SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 1
LEP Amendment Request
Planning Proposal
Concept Overview
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18


Verandah
LIFESTYLE ESTATE
WOLLONGBAR


Clubhouse


Verandah Lifestyle Estate Masterplan
Club House
Gym
Swimming Pool
Tennis Court
Gated Entry

Verandah Wollongbar Proposal

Greenlife Developments Pty Ltd is the owner of lot 10 Lismore Rd Alstonville. We seek support subject to approval from Ballina Council to design and construct a Land Lease Community for over 55's. We estimate a yield of 125 homes and community facilities that will introduce a modern, energy efficient housing product that would appeal to local empty nesters in the Alstonville and Wollongbar region. We present on the following pages our belief that this product is undersupplied and needed in the local area.

Paul Craig is an owner & developer of over 55's residential land lease communities. For the past 27 years Paul has developed communities at Maitland, Erina & Terrigal NSW. Paul relocated from Terrigal to Tugun on the Gold Coast in 2006 and has since acquired greenfield sites for land lease communities including Lot 10 Lismore Road Alstonville. Paul has also recently developed residential subdivisions in the Brisbane area.

Dean Walker qualified as an architect at the University of Natal, Durban, South Africa. In 2003 he left behind his industry leading practice, Walker Smith Architects, to relocate his family to Terrigal NSW. Dean has 20 years of experience in the property Industry, including 10 years in the residential village sector. Dean serves as a board member for CCIA NSW, the association for Residential Land Lease Communities. His strengths are in project managing the design, construction and daily management of over 55's Residential Villages.

Dean And Paul

Dean & Paul have jointly developed Greenlife Land Lease community in Erina, Central Coast NSW. Subject to Council approval they intend to jointly develop and manage Lot 10 Lismore Rd Alstonville and a second community at Taree.

The Need For Affordable Seniors Housing Is Growing

A National Overview of the Retirement Village sector of Australia was prepared by the Property Council of Australia. Findings demonstrate the dramatic increase in the number of Australians turning 65 over the next 20 years is now an established demographic fact. The Australian Treasury also projects a doubling of the seniors' population by 2050. Currently about 184,000 Australians live in retirement villages.

There will be approximately 382,000 people wanting to live in a retirement village by 2025. This is more than double the 184,000 residents currently calling a retirement village home.

The Productivity Commission has highlighted in recent reports that an ageing Australia needs to do more to prepare for its ageing future, and that retirement villages play an integral role in that future.

What is a retirement village? A Retirement Village is a residential, multi dwelling complex specially designed for seniors aged 55 years and over. The majority of villages are single-level or low-rise villas occupying landscaped grounds and with community spaces.

Retirement Villages offer a range of health, leisure and support services. Many include recreational and medical facilities, such as community halls, bowling greens, and rooms for visiting doctors or allied health professionals. In some cases the village is co-located with an aged care facility.

(Author G Thornton 2014, p.1 National Overview of Retirement Village Sector).View at http://www.retirementliving.org.au/wp-content/uploads/2015/03/National-overview-of-the-retirement-village-sector-Grant-Thornton.pdf

Land Lease Community & Retirement Villages - Comparing The Differences - Refer to Table Below

Land Lease Communities appeal to active over-50s living where friends new and old enjoy an active and healthy lifestyle. Residents connect with friends and neighbours, keep active, do as much or as little as they want and enjoy a housing downsize without the compromise. Home owners feel they have achieved freedom through connection with other like minded people. They can share property features like the tennis courts, club house library and woodwork shop, yoga /gym studio, pool, spa and sauna, all to nourish the mind, body and soul.

The property does not include medical facilities on site. Instead the operator can partner with a care provider to arrange home care packages when and if needed.

Homes are purchased outright and renting instead of purchasing the land reduces the capital outlay for the home. Fortnightly subsidy from the Commonwealth Government between $88 (single) to $124 (couple) greatly reduces site rents

link: https://www.humanservices.gov.au/customer/services/centrelink/rent-assistance.

Comparisons	**Retirement Village**	**Land Lease Community**
Ownership	Lease	Outright purchase by home owner
C**onveyancing** cost on Purchase	Yes	No
Outgoings	Maintenance levy	Site rental
Rental Assistance Centrelink	No	Yes
Capital Return on Exit	ETF up to 30% of sale	100 % of sale price to owner or beneficiary
Land Tax	no	no
Council Rates	no	no
Body Corp fees	no	no

Affordable living for over 50’s

Note - quotes below are cited from the Alstonville Community Report 2036

Feedback Themes – Some level of support for further development
Quote “At this stage about 60% of submissions have suggested there is some (limited) scope for further development, either by intensification of densities in parts of Alstonville or for the extension of the urban area. - **Page 3**

Flexible Housing Options
Quote – “A number of older people told us that they were currently living in a large family home on a suburban block but that their children had moved away and they would like to move further into town, They didn’t want a tiny home, but they wanted to live in a 3 bedroom townhouse style home with some backyard. They were happy to live in closer quarters with other residents and would like to walk into town along footpaths.

Different styles of housing dependant on proximity to the CBD to water for all age and ability groups was seen as a way to keep housing opportunity flexible and affordable. **Page 4**

Traffic – both road and pedestrian
Quote – Footpaths were a common theme particularly in common areas but came up as an issue needing to be addressed in many locations. At the time that the Bruxner highway by passed Lismore road, it included an underpass of the highway and a hard surface walkway was created to facilitate pedestrian traffic between Wollongbar, the Industrial estate and central Alstonville.- **Page 4**

This walkway could be also used by residents of Verandah Wollongbar.The developers intend to develop homes to satisfy the ideals expressed on page 3 & 4 of the Alstonville Community Report 2036.

Privacy And Security

Verandah Wollongbar will be designed to ensure the privacy and security of all home owners. Each home is allocated a unique entry code activated by swipe card or remote control. Guests are able to enter via keypad which notifies the relevant home owner of their arrival.

Visitors are not allowed to enter the resort without permission from the home owner or resort management.

All dwellings come with a localised Home-Medi Panic Alarm – Once activated an audible message is broadcast alerting surrounding neighbours to the fact that a resident is in distress.

Positioning and design of individual dwellings takes into account issues of privacy and security.

Hikes and Bikes

Quote – Walking paths and longish cycling routes were also suggested, using the beautiful scenery afforded close by. Many people also use bikes to get around town easily and ways to make this safer and more integrated into the local traffic system was also raised. **Page 4**

Verandah Wollongbar will include walking paths in a circular pattern within the community and connected to the existing footpaths between Wollongbar and Alstonville town centres. Exercise conscious residents would be able to walk, use push bikes, electric powered bikes and electric mobility scooters which can be recharged in the garage of each home.

Verandah Wollongbar will provide a mini bus capable of carrying at least 10 passengers that will provide drop off and pick up of passengers in Alstonville & Wollongbar shops, banking facilities, community facilities and medical practitioners.

About The Homes

1. The developers of Verandah Wollongbar intend to develop a Club House, ancillary buildings and resident homes that are inspired by the traditional architectural theme of Alstonville - see photos opposite.

2. Yet to be designed, each dwelling will offer a high level of specifications within an affordable price range and suitable for the over 50's retiree market. Photos in this brochure feature homes built previously by the Developers.

3. Limited personal maintenance is needed on a smaller home site and extensive landscaping to common grounds is maintained by the community operator.

4. 2 and 3 bedroom homes will be securely located within a gated community.

Downtown Alstonville

Maintenance, Pets and Travelling

Maintenance

The common areas of the facilities are maintained by the on site management team. Individual owners are responsible for the internal maintenance of their houses.

Pets

Verandah Wollongbar welcomes pets and understand that they are an important part of family life. We make allowance for domestic pets in the layout and design of our villages.

Travelling

Verandah Wollongbar makes everyday a holiday. People who enjoy travelling can leave their home secure in the knowledge that it will be safe while they are away. Caravans and boats can be stored within the homeowner”s property or within a secure compound on site or in a nearby storage yard in the Alstonville Industrial area.

Reduce Living Expenses - Energy Smart

It is our aim to provide a clean, reliable supply of power from a renewable source of energy. We are working with **Redback Technologies** to create a state of the art micro-grid embedded network. Our communities will be able to start to manage their own energy future by generating and storing the renewable sources energy from the site. It is our long term goal to generate more energy than we need so we can contribute a renewable resource to the wider community.

Redback's smart inverter technology has been designed to give the user the ability to decide when the energy produced on site should be used, stored or exported. The smart grid will be also able to accommodate the communities fluctuating needs.

Solar Passive Design Windows, walls, and floors are made to collect, store, and distribute solar energy in the form of heat in the winter and rejecting solar heat in the summer. Homes are sited to face due north to gain maximum access to sunlight throughout the day.

Thermal Insulation improves comfort in summer by reducing heat GAIN and in winter by reducing heat LOSS via walls and ceilings. Thermal insulation allows heaters and air conditioners to operate more efficiently.

Rainwater Tanks help to provide water for flushing toilets, washing clothes, irrigate your garden, reduce your water consumption and your water bills.

Financial Security

Downsize your home, upgrade your lifestyle and bank the money left over. Here is an opportunity to free up money and still have a brand new home.

Buying a home is a major financial investment and the Veranda Wollongbar model has advantages over traditional home ownership.

- Pensioners qualifying with Centrelink receive Government Rent Assistance
- No Legal Costs or Stamp Duty on home purchase
- No Exit Fees on departure
- No Body Corporate levies
- No Council Rates
- No Land Tax
- All of the Capital Gain is Yours
- Your home is a Willable Asset

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 2
LEP Amendment Request
Planning Proposal
Agricultural Land Review
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

Agricultural & Property Management Consultants

Allen & Associates

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AGRICULTURAL ASSESSMENT

on

Lot 10 DP1059499

Lismore Road, Alstonville

Prepared by:

John Allen
29th April 2018

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LIST OF APPENDICES

1 EXECUTIVE SUMMARY

1. An agricultural report has been requested in relation to a proposed development of a Manufactured Home Estate on land identified as Lot 10 1059499 situated at Lismore Road Alstonville.

2. The report has classified the land as Class 4 land and Special Class land that is best suited to grazing operations on native or improved pastures. The existing land use of the site agrees with this assessment. The Special Class land has attributes such as well drained soil type and gently to moderately sloping land that are well suited to macadamia production. The small area of land that is available however to this purpose does not provide a level of income that allows the land to be a self-sustaining operation in its own right.

3. Land within the site has been identified as State Significant Farmland under the Northern Rivers Farmland Protection Project. This report disagrees with this assessment and has provided comments in this regard. For instance the land is not of a sufficient size to allow its purposeful use to an associated land use such as horticultural production.

4. Approval of this development proposal will result in the alienation of the land from future agricultural production. This is believed to be inevitable in any event due to the greater value of the land for lifestyle purposes rather than agricultural.

5. Given the land's limited potential for agricultural production both now and into the future, approval of this proposal will in no way significantly detract from the existing or future agricultural production of the region as a whole. Furthermore, approval of the proposal takes pressure off surrounding agricultural land for similar non-agricultural developments. Finally the proposed rural industry is complimentary to and supportive of local and regional agriculture.

6. The report has shown that the development proposal represents no greater possibility for land use conflict with nearby and potentially conflicting land uses than that which already exists between land uses that are either pre-existing or recent developments.

7. From an agricultural perspective therefore, there is no reason why Council should not approve the application.

2 INTRODUCTION

8. Allen & Associates have been requested to undertake an agricultural assessment of the land identified as lot 10 in DP 1059499 situated at Lismore Road Alstonville. The agricultural assessment will be submitted as a part of a proposal for the development of a Manufactured Home Estate on the land.

3 PROPERTY DESCRIPTION

3.1 General

9. Appendix 1 shows the location of the site which is situated immediately on the outskirts (eastern side) of Wollongbar and approximately 1 kilometre to the west of Alstonville. The site has a total area of approximately 7 hectares. Current land use of the site is identified as a cattle grazing on unimproved pastures.

10. Landuses that immediately surround the site are a combination of rural (grazing, horticulture), industrial and residential. The Russelton Industrial Estate exists directly adjacent (southern side) to the Alstonville Bypass which forms the southern boundary of the site.

3.2 Topography

11. Refer to Appendix 2 that shows the terrain of the site. Landform patterns present are Low Hills. According to the nature of the landform present, the degree of slope within the site fluctuates but on average is approximately 9%.

12. Appendix 2 shows two natural drainage lines that enter the site in the south-western corner of the site. These areas are unsuited to any form of agricultural cropping due to the risks of soil erosion.

13. On the basis of slope the land is not suited to regular or continuous cultivation due to the risks of soil erosion. The degree of slope does not preclude however the production of horticultural crops such as macadamia which do not require cultivation.

3.3 Soil Type

14. From experience and local knowledge, it is known that the soil throughout the site is of the Krasnozem type as shown in the Soils Landscape map for the Lismore – Ballina[1] area. Krasnozem soils are typically strongly structured[2] deep well drained red to red-brown soils that are loam to clay loam textured at the surface and which gradually become more clayey with depth. In their natural state they are amongst the most fertile soils of the subtropical areas of Eastern

[1] Morand, D.T. (1994) Soil Landscapes of the Lismore-Ballina 1:100000 Sheet. Department of Conservation and Land Management.

[2] Charman, P.E.V., Murphy, B.W. (eds). (1991), Soils. Their Properties and Management. A Soil Conservation Handbook for New South Wales. Sydney University Press.

Australia[3]. The successful production of a wide range of sub-tropical horticultural crops throughout the immediately surrounding district as well as the wider region bears testament to the suitability of the Krasnozem soil type for these purposes.

15. The sloping nature of the land within the site then in conjunction with the inherent Krasnozem soil type combine to produce a well-drained soil environment which is a major requirement for the successful production of horticultural tree crops.

3.4 Climate

16. The property enjoys a variable but favourable annual rainfall which is ideal for the successful production of many agricultural crops.

17. A significant matter in this report is that rainfall intensity in the area can be extremely high and this along with the lightly textured nature of the soil combines to make land within the site vulnerable to erosion because of high rates of surface runoff and high water flow velocities.

18. Temperatures are warm to hot in summer and this allows a long pasture and crop growing season when moisture levels permit.

4 LAND CLASSIFICATION

19. It is normal to define potential land use by using the Rural Land Evaluation Manual[4] (RLEM) to classify land forms into classes based on their potential land use. The land classes in the RLEM are as below.

Class 1

Arable land suitable for intensive cultivation where constraints to sustained high levels of agricultural production are minor or absent.

Class 2

Arable land suitable for regular cultivation for crops but not suited to continuous cultivation. It has a moderate to high suitability for agriculture but edaphic (soil factors) or environmental constraints reduce the overall level of production and may limit the cropping phase to a rotation with sown pastures.

Class 3

Grazing land or land well suited to pasture improvement. It may be cropped in rotation with pasture. The overall production level is moderate because of edaphic or environmental constraints. Erosion hazard and soil structural breakdown or other factors including climate may limit the capacity for cultivation and soil conservation or drainage works may be required.

Class 4

Land suitable for grazing but not for cultivation. Agriculture is based on native pastures or improved pastures established using minimum tillage techniques. Production may be seasonally high but the overall production level is low as a result of major environmental constraints.

[3] Stephens, C.G (1962). A Manual of Australian Soils; Third Edition., CSIRO, Melbourne.

[4] RLEM. Rural Land Evaluation Manual (1988), New South Wales Department of Planning Sydney

Class 5

Land unsuitable for agriculture or at best suited only to light grazing. Agricultural production is very low or zero as a result of severe constraints, including economic factors, which preclude land improvement.

Special Class

Land which, because of a combination of climate and soil, is well suited to intensive production of a crop or a narrow range of crops whose special requirements limit their successful culture to such land. This class may include some lands formerly described as unique.

20. As per the RLEM ranking given, land within the subject site is classed as being a combination of Special Class and Class 4 land. In this instance the principal determining factor in land class classification was the soil type and the degree of land slope.

5 POTENTIAL LAND USE

5.1 Special Class Land

21. Special Class land comprises approximately 5.2 hectares of the land; or 74% of the site. The Special Class land is described as all of the land that is situated to the east of the lower elevated western portion within which the two natural drainage lines are situated.

22. The Special Class land has a moderate degree of slope and a well-drained Krasnozem soil type. On this basis the land is physically suited to the production of horticultural crops such as macadamia.

23. Other intensive horticultural operations such as blueberries which do not require as large an area of land for production as macadamia may be considered. However the absence of adequate water for irrigation purposes effectively restricts this and other similar land uses that require supplementary irrigation.

5.1.1 Macadamia Production

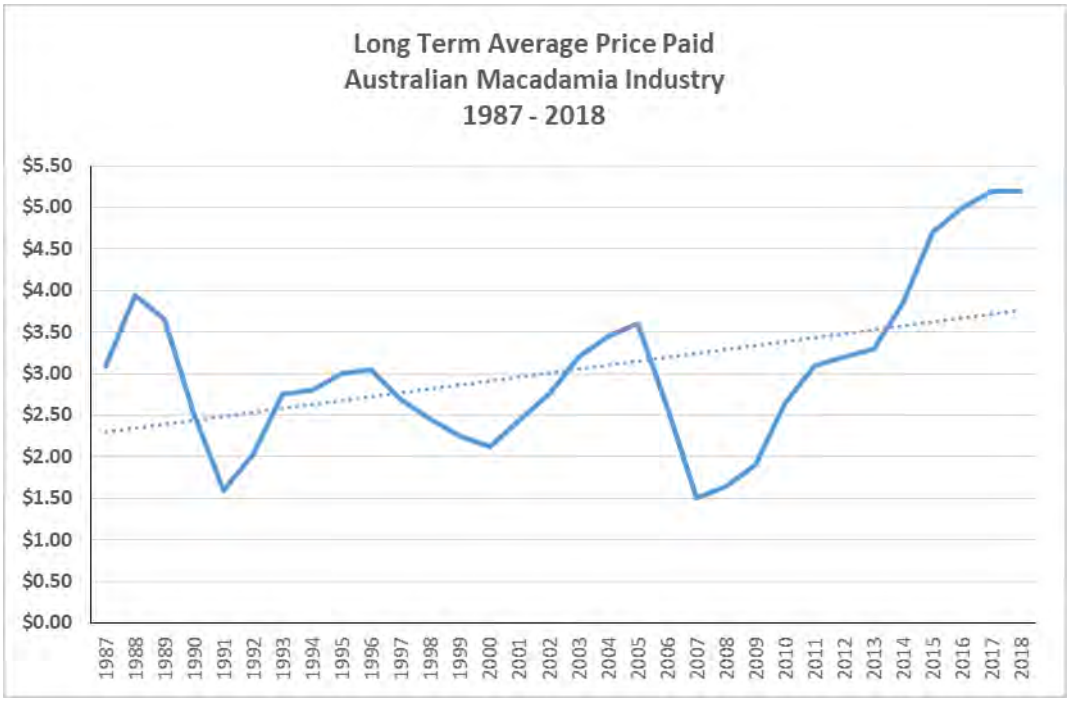
24. There is 5.2 hectares of land within the site that is classified as Special Class land and that which has physical attributes (slope, soil type) that make the land suitable to the production of macadamias. After making an allowance for tree row headlands of 12 metres around the boundary of the potential orchard (required for the turning of machinery at the ends of tree rows) it is calculated that there is 4.0 hectares of land that is plantable to macadamias. This would allow 1,244 macadamia trees to be planted under the standard Industry tree and row spacing of 8 metres by 4 metres.

5.1.1.1 Economics of Macadamia Production

25. To be a viable and self-sustaining orchard it is believed that macadamia enterprises need to be approximately 5,000 trees in size and this is assuming optimal production levels are achieved. In this instance there is not enough suitable land available within the site to enable a successful agricultural operation to exist. To better illustrate this a forecast Macadamia budget including anticipated operational costs and incomes received has been included with this report. Refer to Appendix 7.

26. The yields achieved and prices paid to the farmer ultimately determine the economic productivity of the orchard. Yields per hectare of producing orchard vary from 0.92 for the bottom 25% to 4.06 tonnes per hectare of Nut In Shell (NIS) for the top 25% of benchmarked orchards[5]. Orchards within the Northern Rivers of NSW achieve on average 2.58 tonnes of NIS per hectare[6]. Prices paid for instance to the farmer in 2018 are on average $5.20 per kilogram of NIS at a 10% moisture content. Alternatively the long term average Industry price is approximately $3.75[7]. Refer to Figure 1.

Figure 1: Australian Macadamia Industry Farm Gate Prices - 1987 – 2018



27. For the purposes of this report, the macadamia budget presented in Appendix 7 utilises the Industry average yields (for the Northern Rivers of NSW) of 2.58 tonnes of NIS/Hectare and the long term average farm gate price of $3.75/kg NIS. Nonetheless both yields and prices received can vary according to environmental issues and market conditions respectively. For that reason, higher and lower yields and prices received need to also be considered.

28. Refer to Table 1 that shows the effect on the net annual income that will be achieved for the potential orchard according to fluctuating yields and prices. For yields the higher and lower ranges as per the Industry Benchmarking Report have been used. For prices paid the long term average linear price of $3.75 and also the current price of $5.20/kg NIS have been used.

29. The figures within Table 1 show that even if the potential orchard performs in the top 25% of the industry in terms of productivity and also achieves (in the long term) the current record

[5] Department of Agriculture and Fisheries (2016*), Macadamia industry benchmark report. 2009 to 2015 seasons*.
[6] Department of Agriculture and Fisheries, *opcit*
[7] http://australian-macadamias.org/industry/about-aussie-macadamias/stats

high prices paid, the orchard will still not achieve a level of income that is sufficient enough to sustain an average family without supplementary and off site income. At the industry average yields achieved the net incomes received will fluctuate between $1,295 and $16,174 which are clearly insufficient to support an average family.

Table 1: Net Income Variability - yield and $/kg NIS price fluctuations

	Yield (tonnes NIS/Ha)	2018 Price	Long Term Average Linear Price
		$5.20	**$3.75**
Northern Rivers NSW	2.58	$16,174	$1,295
Top 25% (Total Industry)	4.06	$44,324	$20,880
All Farms (Total Industry)	2.45	$13,803	-$354
Bottom 25% (Total Industry)	0.92	-$15,237	-$20,557

5.2 Class 4 Land

30. Class 4 land comprises approximately 1.8 hectares of the land; or 26% of the site. The Class 4 land is situated in the western corner and is that land within which the previously mentioned natural drainage lines are situated.

31. During periods of prolonged rainfall; be it either of light or heavy intensity; it is observed that this area of the site becomes waterlogged. This is a major constraint to any form of agriculture cropping enterprise. Grazing enterprises as per the current land use is the highest and best land use for this area of the site.

32. There is a small area of land that is situated between the two drainage lines, however the physical size of this portion is not enough to be a practically usable portion of land for higher land uses than grazing.

6 POTENTIAL LAND USE

33. The highest and best agricultural land use suited to the site is believed to be livestock grazing as per the current land use. Land uses of this nature are less lucrative than other more intensive operations such as horticultural cropping. However the agistment of the land to graziers in the area allows for the opportunity for this land use to continue. The lower requirement for the use of heavy machinery commonly associated with horticulture and cropping in general allows agistment to be a practical land use decision.

7 NORTHERN RIVERS FARMLAND PROTECTION PROJECT

34. According to Appendix 4 the land is classified as State Significant Farmland. This report disagrees with this classification as per the following. In addition further discussion in relation to some central issues relating to the Farmland Protection Project are warranted.

7.1 Land Use Potential

35. The land may be physically capable (soil type, slope conditions) of a land use that mirrors the use of local State Significant Farmland (macadamia production) but due to its small land area it is not economically viable for that purpose. In contrast the Northern Rivers Farmland Project Methodology Report indicates that present economics of an industry are not a sufficient justification of the inclusion or exclusion of lands from a particular land use[8]. In this instance it is believed that the economics of the macadamia industry; be they good or bad, is most certainly a sufficient justification for the exclusion of the land from the State Significant Farmland classification.

36. Table 1 within this report indicates that a maximum annual net income of $44,324 is achievable for the site under Macadamia production. This is provided that the current high Industry prices paid continue and also that the orchard achieves a level of production that is equivalent to the higher performing orchards of the Industry. Alternatively if lower prices such as the long term 31 year linear average of $3.75 is the price paid and a lower yield (as per the poorer performing orchards) is achieved a net annual loss of $20,557 is an unfortunate reality.

37. In the context of Macadamia production therefore the site, irrespective of yield and price potential, simply is of not of an adequate size to be economically viable as a self-sustainable operation that is capable of supporting an average family.

38. Other horticultural operations such as Blueberries that are more intensive and that do not require as great an area of land as macadamias in order to be self-sustaining may be considered. Typically however, these more intensive horticultural operations (including Blueberries) require supplementary irrigation. There is no known water license associated with this site.

7.2 Integrity of the Surrounding State Significant Farmland

39. The site is situated within a narrow area of State Significant farmland that is situated between Alstonville and Wollongbar. The location of the Russellton industrial estate directly adjacent to the site in addition to neighbouring residential and non-agricultural land or lifestyle uses in close proximity to the site makes the land well suited to the development. Furthermore approval of the development will take pressure off other rural lands separate to the site for similar developments.

[8] Department of Infrastructure, Planning and Natural Resources and NSW Department of Primary Industries, 2004, Northern Rivers Farmland Protection Project – Mapping Methodology.

7.3 Alienation of Agricultural Land

40. Approval of the application will remove the proposed development area of the site from future agricultural production. In terms of potential agricultural production the land has been identified as been suited to grazing operations at the best. The land is not high value agricultural land due to its small land area and poor potential economic productivity. The loss of this land from future agricultural production (grazing or otherwise) will have no significant impact on the existing or future agricultural production potential of the location or wider region as a whole.

41. Irrespective, with or without approval of the application it is believed that the land has a low potential to be utilised for long term agricultural production due to its perceived higher value as a lifestyle lot in comparison to an agricultural lot. As an example existing smaller scale developed macadamia properties are currently for sale at approximately $45,000 per acre of land. In contrast, similar sized lands that are suitable to horticulture but without such development are been offered for sale at approximately $70,000 per acre. To an owner the land is of more value in an undeveloped (for horticulture) state than as an existing or developed macadamia orchard.

8 THE PROPOSAL AND ISSUES OF LAND USE CONFLICT

42. There is always concern in relation to developments that are non-agricultural in nature on lands that are adjacent to or near to existing agricultural uses. In this instance land uses that immediately surround the site are identified as Industrial, residential (Wollongbar township), lifestyle, grazing and horticulture. Refer to Appendix 5 that shows the location of the site with respect to nearby land uses.

43. Buffer zones are often utilised as a measure of conflict avoidance between potentially conflicting land uses. Spatial zones of separation and or biological (vegetative) zones are commonly utilised in the buffer zone design. Refer to Appendix 6 that shows examples of potentially conflicting land uses near to (and including) the site and the existing zones of separation between them.

44. The macadamia orchard directly opposite and to the north of the Lismore Road as well as the directly adjacent (east) grazing property offer the greatest potential for land use conflict with the proposed development. The grazing property to the east has similar land in terms of soil type and slope to the site and is also on this basis suited to the production of macadamias. However similarly to the site this grazing property is not of a sufficient size to allow this land use to be a realistic land use decision.

45. The macadamia orchard to the north is at its closest point 45 metres from the site. In contrast other similar situations of intensive horticulture and residential development are characterised by much closer distances of separation. For instance:

- 20 metres between the Seniors Living development and mature macadamia orchard further to the north east and;
- 20 metres between the Industrial estate developments and mature macadamia orchard to the south and

- 20 metres between the Lifestyle lots and mature macadamia orchard to the east.

46. The grazing property directly to the east is adjacent to the site. This is a similar situation to other nearby grazing operations and their zones of separation (5 to 10 metres) to lifestyle and or industrial uses.

47. Further to the north east of the proposed development is a recently developed community sporting field facility. This development is directly adjacent to existing and purposeful macadamia orchards. For instance the macadamia property directly to the north of these sporting fields is at its closest point 40 metres away.

48. Based on existing situations of potential conflict (between land uses) near to the site that were pre-existing (macadamias and Seniors Living to the north east) and or recent developments (macadamias and community sporting fields) it is not considered that this proposed development will result in the creation of any land use conflict with neighbouring land uses that is greater than that which already exists in similar situations near to the site. Furthermore and based on the existing situations outlined it is not believed that there is any necessity for specialty buffer zones between the proposed development and neighbouring land uses.

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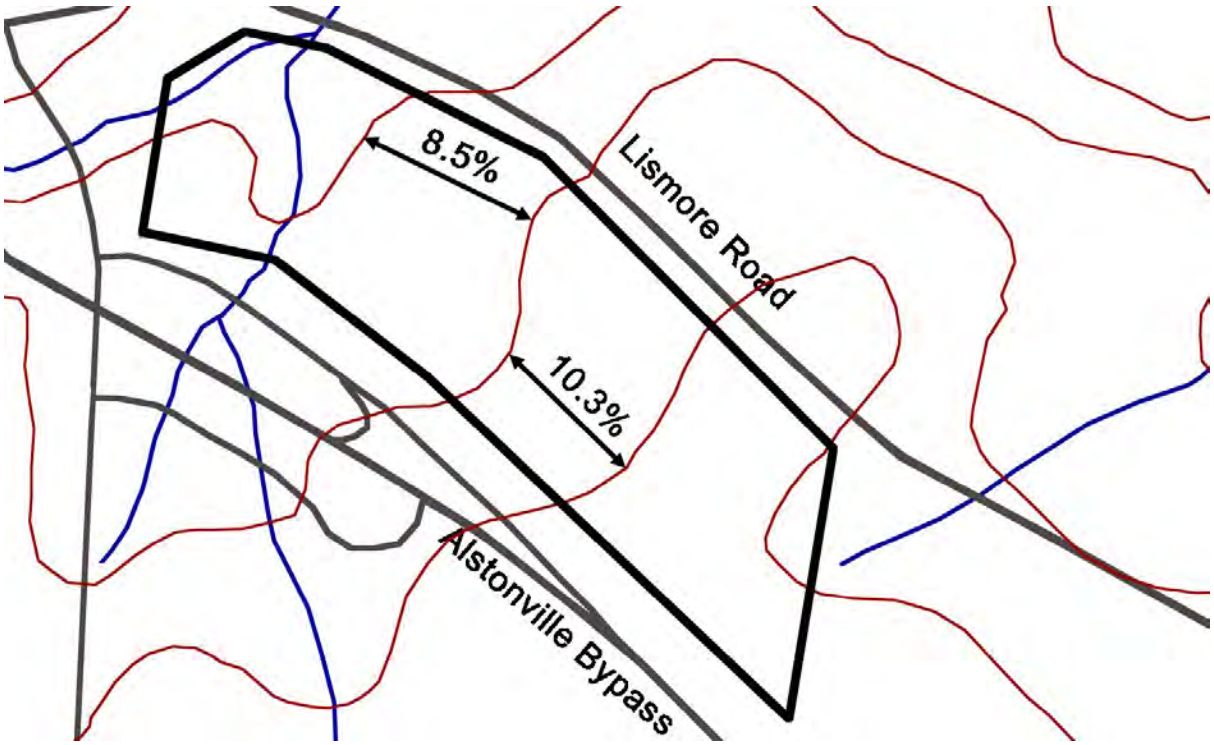
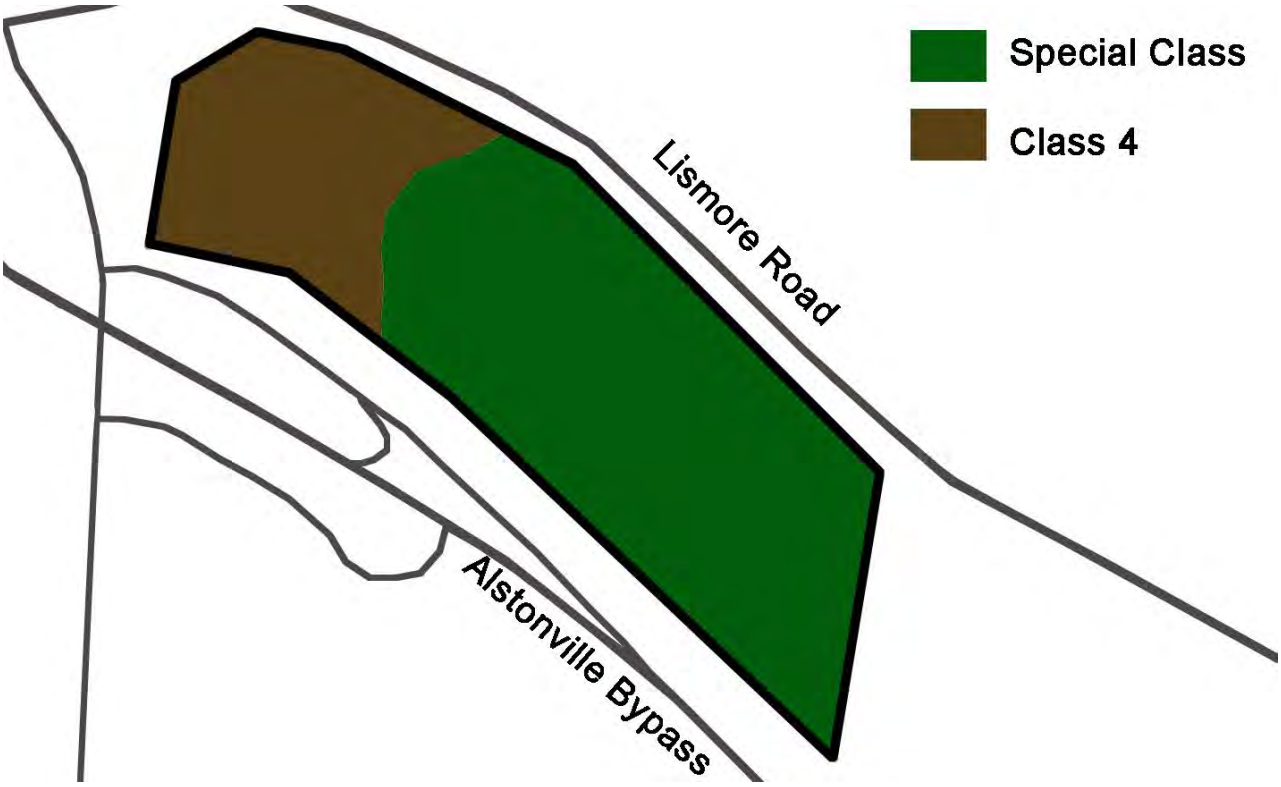
Appendix 1: Site Location

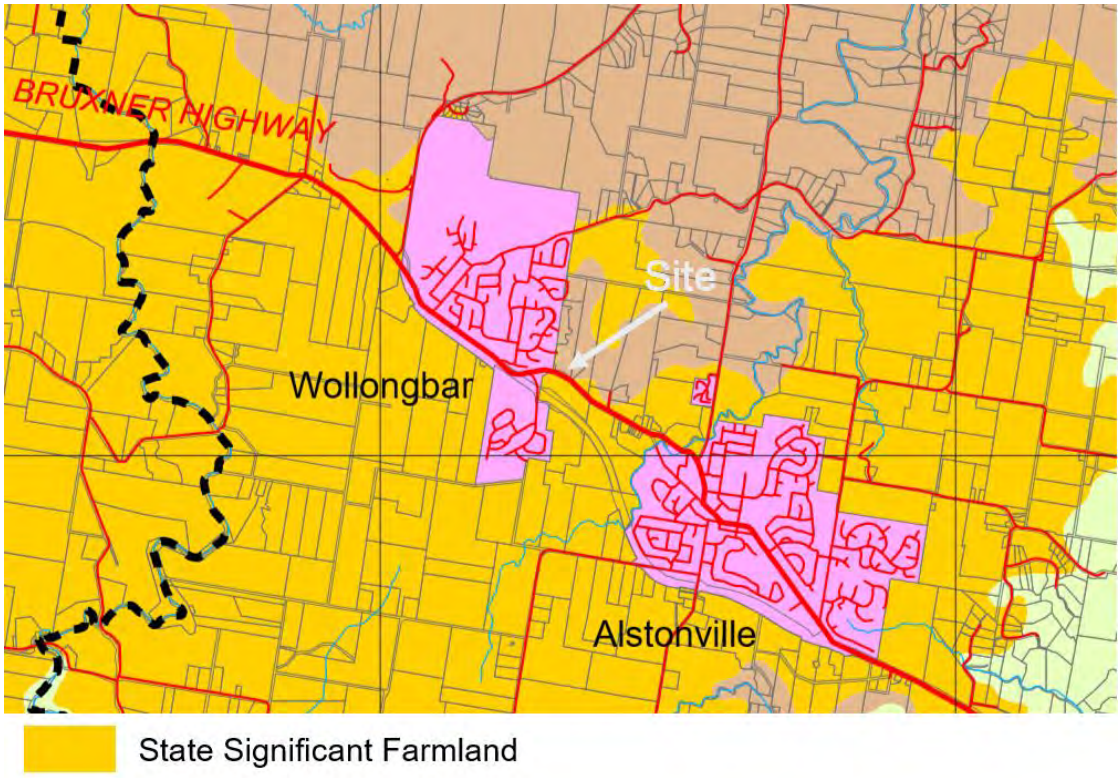
Appendix 2: Topography



Appendix 3: Land Classification



Appendix 4: Northern Rivers Farmland Protection Mapping



Appendix 5: Surrounding Land Uses

Appendix 6: Distances of Separation - potentially conflicting (local) land uses

Horticulture to Seniors Living - 20m

Grazing to Lifestyle - 5m
Horticulture to Lifestyle - 20m

Horticulture to Site - 45m
Grazing to Site - 5m
Grazing to Site - 90m

Horticulture to Council Sporting Fields - 40m

Horticulture to Industrial - 20m
Grazing to Industiral - 10m

Appendix 7: Macadamia Budget

Proposed Lismore Road		4.0	Ha of plantable land		1244	trees															
Calendar Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Age	Plant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
INCOME																					
Yield NIS/Tree - Kg	0	0	0	0	0.8	2.2	5.5	7.6	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Total Yield - Kg NIS	0	0	0	0	995	2,736	6,841	9,453	10,261	10,261	10,261	10,261	10,261	10,261	10,261	10,261	10,261	10,261	10,261	10,261	10,261
Long Term Industry Average $/k	$0	$0	$0	$0	$3,731	$10,261	$25,652	$35,447	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479	$38,479
EXPENDITURE																					
Capital	2886	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772	5772
Maintenance																					
Wages	4784	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568	9568
Workers Comp & Super	808	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615
Chemicals	80	159	318	478	637	796	955	1114	1274	1433	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592
Fertiliser (including lime)	219	438	876	1313	1751	2189	2627	3065	3502	3940	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378	4378
Repairs & Maintenance	180	390	421	454	491	530	572	618	668	721	180	195	210	227	245	265	286	309	334	361	180
Fuel	498	995	995	995	995	995	995	995	995	995	995	995	995	995	995	995	995	995	995	995	995
Insurance	80	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159
Other Expenses	199	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398	398
Contract Work																					
Skirting						498		498		498											
Limb removal (chipping)											2902	2902	2902	2902	2902	2902	2902	2902	2902	2902	2902
Pre-Harveset cleanup						1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Harvesting					249	684	1710	2363	2565	2565	2565	2565	2565	2565	2565	2565	2565	2565	2565	2565	2565
Tree Spraying					2080	2427	2773	3120	3467	3813	4160	4160	4160	4160	4160	4160	4160	4160	4160	4160	4160
NIS transport at $0.035/kg	0	0	0	0	35	96	239	331	359	359	359	359	359	359	359	359	359	359	359	359	359
Dehusking at $0.15/kg	0	0	0	0	149	410	1026	1418	1539	1539	1539	1539	1539	1539	1539	1539	1539	1539	1539	1539	1539
TOTAL EXPENDITURE	$9,733	$19,494	$20,122	$20,753	$23,899	$27,137	$29,411	$32,034	$32,881	$34,376	$37,183	$37,198	$37,213	$37,230	$37,248	$37,268	$37,289	$37,312	$37,337	$37,363	$37,183
NET INCOME	-$9,733	-$19,494	-$20,122	-$20,753	-$20,168	-$16,876	-$3,758	$3,413	$5,597	$4,103	$1,295	$1,281	$1,265	$1,248	$1,230	$1,211	$1,189	$1,167	$1,142	$1,115	$1,295
ACCUMULATED CASH	-$9,733	-$29,226	-$49,348	-$70,101	-$90,269	-$107,145	-$110,903	-$107,490	-$101,893	-$97,790	-$96,495	-$95,214	-$93,949	-$92,700	-$91,470	-$90,259	-$89,070	-$87,903	-$86,762	-$85,647	-$84,351

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 3
LEP Amendment Request
Planning Proposal
Housing Needs Assessment
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

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HOUSING NEEDS ASSESSMENT

Manufactured Housing Estate, Alstonville

Housing Needs Assessment

Prepared for Karalta Court Pty Ltd
December 2016

Prepared by:
Jon Norling, Director
Hannah Seymour, Consultant

Norling Consulting Pty Ltd
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CONTENTS

Appendices

1 INTRODUCTION

1.1 Background

Norling Consulting was commissioned by Planit Consulting on behalf of Karalta Court Pty Ltd to prepare a Housing Needs Assessment for a proposed manufactured housing estate to be located at a site located on the fringe of Wollongbar village.

