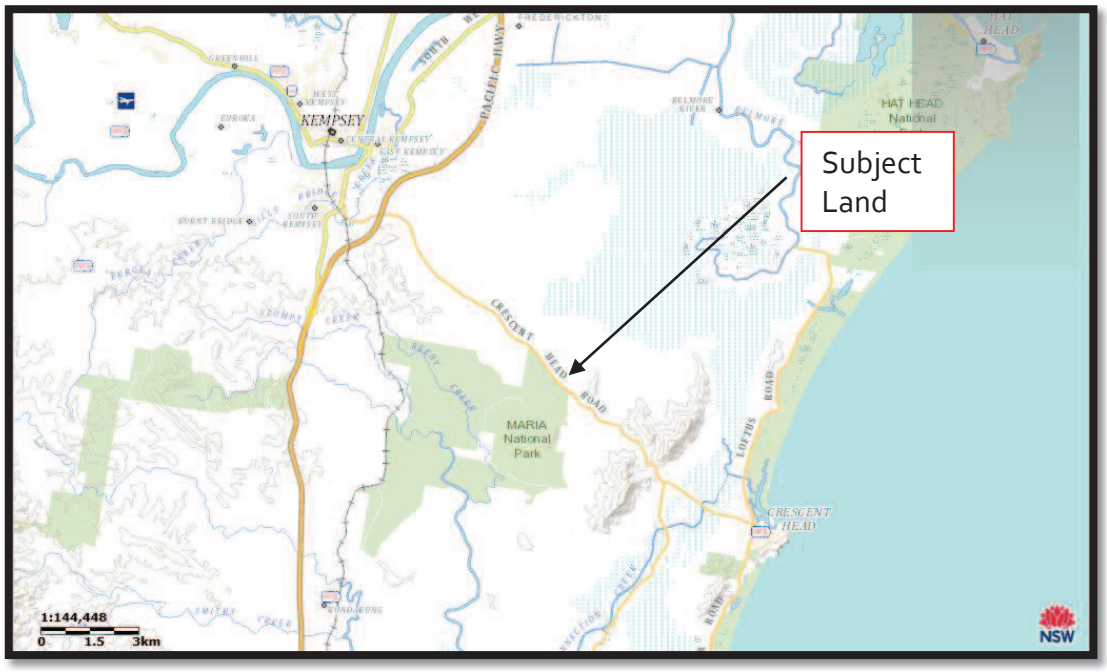

Figure 1: Locality Kempsey context

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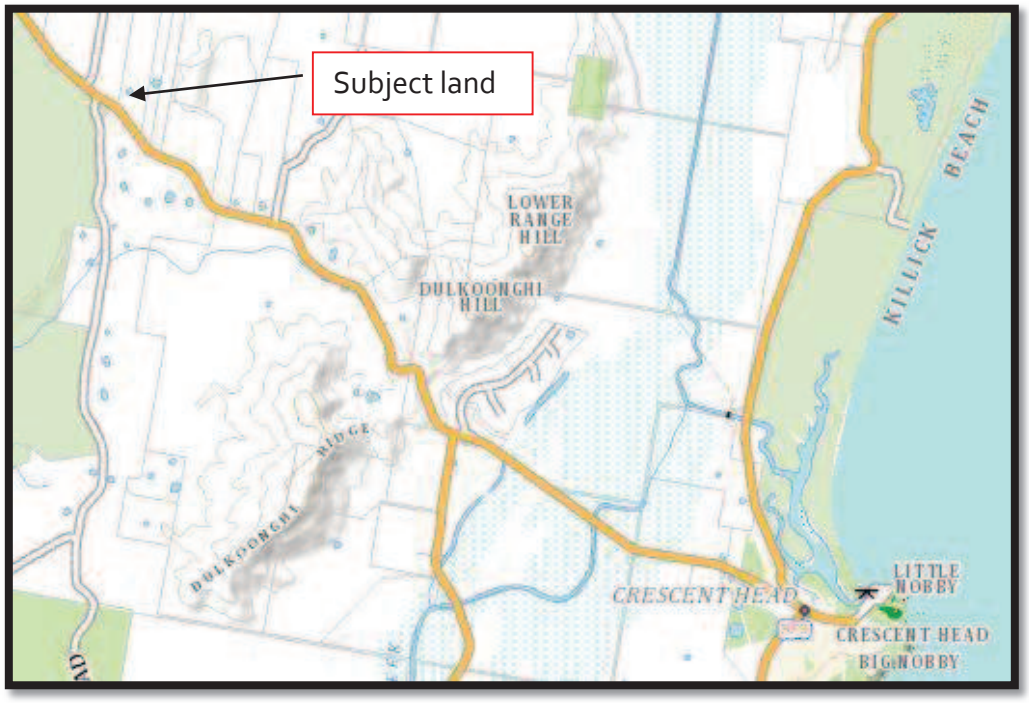

Figure 2: Locality Crescent Head context

The subject land has a total area of 8.002 ha has sealed road frontage to Crescent Head Road with a right of carriageway access along the East boundary of Lot 41 serving lots to the rear.

This Planning Proposal relates only to Lot 41 DP 1098163.

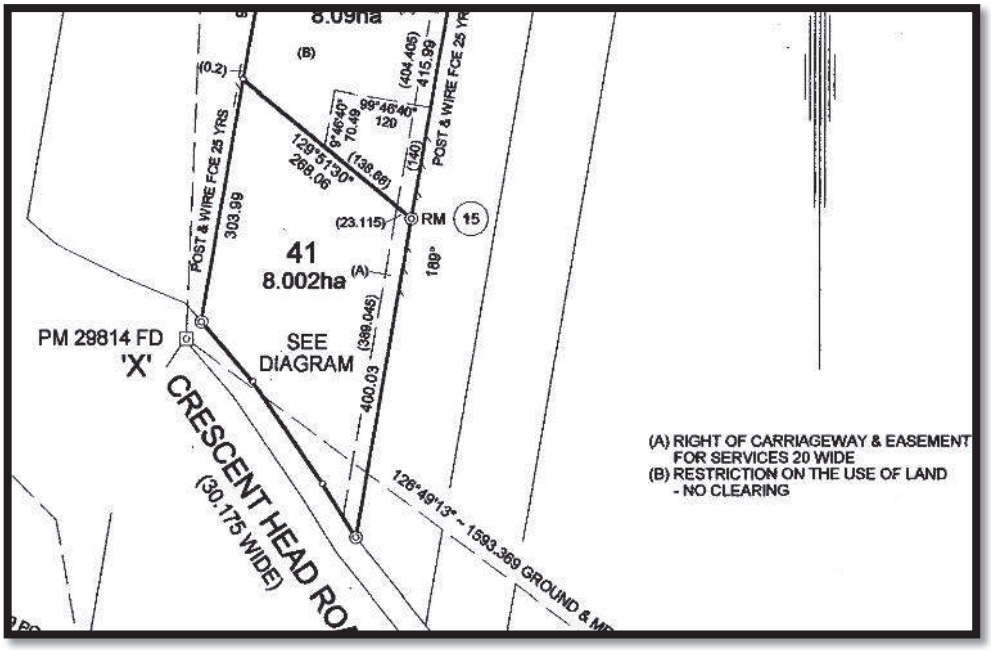

Figure 3: Extract DP 1098162 of Lot 41

Figure 4: Aerial of Planning Proposal site (*(source LPI SIX Maps)*

The land is used for rural residential/ domestic occupation and has an existing dwelling, sheds and dam. The site elevation sits around RL 20 m AHD has a gully/drainage line passing through the land in a north-west direction. Site contours from SIX map are shown in Figure 5 below.

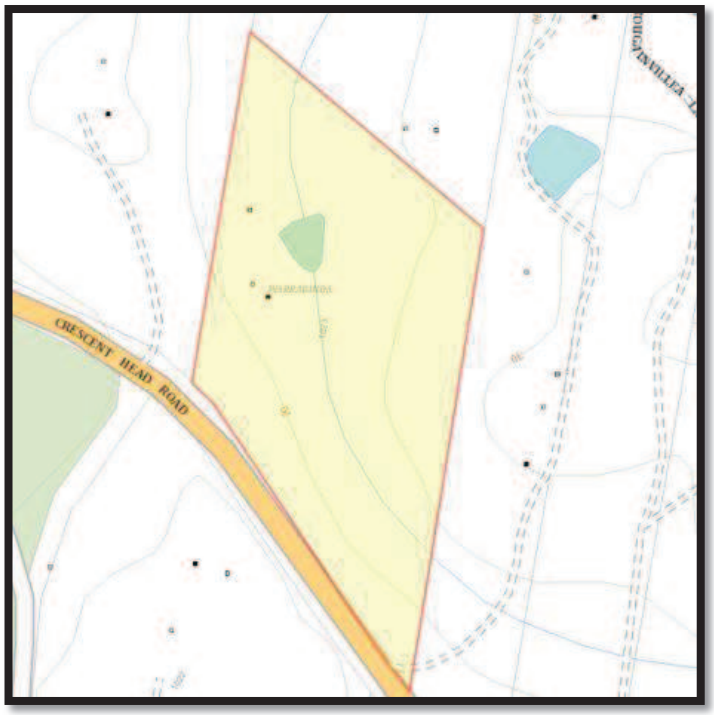

Figure 5: Topography *(source LPI SIX Maps)*

Pursuant to the provisions of Kempsey Local Environmental Plan 2013 the subject land is presently zoned RU4 Primary Production Small Lots which has a minimum lot size of 8ha for subdivision.

The Planning Proposal seeks to amend the minimum lot size map to permit the creation of 2 x4 ha lots.

Review of the Kempsey LEP 2013 minimum lot size maps indicates that a 4ha lots size is denoted in purple Z3.

Plans demonstrating two potential outcomes for the subject land are provided at ***Appendix A***.

3. Planning Proposal

3.1 PART 1: Objectives or Intended Outcomes

To amend Kempsey Local Environmental Plan 2013 in relation to land at 1023 Crescent Head Road to permit further Rural Residential subdivision.

The intended outcome is two (2) rural residential lots of 4 ha in area. The options are to subdivide the existing dwelling, sheds and dam to be contained within a Western lot and creating an Eastern lot. There is potentially more than one suitable dwelling site within the proposed Eastern allotment which would be well setback from the road front and located within existing clearings.

Alternatively the land could be subdivided along an East-West orientation with the same access proposal. Both potential plans of subdivision are illustrated at **Appendix A.**

The proposed amendment to Kempsey Local Environmental Plan 2013 in relation to Lot 41 DP 1098163 is consistent with the Kempsey Shire Rural Residential Land Release Strategy (Rural Res Strategy) and the Mid North Coast Regional Strategy 2009.

3.2 PART 2: Explanation of Provisions

An amendment to the Kempsey Local Environmental Plan 2013 is required to achieve the desired 2 x 4ha allotments. This would be best served by the application of the a Z3 Minimum Lot Size over all of Lot 41 by way of amendment to Sheet 11 &12 LSZ of the Kempsey Local Environmental Plan 2013 .

The proposed mapping amendment would enable the owners of the land to proceed with their vision for the land, subject to Kempsey Council's consideration of a suitable development application for subdivision.

3.3 PART 3: Justification

3.3.1 Section A: Need for the planning proposal

Is the planning proposal a result of any strategic study or report?

Yes - The Planning Proposal is consistent with the Kempsey Local Growth Management Strategy (LGMS) Rural Residential Component and Map 18 of the Release Strategy Staging.

Kempsey Local Growth Management Strategy – Rural Residential Component

The purpose of the Kempsey Local Growth Management Strategy (LGMS) is to meet Council's obligations to manage population and housing growth, consistent with relevant regional policies. With respect to Crescent Head, the strategy identified the subject area as having good accessibility, strong market demand, moderate infrastructure availability. The constraints of the area were also identified as bushfire, koala habitat, landscape values and flooding (in some

locations). These constraints across the release areas and addressed within the background reports to the strategy.

Map 18 of the adopted Strategy identifies the preferred staging for the Crescent Head Release areas. The subject land is part of a 17ha area specifically identified for 4ha lot sizes, as shown below in Figure 6 below. The subject land represents 8ha of that.

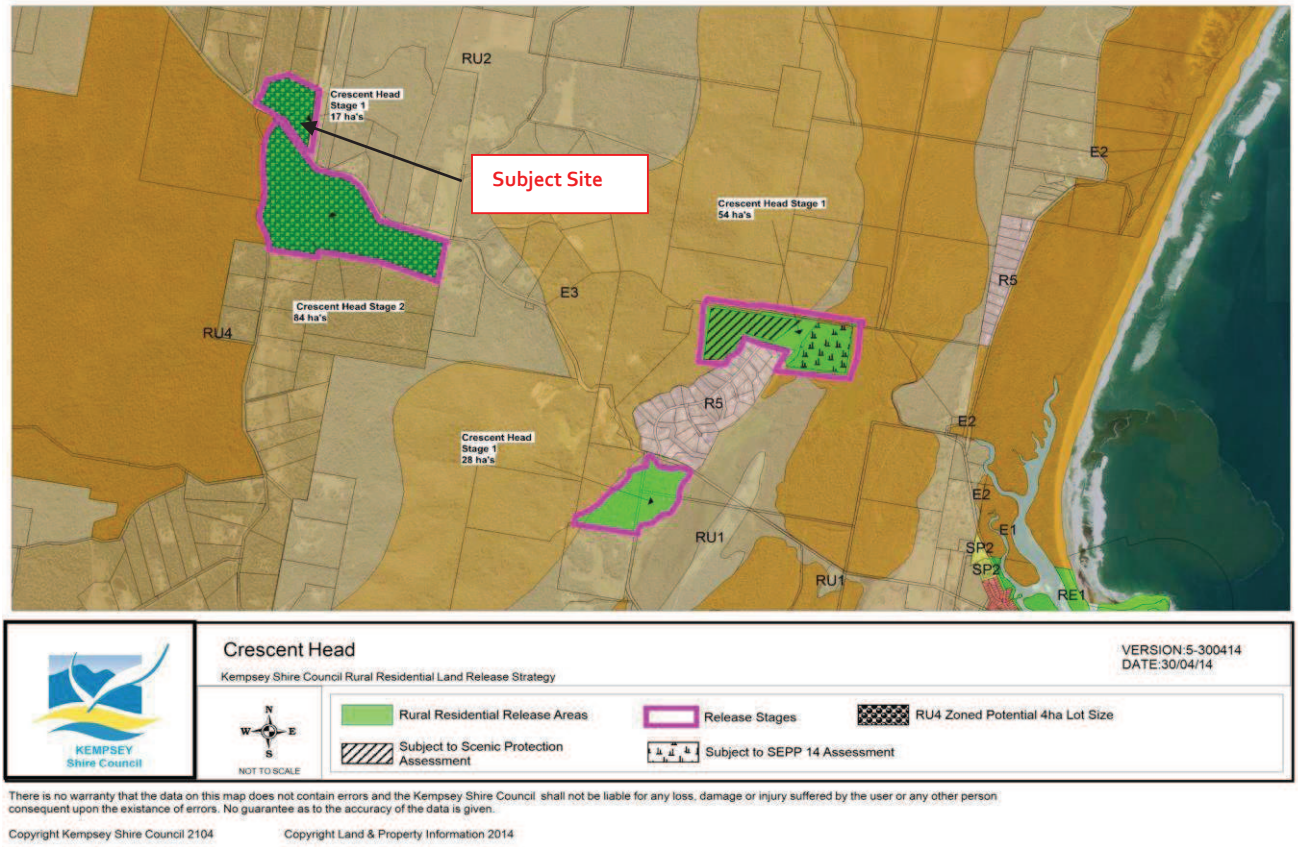

Figure 6: Extract from Kempsey Local Growth Management Strategy Crescent Head Land Release Staging

The Strategy identifies **Locality Specific Issues for the Crescent Head Land Release** Area and specific issues of relevance for consideration include:

- The means of rationalising **access** to facilitate an efficient pattern of subdivision, whilst minimising access points to Crescent Head Road,
- The relationship of the are to potential **fauna** corridor linkages,
- The means by which vegetation retention can be maximised, whilst satisfying **bushfire** requirements,
- The extent of the 1 in 100 year **flood**,
- Unknown and 2B **Koala habitat**,
- Class 5 and small area of Class 2 **Acid Sulfate Soil**.

Access

The existing dwelling on Lot 41 will continue to use the current access at the Western boundary of the land. Any new dwelling located within the Eastern part of the land would utilise the existing right of way access point at the Eastern boundary of the land. As such, no additional access onto Crescent Head road should be necessary.

Fauna / Ecology

The Bionet Atlas does not indicate any threatened species records on the subject land and the land is not identified as part of a fauna corridor or potential linkage.

The park land cleared character of the site is such that it should be possible to identify a locate a future dwelling within existing clearings or that such that it would require very minimal tree removal.

Bushfire

The bushfire hazard assessment concluded that existing cleared areas within the site provide for suitable building envelopes and compliant asset protection zones and BAL levels.

A copy of the Bushfire Hazard Assessment by *Midcoast Building and Environmental* is provided at ***Appendix B.***

Onsite Waste Water Management

The Onsite Sewage Management Assessment by *Midcoast Building and Environmental* recommends that wastewater for the additional lot be treated by Aerated Wastewater Treatment System.

Provision for a 100% reserve area is available for the future lot and additional mitigation measures are recommended including:

- Installation of up-slope surface water (and subsurface) drainage to divert run-on and seepage water from the land application area.
- The soils within the effluent disposal area to be rotary hoed or ripped to a depth of 200mm to improve moisture retention.
- Irrigation areas are to be planted with suitable vegetation to assist in nutrient uptake and improve effluent disposal through evapo-transpiration.

A copy of the On Site Sewage Management Assessment by *Midcoast Building and Environmental* is provided at ***Appendix B.***

1 in 100 year Flood Prone Land

The land is not flood prone and other characteristics of the site lend itself to the smaller lot sizes for rural residential occupation. The site elevation is around RL 20 m AHD. A gully/drainage line passing through the land in a north-west direction but is not part of the Macleay River channels, storage areas or ana-branches and subject to local stormwater flood events only.

Future dwelling site(s) within the Eastern part of the land should be located clear of the area of influence for major storm events.

Kempsey Comprehensive Koala Plan of Management -

The Kempsey Shire Comprehensive Koala Plan of Management (CKPoM) maps the land as 'unknown' in terms of potential Koala habitat. Taking into account the primarily clear nature of the site it is considered possible to locate a dwelling without the need to remove protection tree species such as those identified in the CKPoM.

Acid Sulphate Soils mapping

The land is mapped as Class 5 potential Acid Sulphate soils in the LEP map layers. There are no Class 2 Acid Suphate soils within 500 m of the site. Further, the provisions of Clause 7.1 of the Kempsey LEP 2013 are not triggered as there are no works disturbing 1 tonne or more of soil are proposed nor are any works likely to lower the watertable.

Mid North Coast Regional Strategy 2009

The Planning Proposal is consistent with the Mid North Coast Regional Strategy 2009 as it provides for new housing for the expanding population and proposes new rural-residential development within proximity of an existing settlement.

The Mid North Coast Regional Strategy identifies the site within the Crescent Head Growth Area and states:

"However any new planning for rural residential settlement should focus on land close to an existing urban settlement, away from the coast, away from areas that may in the future have value as urban expansion areas, where significant vegetation clearing would not be required and where current or potential future primary production will not be affected. Protection of primary production and biodiversity values of rural areas will be achieved by limiting settlement and controlling subdivision."

The identified area is consistent with that above in that:

- It is close to existing rural residential settlements along Crescent Head Road, away from the coast and not sufficiently proximate or connected to be an urban expansion area.

- The site vegetation comprises mostly scattered trees, in a parkland cleared setting, consistently maintained & managed. The Planning Proposal will not result in the loss of significant vegetation, biodiversity values or primary production.

- The land is not flood prone and has sufficient area outside the influence of local stormwater flooding during peak storm events.

- Existing sealed road frontage, bus services, electricity, telecommunications and water supply services are available at the frontage of the land along Crescent Head Road.

3.3.2 Is the planning proposal the best means of achieving the objectives or intended outcomes?

Yes – there is no other mechanism available to achieve the objective of 2 x 4ha allotments for the subject site. Council has not indicated a timeframe for a shire wide rezoning to reflect the recommendations of the Strategy and in the interim will consider site specific Planning Proposals consistent with the LGM Strategy.

3.4 Section B: Relationship to strategic planning framework

3.4.1 Is the planning proposal consistent with the objectives and actions of the applicable regional or sub-regional strategy?

a. Does the proposal have strategic merit and

- *Is consistent with a relevant local strategy endorsed by the Director –General or*
- *Is consistent with the relevant regional strategy or Metropolitan Plan or*
- *Can it otherwise demonstrate strategic merit, giving consideration to the relevant section 117 Directions applying to the site and other strategic considerations (e.g. proximity to existing urban areas, public transport and infrastructure accessibility, providing jobs closer to home etc.).*

(i) Local Strategy

Yes – Kempsey Shire Rural Residential Land Release Strategy dated December 2014. The site is identified for rural residential potential and within Stage 1 implementation phase. Specifically described as *RU 4 zoned potential for 4ha minimum lot size.* Refer section 3.2.1 above for discussion of consistency with the Local Strategy.

(ii) Regional Strategy

Yes - Mid North Coast Regional Strategy. The site is identified within the Crescent Head Growth Area.

(iii) 117 Directions

Of the current Section 117 Directions the following are directly relevant to the proposal and/or the subject land and require specific comment.

117 Direction No. 1.2 Rural Zones
117 Direction No. 1.5 Rural Lands
117 Direction No. 2.1 Environment Protection Zones
117 Directive No. 2.2 Coastal Protection
117 Direction No. 3.1 Residential Zones
117 Direction No. 3.4 Integrating Land Use and Transport
117 Direction No. 4.1 Acid Sulphate Soils
117 Direction No. 4.3 Flood Prone Lands
117 Direction No. 4.3 Planning for Bushfire Protection
117 Direction No. 5.1 Implementation of Regional Strategies

The table at ***Appendix C*** provides a summary of the relevant S117 directions and where relevant justifies any inconsistencies.

The key considerations under the S117 Directions for the site and the proposed zone are:

- The Planning Proposal seeks to amend the minimum lot size map (Sheet 11 & 12) consistent with Map 18 of Kempsey Council's adopted Growth Strategy 2014.

- The land is not flood prone and other characteristics of the site lend itself to the smaller lot sizes for rural residential occupation.

- The site is adequately serviced and considered to be appropriate with regard to utilising existing road networks, bus services, and proximity to village services and community facilities at Crescent Head.

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

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

Yes - The natural environment of the site comprises scattered vegetation maintained in a domestic setting. Known hazards relate to bushfire only and this is addressed in the Planning Proposal.

The existing uses, approved uses and likely future uses of land in the vicinity are primarily rural residential in character. We are advised that the adjacent use to the East is a private Orchard and Plant Nursery and the active orchard area is buffered and substantially separated from any future dwelling site by managed forest areas. See Figure 7 below.

Existing services and infrastructure were considered as part of Council's Strategy preparation. The site has frontage to sealed public roads (Unclassified Regional Road RMS Ref 7737), bus services, electricity, telecommunications and water supply along the Crescent Head Road corridor.

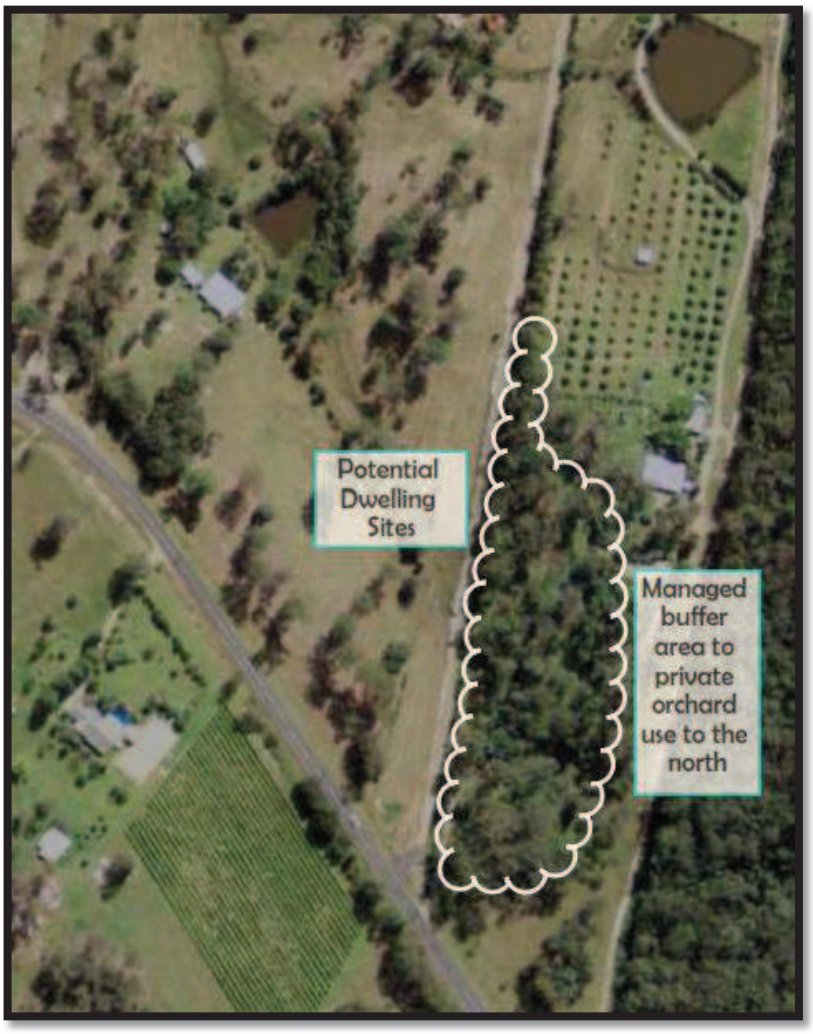

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Figure 7: Existing vegetated buffer to private Orchard/Nursery use

3.4.2 Is the planning proposal consistent with a council's local strategy or other local strategic plan?

Yes - As explain in Section 3.1.3 above.

3.4.3 Is the planning proposal consistent with applicable State Environmental Planning Policies?

Yes - The proposal is consistent with or justifiable as inconsistent with the relevant State Environmental Planning Policies. Refer to **Appendix D** for details.

3.5 Section C: Environmental, social and economic impact

3.5.1 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?

No – The intended outcome of the planning proposal is for 2 x 4ha lots.

The Bionet Atlas does not indicate any threatened species records for the subject land.

Kempsey Shire Council's potential EEC (Endangered Ecological Communities) mapping does not identify any potential EEC on the subject land.

The Kempsey Shire Comprehensive Koala Plan of Management (CKPoM) maps the land as 'unknown' in terms of potential Koala habitat. Taking into account the primarily clear nature of the site it is considered possible to locate a dwelling without the need to remove identified Koala food tree species and as such the proposal is considered consistent with the CKPoM.

It is considered unlikely that any critical habitat, threatened species, populations or ecological communities or their habitats would be adversely affected.

3.5.2 Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

Access, Transport & Traffic	The site has frontage to Crescent Head Road which is an Un-classified Regional Road no. 7737. The frontage to Crescent Head road provides access to local bus services which pass the intersection of the site and Crescent Head Road on regular basis and the site is mid-way between Kempsey township and Crescent Head Village. Existing accesses to the property include one at the western edge serving the existing dwelling and one at the eastern edge serving multiple allotments and the eastern end of the subject land. Bus and sealed road services to Kempsey then link to rail station at Kempsey and national coach services on the Pacific Highway.
Public Domain	No public domain issues have been identified at this juncture.
Utilities	The site has benefit of existing utilities and

	services along the Crescent Head Road corridor. Investigations indicate there is capacity for one additional lot.
Waste (Garbage Service)	The locality is within Council's waste removal service area and any resultant development would be incorporated into that service.
Heritage & Archaeology	No known cultural heritage sites identified.
Soils / Acid Sulphate Soils	The land is mapped as Class 5 potential Acid Sulphate soils in the LEP map layers. No issues anticipated as a result of the Planning Proposal.
Air & Microclimate	N/A
Flora & Fauna	Addressed above.
Noise & Vibration	The subject site contains an existing dwelling located approximately 100m set back from the closest travel lane on Crescent Head Road. The most likely location for the future dwelling is identified in the Bushfire and OSWW assessment reports at Appendix B. The potential future dwelling site for the one additional lot likely to result from the Planning Proposal is set back than the existing dwelling at approximately 300m from the closest travel lane to Crescent Head Road. Considering the distances and topography and low traffic volumes on Crescent Head Road at night times, noise and vibration issues are not anticipated to be an issue.
Natural Hazards Including:	
Bushfire	Bushfire hazard has been assessed refer to **Appendix B.**
Flooding	The land is not classed as Flood Prone. The site elevation is around RL 20 m AHD. A gully/drainage line passing through the land in a north-west direction. Future dwelling site(s) within the Eastern part of the land should be located clear of the area of influence for major storm events.
Slip and Subsidence	No identified subsidence issues.

3.5.3 Has the planning proposal adequately addressed any social and economic effects?

A positive economic benefit is anticipated both in the short term, during construction and longer term, with respect to the local economy and social vibrancy.

3.6 Section D: State and Commonwealth Interests

3.6.1 Is there adequate public infrastructure for the planning proposal?

Yes – Council requirements for large lot residential of 4 ha minimum are addressed by way of provision for on-site sewage management and for on-site water storage for domestic and fire - fighting purposes. Appendix B includes satisfactory assessment reports for both these matters.

Other public infrastructure is available to the land and considered adequate includes overhead mains electricity supply and telecommunications services.

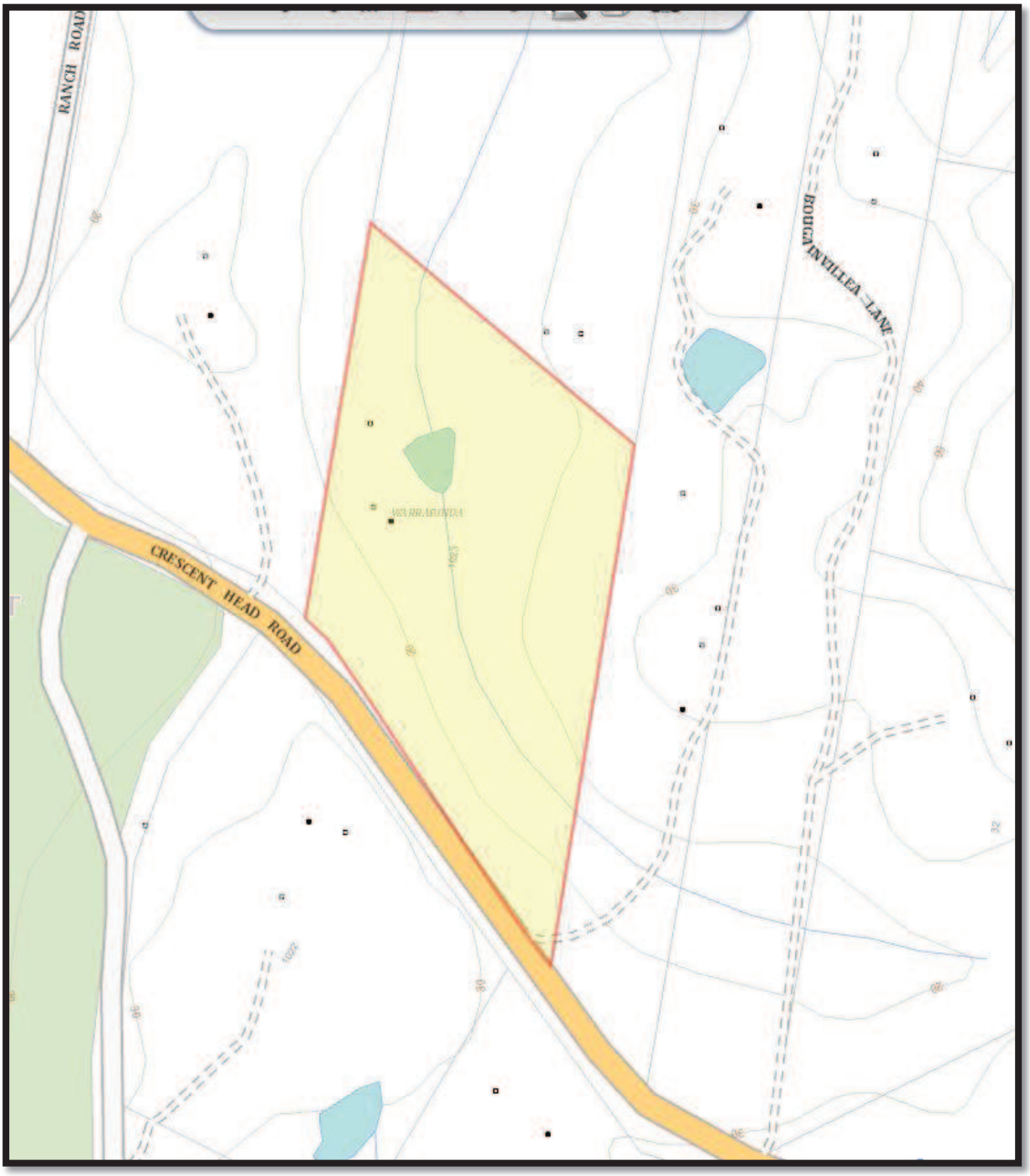
Public road frontage is available to Crescent Head Road, an un-classified regional road and the existing accesses to the site are considered satisfactory.

3.6.2 What are the views of State and Commonwealth public authorities consulted in accordance with the Gateway determination?