This Report examines the demand and need for the proposed housing estate on the subject site by analysing the current supply of vacant residential zoned land and the factors contributing to the demand for residential within Wollongbar. Based on the demand and supply analysis, an estimate of how many years supply of residential land is provided to demonstrate the capacity of the Study Area.

Norling Consulting Pty Ltd is a boutique consultancy practice based in Brisbane, specialising in providing advice to developers and local authorities in Queensland and northern New South Wales. Norling Consulting applies market and economic advice to property decision-making, drawing upon a number of disciplines, including economics, geography, statistics, business analysis and urban planning. Our extensive experience in South East Queensland has provided our firm with a thorough understanding of the planning, political and consumer aspects of the population, employment and settlement growth trends within the region.

1.2 Study Objectives

This Housing Needs Assessment analyses the fundamental demand and supply imperatives that are underpinning the local residential market in Wollongbar and Alstonville and examines the economic need for the proposed development. An assessment of appropriately designated residential land under the relevant LEP has been undertaken to examine the timeframes as to when such remaining supply of available land would be exhausted. Furthermore, a review of the nature and preferences of the future residential growth market will be assessed to examine its implications in terms of local housing demand and choice within Wollongbar and Alstonville.

1.3 Report Structure

This report is structured as follows:

- *Chapter 1: Introduction* - This Chapter outlines the background, objectives and structure of this Housing Needs Assessment.
- *Chapter 2: The Proposed Development* – This Chapter provides a summary of the Ballina Region, the subject site and the proposed development. A contextual overview of the relevant planning documents is also provided.
- *Chapter 3: Residential Property Market* - This Chapter examines the historical trends within the local and regional residential property markets. A review of existing aged care accommodation facilities is provided as well as a brief discussion on housing affordability.
- *Chapter 4: Residential Demand Analysis* – This Chapter defines the Study Area and examines the demographic and socio-economic characteristics of the population. A discussion on the future demographic profile and its influence on housing is also provided.
- *Chapter 5: Residential Supply Analysis* - This Chapter provides a quantitative analysis of the quantum of residential zoned land that is practically available for future residential development within the Study Area.
- *Chapter 6: Needs Analysis* – This Chapter describes the level of economic and planning need for the proposed manufactured housing estate to be located at the subject site.
- *Chapter 7: Conclusion* - This Chapter summarises the key findings of this Housing Needs Assessment.

2 THE PROPOSED DEVELOPMENT

The purpose of this Chapter is to provide a summary of the Ballina Region, the villages of Wollongbar and Alstonville, the subject site and the proposed development. A contextual overview of the relevant planning documents is also provided.

2.1 Regional Context

The local government area of Ballina is within the Northern Rivers region of New South Wales, which also encompasses the local government areas of Byron, Clarence, Kyogle, Lismore, Richmond Valley and Tweed. Collectively, the Northern Rivers region is known for its scenic and environmental qualities, its mild sub-tropical climate, high rainfall and productive soils, artistic and creative talent together with inland farming communities and coastal surf culture influences.

In terms of Gross Regional Product (GRP), key industries in the region include health care and social services, manufacturing, construction, retail, education and training, accommodation and food services, agriculture, forestry and fishing, and financial, professional and other administrative support services. The key agricultural industries in the region include livestock, milk, sugar cane, cut flowers and nursery stock, macadamia nuts and fruit and vegetables.

Referred to as 'a region of villages', this reflects the settlement history of the area, which is characterised by dispersed small villages supported by larger towns. Wollongbar and Alstonville are two examples of villages situated between the larger centres of Lismore and Ballina. With only 30km separating the two larger centres, Lismore provides higher order facilities including medical specialists and Base Hospital services to the surrounding region.

Following strong growth on the Gold Coast and Tweed Heads, Ballina offers a quieter relaxed lifestyle region and is expected to continue to attract people seeking a quieter alternative to the busier communities to its north.

2.2 The Subject Site and Surrounds

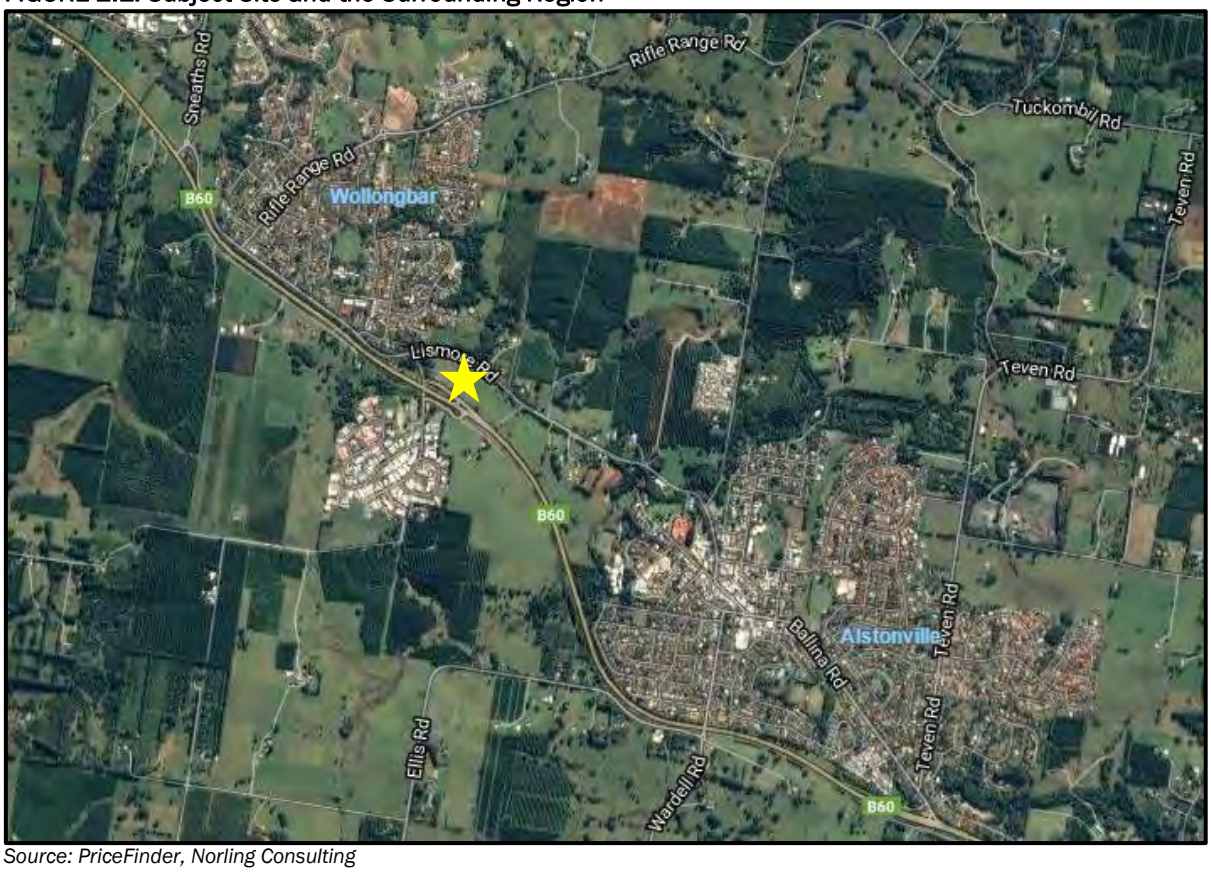
While technically located within the suburb of Alstonville, the subject site is located on the fringe of Wollongbar, a village located within the Ballina region. The village of Wollongbar is situated on an elevated plateau in the Northern Rivers Region of New South Wales. It is located 2km northwest of Alstonville, 18km west of Ballina and 15km east of Lismore. The village of Wollongbar is concentrated on the northern side of the Bruxner Highway with an industrial estate located on the southern side of the Highway.

Wollongbar provides a small community shopping centre with tenancies including a Foodworks supermarket, post office, medical centre, dentist, chemist, hairdresser, cafe and a tavern. Other community infrastructure and facilities include a primary school and sports oval, as well as a TAFE Campus located on Sneaths Road. The surrounding rural area is used largely for agricultural purposes, particularly macadamia nut and avocado growing.

Wollongbar is located on the 'Alstonville Plateau' which refers to the eroded remnants of an ancient shield volcano. The plateau is divided from the coastal plain by an escarpment which runs in a north-south direction through the Ballina Region. The Alstonville Plateau contains fertile soils that are ideal for agricultural purposes.

The following FIGURE 2.1 illustrates the locational context of Wollongbar and its close proximity to Alstonville.

FIGURE 2.1: Subject Site and the Surrounding Region



Source: PriceFinder, Norling Consulting

Alstonville is one of the oldest villages in the Ballina Region and is currently separated from Wollongbar by a green buffer. Alstonville provides a greater range of community facilities compared to Wollongbar including a full line supermarket, banks, post office, cafes, medical centre, public swimming pool and library. The industrial precinct at Wollongbar services both Wollongbar and Alstonville, although there is an Asphalt Plant operated by Boral located to the north east of Alstonville.

The 7.04ha site is formally described as Lot 10 on DP1059499 and is illustrated in the following Figure 2.2. Bounded by Lismore Road which connects Wollongbar and Alstonville to the north and Alstonville Bypass/Bruxner Highway to the south, the subject site is currently being utilised for cattle grazing purposes. Surrounding land uses include the industrial precinct located south of the Alstonville Bypass and horticulture farms to the north of Lismore Road.

It is located only 700m walking distance from the Wollongbar commercial precinct, much closer than houses located in the Wollongbar Urban Expansion Area.

FIGURE 2.2: The Subject Site and Surrounds

Source: PriceFinder, Norling Consulting

2.3 The Proposed Development

The proposal is for a manufactured housing estate for older persons seeking affordable housing. Manufactured housing estates offer affordable and relocatable housing where residents can own their own home and lease the land, paying ongoing rent. Ideally suited to retirees who may be cash poor, it allows them to free up their home equity by purchasing a cheaper home.

The subject site is a short walking distance from the Wollongbar shopping centre, school and tavern and is proximate to the industrial precinct. It also benefits from convenient access to Alstonville which provides a greater range of services than Wollongbar. The subject site is more proximate to services and facilities than the Wollongbar Urban Expansion Area (WUEA) located in the northern part of the Village.

2.4 Planning Context

Under the local planning framework, the Local Environmental Plan (LEP) and Development Control Plan (DCP) provide the basis for development assessment. The LEP establishes the overarching local planning policy of Council, focusing on the permissibility of certain land uses in the different areas of the Shire and development standards that direct land use outcomes. The DCP provides a greater level of detail in relation to the delivery of development outcomes and incorporates a variety of planning objectives and development controls that form Council's local planning policy when used in conjunction with the LEP.

The Ballina Local Environment Plan 2012 (BLEP 2012) commenced on 4 February 2013. Within the BLEP 2012, the subject site sits within the Deferred Matter area. Land identified as Deferred Matter is subject to the provisions of the Ballina Local Environmental Plan 1987 (BLEP 1987). Within the BLEP 1987, the subject site is zoned Environmental Protection – Urban Buffer of which the primary objective is to create a rural buffer between Alstonville and Wollongbar. The Deferred Matter areas are the result of a decision by the Minister for Planning to review the application of the Environmental zones (E zones) on the North Coast. This review is now complete and it is understood that Council will integrate the Department of Planning & Environment's recommendations into the BLEP 2012 through a staged program of amendments. This is likely to be finalised in 2018.

Council has commenced strategic planning for Alstonville, which involved a community engagement process and is currently preparing a strategic plan for the village. It is likely that a similar process would be undertaken for Wollongbar in the future.

3 RESIDENTIAL PROPERTY MARKET

The purpose of this Chapter is to examine the historical trends within the local and regional residential property markets. A review of existing aged care accommodation facilities is provided as well as a brief discussion on housing affordability.

3.1 The Residential Market

The residential property market within Wollongbar and Alstonville is intrinsically linked to the surrounding region and in particular, the larger nearby centres of Ballina and Lismore. The attractiveness of the region's sub-tropical climate, natural environment and lifestyle attributes also underpins residential growth.

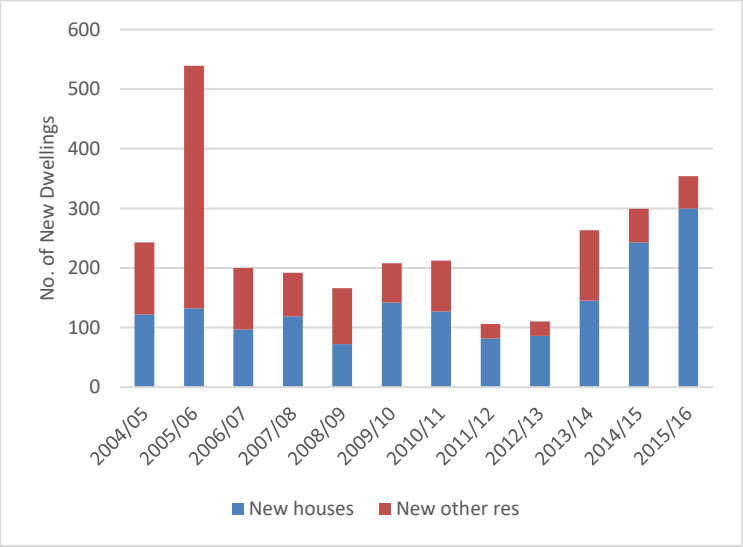
The following Table and Figure detail the number of new dwellings recorded in the local government area of Ballina.

Table 3.1: Building Approvals Ballina LGA

Year	New Houses	New Other	Total
2004/05	122	121	243
2005/06	132	407	544
2006/07	97	103	202
2007/08	119	73	192
2008/09	72	94	166
2009/10	142	66	209
2010/11	127	85	212
2011/12	82	24	109
2012/13	86	24	111
2013/14	145	118	268
2014/15	243	56	304
2015/16	300	54	367
2016/17*	77	20	97

Up to and including September 2016
Source: ABS

Figure 3.1: Building Approvals Ballina LGA



The number of new dwellings within Ballina remained in the order of 200 new dwellings per year (apart from the significant 544 recorded in 2005/06) before dropping to 109-111 in the 2011/12 and 2012/13 period. Following these lows, the number of new dwellings increased

in the following three consecutive years to reach 367 in 2015/16. Approximately 45% of the above totals for Ballina were recorded within the Ballina Region SA2, which incorporates the regional area of the Ballina LGA (including Wollongbar and Alstonville) and excludes Ballina, Lennox Head and Skennars Head.

The Ballina property market has improved significantly in the past few years with sales volumes of vacant land, houses and units increasing. Median prices have also improved with annual increases of up to 13.8% experienced. This is highlighted in the Table 3.2 below.

Table 3.2: Ballina LGA Vacant Land, House and Unit Sales

	Vacant Land Sales			House Sales			Unit Sales		
Year	Volume (No.)	Median ($)	Growth	Volume (No.)	Median ($)	Growth	Volume (No.)	Median ($)	Growth
2011	79	265,000		398	485,000		209	355,000	
2012	91	250,000	-5.7%	407	480,000	-1.0%	228	340,000	-4.2%
2013	196	235,000	-6.0%	506	500,000	4.2%	292	352,000	3.5%
2014	225	239,000	1.7%	566	509,600	1.9%	361	355,000	0.9%
2015	234	250,000	4.6%	643	580,000	13.8%	405	380,000	7.0%
2016*	158	260,000	4.0%	558	591,000	1.9%	337	410,000	7.9%

**Year to date*
Source: PriceFinder

Similarly to Ballina, the housing market within Wollongbar and Alstonville suburbs has also significantly improved in recent years, particularly in relation to vacant land sales within Wollongbar, as shown below.

Table 3.3: Vacant Residential Land Sales – Wollongbar & Alstonville

	Wollongbar			Alstonville		
Year	Volume (No.)	Median ($)	Growth	Volume (No.)	Median ($)	Growth
2011	12	232,500		3	355,000	
2012	17	220,000	-5.4%	4	223,500	-37.0%
2013	55	195,000	-11.4%	7	252,000	12.8%
2014	48	205,000	5.1%	5	300,000	19.0%
2015	50	217,000	6.1%	8	330,000	10.0%
2016*	22	232,000	6.7%	8	290,000	-12.1%

**Year to date*
Source: PriceFinder

From 2013, the number of sales within Wollongbar have increased significantly following the commencement of the Wollongbar Urban Expansion Area. Sales within Alstonville have remained below 10 throughout the period analysed, indicating the lack of vacant residential zoned land.

The volume of house sales have remained relatively constant within Wollongbar, although have increased in 2015 and 2016 to date. Given its larger size, Alstonville has recorded a greater volume of house sales, which increased in 2013 and has remained consistent since. The median sales prices are similar for both communities with Wollongbar recording a 2016 median price of $265,000, only $2,000 less than Alstonville. Table 3.3 details house sales within the Wollongbar and Alstonville.

Table 3.4: House Sales – Wollongbar & Alstonville

	Wollongbar			Alstonville		
Year	Volume (No.)	Median ($)	Growth	Volume (No.)	Median ($)	Growth
2011	34	428,000		86	392,000	
2012	31	411,000	-4.0%	72	387,500	-1.1%
2013	33	400,000	-2.7%	96	420,000	8.4%
2014	37	440,000	10.0%	92	432,500	3.0%
2015	49	460,000	4.5%	95	465,000	7.5%
2016*	50	465,000	1.1%	93	467,000	0.4%

**Year to date*
Source: PriceFinder

With respect to unit sales, there are fewer sales compared to houses, which is unsurprising given the nature of the low density communities dominated by detached dwellings. Interestingly, Wollongbar median unit prices are considerably higher than in Alstonville (see below).

Table 3.5: Unit Sales – Wollongbar & Alstonville

	Wollongbar			Alstonville		
Year	Volume (No.)	Median ($)	Growth	Volume (No.)	Median ($)	Growth
2011	8	257,500		21	263,500	
2012	11	300,000	16.5%	30	278,000	5.5%
2013	20	303,500	1.2%	31	280,000	0.7%
2014	10	300,000	-1.2%	45	275,000	-1.8%
2015	18	327,500	9.2%	50	282,500	2.7%
2016*	14	361,000	10.2%	44	290,500	2.8%

**Year to date*
Source: PriceFinder

In comparison to the current house prices of $460,000 and current unit prices of $290,000 (Alstonville) and $360,000 (Wollongbar), recent sales of manufactured homes within the Alstonville Leisure Village have averaged only $250,000. This evidences the much greater levels of affordability of manufactured housing options targeted at retirees.

3.2 Aged Care Accommodation

There are currently two aged care facilities operating within Alstonville and none within Wollongbar. The two facilities are described below:

Alstonville Adventist Aged Care Facility

The Alstonville Adventist Aged Care facility comprises a village with 84 villas in one, two and three bedroom designs, all of which are currently occupied (there is a waiting list). The facility also provides a 51-bed aged care facility allowing for ageing in place and accommodating the needs of residents from low to high level care. Assistance with cleaning, laundry, personal care and other day-to-day needs are available in the higher care facility. Located at 77 Pearces Creek Road, Alstonville, the facility is separated from the main village area (1.1km) of Alstonville and is set amongst a Macadamia farm.

BaptistCare Maranoa

Located at 15 The Avenue, Alstonville (only 400m from the commercial centre), Maranoa Village provides 13 one-bedroom units and 15 two bedroom units facilitating independent living for those that require low levels of care. Also allowing for the transition into higher levels of care, the co-located Maranoa Centre provides 90 beds for residents offering dementia care and respite care. Individual and companion rooms are also provided. An application has recently been lodged for the re-development of Alstonville Maranoa with Stage one involving the construction of 12 self-contained dwellings.

While not a dedicated aged care the **Alstonville Leisure Village** is a relocatable home park offering affordable housing. Located on Ballina Road, Alstonville, the homes include a mix of one and two bedroom homes which are set on small lots with communal gardens and swimming pool. There are currently no homes available for sale within this village.

3.3 Housing Affordability

While housing affordability is an internationally used term, in Australia, the former National Affordable Housing Summit Group (now called the National Affordable Housing Consortium) developed their definition of affordable housing as housing that is, "*...reasonably adequate in standard and location for lower or middle income households and does not cost so much that a household is unlikely to be able to meet other basic needs on a sustainable basis."*

The common measure adopted to determine housing affordability is that housing is considered affordable if it costs less than 30% of gross household income. While Australian housing affordability improved in early 2016, there was an overall decline over the past 12 months to March 2016. Meanwhile, house prices in Sydney continue to outstrip all other cities, making Sydney the most unaffordable city in Australia.

Federal government initiatives have been developed to address the issue on housing affordability in Australia. In order to improve housing affordability, Ballina Shire Council received a Federal Government Grant to develop a scheme to assist low to moderate income earners to purchase land at a $25,000 discount within the Wollongbar Urban Expansion Area along with two other areas elsewhere in Ballina (Ballina Heights and Cumbalum Urban Release Area A (CURA A) Estate). This was achieved by a reimbursement to developers of $25,000 off their developer contributions. Council was required to put in place a land buyers' subsidy scheme for 120 lots over four years on Ballina Heights Estate and CURA A and 96 lots over four years on the Wollongbar Urban Release Area (WURA). The WURA land buyers' scheme is now complete, with all grants having been issued.

At the State level, since 2012, the NSW Government's First Home Owner Grant has been targeted to encourage increased housing supply, providing $10,000 towards the construction or purchase of newly built homes valued up to $750,000. The First Home – New Home scheme also provides further financial assistance for first homebuyers through full exemptions from stamp duty on new homes valued up to $550,000, and stamp duty concessions on new homes valued between $550,000 and $650,000.

Both the Far North Coast Regional Strategy 2006 and the Draft North Coast Regional Plan recognise the need to provide affordable housing, identifying specific actions on facilitating the supply of more affordable housing. Specifically, within the Draft North Coast Regional Plan one of the actions for Direction 3.3 'Deliver more opportunities for affordable housing' is to 'facilitate the supply of more affordable housing.' Furthermore, it states that one of the ways that Councils can help to improve housing affordability is "*promotion of new caravan parks and manufactured home estates on unconstrained land in existing settlements and new land release areas in the urban growth areas*." (Action 3.3.1., Goal 3 – Housing choice, with homes that meet the needs of changing communities).

The NSW Government is also working on a whole-of-government strategy for affordable housing. The strategy will assess the need for social, public and affordable housing across NSW, provide greater planning certainty, and facilitate complementary activities such as partnering with affordable housing providers.

4 RESIDENTIAL DEMAND ANALYSIS

This Chapter defines the Study Area and examines the demographic and socio-economic characteristics of the population. A discussion on the future demographic profile and its influence on housing is also provided.

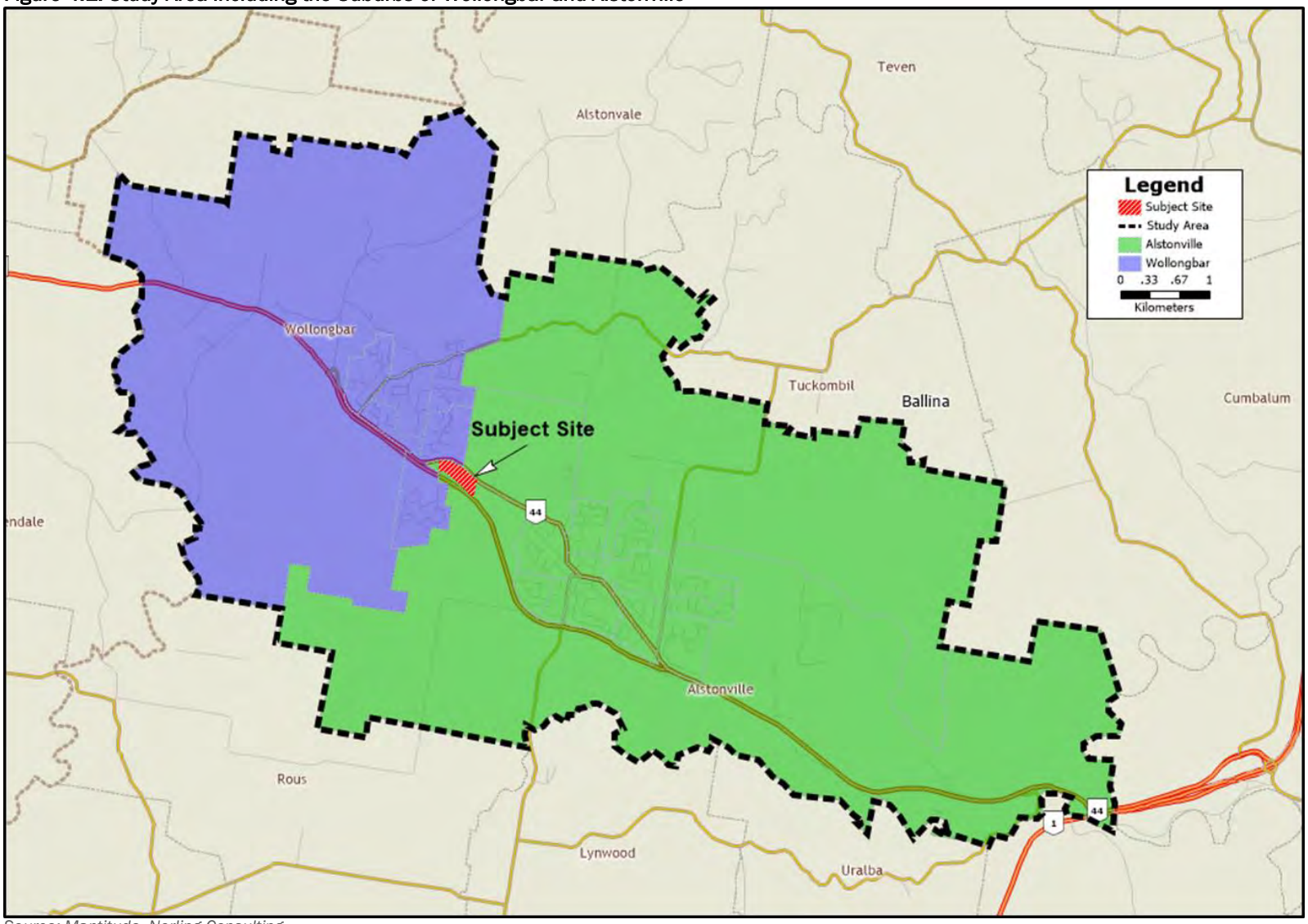
4.1 Study Area Definition

The Study Area is illustrated in Figure 4.1 (overleaf) and has been defined based upon the following:

- Given the location of the subject site on the fringe of Wollongbar but within the suburb of Alstonville, the Study Area has been defined to include the Australian Bureau of Statistics (ABS) defined suburbs of Wollongbar and Alstonville. This area includes the two villages as well as the surrounding rural community that the villages service.
- The Wollongbar suburb is defined by the ABS as comprising 6 Statistical Areas Level 1 (SA1) and the Alstonville suburb comprises 17 SA1's. These geographical areas are the smallest areas for which Census data is collected.

While the Study Area incorporates both Wollongbar and Alstonville and the surrounding rural properties, it is relevant at times in this Report to examine each village separately to understand the different profiles of each.

Figure 4.1: Study Area including the Suburbs of Wollongbar and Alstonville



Source: Maptitude, Norling Consulting

4.2 Population and Household Growth

TABLE 4.1 summarises the historic population growth of Wollongbar, Alstonville and Ballina LGA (for comparison purposes). The estimates are based upon information sourced from the Australian Bureau of Statistics (ABS) Population and Household Censuses, ABS Estimated Resident Population publications as well as Norling Consulting's analysis of Google Earth aerial photos to determine the level of growth that has occurred in Wollongbar and Alstonville post 2011. It is Norling Consulting's opinion that the 2015 ABS estimates for Wollongbar and the Ballina LGA are too low based upon the significant new growth that has occurred in Wollongbar post 2011. However, this will not be confirmed until the results of the 2016 Census are released (progressively during 2017).

TABLE 4.1: Historical Population and Household Growth

	2001	Incr. p.a.	2006	Incr. p.a.	2011	Incr. p.a.	2015	% p.a. 2001-2015
Wollongbar								
ERP	2,475	-0.1%	2,459	0.0%	2,459	4.2%	2,894	1.1%
Households	917	8	957	2	968	38	1,122	
Persons per household	2.70		2.57		2.54		2.58	
Alstonville								
ERP	5,539	1.0%	5,816	0.0%	5,830	0.1%	5,858	0.4%
Households	2,419	36	2,596	-10	2,546	9	2,581	
Persons per household	2.29		2.24		2.29		2.27	
Study Area (Wollongbar + Alstonville)								
ERP	8,014	0.6%	8,275	0.0%	8,289	1.4%	8,752	0.6%
Households	3,335	44	3,553	-8	3,514	47	3,702	
Persons per household	2.40		2.33		2.36		2.36	
Ballina LGA								
ERP	37,856	0.9%	39,537	0.6%	40,747	0.8%	42,078	0.8%
Households	15,708	167	16,543	145	17,266	160	17,906	
Persons per household	2.41		2.39		2.36		2.35	

Source: ABS and Norling Consulting's estimates

Overall the local government area of Ballina has experienced constant modest growth of around 0.8% per annum between 2001 and 2015. The 2006 to 2011 period was the weakest with only 1,210 persons added to the region total. As at 2015 it was estimated that Ballina had a population of approximately 42,080 persons.

The Study Area was estimated to comprise a total of 8,750 persons as at 2015. Between 2001 and 2006 the Study Area grew by 260 persons to reach a 2006 population of 8,275. Very little growth occurred during the 2006 to 2011 period, with the population increasing by only 14 during this five year period. The Study Area experienced its strongest levels of growth post 2011 with an average annual growth rate of 1.4% estimated.

When examined separately, the population of Wollongbar declined between 2001 and 2011 from 2,475 persons to 2,459 persons. However, following 2011, significant growth has occurred in the northern part of the village and it is estimated that the population grew by 4.2% per annum to reach a 2015 population of 2,894. Wollongbar has less than half the population of its neighbouring village Alstonville.

Between 2001 and 2006 Alstonville grew at a rate of 1.0% per annum to reach a population of 5,816. However, Alstonville has experienced very little growth post 2006. As at 2015 it is estimated that the urban centre of Alstonville had a population of 5,858 persons.

Table 4.2 summarises the population projections for Wollongbar, Alstonville and the Ballina LGA, which have been derived from population projections prepared for the Ballina LGA by the New South Wales Government Planning and Environment Department.

It is noted that a large amount of land within the Study Area is identified as a Deferred Matter within the 2012 LEP. The 1987 LEP therefore applies to this land and within this LEP the area is divided into primarily Environmental Protection – Urban Buffer Zone with two parcels within the Rural – Extractive & Mineral Resources Zone and a small parcel of land within the Environmental Protection – Habitat Zone. While this land is currently governed by very dated planning designations due to the State Government undertaking a review of the environmental zones, it has been assumed that there would be limited future residential growth within the Deferred Matter area, with these areas likely to continue to be intended for rural and agricultural purposes.

TABLE 4.2: Population and Household Projections

	2016	2021	2026	2031	2036	% p.a. 2016-2036
Wollongbar						
ERP	3,019	3,584	4,140	4,637	5,100	2.7%
Households	1,170	1,400	1,630	1,840	2,040	-
Persons per household	2.58	2.56	2.54	2.52	2.50	-
Alstonville						
ERP	5,853	5,869	5,883	5,896	5,908	0.1%
Households	2,590	2,620	2,650	2,680	2,710	-
Persons per household	2.26	2.24	2.22	2.20	2.18	-
Study Area						
ERP	8,872	9,453	10,023	10,533	11,008	1.1%
Households	3,760	4,020	4,280	4,520	4,750	-
Persons per household	2.36	2.35	2.34	2.33	2.32	-
Ballina						
ERP	**42,100**	**43,250**	**44,300**	**45,150**	**45,850**	0.4%
Households	**18,069**	**18,723**	**19,430**	**20,067**	**20,561**	-
Persons per household	**2.33**	**2.31**	**2.28**	**2.25**	**2.23**	-

Source: ABS, NSW Govt Dept of Planning & Environment and Norling Consulting's estimates

According to the latest population forecasts prepared for Ballina LGA, the population is projected to increase at a steady rate of around 0.4% per annum. Ballina is projected to grow by an additional 3,750 persons between 2016 and 2036 to reach 45,850 persons by 2036.

Between 2016 and 2021, the resident population of the Study Area is projected to increase at a rate of 1.3% per annum to comprise some 9,450 persons. By June 2026, it is projected that the resident population of the Study Area would accommodate some 10,020 persons. Continuing to grow at an average rate of 1.0% to 2036, the population is projected to reach 11,008 by 2036.

The majority of future growth within the Study Area will occur within Wollongbar due to the location of the Wollongbar Urban Expansion Area. Growth occurring within Alstonville would be limited to infill development and intensification within appropriate areas.

4.3 Socio-Economic and Demographic Characteristics

The results of the 2011 ABS Population and Household Census have been utilised to examine the demographic and socio-economic characteristics of the Study Area. Table 4.3 presents a detailed summary of the characteristics of the Study Area community, with comparisons made with Ballina LGA and the NSW State average. The separate characteristics of Wollongbar and Alstonville are also examined to identify any significant differences between the two villages.

Key characteristics of the Study Area and including information from previous Censuses to profile how the Ballina Region has changed over time, are detailed below.

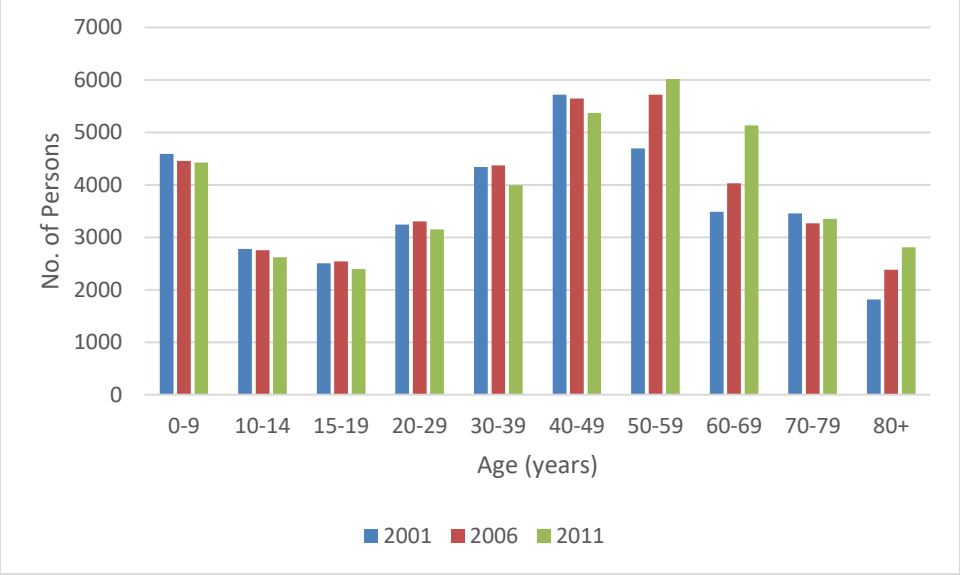
Age Structure

The age structure of the Ballina Region is markedly different from the State average with a lower proportion of younger persons and a higher proportion of older persons. The Study Area displayed a similar profile with fewer children and young adults and greater proportions of persons aged 50 years and above. Both the Ballina Region and the Study Area may be described as accommodating large retiree populations.

While Alstonville in particular has a significant amount of persons age 65+, Wollongbar displayed a younger demographic in comparison. Wollongbar had a similar proportion of younger children (under 10 years) to the State average, but had a higher proportion of older children and teenagers (10 – 19 years). However, the proportion of 20-somethings was significantly below average as is similar to Alstonville and the Ballina Region. Within Wollongbar, the proportion of persons aged 50 and above (38.8%) was higher than the State average (33.2%) but not nearly as high as within Alstonville (48.0%).

Compared to previous Censuses, there is a trend towards an ageing population within Ballina. The following chart highlights the ageing that has occurred over the decade between 2001 and 2011.

Figure 4.2: Age Profile of Ballina LGA 2001 - 2011



Source: ABS 2001, 2006 & 2011 Census, Norling Consulting

In particular, the proportion of persons aged 50 years and older has increased significantly from 36.7% of the population in 2001 to 44.1% of the population in 2011.

At the time of the 2011 Census, the median age of Ballina residents was 45, significantly higher than the State average of 38. The median age of Wollongbar and Alstonville residents was also higher than the State average, with Alstonville having an older median age of 48 compared to Wollongbar (42).

Family Type

The household composition of the Study Area (also reflected within the Ballina LGA overall), reveals higher proportions of couple only and single parent households as well as an increased proportion of lone persons. Alstonville in particular displayed a higher proportion of lone persons (12.9%) in comparison to Wollongbar (7.8%) and the State average (9.3%).

In the past decade, between the 2001 Census and the 2011 Census, the household composition for Ballina LGA has changed slightly, with fewer households with children and dependent students. The incidence of single parents and lone persons has increased over this period.

Housing

The most common type of dwelling within the Region is the detached house which is unsurprising given the low density nature of the villages. The prevalence of this form of housing has remained relatively consistent over the past decade, increasing by nearly four percentage points between 2001 and 2011 to reach 71.1% of dwellings. For the same period there has been an increase in the proportion of flats, units or apartments but a decrease in the proportion of semi-detached housing types (townhouses, terrace houses, etc.).

Education

At the time of the 2011 Census, the Study Area had a higher incidence of persons who had achieved a certificate or advanced diploma. In comparison, post graduate qualifications and Bachelor degree attainment was lower than the State average.

Employment

The community, health, safety and recreation industry employed nearly 40% of Study Area workers at the time of the 2011 Census. At the same time there were fewer persons employed within the finance and insurance, property and business industries. This reflects the suburban nature of the villages and the focus on providing essential services and facilities to service its residents.

At the time of the 2011 Census, the unemployment rate within the Study Area (4.7%) was lower than both the Ballina (6.3%) and State averages (5.9%). In contrast however, workforce participation rates were lower, indicative of the significant retirement age contingent within the Study Area communities. More recently, in the 2016 June Quarter the unemployment rate for Ballina was 5.4%, a rate slightly higher than the State average (5.2%).

Mobility

At the time of the 2011 Census, the Study Area had fewer households with no motor vehicles and a greater proportion of households with one or more motor vehicles. This highlights the reliance on motor vehicles to access places of employment and other shopping and essential facilities. Wollongbar in particular had higher levels of vehicle ownership compared to Alstonville, with only 2.7% of Wollongbar households without a vehicle (c.f. 6.8% for Alstonville). This is unsurprising given that residents would often need to travel to Alstonville (at the very least) to access the greater range of facilities compared to what is provided within Wollongbar.

Income

At the time of the 2011 Census, Study Area households had a lower income ($63,720) compared to the State average ($67,400). However, when examining the villages separately, Wollongbar displayed a higher than average income ($69,550) which was tempered by the larger size of Alstonville and its lower average income levels ($61,590).

4.3: Key Demographic and Socio-economic Characteristics

	Wollongbar	Alstonville	Study Area	Ballina LGA	New South Wales
Age Distribution (%)					
0 - 4	5.7%	5.4%	5.5%	5.4%	6.6%
5 - 9	6.8%	5.5%	5.9%	5.8%	6.3%
10 - 19	15.2%	12.1%	13.0%	12.8%	12.8%
20 - 29	7.6%	7.2%	7.3%	8.0%	13.3%
30 - 49	25.8%	21.8%	23.0%	23.8%	27.8%
50 - 64	22.7%	20.6%	21.2%	22.6%	18.5%
65+	16.1%	27.4%	24.0%	21.5%	14.7%
Household Composition (%)					
Couple only	50.8%	48.1%	48.9%	47.4%	45.7%
Single Parent	5.8%	5.6%	5.6%	5.3%	4.6%
Parents with children under 15 years	20.6%	18.2%	18.9%	18.3%	19.6%
Parents with dependent students	5.1%	4.3%	4.5%	4.4%	5.3%
Parents with non-dependent children	5.6%	4.3%	4.7%	5.0%	6.7%
Group Household	1.4%	2.1%	1.9%	3.2%	3.3%
Lone Persons	7.8%	12.9%	11.4%	11.6%	9.3%
Other	8.3%	8.7%	8.6%	8.7%	11.6%
Workforce Status (%)					
Male workforce participation rate	67.2%	57.9%	60.7%	62.1%	69.5%
Female workforce participation rate	61.0%	46.8%	50.7%	53.5%	57.4%
Total workforce participation rate	63.9%	51.7%	55.2%	57.5%	63.3%
Unemployment Rate	4.2%	5.0%	4.7%	6.3%	5.9%
Highest Qualification Achieved (%)					
Post graduate qualification	3.4%	4.0%	3.8%	3.9%	7.5%
Bachelor degree	20.6%	22.4%	21.8%	21.6%	24.6%
Certificate/Advanced diploma	57.7%	57.9%	57.8%	55.2%	47.9%
Occupation of the Workforce (%)					
Managers/Professionals	33.5%	35.2%	34.7%	34.2%	36.1%
Technicians and Trades	12.9%	13.2%	13.1%	13.9%	13.2%
Community, personal services, admin and sales	38.6%	36.0%	36.9%	35.3%	33.8%
Machine operators, drivers and labourers	14.2%	14.8%	14.6%	15.4%	15.1%
Industry of the Workforce (%)					
Agriculture, forestry and fishing	3.6%	3.5%	3.5%	4.3%	2.2%
Mining	.3%	.9%	.7%	.5%	1.0%
Manufacturing, transport, postal and warehouse	9.7%	8.7%	9.1%	8.7%	13.4%
Electricity, gas, water and water services	1.2%	.9%	1.0%	.9%	1.1%
Construction	7.7%	7.4%	7.5%	9.1%	7.3%
Wholesale and retail trade	16.6%	14.0%	14.9%	15.7%	14.8%
Accommodation and food services	6.2%	8.6%	7.8%	9.0%	6.7%
Finance and insurance, property and business	6.6%	7.2%	7.0%	8.4%	12.3%
Community, health, safety and recreation	38.7%	37.9%	38.2%	33.0%	27.2%
Other	8.3%	8.7%	8.6%	8.7%	11.6%
Nature of Occupied Dwellings (%)					
Owned outright	38.2%	46.5%	44.2%	40.2%	33.2%
Mortgage committed	37.5%	26.9%	29.8%	26.7%	33.4%
Rented	22.5%	22.4%	22.4%	29.2%	30.1%
Structure of Occupied Dwellings (%)					
Separate house	89.6%	76.1%	79.8%	71.1%	69.5%
Semi-detached row/terrace/townhouse	4.9%	8.8%	7.7%	12.8%	10.7%
Flat/unit	5.1%	11.5%	9.8%	12.8%	18.8%
Number of Motor Vehicles per Dwelling (%)					
No vehicle	2.7%	6.8%	5.7%	7.5%	10.4%
1 vehicle	36.9%	41.4%	40.1%	39.2%	37.8%
2+ vehicles	58.4%	48.9%	51.5%	50.4%	48.6%
Average Annual Household Income ($)	$ 69,550	$ 61,590	$ 63,720	$63,280	$67,400

Source: ABS, Norling Consulting

4.4 Demographic Projections and Housing Implications

The NSW Department of Planning & Environment has prepared age group projections to 2036 for the Ballina LGA. The following table details the breakdown of age groups for 2011, 2021 and 2031.