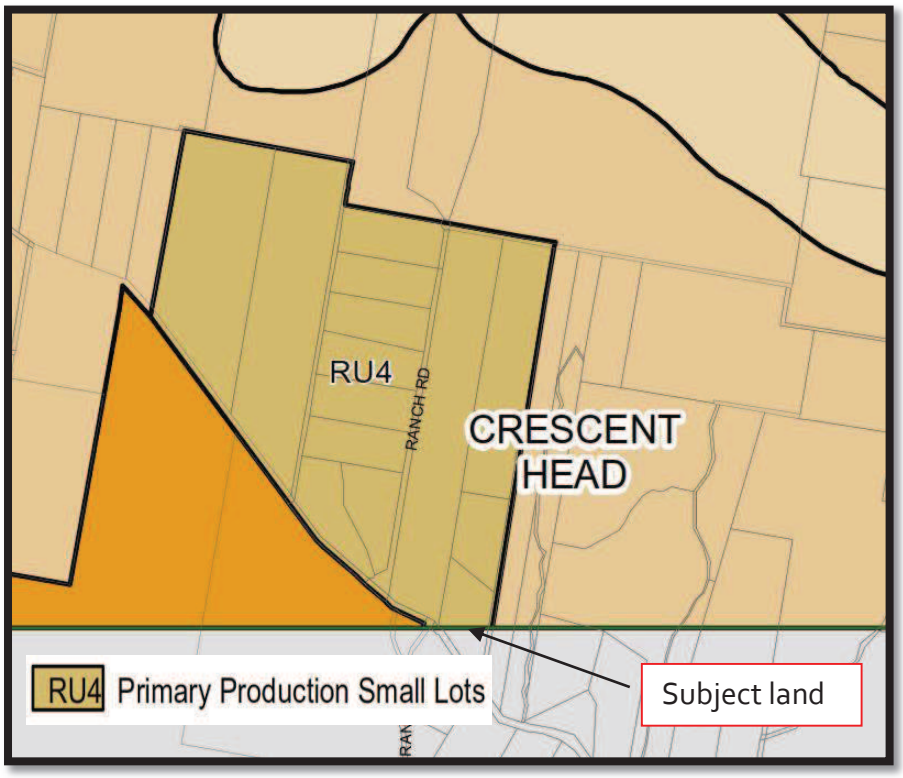
This section is completed following consultation with the State and Commonwealth authorities should the Director General determine to proceed with the Planning Proposal and identifies which authorities are to be consulted with.

Part 4: Mapping

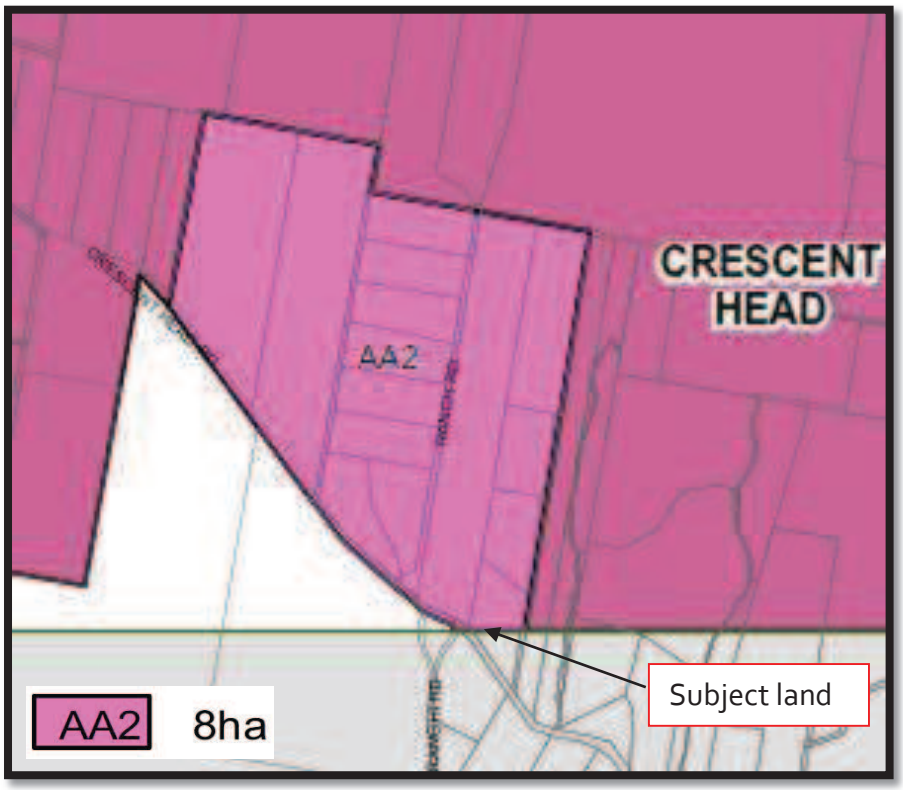
4.1 The land subject to the planning proposal



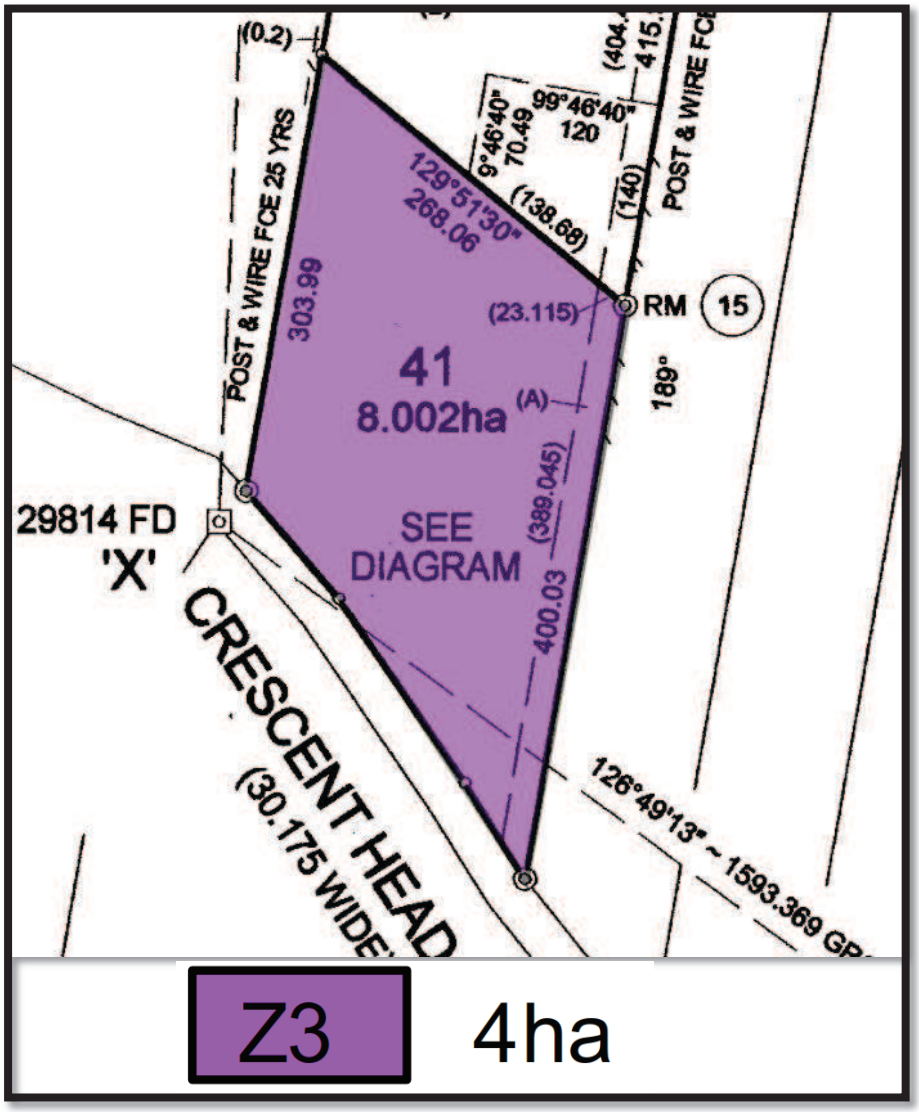
4.2 Current land use zone RU4 Primary Production Small Lots



4.3 Current Minimum Lot Size 8 ha for subdivision and dwellings



4.4 Proposed Minimum Lot Size



Part 5: Community Consultation

Community Consultation will be undertaken in accordance with Council's policy and will include referral to NSW State agencies such as the Rural Fire Service, Office of Environment and Heritage, and Department of Primary industries, along with any additional agencies specified within the Gateway Determination.

Part 6: Project Timeline

The Project Timeline established with the Gateway Determination will be adhered to.

Yours faithfully

Geraldine Haigh
Director & Senior Planner
GEM Planning Projects

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Geraldine@ gemplanningprojects.com.au

APPENDIX A – CONCEPT PLAN INTENDED OUTCOME

Option A – North South subdivision boundary for 2 x 4ha lots (subject to survey)

Source: DP 1098163 LPI SIXMAP

Option B – East West subdivision boundary for 2 x 4ha lots (subject to survey)

Source: DP 1098163 LPI SIXMAP

APPENDIX B – ENVIRONMENTAL ASSESSMENTS

BUSHFIRE AND ON SITE SEWAGE MANAGEMENT REPORTS

Midcoast Building and Environmental	Bushfire Hazard Assessment
Midcoast Building and Environmental	Onsite Sewage Management Assessment

Midcoast
Building and
Environmental

BUSHFIRE HAZARD ASSESSMENT

Proposed Rezoning and then a Subdivision

Lot 41 DP 1098163
No 1023
Crescent Head Road
Crescent Head NSW

CLIENT:

Sue Ashley

Date:

December 2015

41 Belgrave Street, Kempsey NSW 2440 – PO Box 353 Kempsey NSW 2440 – phone 0265631292 – mecham@bigpond.com – ABN 32098436812

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APPENDIX 3 – RFS Upgading of existing buildings

1.0 INTRODUCTION

As requested a Bushfire Risk Assessment has been carried out for a proposed two (2) lot subdivision which includes the rezoning of land known as Lot 41 No 1023 DP 1098163 Crescent Head Road Crescent Head and this report considers two layout options.

The rezoning has been identified in Kempsey's Local Growth Management Strategy.

This report is based on a site assessment carried out on the 27th October 2015.

The report is to demonstrate that the bushfire risk is manageable.

The development would be an integrated development and has a requirement for a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

NOTE

The report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from field survey, experience and has been completed in consideration of the following legislation.

1. Rural Fires Act 1997.
2. Environmental Planning and Assessment Act 1979.
3. Building Code of Australia.
4. Council Local Environment Plans and Development Control Plans where applicable.
5. NSW Rural Fire Services, Planning for Bushfire Protection, 2006. (PfBP, 2006)
6. AS 3959-2009 Construction of Buildings in Bushfire Prone Areas.

The report recognizes the fact that no property and lives can be guaranteed to survive a bushfire attack.

The report examines ways the risk of bushfire attack can be reduced where the rezoning falls within the scope of the legislation.

The report is confidential and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known.

Any such party relies on this report at their own risk.

1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed rezoning/subdivision meets the aims and objectives of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 and has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire; and

- Comply where applicable with AS3959 – 2009.

1.2 Legislative Framework

In NSW, the bushfire protection provisions of the BCA are applied to Class 1, 2, 3, Class 4 parts of buildings, some Class 10 and Class 9 buildings that are Special Fire Protection Purposes (SFPPs).

The BCA references AS3959 – 2009 as the deemed-to-satisfy (DTS) solution for construction requirements in bushfire prone areas for NSW. As per the Rural Fire Service's Fast Fact of 01/10 all development on bushfire prone land in NSW should comply with the requirements of Addendum Appendix 3 and other bushfire protection measures identified within PfBP, 2006.

1.3 Location

The site is located at Lot 41 No 1023 DP 1098163 Crescent Head Road, Crescent Head.

The site is located approximately 11.2km southeast of Kempsey. Travel south from the Kempsey CBD along the Pacific Highway and turn left onto the Crescent Head Road. Travel for 10.5 km till you reach Gary's Way and the subject site is on the corner.

All the above mentioned roads are public sealed roads.

Locality – Crescent Head
Local Government Area – Kempsey Shire Council
Closest Rural Fire Service – Crescent Head
Closest Fire Control Centre – Kempsey

The site location of the proposed rezoning can be seen in **Figure 1** and **Figure 2** below:

Figure 1 – Topographic Map

Figure 2 – Aerial View

1.4 Development Proposal and History

The lot is 8.002 ha and it is proposed to rezone and subdivide Lot 41 into a two lots and as detailed above the proposal is in accordance with Kempsey's Local Growth Management Strategy.

The intended outcome is two (2) rural residential lots of four (4) ha in each.

Option A keeping the existing dwelling, sheds and dam contained within this western lot and to create an eastern lot which has more than one suitable dwelling site set well back from the road front and located within existing clearings.

Option B alternatively subdividing basically along the east-west orientation with the same access proposed for the northern lot.

Option A and Option B can be seen in **Appendix 1**.

With respect to the proposed dwelling the location will not change whether it is Option A or Option B.

However it is noted that the distance to the hazards will change.

2.0 BUSHFIRE HAZARD ASSESSMENT

2.1 Assessment Methodology

Several factors need to be considered in determining the bushfire hazard.

These factors are slope, vegetation type, and distance from hazard, access/egress and fire weather. Each of these factors has been reviewed in determining the bushfire protection measures.

The assessment of slope and vegetation being carried out in accordance with Appendix 2 and Appendix 3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 and Section 2 of AS 3959 - 2009.

2.2 Slope Assessment

Slope is a major factor to consider when assessing the bushfire risk.

The slopes were measured using a Suunto PM-5/360 PC Clinometer.

The hazard vegetation on adjacent land was also identified and the slopes within the vegetation measured.

The proposed new dwelling site can be seen in the Hazard Map ***Figure 3***.

The following table shows the results:

Table 1 – Hazard Vegetation Slopes

Proposed Dwelling	Hazard Aspect	Slope	Upslope/Downslope or Flat
	North	0-5°	Downslope
	East	0°	Flat
	South	0-5°	Downslope
	West	0-5°	Downslope

Existing Dwelling	Hazard Aspect	Slope	Upslope/Downslope or Flat

	North	0-5°	Downslope
	East	0°	Flat
	South	0-5°	Downslope
	West	0-5°	Downslope

2.3 Vegetation Assessment

The vegetation on and surrounding the subject site was assessed over a distance of 140m.

The vegetation formations were classified using the system adopted as per Keith (2004) initially for the Asset Protection Zone calculation and then converting Keith to AUSLIG using Table A3.5.1 of Appendix 3 (2010) for assessment of the Bushfire Attack Level.

2.3.1 Vegetation on and Adjoining/Adjacent to the Subject Lots

Both lots have been cleared and are currently being managed.

To the west of the proposed dwelling adjacent to the dam there is a piece of remnant vegetation approximately 20m wide and 2500m² that for the purposes of the report has been considered as rainforest.
To the north of the proposed dwelling site there is grassland that is currently being managed by the current owner for approximately 60m which then extends into the adjoining property.

The proposed dwelling is to be positioned approximately 30m from the eastern boundary.

The land between the proposed dwelling and the boundary is currently managed and also contains an easement for electrical services.

Beyond this managed land there is the adjoining property which contains an orchard which is currently not being managed. This vegetation has been conservatively considered as woodland.

The area around the existing dwelling is grassland and is currently managed with the exception of the piece of remnant vegetation as noted above to the northeast of the existing dwelling.

The following Table details hazards for the proposed lots:

Table 2 – Hazard Vegetation

Proposed Dwelling	Hazard Aspect	Vegetation
	North	Grassland
	East	Woodland
	South	Grassland
	West	Rainforest

Existing Dwelling	Hazard Aspect	Vegetation
	North East	Rainforest
	East	Grassland
	South	Grassland
	West	Grassland

2.4 Hazard

The hazards are located on the subject lot and also to the north, south, east and west of the subject lot.

The hazard vegetation can be seen in ***Figure 3*** below:

Figure 3 – Hazard Map

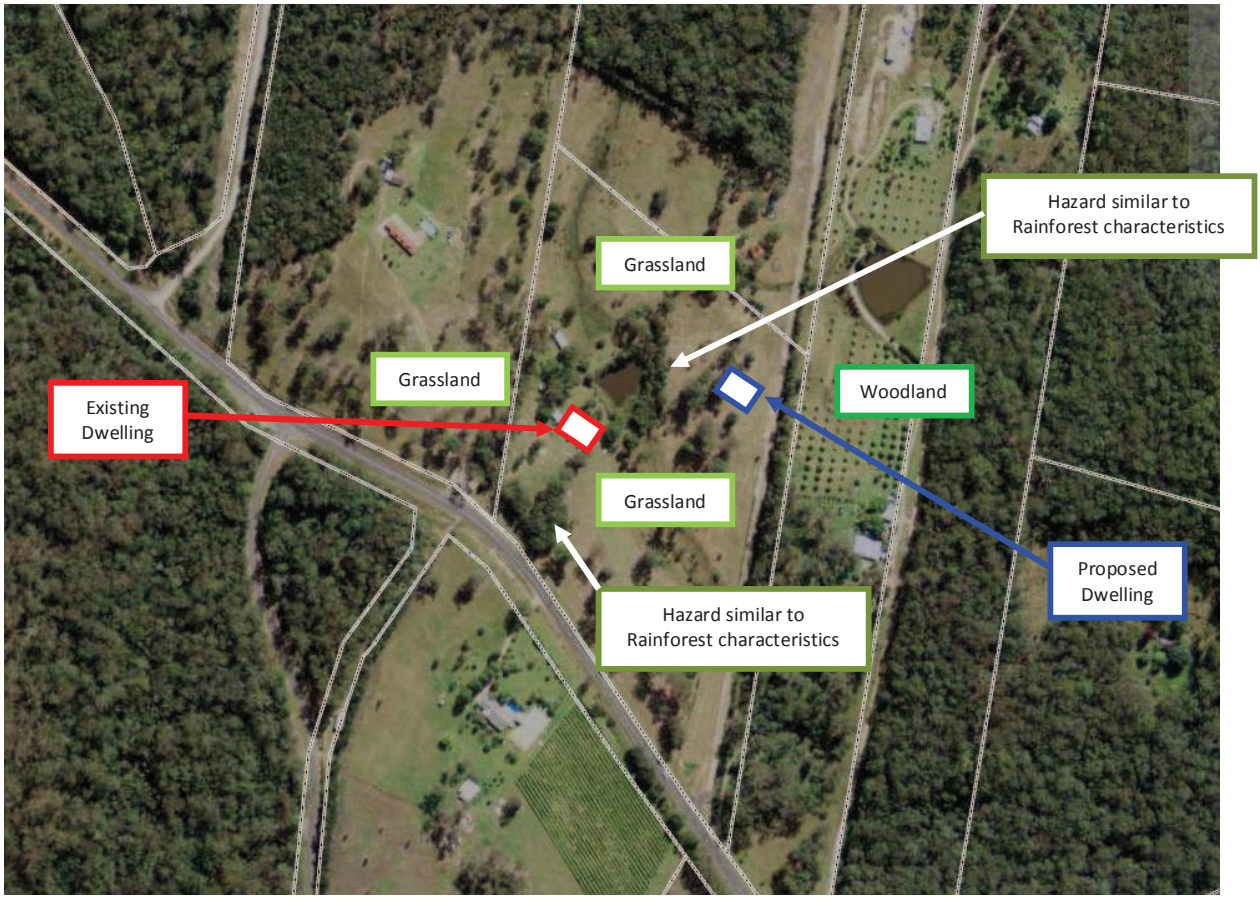


Table 3 – Summary of Hazard Characteristics

Proposed Dwelling Option A	Hazard Aspect	Hazard	Slope	Upslope/Downslope or Flat
	North	Grassland	0-5°	Downslope
	East	Woodland (See *Note 1* below)	0°	Flat/Upslope
	South	Grassland	0-5°	Downslope
	West	Rainforest	0-5°	Downslope

Note 1 - Beyond the managed land to the east there is the adjoining property which contains an orchard which is currently not being managed. This vegetation has been conservatively considered as woodland.

Existing Dwelling Option A	Hazard Aspect	Hazard	Slope	Upslope/Downslope or Flat
	North	North	0-5°	Downslope
	East	Grassland	0-5°	Downslope
	South	Rainforest	0°	Flat/Upslope
	West	Grassland	0-5°	Downslope

Proposed Dwelling Option B	Hazard Aspect	Hazard	Slope	Upslope/Downslope or Flat
	North	Grassland	0-5°	Downslope
	East	Woodland (See *Note 1* above)	0°	Flat/Upslope
	South	Grassland	0-5°	Downslope
	West	Rainforest	0-5°	Downslope

Existing Dwelling Option B	Hazard Aspect	Hazard	Slope	Upslope/Downslope or Flat
	North	North	0-5°	Downslope
	East	Grassland	0-5°	Downslope
	South	Rainforest	0°	Flat/Upslope
	West	Grassland	0-5°	Downslope

2.5 Fire Danger Index

The fire weather for the site is assumed on the worst-case scenario.

This report is in accordance with NSW Rural Fire Services, PfBP, 2006 and Table 2.1 of AS3959 – 2009.

The fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

3.0 BUSHFIRE THREAT REDUCTION MEASURES

3.1 NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006

The following provisions of PfBP 2006 have been identified.

3.1.1 Defendable Space/Asset Protection Zone (APZ)

To ensure that the aims and objectives of NSW Rural Fire Services, PfBP, 2006, are achieved, a defendable space between the asset and the hazard should be provided.

The defendable space provides for, minimal separation for safe fire fighting, reduced radiant heat, reduced influence of convection driven winds, reduced ember viability and dispersal of smoke.

The proposed development is not considered to be subject to the Special Fire Protection Purpose requirements which are applicable to schools, (the proposed development is not a school).

It is recommended that the defendable space be based upon the minimum requirements for Asset Protection Zones as set out in NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006.

Proposed New Dwelling Option A	Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Distance of existing managed land between proposed asset and hazard
	North	Grassland	0-5° Downslope	9m		9m	Approx 60m
	East	Woodland	0° Flat/Upslope	14m		14m	30m
	South	Grassland	0-5° Downslope	9m		9m	Over 100m
	West	Rainforest	0-5° Downslope	9m		9m	Approx 50m

Existing Dwelling Option A	Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Distance of existing managed land between proposed asset and hazard
	North	Rainforest	0-5° Downslope	11m		11m	Approx 40m
	East	Grassland	0-5° Downslope	9m		9m	Min 30m
	South	Rainforest	0° Flat	9m		9m	Min 40m
	West	Grassland	0-5° Downslope	9m		9m	Min 50m

Proposed New Dwelling Option B	Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Distance of managed land between proposed asset and hazard
	North	Grassland	0-5° Downslope	9m		9m	Approx 60m
	East	Woodland	0° Flat/Upslope	14m		14m	30m
	South	Grassland	0-5° Downslope	9m		9m	Over 100m
	West	Rainforest	0-5° Downslope	9m		9m	Approx 50m

Existing Dwelling Option B	Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Distance of existing managed land between proposed asset and hazard
	North	Rainforest Grassland	0-5° Downslope	11m		11m	Approx 40m
	East	Grassland	0-5° Downslope	9m		9m	Min 35m
	South	Rainforest	0° Flat	9m		9m	Min 40m
	West	Grassland	0-5° Downslope	9m		9m	Min 50m

The report assumes that the existing managed areas are to be managed in perpetuity and for the continued management no trees would be lost.

It is acknowledged that if the managed areas are reduced the proposed dwelling would be required to be built to greater Bushfire Attack Level.

3.1.2 Operational Access and Egress

Access will be off Crescent Head Road with a right of carriageway access along the eastern boundary.

The access is existing and services the other dwellings further along the ROW. This proposed dwelling will be positioned approximately 320m along the Right of Way which services another three dwellings.

The access road into the property needs to comply with the following to achieve compliance under PfBP, 2006 with respect to design, if it is considered to become acceptable:

Performance criteria	**Acceptable solution**	**Comment**
The intent may be achieved where:		
Access to properties is provided in recognition of the risk to fire fighters and/or evacuating occupants	At least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road	The ROW is existing and the property access road is less than 200m. The access road to the existing property is less than 200m.
The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles All weather access is provided	Bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge)	N/A N/A
• Road widths and design enable safe access for vehicles	• A minimum carriageway width of four metres for rural residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint) • In forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six meters at the passing bay. • A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches. • Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius. • Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.	Can comply with minimum carriageway N/A Can comply Can comply Can comply.

	• The minimum distance between inner and outer curves is six metres. • The crossfall is not more than 10 degrees. • Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.	Can Comply Can comply Can Comply

3.1.3 Services - Water, Gas and Electricity

As set out in Section 4.1.3 of NSW Rural Fire Services**,** *Planning for Bushfire Protection*, 2006, developments in bushfire prone areas must maintain a water supply for fire fighting purposes.

A Water Supply for Fire Fighting of 20,000 litres in accordance with Fast Fact 3/08 and Planning for Bushfire Protection, 2006 is to be provided, see **Appendix 2.**

Any tanks will require the following at a minimum.

- A suitable connection for fire fighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a Gate or Ball valve is provided.
- Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic.
- Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole.
- Above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters.
- All above ground water pipes external to the building are metal including and up to any taps.
- Pumps are shielded.

The use of heavy-duty hoses with wide spray nozzles is recommended with hoses able to reach all parts of a dwelling.

Electricity supply will be connected to the subject property. To assist in providing protection in a bushfire event, in consideration of the possible loss of electricity, a secondary power supply or a petrol/diesel pump should be provided. This secondary supply is to be adequately shielded from the fire.

Bottled gas supplies are to be installed and maintained in accordance AS 1596. Metal piping is to be used. All fixed gas cylinders are to be kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation. If gas cylinders need to be located close to the building, the release valves are to be directed away from the building and at least 2 metres away from any combustible material so they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.

It is considered that the relevant acceptable solutions as provided for by Section 4.1.3 of NSW Rural Fire Services, PfBP, 2006 are capable of being complied with and as such the intent for the provision of services can be achieved.

3.1.4 Landscaping

Landscaping is a major cause of fire spreading to buildings, and therefore any landscaping proposed will need consideration when planning, to produce gardens that do not contribute to the spread of a bushfire.

When planning any future landscaping surrounding any proposed building or subdivision, consideration should be given to the following:

- The choice of vegetation – consideration should be given to the flammability of the plant and the relation of their location to their flammability and on going maintenance to remove flammable fuels.
- Trees as windbreaks/firebreaks – Trees in the landscaping can be used as windbreaks and also firebreaks by trapping embers and flying debris.
- Vegetation management – Maintain a garden that does not contribute to the spread of bushfire.
- Maintenance of property – Maintenance of the property is an important factor in the prevention of losses from bushfire.

Appendix 5 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006, contains standards that are applicable to the provision and maintenance of landscaping. Any landscaping is to comply with the principles contained in Appendix 5 of NSW Rural Fire Services, PfBP, 2006.

Compliance with Appendix 5 of NSW Rural Fire Services, PfBP, 2006, will satisfy the intent of the bush fire protection measures that are applicable to the provision of landscaping.

3.2 Construction of Buildings

3.2.1 General

The deemed-to-satisfy provisions for construction requirements are detailed in AS 3953-2009. The relevant Bushfire Attack Level and Construction Requirements have been determined in accordance with Appendix 3 (2010) of PfBP, 2006 and Section 2 of AS 3959-2009. The additional construction requirements with respect to A3.7 of Appendix 3 (2010) of PfBP (2006) are required to be added to the standards for each Bushfire Attack Level.

3.2.2 Vegetation

To complete the assessment under AS 3959-2009 the vegetation, as originally assessed in accordance with Keith, has to be converted to AUSLIG.

The following table shows the conversion:

Table 4 – Summary of Vegetation Characteristics

Vegetation Classification – (Keith, 2004)	Vegetation Classification – (AUSLIG 1990)
Grassland	Grassland
Forest	Forest

3.2.3 AS3959 – 2009 Construction of Buildings in Bushfire Prone Areas

The following construction requirements in accordance with AS 3959 – 2009 Construction of Buildings in Bushfire Prone Areas is required for the bushfire attack categories.

Bushfire Attack Level (BAL)
BAL - LOW No construction requirements under AS 3959-2009
BAL - 12.5
BAL - 19
BAL - 29
BAL - 40
BAL - FZ

Table 5

Proposed New Dwelling Option A	**Hazard Aspect**	**Vegetation Type**	**Slope**	**IPA**	**OPA**	**Total APZ Required (IPA + OPA)**	**Distance of existing managed land between proposed asset and hazard**	**AS 3959-2009 Bushfire Attack Level (BAL)**
	North	Grassland	0-5° Downslope	9m		9m	Approx 60m	BAL - Low
	East	Woodland	0° Flat/Upslope	14m		14m	30m	BAL – 12.5
	South	Grassland	0-5° Downslope	9m		9m	Over 100m	Bal -Low
	West	Rainforest	0-5° Downslope	9m		9m	Approx 50m	BAL -12.5

Existing Dwelling Option A	**Hazard Aspect**	**Vegetation Type**	**Slope**	**IPA**	**OPA**	**Total APZ Required (IPA + OPA)**	**Distance of existing managed land between proposed asset and hazard**	**AS 3959-2009 Bushfire Attack Level (BAL)**
	North	Rainforest	0-5° Downslope	11m		11m	Approx 40m	BAL -12.5
	East	Grassland	0-5° Downslope	9m		9m	Min 30m	BAL– 12.5
	South	Rainforest	0° Flat	9m		9m	Min 40m	Bal 12.5
	West	Grassland	0-5° Downslope	9m		9m	Min 50m	BAL -12.5

Proposed New Dwelling Option B	Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Distance of managed land between Proposed Asset and hazard	AS 3959-2009 Bushfire Attack Level (BAL)
	North	Grassland	0-5° Downslope	9m		9m	Approx 60m	Bal -Low
	East	Woodland	0° Flat/Upslope	14m		14m	30m	BAL – 12.5
	South	Grassland	0-5° Downslope	9m		9m	Over 100m	BAL - LOW
	West	Rainforest	0-5° Downslope	9m		9m	Approx 50m	BAL -12.5

Existing Dwelling Option B	Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Distance of existing managed land between Proposed Asset and hazard	AS 3959-2009 Bushfire Attack Level (BAL)
	North	Rainforest	0-5° Downslope	11m		11m	Approx 40m	BAL – 12.5
	East	Grassland	0-5° Downslope	9m		9m	Min 35m	BAL - LOW
	South	Rainforest	0° Flat	9m		9m	Min 40m	BAL -12.5
	West	Grassland	0-5° Downslope	9m		9m	Min 50m	BAL - Low

It is recommended that the existing dwelling be upgraded for ember protection in accordance with the minimum requirements of the Rural Fire Services **Appendix 3**.

4.0 REQUIREMENTS

The following requirements are considered to be integral to this bushfire risk assessment:

1. An Asset Protection Zones as detailed in Section 3.1.1 of this report are to be provided.
2. The proposed rezoning is to comply with the relevant performance criteria/acceptable solutions as provided for by Section 4.1.3 of NSW Rural Fire Services**,** PfBP, 2006.
3. Adopt landscaping principals in accordance with Section 3.1.4 of the NSW Rural Fire Services, PfBP, 2006.
4. The proposed dwelling is to be constructed to the requirements of AS3959 and the existing dwelling is upgraded in accordance with the recommendations of the report..

5.0 CLAUSE 44 CONSIDERATIONS

Table 6

Environmental/Heritage Feature	Comment
Riparian Corridor	Not considered in this report
SEPP 14 – Coastal Wetland	Not considered in this report
SEPP 26 – Littoral	Not considered in this report
SEPP 44 – Koala Habitat	Not considered in this report
Areas of geological interest	Not considered in this report
Environment protection zones	Not considered in this report
Land slip	Not considered in this report
Flood prone land	Not considered in this report
National Park Estate or other reserves	Not considered in this report
Threatened Species, populations, endangered ecological communities and critical habitat	Not considered in this report
Aboriginal Heritage	Not considered in this report

6.0 CONCLUSION

It is suggested that with the implementation of this report, and its recommendations, that the bushfire risk is manageable and will be consistent with the acceptable bushfire protection measure solutions, provided for in Section 4.3.5 of NSW Rural Fire Services, PfBP, 2006.

The report provides that the required APZ's can be achieved for the proposed new dwelling and be constructed to comply with the requirements of AS 3959-2009 and Appendix 3 of PfBP, 2006, Construction of Buildings in Bushfire Prone Areas.

This report is however contingent upon the following assumptions and limitations:

Assumptions

1. For a satisfactory level of bushfire safety to be achieved, regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.

2. There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.

3. It is assumed that the building works will comply with the DTS provisions of the BCA including the relevant requirements of Australian Standard 3959 – 2009.

4. The proposed dwelling is constructed and maintained in accordance with the risk reduction strategy in this report.

5. The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.

Limitations

1. The data, methodologies, calculations and conclusions documented within this report specifically relate to the proposed rezoning and proposed dwelling and must not be used for any other purpose.

2. A reassessment will be required to verify consistency with this assessment if there is any alterations and/or additions, or changes to the risk reduction strategy contained in this report.