Table 4.4: Population Projections by Age Group Proportions 2011, 2021 and 2031 – Ballina LGA

Age Groups	2011	2021	2031
0-14	17.9%	17.3%	16.5%
15-24	10.6%	9.5%	9.2%
25-44	21.1%	20.2%	18.9%
45-64	29.2%	27.3%	25.4%
65+	21.2%	25.8%	30.0%
Total	100.0%	100.0%	100.0%

Source: NSW Govt Dept of Planning & Environment

The above Table highlights the expected strong growth of the older population, in particular the 65+ age group which is projected to grow from comprising 21.2% of the population to 30% of the population by 2031.

Projections by household type have also been prepared for the Ballina Region. Table 4.5 details these changes over 2011, 2021 and 2031.

Table 4.4: Household Type Projections 2011, 2021 and 2031 – Ballina LGA

Age Groups	2011	2021	2031
Couple only	31.6%	33.5%	34.0%
Couple with children	26.3%	24.5%	23.0%
Single parent	10.9%	10.4%	10.0%
Other family household	2.1%	2.2%	2.0%
Lone person	25.4%	26.2%	27.9%
Group	3.5%	3.3%	3.1%
Total	99.7%	100.0%	100.0%

Source: NSW Govt Dept of Planning & Environment

The household types that are anticipated to be the major drivers of household growth for the Ballina Region are couples only households and lone person households. In particular, 94% of the additional household growth is expected to be comprised of these household types.

Overall the Study Area displays the characteristics of an older community with fewer children and fewer teenagers and young adults. When examining Wollongbar and Alstonville separately, there are some distinctive differences between the two villages. In particular,

Wollongbar is a younger community in comparison to Alstonville and it is expected that this will become more evident following the 2016 Census, which will have captured the new residents living in the WUEA. The WUEA is expected to continue to attract younger residents including families.

Whilst the ageing of the population will be tempered somewhat by the new growth occurring in Wollongbar, overall, the population will continue to age with higher levels of smaller households and lone persons. The ageing population is anticipated to drive demand for additional smaller, cheaper and different housing products.

According to the Australian Government Productivity Commission's Research Paper on Housing Decisions of Older Australians, older residents prefer to age in place and while most are happy to remain in their family home, others prefer age-specific housing options that provide more integrated accommodation and care and may delay entry into residential aged care. As such growth in retirement villages and manufactured home estates has been strong and is expected to continue as the population ages at an increasing rate.

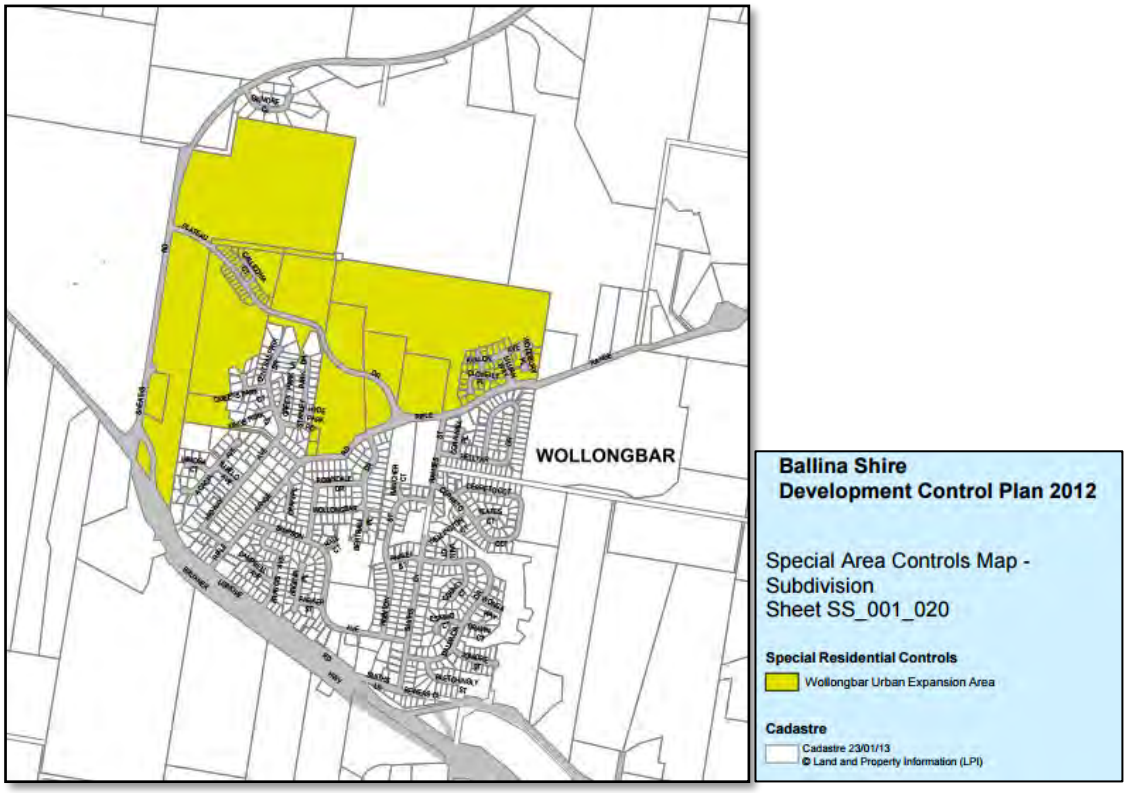
5 RESIDENTIAL SUPPLY ANALYSIS

This Chapter provides quantitative analysis of the quantum of residential zoned land that is practically available for future residential development within the Study Area. Adopting a determined dwelling density to the identified vacant residential zoned land, the future dwelling capacity of the BLEP 2012 was identified. Based on the population and household projections and historic growth rates, it was determined when the available stock of vacant Greenfield land will be exhausted.

In order to examine the availability of residential land, Norling Consulting undertook an assessment of vacant land designated for urban residential development within Wollongbar and Alstonville. This assessment focussed on the capacity of the BLEP 2012 to accommodate future residential growth.

Within the Study Area, the BLEP 2012 and DCP identifies the Wollongbar Urban Expansion Area, illustrated below, which is intended to provide for future growth. The WUEA comprises an area of some 104ha located on the northwestern edge of Wollongbar.

Figure 5.1: Ballina Shire DCP 2012 Special Area Controls Map – Wollongbar Urban Expansion Area



Source: Ballina Shire DCP 2012

Apart from the WUEA, there is a very limited amount of vacant residential zoned land within Alstonville and Wollongbar. However, there would still be some level of infill occurring over time. Chapter 15 – Wollongbar Urban Expansion Area of the Ballina Shire Combined Development Control Plan outlines a land budget for the WUEA including a breakdown by lot, land use, area, dwellings per hectare and dwelling estimates. This was utilised and updated to reflect the recent development that has already occurred within the WUEA.

Norling Consulting has inspected vacant and underutilised lands in December 2016 together with the viewing of satellite images (Google Maps). The detailed results of these investigations are detailed in Appendix A and summarised below:

Table 5.1: Vacant and Underutilised Zoned Residential Land

Study Area	Vacant and Underutilised* Land (ha)
Wollongbar Urban Expansion Area	77.23
Wollongbar (Outside WUEA)	4.27
Alstonville	2.90
Total	**84.40**

**underutilised includes large sites greater than 1ha that may have a single home. It excludes lots containing churches which are unlikely to be redeveloped in the short to medium term.*
Source: Ballina DCP, Norling Consulting, PriceFinder

In total, there is approximately 84ha of vacant and underutilised land within the Study Area, the majority of which is within the WUEA.

The Ballina Shire DCP divides the WUEA into 2 distinct residential precincts. Precinct 1 contains land that is characterised by slopes less than 12 degrees. Precinct 2 contains land that is characterised by slopes in excess of 12 degrees. An average dwelling density of 15 dwellings per ha was adopted for Precinct 1 and an average of 10 dwellings per ha was adopted for Precinct 2. However, based upon the actual rate at which the land within the WUEA has been developed so far, an average of 10 dwellings per hectare is more appropriate for all developable areas. Therefore, for the purposes of this Study a dwelling density of 10 dwellings per hectare has been adopted. For the areas outside of the WUEA, the developable area of each lot is assumed to comprise 80% of the total lot area. This allows for roads and any buffering requirements.

The following Table outlines the total dwelling capacity within vacant and underutilised land within the Study Area:

Table 5.2: Lot/Dwelling Capacity within the Study Area

Study Area	Vacant or Underutilised* Land (ha)	Total Dwellings
Wollongbar Urban Expansion Area	77.23	529
Wollongbar (Outside WUEA)	4.27	34
Alstonville	2.90	23
Total	**84.40**	**586**

**underutilised includes large sites greater than 1ha that may have a single home. It excludes lots containing churches which are unlikely to be redeveloped in the short to medium term.*
Source: Ballina DCP, Norling Consulting, PriceFinder

Based upon this analysis, there is capacity for approximately 586 dwellings within appropriately zoned vacant residential land within the Study Area.

In assessing the number of years supply, the residential demand for future take-up within the Study Area is assessed with the following underpinning the analysis:

- Based on PriceFinder data of vacant residential land sales, there has been an average of 51 sales over the past three full years (2013, 2014 & 2015) within Wollongbar and for the same period, an average of 7 within Alstonville. In total this equates to an average of 58 land sales within the Study Area.
- The population and dwelling projections set out in the previous Chapter, there is projected to be an additional 52 dwellings per annum between 2016 and 2026, 48 per annum between 2026 and 2031 and 46 per annum between 2031 and 2036.

The following Table details the dwellings required to accommodate the projected population and dwellings to 2036.

Table 5.3: Dwellings required to 2036

Study Area	2016	2021	2026	2031	2036
Population (no.)	8,872	9,453	10,023	10,533	11,008
Dwellings (no.)	3,760	4,020	4,280	4,520	4,750
Dwellings Required (no.)		260	260	240	230
Accumulated Dwellings Required (no.)		260	520	760	990

Source: Norling Consulting

With a current capacity for approximately 586 dwellings, the Study Area is calculated to have less than twelve years supply of residential land, to be exhausted by 2028.

It is generally accepted that Environmental Plans should identify sufficient residential lands to accommodate demand for a 15- to 20-year timeframe at their commencement. The estimated 12 year's supply at this time appears to satisfy this measure.

However, it is considered to be of some concern that 90% of residential capacity is located within a single location (WUEA) and that location is between 1.0km and 2.0km from the Wollongbar commercial centre.

6 NEEDS ANALYSIS

Based upon the findings of this Housing Needs Assessment, it is Norling Consulting's opinion that there is a moderate level of economic and planning need for the proposed development. This is demonstrated by the following points:

a) The Study Area is characterised by an older population, particularly those aged over 65 and fewer children, teenagers and 20-somethings. At the time of the 2011 Census, 24% of the Study Area population were aged over 65, which is 63% greater than the State average (14.7%). This older age group would have a greater propensity for alternative housing products including smaller lot and affordable housing.
b) The proposed development would increase choice in lot and housing alternatives. It would also contribute to increasing diversity in living options for different housing types.
c) There is a lack of smaller housing products to meet the needs of retirees seeking to downsize within the Study Area. There is currently only two aged care facility providing independent living units, both of which are full (there are waiting lists). The proposal would provide for this gap in the market.
d) The residential capacity analysis indicated that there is less than twelve years supply of suitably zoned residential land supply to cater for the future population growth within the Study Area. It is projected that the supply would be exhausted by 2028.
e) A key goal of the current and draft Regional Plan is to provide housing choice to meet the community's needs into the future, recognising that as a result of changing demographics and an ageing population, residents may want a choice about whether to remain in their family home or to relocate to smaller, more affordable housing closer to services. The proposal would help to achieve this goal.
f) The proposed development would improve the affordable housing option in the villages by providing only the second manufactured home product, which has been demonstrated to be an affordable product and attractive to the increasing retiree market.
g) To inform its strategic planning process for Alstonville, Council undertook a community engagement process to understand how the community feels about Alstonville now and into the future. As reported in Council's Community Report Alstonville 2036, a number of older people stated that they were currently living in a large family home on a suburban block but that their children had moved away and they would like to live closer to town. They didn't want a tiny home but wanted to live in a 3 bedroom townhouse style home

with some backyard. They were happy to live in close quarters with other residents and would like to walk into town along level footpaths. Different styles of housing dependent on proximity to the CBD to cater for all age and ability groups was seen as a way to keep housing opportunity flexible and affordable. With limited capacity for growth within the village Alstonville, the subject site is a strategic location proximate to both Alstonville and Wollongbar.

h) The subject site is closer to the Wollongbar shopping facilities and services than land within the WUEA. The site is also conveniently located close to Alstonville, which offers a greater range of services and shopping facilities.

7 CONCLUSION

Wollongbar and Alstonville are small villages located on the Alstonville Plateau between Lismore and Ballina on the Bruxner Highway. While Alstonville has experienced very little growth over the past decade, Wollongbar has recently attracted strong growth since the release of the Wollongbar Urban Expansion Area. With a current population of 8,870 Persons, the Study Area is projected to growth to reach 9,450 persons by 2021 and 10,530 persons by 2031.

The Study Area comprises a large proportion of older persons in comparison to the State average. This ageing population would increasingly demand smaller and more affordable housing products. With only two facilities offering independent living units within Alstonville and none within Wollongbar, all are currently full and there are waiting lists. While not a dedicated aged persons' facility, the existing Alstonville Leisure Village, which offers affordable housing to the elderly, is also at capacity with no homes currently available for sale.

An analysis of the vacant zoned residential land indicates that there is 84.4ha of vacant and underutilised land. Based upon population and dwelling projections for the Study Area, this is projected to be exhausted by 2028, or within twelve years. The majority of this vacant land is within the WUEA, located in the northern part of Wollongbar Village.

The proposal is strategically located on a site close to both Wollongbar and Alstonville. It is located within a short distance of Wollongbar shops and services and is a more convenient location than land within the WUEA. The proposed manufactured housing estate would assist in providing a greater range in housing products, contribute to the provision of affordable housing and help to meet the needs of the changing demographic of the area.

Appendices

Appendix A: Vacant Land Supply Analysis – Study Area

Lot No.	Land Use Group	Specific Uses	Total Lot Area (ha)	Landuse Group Area (ha)	Specific Uses Area (ha)	Dwellings per ha	Dwellings
Within Wollongbar Urban Expansion Area							
Lot 11 DP868264		46 Sneaths Road	37.38				
	Arterial Road			0.82			
		Link Road			0.31		
		Noise Buffers (Bruxner Hwy)			0.20		
		Noise Buffers (Sneaths Rd)			0.31		
	Open Space			6.05			
		7(d) zone/environment restoration(includes buffers to vegetation and environmentally sensitive land)			6.05		
	Precinct 1 (developable)			25.65		10	256.50
	Precinct 2 (developable)			4.86		10	48.60
Lot 23 DP842886		43 Midway Avenue	2.01				
	Open Space						
		7(d) zone/environment restoration(includes buffers to vegetation and environmentally sensitive land)		0.68			
	Precinct 1 (developable)			1.07		10	10.70
	Residue			0.26			
Lot 100 DP1212282		Plateau Drive	5.41				
	Open Space						
		7(d) zone/environment restoration(includes buffers to vegetation and environmentally sensitive land)		4.73			
	Precinct 1 (developable)			0.68		10	6.78
Lot 11 DP1063669		59 Rifle Range Road	0.21				
	Arterial Road			0.03			
		Link Road			0.01		
		Noise Buffers (Rifle Range Road)			0.02		
	Precinct 1 (developable)			0.18		10	1.80
Lot 10 DP1063669		57 Rifle Range Road	0.19				
	Precinct 1 (developable)			0.19		10	1.94
Lot 7 DP1201077		Rifle Range Road	8.03				
	Arterial Road			0.62			
		Link Road			0.29		
		Noise Buffers (Rifle Range Road)			0.21		
		Rifle Range Road Realignment			0.12		
	Open Space			0.46			
		7(d) zone/environment restoration(includes buffers to vegetation and environmentally sensitive land)			0.46		
	Precinct 1 (developable)			4.80		10	48.00
	Precinct 2 (developable)			1.95		10	19.50
Lot 16 DP1204621		Plateau Drive	2.77				70.50
	Open Space			0.12			
		Community Facilities			0.04		
		Open Space			0.08		
	Proposed Development - 16 lots						16.00
Lot 6 DP1161720		93 Rifle Range Road	3.78				
	Structured Open Space			3.46			
		Community Facilities			0.09		
		Open Space (may include any of the following: multi-use courts, skate park, car parking, play equipment and the like)			3.37		
		Medium Density (Precinct 1 developable)		0.32		33	10.56
Lot 75 DP1213425		121 Rifle Range Road	17.45				
	Open Space			6.61			
		7(d) zone/environment restoration(includes buffers to vegetation and environmentally sensitive land)			5.82		
		Buffer to Rural land			0.14		
		Buffer to 6(d) zone land			0.65		
	Precinct 1 (developable)			3.18		10	31.75
	Precinct 2 (developable)			7.67		10	76.70
Sub Total			***77.23***				***528.83***

Lot No.	Land Use Group	Specific Uses	Total Lot Area (ha)	Landuse Group Area (ha)	Specific Uses Area (ha)	Dwellings per ha	Dwellings
Outside of Wollongbar Expansion Area							
Lot 4 DP244611		76-86 Rifle Range Road	2.02				
		Developable		1.616		10	16
Lot 19 DP259768		13 Acacia Street	1.15				
		Developable		0.92		10	9
Lot 1 DP1038613		Bletchingly Street	1.1				
		Developable		0.88		10	9
Sub Total			***4.27***				***34***
Alstonville							
Lot 323 DP755745		Main Street	1.8				
		Developable		1.44		10	14
Lot 83 DP239781		77 Teven Road	1.12				
		Developable		*0.90*		10	9
Sub Total			***2.92***				***23***
GRAND TOTAL			**84.42**				**586**

Source: Ballina Shire DCP, Norling Consulting Inspections, PriceFinder, Google Maps

Appendix B: Wollongbar Urban Expansion Area and Surrounds

Source: Ballina Shire DCP, Norling Consulting Inspections, PriceFinder, Google Maps

Norling Consulting Pty Ltd
Business & Property Economics

Housing Needs Assessment

December 2016

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SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 4
LEP Amendment Request
Planning Proposal
Traffic Review
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

LOT 10 LISMORE ROAD, ALSTONVILLE
TRAFFIC IMPACT ASSESSMENT

FOR

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Project No: P3320 Version No: 002 Issue date: 7 February 2018

DOCUMENT CONTROL SHEET

Issue History

Report File Name	Prepared by	Reviewed by	Issued by	Date	Issued to
P3320.001R Lot 10 Lismore Road, Alstonville TIA DRAFT	J. Bunn N. Brennan	A. Eke	N. Brennan	13/11/2017	Planit Consulting Simon Halcrow simon@planitconsulting.com.au
P3320.002R Lot 10 Lismore Road, Alstonville TIA	J. Bunn N. Brennan	A. Piggott	N. Brennan	07/02/2018	Planit Consulting Simon Halcrow simon@planitconsulting.com.au

CONTENTS

Tables

Figures

Appendices

1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting has been commissioned by Greenlife Properties Pty Ltd to prepare a traffic impact assessment (TIA) report for the proposed rezoning of land at Lot 10 Lismore Road to allow senior living. The location of the subject site is shown in Figure 1.1.

Source: Google Maps

Figure 1.1: Site Location

1.2 DEVELOPMENT DETAILS

The proposed development includes 123 low density residential dwellings for seniors living (over 55-years). The development will include a number of ancillary buildings which will consist of the following:

- community hall to accommodate lounge, library, craft room, billiard room, toilets, small office and kitchen;
- gym / multipurpose space; and
- sales office and admin.

A preliminary development layout plan is provided in Appendix A.

1.3 SCOPE

The scope for the assessment includes:

- reviewing the existing road network and traffic conditions at the site and its surrounds;
- assessment of the potential development related traffic impacts on the external road network;
- assessing the site access location and form; and
- reviewing alternate transport mode opportunities within proximity to the site.

2. EXISTING CONDITIONS

2.1 ROAD NETWORK

Table 2.1 provides a summary of details of the surrounding road network fronting the development site.

Table 2.1: Surrounding Road Network

Name	Jurisdiction	No. of Lanes (two-way)	Divided	Speed Limit	Comments
Lismore Road	Ballina Shire Council (BSC)	2	No	70km/h	*Arterial road connecting the Bruxner Highway at Wollongbar and Budgen Avenue at Alstonville. Lismore Road provides an access to a number of local streets and residential properties.*
Kays Lane	Ballina Shire Council (BSC)	2	No	50km/h	*Local industrial street which provides connections to Lismore Road and Bruxner Highway.*
Bruxner Highway	NSW Roads and Maritime Services (RMS)	2	No	100km/h	*State highway forming an east-west link from the Northern Rivers Coast of NSW. The Bruxner Highway bypasses Alstonville.*

2.2 ALTERNATIVE TRANSPORT

2.2.1 Public Transport

The proposed development is located within an area that is not frequently serviced by bus routes. The Northern Rivers bus line provides services between Ballina and Lismore which passes through Wollongbar and Alstonville. No bus stops are located within proximity to the site.

2.2.2 Active Transport

A footpath currently exists along the site's northern frontage with Lismore Road which connects to Alstonville and terminates at the site's western boundary. No cycle paths are located in proximity to the site.

Additional footpath connections or provision of bicycle paths are not considered to be necessary for the proposed development.

3. TRAFFIC ASSESSMENT

3.1 TRAFFIC ASSESSMENT METHODOLOGY

The adopted traffic assessment methodology is outlined as follows:

- determining background traffic volumes from survey data;
- forecasting future background traffic volumes based on the development potential of the area;
- estimating the development's traffic generation and distribution patterns;
- identifying key intersections for assessment;
- estimating design traffic volumes by combining forecast background traffic volumes and development trips for the anticipated year-of-completion and 10-year design horizon;
- undertaking SIDRA intersection analyses for the key intersections; and
- undertaking a turn warrants assessment for the development's access with Lismore Road.

If the rezoning is approved and for the purpose of this assessment, it is anticipated that the development will be completed by 2022 and the 10-year design horizon will be 2032.

3.2 EXISTING BACKGROUND TRAFFIC VOLUMES

Background traffic volumes were obtained from traffic surveys undertaken by Traffic Data and Control (TDC) for the Lismore Road / Kays Lane priority-controlled intersection for the AM peak period (7:00AM to 9:00AM) and PM peak period (4:00PM to 6:00PM) on Tuesday 19th September 2017. The 2017 AM (8:00AM to 9:00AM) and PM (4:00PM to 5:00PM) peak hour traffic volumes are summarised in Figure 3.1. The detailed TDC traffic surveys are attached at Appendix B.

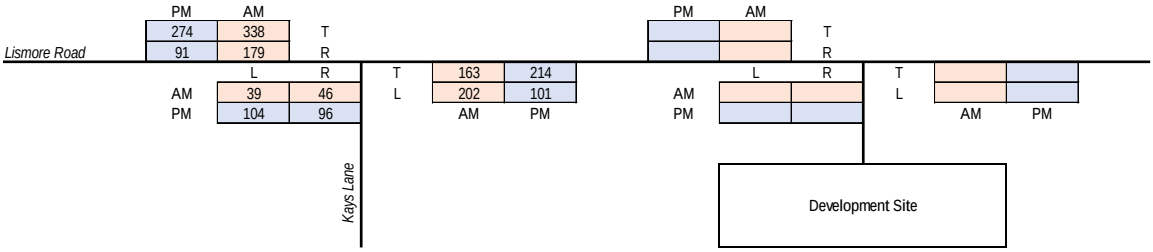


Figure 3.1: 2017 AM and PM Peak Hour Traffic Volumes

3.3 ADOPTED BACKGROUND TRAFFIC GROWTH

Population data (*sourced from Profile ID online*) has been analysed alongside an understanding of the planned future growth in the area to provide an indication of the expected background traffic growth. A compounding growth rate of 1.0% p.a. was extrapolated form the available data and applied to the 2017 survey data to estimate the 2022 and 2032 background volumes.

3.4 FORECAST BACKGROUND TRAFFIC VOLUMES

The forecast background traffic volumes for the 2022 'year-of-completion' and 2032 '10-year design horizon' are illustrated in Figure 3.2 and Figure 3.3 respectively.

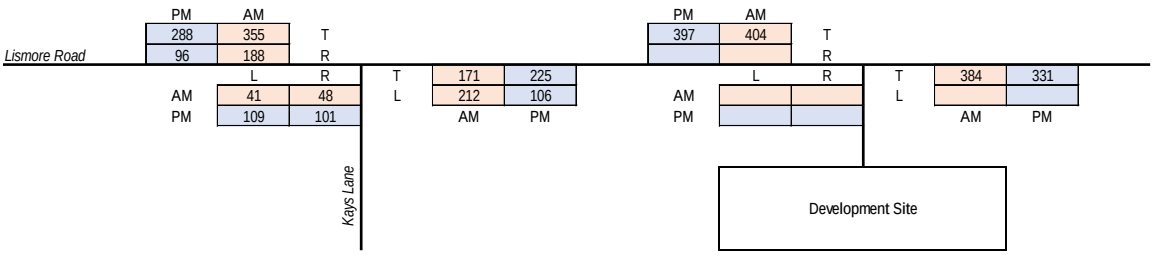


Figure 3.2: 2022 AM and PM Peak Background Traffic Volumes

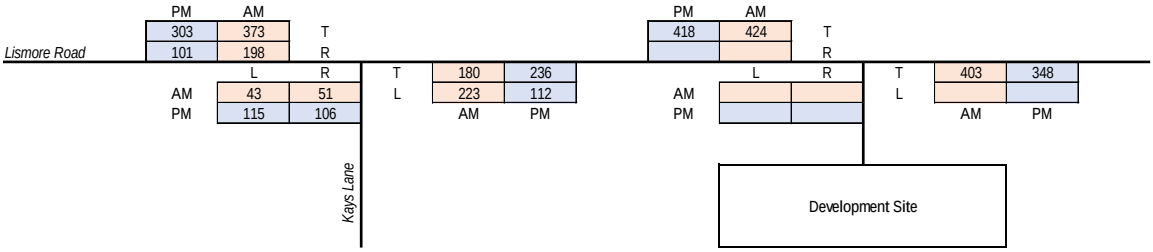


Figure 3.3: 2032 AM and PM Peak Background Traffic Volumes

3.5 DEVELOPMENT TRAFFIC GENERATION

Traffic generation rates for this development have been sourced from the *Roads and Maritime Services (RMS) Guide to Traffic Generating Developments – Technical Direction (TDT2013/04a).* The average weekday peak hour traffic generation rate for 'Seniors Housing' of 0.4 trips per dwelling has been adopted for both the AM and PM peak hours. It is important to note that the RMS Technical Direction (TDT2013/04a) only provides an average traffic generation rate for the peak PM period. As such, a 'conservative' approach has been adopted where the PM traffic generation rate has been used to estimate the AM peak traffic volumes. Any staff on-site are expected to arrive and depart outside the peak times. The estimated traffic generated by the proposed development is detailed in Table 3.1.

Table 3.1: Development Traffic Generation

Land Use	Quantity	AM Rate	PM Rate	AM Trips	PM Trips
Over 55's Living (Seniors Housing)	123 dwellings	0.40	0.40	50	50

As demonstrated in Table 3.1, the development is estimated to generate in the order of 50 trips during the AM and PM peak hours.

Due to the residential nature of the development, it is anticipated that the IN:OUT directionality splits during the AM peak would be 30%:70% and during the PM peak the IN:OUT trip split would be 60%:40%. The peak AM and PM trip splits for the development are shown in Table 3.2.

Table 3.2: Development Traffic Splits

Land Use	AM		PM		AM		PM	
	IN %	OUT %	IN %	OUT %	IN Trips	OUT Trips	IN Trips	OUT Trips
Over 55's Living (Seniors Housing)	30%	70%	60%	40%	15	35	30	20

3.6 DEVELOPMENT TRAFFIC DISTRIBUTION AND ASSIGNMENT

The distribution of development traffic is assumed to predominantly associate with northern and southern attractions, such as Ballina and Lismore. The development traffic distributions were based on the background traffic volumes surveyed at the intersection of Lismore Road / Kays Lane. The AM and PM peak development distributions are illustrated in Figure 3.4.

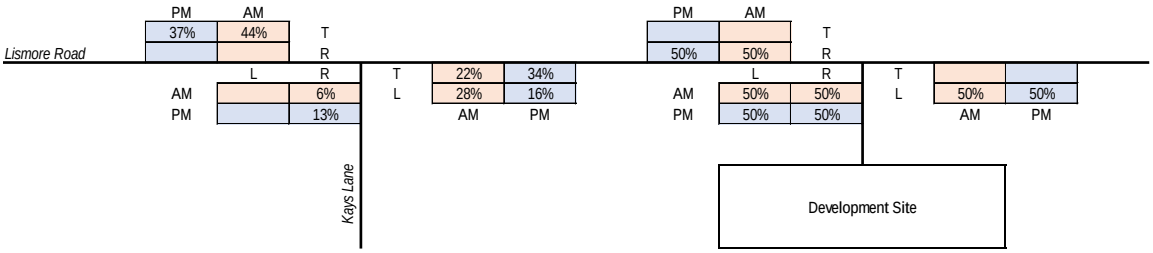


Figure 3.4: Development Trip Distributions

The development trip assignment is presented in Figure 3.5.

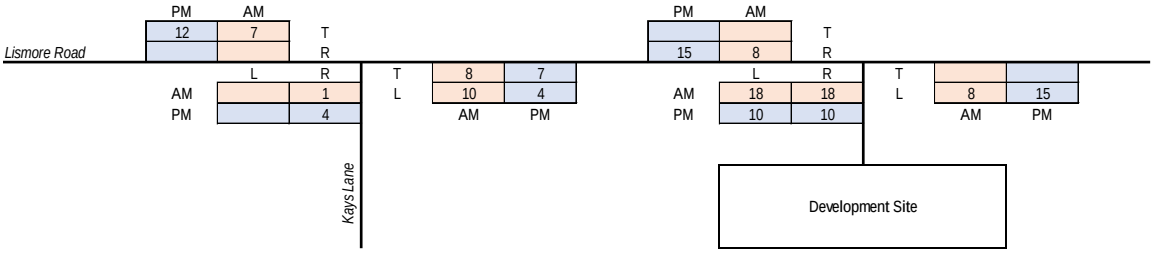


Figure 3.5: Development Trip Assignment

3.7 DESIGN TRAFFIC VOLUMES

The traffic generated by the proposed development has been added to the background traffic volumes to determine design traffic volumes ('with development' scenario). The 2022 'year-of-completion' and 2032 '10-year design horizon' traffic volumes are provided in Figure 3.6 and Figure 3.7 respectively.

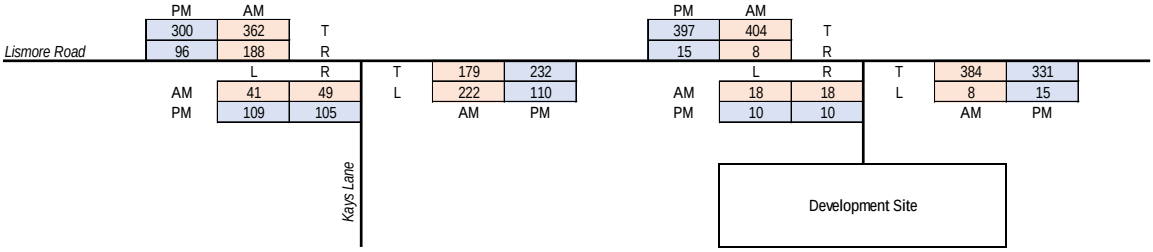


Figure 3.6: 2022 AM and PM Peak Design Traffic Volumes

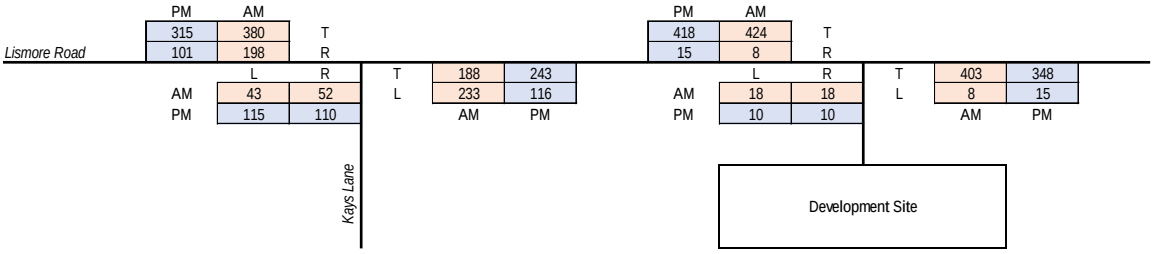


Figure 3.7: 2032 AM and PM Peak Design Traffic Volumes

3.8 INTERSECTION ASSESSMENT

SIDRA 7.0 Plus intersection modelling software has been used to analyse the key intersections of Lismore Road / Kays Lane and Lismore Road / Site Access. The background and design traffic scenarios for the expected year of opening (2022) and 10-year design horizon (2032) have been analysed to determine the subject intersection's operational performance during the AM and PM peak hours.

3.8.1 Lismore Road / Kays Lane Intersection

The intersection of Lismore Road / Kays Lane is designed as a 'Seagull Treatment', which is analysed as a two-staged network crossing as illustrated in Figure 3.8.

The following points apply when assessing the staged crossing SIDRA results:

- the degree of saturation is the higher of the values for the two stages;
- the overall average delay is the sum of the average delay values for the two stages; and
- the level of service for the staged crossing could be assessed using the average delay calculated as the sum of delays at the two stages of crossing.

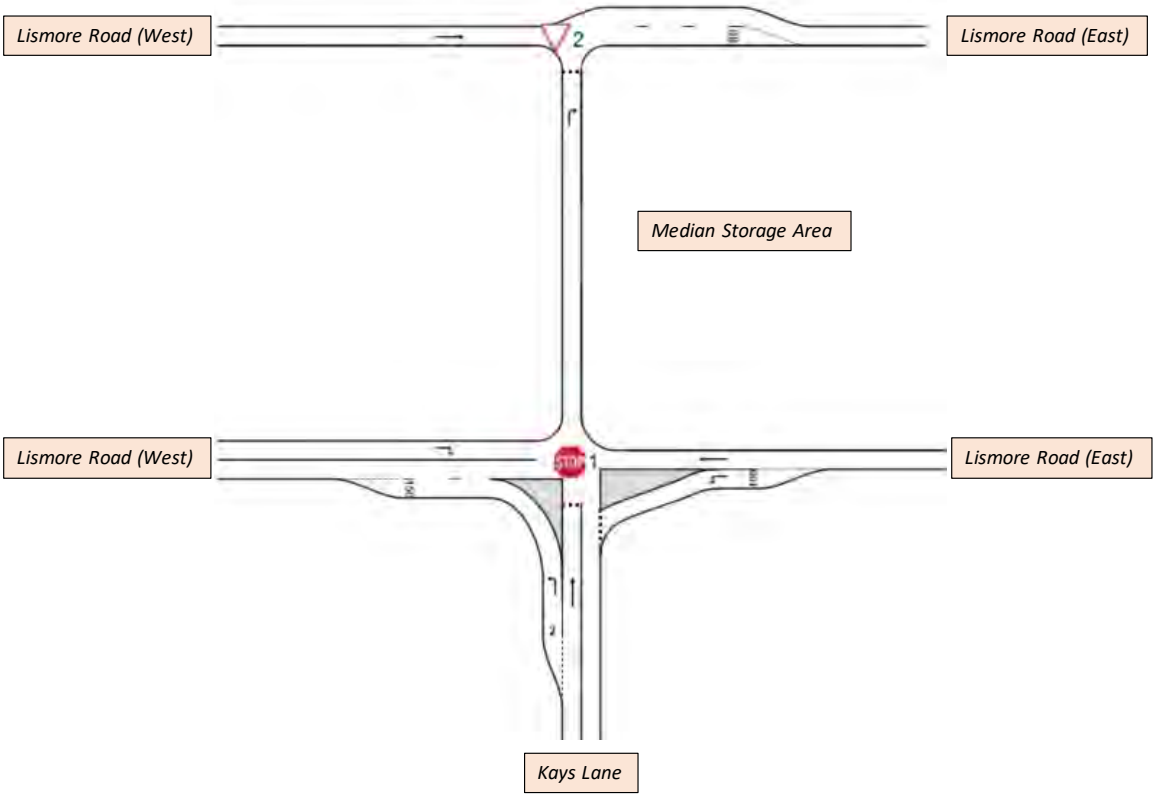


Figure 3.8: Lismore Road / Kays Lane – SIDRA Geometric Layout

The Stage 1 and Stage 2 2022 SIDRA output results for the intersection of Lismore Road / Kays Lane are detailed in Table 3.3 and Table 3.4 respectively.

Table 3.3: Stage 1 Lismore Road / Kays Lane – 2022 SIDRA Results Summary

Approach	2022 AM Peak				2022 PM Peak			
	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)
Stage 1 2022 Background Traffic								
Kays Lane (South)	0.08	9	A	3	0.14	8	A	4
Lismore Road (East)	0.20	5	A	7	0.13	3	A	3
Lismore Road (West)	0.14	8	N/A	5	0.08	8	N/A	3
Stage 1 2022 Design Traffic								
Kays Lane (South)	0.09	9	A	3	0.14	8	A	5
Lismore Road (East)	0.21	5	A	7	0.13	3	A	3
Lismore Road (West)	0.14	8	N/A	5	0.08	8	N/A	3

Table 3.4: Stage 2 Lismore Road / Kays Lane – 2022 SIDRA Results Summary

Approach	2022 AM Peak				2022 PM Peak			
	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)
Stage 2 2022 Background Traffic								
Median Storage (South)	0.06	2	A	2	0.20	1	A	2
Lismore Road (West)	0.20	2	N/A	0	0.16	0	N/A	0
Stage 2 2022 Design Traffic								
Median Storage (South)	0.06	2	A	2	0.11	2	A	2
Lismore Road (West)	0.20	0	N/A	0	0.17	0	N/A	0

As shown in Table 3.3 and Table 3.4, the 2022 background and design SIDRA results indicate that the subject intersection is anticipated to operate within the acceptable performance limits for a priority-controlled intersection in terms of Degree of Saturation (DOS), average delay, Level of Service (LOS) and 95th percentile queue. Detailed SIDRA outputs are attached at Appendix C.

Table 3.5: Lismore Road / Kays Lane – 2032 SIDRA Results Summary

Approach	2032 AM Peak				2032 PM Peak			
	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)
Stage 1 2032 Background Traffic								
Kays Lane (South)	0.09	9	A	3	0.15	8	A	5
Lismore Road (East)	0.22	5	A	8	0.13	3	A	3
Lismore Road (West)	0.15	8	N/A	5	0.08	8	N/A	3
Stage 1 2032 Design Traffic								
Kays Lane (South)	0.09	9	A	3	0.15	8	A	5
Lismore Road (East)	0.23	5	A	8	0.14	3	A	4
Lismore Road (West)	0.15	8	N/A	5	0.08	8	N/A	3

Table 3.6: Stage 2 Lismore Road / Kays Lane – 2032 SIDRA Results Summary

Approach	2032 AM Peak				2032 PM Peak			
	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)
Stage 2 2032 Background Traffic								
Median Storage (South)	0.06	2	A	2	0.11	2	A	2
Lismore Road (West)	0.21	0	N/A	0	0.17	0	N/A	0
Stage 2 2032 Design Traffic								
Median Storage (South)	0.06	2	A	2	0.11	2	A	2
Lismore Road (West)	0.21	0	N/A	0	0.18	0	N/A	0

As shown in Table 3.5 and Table 3.6 , the SIDRA results indicate that the subject intersection is anticipated to operate within acceptable limits for a priority-controlled intersection (DOS<0.8) at year 2032 for the background and design traffic scenarios. Based on this analysis, it is expected that no upgrades are required to be imposed, particularly given that the SIDRA results indicate a marginal change in operating parameters between the pre and post development scenarios.