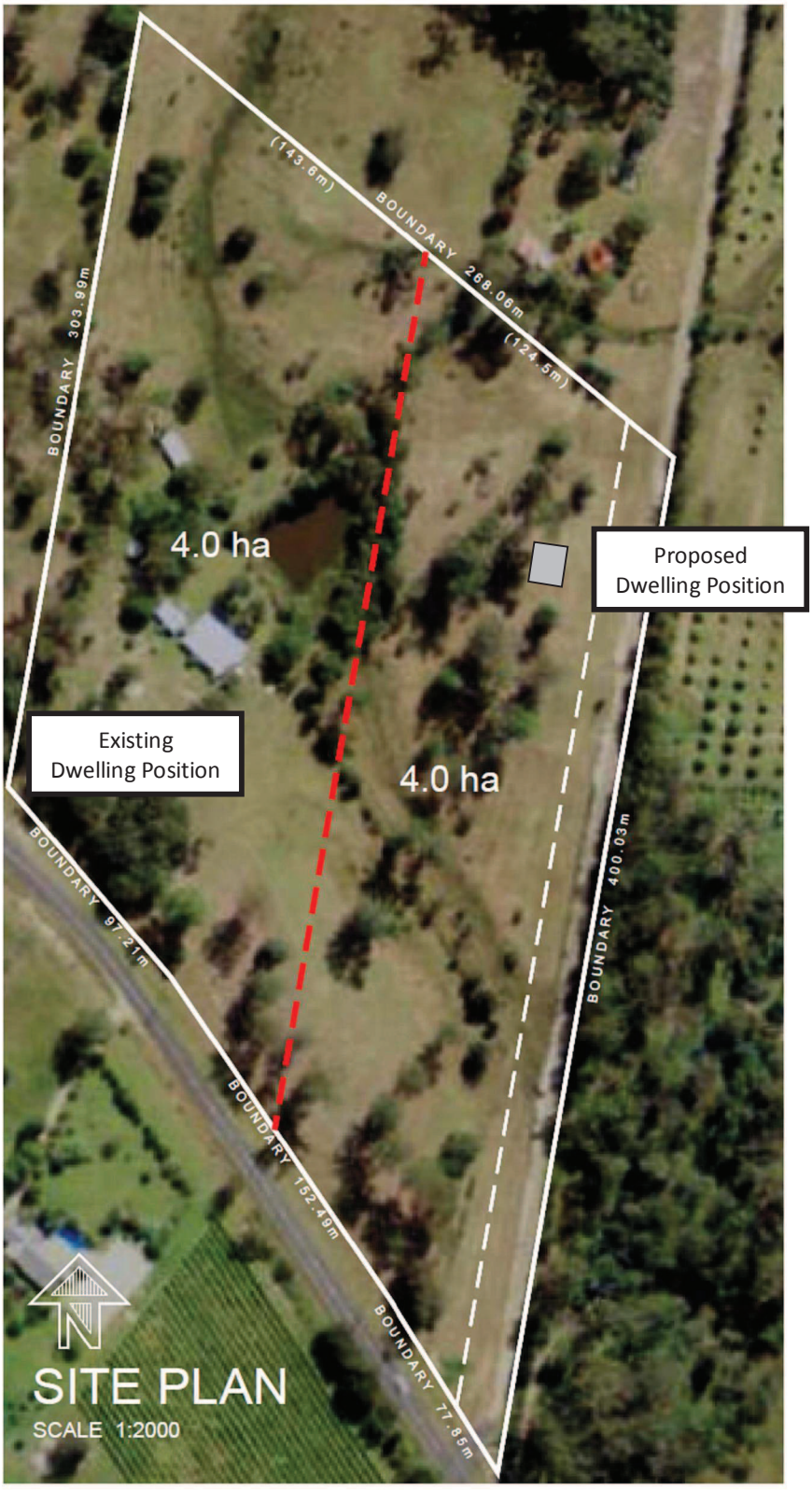
Regards

Tim Mecham
Midcoast Building and Environmental

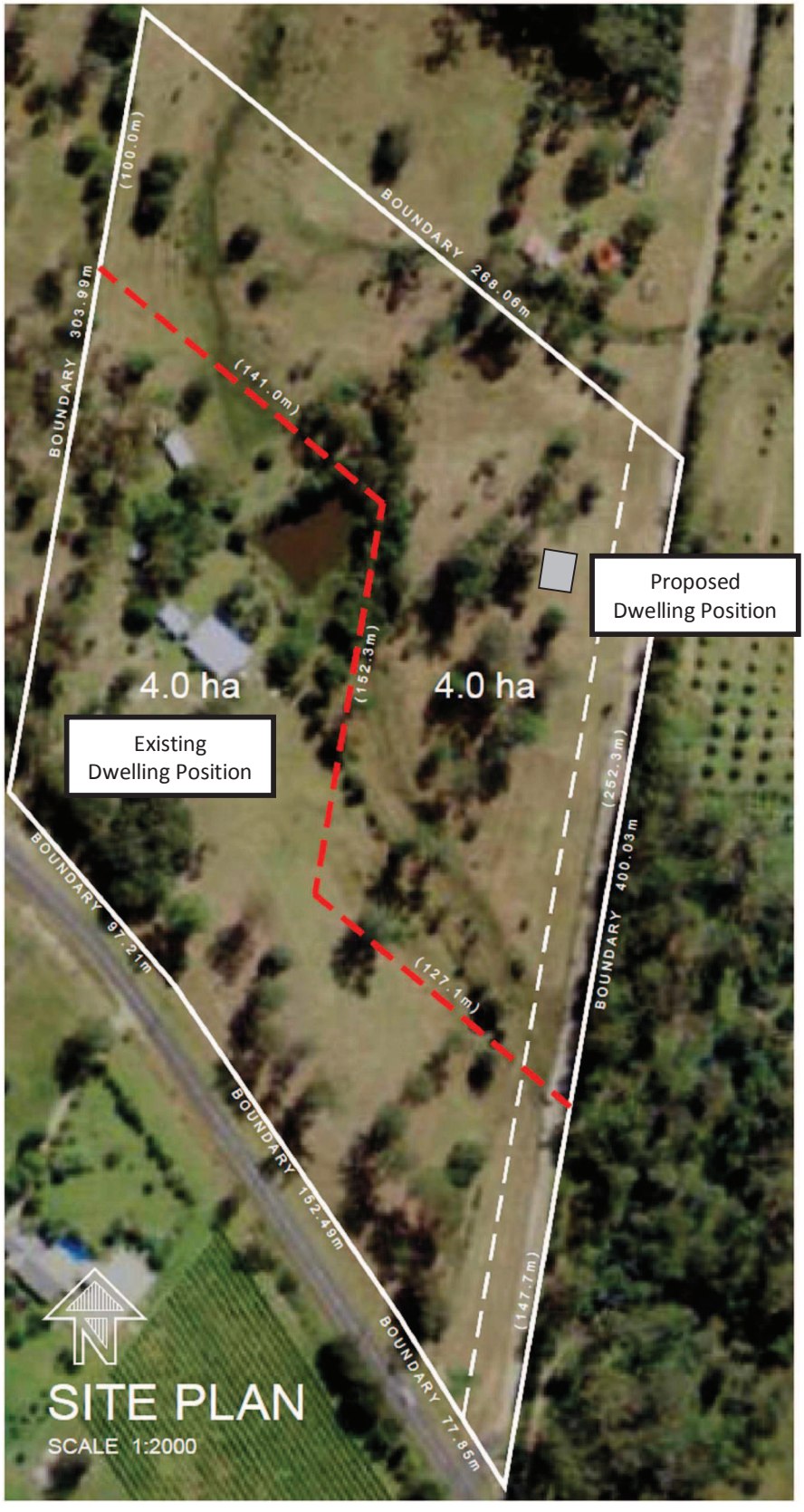
7.0 REFERENCES

NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2001
NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2006
AS 3959-2009 ***Construction of Buildings in Bushfire Prone Areas***
Keith David 2004, Ocean ***Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT***, Department of Environment and Conservation
NSW State Government (1997) Rural Fires Act 1997
NSW Rural Fire Service – ***Guideline for Bushfire Prone Land Mapping 2002***

APPENDIX 1: Rezoning Layout Option A



Rezoning Layout Option B



APPENDIX 2 – Water Supply for Fire Fighting Purposes

NSW RURAL FIRE SERVICE

COMMUNITY RESILIENCE FAST FACTS 3/08

Water Supply for Fire Fighting Purposes

This Fast Fact clarifies the NSW Rural Fire Service (RFS) position on the requirement for water supplies for development in bush fire prone areas.

Adequate water supply is critical for effective fire fighting. Where a non reticulated water supply is provided or the reticulated water supply is deemed inadequate, an additional onsite stored supply of water for fire fighting will be required. Non reticulated water is a supply that is not piped by council or a water authority and includes rainwater, ground water or surface water.

In the past, additional water sources could take the form of a static water supply (SWS) or a dedicated water supply. The RFS has traditionally required that an alternate supply of water be 'dedicated' for fire fighting purposes in line with the provisions of *Planning for Bush Fire Protection* 2006 (PBP). Dedicated water implies that the supply shall be in the form of a tank of water and has traditionally not included swimming pools or dams. The term also implies that the supply must be isolated from other domestic water supplies and used solely for fire fighting purposes.

From a practical fire fighting point of view, any source of available water will be utilised during a bush fire event and dedicated tanks are not always the most practical option.

In light of the above and the increasing demand for sustainable and efficient use of our water resources, the RFS will no longer require water to be solely 'dedicated' for fire fighting purposes and will allow more flexibility in satisfying the water requirements of PBP. As such, water holding structures such as tanks, swimming pools and dams can be considered.

Therefore, the RFS conditions addressing water supply will no longer refer to a 'dedicated' water supply and will simply state that a supply of water shall be provided for 'fire fighting purposes'. This position will also apply to previously issued conditions referring to dedicated supplies. As such, the water source can be used for other purposes and allow for the circulation of fresh water. The onus will be on the property owner to provide suitable water supply arrangements for fire fighting that meet the RFS requirements and ensure that any water sources are maintained at the appropriate capacity (see Table 4. of PBP).

Water capacities, access (tanker or pedestrian) for fire fighters and the provision of appropriate connections should also be considered when determining if a proposed water source is suitable. Furthermore, the property owner is encouraged to place a 'SWS' sign in a visible location on the street front.

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APPENDIX 3 – Upgrading of Existing Buildings

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Best Practice Guide to Bush Fire Protection

- Upgrading of Existing Buildings -

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INTRODUCTION

Bush fire is a major challenge for the community. It has been a natural part of our landscape for thousands of years and remains an ever-present threat. Due to historic settlement patterns and the need to provide housing for people, development has occurred in areas that are bush fire prone placing lives and property at risk.

The NSW Rural Fire Service (RFS) has a statutory obligation to protect life, property and the environment through fire suppression and fire prevention. Improved land use planning and construction of buildings in bush fire prone areas are intrinsic to the fire management strategies of the RFS.

Through a working relationship with local Councils and the NSW Department of Planning, the RFS has been able to refine and implement bush fire protection for new developments through the NSW planning system. Since the introduction of these planning and building regulations in August 2002, all new development on bush fire prone land in NSW must comply with the requirements of *Planning for Bush Fire Protection 2006* and Australian Standard 3959-2009 – *Construction of buildings in bushfire-prone areas* (AS3959).

This means that people who are building or renovating have a clear direction on how to design and build their homes to be better protected from the impacts of bush fires. The types of protection measures include asset protection zones (vegetation management), access, landscaping, water supply, building design and construction. These measures assist building survival during a bush fire. They also contribute to the safety of fire-fighters and members of the community occupying buildings during the passage of a bush fire front.

Unfortunately, the majority of buildings in bush fire prone areas pre-date these regulations, meaning that most existing houses are at an increased risk of damage or loss from a bush fire.

With this in mind, the RFS has developed a practical guide for those living in bush fire prone areas who may wish to take the opportunity to upgrade their existing building to increase it's resilience from bush fire attack.

The guide provides a range of options that homeowners may wish to consider in determining the level of protection appropriate for their circumstances and risk. These include minimal protection

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measures such as basic ember proofing, establishment of Asset Protection Zones (APZs) to higher level protection measures such as re-building or upgrading construction elements of the building.

While this guide identifies protection methods, it is vital that such building enhancements are considered in conjunction with any upgrade works undertaken, consideration of other bush fire protection measures such as maintenance of Asset Protection Zones, services and landscaping

The guide is not intended to be a comprehensive bush fire assessment of the risk to your property or an indication of compliance with *Planning for Bush Fire Protection 2006* and AS3959-2009. In this regard, home owners are advised to seek professional advice with regards to further upgrades or reconstruction to improve their resistance to bush fire attack.

For further assistance, details regarding suitably qualified consultants can be found on the RFS website www.rfs.nsw.gov.au

IS UPGRADING MANDATORY?

Upgrading of existing elements of the building to Planning for Bush Fire Protection is not mandatory. However, in the interests of achieving a better bush fire outcome, the RFS strongly recommends improvement of existing elements including upgrade of buildings.

Anyone whose land is bush fire prone should have regard to this document for practical guidance in protecting your property against bush fire attack. For all new developments on bush fire prone land, following the Development Application process or the Exempt and Complying Development process, the advice in this document should be applied as a minimum standard to the existing situation. This is in addition to any other bush fire protection measures that may be required by the development consent or complying development certificate.

These upgrading measures will contribute to making your home safer against the impact of the different elements of attack in the event of a bush fire; however, they form only part of the solution. Undertaking routine property maintenance and preparing a Bush Fire Survival Plan are other important parts to your bush fire protection and survival.

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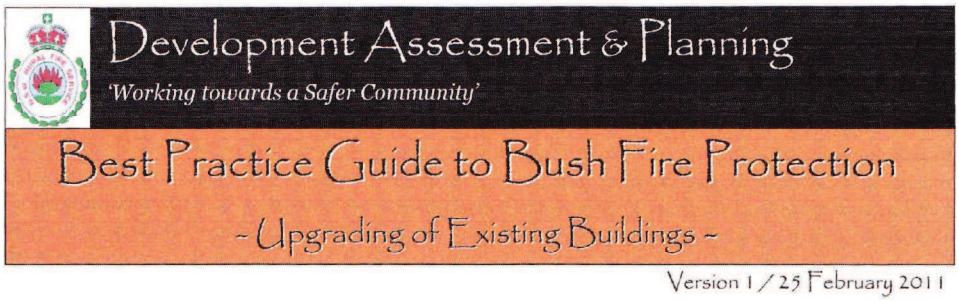

UPGRADE PROVISIONS

85% of houses are lost from ember attack. The following provisions are designed to give existing buildings improved protection from ember attack during a bush fire event. Ember attack can occur over distances greater than 100 metres from the bush fire front. Any gaps, cracks or areas where embers and fuel can lodge (leaves, twigs, debris), significantly reduces a building's resistance to bush fire attack.

To mitigate against ember attack you should consider the minimal upgrades as detailed in the table below. Additional protection measures may also be considered and this will be dependent on the individual circumstances of the building commensurate with the level of threat from bush fire attack. The potential level of threat to the property from bush fire attack should also be taken in to account when deciding what level of protection should be used. Factors to be taken in to consideration include the isolation of the development and how easily you can react in the event of a bush fire.

Owners are cautioned that existing buildings may contain materials made from asbestos or have painted surfaces that contain lead. These materials should be handled in accordance with appropriate guidelines.

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BUILDING ELEMENT	MINIMAL PROTECTION MEASURES	ADDITIONAL PROTECTION MEASURES
GENERAL	Seal all gaps (>3mm) around the house (excluding subfloor) with: ▪ appropriate joining strips; ▪ flexible silicon based sealant; or ▪ mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.	Install a bush fire sprayer system. (Please contact a bush fire consultant or relevant industry expert to discuss options)
		Seal all gaps (>3mm) around the house (excluding subfloor) with: ▪ appropriate joining strips; ▪ flexible silicon based sealant; or mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.
WALLS	Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding when they are being replaced for maintenance or other reasons.	Replace wall materials with non-combustible materials
		Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding.
SUBFLOOR	Removal of combustible materials and keeping areas clear and accessible.	Enclose subfloor with non-combustible material.
DOORS	Install weather strips, draught excluders or draught seals at the base of side-hung doors.	Replace external doors with non-combustible or solid timber doors with minimum thickness of 35mm.
		Replace or over-clad parts of door frames less than 400mm above the ground, decks and similar elements or fittings with non-combustible material.
		Install weather strips, draught excluders or draught seals at the base of side-hung doors.
VENTS & WEEPHOLES	Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.	Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.
ROOFS	Seal around roofing and roof penetrations with a non-combustible material.	Replace fascia and roof materials with non-combustible materials.
		Seal around roofing and roof penetrations with a non-combustible material.
	Install sarking with a flammability index of not more than 5 beneath existing roofing when it is being replaced for maintenance or other reasons. If installed, gutter and valley leaf guards shall be non-combustible.	Install sarking with a flammability index of not more than 5 beneath existing roofing. If installed, gutter and valley leaf guards shall be non-combustible.
WINDOWS	Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows	Installing appropriately tested shutters to doors and windows; or Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and windows
		Replacing glass with toughened or laminated safety glass
		Replace overhead glazing with 'grade a' safety glass
EXTERNAL STRUCTURES		Exernal structures to be located >10 metres from the main dwelling.
DECKING		Replace decking with non-combustible material

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OTHER REQUIREMENTS

ASSET PROTECTION ZONES

Development on bush fire prone land requires suitable separation from the bush fire hazard. This separation is referred to as an asset protection zone (APZ) and should be located wholly within the development property.

The APZ separates the building from the hazard. It is designed to minimize the presence of fuels, which could burn in a fire. Therefore, the impact of direct flame contact, radiant heat and ember attack on the development is reduced.

In order to ensure appropriate levels of safety, the RFS recommends that an APZ is always provided. Where a building has been newly developed or alterations and additions have been undertaken, recommended levels of construction are reliant upon the ongoing maintenance of the APZ. In this regard, the suitability of the design and construction of the building will be significantly compromised should the APZ not be maintained or implemented as intended.

APZ should be managed in accordance with section 4.1.3 and Appendix 5 of '*Planning for Bush Fire Protection 2006*' and the NSW Rural Fire Service's document *Standards for asset protection zones*.

SERVICES

During major bush fire events, the preparedness of the dwelling and its occupants may be seriously jeopardised with the loss of basic services, particularly water and electricity.

Adequate water supply is critical for any firefighting operation, particularly where property protection is envisaged. A reticulated water supply should be provided which is easily accessible and located at regular intervals. Where no reticulated water supply is available, a water supply of 5,000L reserve (i.e. water tank or dam) dedicated to firefighting purposes should be installed and maintained.

Electricity services should be located so that the possibility of ignition of the surrounding bushland or fabric of the buildings is limited. Regular inspection of the electricity lines should be undertaken to ensure they are not impacted by branches.

NSW RURAL FIRE SERVICE

Development Assessment & Planning

'Working towards a Safer Community'

Best Practice Guide to Bush Fire Protection

- Upgrading of Existing Buildings -

Version 1 / 25 February 2011

The location of gas services should vent facing away and not lead to the ignition of surrounding bushland or the fabric of the buildings.

LANDSCAPING

Vegetation can burn during a bush fire. With this in mind, careful attention must be paid to species selection, their location relative to their flammability, avoidance of continuity of vegetation (horizontally and vertically), and ongoing maintenance to readily remove flammable fuels (leaf litter, twigs and debris).

Homeowners are advised to contact their local Council before undertaking any work that involves modifying or removing existing trees.

The following additional information relating to landscaping is available at www.rfs.nsw.gov.au:

1. Standards for Asset Protection Zones
2. Appendix 5 of *Planning for Bush Fire Protection 2006*

CONTACT US

For more information please visit www.rfs.nsw.gov.au or contact:

NSW Rural Fire Service - Development Assessment & Planning

Phone: 8741-5175

Email: development.assessment@rfs.nsw.gov.au

Fax: 8741-5433

NSW RURAL FIRE SERVICE

ONSITE SEWAGE MANAGEMENT ASSESSMENT

Proposed Rezoning and then a Subdivision

Lot 41 DP 1098163
No 1023
Crescent Head Road
Crescent Head

CLIENT:

Sue Ashley

DATE:

December 2015

41 Belgrave Street, Kempsey NSW 2440 – PO Box 353 Kempsey NSW 2440 – phone 0265631292 – fax 0265624851 – ABN 32098436812

1.0 INTRODUCTION

This report has been prepared on behalf of the owners on the subject site for a proposed subdivision on land known as No 1023 Lot 41 DP 1098163 Crescent Head Road Crescent Head.

The proposal is to subdivide the eight hectare lot into two x four (4) hectare lots. There is a dwelling already existing on the lot and therefore this report is to show that a new dwelling on the proposed new lot can comply with AS/NZS 1547-2012 On-site domestic-wastewater management.

There are two planning options in regards to the subdividing of the lot that are considered in this report however the proposed new dwelling position in Option A and Option B are the same, see **Appendix 1**.

The report contains an assessment of soil and site conditions and provides recommendations for the most suitable types of on-site sewage management systems that could be utilized.

Site investigations were carried out on the 1st September 2015 to determine site and soil conditions.

The site/soil assessments, design details and calculations have been carried out in accordance with the following technical and regulatory documents:

- AS/NZS 1547-2012 On-site domestic-wastewater management.
- NSW Government Environment and Health Protection Guidelines - On-site Sewage Management for Single Households.

NOTE

This report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from the field survey and experience.

The report recognizes the importance of the correct installation of onsite sewage management systems, coupled with ongoing appropriate and regular maintenance in ensuring that satisfactory environmental health outcomes are obtained and maintained into the future.

The report is confidential and the writer accepts no responsibility of whatsoever nature, to third parties who use this report, or part thereof is made known.

Any such party relies on this report at their own risk.

2.0 Site Description

The allotment of land that is the subject of this report is situated within the Kempsey Shire Council Area, which is on the Mid North Coast of NSW.

The site is located at No 1023 Lot41 DP 1098163 Crescent Head Road, Crescent Head.

The site is located approximately 11.2km southeast of Kempsey. Travel south from the Kempsey CBD along the Pacific Highway and turn left onto the Crescent Head Road. Travel for 10.5 km till you reach Gary's Way and the subject site is on the corner.

All the above mention roads are public sealed roads.

Figure 1 and **Figure 2** below show the site location.

Figure 1 –Topographical Map

Figure 2 – Aerial Photograph

3.0 History and Proposed Development

The subject site is approximately 8.002 hectares in size.

It is proposed to subdivide the Lot to make two (2) separate lots being approximately four (4) hectares each.

There are two subdivision planning options which can be seen in **Appendix 1**.

4.0 Site Assessment

The following table outlines the major site features relevant to on-site sewage management.

Table 1: Site Assessment Results

SITE FEATURE	DESCRIPTION	LIMITATION
Climate	Annual rainfall – 1431mm (Crescent Head BOM) Annual pan evaporation – 1597mm (BOM)	Moderate
Flood/inundation potential	Given the possible dwelling positions it is not anticipated that there will not be any flooding or localized storm water inundation issues for the site and associated infrastructure.	Minor
Exposure	The aspect of the site provides for high levels of wind and sun exposure	Minor
Slope	The site slopes towards the gully from every direction on the lot.	Minor
Landform	The site has a gully running from south west to north east thought the centre which feeds a dam	Minor
Run-on & Seepage	Given the nature of the soil there is likely to be run-off unless measures are not implemented	Moderate
Erosion Potential	No signs of erosion at present.	Minor
Drainage	The site has good drainage with no pooling.	Minor
Fill	There is no evidence of fill in the area assessed for onsite sewage management	Minor
Buffer Distances	Buffer distances are achievable, refer to ***Table 2***	Minor
Land Area	Sufficient to cater for proposed systems as the proposed lot is 4 hectares	Minor
% Rocks and /or Outcrops	There were no rocks or rock outcrops viewed during the site assessment	Minor

There are minor limitations to onsite sewage management and the relationships of rainfall to evaporation, and run-on & seepage from the disposal area have been identified as moderate.

The above limitations will require attention in the design of the onsite sewage management system.

5.0 Soil Assessment

Soil samples were taken at sites determined to represent the soil profiles that would be expected to exist on the subject lot. Given that the entire disposal area site was expected to have a relatively homogenous soil type four (4) test pits were examined, these pits were considered representative of the expected location of the onsite sewage management system.

See **Appendix 2.**

The test pits were excavated to a depth of approximately 800mm. Observations of soil characteristics were made and noted with soil samples being taken from test pit one (1).The soil samples that have been taken are considered to be representative of the various soil profiles on the site.

Samples were analysed for a range of characteristics relevant to on-site sewage management. Soil permeability was established using field textural classification techniques.

Field observations indicated soil conditions over the site consist of three (3) horizons being:

- Top soil (Profile A) – 0mm to 125mm
- Profile B – 125mm to 350mm
- Profile C – 350mm plus

Field observations indicated that the soils within the study area generally consist of silty clay topsoil above a medium clay with a heavy clay layer extending below to a depth greater than 800mm.

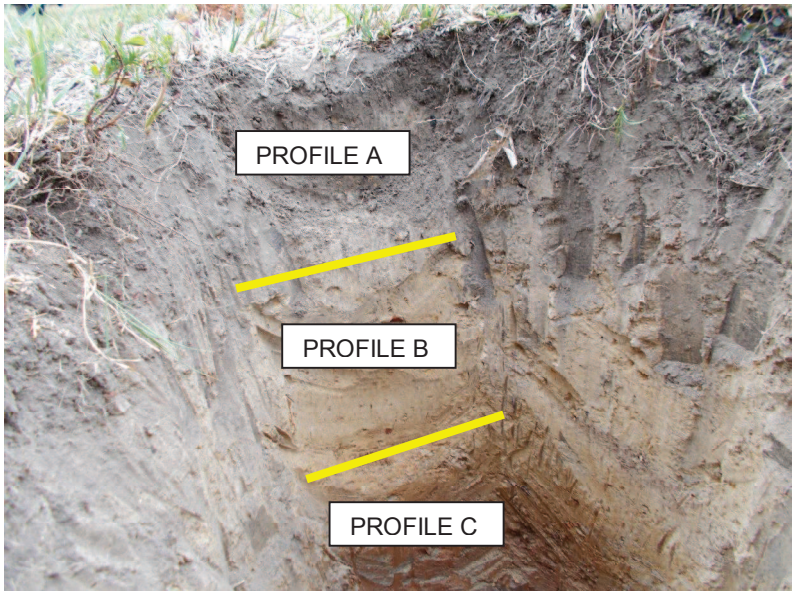
Field observation and soil analysis information is presented in **Appendix 3**.

Generally the top soil, (Profile A), was a very dark brown silty clay. Profile A had a smooth texture with some, (<20%), small course fragments with a sub-angular blocky ped structure and an estimated clay content of 40 to 50%.

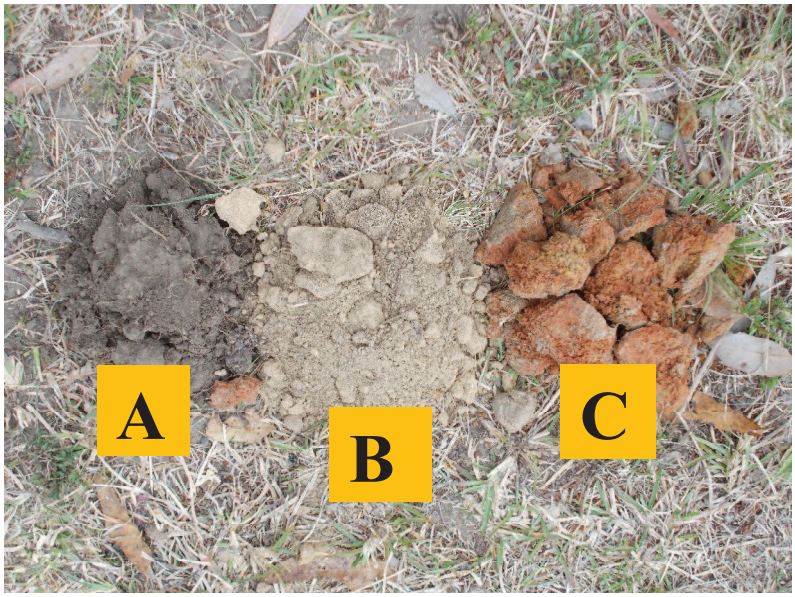
Profile B was underlain by a yellowish brown medium clay. Profile B had a smooth texture with some, (<20%), small course fragments with a sub angular blocky ped structure and an estimated clay content being 40-55%.

Profile C was underlain by a red heavy clay. Profile B had a smooth texture with a few, (<20%), small course fragments with a sub angular blocky ped structure and an estimated clay content being >50%.

Photograph 1: Showing Test Pit 1



Photograph 2: Showing the 3 Soil Profiles from Test Pit 1



The following table outlines the major soil features relevant to on-site sewage management with the characteristics of all test pits were very similar and therefore one sample was used for the detailed assessment.

Table 2: Soil Assessment Results

SOIL FEATURE	DESCRIPTION	LIMITATION
Depth to bedrock/hardpan	Bedrock/hardpan was not encountered in any test pits	Minor
Depth to water table	The elevation of the subject land is such that the water table	Minor

	would be expected to be greater than 6m below ground level.	
Soil permeability (Category)	Profile A – (silty clay) Profile B – (medium clay) Profile C – (heavy clay)	Profile A - Minor limitation Profile B - Moderate limitation Profile C - Moderate limitation
Soil structure	Profile A - Sub angular Blocky Profile B - Sub angular Blocky Profile C - Sub angular Blocky	Profile A - Minor Profile B - Minor Profile C- Minor
Course fragments%	Profile A – less than 20% Profile B – less than 20% Profile C – less than 20%	Minor Minor Minor
pH	Profile A – 6.1 Profile B – 6.0 Profile C – 5.9	Minor Minor Minor
Electrical conductivity	Profile A – 0.00 Profile B – 0.00 Profile C – 0.00	Minor Minor Minor
Dispersability (Emerson Class)	Profile A – 3 Profile B – 2 Profile C – 3	Moderate Moderate Moderate

For the proposed systems soil permeability and dispersability were identified as moderate limitations to the irrigation system.

The above limitations will require attention in the detailed design of onsite sewage management systems.

6.0 Waste Water Characteristics and Generation

Having regards to the domestic nature of the occupation of the proposed subdivision it is considered that low strength effluent will be generated following treatment.

Assumed characteristics of effluent which requires disposal would therefore be as follows:

Table 3: Effluent Characteristics

PARAMETER	STRENGTH
Total Nitrogen	<50mg/L
Total Phosphorus	<10mg/L
BOD	<40mg/L
TDS	<500mg/L

For the purposes of this report the volume of wastewater which is predicted to be produced is provided for in ***Table 4*** below.

It has been assumed that standard water reduction measures will be installed as a result of compliance with the BASIX requirements.

Table 4: Estimation of Effluent Generation

NUMBER OF BEDROOMS	NUMBER OF PERSONS	EFFLUENT – PERSON LITRES/PER DAY	PREDICTED EFFLUENT GENERATION - LITRES/DAY
3	5	120 L	600 L
5	7		840 L

It is therefore considered that a total daily effluent production rate from the above table should be applied to the determination of the minimum onsite effluent disposal requirements for any new dwelling on the proposed lots dependant on the number of bedrooms.

7.0 System Design Assumptions

The following design assumptions have been adopted for the purposes of investigating system design options.

Table 5: Design Parameters

DESIGN PARAMETER	DESIGN ASSUMPTION
Soil Permeability	0.06 m/d
Hydraulic Loading - Number of persons	5 persons (3 Bedroom Dwelling) 7 persons (5 Bedroom Dwelling)
Hydraulic Loading - Expected Wastewater Quantity	120 L/p/d
Crop Factor	0.75
Rainfall	1431mm
Design Irrigation Rate (DIR)	17mm/week

It is noted that the permeability of the soils on the subject site is such that the soil is generally unsuited to absorption based disposal systems.

For the purposes of this report a system with secondary treatment has been considered as the soil is a constraining issue. A design irrigation rate (DIR) of 17mm/week was adopted in consideration of soil improvement before and during installation. In regard to subsurface irrigation the site will need to import top soil to provide the 250mm required.

8.0 On-site Sewage Management System

Based on the above site assessment, the type of treatment proposed for the effluent, and the likely quantity and quality of wastewater to be generated it is considered that the site is suitable for disposal of effluent by the following.

8.1 Primary and Secondary Treatments

An Aerated Wastewater Treatment System then to surface or subsurface irrigation.

8.2 Disposal Area, Irrigation

8.2.1 Surface /Subsurface Irrigation Systems (Secondary Treatment)

Either a below or above ground system would need to be constructed.

The irrigation area is to be planted with suitable vegetation (shrubs or lawns) to assist in nutrient uptake and improve effluent disposal through evapotranspiration.

All storm water is to be directed away from the disposal area. This includes the stormwater from any proposed dwelling and any ground water run-off.

The irrigation area sizing is based on hydraulic loading without consideration of a nutrient balance calculation.

It is considered nutrient build up in soil within the effluent disposal area will be minimised due to the natural filtration process that occurs in clay soils. Plantings in the irrigation area will also help with the nutrient uptake.

Irrigation Area Required

- **For 5 persons (3 bedroom dwelling) a minimum irrigation of 331m² is required for spray irrigation and subsurface irrigation**. **Design calculations are presented in** Appendix 4 **of this report.**
- **For 7 persons (5 bedroom dwelling) a minimum irrigation of 463m² is required for spray irrigation and subsurface irrigation**. **Design calculations are presented in** Appendix 4 **of this report.**

These areas are based on a DIR of 17mm per week (see **Appendix 4**).

(i) Spray Irrigation Area

Spray-irrigation systems shall:

(a) Distribute the effluent evenly in the designated area;

(b) Control the droplet size, throw and plum height of the sprinkler system so that the risk of aerosol dispersion and likelihood of wind drift distributing any effluent beyond the designated area is negligible.

(c) Have warnings, complying with AS 1319 or NZS/AS 1319, at the boundaries of the designated area in at least two places, clearly visible to property users, with wording such as 'Recycled Water- Avoid Contact- DOT NOT DRINK';

(d) Meet the application disinfection criteria, see 5.4.2.5.1; and

(e) Be provided with buffer area to ensure that any potential spray drift is absorbed within the appropriate setback distances.

(f) The main irrigation line is to be buried.

Improvement of the soil within the irrigation area is to be carried out to ensure no run-off. The soil should be rotary hoed or ripped to a depth of 200mm and lime or gypsum added, (at a rate of 200g/m²).

This will also raise the pH and improve the emersion class rating. The provision of garden beds, benched areas and importing absorbent soils are likely to be required to ensure that any run-off is in accordance with Appendix M of Australian Standard 1547 – 2012.

Components of this system would include:

- A designated surface irrigation area.
- Irrigation area to contain suitable vegetation to assist effluent disposal through evapotranspiration.
- The positioning of the disposal area is to comply with the requirements of Kempsey Shire Council.
- The installation of the irrigation area is to comply with the Kempsey Shire Councils technical standards.
- The design and construction of surface irrigation areas is to comply with Appendix M of Australian Standard 1547 – 2012.
- The proposed irrigation area is to be benched when required to ensure a slope of less than 10%. A stormwater diversion system needs to be installed to divert stormwater from irrigation area.

The irrigation area sizing is based on hydraulic loading without consideration of a nutrient balance calculation. It is considered that nutrient build up in the soil within the effluent disposal area will be minimized due to the natural filtration process that occurs in clay soils. Plantings in the irrigation area will also help with the nutrient uptake.

The positioning of the irrigation area is to be determined on site however an indicative position is nominated in **Appendix 2.**

(ii) Subsurface Irrigation Area

Sub surface irrigation will require the importation and the necessary measures to ensure there is no loss of top soil.

Sub-surface systems include:

- **Shallow subsurface drip irrigation**

Shallow subsurface drip irrigation shall be installed at 100-150 depth into 150 to 250mm of top soil in grassed or other suitably vegetated areas. Secondary treated effluent shall be distributed from a system of pressure compensating drip emitters into the topsoil layer.

- **Covered subsurface drip irrigation**

In systems using subsurface drip irrigation, effluent shall be applied directly to the surface of the soil under a cover of mulch or other approved cover material, which shall be held in place by durable bird resistant mesh netting pinned securely to the ground surface. Secondary treated effluent shall be distributed from pressure compensating drip emitters to achieve effective coverage of the design area.

Components of a sub-surface system would include:

- A designated subsurface irrigation area.
- Irrigation area to contain suitable vegetation to assist effluent disposal through evapotranspiration.
- The positioning of the disposal area is to comply with the requirements of Kempsey Shire Council.
- The installation of the irrigation area is to comply with the Kempsey Shire councils technical standards.
- The design and construction of subsurface irrigation areas is to comply with Appendix M of Australian Standard 1547 – 2012.

All irrigation systems shall be designed to ensure that effluent is not applied at rates which exceed the absorption capacity of the soil. Care shall be taken to ensure that the application rate does not lead to:

(a) Adverse effects on soil properties and plant growth through excess salt accumulation in the root zone during extended dry periods;

(b) Harmful long term environmental effects to the soil of the land application system or the adjacent surface water and ground water; or

(c) Increased risk to public health from surface ponding in the land application area or channelling or seepage beyond the land application area.