Detailed SIDRA outputs are attached at Appendix C.

3.8.2 Lismore Road / Road 1 Intersection (Development Access)

The Lismore Road / Road 1 intersection has been analysed as a priority-controlled T-intersection as illustrated in Figure 3.9.

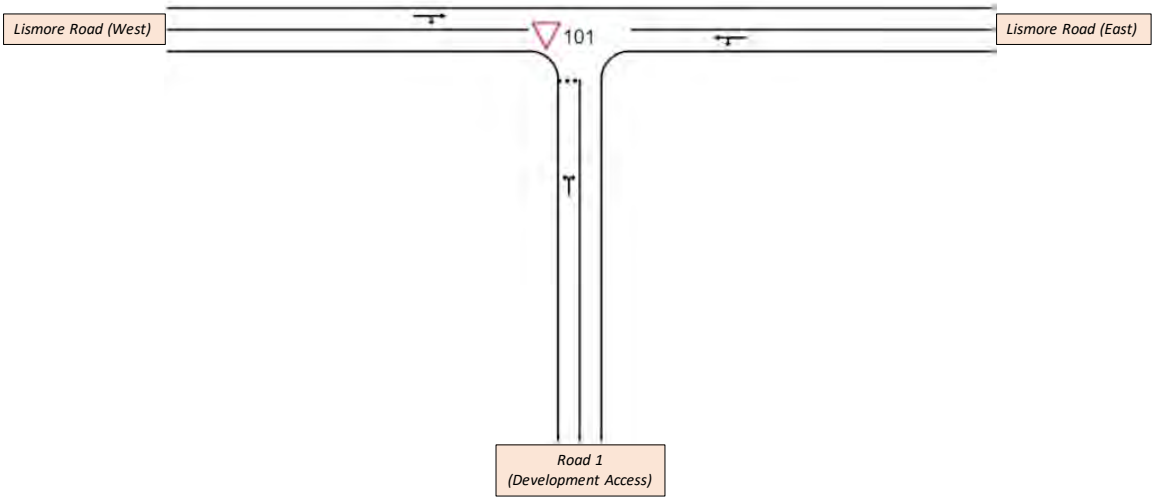


Figure 3.9: Lismore Road / Road 1 (Development Access) - SIDRA Geometric Layout

The Lismore Road / Road 1 intersection is modelled for the design scenario only, given that the intersection currently does not exist and therefore has no background scenarios. The SIDRA output results for the Lismore Road / Road 1 intersection for the 2022 and 2032 design traffic scenarios are provided in Table 3.7.

Table 3.7: Lismore Road / Road 1 (Development Access) – SIDRA Results Summary

Approach	AM Peak				PM Peak			
	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)	DOS (v/c)	Avg. Delay (s)	Level of Service (LOS)	95%ile Back of Queue (m)
2022 Design Traffic								
Road 1 (South)	0.06	8	A	2	0.03	8	A	1
Lismore Road (East)	0.23	1	N/A	0	0.20	1	N/A	0
Lismore Road (West)	0.24	1	N/A	1	0.24	1	N/A	2
2032 Design Traffic								
Road 1 (South)	0.06	8	A	2	0.03	8	A	1
Lismore Road (East)	0.24	1	N/A	0	0.21	1	N/A	0
Lismore Road (West)	0.25	1	N/A	1	0.25	1	N/A	2

As shown in Table 3.7, the SIDRA results indicate that the subject intersection is anticipated to operate within the acceptable performance limits for a priority-controlled intersection (DOS<0.8) at year 2032 for the design traffic scenarios. Therefore, a priority-controlled intersection treatment is suitable for the subject intersection. Detailed SIDRA outputs are attached at Appendix C.

3.9 TRAFFIC ASSESSMENT SUMMARY

The key points from this traffic assessment are as follows:

- the development is estimated to generate in the order of 50 peak hour trips in the AM and PM peaks;
- the SIDRA results indicate that the Lismore Road / Kays Lane intersection is expected to operate within acceptable performance limits for a priority-controlled intersection under 2032 design traffic scenarios;
- the SIDRA results indicate that the Lismore Road / Road 1 intersection is expected to operate within acceptable performance limits for a priority-controlled intersection under 2032 design traffic scenarios; and
- following the rezoning of the site to allow the seniors living development, the above traffic analysis is required to be re-analysed with any development application.

4. ACCESS ASSESSMENT

4.1 TURN WARRANTS ASSESSMENT

A turn warrants assessment has been undertaken for the site's access with Lismore Road to determine if any turn lane treatments are required.

The turn warrants assessment was undertaken in accordance with *Austroads Guide to Road Design: Part 4A* using 2032 design traffic volumes. Figure 4.1 and Figure 4.2 illustrate the turn warrants assessment for the subject site's access with Lismore Road.

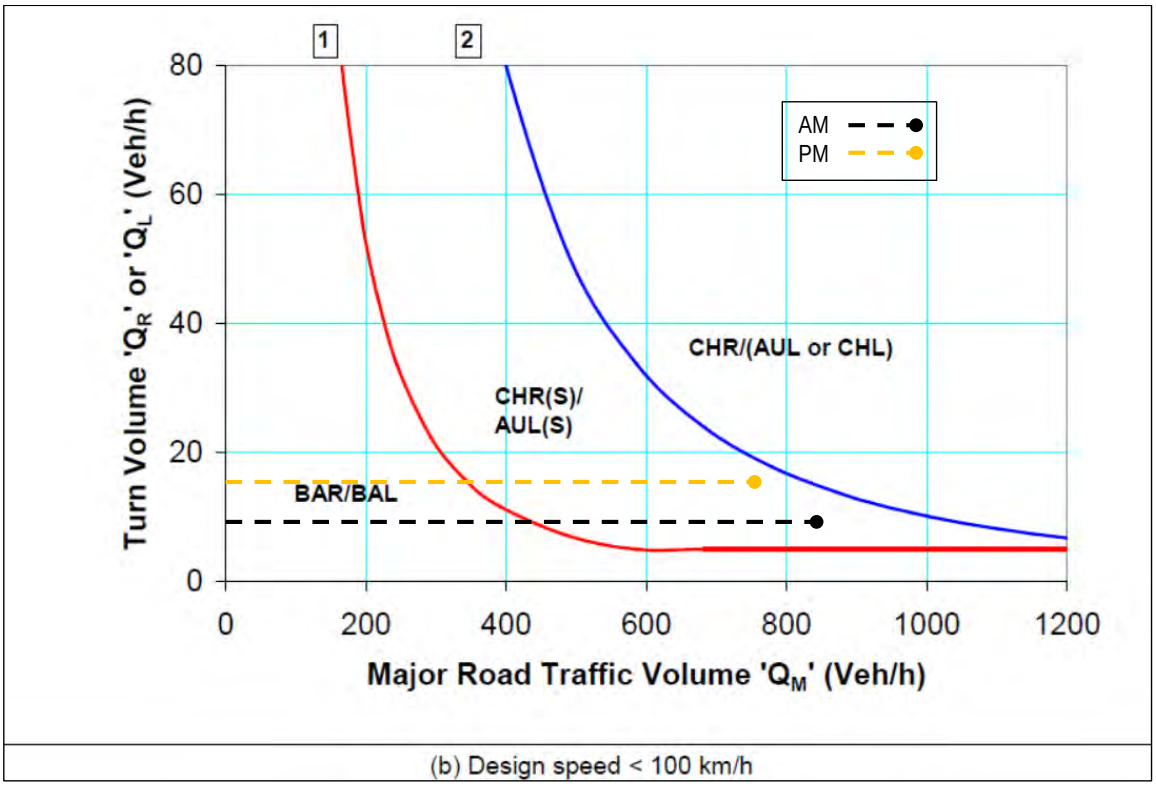


Figure 4.1: Lismore Road / Road 1 – Right Turn (Year 2032 Design Traffic)

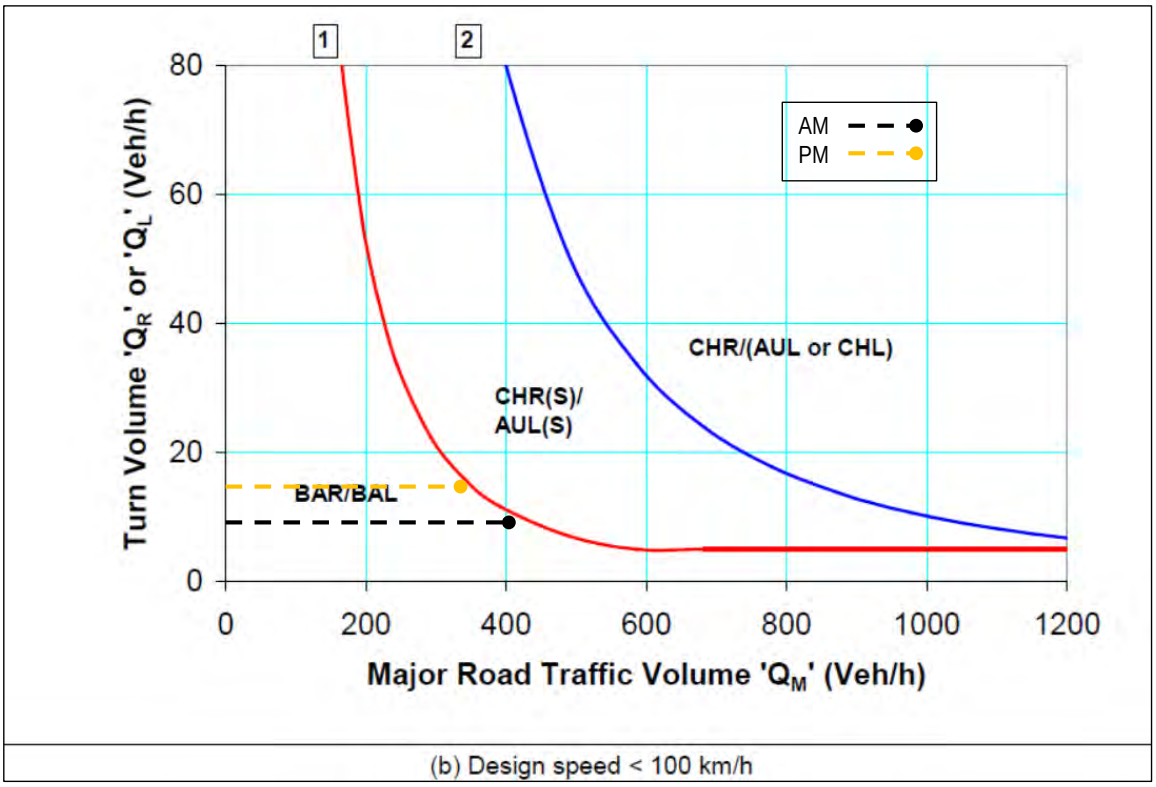


Figure 4.2: Lismore Road / Road 1 – Left Turn (Year 2032 Design Traffic)

As shown in Figure 4.1 and Figure 4.2, the Lismore Road / Road 1 intersections requires a Short Channalised Right Turn (CHR(s)) and Basic Left Turn (BAL) turn treatments.

Following the rezoning of the site to allow the seniors living development, the turn warrants assessment is required to be reanalysed.

4.2 SIGHT DISTANCE ASSESSMENT

A sight distance assessment has been undertaken based on the likely access location for the subject site. Figure 4.3 illustrates the available sight distances for the likely access location in accordance with AS2890.1 for a 70km/h frontage speed. The proposed access location exceeds the minimum requirement of 97m in both directions. However, shifting the driveway in any direction along Lismore Road will impact the sight lines due to the surrounding terrain (i.e. the batter starts to obstruct sight lines if the access is located any further north-west). In addition, the land required to provide the likely turn treatments into the site needs be taken into consideration with the site access location (i.e. merge lane located to the north-west and batter to the south-east). It is recommended that the access driveway remains in the proposed location.

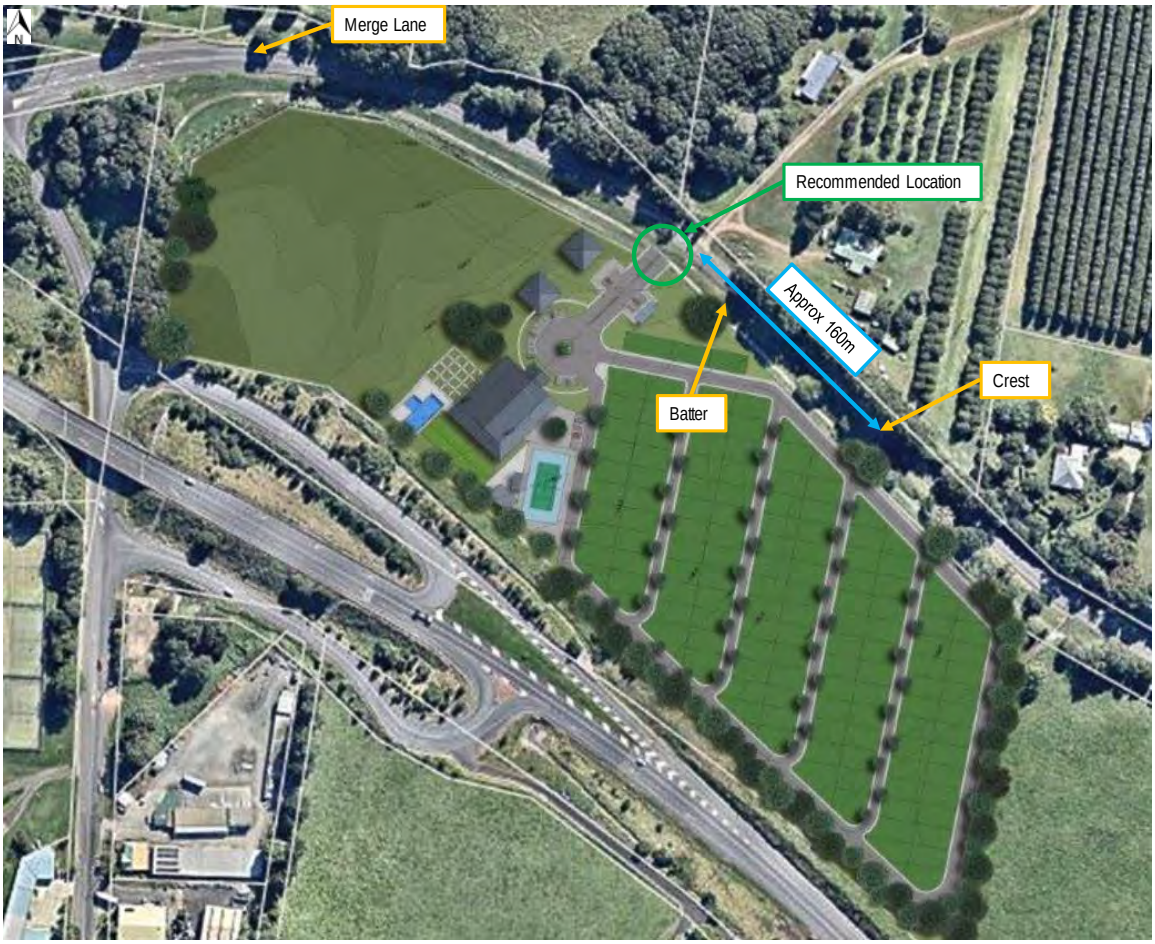


Figure 4.3: Sight Distance Assessment

A site visit was undertaken on 23rd October 2017 to assess the proposed access location. Figure 4.4 illustrates the available sight lines along Lismore Road at the proposed driveway access location.

Figure 4.4: Site Visit Photos Along Lismore Road From Proposed Access Location

5. SUMMARY AND CONCLUSION

The key findings for this assessment are as follows:

- the proposed development is for a rezoning to allow 123 low density relocatable residential dwellings for seniors living (over 55-years);
- the development is estimated to generate in the order of 50 trips during the AM and PM peak hours;
- the SIDRA results indicate that the Lismore Road / Kays Lane intersection is expected to operate within acceptable performance limits for a priority-controlled intersection under 2032 design traffic scenarios;
- the SIDRA results indicate that the Lismore Road / Road 1 intersection is expected to operate within acceptable performance limits for a priority-controlled intersection under 2032 design traffic scenarios;
- the intersection of Lismore Road / Road 1 requires a CHR(s) and BAL turn treatments;
- the proposed access location complies with the minimum sight distance requirements of 97m in both directions (i.e. frontage road speed of 70km/h). The proposed access location is considered the best location based on surrounding terrain and land requirements for the likely turn treatments;
- there are no public bus stops in proximity to the site and public bus services are infrequent. No additional bus services or bus stops are considered necessary; and
- additional footpath connections or provision of bicycle paths are not considered for the necessary for the proposed development.

Based on the above assessment, it is concluded that there are no significant traffic or transport concerns that would prevent Council refusing the rezoning of the proposed site.

APPENDIX A

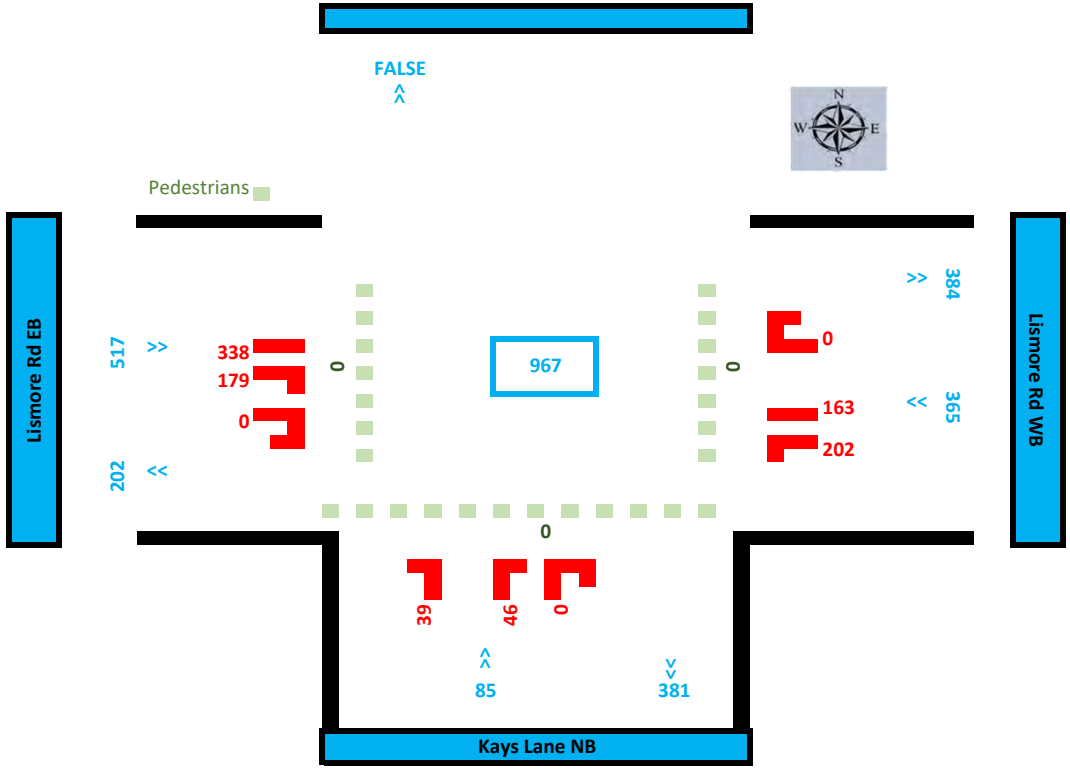
PRELIMINARY DEVELOPMENT PLANS

APPENDIX B

TRAFFIC SURVEYS

Turning Movement Count Summary

Site ID:	1
Location:	Kays Lane & Lismore Rd, Alstonville
Date:	19-Sept-2017
Surveyed Time:	7:00 AM to 9:00 AM
Weather:	Fine
Data for hour starting:	8:00 AM to 9:00 AM
Vehicle Class:	ALL VEHICLES



Site ID: 1

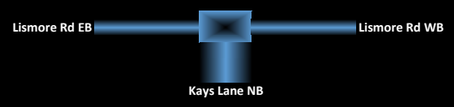
Location: Kays Lane & Lismore Rd, Alstonville

Date: 19-Sept-2017

Period 1 Time: 7:00 AM to 9:00 AM

Weather: Fine

Period 1 Peak Hour: 8:00 AM to 9:00 AM



TDC Traffic Data & Control

TOTALS AND PEAKS

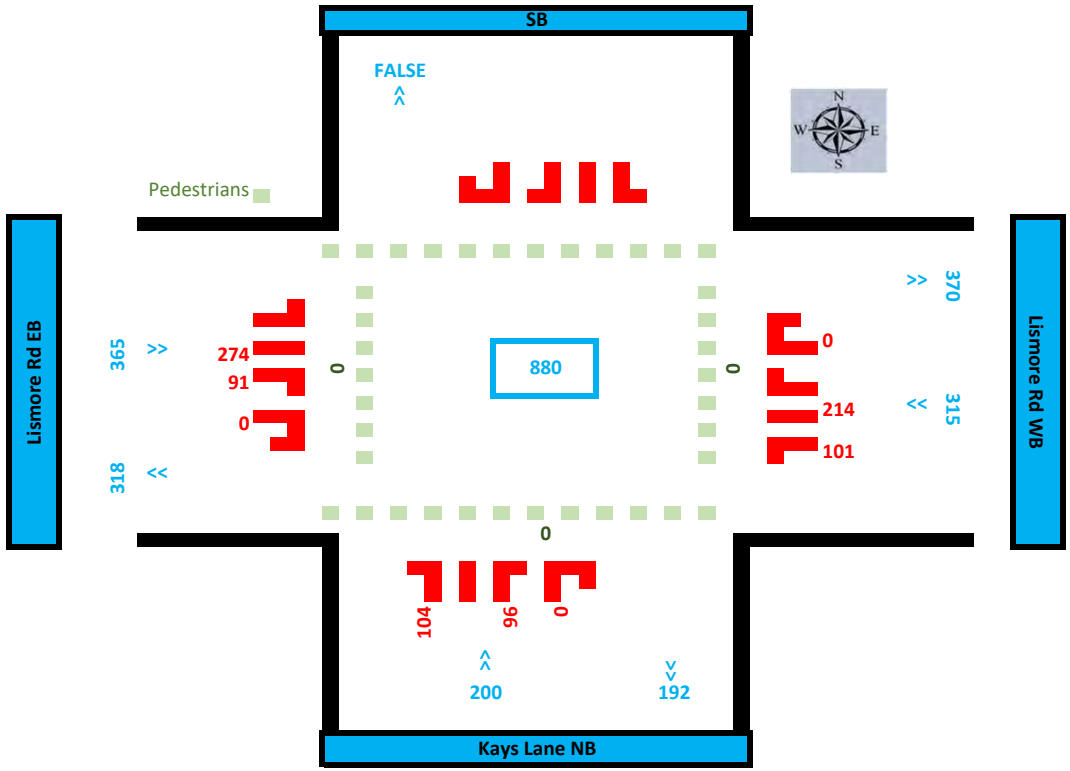
Period 1 Total	316	20	1	0	267	20	1	0	0	0	0	0	0	57	9	5	0	61	17	0	0	0	0	0	0	0	494	13	1	2	288	4	10	0	0	0	0	0	0	1586	625	149	812
Period 1 Peak Hr	184	17	1	0	153	9	1	0	0	0	0	0	0	34	2	3	0	38	8	0	0	0	0	0	0	0	327	10	1	0	171	4	4	0	0	0	0	0	0	967	365	85	517

Time Starting	Lismore Rd WB Left Light Vehicles	Lismore Rd WB Left Light Trucks (3-5)	Lismore Rd WB Left Heavy Trucks (6-12)	Lismore Rd WB Left Bicycles on Road	Lismore Rd WB Through Light Vehicles	Lismore Rd WB Through Light Trucks (3-5)	Lismore Rd WB Through Heavy Trucks (6-12)	Lismore Rd WB Through Bicycles on Road	Lismore Rd WB U-turn Light Vehicles	Lismore Rd WB U-turn Light Trucks (3-5)	Lismore Rd WB U-turn Heavy Trucks (6-12)	Lismore Rd WB U-turn Bicycles on Road	Lismore Rd WB Cross 1 Pedestrians	Kays Lane NB Left Light Vehicles	Kays Lane NB Left Light Trucks (3-5)	Kays Lane NB Left Heavy Trucks (6-12)	Kays Lane NB Left Bicycles on Road	Kays Lane NB Right Light Vehicles	Kays Lane NB Right Light Trucks (3-5)	Kays Lane NB Right Heavy Trucks (6-12)	Kays Lane NB Right Bicycles on Road	Kays Lane NB U-turn Light Vehicles	Kays Lane NB U-turn Light Trucks (3-5)	Kays Lane NB U-turn Heavy Trucks (6-12)	Kays Lane NB U-turn Bicycles on Road	Kays Lane NB Cross 1 Pedestrians	Lismore Rd EB Through Light Vehicles	Lismore Rd EB Through Light Trucks (3-5)	Lismore Rd EB Through Heavy Trucks (6-12)	Lismore Rd EB Through Bicycles on Road	Lismore Rd EB Right Light Vehicles	Lismore Rd EB Right Light Trucks (3-5)	Lismore Rd EB Right Heavy Trucks (6-12)	Lismore Rd EB Right Bicycles on Road	Lismore Rd EB U-turn Light Vehicles	Lismore Rd EB U-turn Light Trucks (3-5)	Lismore Rd EB U-turn Heavy Trucks (6-12)	Lismore Rd EB U-turn Bicycles on Road	Lismore Rd EB Cross 1 Pedestrians	GRAND TOTAL TOTALS	Lismore Rd WB TOTAL All Classes	Kays Lane NB TOTAL All Classes	Lismore Rd EB TOTAL All Classes
07:00	22	0	0	0	25	4	0	0	0	0	0	0	0	5	1	0	0	5	0	0	0	0	0	0	0	0	27	0	0	0	20	0	1	0	0	0	0	0	0	**110**	51	11	48
07:15	24	1	0	0	22	3	0	0	0	0	0	0	0	3	1	1	0	6	3	0	0	0	0	0	0	0	34	1	0	2	24	0	3	0	0	0	0	0	0	**128**	50	14	64
07:30	38	1	0	0	28	1	0	0	0	0	0	0	0	5	3	1	0	5	6	0	0	0	0	0	0	0	50	2	0	0	36	0	1	0	0	0	0	0	0	**177**	68	20	89
07:45	48	1	0	0	39	3	0	0	0	0	0	0	0	10	2	0	0	7	0	0	0	0	0	0	0	0	56	0	0	0	37	0	1	0	0	0	0	0	0	**204**	91	19	94
08:00	45	2	0	0	38	3	0	0	0	0	0	0	0	11	0	1	0	8	4	0	0	0	0	0	0	0	63	2	0	0	65	2	0	0	0	0	0	0	0	**244**	88	24	132
08:15	48	1	1	0	34	3	0	0	0	0	0	0	0	7	1	1	0	7	1	0	0	0	0	0	0	0	82	4	0	0	35	1	1	0	0	0	0	0	0	**227**	87	17	123
08:30	60	4	0	0	31	1	1	0	0	0	0	0	0	7	1	1	0	13	1	0	0	0	0	0	0	0	89	2	0	0	38	1	2	0	0	0	0	0	0	**252**	97	23	132
08:45	31	10	0	0	50	2	0	0	0	0	0	0	0	9	0	0	0	10	2	0	0	0	0	0	0	0	93	2	1	0	33	0	1	0	0	0	0	0	0	**244**	93	21	130

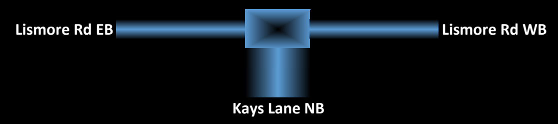
Turning Movement Count Summary

Site ID:	1
Location:	Kays Lane & Lismore Rd, Alstonville
Date:	19-Sept-2017
Surveyed Time:	4:00 PM to 6:00 PM
Weather:	Fine
Data for hour starting:	4:00 PM to 5:00 PM
Vehicle Class:	ALL VEHICLES

TDC Traffic Data & Control



Site ID: 1
Location: Kays Lane & Lismore Rd, Alstonville
Date: 19-Sept-2017
Period 2 Time: 4:00 PM to 6:00 PM
Weather: Fine
Period 2 Peak Hour: 4:00 PM to 5:00 PM



TOTALS AND PEAKS

Time Starting	Lismore Rd WB Left Light Vehicles	Lismore Rd WB Left Light Trucks (3-5)	Lismore Rd WB Left Heavy Trucks (6-12)	Lismore Rd WB Left Bicycles on Road	Lismore Rd WB Through Light Vehicles	Lismore Rd WB Through Light Trucks (3-5)	Lismore Rd WB Through Heavy Trucks (6-12)	Lismore Rd WB Through Bicycles on Road	Lismore Rd WB U-turn Light Vehicles	Lismore Rd WB U-turn Light Trucks (3-5)	Lismore Rd WB U-turn Heavy Trucks (6-12)	Lismore Rd WB U-turn Bicycles on Road	Lismore Rd WB Cross 1 Pedestrians
Period 2 Total	186	9	0	0	402	5	0	0	0	0	0	0	0
Period 2 Peak Hr	92	9	0	0	212	2	0	0	0	0	0	0	0
16:00	24	0	0	0	55	1	0	0	0	0	0	0	0
16:15	23	3	0	0	58	1	0	0	0	0	0	0	0
16:30	25	5	0	0	61	0	0	0	0	0	0	0	0
16:45	20	1	0	0	38	0	0	0	0	0	0	0	0
17:00	27	0	0	0	56	0	0	0	0	0	0	0	0
17:15	25	0	0	0	52	1	0	0	0	0	0	0	0
17:30	28	0	0	0	43	2	0	0	0	0	0	0	0
17:45	14	0	0	0	39	0	0	0	0	0	0	0	0

Time Starting	Kays Lane NB Left Light Vehicles	Kays Lane NB Left Light Trucks (3-5)	Kays Lane NB Left Heavy Trucks (6-12)	Kays Lane NB Left Bicycles on Road	Kays Lane NB Right Light Vehicles	Kays Lane NB Right Light Trucks (3-5)	Kays Lane NB Right Heavy Trucks (6-12)	Kays Lane NB Right Bicycles on Road	Kays Lane NB U-turn Light Vehicles	Kays Lane NB U-turn Light Trucks (3-5)	Kays Lane NB U-turn Heavy Trucks (6-12)	Kays Lane NB U-turn Bicycles on Road	Kays Lane NB Cross 1 Pedestrians
Period 2 Total	205	1	2	1	136	4	0	1	0	0	0	0	1
Period 2 Peak Hr	102	0	2	0	91	4	0	1	0	0	0	0	0
16:00	34	0	1	0	24	2	0	0	0	0	0	0	0
16:15	21	0	0	0	20	1	0	1	0	0	0	0	0
16:30	25	0	1	0	29	1	0	0	0	0	0	0	0
16:45	22	0	0	0	18	0	0	0	0	0	0	0	0
17:00	33	0	0	1	17	0	0	0	0	0	0	0	0
17:15	28	0	0	0	8	0	0	0	0	0	0	0	1
17:30	25	1	0	0	9	0	0	0	0	0	0	0	0
17:45	17	0	0	0	11	0	0	0	0	0	0	0	0

Time Starting	Lismore Rd EB Through Light Vehicles	Lismore Rd EB Through Light Trucks (3-5)	Lismore Rd EB Through Heavy Trucks (6-12)	Lismore Rd EB Through Bicycles on Road	Lismore Rd EB Right Light Vehicles	Lismore Rd EB Right Light Trucks (3-5)	Lismore Rd EB Right Heavy Trucks (6-12)	Lismore Rd EB Right Bicycles on Road	Lismore Rd EB U-turn Light Vehicles	Lismore Rd EB U-turn Light Trucks (3-5)	Lismore Rd EB U-turn Heavy Trucks (6-12)	Lismore Rd EB U-turn Bicycles on Road	Lismore Rd EB Cross 1 Pedestrians	GRAND TOTAL TOTALS	Lismore Rd WB TOTAL All Classes	Kays Lane NB TOTAL All Classes	Lismore Rd EB TOTAL All Classes
Period 2 Total	477	9	0	0	134	7	1	0	0	0	0	0	0	1580	602	350	628
Period 2 Peak Hr	265	9	0	0	84	6	1	0	0	0	0	0	0	880	315	200	365
16:00	41	5	0	0	26	2	1	0	0	0	0	0	0	**216**	80	61	75
16:15	80	4	0	0	20	2	0	0	0	0	0	0	0	**234**	85	43	106
16:30	79	0	0	0	23	1	0	0	0	0	0	0	0	**250**	91	56	103
16:45	65	0	0	0	15	1	0	0	0	0	0	0	0	**180**	59	40	81
17:00	57	0	0	0	10	0	0	0	0	0	0	0	0	**201**	83	51	67
17:15	66	0	0	0	14	0	0	0	0	0	0	0	0	**194**	78	36	80
17:30	48	0	0	0	9	0	0	0	0	0	0	0	0	**165**	73	35	57
17:45	41	0	0	0	17	1	0	0	0	0	0	0	0	**140**	53	28	59

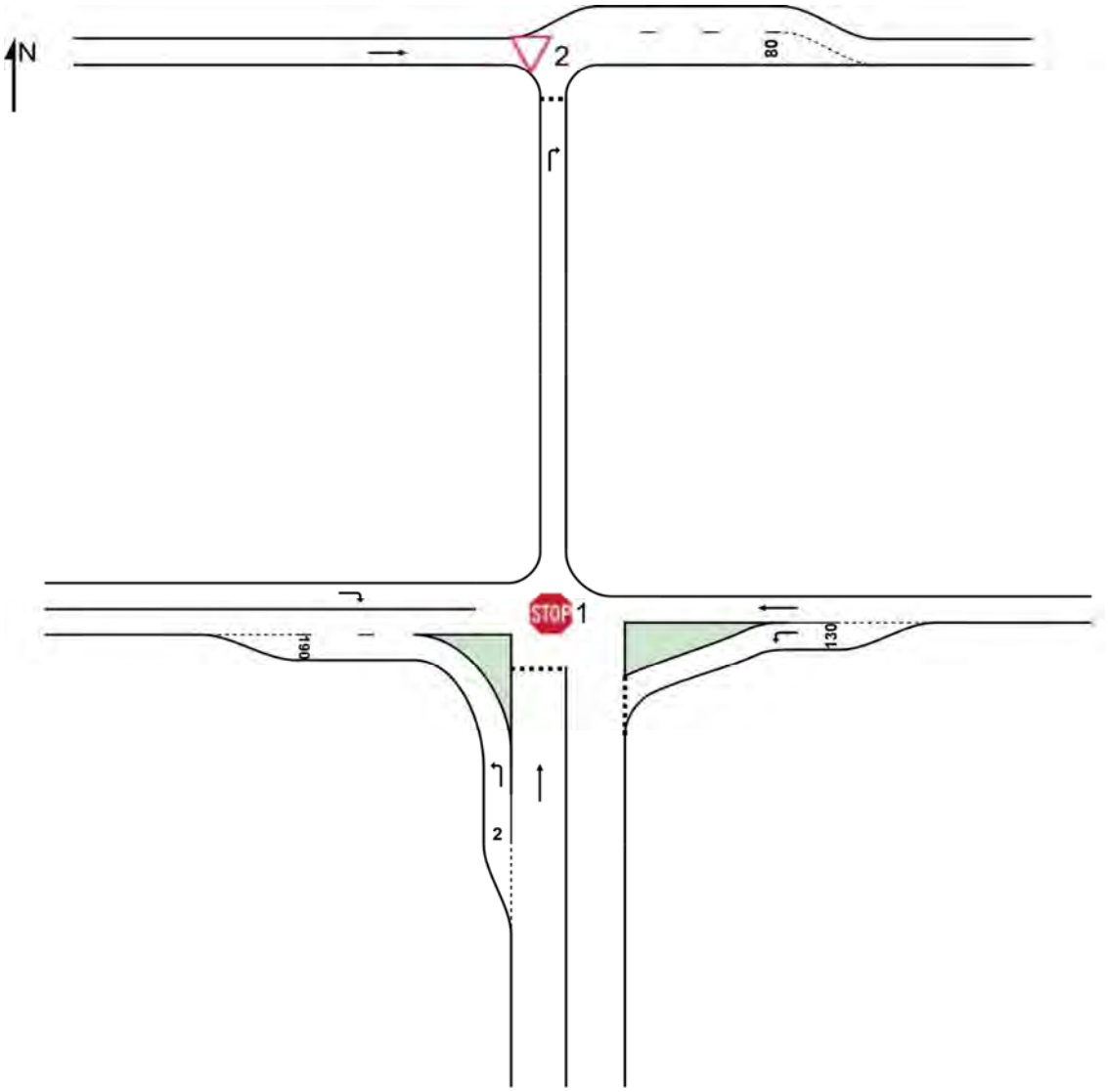
APPENDIX C

SIDRA RESULTS

NETWORK LAYOUT

Network: N101 [Lismore Road / Kays Lane 2017 BG | AM]

New Network



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
STOP 1	NA	Stage 1 Lismore Road / Kays Lane 2017 BG | AM
▽2	NA	Stage 2 Lismore Road / Kays Lane 2017 BG | AM

Organisation: BITZIOS CONSULTING | Created: Monday, 5 February 2018 11:49:41 AM
Project: P:\P3320 Lot 10 Lismore Road Alstonville TIA\Technical Work\Models\P3320.001M Lismore Road_Kays Lane Intersection v2.sip7

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2017 BG | AM]

Network: N101 [Lismore Road / Kays Lane 2017 BG | AM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2017 AM Background Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	41	12.8	41	12.8	0.024	6.8	LOS A	0.0	0.0	0.00	0.56	57.6
2	T1	48	17.4	48	17.4	0.073	9.7	LOS A	0.3	2.2	0.52	0.73	51.6
Approach		89	15.3	89	15.3	0.073	8.4	LOS A	0.3	2.2	0.28	0.65	55.2
East: Lismore Road (E)													
4	L2	213	8.9	213	8.9	0.188	7.7	LOS A	0.8	6.2	0.34	0.60	56.5
5	T1	172	6.1	172	6.1	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		384	7.6	384	7.6	0.188	4.2	LOS A	0.8	6.2	0.19	0.33	61.8
West: Lismore Raod (W)													
12	R2	188	4.5	188	4.5	0.126	7.2	LOS A	0.6	4.4	0.30	0.57	57.7
Approach		188	4.5	188	4.5	0.126	7.2	NA	0.6	4.4	0.30	0.57	57.7
All Vehicles		662	7.8	662	7.8	0.188	5.7	NA	0.8	6.2	0.23	0.44	59.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2017 BG | AM]

Network: N101 [Lismore Road / Kays Lane 2017 BG | AM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2017 AM Background Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	48	17.4	48	17.4	0.051	1.3	LOS A	0.2	1.0	0.36	0.26	48.4
Approach		48	17.4	48	17.4	0.051	1.3	LOS A	0.2	1.0	0.36	0.26	48.4
West: Lismore Road (W)													
11	T1	356	3.3	356	3.3	0.184	0.0	LOS A	0.0	0.0	0.00	0.00	69.9
Approach		356	3.3	356	3.3	0.184	0.0	NA	0.0	0.0	0.00	0.00	69.9
All Vehicles		404	5.0	404	5.0	0.184	0.2	NA	0.2	1.0	0.04	0.03	68.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2017 BG | PM]

Network: N101 [Lismore Road / Kays Lane 2017 BG | PM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2017 PM Background Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane													
1	L2	109	1.9	109	1.9	0.059	6.7	LOS A	0.0	0.0	0.00	0.57	60.5
2	T1	101	4.2	101	4.2	0.123	8.5	LOS A	0.5	3.6	0.47	0.70	53.1
Approach		211	3.0	211	3.0	0.123	7.5	LOS A	0.5	3.6	0.22	0.63	58.0
East: Lismore Road (E)													
4	L2	106	8.9	106	8.9	0.085	7.1	LOS A	0.3	2.6	0.21	0.56	57.0
5	T1	225	0.9	225	0.9	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		332	3.5	332	3.5	0.115	2.3	LOS A	0.3	2.6	0.07	0.18	65.2
West: Lismore Raod (W)													
12	R2	96	7.7	96	7.7	0.068	7.4	LOS A	0.3	2.3	0.34	0.58	56.8
Approach		96	7.7	96	7.7	0.068	7.4	NA	0.3	2.3	0.34	0.58	56.8
All Vehicles		638	3.9	638	3.9	0.123	4.8	NA	0.5	3.6	0.16	0.39	61.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2017 BG | PM]

Network: N101 [Lismore Road / Kays Lane 2017 BG | PM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2017 PM Background Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	101	4.2	101	4.2	0.091	0.9	LOS A	0.3	1.7	0.32	0.22	54.8
Approach		101	4.2	101	4.2	0.091	0.9	LOS A	0.3	1.7	0.32	0.22	54.8
West: Lismore Road (W)													
11	T1	288	3.3	288	3.3	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		288	3.3	288	3.3	0.150	0.0	NA	0.0	0.0	0.00	0.00	70.0
All Vehicles		389	3.5	389	3.5	0.150	0.3	NA	0.3	1.7	0.08	0.06	67.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2022 BG | AM]