All irrigation systems shall be designed to promote evapotranspiration. The irrigation area is to be planted with suitable vegetation (shrubs or lawns) to assist in nutrient uptake and improve effluent disposal through evapotranspiration.

Care shall be taken to ensure that the irrigation is well planted with plant species that are:

(d) Water tolerant;

(e) Appropriate for site conditions; and

(f) Planted at an appropriate density for evapotranspiration.

All stormwater is to be directed away from the disposal area.

This includes the stormwater from any proposed dwelling and any ground water run-off.

The positioning of the irrigation area is to be determined on site.

8.3 Buffer Distances

Given the size of the subject lot and the flexibility which exists for the positioning of an onsite effluent disposal area it is considered that appropriate buffer zones can be provided.

It is recommended that the buffer distances be provided in accordance with the following table:

Table 6: Recommended Buffer Distances for Onsite Sewage Management

SYSTEM	BUFFER DISTANCES
All Systems	• 100m to permanent surface waters (rivers, creeks, lakes etc.). • 250m to domestic ground water supplies • 40m to other waters (farm dams, intermittent creeks/drainage depressions, drainage channels etc.)
Surface Spray Irrigation Systems	• 6m between irrigation area and property boundaries/driveways if area up gradient and 3m if down gradient • 15m to dwellings or other buildings • 3m to paths and walkways • 6m to swimming pools
Surface Drip/Trickle Irrigation Systems Shallow Subsurface Irrigation Systems	• 6m between irrigation area and property boundaries/driveways, swimming pools, dwellings and buildings if area up gradient and 3m if down gradient

8.4 Reserve Area

Over time the operation and performance of disposal area can become compromised by the effects of wastewater on the soil characteristics within the disposal area.

In accordance with AS 1547-2012 a reserve area of 100% of the design area shall be available on site for future use if required.

8.5 Mitigation Measures

The following mitigation measure is necessary to ensure the sustainability of the recommended onsite sewage management system:

- Installation of up-slope surface water (and subsurface) drainage to divert run-on and seepage water from the land application area. The diversion system is to be designed and constructed in accordance with the technical requirements of Kempsey Shire Council.
- The soils within the effluent disposal area are to be rotary hoed or ripped to a depth of 200mm to improve moisture retention.

9.0 Recommendations

With the introduction of the new system the following recommendations should be implemented:

- Be water wise.
- Use low sodium washing detergents.
- Use 'septic friendly' cleaning agents.

10.0 Conclusion

The site and soil characteristics of the allotment are suitable for the use of the onsite sewage management systems identified in this report.

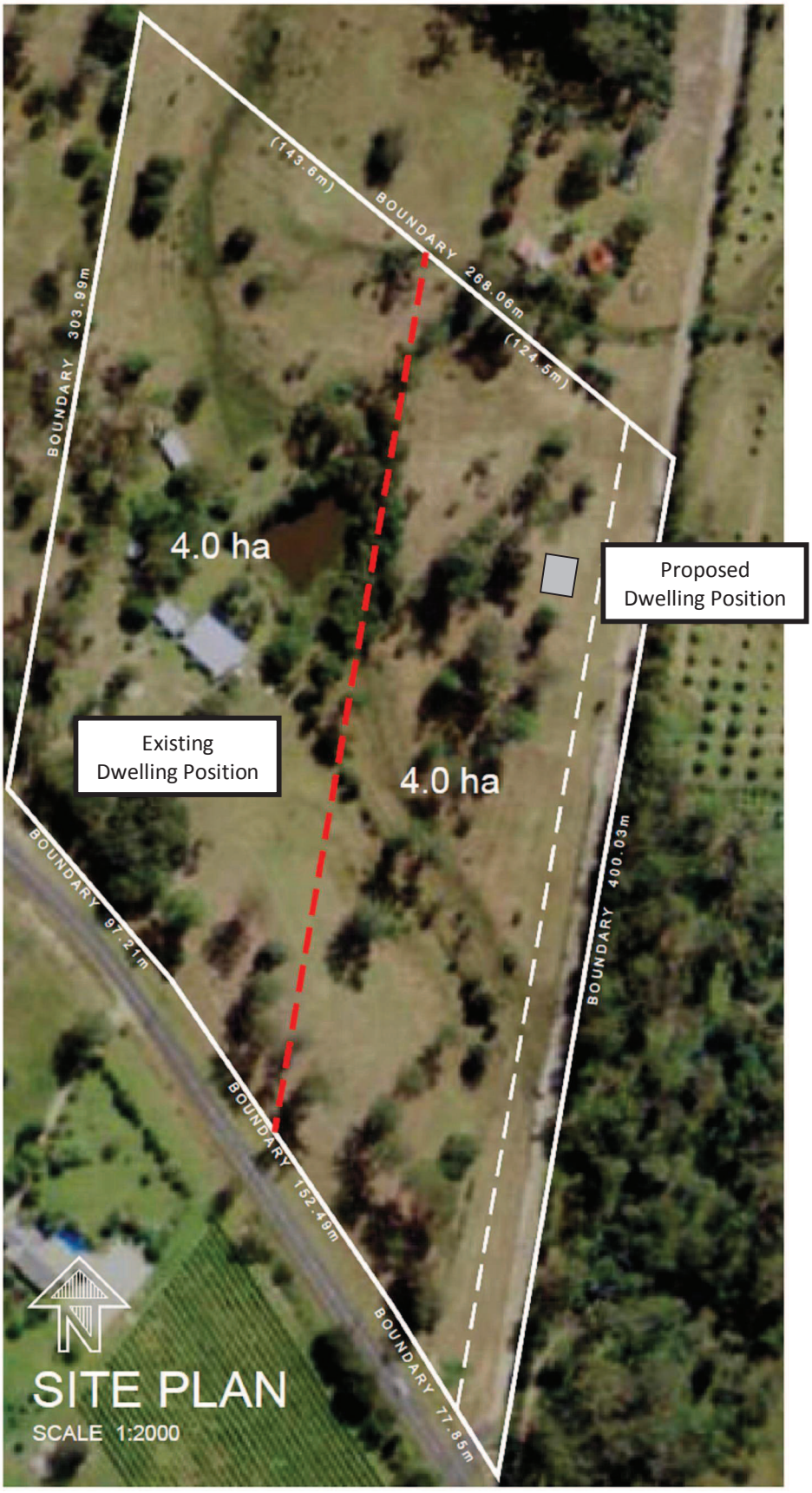
In this regard the Mitigation Measures outlined in Section 8.5 of this report must be implemented in respect of the system utilized.

It must however be recognized that the sustainable disposal of effluent is heavily reliant upon the correct installation of onsite sewage management systems coupled with ongoing appropriate and regular maintenance if satisfactory environmental health outcomes are obtained and maintained into the future.

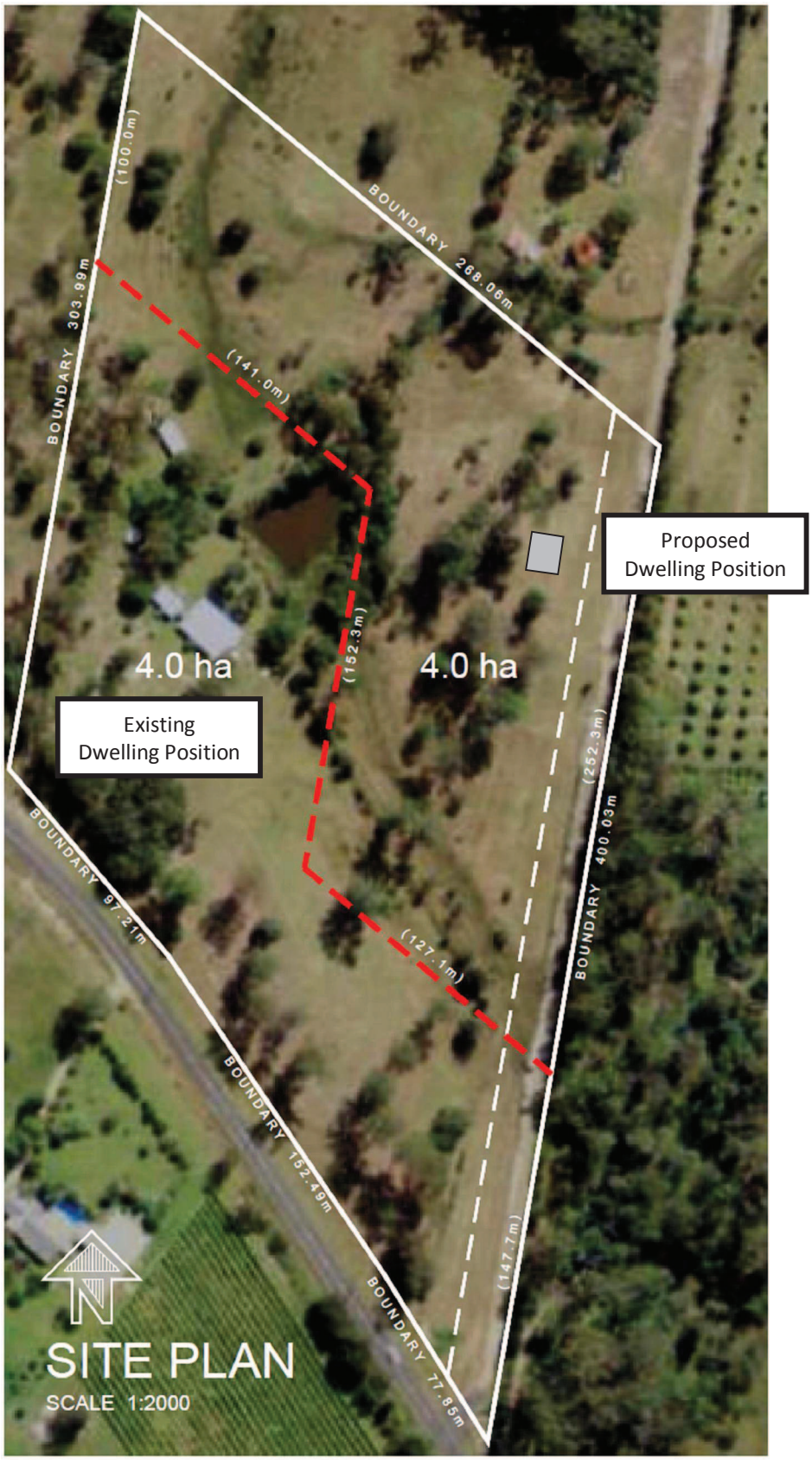
Regards

Tim Mecham
Midcoast Building and Environmental

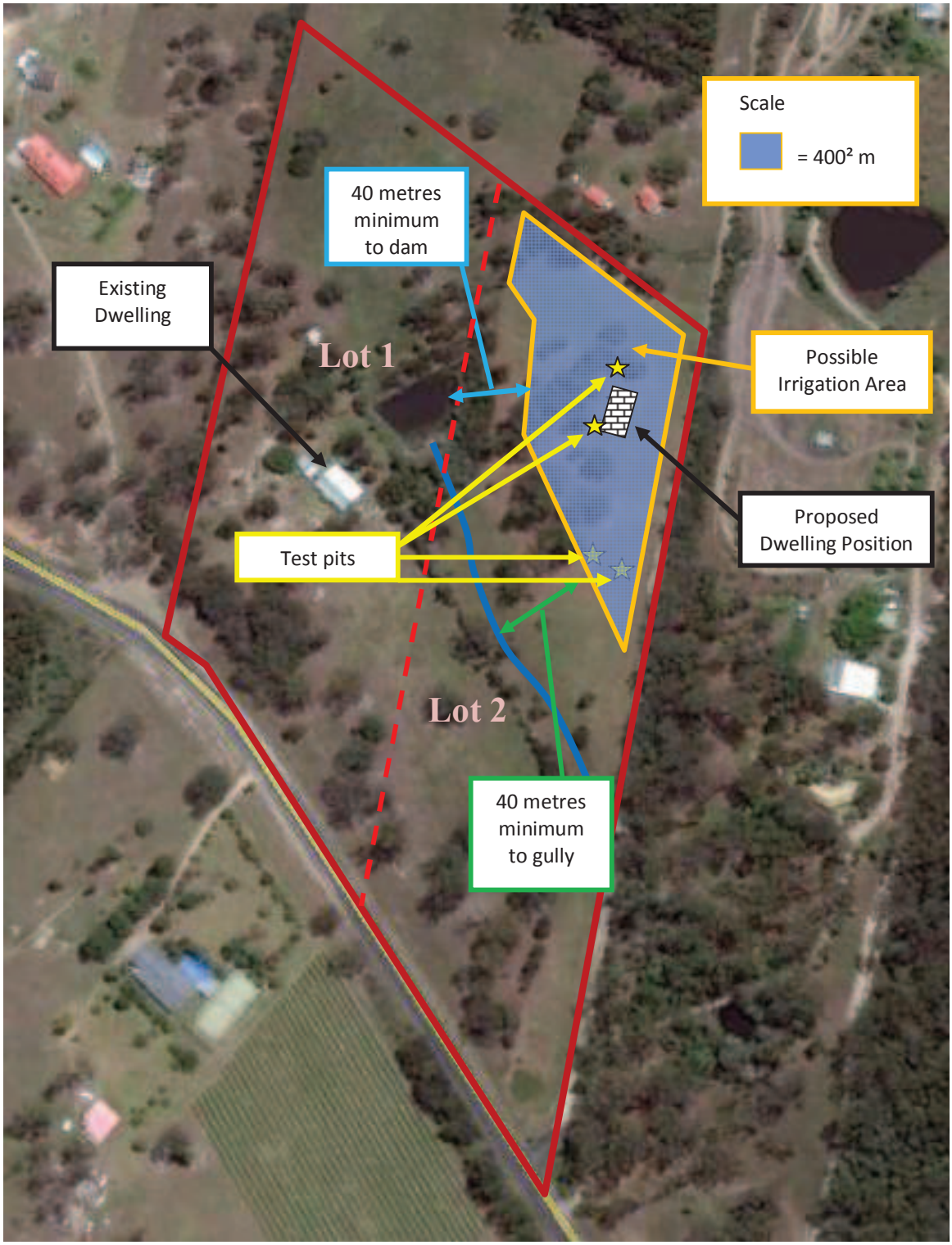
APPENDIX 1 – Subdivision Plan Option A



Subdivision Plan Option B

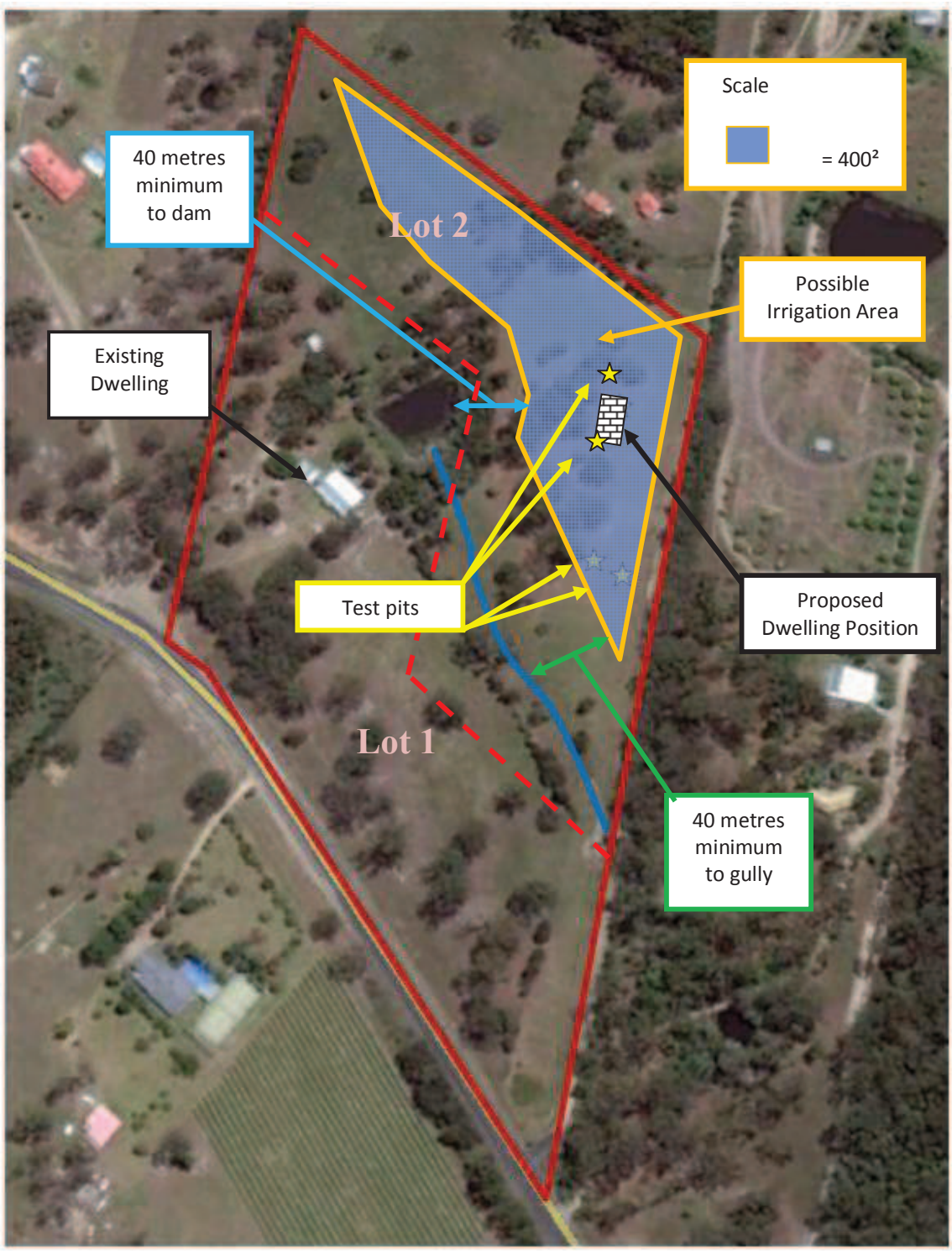


APPENDIX 2 - Aerial Test Pits and Possible Irrigation Areas Option A



- **Measurements are indicative only and not to scale**

Aerial Test Pits and Possible Irrigation Areas Option B



- **Measurements are indicative only and not to scale**

APPENDIX 3 - Soil Profile Descriptions

Sample	Test hole layer	Ped Structure	pH (1:5) soil/water	Emerson Class	ECe	Salinity
A	0mm-125mm	sub-angular blocky	6.1	3	0.00	Low
B	125mm-350mm	sub-angular blocky	6.0	2	0.00	Low
C	350mm-plus	sub-angular blocky	5.9	3	0.00	Low

Sample	Texture class	Approximate % of clay	Course Fragments %	Soil Colour	Munsel Colour
A	Silty Clay	40-50%	<20%	Very Dark Brown	10yr 2/2
B	Medium Clay	40-55%	<20%	Yellowish Brown	10yr 5/4
C	Heavy Clay	+55%	<20%	Red	2.5yr 4/6

Appendix 4 - Surface and Subsurface Irrigation Areas Calculations for Both 3 and 5 Bedroom Dwellings - 3 Bedrooms Calculations

Minimum Area Method Water Balance and Wet Weather Storage Calculations (Kempsey)

Design Wastewater Flow (Q):	l/day	600
Design Percolation Rate (R):	mm/wk	17

Surface Irrigation Area from a Secondary Treatment System

Design Irrigation Rate 17

Parameters					Outputs			Inputs					
Month	Days (D)	Precipitation (P)	Evaporation (E)	Crop factor (C)	Evapotranspiration (ET)	Percolation (B)	Total Outputs (ET+B)	Retained Precipitation P=1	Possible Effluent Irrigation (W)	Actual Effluent Production (I)	Inputs	Storage (S)	Cumulative Storage (M)
	days	mm/month	mm/month	-	mm/month	mm/month	mm/month	mm/month	mm/month	mm/month	mm/month	mm/month	mm
Jan	31	152.1	189.0	0.75	141.75	75.29	217.04	152.1	64.94	54.51	206.61	-10.43	0.00
Feb	28	166.9	154.0	0.75	115.5	68.00	183.50	166.9	16.60	54.51	221.41	37.91	37.91
Mar	31	183.5	147.0	0.75	110.25	75.29	185.54	183.5	2.04	54.51	238.01	52.47	90.38
Apr	30	167	111.0	0.75	83.25	72.86	156.11	167	-10.89	54.51	221.51	65.40	155.78
May	31	127.8	98.0	0.75	73.5	75.29	148.79	127.8	20.99	54.51	182.31	33.52	189.30
Jun	30	126.5	70.0	0.75	52.5	72.86	125.36	126.5	-1.14	54.51	181.01	55.65	244.95
Jul	31	57.1	73.0	0.75	54.75	75.29	130.04	57.1	72.94	54.51	111.61	-18.43	226.52
Aug	31	63	98.0	0.75	73.5	75.29	148.79	63	85.79	54.51	117.51	-31.28	195.24
Sep	30	56.2	129.0	0.75	96.75	72.86	169.61	56.2	113.41	54.51	110.71	-58.90	136.34
Oct	31	91.7	160.0	0.75	120	75.29	195.29	91.7	103.59	54.51	146.21	-49.08	87.26
Nov	30	119.1	173.0	0.75	129.75	72.86	202.61	119.1	83.51	54.51	173.61	-29.00	58.26
Dec	31	119.2	195.0	0.75	146.25	75.29	221.54	119.2	102.34	54.51	173.71	-47.83	10.43
Total	365	1430.1	1597		1197.75	886.43	2084.18	1430.1	654.08	654.08	2084.18	-	-

Irrigation Area (L) m2 330.24

Storage (V) **largest M mm** 244.95
(VxL)/1000 m3 80.89

RAINFALL BOM Crescent Head
EVAPORATION BOM

C=0.75
P (r) = 1.0

Surface Irr

5 Bedrooms Calculations

Minimum Area Method Water Balance and Wet Weather Storage Calculations (Kempsey)

Design Wastewater Flow (Q):	l/day	840
Design Percolation Rate (R):	mm/wk	17

Surface Irrigation Area from a Secondary Treatment System

Design Irrigation Rate 17

Parameters					Outputs			Inputs					
Month	Days (D)	Precipitation (P)	Evaporation (E)	Crop factor (C)	Evapotranspiration (ET)	Percolation (B)	Total Outputs (ET+B)	Retained Precipitation P=1	Possible Effluent Irrigation (W)	Actual Effluent Production (I)	Inputs	Storage (S)	Cumulative Storage (M)
	days	mm/month	mm/month	-	mm/month	mm/month	mm/month	mm/month	mm/month	mm/month	mm/month	mm/month	mm
Jan	31	152.1	189.0	0.75	141.75	75.29	217.04	152.1	64.94	54.51	206.61	-10.43	0.00
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Oct	31	91.7	160.0	0.75	120	75.29	195.29	91.7	103.59	54.51	146.21	-49.08	87.26
Nov	30	119.1	173.0	0.75	129.75	72.86	202.61	119.1	83.51	54.51	173.61	-29.00	58.26
Dec	31	119.2	195.0	0.75	146.25	75.29	221.54	119.2	102.34	54.51	173.71	-47.83	10.43
Total	365	1430.1	1597		1197.75	886.43	2084.18	1430.1	654.08	654.08	2084.18	-	-

Irrigation Area (L) m2 462.33

Storage (V) **largest M mm** 244.95
(VxL)/1000 m3 113.25

RAINFALL BOM Crescent Head
EVAPORATION BOM

C=0.75
P (r) = 1.0

Surface Irr

APPENDIX C – SECTION 117 DIRECTIONS

COMPLIANCE AND JUSTIFICATIONS

Table of Relevant 117 Directives		
Directive	Key requirement	Complies or Justification
1.2 Rural Zones The objective of this direction is to protect the agricultural production value of rural land. A planning proposal must: (a) not rezone land from a rural zone to a residential, business, industrial, village or tourist zone. (b) not contain provisions that will increase the permissible density of land within a rural zone (other than land within an existing town or village).	May be inconsistent if: (a) justified by a strategy which: (i) gives consideration to the objectives of this direction, (ii) identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), and (iii) is approved by the Director-General of the Department of Planning, or (b) justified by a study prepared in support of the planning proposal which gives consideration to the objectives of this direction, or (c) in accordance with the relevant Regional Strategy or Sub-Regional Strategy prepared by the Department of Planning which gives consideration to the objective of this direction, or (d) is of minor significance.	Justification Justification provided in accordance with the Mid North Coast Regional Strategy and Kempsey Shire Council's adopted Rural Residential Strategy.
1.5 Rural Lands The objectives of this direction are to: (a) protect the agricultural production value of rural land,	A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General) that the provisions of the planning proposal that are inconsistent are:	Justified as per for S117 Direction 1.2 Rural Zones above. The provisions SEPP (Rural Lands) 2008 were addressed as part of Kempsey Shire Council's Strategy

(b) facilitate the orderly and economic development of rural lands for rural and related purposes. A planning proposal to which clauses 3(a) or 3(b) apply must be consistent with the Rural Planning Principles listed in *State Environmental Planning Policy (Rural Lands) 2008*.	(a) justified by a strategy which: i. gives consideration to the objectives of this direction, ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites, and iii. is approved by the Director-General of the Department of Planning and is in force, or (b) is of minor significance.	preparation and the Local Growth Management Strategy has since been approved by the Director General. Inconsistency with S117 Direction 1.5 is acceptable under Clause 6 of the Directive.
3.1 Residential Zones The objectives of this direction are: (a) to encourage a variety and choice of housing types to provide for existing and future housing needs, (b) to make efficient use of existing infrastructure and services and ensure that new housing has appropriate access to infrastructure and services, and (c) to minimise the impact of residential development on the environment and resource lands. This direction applies when a relevant planning authority prepares a planning proposal that will affect land within an existing or proposed residential zone (including the alteration of any existing residential zone boundary).	A planning proposal must, in relation to land to which this direction applies: (a) contain a requirement that residential development is not permitted until land is adequately serviced (or arrangements satisfactory to the council, or other appropriate authority, have been made to service it), and (b) not contain provisions which will reduce the permissible residential density of land.	Not applicable The land is proposed to be retained in its existing RU4 Primary Production Small Lot zone and amend the Lot Size Map from AA4 8ha to Z3 4ha.
3.4 Integrating Land Use and Transport The objective of this direction is to ensure that urban structures, building forms, land use locations,	(4) A planning proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of:	Consistent with Council's Rural Residential strategy. Land has proximity to local bus services which pass the intersection of the site and Crescent Head Road

development designs, subdivision and street layouts achieve the following planning objectives: (a) improving access to housing, jobs and services by walking, cycling and public transport, and (b) increasing the choice of available transport and reducing dependence on cars, and (c) reducing travel demand including the number of trips generated by development and the distances travelled, especially by car, and (d) supporting the efficient and viable operation of public transport services, and (e) providing for the efficient movement of freight.	(a) *Improving Transport Choice – Guidelines for planning and development* (DUAP 2001), and (b) *The Right Place for Business and Services – Planning Policy* (DUAP 2001).	on regular basis and the site is mid way between Kempsey township and Crescent Head Village. Bus and sealed road services to Kempsey then link to rail station at Kempsey and national coach services on the Pacific Highway. Public primary school available at Crescent Head village as well as Primary and Secondary school campuses in Kempsey. Tertiary education by way of various Tafe campuses and University linked educational services at Port Macquarie.
4.1 Acid Sulphate Soils The objective of this direction is to avoid significant adverse environmental impacts from the use of land that has a probability of containing acid sulphate soils.	A relevant planning authority must not prepare a planning proposal that proposes an intensification of land uses on land identified as having a probability of containing acid sulphate soils on the Acid Sulphate Soils Planning Maps unless the relevant planning authority has considered an acid sulphate soils study assessing the appropriateness of the change of land use given the presence of acid sulphate soils.	Consistent Land is mapped as Class 5 ASS. Proposed building envelope is above the 1 in 100 year flood level and outside areas of probable acid sulphate soils.
4.3 Flood Prone Land The objectives of this direction are: (a) to ensure that development of flood prone land is consistent with the NSW Government's	A planning proposal may be inconsistent with this direction only if the relevant planning authority can satisfy the Director-General (or an officer of the Department nominated by the Director-General) that:	N/A .

Flood Prone Land Policy and the principles of the *Floodplain Development Manual 2005*, and (b) to ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land. (4) A planning proposal must include provisions that give effect to and are consistent with the NSW Flood Prone Land Policy and the principles of the *Floodplain Development Manual 2005* (including the *Guideline on Development Controls on Low Flood Risk Areas*). (5) A planning proposal must not rezone land within the flood planning areas from Special Use, Special Purpose, Recreation, Rural or Environmental Protection Zones to a Residential, Business, Industrial, Special Use or Special Purpose Zone.	(a) the planning proposal is in accordance with a floodplain risk management plan prepared in accordance with the principles and guidelines of the Floodplain Development Manual 2005, or (b) the provisions of the planning proposal that are inconsistent are of minor significance. **Note:** "flood planning area", "flood planning level", "flood prone land" and "floodway area" have the same meaning as in the *Floodplain Development Manual 2005*.	The land is not mapped as Flood Prone Land under the NSW Government's *Floodplain Development Manual 2005.*
4.4 Planning for Bushfire Protection The objectives of this direction are: (a) to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and (b) to encourage sound management of bush fire prone areas.	A planning proposal must: (a) have regard to *Planning for Bushfire Protection 2006*, (b) introduce controls that avoid placing inappropriate developments in hazardous areas, and (c) ensure that bushfire hazard reduction is not prohibited within the APZ.	Complies A Bushfire Hazard Assessment has been completed by Midcoast Building and Environmental and each lot has appropriate APZ and BAL construction levels identified within that assessment.

5.1 Implementation of Regional Strategies The objective of this direction is to give legal effect to the vision, land use strategy, policies, outcomes and actions contained in regional strategies. Planning proposals must be consistent with a regional strategy released by the Minister for Planning.	A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General), that the extent of inconsistency with the regional strategy: (a) is of minor significance, and (b) the planning proposal achieves the overall intent of the regional strategy and does not undermine the achievement of its vision, land use strategy, policies, outcomes or actions.	Justification The proposal is consistent with the adopted Kempsey Shire Rural Residential Strategy and Staging Map 18.

APPENDIX D – STATE ENVIRONMENTAL PLANNING POLICIES

D1. State Environmental Planning Policy (Rural Lands) 2008

The proposal to rezone rural land to Large Lot Residential requires consideration of the provisions of the SEPP for Rural Lands and flags the mid north coast farmland mapping for consideration.

The Planning Proposal is consistent with a Kempsey Council's Local Growth Management Strategy which has been prepared by Council in consideration of the SEPP for Rural Lands 2008 and has been approved by the Director- General.

Therefore inconsistency with the SEPP and S117 Directive 1.5 Rural Lands is acceptable.

In considering the rezoning Clause 7 of the SEPP for Rural Lands is applicable and is addressed as follows**.**

2 Aims of Policy

The aims of this Policy are as follows:
(a) to facilitate the orderly and economic use and development of rural lands for rural and related purposes,
(b) to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,
(c) to implement measures designed to reduce land use conflicts,
(d) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,
(e) to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.

Part 2 Rural Planning Principles

7 Rural Planning Principles

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.

In considering the above Rural Planning Principles, principle (h) is most relevant to the subject Planning Proposal. The Planning Proposal is consistent with an applicable local strategy endorsed by the Director-General. In this case, the applicable strategy is the Rural Residential component of the Kempsey Local Growth Management Strategy.

D.2 State Environmental Planning Policy No. 44 – Koala Habitat

The site identified as part of the area mapped under the Kempsey Comprehensive Koala Plan of Management. This KPoM was prepared under the provisions of SEPP 44 and has been approved by the Department of Planning.

The one additional dwelling site likely to arise from the Planning Proposal could be located within existing clearings. The final location of any future dwelling on the new allotment would be subject to the requirements of Council's policy at the time.

D.3 State Environmental Planning Policy No. 55 – Remediation of Land

Clause 6 of the *SEPP 55 – Remediation of Land* requires a planning authority to consider whether the land is contaminated and if the land is contaminated, to be satisfied that the land will be suitable for the proposed use or appropriately remediated.

In accordance with Clause 6(2) a preliminary investigation of the land in accordance with the contaminated land guidelines has been undertaken and the land has not been used for any of the purposes referred to in Table 1 of the contaminated land planning guidelines.

Enquiries of the current owners and a third party person familiar with the land described wholly as Lot 41 DP 1098163, 1023 Crescent Head Road indicate that:

- All previous and current land use has been cattle grazing with a single dwelling occupancy.
- There is no on site cattle tick dip or former tick dip site.
- The land has not been used for Market Gardens or Orchards.
- There are no oil storage depots or former fuel depots associated with the past or present uses.
- There are no refuse or garbage land fill areas

Searches of the land contamination register, record of notices and contaminated sites notified to EPA have not identified the subject land Lot 41 DP 1098163, nor its prior description of Lot 4 DP 584704.

Table 1 - List of Potentially Contaminating Activities

Acid/alkali plant and formation	Metal treatment
Agricultural/horticultural activities	Mining and extractive industries
Airports	Pesticide manufacture and formulation
Asbestos production and disposal	Pharmaceutical formulation and
Chemicals manufacture and formation	manufacture
Defence works	Oil production and storage
Drum re-conditioning works	Paint formulation and manufacture
Dry cleaning establishments	Power stations
Electrical manufacturing (transformers)	Railway yards
Electroplating and heat treatment premise	Scrap yards
Engine works	Service stations
Explosive industry	Sheep and cattle dips
Gas works	Smelting and refining
Iron and steel works	Tanning and associated trades
Landfill sites	Waste storage and treatment
	Wood preservation

Source: ANZECC & NHMRC 1992 The Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, From DUAP & EPA 1998 Managing Land Contamination.

D.5 State Environmental Planning Policy No. 71 – Coastal Protection

Council has advised that the subject land is not mapped as part of the Coastal Zone mapping under SEPP 71.

D.6 State Environmental Planning Policy (Infrastructure) 2007

The subject land, Lot 41 DP 1098163 has frontage Crescent head Road which is an Un-Classified Regional Road under Roads and Maritime Service (RMS) schedule. Crescent Head Road is identified as road no. 7737 - "Crescent Head Rd from the Pacific Highway (HW10) at Kempsey to the East Street Roundabout, Crescent Head".

Division 17 of the SEPP (Infrastructure) includes provisions relating to Traffic Generating Development and Development adjacent classified road corridors.

The planning proposal does not include any new intersections and proposes to utilise existing accesses for both the existing dwelling in the west of Lot 41 and for the proposed additional lot at the east side of Lot 41 by way of the existing shared access on the eastern boundary. Lot 41 has benefit of right of carriageway over the existing access.

Any development application resulting from the rezoning would be unlikely to trigger the traffic related provisions of the SEPP (Infrastructure).