Network: N101 [Lismore Road / Kays Lane 2022 BG | AM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2022 AM Background Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	43	12.8	43	12.8	0.025	6.8	LOS A	0.0	0.0	0.00	0.56	57.6
2	T1	51	17.4	51	17.4	0.079	9.9	LOS A	0.3	2.4	0.53	0.74	51.2
Approach		94	15.3	94	15.3	0.079	8.5	LOS A	0.3	2.4	0.28	0.66	55.1
East: Lismore Road (E)													
4	L2	223	8.9	223	8.9	0.199	7.7	LOS A	0.9	6.6	0.35	0.61	56.4
5	T1	180	6.1	180	6.1	0.095	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		403	7.6	403	7.6	0.199	4.3	LOS A	0.9	6.6	0.19	0.34	61.8
West: Lismore Raod (W)													
12	R2	198	4.5	198	4.5	0.133	7.3	LOS A	0.6	4.6	0.31	0.58	57.7
Approach		198	4.5	198	4.5	0.133	7.3	NA	0.6	4.6	0.31	0.58	57.7
All Vehicles		695	7.8	695	7.8	0.199	5.7	NA	0.9	6.6	0.24	0.45	59.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2022 BG | AM]

Network: N101 [Lismore Road / Kays Lane 2022 BG | AM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2027 AM Background Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	51	17.4	51	17.4	0.054	1.4	LOS A	0.2	1.1	0.37	0.28	48.3
Approach		51	17.4	51	17.4	0.054	1.4	LOS A	0.2	1.1	0.37	0.28	48.3
West: Lismore Road (W)													
11	T1	374	3.3	374	3.3	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	69.9
Approach		374	3.3	374	3.3	0.194	0.0	NA	0.0	0.0	0.00	0.00	69.9
All Vehicles		424	5.0	424	5.0	0.194	0.2	NA	0.2	1.1	0.04	0.03	68.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2022 BG | PM]

Network: N101 [Lismore Road / Kays Lane 2022 BG | PM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2022 PM Background Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	115	1.9	115	1.9	0.062	6.7	LOS A	0.0	0.0	0.00	0.57	60.5
2	T1	106	4.2	106	4.2	0.133	8.6	LOS A	0.5	3.9	0.48	0.71	52.8
Approach		221	3.0	221	3.0	0.133	7.6	LOS A	0.5	3.9	0.23	0.64	57.9
East: Lismore Road (E)													
4	L2	112	8.9	112	8.9	0.090	7.1	LOS A	0.4	2.8	0.22	0.56	57.0
5	T1	237	0.9	237	0.9	0.121	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		348	3.5	348	3.5	0.121	2.3	LOS A	0.4	2.8	0.07	0.18	65.2
West: Lismore Raod (W)													
12	R2	101	7.7	101	7.7	0.073	7.5	LOS A	0.3	2.5	0.35	0.58	56.7
Approach		101	7.7	101	7.7	0.073	7.5	NA	0.3	2.5	0.35	0.58	56.7
All Vehicles		671	4.0	671	4.0	0.133	4.8	NA	0.5	3.9	0.17	0.39	61.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2022 BG | PM]

Network: N101 [Lismore Road / Kays Lane 2022 BG | PM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2022 PM Background Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	106	4.2	106	4.2	0.097	1.0	LOS A	0.3	1.8	0.33	0.23	54.7
Approach		106	4.2	106	4.2	0.097	1.0	LOS A	0.3	1.8	0.33	0.23	54.7
West: Lismore Road (W)													
11	T1	303	3.3	303	3.3	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		303	3.3	303	3.3	0.157	0.0	NA	0.0	0.0	0.00	0.00	70.0
All Vehicles		409	3.5	409	3.5	0.157	0.3	NA	0.3	1.8	0.09	0.06	67.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2032 BG | AM]

Network: N101 [Lismore Road / Kays Lane 2032 BG | AM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2032 AM Background Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	45	12.8	45	12.8	0.026	6.8	LOS A	0.0	0.0	0.00	0.56	57.6
2	T1	54	17.4	54	17.4	0.087	10.2	LOS B	0.3	2.6	0.54	0.76	50.8
Approach		99	15.3	99	15.3	0.087	8.7	LOS A	0.3	2.6	0.29	0.67	54.9
East: Lismore Road (E)													
4	L2	235	8.9	235	8.9	0.212	7.8	LOS A	0.9	7.1	0.36	0.62	56.4
5	T1	189	6.1	189	6.1	0.100	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		424	7.6	424	7.6	0.212	4.3	LOS A	0.9	7.1	0.20	0.34	61.7
West: Lismore Raod (W)													
12	R2	208	4.5	208	4.5	0.142	7.3	LOS A	0.7	4.9	0.33	0.58	57.7
Approach		208	4.5	208	4.5	0.142	7.3	NA	0.7	4.9	0.33	0.58	57.7
All Vehicles		732	7.8	732	7.8	0.212	5.8	NA	0.9	7.1	0.25	0.45	59.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2032 BG | AM]

Network: N101 [Lismore Road / Kays Lane 2032 BG | AM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2032 AM Background Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	54	17.4	54	17.4	0.058	1.5	LOS A	0.2	1.2	0.38	0.30	48.2
Approach		54	17.4	54	17.4	0.058	1.5	LOS A	0.2	1.2	0.38	0.30	48.2
West: Lismore Road (W)													
11	T1	393	3.3	393	3.3	0.204	0.0	LOS A	0.0	0.0	0.00	0.00	69.9
Approach		393	3.3	393	3.3	0.204	0.0	NA	0.0	0.0	0.00	0.00	69.9
All Vehicles		446	5.0	446	5.0	0.204	0.2	NA	0.2	1.2	0.05	0.04	67.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2032 BG | PM]

Network: N101 [Lismore Road / Kays Lane 2032 BG | PM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2032 PM Background Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	121	1.9	121	1.9	0.065	6.7	LOS A	0.0	0.0	0.00	0.57	60.5
2	T1	112	4.2	112	4.2	0.143	8.8	LOS A	0.6	4.2	0.50	0.72	52.6
Approach		233	3.0	233	3.0	0.143	7.7	LOS A	0.6	4.2	0.24	0.64	57.8
East: Lismore Road (E)													
4	L2	118	8.9	118	8.9	0.095	7.2	LOS A	0.4	3.0	0.23	0.56	56.9
5	T1	248	0.9	248	0.9	0.127	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		366	3.5	366	3.5	0.127	2.3	LOS A	0.4	3.0	0.07	0.18	65.2
West: Lismore Raod (W)													
12	R2	106	7.7	106	7.7	0.078	7.5	LOS A	0.3	2.6	0.36	0.59	56.7
Approach		106	7.7	106	7.7	0.078	7.5	NA	0.3	2.6	0.36	0.59	56.7
All Vehicles		705	4.0	705	4.0	0.143	4.9	NA	0.6	4.2	0.17	0.39	61.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2032 BG | PM]

Network: N101 [Lismore Road / Kays Lane 2032 BG | PM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2032 PM Background Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	112	4.2	112	4.2	0.103	1.1	LOS A	0.3	1.9	0.34	0.25	54.6
Approach		112	4.2	112	4.2	0.103	1.1	LOS A	0.3	1.9	0.34	0.25	54.6
West: Lismore Road (W)													
11	T1	319	3.3	319	3.3	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		319	3.3	319	3.3	0.165	0.0	NA	0.0	0.0	0.00	0.00	70.0
All Vehicles		431	3.5	431	3.5	0.165	0.3	NA	0.3	1.9	0.09	0.06	67.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2022 Des | AM]

Network: N101 [Lismore Road / Kays Lane 2022 Des | AM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2022 AM Design Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	43	12.8	43	12.8	0.025	6.8	LOS A	0.0	0.0	0.00	0.56	57.6
2	T1	52	17.4	52	17.4	0.082	10.1	LOS B	0.3	2.5	0.53	0.75	51.0
Approach		95	15.3	95	15.3	0.082	8.6	LOS A	0.3	2.5	0.29	0.66	54.9
East: Lismore Road (E)													
4	L2	234	8.9	234	8.9	0.209	7.7	LOS A	0.9	7.0	0.35	0.61	56.4
5	T1	188	6.1	188	6.1	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		422	7.7	422	7.7	0.209	4.3	LOS A	0.9	7.0	0.20	0.34	61.8
West: Lismore Raod (W)													
12	R2	198	4.5	198	4.5	0.134	7.3	LOS A	0.6	4.7	0.32	0.58	57.7
Approach		198	4.5	198	4.5	0.134	7.3	NA	0.6	4.7	0.32	0.58	57.7
All Vehicles		715	7.8	715	7.8	0.209	5.7	NA	0.9	7.0	0.24	0.45	59.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2022 Des | AM]

Network: N101 [Lismore Road / Kays Lane 2022 Des | AM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2027 AM Design Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	52	17.4	52	17.4	0.055	1.5	LOS A	0.2	1.1	0.38	0.28	48.3
Approach		52	17.4	52	17.4	0.055	1.5	LOS A	0.2	1.1	0.38	0.28	48.3
West: Lismore Road (W)													
11	T1	381	3.3	381	3.3	0.198	0.0	LOS A	0.0	0.0	0.00	0.00	69.9
Approach		381	3.3	381	3.3	0.198	0.0	NA	0.0	0.0	0.00	0.00	69.9
All Vehicles		433	5.0	433	5.0	0.198	0.2	NA	0.2	1.1	0.04	0.03	68.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2022 Des | PM]

Network: N101 [Lismore Road / Kays Lane 2022 Des | PM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2022 PM Design Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	115	1.9	115	1.9	0.062	6.7	LOS A	0.0	0.0	0.00	0.57	60.5
2	T1	111	4.2	111	4.2	0.140	8.7	LOS A	0.6	4.1	0.49	0.72	52.7
Approach		225	3.0	225	3.0	0.140	7.7	LOS A	0.6	4.1	0.24	0.64	57.7
East: Lismore Road (E)													
4	L2	116	8.9	116	8.9	0.093	7.1	LOS A	0.4	2.9	0.22	0.56	57.0
5	T1	244	0.9	244	0.9	0.125	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		360	3.5	360	3.5	0.125	2.3	LOS A	0.4	2.9	0.07	0.18	65.2
West: Lismore Raod (W)													
12	R2	101	7.7	101	7.7	0.074	7.5	LOS A	0.3	2.5	0.35	0.59	56.7
Approach		101	7.7	101	7.7	0.074	7.5	NA	0.3	2.5	0.35	0.59	56.7
All Vehicles		686	3.9	686	3.9	0.140	4.8	NA	0.6	4.1	0.17	0.39	61.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2022 Des | PM]

Network: N101 [Lismore Road / Kays Lane 2022 Des | PM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2022 PM Design Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	111	4.2	111	4.2	0.102	1.1	LOS A	0.3	1.9	0.34	0.25	54.6
Approach		111	4.2	111	4.2	0.102	1.1	LOS A	0.3	1.9	0.34	0.25	54.6
West: Lismore Road (W)													
11	T1	316	3.3	316	3.3	0.164	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		316	3.3	316	3.3	0.164	0.0	NA	0.0	0.0	0.00	0.00	70.0
All Vehicles		426	3.5	426	3.5	0.164	0.3	NA	0.3	1.9	0.09	0.06	67.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2032 Des | AM]

Network: N101 [Lismore Road / Kays Lane 2032 Des | AM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2032 AM Design Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	45	12.8	45	12.8	0.026	6.8	LOS A	0.0	0.0	0.00	0.56	57.6
2	T1	55	17.4	55	17.4	0.090	10.4	LOS B	0.3	2.7	0.55	0.76	50.6
Approach		100	15.3	100	15.3	0.090	8.8	LOS A	0.3	2.7	0.30	0.67	54.7
East: Lismore Road (E)													
4	L2	245	8.9	245	8.9	0.222	7.8	LOS A	1.0	7.5	0.37	0.62	56.4
5	T1	198	6.1	198	6.1	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		443	7.6	443	7.6	0.222	4.3	LOS A	1.0	7.5	0.20	0.34	61.7
West: Lismore Raod (W)													
12	R2	208	4.5	208	4.5	0.143	7.4	LOS A	0.7	5.0	0.33	0.59	57.6
Approach		208	4.5	208	4.5	0.143	7.4	NA	0.7	5.0	0.33	0.59	57.6
All Vehicles		752	7.8	752	7.8	0.222	5.8	NA	1.0	7.5	0.25	0.45	59.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2032 Des | AM]

Network: N101 [Lismore Road / Kays Lane 2032 Des | AM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2032 AM Design Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	55	17.4	55	17.4	0.060	1.6	LOS A	0.2	1.2	0.39	0.30	48.1
Approach		55	17.4	55	17.4	0.060	1.6	LOS A	0.2	1.2	0.39	0.30	48.1
West: Lismore Road (W)													
11	T1	400	3.3	400	3.3	0.207	0.0	LOS A	0.0	0.0	0.00	0.00	69.9
Approach		400	3.3	400	3.3	0.207	0.0	NA	0.0	0.0	0.00	0.00	69.9
All Vehicles		455	5.0	455	5.0	0.207	0.2	NA	0.2	1.2	0.05	0.04	67.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [Stage 1 Lismore Road / Kays Lane 2032 Des | PM]

Network: N101 [Lismore Road / Kays Lane 2032 Des | PM]

Intersection of Lismore Road / Kays Lane (Stage 1)
2032 PM Design Traffic Volumes
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kays Lane (S)													
1	L2	121	1.9	121	1.9	0.065	6.7	LOS A	0.0	0.0	0.00	0.57	60.5
2	T1	116	4.2	116	4.2	0.150	8.9	LOS A	0.6	4.4	0.50	0.73	52.4
Approach		237	3.0	237	3.0	0.150	7.8	LOS A	0.6	4.4	0.25	0.65	57.6
East: Lismore Road (E)													
4	L2	122	8.9	122	8.9	0.099	7.2	LOS A	0.4	3.1	0.23	0.56	56.9
5	T1	256	0.9	256	0.9	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		378	3.5	378	3.5	0.131	2.3	LOS A	0.4	3.1	0.07	0.18	65.1
West: Lismore Raod (W)													
12	R2	106	7.7	106	7.7	0.078	7.6	LOS A	0.4	2.6	0.36	0.59	56.6
Approach		106	7.7	106	7.7	0.078	7.6	NA	0.4	2.6	0.36	0.59	56.6
All Vehicles		721	4.0	721	4.0	0.150	4.9	NA	0.6	4.4	0.17	0.40	61.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Stage 2 Lismore Road / Kays Lane 2032 Des | PM]

Network: N101 [Lismore Road / Kays Lane 2032 Des | PM]

Intersection of Lismore Road / Kays Lane (Stage 2)
2032 PM Design Traffic Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

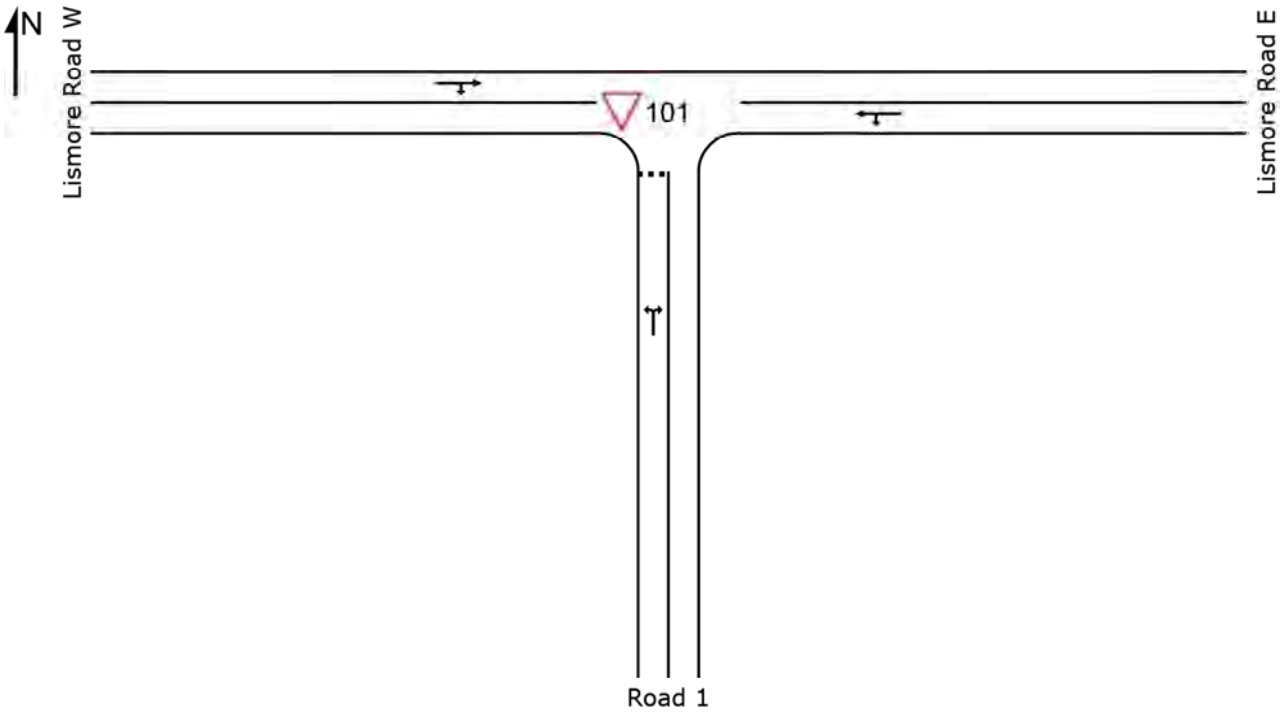
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Median Storage Area													
3	R2	116	4.2	116	4.2	0.109	1.1	LOS A	0.4	2.0	0.35	0.26	54.5
Approach		116	4.2	116	4.2	0.109	1.1	LOS A	0.4	2.0	0.35	0.26	54.5
West: Lismore Road (W)													
11	T1	332	3.3	332	3.3	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
Approach		332	3.3	332	3.3	0.172	0.0	NA	0.0	0.0	0.00	0.00	70.0
All Vehicles		447	3.5	447	3.5	0.172	0.3	NA	0.4	2.0	0.09	0.07	67.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

SITE LAYOUT

Site: 101 [Lismore Road / Road 1 2022 DES | AM]

New Site
Giveway / Yield (Two-Way)



Organisation: BITZIOS CONSULTING | Created: Monday, 5 February 2018 1:46:03 PM
Project: P:\P3320 Lot 10 Lismore Road Alstonville TIA\Technical Work\Models\P3320.001M Lismore Road_Road 1Intersection.sip7

MOVEMENT SUMMARY

Site: 101 [Lismore Road / Road 1 2022 DES | AM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1											
1	L2	19	0.0	0.053	6.1	LOS A	0.2	1.2	0.50	0.70	49.9
3	R2	19	0.0	0.053	9.5	LOS A	0.2	1.2	0.50	0.70	49.6
Approach		38	0.0	0.053	7.8	LOS A	0.2	1.2	0.50	0.70	49.8
East: Lismore Road E											
4	L2	8	0.0	0.222	6.4	LOS A	0.0	0.0	0.00	0.01	66.4
5	T1	404	7.7	0.222	0.0	LOS A	0.0	0.0	0.00	0.01	69.7
Approach		413	7.5	0.222	0.2	NA	0.0	0.0	0.00	0.01	69.7
West: Lismore Road W											
11	T1	425	5.1	0.233	0.1	LOS A	0.1	0.7	0.03	0.01	69.7
12	R2	8	0.0	0.233	8.2	LOS A	0.1	0.7	0.03	0.01	56.9
Approach		434	5.0	0.233	0.2	NA	0.1	0.7	0.03	0.01	69.4
All Vehicles		884	6.0	0.233	0.5	NA	0.2	1.2	0.03	0.04	68.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Lismore Road / Road 1 2022 DES | PM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1											
1	L2	11	0.0	0.028	5.7	LOS A	0.1	0.6	0.45	0.65	50.3
3	R2	11	0.0	0.028	8.8	LOS A	0.1	0.6	0.45	0.65	49.9
Approach		21	0.0	0.028	7.2	LOS A	0.1	0.6	0.45	0.65	50.1
East: Lismore Road E											
4	L2	16	0.0	0.191	6.4	LOS A	0.0	0.0	0.00	0.03	66.3
5	T1	348	3.5	0.191	0.0	LOS A	0.0	0.0	0.00	0.03	69.6
Approach		364	3.3	0.191	0.3	NA	0.0	0.0	0.00	0.03	69.4
West: Lismore Road W											
11	T1	418	3.5	0.232	0.1	LOS A	0.2	1.2	0.05	0.02	69.4
12	R2	16	0.0	0.232	7.8	LOS A	0.2	1.2	0.05	0.02	56.7
Approach		434	3.4	0.232	0.4	NA	0.2	1.2	0.05	0.02	68.8
All Vehicles		819	3.3	0.232	0.5	NA	0.2	1.2	0.04	0.04	68.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Lismore Road / Road 1 2032 DES | AM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1											
1	L2	19	0.0	0.056	6.2	LOS A	0.2	1.3	0.51	0.71	49.8
3	R2	19	0.0	0.056	9.9	LOS A	0.2	1.3	0.51	0.71	49.4
Approach		38	0.0	0.056	8.0	LOS A	0.2	1.3	0.51	0.71	49.6
East: Lismore Road E											
4	L2	8	0.0	0.233	6.4	LOS A	0.0	0.0	0.00	0.01	66.4
5	T1	424	7.7	0.233	0.0	LOS A	0.0	0.0	0.00	0.01	69.8
Approach		433	7.6	0.233	0.1	NA	0.0	0.0	0.00	0.01	69.7
West: Lismore Road W											
11	T1	446	5.1	0.244	0.1	LOS A	0.1	0.7	0.03	0.01	69.7
12	R2	8	0.0	0.244	8.3	LOS A	0.1	0.7	0.03	0.01	56.9
Approach		455	5.0	0.244	0.2	NA	0.1	0.7	0.03	0.01	69.4
All Vehicles		925	6.0	0.244	0.5	NA	0.2	1.3	0.03	0.04	68.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Lismore Road / Road 1 2032 DES | PM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1											
1	L2	11	0.0	0.029	5.8	LOS A	0.1	0.7	0.47	0.66	50.1
3	R2	11	0.0	0.029	9.1	LOS A	0.1	0.7	0.47	0.66	49.8
Approach		21	0.0	0.029	7.5	LOS A	0.1	0.7	0.47	0.66	50.0
East: Lismore Road E											
4	L2	16	0.0	0.201	6.4	LOS A	0.0	0.0	0.00	0.03	66.3
5	T1	366	3.5	0.201	0.0	LOS A	0.0	0.0	0.00	0.03	69.6
Approach		382	3.4	0.201	0.3	NA	0.0	0.0	0.00	0.03	69.4
West: Lismore Road W											
11	T1	440	3.5	0.244	0.1	LOS A	0.2	1.2	0.05	0.02	69.4
12	R2	16	0.0	0.244	7.9	LOS A	0.2	1.2	0.05	0.02	56.7
Approach		456	3.4	0.244	0.4	NA	0.2	1.2	0.05	0.02	68.9
All Vehicles		859	3.3	0.244	0.5	NA	0.2	1.2	0.04	0.04	68.5

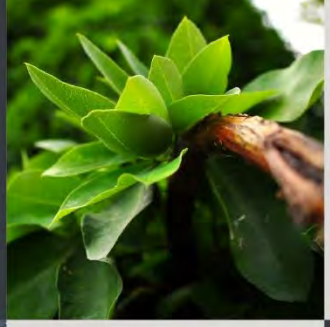
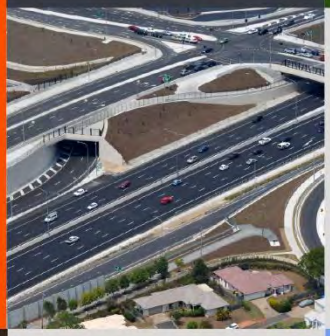
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

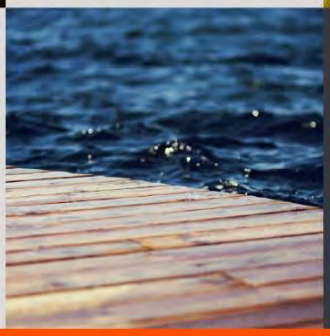
SEPARATE ATTACHMENT

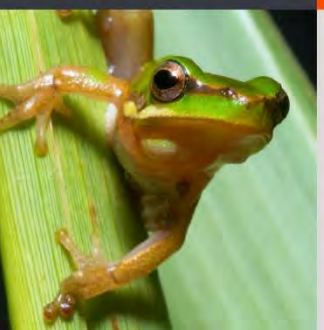
Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 5
LEP Amendment Request
Planning Proposal
Visual Impact Assessment
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

VISUAL IMPACT ASSESSMENT

"Verandah Lifestyle Estate", Wollongbar NSW

Prepared for Greenlife Properties Pty Ltd
By Planit Consulting

June 2018

This report has been prepared by:

Planit Consulting Pty Ltd

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Document Control

Issue	Date	Description	Prepared By	Checked By
A	27.06.2018	Draft Issue for Review	JA	JB
b	10.07.2018	Draft Revised for review	JA	JB

Terms & Abbreviations

Aesthetic	A general term referring to visual appearance and its human perception.
Baseline conditions	Description of the existing situation in the area of interest.
Cross Section	A vertical view drawn at right angles to the control line, showing the existing ground and various elements that make up the landscape.
Enhancement	Landscape improvement through restoration, reconstruction or creation
Fauna	Refers to animals, both individually and collectively.
Flora	Refers to plants, both individually and collectively.
IUB	Inter Urban Break between the townships of Wollongbar and Alstonville
KVP	Key Vantage Point, A location selected for Investigation based on desktop analysis Referenced as KVP1, KVP2 etc
Landscape	A holistic term that encompasses visual, ecological and cultural values of the physical landscape.
Landscape Character	The distinct & recognizable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.
Landscape Effects	Change on the elements, characteristics, character and qualities of the landscape as a result of development. These effects can be positive or negative.
Landscape Factor	A circumstance of influence contributing to the impression of a landscape (scale, enclosure elevation)
Landscape Resource	The Combination of elements that contribute to landscape context, character & value.
Landscape Sensitivity	The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.
Native Plants	Plant species that are indigenous to the local area, or to Australia.
Nature	All aspects of nature, including but not limited to: a. ecosystems and their constituent parts b. all natural and physical resources c. natural dynamic processes, and d. the characteristics of places, however large or small, that contribute to their biological diversity and integrity, or their intrinsic or scientific value
PSH	Proposed Structure Heights. The maximum height of the proposed structures proposed within the subjects site 8.0m above ground level.
Scenic Amenity	A measure of the relative contribution of each place in the landscape to the collective appreciation of open space as viewed from places that are important to the public
Screen Planting	The intentional use of landscape planting to visually screen adjoining uses and structure or views of these.
Visual Amenity	The degree of positive or negative factors associated with viewing a particular structure or proposal.
Visual Catchment	Visual catchments are areas bound by a shared viewing exposure from a particular vantage point or location on the ground plane.
Visualization	Computer stimulation, photomontage or other technique to illustrate the appearance of a development.
Visual Effect	Change in the appearance of the landscape as a result of development. This can be positive (ie. Beneficial or an improvement) or negative (ie. Adverse or a detraction).
VIA	Visual Impact Assessment
VCP	Visual Catchment Plan
VCA | VC	Visual Catchment Area, Referenced as VC1, VC2 etc
The Site / Subject Site	Lismore Road, Alstonville or Lot 10 DP 1059499

1.0 Introduction

Planit Consulting has been commissioned by Greenlife Properties Pty Ltd to prepare and submit a Visual Impact Assessment to accompany a request for a Planning Proposal at Lismore Road, Alstonville. The objective of this report is to assess the potential impact of the proposed changes to the subject site and its surrounds in context with the Inter Urban Break (IUB) between the townships of Wollongbar and Alstonville. The planning proposal request relates to land known as Lismore Road, Alstonville or Lot 10 in DP 1059499.

2.0 The Proposal

The proposal seeks to rezone the land at Lismore Road, Alstonville or Lot 10 in DP 1059499. Greenlife Properties, who own the subject site, are seeking to develop it as a manufactured home estate, introducing a modern, affordable, and energy efficient housing product within the Alstonville Plateau.

A concept layout has been prepared to inform how the subject site could be developed as a manufactured home estate, considering the site attributes, surrounding characteristics and increasing needs of the community. The concept plan indicates up to 125 self-contained homes being accommodated onsite, with additional community facilities including a club house, gym, swimming pool, tennis court, garden and BBQ areas, visitor parking and a village bus service

Refer to Figure 1 for the current development Concept Layout Plan proposal. This concept plan will be further refined following more detailed site investigations at development application stage.

Fig 1 1.0 Concept Layout Plan

3.0 Limitations and Assumptions of Study

This report examines the current landscape and visual amenity of the study area including the IUB through site inspections and through review of existing reports and studies including the Alstonville Strategic Plan 2017 – 2037, and the Alstonville Planning & Environmental Study, 2017.

Field inspection of the study location and identified area of interest have been conducted to determine potential visual impacts of the proposed development. This inspection exercise was to gain familiarity with the location and its landscape character and scenic amenity values.

Whilst various data and information sources were utilized in association with this report, various data limitations are present in such documents. As such, these limitations would also be transferrable to the information within this current report. Global Mapper R15 based on Digital Elevation Model (DEM). The Digital Elevation Model (DEM) Grid LiDAR 2015 has been utilized for all topographic and viewshed mapping included within this report.

This report has been prepared to accompany an initial planning proposal and as such the proposed development works exist as conceptual only. The potential for architectural form and landscape design to mitigate potential visual impacts of the development to the IUB will not be addressed in detail within this report. However, both architectural form and landscape design can be used to potentially mitigate and adverse visual impacts of the development in the log term. The building heights used within this visual assessment have been based on the proposed heights of the dwellings as detailed within the planning proposal prepared by Planit Consulting. A 8.0m maximum building height provision has been applied which is based on the Ballina Shire Council maximum building height applied to rural land under its local planning controls.

In this way, although Planit Consulting has taken every precaution in the report preparation process to ensure data accuracy.

4.0 Objectives & Methodology

The objective of this report is to assess the potential impact of the proposed changes to the subject site and its surrounds in context with the IUB between the townships of Wollongbar and Alstonville. Key visual catchment zones have been identified through both topographic and photographic studies. The potential visual impact of the proposal on the identified catchments have been assessed and evaluated against recognized visual assessment principals.

To determine any potential visual impacts it is necessary to define the visual catchment of the site. This has been undertaken utilizing the following GIS Mapping Programs and associated data resources;

- Visual Catchment Boundary Plan - Generated using Global Mapper R15 and AutoCad and based on Digital Elevation Model (DEM)The Digital Elevation Model (DEM) Grid LiDAR 2015
- Cross Sectional Analysis – 4 Key Vantage Points - Generated using Global Mapper R15 and AutoCad and based on Digital Elevation Model (DEM)The Digital Elevation Model (DEM) Grid LiDAR 2015 / SRTM Elevation Data

This mapping has been used to identify Key Vantage Points (KVP) based on a number of criteria a) Proximity to subject site b) Location along primary vehicular or pedestrian networks and c) Areas of elevated topography (Refer Section 8,0 Viewshed Analysis).

Particular emphasis has been placed on the impacts of extending the urban footprint in relation to the BSC stated goal of retaining the IUB between Alstonville and Wollongbar as per “Locality Objective 1.1” in the Alstonville Strategic Plan 2017 – 2037 plus Section 1.4 “Alstonville / Wollongbar urban buffer area” and Section 5.7 “Rural Separation between plateau villages” from the Alstonville Planning & Environmental Study 2017. This Visual Impact

Assessment considers the areas of existing residential and industrial developments along with rural landscapes within a close proximity to the subject site and areas determined to be located within the visual catchment resulting from the proposed site development. Verification of these KVP's was made through site inspections and photographs have been recorded where relevant to investigate any potential visual impact of the proposed rezoning.

A qualitative assessment of visual impacts forms the second component of the assessment. The significance of impacts has been evaluated using a combination of landscape impacts and visual impacts, as defined below.

4.1 Landscape Impact

Landscape impacts refer to the relative capacity of the landscape to accommodate changes to the physical landscape of the type and scale proposed that would occur as a direct result of the proposed development, through the introduction of new features or loss/modification of existing features.

Impacts have been assessed from identified viewpoints (Key Vantage Points) and consider (through professional judgement) the scale of change including:

- The extent to which the change (modification, removal and / or addition) of landscape features alters the existing landscape character visible to each Key Vantage Point;
- The extent of area from which the effect is evident;
- The duration of the effect (short/medium/long term, permanent/temporary);
- The physical state (or condition) of the landscape and its intactness from visual, functional, and ecological perspective. This includes consideration of the condition of landscape elements (eg. groups of features within the soft landscape including roadside planting, open space, recreational facilities, creek lines, tree, bush blocks), or features (eg. prominent eye-catching elements such as a distinctive building and/or its setting, significant mature specimen tree, lookout point, etc) and their contribution to landscape character. Individual features and elements make up the character of a place and influence how the landscape is experienced

Definitions used to describe this assessment are detailed in Table 1.0

Table 1.0 Assessment of Landscape Impact (Source: Landscape Institute and Institute for Environmental Management and Assessment, 2002)

Landscape impact	Definition
Large	A substantial / obvious change to the landscape due to total loss of, or change to, elements, features or characteristics of the landscape. Would cause a landscape to be permanently changed and its quality diminished.
Moderate	Discernible changes in the landscape due to partial loss of, or change to the elements, features or characteristics of the landscape. May be partly mitigated. The change would be out of scale with the landscape, and at odds with the local pattern and landform and will leave an adverse impact on a landscape of recognised quality.
Small	Minor loss or alteration to one or more key landscape elements, features, or characteristics, or the introduction of elements that may be visible but may not be uncharacteristic within the existing landscape.
Negligible	Almost imperceptible or no change in the view as there is little or no loss of / or change to the elements, features or characteristics of the landscape. The existing landscape quality is maintained but be slightly at odds to the scale, landform and pattern of the landscape.

4.2 Visual Impact

Visual impacts arise from changes in available views of the landscape that occur as a result of the development. Visual impact is determined through the subjective assessment of sensitivity of the visual receptors (i.e. residents, outdoor recreational users) and the magnitude (scale) of the change in view. Sensitivity is dependent upon receptors' location; the importance of their view; their activity (i.e. working, recreational, or travelling through); expectations; available view; and the extent of screening of this view.

Factors that have been considered in assessing the response of receptors to changes in the visual amenity include:

- Interest in the visual environment and their distance/angle of view to the source of the impact;
- The extent of screening/filtering of the view;
- Magnitude of change in the view (i.e. loss/addition of features that change the view's composition);
- Integration of changes within the existing view (form, mass, height, colour and texture);
- Duration of the effect (temporary/permanent, intermittent/continuous)

Receptor sensitivity definitions used to describe this assessment have been outlined in Table 2.0.

Table 2.0 Assessment of Receptor Sensitivity (Source: Landscape Institute and Institute for Environmental Management and Assessment, 2002)

Sensitivity	Definition
High	Occupiers of residential properties with long viewing periods, within close proximity to the proposed development
	Users of outdoor recreational area including nature reserves, and nature based recreation (walking, horse riding trails, water based activities such as swimming and fishing) where their attention is focused, in part, on the landscape and its amenity
	Communities that place value upon the landscape and enjoyment of views of their landscape setting
Medium	Outdoor workers who have a key focus on their work who may also have intermittent views of the Project Area
	Outdoor recreation users (i.e. sporting activities) where their attention is focused predominately on the activity being undertaken
	Occupiers of residential properties with long viewing periods, at a distance from or screened from the Project Area
Low	Road users in motor vehicles, trains or on transport routes that are passing through or adjacent to the study area and therefore have short term views
	Viewers indoor at their place of work
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short
	Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the study area and have partially screened views and short viewing times

4.3 Significance of Impact

For the purposes of this assessment, predicted impacts as a direct result of the project have been described according to their significance, which is a function of the magnitude of the impact and the sensitivity of the receptor as detailed in Table 3.0.

Table 3.0 Significance of Impact

		Landscape Impact			
		Large	**Moderate**	**Small**	**Negligible**
Visual Sensitivity	**High**	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

5.0 Site Location & Study Area

The site has a total area of 7.04 hectares and is bound by Lismore Road to the north and north-west and the Alstonville Bypass/Bruxner Highway to the south. Immediately south of the Bruxner Highway is the Russellton Industrial Precinct. Opposite the north west end of the subject site is the residential area of Wollongbar. A cattle grazing property and small rural residential estate is located to the east. Land being used for horticulture, particularly macadamia nut growing, is located to the north and south of the subject site.

The site is predominantly vacant and is currently utilised for low scale cattle grazing purposes, primarily to keep the site maintained. Some mature vegetation aligns the site's north western boundaries however the site itself is predominantly clear of all mature vegetation. A number of natural overland flow drainage lines traverse the site in its north west.

The land is undulating, with a north – south orientated ridgeline rising from 154m in elevation to 158m in elevation when traversing from north to south. This ridge is located approximately 50m from the eastern boundary which has an elevation of approximately 152m in elevation to 157m in elevation when traversing North to South. From the ridgeline, the land falls towards the west, with the western boundary being approximately 140m in elevation as shown in Figures 8.0 and 10.0 (Refer Section 9).

The study area / area of investigation for this landscape and visual impact assessment is identified as 1.0km from the central point of the site as illustrated in Fig 2.0. This 1.0km radial study area captures the western edge of Alstonville, the eastern area of Wollongbar, the Russeton Industrial Estate and the IUB area. This area of investigation was determined through topographic study and through the identification of the KVP's being investigated as part of this report. The confines of this area of investigation will be further explained throughout this report through the investigation of each identified KVP.

While the site is technically within Alstonville, it is on the fringe of the Wollongbar Township. Wollongbar provides a small community shopping centre within 700m walking distance to the site, with tenancies including a Foodworks supermarket, post office, medical centre, dentist, chemist, hairdresser, cafe and a tavern. Other community

infrastructure and facilities include a primary school and sports oval, as well as a TAFE Campus located on Sneaths Road.

More widely, the site is located 600m northwest of the Alstonville urban boundary and approximately 1.5km north west of Alstonville's town centre, 18km west of Ballina and 15km east of Lismore. Figure 2 below shows the site context and site itself.

Fig. 2.0 Site Context Plan 01 | Study Area

A photographic study from 16 Vantage Points identified for further investigation were identified and the location of these are illustrated in Figure 3.0. Through additional site plus topographic studies, a number of these photographic points were identified as "Key Vantage Points" (KVP's). (Refer to Section 9).

Refer to **Appendix A** for the Photographic Study Images.

Fig. 3.0 Vantage Points – Photographic Study | Study Area

6.0 Proposed Structure Heights

The potential visual impact of the proposed development will be largely determined by the heights of the proposed structures within the site, the site's topography, and the resultant viewsheds. These Proposed Structure Heights (PSH) represent approximate height levels only, for the purposes of cross sectional analysis and viewshed analysis.

The building heights used within this visual assessment have been based on the proposed heights of the dwellings as detailed within the planning proposal prepared by Planit Consulting. An 8.0m maximum building height has been established based on Council local planning controls and forms the basis of establishing the PSH.

Based on these assumptions the following PSH's have been calculated and form the basis for the analysis contained within this report.

Proposed Structure Heights (PSH):

- 8.0m above ground level

This PSH height data (buildings heights up to 8.0m based on Digital Elevation Model (DEM)The Digital Elevation Model (DEM) Grid LiDAR 2015 / SRTM Elevation Data) has been used to establish the potential visual impact on the

surrounding visual catchment areas (VC's) and will be referenced throughout this report when investigating key vantage points surrounding the subject site. Refer to Figure 5 (Section 7).

7.0 Visual Catchment Areas | Site Topography

Visual catchments are areas bound by a shared viewing exposure from a particular vantage point or location on the ground plane. Visual catchment areas are defined largely by topography, the height of a particular point on the ground plane, relative to the surrounding area.

This is illustrated in Figure 4.0 below.

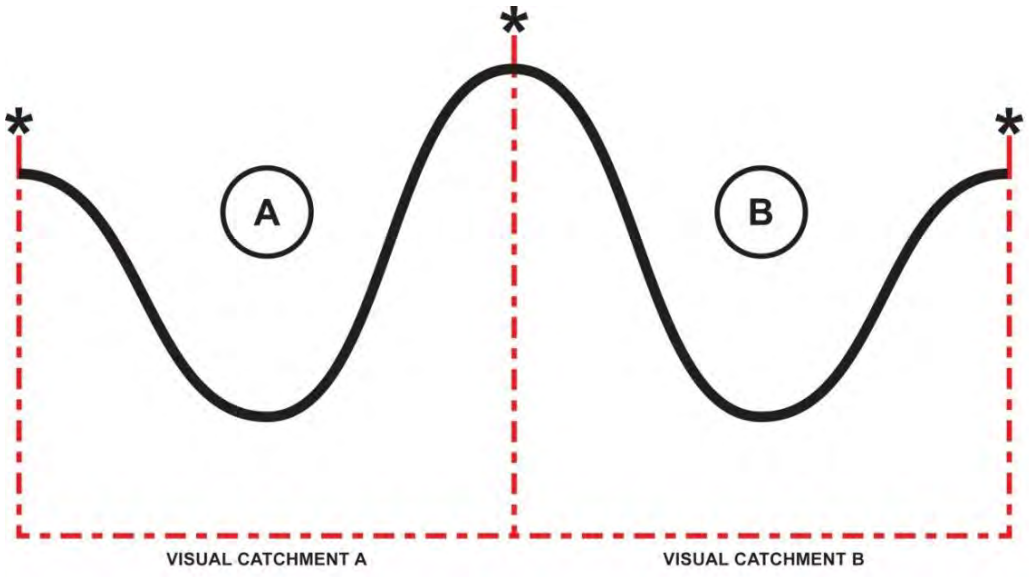


Fig 4.0: Visual Catchment Graph

This cross-sectional view illustrates two distinct Visual Catchments 'A' and 'B'. A particular land-use or structure that exist within Visual Catchment Area A is likely to be contained within the confines of Visual Catchment Zone A. Further, its impact may be visually obscured (or its impact lessened) from Visual Catchment B by the central rise in topography. The dominant ridgelines form the extents of a visual catchment (illustrated as an'*'on the above diagram).

This methodology for establishing visual catchment boundaries has been applied over the study area identified in Section 5.0 of this report. This Visual Catchment Plan is included as Fig 5.0.

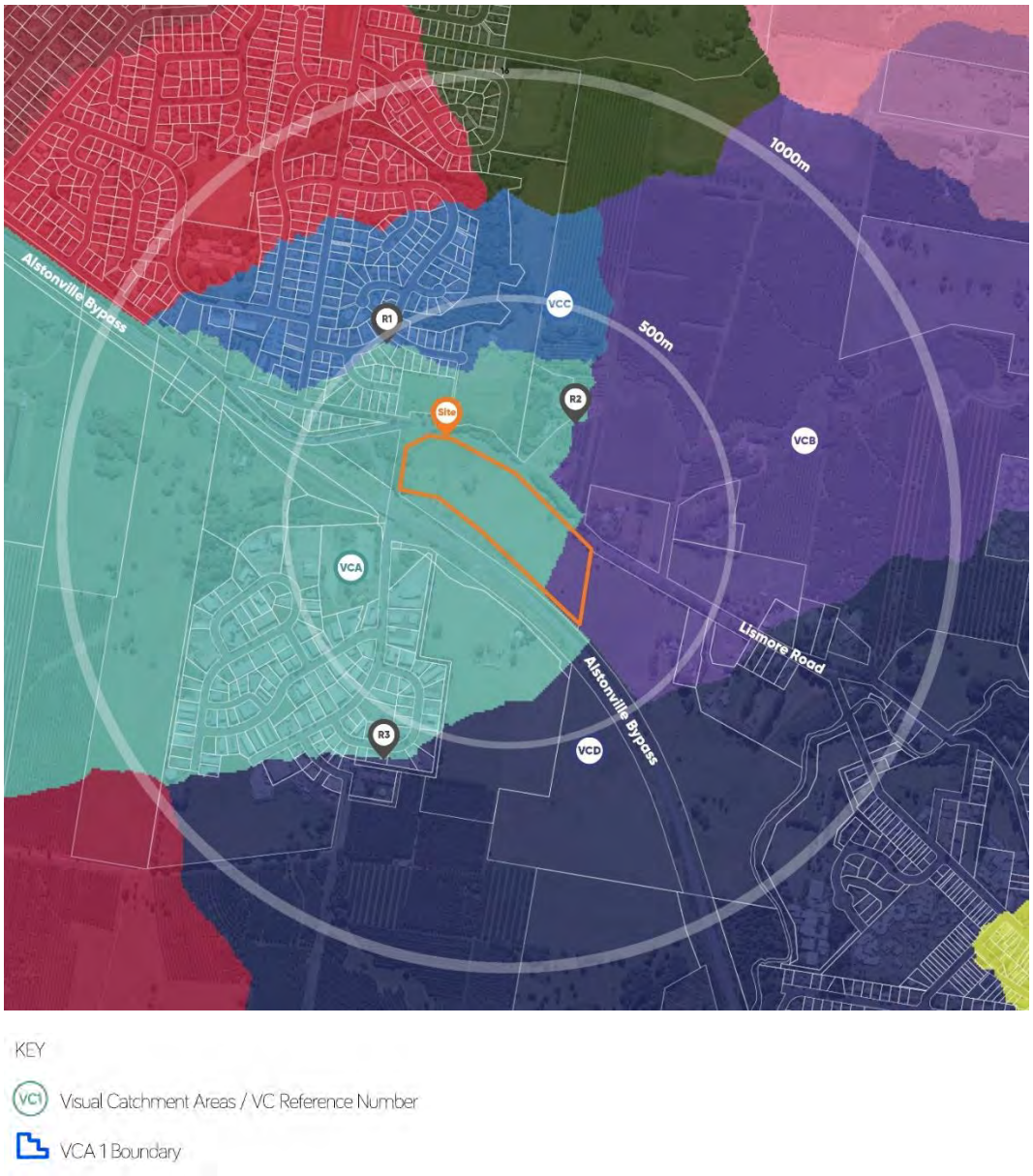


Fig 5.0: Visual Catchment Plan

The Visual Catchment Plan (Figure 5.0) provides a base that will aid in determining the potential visual impact or exposure that the proposed development will have to surrounding view catchments. The various visual catchments determined through topographic analysis are illustrated by the contrasting coloured catchment zones surrounding the subject site. The four (4) prominent Visual Catchment Boundaries have been identified and are referenced throughout this report (VC A to VC D).

As illustrated in the Visual Catchment Plan, the subject site is located predominately within a single visual catchment (VCA) with a clearly defined visual catchment area (illustrated by green shading). The boundaries of this VC are defined by the prominent ridgelines (R1, R2 & R3) which act to limit views of the majority of the subject site from areas outside this visual catchment.

A portion of the site (approximately 10%) is contained within a second visual catchment area (VCB) with a clearly defined visual catchment area (illustrated by purple shading). The boundaries of this VC are defined by the prominent

ridgelines (R2 and R3) which act to limit the views of the portion of the subject site from areas outside of this visual catchment.

8.0 Viewshed Analysis

As detailed in Section 6.0 of this report, the proposed structure height (PSH) within the subject site will be restricted to 8.0m for the development. This height data has been used to generate a viewshed analysis of the proposed structures within the subject site. The view shed analysis uses loaded elevation grid data with a user-specified transmitter location, height, and radius. Areas within the selected radius that have a clear line of sight to the transmitters are coloured with a user-specified colour (Purple or Aqua - Refer Fig 6.0). The Digital Elevation Model (DEM) Grid LiDAR 2015 has been used to determine the potential viewshed for these structures.

Two key locations were selected (VS1/VS2) based on the findings as illustrated in Figure 5.0: Visual Catchment Plan, to determine the influence of the R2 and associated topography on the Viewsheds. These are graphically shown in Figure 6.0.

Fig. 6.0 Combined Viewshed Analysis

Viewshed 1

- Represents a minor portion of the site.
- VS1 includes:
    - Approximately 50% of the eastern edge of the IUB area between Alstonville and the site bounded by Alstonville Bypass and Lismore Road
    - The eastern edge of the Wollongbar built form
    - A portion of the Russelton Industrial Estate located to the south-west of the site
    - Rural zones between 500 and 1000m in the north to east quadrant from the site
    - Existing rural residential and associated farm buildings to both the north and south of Lismre Road
    - Rural zones adjacent to the site to the western boundary of the site extending beyond the Russelton Industrial Estate
- Has been used to determine Key Vantage Point 1 associated with Photograph Location 01(Alstonville Bypass) and Cross Section B plus Key Vantage Point 2 associated with Photograph Location 10 (Lismore Road) and Cross Section D. (Refer to Figure 7.0: Visual Catchment Reference Plan)

Viewshed 2

- Represents the majority of the site area
- VS2 includes:
    - Approximately 50% of the western edge of the IUB area between Alstonville and the site bounded by Alstonville Bypass and Lismore Road
    - Rural zones to the north immediately adjacent to the site and extending to the 1000m radial extent
    - Rural zones adjacent to the site extending to the west
    - Rural zones between the Alstonville bypass and the Russelton Industrial Estate to the south of the site
    - The eastern edge of the Wollongbar built form (existing and planned) up to the 1000m radial extent
    - The majority of the Russelton Industrial Estate
- Has been used to determine Key Vantage Point 3 associated with Photographic Location 06 (Lismore Road) and Cross Section A plus Key Vantage Point 4 associated with Photograph Location 05 (Russelton Estate) and Cross Section C. (Refer to Figure 7.0: Visual Catchment Reference Plan)

Summary

The contrast between VS1/VS2 is the result of Ridge 2 that transects the subject site as illustrated in Figure 5.0. It is noted that the View Shed generated for VS1 represents a larger viewshed area than VS2 and that the VS1 portion of the site represents a limited area of the Subject site.

This Viewshed Analysis has been used in combination with the Site Investigation to inform the location of Key Vantage Points (KVP's)

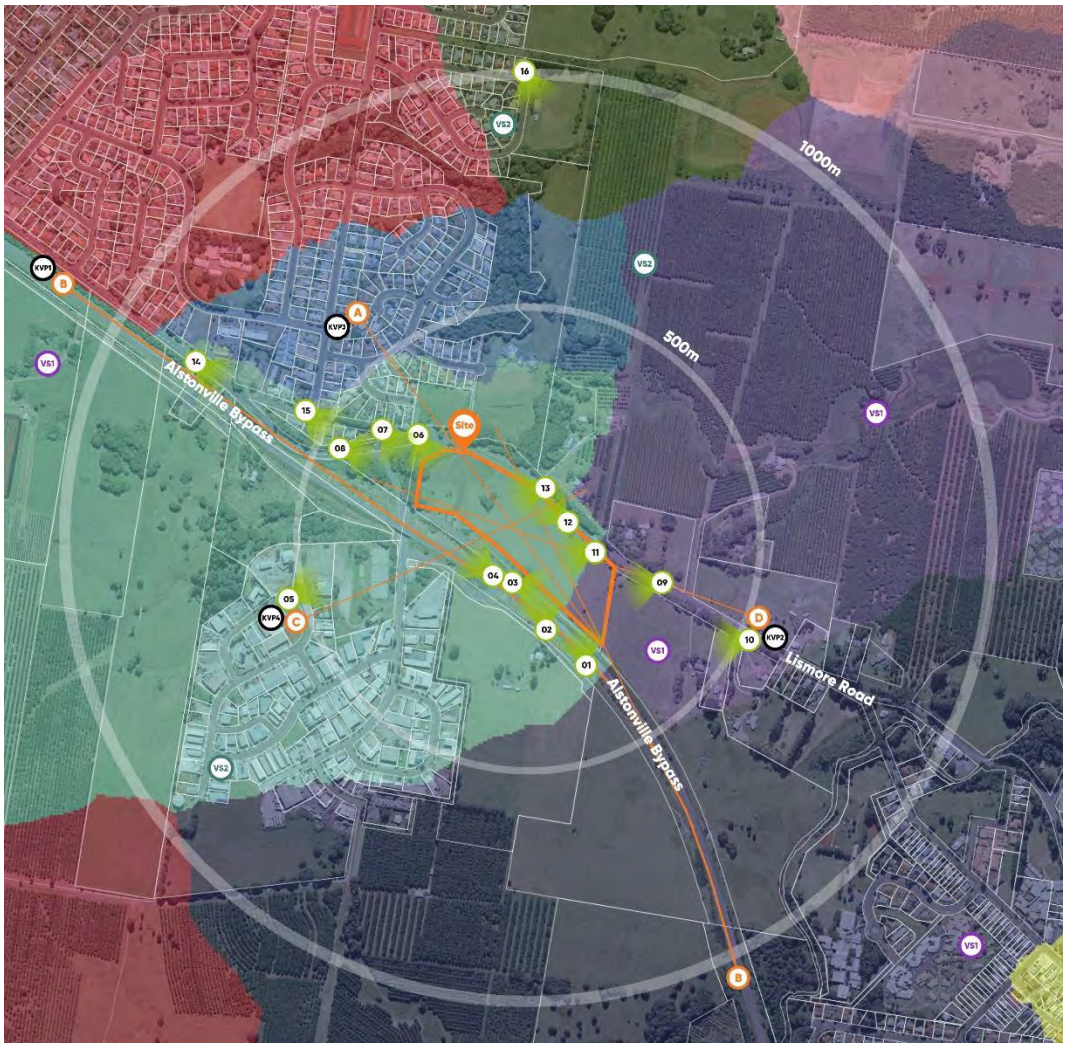
9.0 Key Vantage Points

Within the established investigation area, four (4) KVP's have been selected for further investigation. These vantage points have been selected based on several factors including:

1) Proximity to subject site
2) Location along primary vehicular or pedestrian networks
3) Areas of elevated topography (based on findings within the Viewshed Analysis)
4) Photographic and site investigation
5) Land use (existing residential areas)

Verification of these KVP's was made through site inspections and photographs have been recorded where relevant to provide a representation of typical views from each KVP toward the subject site. Topographic cross sections from each KVP location to the subject site have been generated using (DEM) Grid LiDAR 2015 / SRTM Elevation Data.

Fig.7.0 illustrates the location of the four (4) KVP's identified for further investigation. These are numbered KVP1 to KVP4 on this plan with the orange line that extends from each of these KVP's to the subject site representing the distance measurement line as well as the path used to create the cross sectional transect that is included within the KVP analysis section 9.1.



KEY

VC1 Visual Catchment Areas / VCA Reference Number

VCA 1 Boundary

R1 Primary Ridge Lines / Ridge Reference Number

Fig. 7.0 Visual Catchment Reference Plan

9.1 Key Vantage Points Analysis

9.1 Key Vantage Point 1 | Alstonville Bypass User Experience

Key Vantage Point 1 is not a single point, but rather is a 1900m section of the Alstonville Bypass immediately to the south of the subject site and relates to motorists who are traversing the IUB between Wollongbar and Alstonville in either direction. Refer to Fig 8.0 for the location and extent of this KVP Fig 8.0 also shows the longitudinal section along the centreline of Alstonville Bypass (Section A) juxtaposed with a cross section of the landform 100m to the north of the road cutting through the subject site (Section B).

As shown in Section A, the Alstonville Bypass when travelling west to east has a high point of just over 170m at its western extent, falling to a low point 750m from the start of the Section of 146m. This low point is adjacent to the subject sites western boundary. The road then rises to a high point of 152m at a distance of 1,470 m from the start of the section and 165 m from the eastern boundary of the subject site, before falling to an elevation of 140m at the eastern extent of the section.

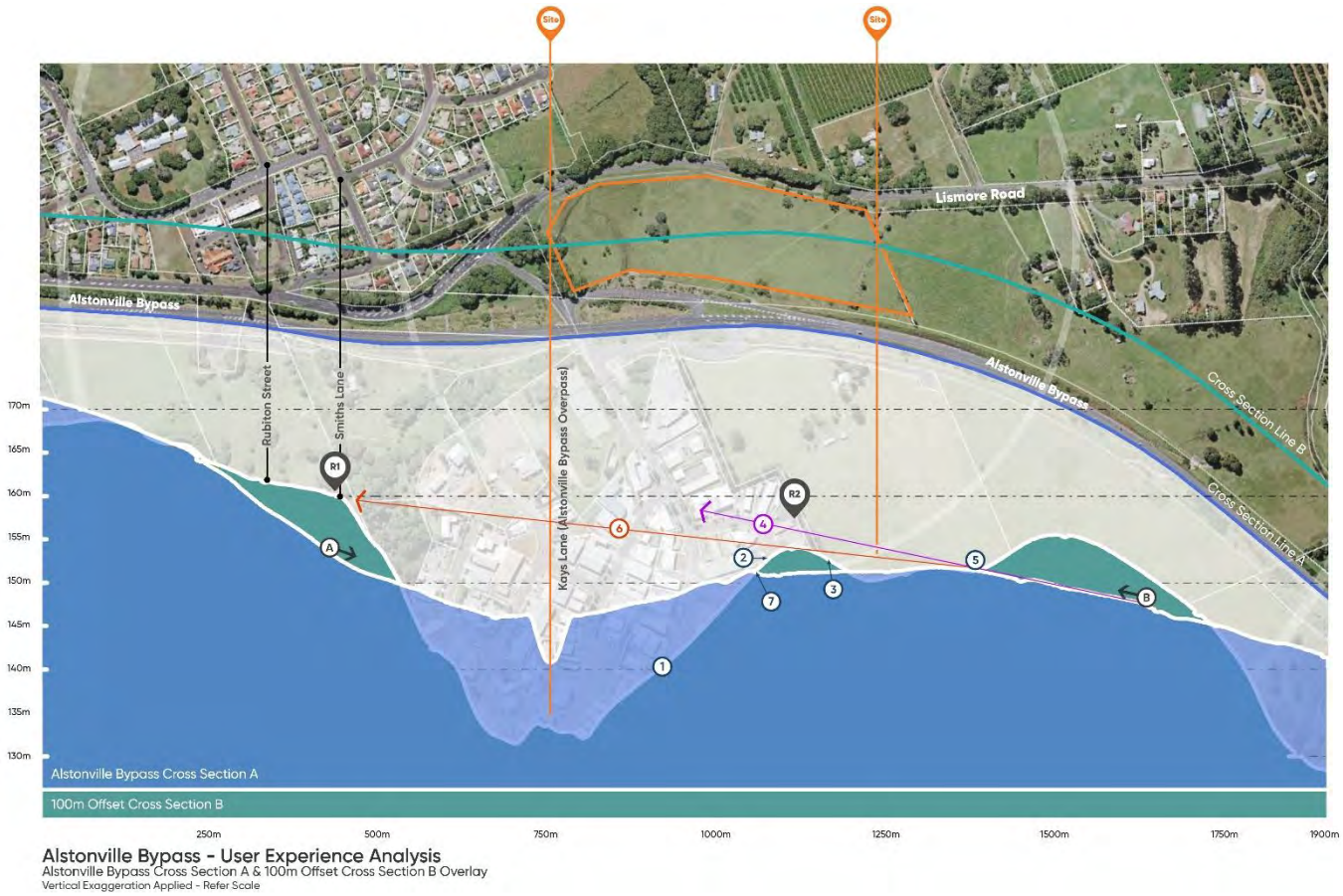


Fig 8.0. Cross Section Analysis- Key Vantage Point 1 | Alstonville Bypass User Experience | Vertical exaggeration applied refer to scale reference

Image 1.0. Site Image - Vantage Point 1 viewing east along Alstonville Bypass towards Ridgeline 2 and the subject site

Image 2.0. Site Image - Vantage Point 1 viewing east Alstonville Bypass towards Ridgeline 2 and the subject site

Image 3.0. Site Image - Vantage Point 1 viewing west along Alstonville Bypass towards the subject site

Vantage Point 01 Analysis

- Key Vantage Point 1 is not a single point, but rather is a 1900m section of the Alstonville Bypass immediately to the south of the subject site and relates to motorists who are traversing the IUB between Wollongbar and Alstonville in either direction.
- The Alstonville Bypass when travelling west to east has a high point of just over 170m at its western extent, falling to a low point 750m from the start of the Section of 146m. This low point is adjacent to the subject sites western boundary. The road then rises to a high point of 152m at a distance of 1,470 m from the start of the section and 165 m from the eastern boundary of the subject site, before falling to an elevation of 140m at the eastern extent of the section.

- Section B shows the relationship of the adjacent topography 100m to the north of the Alstonville Bypass and includes the length of the subject site within the Cross-Section extents.

- Ridgeline 2 (R2) forms the Viewshed boundary that separates VCA (containing the western portion of the subject site) and VCB (containing the eastern portion of the subject site) with KVP1 extending through both VCA's. (Refer to Figure 4: Visual Catchment Plan). As per Figure 5.0: Combined Viewshed Analysis Plan, R2 is the dividing line between VS1 (VCA) and VS2 (VCB)

Travelling East

- When approaching the subject site from the west (A) and as shown in Image 01 (Photographic location 14) which is located approximately 250m east of the start point of the Section, only a small portion (approximately 10%) of the subject site is visible to the west of R2 (2). This is due to the subject site being screened from view by a combination of Ridgeline 1 (R1), existing mature vegetation, the subject site being lower than Alstonville Bypass (1) for 500m of the subject site and the screening of the subject site to the east of R2 (3).

- The views to the north of the Alstonville Bypass from the western edge of the Cross Section for the first 800m when travelling east is of the Wollongbar urban development viewed either directly or through existing mature vegetation.

- While VS2 (Refer Fig. 6.0) includes the portion of the subject site to the west of R2, the subject site is predominantly at elevations lower than the majority of the Alstonville Bypass within the View Shed (1). This results in the view line of motorists from the western edge of the IUB going over the subject site to R2 and R3 when travelling east.

- Image 02 (Photographic location 3) indicates that the subject site will be screened by the existing roadside bund to the north of the Alstonville Bypass even though the Alstonville Bypass is at a similar level to the subject site at this point.

Travelling West

- As shown in Figure 6.0, VS1 contains views across the IUB from the east including the eastern portion of the subject site. However, as shown in Figure 8.0 when approaching from the east, the subject site (3) is only visible for a length of approximately 290m (5) due to the topography rising from east to the west culminating in R3. When the subject site does become visible in VS1, the visual catchment includes views to R1 and its urban development of Wollongbar in the background (6).

- At location 7 on the Section, the subject sites ground elevation falls below that of the Alstonville Bypass through to the western boundary of the subject site. The predominant view for motorists along this section of the Alstonville Bypass will be of R1 and the urban development of Wollongbar which is characterised by recurrent roof lines rooflines of buildings located within residential allotments visually broken up by vegetation located within and adjacent to these lots.

- Image 03 (Photographic location 4) indicates that the subject site will be screened from views by a combination by the existing roadside bund to the to the north of the Alstonville Bypass and the subject site elevation becoming lower than the Alstonville Bypass.

Summary | Significance of Impact

As per Vantage Point 01 Analysis, the impact of the proposed development to the IUB is limited within VCA when travelling both west or east along the Alstonville Bypass to approximately 10% of the site immediately to the west of Ridgeline 2, and there is a corresponding limited exposure of the proposed development within VCB to a travel distance of approximately 290m. Views from KVP1 (Alstonville Bypass) across the subject site are screened from view by a combination of the subject site being lower than Alstonville Bypass (Viewshed 2), ridgeline 2 and the roadside bund.. The allotments to the north of Alstonville Bypass having views of the eastern portion of the subject site to the east of R2 are located in the IUB and as a result, these allotments are unlikely to be subject to any urban development. As such, the significance of impact summary will be limited to assessing the impact the proposed development will have on the views along Alstonville Bypass when approaching the subject site from either the west or east.

The Landscape Impact would be considered small with 'the introduction of elements that may be visible but may not be uncharacteristic within the existing landscape'. The alteration of the landscape by the proposed development will only be visible within the existing landscape for a short period of time.

The significance of the impact of the proposed development to KVP1 is considered to Not Significant.

		Landscape Impact			
		Large	**Moderate**	**Small**	**Negligible**
Visual Sensitivity	**High**	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

9.2 Key Vantage Point 2 | Lismore Road

Key Vantage Point 2 is located to the east of the subject site along Lismore Road. KVP 2 was selected based on its relatively close proximity to the subject site (540 metres from the sites eastern border), its lower elevation (151m), its rural nature and having views of the subject site across the IUB. As part of KVP2 analysis, the immediate surrounds have also been assessed including rural residential lots to the south of Lismore Road and rural residential lots/farm land to the north of Lismore Road.

2. Lismore Road

VP Location Coordinates:28°50'2.71"S| 153°25'53.20"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 151.0m
Approx Distance from Subject Area (centre point): 540m

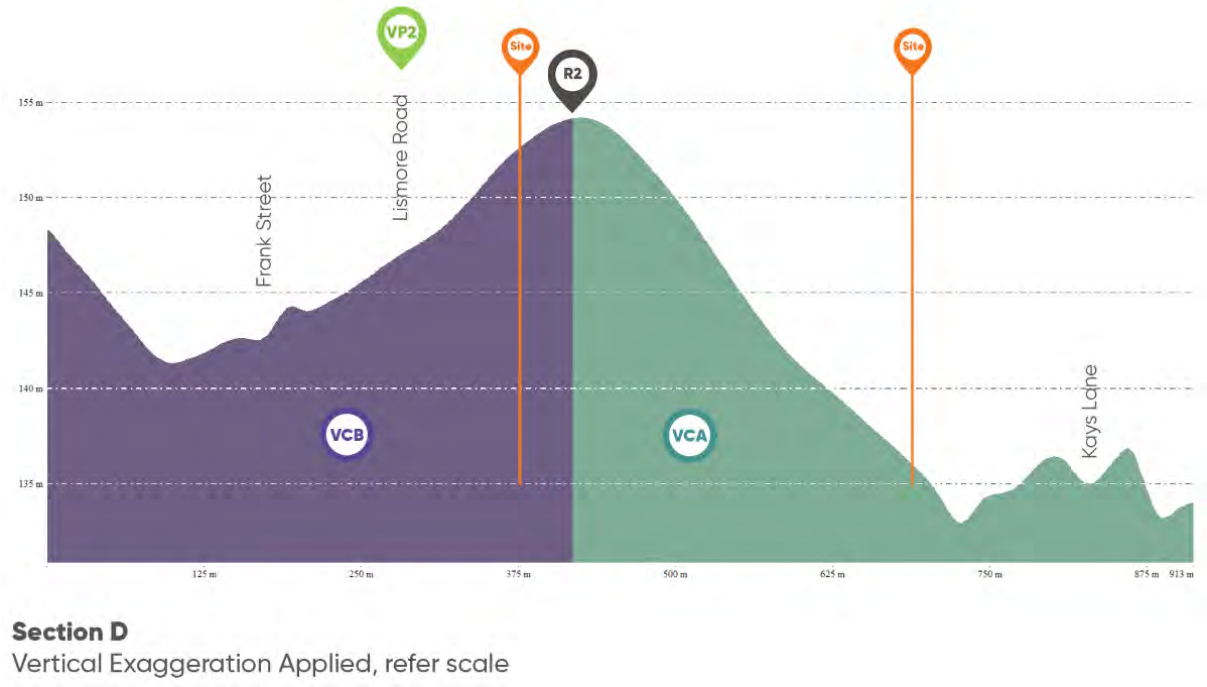


Fig 9.0. Cross-Section - Vantage Point 2 | vertical exaggeration applied refer to scale reference

Image 4.0. Site Image - Vantage Point 2 Viewing west from Lismore Road towards Ridgeline 2 and the subject site

Vantage Point 02 Analysis

- Key Vantage Point 2 is located to the south-east of the subject site along Lismore Road. KVP 2 is located 540 metres east of the subject sites eastern border and having views across the IUB to the subject site. The KVP sits at an elevation of 151 m at a height lower than that of the eastern portion of the subject site as defined between R2 and the eastern boundary of the subject site. The eastern boundary has an elevational change from 152m to 157 when traversed from north to south.
- Approximately 10% of the subject site between the eastern boundary and R2 is visible from KVP2
- Ridgeline 2 (R2) forms the prominent Viewshed Boundary that restricts VCB along its western boundary (containing the eastern portion of the subject site), R2 is visible in Image 2.0. R2 raises in elevation from 154m to 158m when traversed north to south and generally runs at right angles to Lismore Road.
- R2 limits the extent of the view across the IUB between Alstonville and Wollongbar to approximately 50% of the IUB width.
- The higher elevation of R2 (154 – 158m) than that of KVP 2 (151 AHD) increase the visual impact R2 has on views to the west from KVP2.
- The raised elevation R2 that is located to the west of the subject sites eastern boundary when viewed from KVP2 creates a defined visual boundary within the subject site. With R2 elevation of 154 – 158m, the PSH of the subject site (162.00–168.00 AHD) will be higher than the existing visual backdrop.
- As per Fig 5.0 Visual Catchment Plan, KVP2 and the eastern portion of the subject site share the same Visual Catchment Boundary both being located within VCB.
- As per Fig 6.0 Combined Viewshed Analysis, views from KVP2 to the subject site were predicted with R2 acting to contain the projected viewshed to the north and north-west of where KVP2 is located.
- Figure 9.0 Cross Sectional Analysis – Vantage Point 2 illustrates the lower elevation of KVP2 (151m) compared to that of the eastern portion of the subject site. As illustrated in Fig 9.0, a clear line of sight from KVP2 to the subject site from the eastern boundary to R2 is evident. This cross sectional analysis is based on topographic data Digital Elevation Model (DEM) Grid LiDAR 2015 and does not take into consideration the mitigating effect of existing vegetation or future landscape screening of the site. As visible in Image 2, existing vegetation is located across the sightline from KVP2 to the subject site.
- Image 4.0 illustrates the typical landscape and rural residential character created by existing development along both the northern and southern sides of Lismore Road. This is characterized by the sporadic but recurrent rooflines of dwellings located within the rural allotments of the IUB. These sporadic roof lines continue along the length of Lismore Road and are visually broken up by mature vegetation located within these lots and within the road reserve. These dwellings along Lismore Road are located on the eastern (lower) side of R2 with primary views to the east. Rooflines do not exceed the general tree line associated with Image 4.0.
- As per Image 4.0, the subject site is visible from KVP2, however at a distance of 540m, the subject site represents a minor portion of the overall visual catchment from KVP2. As per Image 4.0, the primary view orientation of the rural lots located along Lismore Road is not toward the subject site but is to the east and north east.

- Architectural and Landscape treatments will be utilized to assist in mitigating any potential adverse visual impact of the proposed subject site development works. Landscape amenity planting should aim to mitigate any potential visual impacts though landscape treatments appropriate to the scale of the development and sympathetic to the established regional landscape treatments. Detailed landscape plans will be developed as part of future development applications.

Summary | Significance of Impact

As per Vantage Point 02 Analysis, the eastern portion of the subject site (approximately 10% of the subject site) is visible from the position of KVP2. The visual impact of the entire subject site is reduced by R2 which screens the majority of the subject site which is located to the west of R2. Ridgeline 2 (R2) also limits the views across the IUB from Alstonville to Wollongbar to approximately 50% of the IUB width.

The primary view orientation along Lismore Road towards the subject site from KPV2 is of rural landscape, farm houses and mature vegetation both within paddocks and along the road verge. The primary view orientation of the existing dwellings located on Lismore Road (with potential views of the subject site) are towards the east and north east (not toward the subject site). The subject site represents a minor portion of the overall visual catchment afforded to these existing dwellings within the IUB. Development on the subject site will be in consonance with the existing landscape and character of contained by R2 which is characterized by the rooflines of dwellings located within large rural allotments visually broken up by vegetation located within these lots and the mature vegetation growing along the Lismore Road verge.

With reference to Table 2.0 Assessment of Receptor Sensitivity of KVP2 and its surrounds is considered medium 'Occupiers of residential properties with long viewing periods, at a distance from or screened from the Project Area' to Low 'Road users in motor vehicles … that are passing through or adjacent to the study area and therefore have short term views'. The general public have short term views from this location whilst dwelling occupiers are likely to have long viewing periods of the subject site however these are located at a distance and orientation that reduces the proportional viewing impact.

The Landscape Impact would be considered small, with minor alteration to the landscape when viewed from this vantage point. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape.

The significance of the impact of the proposed development to KVP2 is considered to be either of Minor Significance or Not Significant

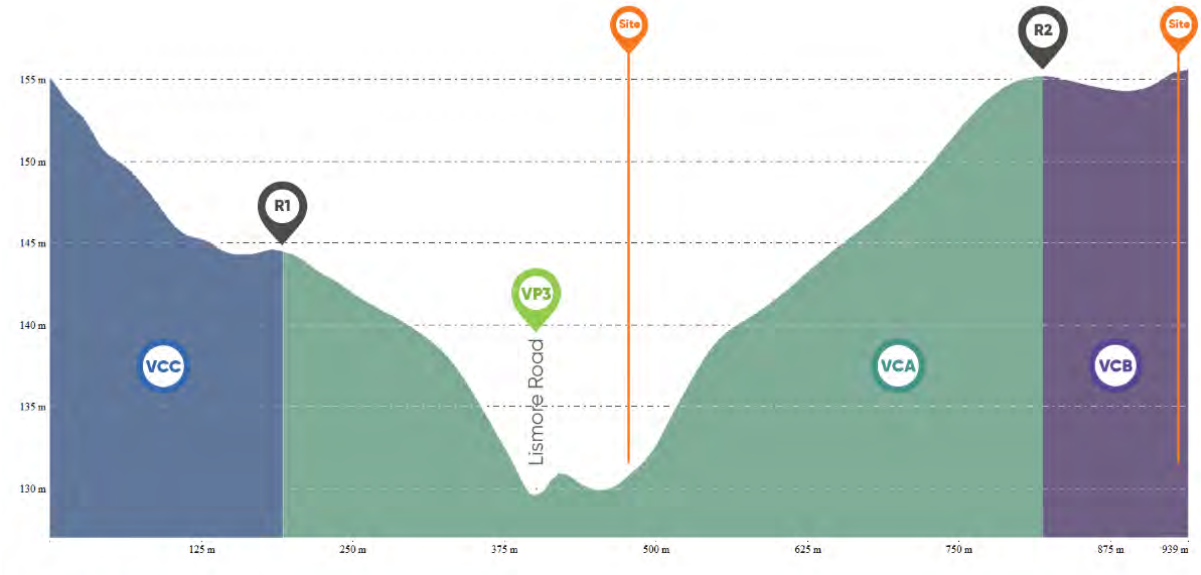
		Landscape Impact			
		Large	**Moderate**	**Small**	**Negligible**
Visual Sensitivity	**High**	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

9.3 Key Vantage Point 3 | Lismore Road

Key Vantage Point 3 is located to the immediate north-west of the subject site along Lismore Road with easterly views across the IUB. KVP 3 was selected based on its relatively close proximity to the subject site (290m from the subject sites centre point), its elevation (144.5m) and its residential nature. As part of KVP3 analysis, the immediate surrounds have also been assessed including residential lots to the north and east of Lismore Road.

3. Lismore Road

VP Location Coordinates:28°14'22.39"S | 153°30'58.04"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 144.5m
Approx Distance from Subject Area (centre point): 290m



Section A
Vertical Exaggeration Applied, refer scale

Fig 10.0. Cross Section - Vantage Point 3 | vertical exaggeration applied refer to scale reference

Image 5.0. Site Image - Vantage Point 3 Viewing east from Lismore Road

Image 6.0. Site Image - Vantage Point 3 Viewing east from Lismore Road

Vantage Point 03 Analysis

- Key Vantage Point 3 is located immediately to the north-west of the subject site along Lismore Road with easterly views across the IUB. KVP 3 is located adjacent to the subject sites western border. KVP3 has an elevation of 144.5m elevation in relation to the subject site western boundary which sits at an average elevation of 138 – 144m
- R2 is visible from KVP3 at a height ranging from 154 – 158m when traversing the site from north to south at the location referenced on Image 3. The higher elevation of R2 (154 – 158m) than that of KVP3 (144.5m) increases the visual impact R2 has on views to the east from KVP3.
- The raised elevation of R2 that traverses the eastern portion of the subject site when viewed from KVP3 provides a limit of the views across the subject site. With R2 elevation of 154 - 158, the PSH of the subject site (162 – 166m) will be higher than this visual backdrop.
- R2 limits the extent of the view across the IUB between Wollongbar and Alstonville to approximately 50% of the IUB width.
- As per Fig 5.0 Visual Catchment Plan, KVP3 and the western portion of the subject site share the same Visual Catchment Boundary both being located within VCA. KVP3 is located at the lowest point between R1 which forms the western boundary of VCA and R2 which provides the eastern boundary of VCA.
- As per Fig 6.0 Combined Viewshed Analysis, views from KVP3 to the subject site were predicted with R1 and R2 acting to contain the projected viewshed to the east in which KVP 3 is located (VS2)
- Figure 10.0 Cross sectional Analysis illustrates the elevation of KVP3 (144.50m) compared to that of the subject site. As illustrated in Fig 10.0, a clear line of sight from KVP3 to the subject site is evident. This cross sectional analysis is based on topographic data Digital Elevation Model (DEM) Grid LiDAR 2015 and does not take into consideration the mitigating effect of existing vegetation within the line of sight. As visible in Image 5.0, significant existing vegetation is located across the western section of the sightline from KVP3 to the subject site. This vegetation also screens views of the IUB from this KVP.
- As illustrated in Image 5.0 and 6.0, the subject site is obscured from the viewing locations available along Lismore Road. It can be assumed from topographic analysis and inference that the subject site will likely be visible from within the private dwellings located on the northern side of Lismore Road, however at a distance of 290m to the centre of the site, the subject site represents a minor portion of the overall visual

catchment from KVP3. As per Image 6.0, the primary view orientation of the residential lots located along R3 is to the north and north east of Lismore Road (not toward the subject site).

- As per KVP2 analysis, Image 6.0 illustrates the typical landscape and urban character created by the existing urban development of Wollongbar. This is characterized by the recurrent rooflines of dwellings located within the residential allotments. These roof lines continue throughout VCA and are visually broken up by vegetation located within these lots and to R1 to the north and north-west of KVP3. Any views available from KVP3 to the subject site will be consistent with the existing landscape and urban character contained below the R1 escarpment.
- Architectural and Landscape treatments will be utilized to assist in mitigating any potential adverse visual impact of the proposed subject site development works. Landscape amenity planting should aim to mitigate any potential visual impacts though landscape treatments appropriate to the scale of the development and sympathetic to the established regional landscape treatments. Detailed landscape plans will be developed as part of future development applications.

Summary | Significance of Impact

As per Vantage Point 03 Analysis, it can be assumed from topographic analysis and inference that the subject site will likely be visible from the position of KVP3. The visual impact of the subject site is limited by R2 providing a highline within the proposed development as well as the significant stands of existing vegetation that lies to the south-west of KVP3 and the subject site. R2 also provides a limit of the extent of views across the IUB between Wollongbar and Alstonville.

The primary view orientation of the existing dwellings located to the north of Lismore Road (with potential views of the subject site) are towards the north and north-east of Lismore Road. The subject site represents a minor portion of the overall visual catchment afforded to these existing dwellings and is not located with the KVP's primary viewing corridor. Development on the subject site will be in consonance with the existing landscape and urban character contained by R1 and R2 escarpments which is characterized by the recurrent rooflines of dwellings located within residential allotments visually broken up by vegetation located within these lots and to R1 located to the north and north-west.

With reference to Table 2.0 Assessment of Receptor Sensitivity of KVP3 is considered medium 'Occupiers of residential properties with long view periods, at a distance from or screened from the Project Area' or low 'Road users in motor vehicles …. that are passing through or adjacent to the study area and therefore have short term views'. The motoring public have short term views from this location whilst dwelling occupiers are likely to have long viewing periods of the subject site however these are located at a distance that considerably reduces the proportional viewing impact.

The Landscape Impact would be considered 'Small', with 'minor alteration to one or more key landscape elements, features or characteristics, or the introduction of elements that may be visible but may not be uncharacteristic within the existing landscape' when viewed from this vantage point. The alteration of the landscape by the proposed development is not considered to be uncharacteristic within the existing landscape.

The significance of the impact of the proposed development to KVP3 is considered to be of minor significance to not significant.

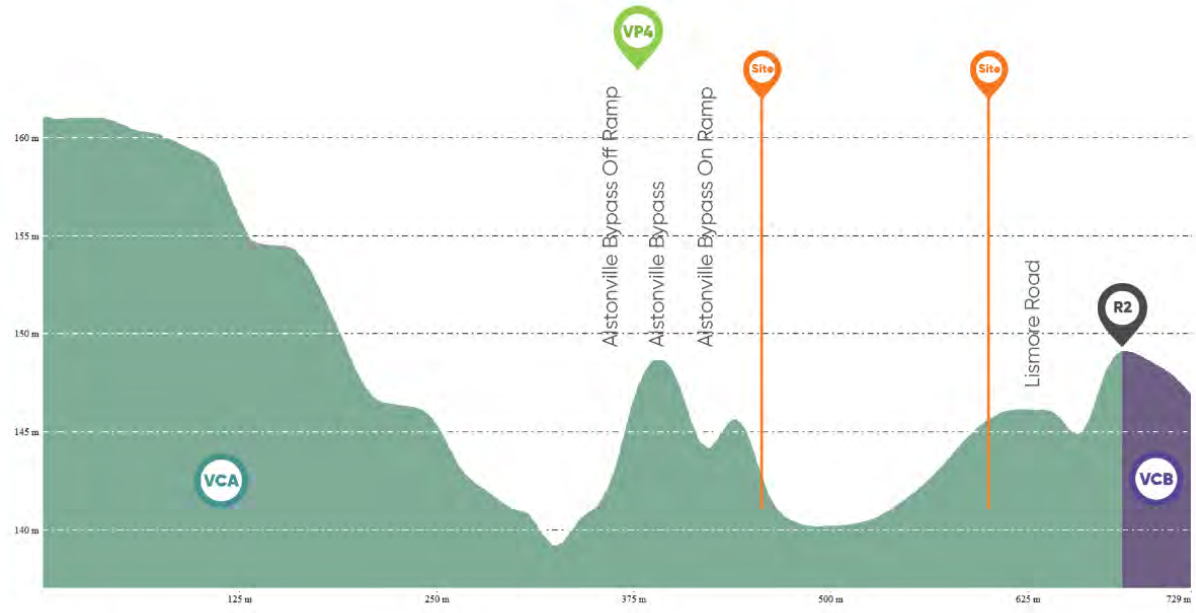
		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

9.4 Key Vantage Point 4 | Northcott Crescent, Russelton Industrial Estate

Key Vantage Point 4 is located approximately 500m south-west of the centre point of the subject site. It is located along Northcott Crescent within the Russelton Industrial Estate. KVP 4 was selected based on its location within the identified Viewshed Analysis (Fig 7.0). KVP4 represents one of the only areas available to the public to the south-west of the subject site with potential views of the subject site. As part of KVP4 analysis, the immediate surrounds have also been assessed including Russelton Industrial Estate.

4. Northcott Crescent, Russelton Industrial Estate

VP Location Coordinates:28°50'0.93"S | 153°25'18.72"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 158m
Approx Distance from Subject Area (centre point): 500m



Section C
Vertical Exaggeration Applied, refer scale

Fig 11.0. Cross-Section - Vantage Point 4 | vertical exaggeration applied refer to scale reference

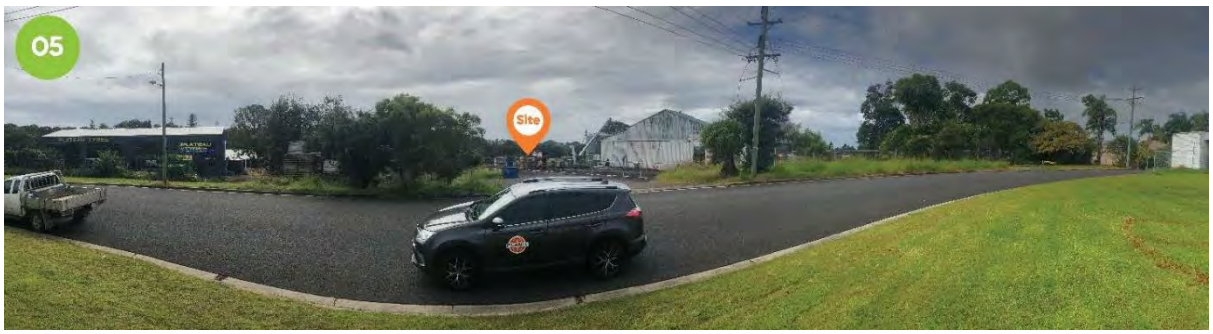


Image 7.0. Site Image - Vantage Point 4 Viewing north-east from Northcott Crescent in the Russelton Industrial Estate

Vantage Point 04 Analysis

- Key Vantage Point 4 is located approximately 500m west of the centre point of the subject site. KVP4 sits at a slightly elevation of 1.59m than that of the R2 which traverses the subject site from north to south with an elevation of 158m at the southern point of the subject site.
- KVP4 represents the primary viewing location to the south west that is available to the public. The lands to the south and south-west of the subject site are dominated by the Russelton Industrial Estate which is the closest land development to the south and south west of the subject site. As per Figure 5.0 Combined Viewshed analysis, views from this industrial area of the subject site are predominantly of VS2.
- As per Fig 7.0 Visual Catchment Plan, KVP4 and the subject site are located within the same Visual Catchment Boundary of VCA. This is also graphically illustrated in Fig 11.0. Cross-Sectional Analysis – Vantage Point 4.
- As shown in Image 7.0, the built form of the Industrial Estate screens views of the IUB.
- As per Fig 5.0 Combined Viewshed Analysis, views from KVP4 to the subject site were predicted with R1, R2 and R3 acting to contain the projected viewshed to the south and south-west in which KVP4 is located.
- Figure 11.0 Cross Sectional Analysis illustrates the elevation of KVP4 (1.58m) in comparison to that of the subject site (154 – 158m). As illustrated in Fig 11.0, a clear line of sight from KVP4 to the subject site is evident. This cross sectional analysis is based on topographic data Digital Elevation Model (DEM) Grid LiDAR 2015 and does not take into consideration the mitigating effect of existing vegetation or other built structures located within the line of sight.
- As per KVP2 analysis, Image 7.0 illustrates the typical landscape and urban character created by existing development along the eastern side of Northcott Crescent. This general character is clearly evident from KVP4. For ease of visual identification, the industrial structures visible are shown in Image 7.0. This image identifies that KPV4 is characterized by the recurrent rooflines of industrial buildings located within industrial allotments. These structures frame KVP4 and are further visually broken up by existing mature vegetation located within these lots and to the escarpment of R1 and R2.

- Any minor views available from KVP4 of the subject site will be in consonance with the existing landscape and urban character of the R1 escarpment.

Summary | Significance of Impact

As per Vantage Point 04 Analysis, the subject site is visible from KVP4 due to its elevated nature at R2. The visual impact of the subject site is reduced by the existing industrial buildings providing a visual screen to the subject site as well as the significant distance between KVP4 and the subject site. These buildings also act to screen views of the IUB between Alstonville and Wollongbar.

Development on the subject site will be in consonance with the existing landscape and urban character of the Russelton Industrial Estate and the R1 escarpment.

With reference to Table 2.0 Assessment of Receptor Sensitivity of the subject site is considered negligible where 'viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short' plus 'Road users in motor vehicles …. that are passing through /adjacent to the study area and have partially screened views and short viewing times'. At a distance of 500m, the subject site represents a minor portion of the overall visual catchment visible from KVP4 and its surrounds. The Landscape Impact would be considered small, with minor alteration to the landscape when viewed from this vantage point. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape.

The significance of the impact of the proposed development to KVP4 is considered to be not significant.

		Landscape Impact			
		Large	**Moderate**	**Small**	**Negligible**
Visual Sensitivity	**High**	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

10.0 Conclusions

- The subject site is located within a two Visual Catchment Areas (VCA and VCB) with a clearly defined visual catchment area (Ref Plan 5.0 Combined Viewshed Analysis). The boundaries of the VC's are defined by prominent ridgelines which act to limit views of the subject site from areas outside of the VC's. Three (3) ridgelines located within the 2.5km area of investigation have been identified and their influence on the visual containment of the PSH are referenced throughout this report (R1 to R3).

- The viewshed of the proposed structures is concentrated to the western portion, of the subject site with Ridge Line 2 (R2) limiting the viewshed to the east and south-east of the subject site (Ref Plan 5.0 Combined Viewshed Analysis). Other significant ridgelines (R1 to R3) are located within the 1.0km area of investigation and have influence on visual catchments creating four (4) distinct Visual Catchments (Ref plan 4.0 Visual Catchment Plan).

- The IUB between Wollongbar and Alstonville is divided into two viewsheds by R2 in relation to the subject site, with the subject site contained within both portions. VS1 contains approximately 10% of the subject site, while VS2 contains the balance of the subject site within the IUB. The related urban character contained within each viewshed, plus the minor portion of the subject site within the overall visual catchment, limits the visual impact of the proposed development on the IUB.

- Four (4) key Vantage Points were investigated to determine the potential visual impact of the Subject Site. These vantage points were selected based on a number of factors as identified within this report. Generally, they represent views from key visual receptors (residents and passing motorists) where a potentially significant change in view may occur. Particular emphasis was placed on areas of existing residential and industrial development within a close proximity to the subject site and areas determined to be located within the visual catchment resulting from the proposed site development. Verification of these KVP's was made through site inspections and photographs recorded where relevant to investigate any potential visual impact of the subject site.

- Through analysis of the four (4) identified KVP's and through general site investigations the rural landscape and urban characters of the area of investigation has been assessed. This is generally characterized by the recurrent rooflines of dwellings and industrial buildings located within residential and industrial allotments respectively to the north-west (residential) and south-west (industrial). These roof lines are visually broken up by vegetation located within and adjacent to these. The proposed development is considered to be sympathetic and consistent with this establish regional character and scenic amenity.

- The most significant visual impact identified were those of KVP2 and KVP3. These vantage points contain the existing neighbouring lots located to the immediate north, west and east of the subject sites primary north-western, northern and eastern boundaries. The existing residential dwelling lots in KVP2 have secondary views toward the west (toward the Subject Site) by virtue of the rising topography towards R2, while the existing dwellings lots in KVP3 have secondary views to the east and south-east (toward the Subject Site) by virtue of the rising topography towards R2. In both instances, these views are considered secondary to broader views available across the existing rural landscape available in both View Sheds. Both KVP1 and KVP2 contain views of existing residential development (rural and urban) within their respective viewsheds. The significance of the impact of the proposed development to KVP2 and KVP3 has been determined to be of Minor Significance to Not Significant due to the existing elevational changes and orientation of these existing neighbouring lots.

- The significance of the impact of the proposed development to residential areas associated with KVP1 and KVP4 have both been determined to be not significance.

- For KVP1, this is as a result of the primary view orientation of the subject site along the Alstonville Bypass being of a short duration when approaching from either the east or the west. This is due to a combination of R2 screening the majority of the subject site when approaching from the east plus the major portion of the subject site being lower than Alstonville Bypass when approaching from the west. The subject site represents a minor portion of the overall visual catchment afforded within VCA and is not evident within VCD which is located just to the south of KVP1. Development on the subject site will be consistent with the existing landscape and urban character of VCA which is characterized by the recurrent rooflines of buildings located within residential and industrial allotments visually broken up by vegetation located within and adjacent to these lots. The development of a manufactured home estate on the eastern two-thirds of the Subject Site is considered to be a continued application an established residential form to the west of the Subject Site.

- For KVP4, this is as a result of the views to the Subject Site being through the existing Russelton Industrial Estate. The visual impact of the subject site is reduced by the existing industrial buildings providing a visual screen to the subject site as well as the distance between KVP4 and the subject site. Development on the subject site will be in consonance with the existing landscape and urban character of the Russelton Industrial Estate and the R1 escarpment.

- Architectural and Landscape treatments will be utilized to assist in mitigating any potential adverse visual impact of the proposed subject site development works. Landscape amenity planting should aim to mitigate any potential visual impacts though landscape treatments appropriate to the scale of the development and sympathetic to the established regional landscape treatments. Detailed landscape plans will be developed as part of future development applications.

- The planning proposal seeks to rezone the land to permit the development of a manufactured home estate on the eastern two-thirds of the Subject Site, with the residue land to the western end of the Subject Site being retained as open space. This will ensure the area of land dedicated as open space will not be fragmented and will be perpetually protected and managed.

APPENDIX 01

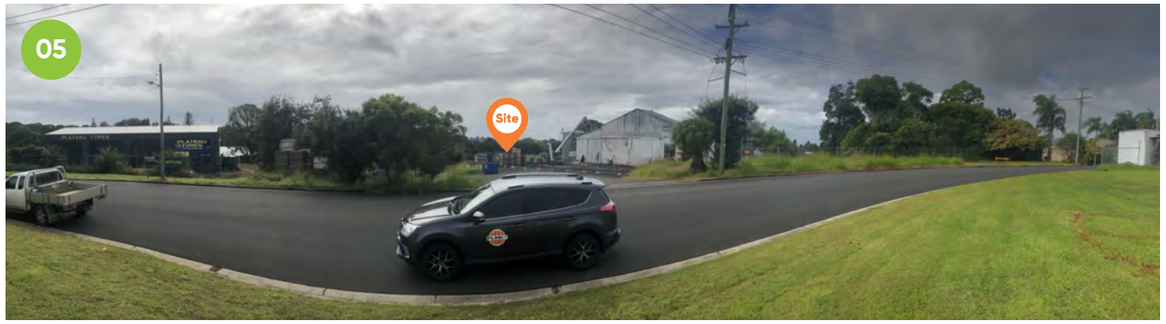
PHOTOGRAPHIC STUDY IMAGES


01
Site

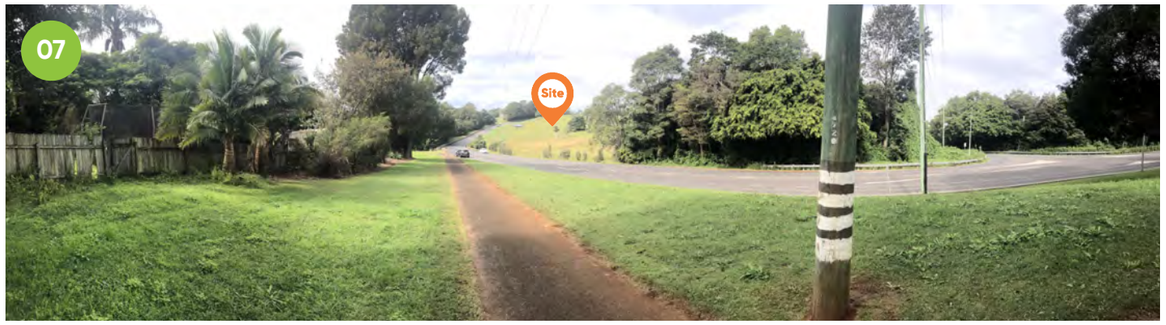

02
Site


03
Site


04
Site


05
Site


06
Site


07
Site


08
Site
Obscured

09

10

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12

13

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15

16

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 6
LEP Amendment Request
Planning Proposal
Engineering Review
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

Engineering Assessment
Verandah Lifestyle Estate, Wollongbar

Greenlife Properties Pty Ltd

July 2018
Document No: J5105-EA01

Document Status

Version	Document type	Reviewed by	Issued by	Date Issued
0	Draft Report	BG	MK	19/10/2016
1	Final report	BG	MK	13/07/2018

Project Details

Project Name:	Verandah Lifestyle Estate, Wollongbar
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Planit Reference:	J5105-EA01

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CONTENTS

TABLE OF FIGURES

1. INTRODUCTION

1.1. BACKGROUND

Planit Consulting Pty Ltd have been engaged by Greenlife Properties Pty Ltd to prepare an Engineering Assessment (PEA) for the proposed Verandah Lifestyle Estate (A Manufactured Home Estate) in Wollongbar, NSW.

The subject site is legally described as Lot 10 on DP1059499 and measures approximately 7ha in plan. The site is currently vacant with sparse vegetation. The site currently grades towards the northwest into an existing waterway. An aerial image of the site is depicted in Figure 1.

Planit understands that its role is to prepare an engineering assessment to assist with the masterplan of the proposed VLE that includes preliminary advice, assess, and report on potential opportunities and constraints, including, but not limited to the following:

- Roads and Drainage;
- Earthworks;
- Water and Sewer reticulation;
- Lead-in Trunk Water and Sewer to the site;
- Power and Telecommunications.

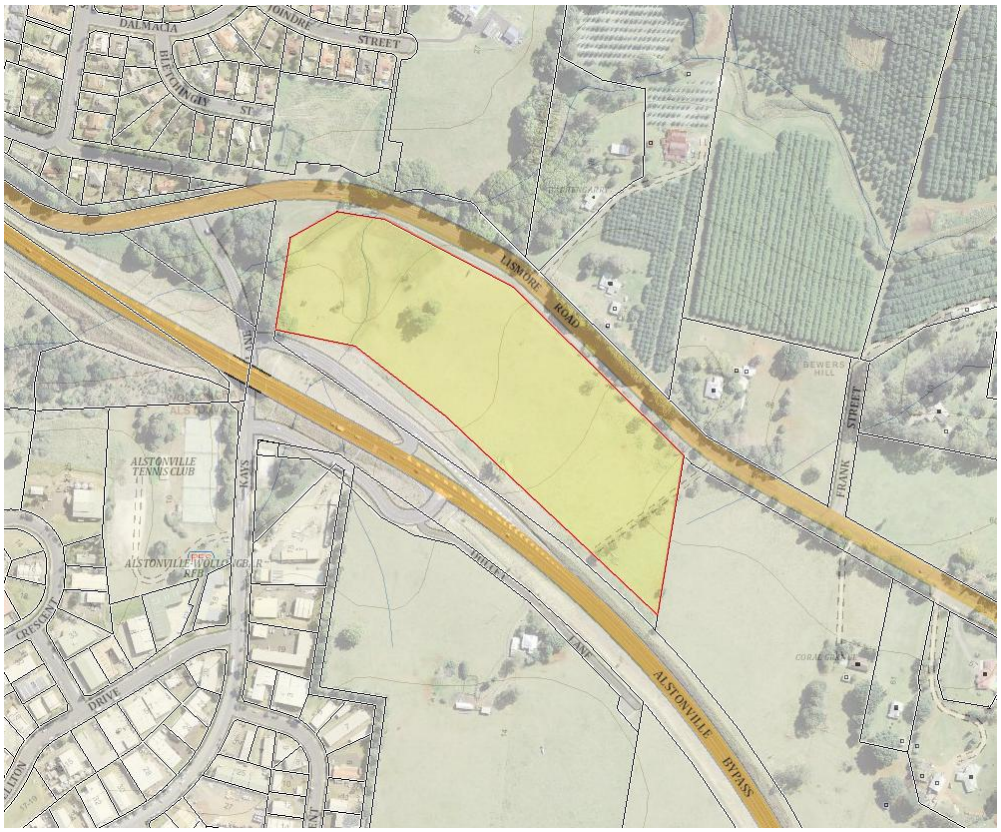


Figure 1 | Subject site, *Source of aerial image: NSW Planning Portal 2016*

1.2. DEVELOPMENT DESCRIPTION

A Manufactured Home Estate is typically set up such that residents own a relocatable style dwelling on land that is leased from the landholder. Thus affordable relocatable housing is offered to the 55+ age group. The scale and size of the development are subject to this PEA and the associated planning report.

1.3. SCOPE AND STRUCTURE OF REPORT

This PEA is intended to investigate the potential for the proposed development on this subject site, in order to inform a future concept design for the MHE. As such, this report is preliminary only and provides advice based on information gathered out of a Dial Before You Dig investigation, liaison with Ballina Shire Council and a site inspection by our staff. Our scope is limited to the following topics and our report is set up accordingly:

- Traffic impact and safety;
- Roads and drainage;
- Earthworks;
- Water and sewer reticulation;
- Electricity and telecommunications;
- Staging and construction.

1.4. STANDARDS, POLICIES AND GUIDELINES

This report is prepared in order to inform future designs towards compliance with the following standards and guidelines:

- Ballina Shire Development Control Plan 2012;
- RTA Guide to Traffic Generating Developments (and consecutive updates);
- AS/NZS 2890 Parking facilities series;
- Austroads Guide to Road Design series;
- Water Services Australia codes;
- AS 3500 codes.

1.5. PRELIMINARY DENSITY CALCULATIONS

In order to obtain high level information on the likely number of dwellings on the site, we have carried out a desktop survey of similar developments in NSW. These included Coastal Palms and Tall Timbers in Shoalhaven Heads and Wairo Beach Holiday Park in Lake Tabourie. We found an average density of 48 dwellings per hectare, when communal facilities were included in the area measurement.

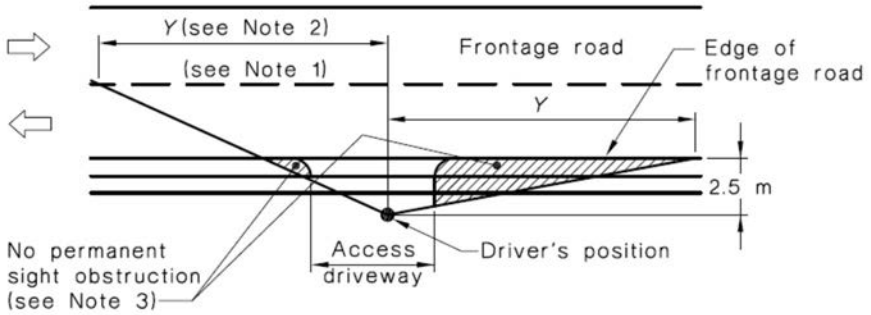
The subject site has a usable area of approximately 5 hectares, resulting in a potential number of dwellings of 240, excluding communal facilities.

2. TRAFFIC AND PARKING

2.1. ACCESS

Access to the site will likely be arranged in a similar fashion as a caravan park or gated community: There would be one access point, serviced by a boom gate set back from the road for access by service vehicles and one car per home owner. A separate visitor car park would likely be provided near the public road.

As such, the entrance and exit would not function as a regular public road intersection, but as an entry to a private property. Before exiting the site, vehicles would come to a halt before turning onto the main road. Therefore, we recommend that compliance with the Austroads sight distance requirements for public road intersection would not be required. Instead, we recommend compliance with the sight distance table provided in figure 3.2 of AS/NZS 2890.1, copied below in Figure 2.



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Figure 2 | Partial copy of figure 3.2 of AS/NZS 2890.1

In figure 3.2 of AS/NZS 2890.1 three options are provided for assessing sight distance: Domestic property access, minimum Stopping Sight Distance (SSD) and desirable 5s gap. Due to the volume of traffic generation, assessment as a domestic property access would not be suitable. Due to the likely age of the majority of drivers associated with the development, we recommend that sight distance be assessed based on the desirable 5s gap.

The posted speed limit along the property frontage is 70 km/h, therefore we recommend that any access be designed to accommodate a 97 metre sight distance. Due to the speed and volume of traffic on Lismore Road at the subject site location, it is likely that an access would require short channelised CHR(S) / AUL(S) treatment (subject to a traffic study). This would require road widening and earthworks.

From a site inspection, we deem that the best location for such an access would be the location marked with the white arrow in Figure 3 below. In this location the 97 metre sight distance is likely achieved in both directions and

the level of earthworks required would be the least of any of the other locations where the required sight distance can be achieved. Figure 4 and Figure 5 illustrate the earthworks required with creating an access. The driveway location proposed is in the location where the fill batter finishes and the cut batter commences.

Potentially, the existing driveway to the site in the south-eastern corner could be used as a secondary access, but we recommend that would be used for emergency access only. To enable this to be used, an arrangement would need to be made with the adjoining land owner, as the driveway crosses neighbouring land. A boundary adjustment would likely resolve this issue (see Figure 6).

2.2. INTERNAL CIRCULATION

Internal circulation would mostly serve private vehicles, but should supply sufficient space for occasional access by a service vehicle or garbage collection vehicle. We recommend the Small Rigid Vehicle (SRV) as defined in AS/NZS 2890.2 be selected as design vehicle with a Heavy Rigid Vehicle (HRV) as checking vehicle for internal road design.

Based on the above, in accordance with table 3.1 of AS2890.2, the typical design road width from kerb to kerb should be 6.2 metres – with increased width around curves as required. This appears consistent with road widths measured during a desktop assessment of similar developments elsewhere in New South Wales. Separate footpaths would not be required serving the individual dwellings.

2.3. CAR PARKS

We do recommend that at least one covered car space would be available per dwelling site, with additional visitor car parking in one centralised location. Visitor parking can be calculated in accordance with the Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005. Based on this regulation, for 240 dwellings, 35 visitor parking spaces should be provided.

Figure 3 | Suitable access locations, *Source of aerial image: Google Maps 2016*

Figure 4 | Potential access location, facing east

Figure 5 | Potential access location, facing west

Figure 6 | Eastern boundary w.r.t existing driveway, *Source of aerial image: NSW Planning Portal 2016*

3. ROADS AND DRAINAGE

3.1. ROAD DESIGN

As the residents are likely in the 55+ age group, we recommend that the use of upright kerb and gutters is limited, as they form trip hazards for the pedestrians. Upright kerb and gutters would also restrict the potential of pedestrians and mobility scooters to move off the road if needed due to passing cars. We therefore recommend that the road cross sections be designed to be a V-shaped, with trafficable grated inlet pits in the centre of the road, connected to an in-ground piped drainage system.

The additional benefit of a V-shaped road in a sloping area is that it provides a significant overland flow path, preventing overtopping onto private land during large storms. When designed adequately with designated overtopping locations, any future issues associated with large storm events can be minimized.

The roads should be designed such as to encourage slow traffic speeds. In accordance with the Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005, design vehicle speeds should be limited to 15 km/h. This will facilitate the shared use of the road by cars and pedestrians. The use of a V-shaped cross section will help with this speed environment.

For the purposes of designing the longitudinal gradient of the internal access roads, we will assume that any mobility impaired users of the site would travel from their dwelling to the communal spaces by car. Otherwise, compliance with vertical gradient requirements of AS 1428.1 will likely inhibit the efficient design of the site. Thus, we recommend that longitudinal gradient design is carried out in accordance with the Northern Rivers Local Government Development Design Manual, clause D1.10, using the maximum percentages for local access roads. The desirable maximum percentage for a maximum length of 150 metres is 12%.

3.2. LEGAL POINT OF DISCHARGE

A legal point of discharge exists for the site's rainfall runoff. Two second order streams cross the western extent of the site as shown in Figure 7.

3.3. ON-SITE STORMWATER DETENTION

We have carried out a preliminary on-site stormwater detention calculation in order to estimate the likely required OSD storage for the proposed development at this site. As no site layout and survey are available, this estimate is based on basic assumptions such as usable areas and fraction impervious.

When documentation is prepared for a development application with Ballina Shire Council, a detailed Drains model is to be created to accurately calculate OSD requirements to meet Council's criteria, which include throttling back post-developments flows to pre-development flows for all ARI scenarios.

We have assumed that there is 5.2 hectares of developable land is available for this development. We have adopted an 80% imperviousness for the developed site. Details of the calculations are provided in Appendix E. A total of approximately 493m^3 of storage would be required, based on the largest outcome of the four different calculation methods presented. As the detailed site layout is not known, for preliminary planning and costing purposes we recommend an allowance for 500m^3 of detention.

3.4. STORMWATER TREATMENT

Ballina Shire Council's Stormwater Management Guidelines for Development prescribe the following stormwater pollutant load reduction targets:

- 80% reduction in total suspended solids (TSS)
- 60% reduction in total phosphorus (TP)
- 45% reduction in total nitrogen (TN)
- 90% reduction in gross pollutants (GP)

We have carried out a preliminary MUSIC model to produce ball park estimates of likely treatment train requirements. This model is based on the following assumptions:

- Limited to no use of grass swales due to proposed road drainage;
- 2.1 hectares of roof area discharging onto the pavement areas;
- 2.1 hectares of impervious pavement areas;
- MUSIC modelling parameters as per Appendix B of the BSC Stormwater Management Guidelines for Developments.

From the MUSIC modelling, we recommend that the following stormwater treatment infrastructure be allowed for in addition to the detention requirements provided above:

- 4 x Gross Pollutant Trap with overflow;
- A 400m^2 bioretention area.

It should be noted that the bioretention area can utilised in the previously discussed detention allowance.

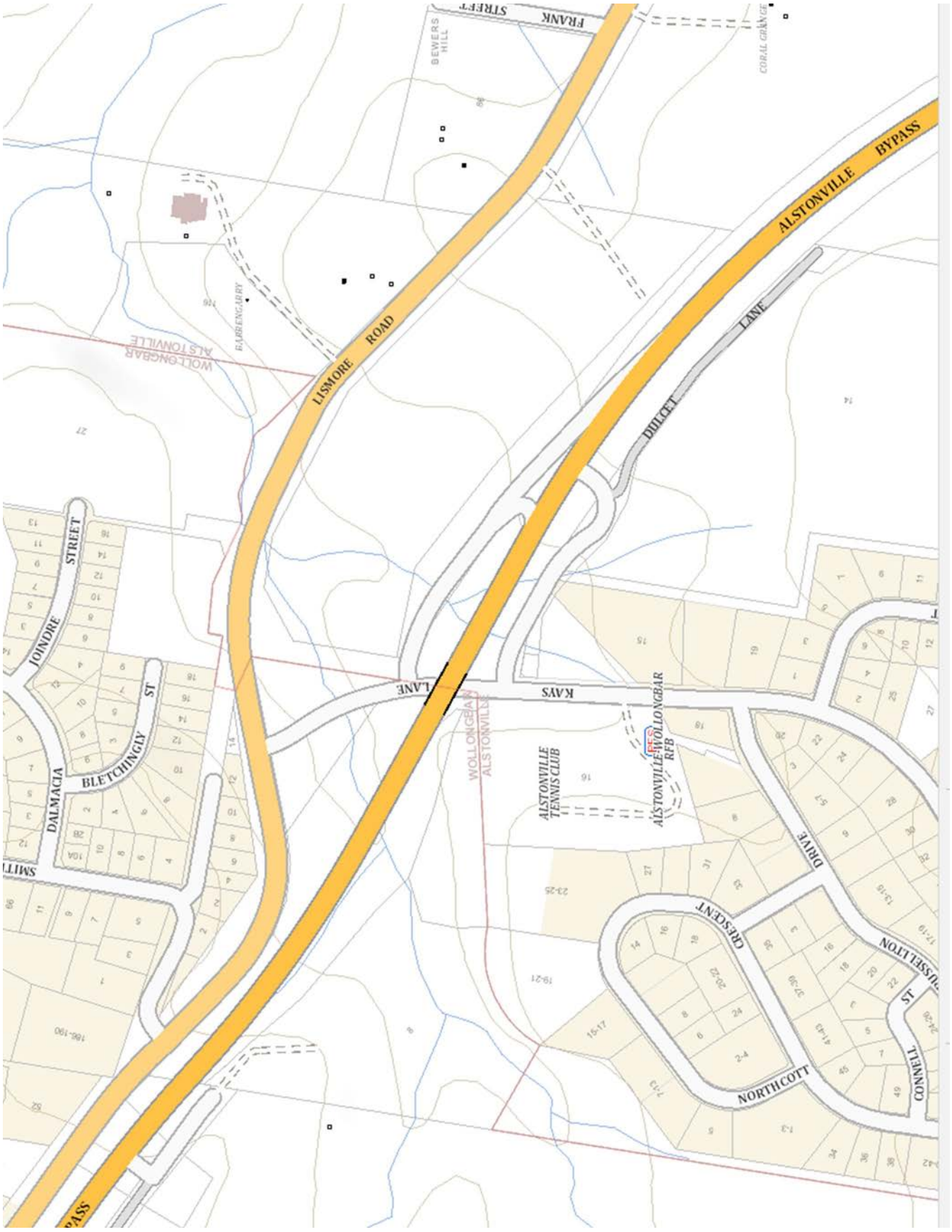


Figure 7 | Topographical map of site, (North to the left), *Source of map: NSW Planning Portal*

4. EARTHWORKS

From a desktop assessment, it appears that there is 20 to 30 metres of height difference across the site, with the high point being formed by a spur in the south-eastern corner and the site. From the top of this spur, the site slopes at approximately 10% down towards another flat area on the north-western part of the site.

We recommend that care be taken in designing the development, as the height differences may be inhibiting for some of the aged residents of the site. Typically, developments such as this have a community centre with recreational and hospitality facilities that are accessed by foot or mobilised scooter. When a site is not flat, access to these facilities can be become problematic.

Lismore Road, that runs along the northern boundary of the site, is in cut for the eastern portion of the northern boundary. On the top of this cutting there are mature trees and a shared path. In order to minimize earthworks, we recommend that the access to the site is constructed along the western portion of the northern boundary at the location shown in Figure 3.

Balanced cut and fill will likely be required in association with the construction of the internal roads. These internal roads would be best aligned to run parallel to the contours and thus snake up the slope to the top of the spur. This way longitudinal grades can be limited. Retaining walls could be constructed between the dwelling sites, with these retaining walls also running along the elevation contours.

For any grassed cut and fill batters we recommend that slopes are 1:4 (V:H) or flatter, in order to ensure ease of maintenance. We recommend that a geotechnical assessment be carried out to provide advice on soil profiles and slope stability, to inform bulk earthworks design during the concept design phase.

The nearest quarries as sources of fill and pavement material would be the Boral and Holcim quarries at Teven, at approximately 13 kilometres from the site.

5. WATER AND SEWER RETICULATION

5.1. CONNECTION

We have liaised with Ballina Shire Council in order to obtain information regarding connection to Council's reticulated water and sewer infrastructure in the vicinity of the site. We understand that capacity is available for development on this site. Council's information (with notes added by our office) is depicted in Figure 8. An existing abandoned sewer rising main runs through the northern portion of the site, in an alignment similar to the NBN shown in Figure 12. This abandoned rising main can likely be removed if required as part of this development.

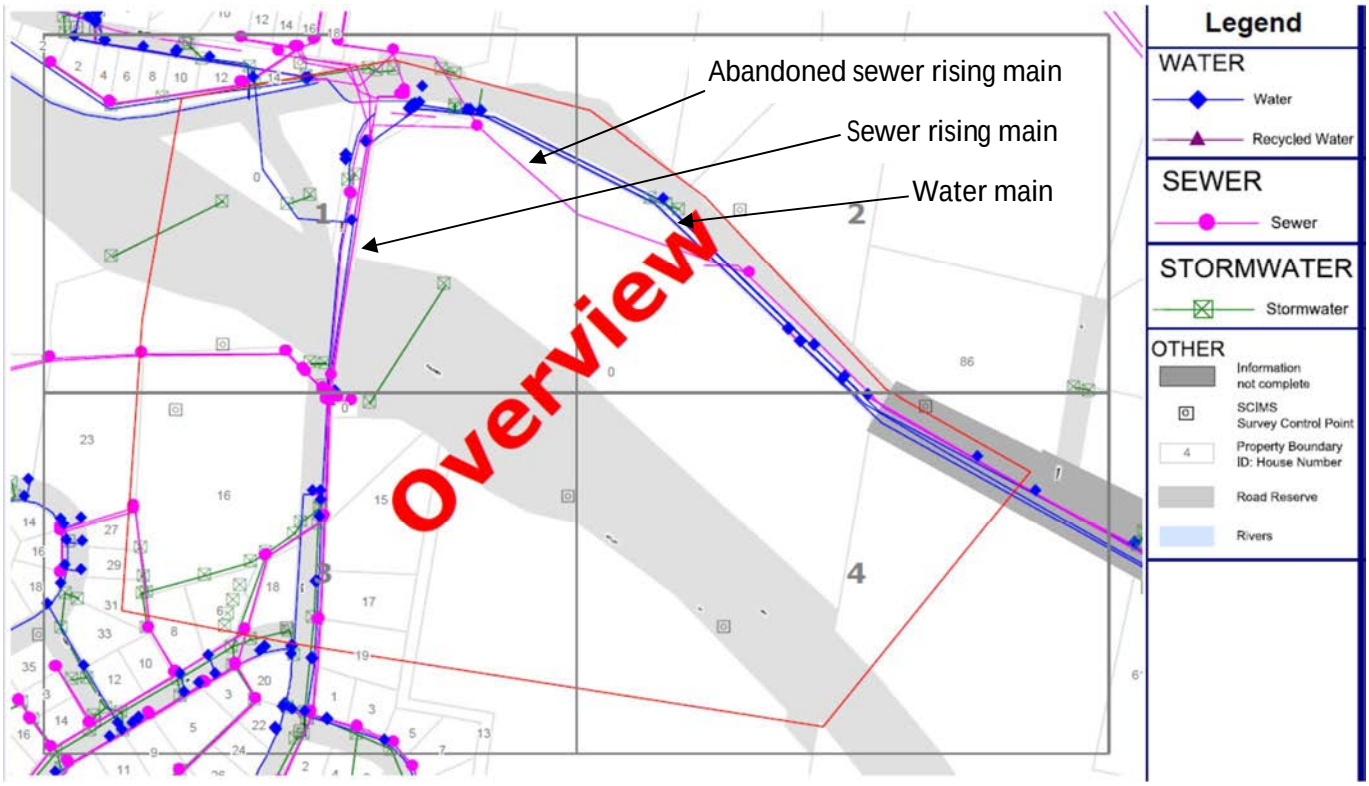


Figure 8 | Ballina Shire Council assets

Reticulated water supply can be obtained by connection to Council's main in Kays Lane along the property frontage. Figure 9 below shows a photo of the subject site taken near the northwestern boundary, showing stop valves near the site boundary – thus depicting the likely approximately location of a water main.

Council have a sewage pump station located next to the westbound off ramp, as shown in Figure 10. This station pumps sewerage along Kays Lane into a sewer manhole between Lismore Road and Bewers Lane. The approximate location is shown in Figure 11. We recommend that the proposed development includes a sewage pump station that pumps sewerage into the same manhole as the Kays Lane pump station. This could typically consist of a packaged pump station with a 50mm nominal diameter discharge line to the gravity sewer manhole in Bewers Lane.

It is noted that both reticulated water connection and sewerage discharge would require crossing the creek and swamp in the northwestern corner of the site.

5.2. DESIGN PARAMETERS

The water use per dwelling is likely to be less than that of typical suburban dwellings, as there would likely not be more than two occupants per dwelling with no children.

For this preliminary assessment, we will base our sewerage ET assessment on the following parameters:

- ET: 150 Litres per EP per day;

- EP: 80 EP per hectare

Based on 5 hectares, the total sewerage generation of the site would be in the order of 80 x 150 x 5 = 60 kL per day (excluding communal facilities). As there is good fall available across the site, we would expect that a gravity drainage network into a pump station would likely consist of 150 mm diameter pipes. Typical minimum cover to top of sewer would be 750mm where subject to vehicular loading and 600mm where pipes are not subject to vehicular loading.

Figure 9 | Subject site with stop valves along frontage

Figure 10 | Council sewage pump station next to westbound off ramp Kays Lane

Figure 11 | Approximate manhole location, *Source of aerial image: Google Maps 2016*

6. ELECTRICITY AND COMMUNICATION

Figure 12 depicts the approximate location and alignment of the fibre optics line that crosses the property in green. This alignment was obtained through the Dial Before You Dig enquiry. It is noted that the location and alignment shown are approximate only – the accurate location and depth of underground services should be established by a service locator prior to construction works.

We have liaised with NJ Constructions to gain an understanding of the potential to connect to the existing overhead powerline for the supply of electricity to the site. We were advised that the most suitable way would be to install a 25kVA transformer on one of the power poles on the site as depicted in Figure 13. The connection could be either single phase or three phase.

No mapping information was received from Telstra as a result of the Dial Before You Dig enquiry. However, Telstra infrastructure is likely to be available in close proximity to the site as the site is surrounded by residential and industrial development.

Figure 12 | DBYD map showing NBN in green

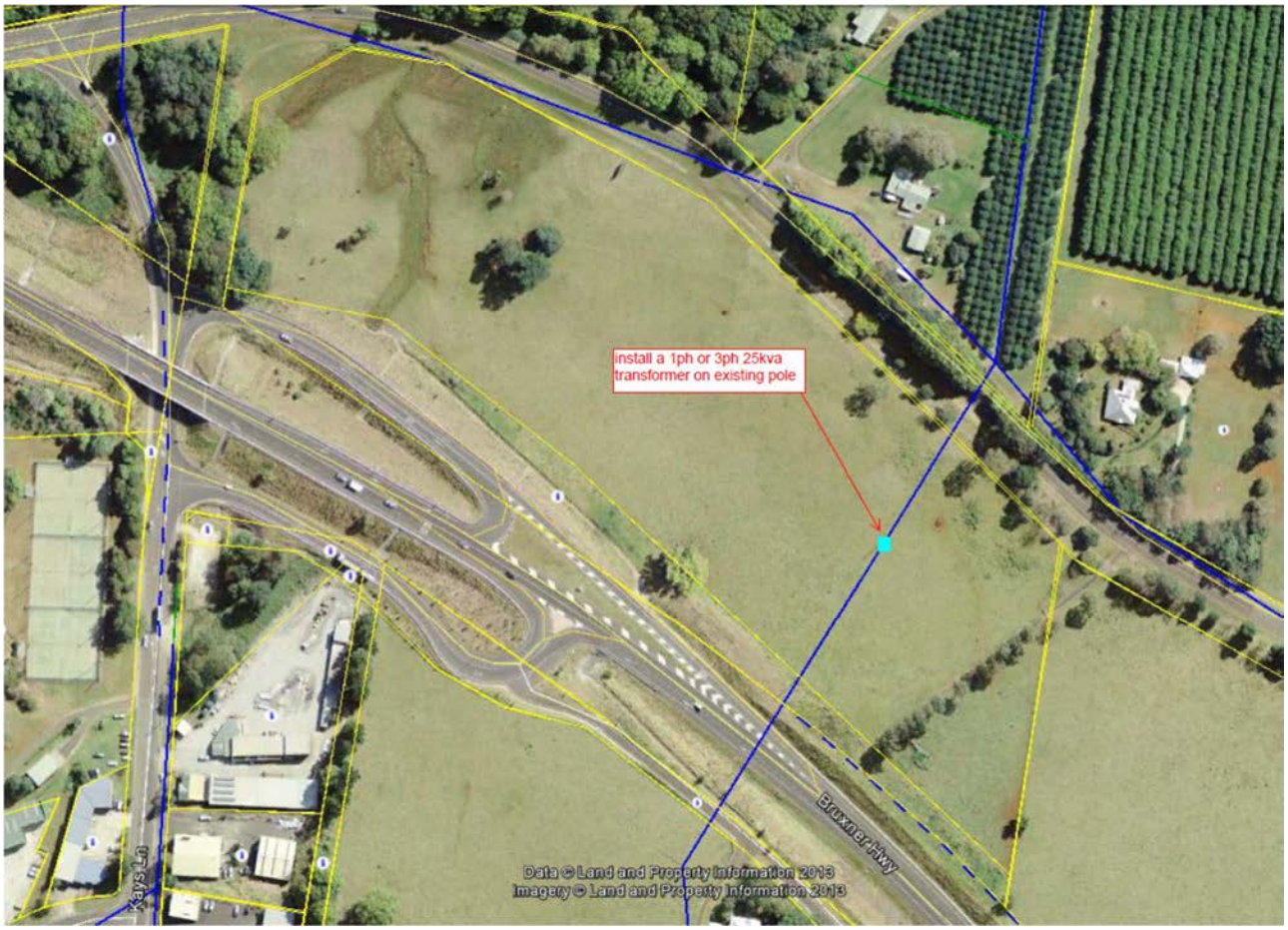


Figure 13 | Electricity connection mud map, *Source: NJ Constructions*

7. STAGING AND CONSTRUCTION

Most of the site sloping occurs in the centre section of the site. Near-level areas are available in the eastern portion and in the western portion of the site. During the bulk earthworks stage it is expected that there should be sufficient level areas available for stockpiling of materials. Therefore, from a construction perspective, staging is not required.

A temporary site access could be established at the location of the proposed permanent access as shown in Figure 3. We recommend that the existing driveway near the eastern boundary of the site is not used for construction access due to the limited sight distance available.

Likely construction times would depend on the site design and details of the development. The site is sufficiently large for the size not to pose restrictions on construction.

8. CONCLUSIONS AND RECOMMENDATIONS

We have carried out a engineering assessment for a proposed Veranda Lifestyle Estate on Lot 10 DP 1059499, Lismore Road in Wollongbar. This assessment was preliminary only, with the purpose to investigate site constraints based on the proposed development type. We recommend a detailed engineering assessment is carried in association with detailed site layout design.

Our preliminary findings are as follows:

Traffic, access and parking:

- A new access would need to be created, on the western portion of the northern boundary;
- The site access intersection would likely require CHR(S)/AUL(S) treatment;
- A secondary (emergency) access can likely be established using the existing driveway, however this would require an agreement with the adjoining land owner in the form of a right of way or boundary adjustment;
- Internal circulation roads would be 6.2m wide;
- Based on an assumed 240 dwellings, 35 visitor car parks should be provided.

Roads and drainage:

- Internal roads to be V-shaped;
- No separate footpaths required;
- 15 km/h design speed;
- Longitudinal road gradient not to exceed 12% for a maximum length of 150 metres.
- The creek and swamp area in the western portion of the site form a legal point of discharge;
- We recommend 500m^3 of on-site stormwater detention is allowed for;
- We recommend an allowance is made for four gross pollutant traps and a 400m^2 bioretention area that incorporates the bioretention requirement.

Earthworks:

- The 20 to 30 metres of fall across the site may limit the suitability of the site for the proposed development;
- The middle section of the site between the top of the spur and the flats slopes at approximately 10%;
- There is limited scope for the construction of an access intersection, due to the cut and fill batters of Lismore Road;
- Balanced cut and fill can likely be achieved within the site;
- Grassed cut and fill batters should be limited to 1:4 (V:H) slope;
- The nearest quarries as source of fill and pavement material are located 13 kilometres from the site at Teven.

Water and sewer reticulation:

- Reticulated water can be obtained from Council's mains that run along the property boundaries in Lismore Road and Kays Lane;
- The site would require a sewage pump station that pumps sewage up to the sewer manhole in Bewers Lane or connect to Council's rising main in Kays Lane;
- Both sewer and water connections to Council's infrastructure would require crossing the swamp and creek area in the western extent of the site.
- We recommend allowance is made for a packaged sewage pump station with 50mm discharge line;
- We recommend an allowance is made for 400 EP reticulated water use, excluding any community facilities;
- We recommend an allowance is made for 400 EP sewage generation, excluding any community facilities;

Electricity and telecommunications:

- A one or three phase 25 kVA transformer could be constructed on one of the power poles on the site;
- An NBN cable runs through the northern portion of the site, which will need to be considered when designing internal site layout. This does provide opportunity for connection to NBN, subject to NBNCo and Telstra;
- We have not received a Dial Before You Dig map from Telstra. However, we expect that Telstra connection should be available in close proximity to the site.

Staging and construction:

- Construction site access can be achieved in the location of the proposed permanent site access;
- Sufficient space is available for stockpiling – construction staging is likely not required due to any spatial restrictions;
- Spatial considerations are unlikely to impact on project timelines.

REFERENCES

Australian/New Zealand Standard 2890 Parking Facilities, Part 1: Off-Street car parking, Council of Standards Australia, 5th March 2004

Stormwater Management Guidelines for Development, Ballina Shire Council, Ballina, 1st February 2016

New South Wales Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005 under the Local Government Act 1993, Minister for Local Government, 2005

New South Wales Development Design Specification D1 – Geometric Road Design (Urban and Rural), Northern Rivers Local Government, January 2006

Gravity Sewerage Code of Australia WSA 02-2014, Water Services Association of Australia, 3rd ed. V3.1, 2014

Water Supply Code of Australia WSA 03-2011, Water Services Association of Australia, 3rd ed., V3.1, 2011

Sewage Pumping Station Code of Australia WSA 04-2004, Water Services Association of Australia, 2nd ed., V2.1, 2005

Pressure Sewerage Code of Australia WSA 07-2007, Water Services Association of Australia, 1st ed., V1.1, 2007

APPENDIX A – DIAL BEFORE YOU DIG – NBN

To:	Mr Michiel Kamphorst
Phone:	0266180512
Fax:	Not Supplied
Email:	michielk@planitengineering.com.au

Dial before you dig Job #:	11351959	DIAL BEFORE YOU DIG www.1100.com.au
Sequence #	56224359	
Issue Date:	10/11/2016	
Location:	Dulcet Lane,Alstonville,NSW-2477	Some impact. No onsite action required.

Location of Underground Telecommunications

We thank you for your enquiry. In relation to your enquiry at the above address:

- **nbn's** records indicate that there **MAY BE** underground fibre optic/telecommunications facility/facilities (owned or controlled by **nbn**) in the vicinity of the location identified above ("Location").
- **nbn** indicative plan/s are attached with this notice ("Indicative Plans").
- The Indicative Plan/s show general depth and alignment information only and are not an exact scale or accurate depiction of the location, depth and alignment of the fibre optic/telecommunications facilities shown on the Indicative Plan/s.
- In particular, the fact that the Indicative Plans show that a facility is installed in a straight line, or at uniform depth along its length cannot be relied upon as evidence that the facility is, in fact, installed in a straight line or at uniform depth.
- You should read the Indicative Plans in conjunction with this notice and in particular, the notes below.
- The information contained in the Indicative Plans is valid for 28 days from the date of issue set out above.You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators at your cost to locate **nbn™** telecommunications facilities during any activities you carry out on site).

We thank you for your enquiry and appreciate your continued use of the Dial Before You Dig Service. If you are planning to excavate or require further information, please contact **nbn** on 1800 626 762. For any enquiries related to moving assets or Planning and Design activities, please email **nbn** at RelocationWorks@nbnco.com.au.

Notes:

1. You are now aware that there are items of telecommunications and/or power facilities in the vicinity of the above property that could be damaged as a result activities carried out (or proposed to be carried out) by you in the vicinity of the Location.
2. You should have regard to section 474.6 and 474.7 of the *Criminal Code Act 1995* (Cth) which deals with the consequences of interfering or tampering with a telecommunications facility. Only persons authorised by **nbn** can interact with **nbn's** network facilities.
3. Any information provided is valid only for **28 days** from the date of issue set out above.

Indicative Plans

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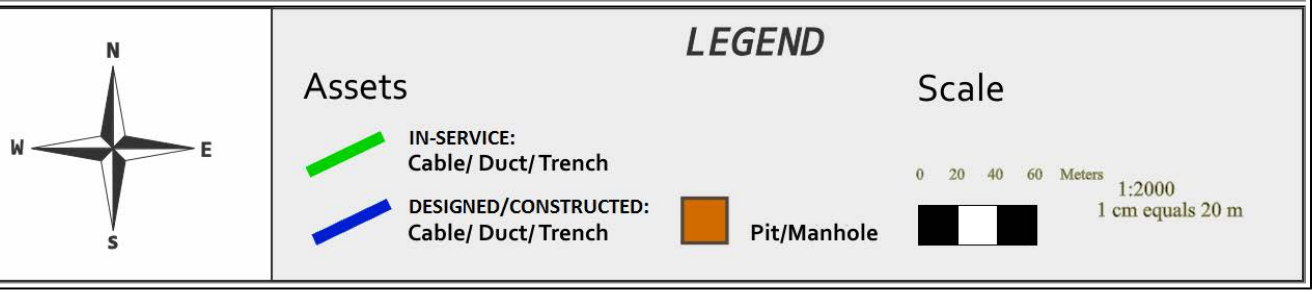
2	6	10
3	7	11
4	8	12



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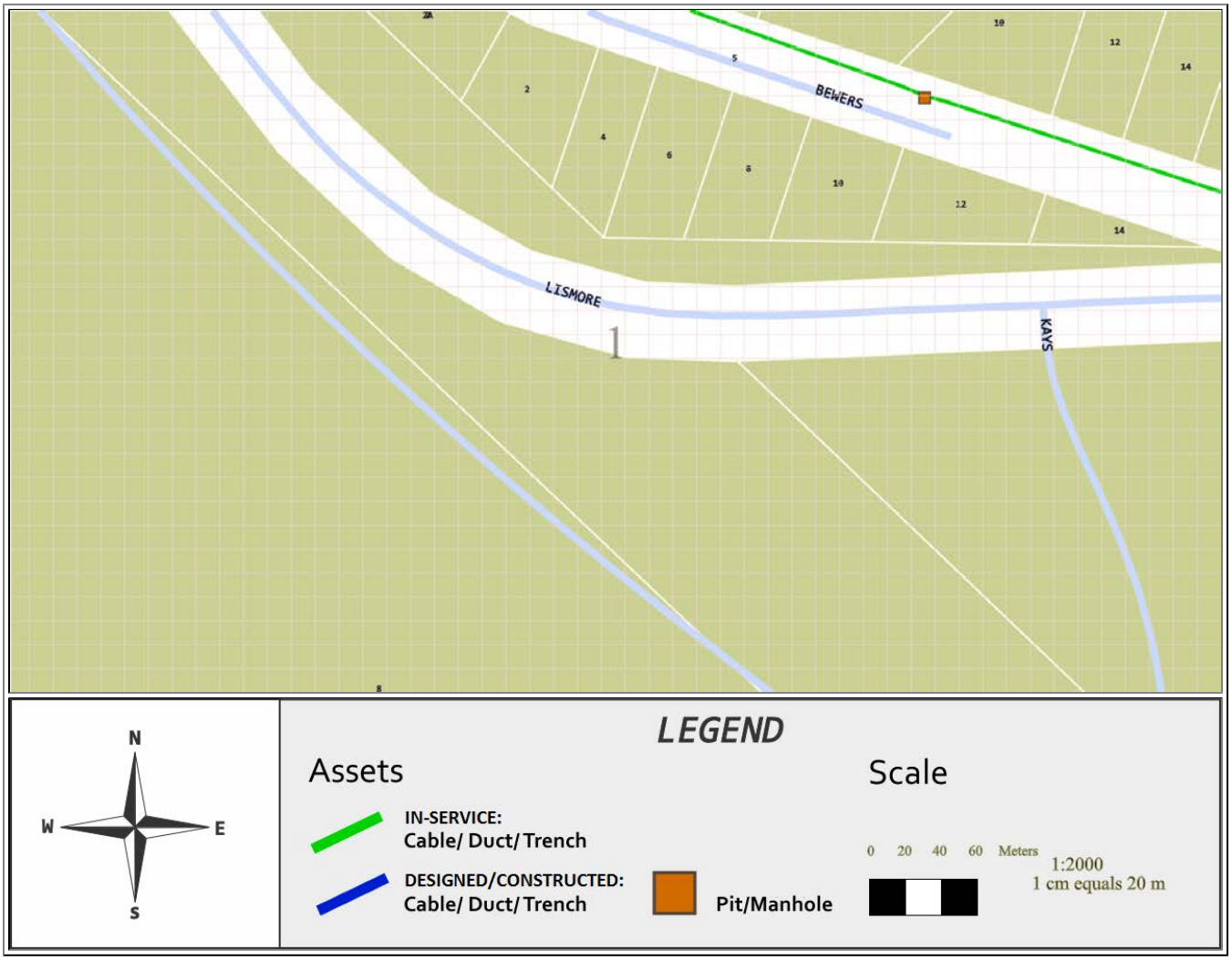

Email info@nbn.com.au Web nbn.com.au

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LEGEND

Assets

IN-SERVICE:
Cable/ Duct/ Trench

DESIGNED/CONSTRUCTED:
Cable/ Duct/ Trench

Pit/Manhole

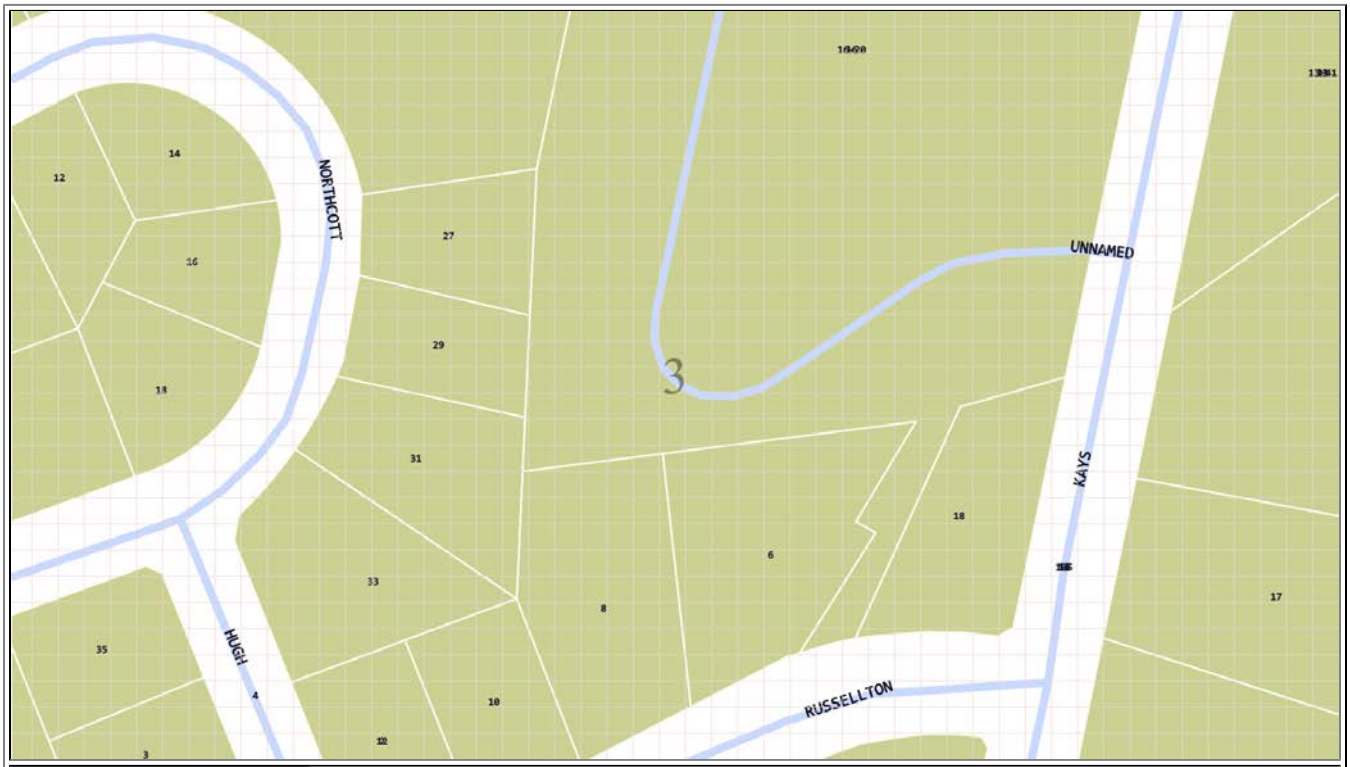
Scale

0 20 40 60 Meters

1:2000
1 cm equals 20 m

Level 11, 100 Arthur Street, North Sydney NSW 2060

Email info@nbn.com.au Web nbn.com.au



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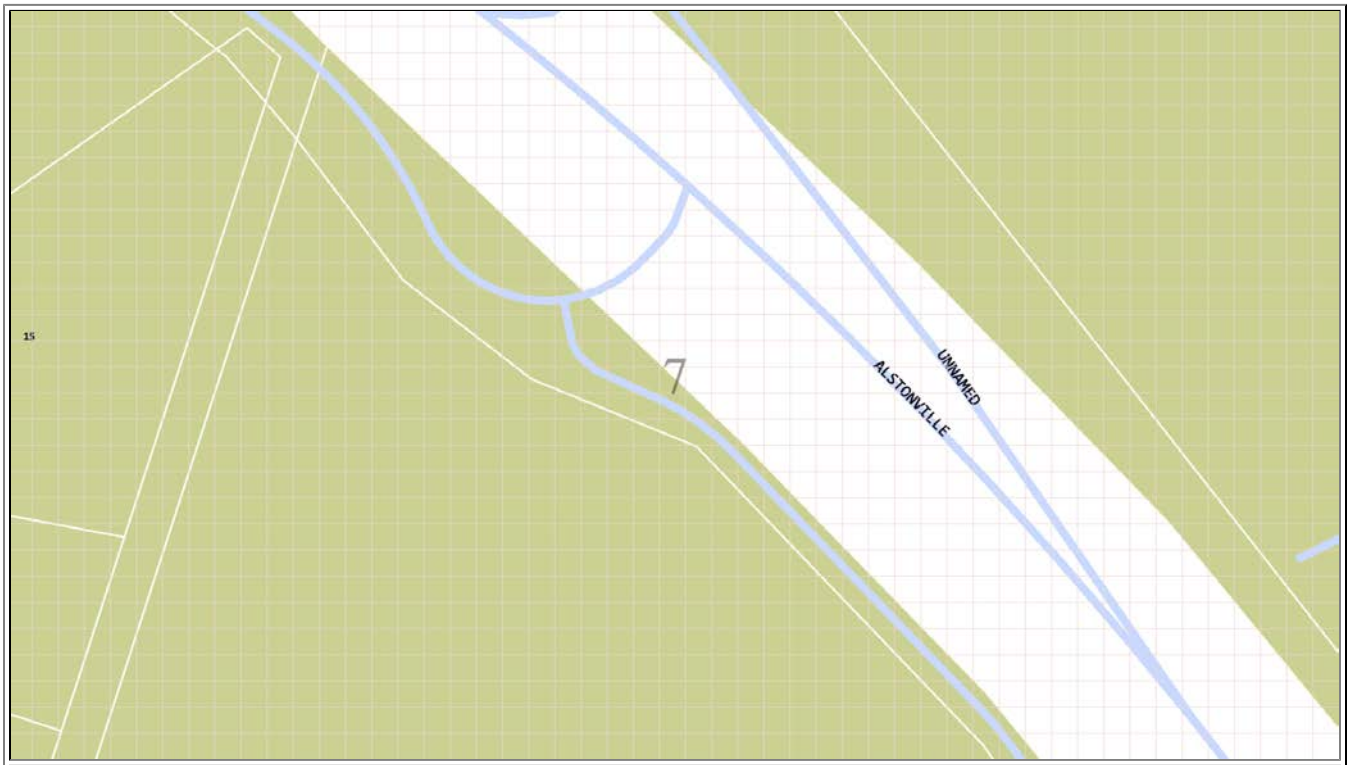

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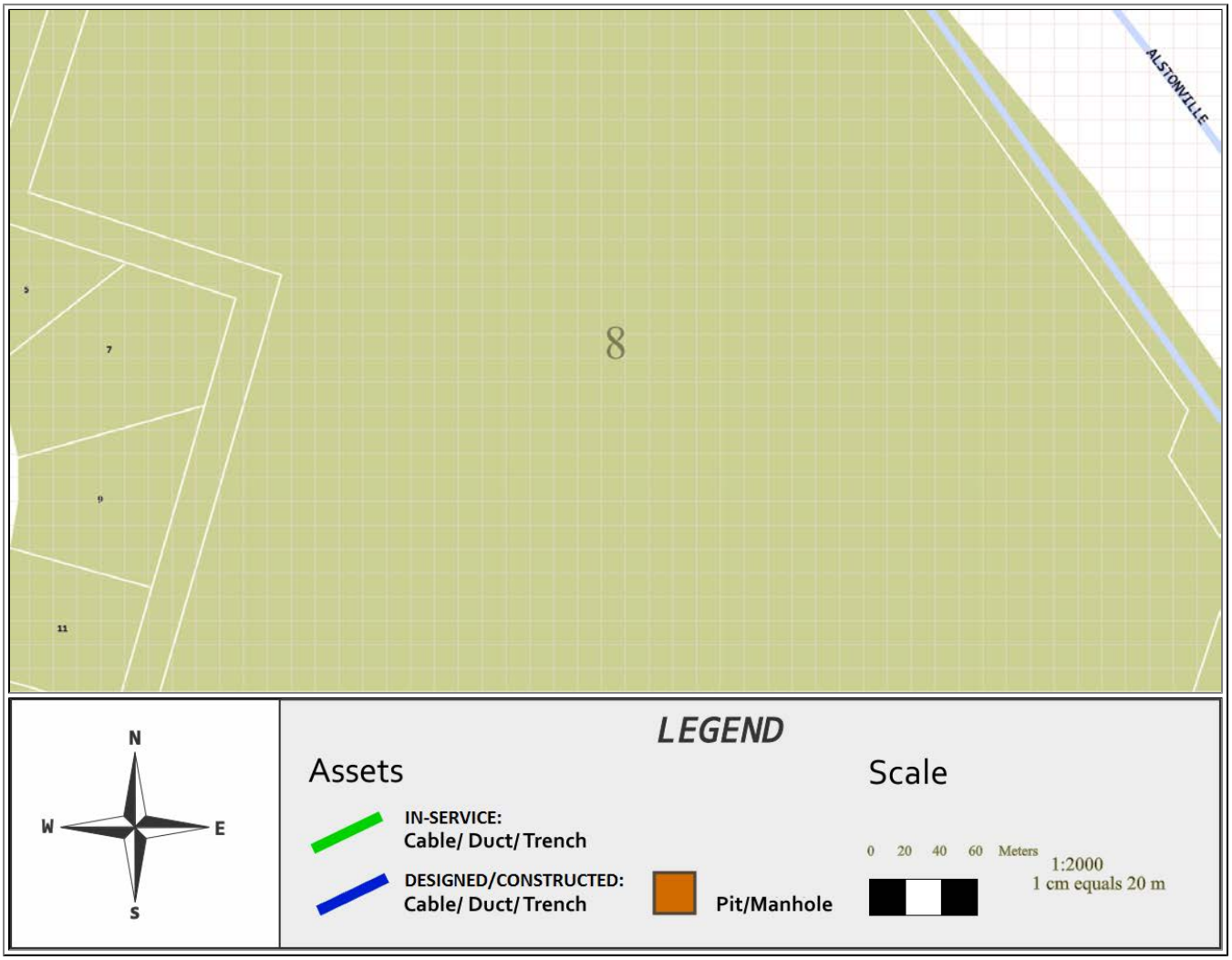

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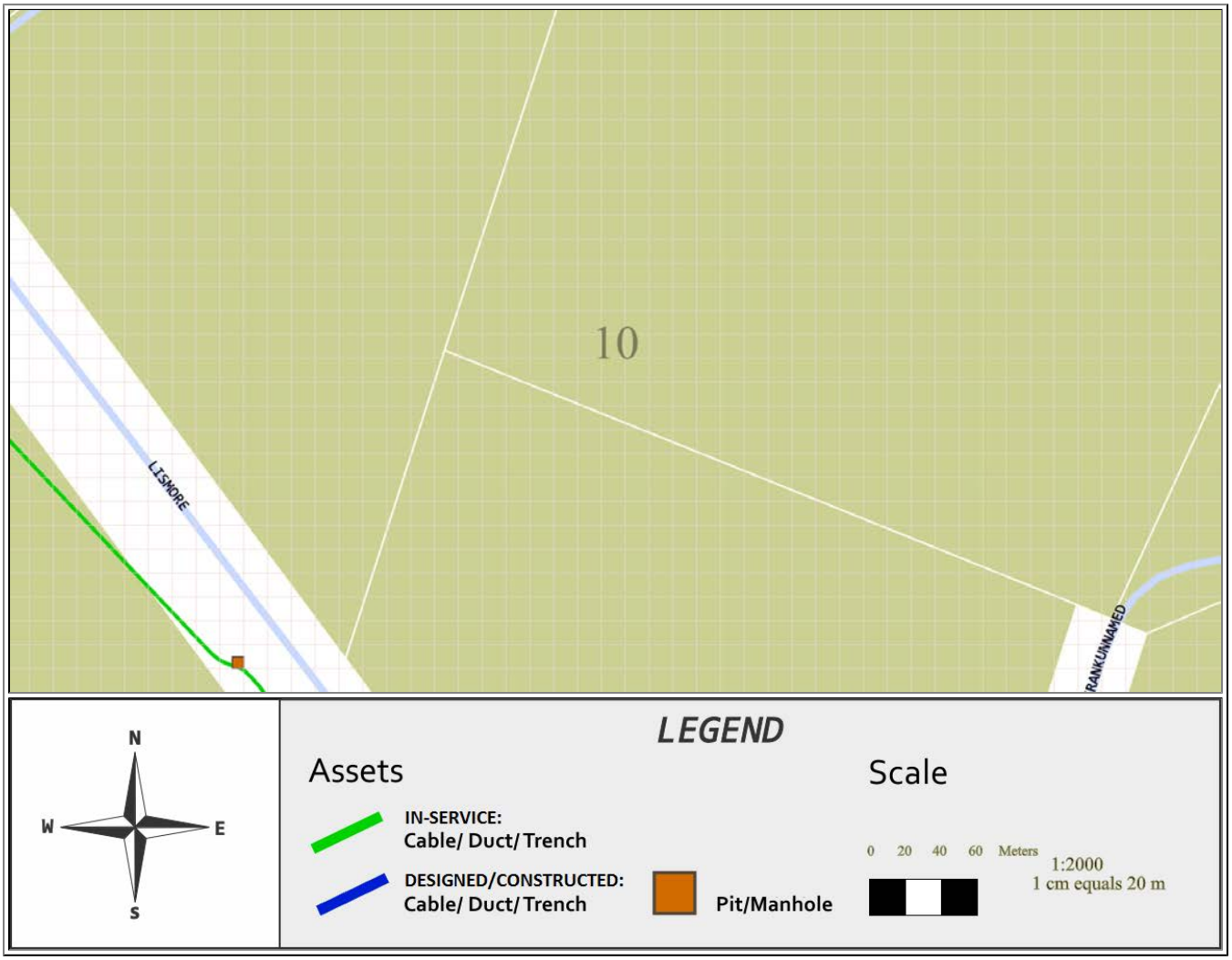

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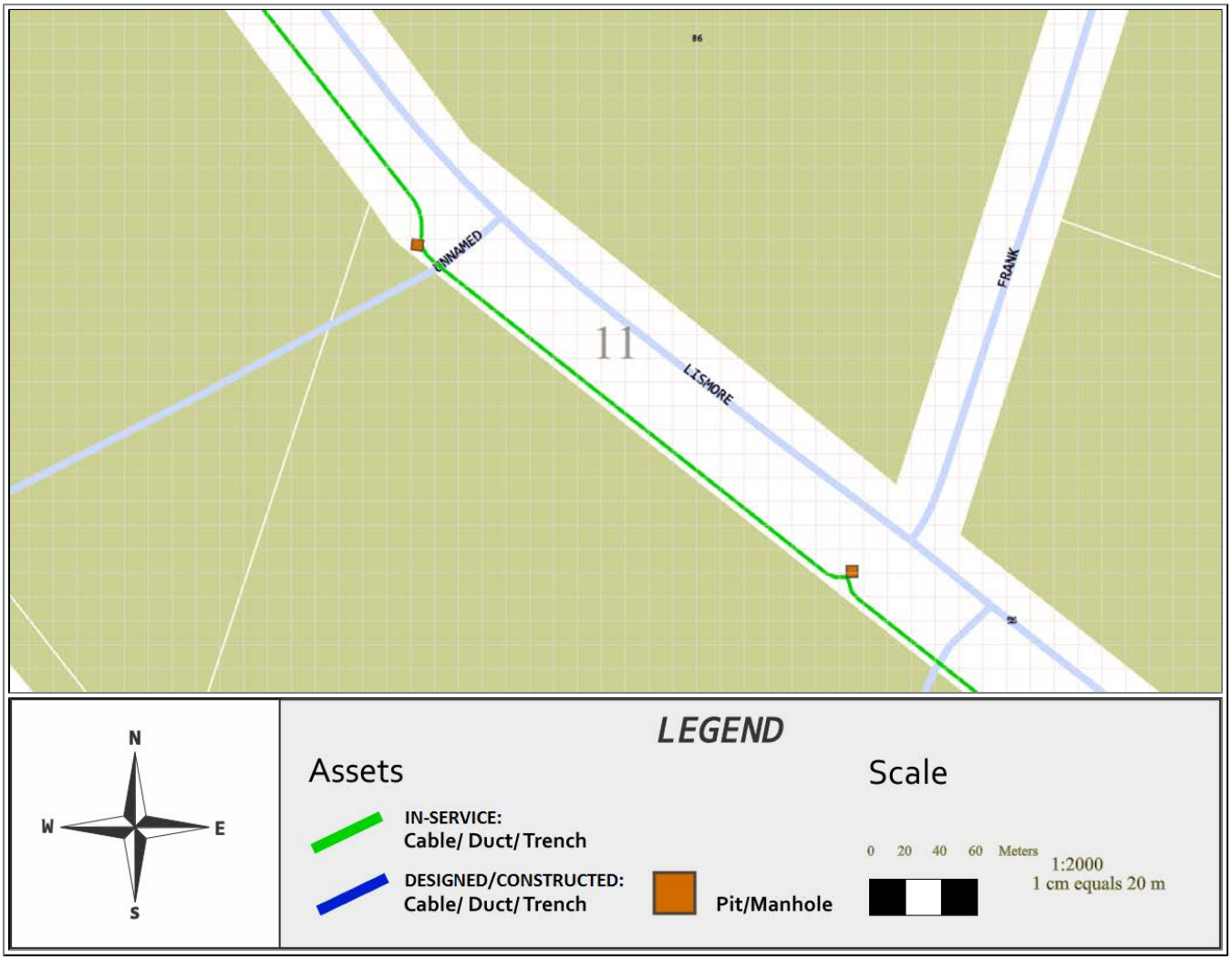
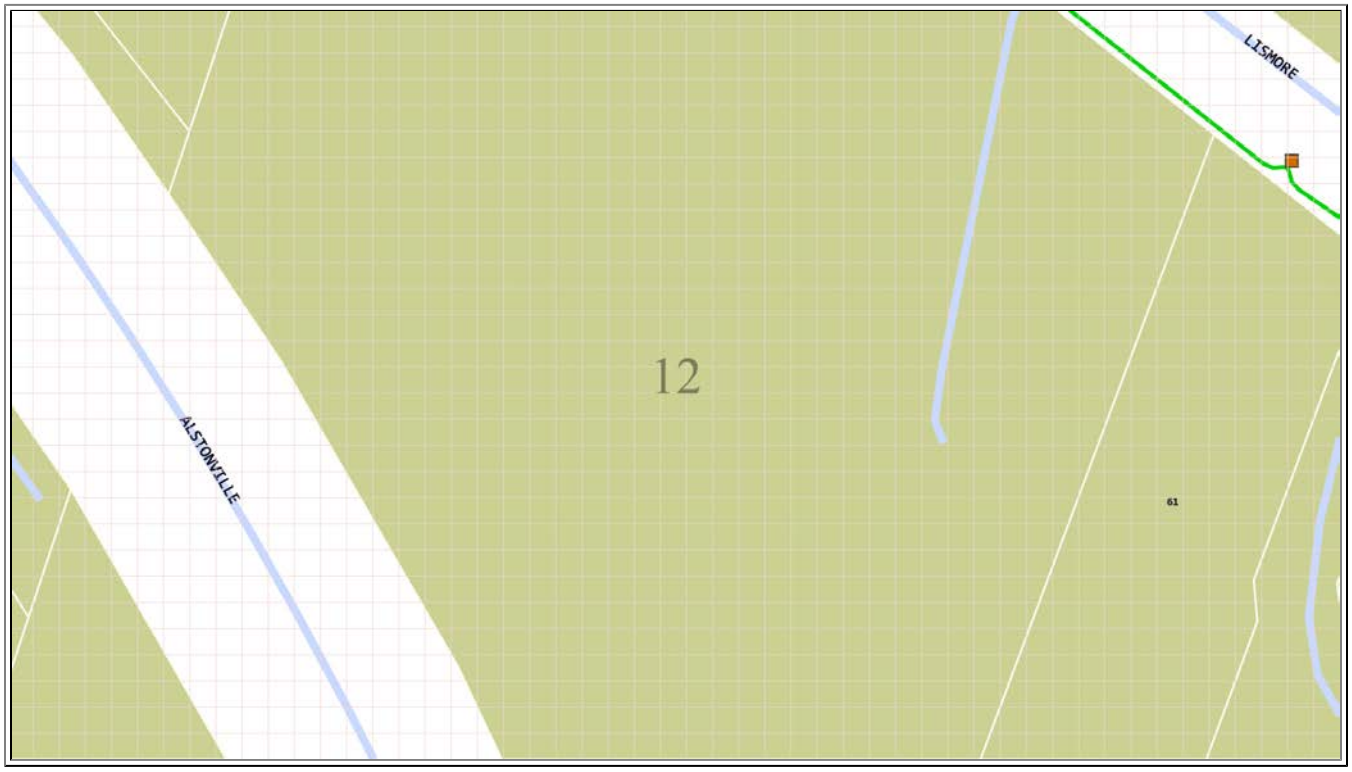




Referral Conditions

The following are conditions on which **nbn** provides you with the Indicative Plans. By receiving, accepting or relying upon the plans (including the Indicative Plans), you are agreeing to these conditions. These conditions are in addition to (and not in replacement of) any duties and obligations you have under applicable law.

1. **nbn** does not accept any responsibility for any inaccuracies of its plans including the Indicative Plans. You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators at your cost to locate **nbn** telecommunications facilities during any activities you carry out on site).
2. You should not assume that **nbn** cables and assets follow straight lines or are installed at uniformed depths along their lengths, even if they are indicated on plans provided to you. Careful onsite investigations are essential to locate the exact position of cables.
3. In carrying out any works in the vicinity of **nbn** facilities, you must maintain the following minimum clearances:
    - 300mm when laying assets inline, horizontally or vertically
    - 500mm when operating vibrating equipment, for example: jackhammers or vibrating plates;and
    - 1000mm when operating mechanical excavators.
    - Adherence to clearances as directed by other asset owner's instructions
4. You are aware that there are inherent risks and dangers associated with carrying out work in the vicinity of underground facilities (such as **nbn** fibre optic,copper and coaxial cables, to **nbn** assets).Damage to underground electric cables may result in:

- Injury from electric shock or severe burns, with the possibility of death.
- Interruption of the electricity supply to wide areas of the city.
- Damage to your excavating plant.
- Responsibility for the cost of repairs.

5. You must take all reasonable precautions to avoid damaging **nbn** facilities. These precautions may include ,but not limited to, the following:
    - All excavation sites should be examined for underground cables by careful hand excavation. Cable cover slabs if present must not be disturbed. Hand excavation needs to be undertaken with extreme care to minimise the likelihood of damage to the cable, for example, the blades of hand equipment should be aligned parallel to the line of the cable rather than digging across the cable.
    - If any undisclosed underground cables are located, notify **nbn** immediately.
    - All personnel must be properly briefed, particularly those associated with the use of earth-moving equipment, trenching, boring and pneumatic equipment.
    - The safety of the public and other workers must be ensured.
    - All excavations must be undertaken in accordance with all relevant legislation and regulations.
6. You will be responsible for all damage to **nbn** facilities that are connected whether directly, or indirectly with work you carry out (or work that is carried out for you or on your behalf) at the Location. This will include,without limitation, all losses expenses incurred by **nbn** as a result of any such damage.
7. You must immediately report any damage to **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 762.
8. Except to the extent that liability may not be capable of lawful exclusion, **nbn** and its servants and agents and the related bodies corporate of **nbn** and their servants and agents shall be under no liability whatsoever to any person for any loss or damage (including indirect or consequential loss or damage) however caused (including, without limitation, breach of contract negligence and/or breach of statute) which may be suffered or incurred from or in connection with this information sheet or any Plans attached hereto. Except as expressly provided to the contrary in this information sheet or the attached Indicative Plans, all terms, conditions, warranties, undertakings or representations (whether expressed or implied) are excluded to the fullest extent permitted by law.

All works undertaken shall be in accordance with all relevant legislations, acts and regulations applicable to the particular state or territory of the Location. The following table lists all relevant documents that shall be considered and adhered to.

State/Territory	Documents
National	Work Health and Safety Act 2011
	Work Health and Safety Regulations 2011
	Safe Work Australia - Working in the Vicinity of Overhead and Underground Electric Lines (Draft)
	Occupational Health and Safety Act 1991
NSW	Electricity Supply Act 1995

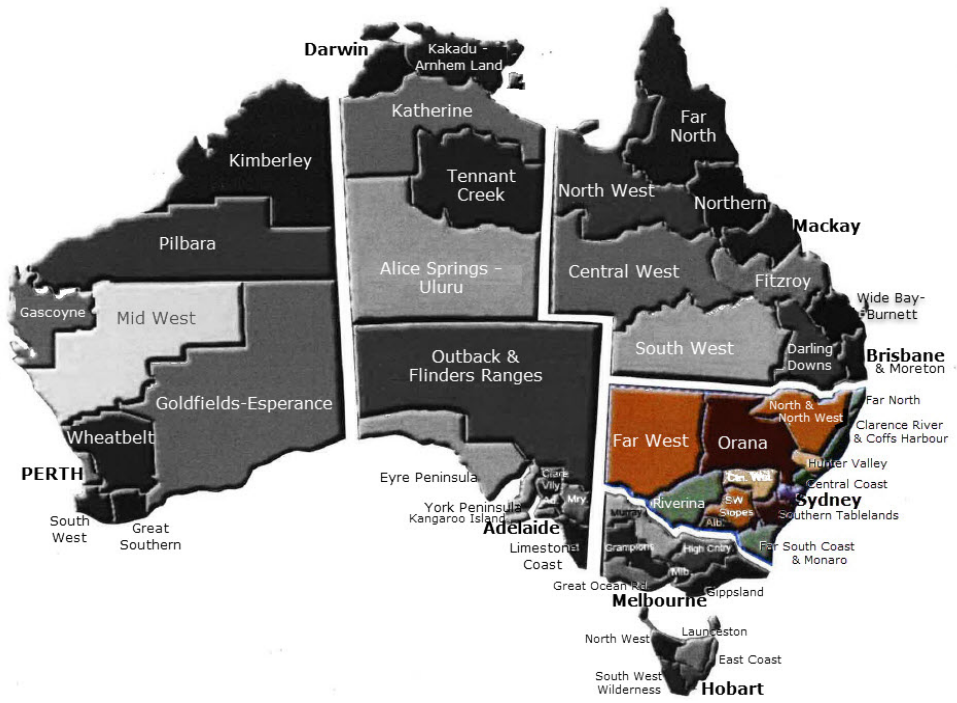
	Work Cover NSW - Work Near Underground Assets Guide
	Work Cover NSW - Excavation Work: Code of Practice
VIC	Electricity Safety Act 1998
	Electricity Safety (Network Asset) Regulations 1999
QLD	Electrical Safety Act 2002
	Code of Practice for Working Near Exposed Live Parts
SA	Electricity Act 1996
TAS	Tasmanian Electricity Supply Industry Act 1995
WA	Electricity Act 1945
	Electricity Regulations 1947
NT	Electricity Reform Act 2005
	Electricity Reform (Safety and Technical) Regulations 2005
ACT	Electricity Act 1971

Thank You,

Network Operations Centre - Assurance

Date: 10/11/2016

APPENDIX B – DIAL BEFORE YOU DIG – TELSTRA



TELSTRA ACCREDITED PLANT LOCATORS – NEW SOUTH WALES. NORTHERN REGION

Regions – NSW North

Telstra plans are intended to be indicative only. A plant location service (Telstra accredited) is required to identify the exact location of the plant and ensure that the asset is protected during construction work. It is your responsibility as part of your "Duty of Care" to engage an Accredited Plant Locator.

***Optic fibre cable locations** must be performed by a locator with Telstra optic fibre location accreditation.

Locators with Telstra optic fibre cable location accreditation are indicated by either a 'yes' in the 'Fibre' column or the DBYD Certified Locator Symbol.

DIAL BEFORE YOU DIG CERTIFIED LOCATOR

Please contact a Telstra accredited locator from the pages following (fees apply).

Telstra Accredited Plant Locators – New South Wales. NORTH

NSW North

Company Name & service areas	*Fibre	Contact	
1 Find Cables Brisbane, Ipswich, Gold Coast & Northern NSW – and surrounding areas	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	1300 734 772 0410 473 772 07 3041 6471 matt@provac.net.au www.provac.net.au	Phone Mobile Fax Email Web
A1 Vac & Location Port Macquarie, Laurieton, Wauchope, Kempsey	YES	0412 655 130 02 6584 8324 midgandp@bigpond.com.au	Phone Mobile Fax Email Web
ABC Locators Pty Ltd Darling Downs, Southern Downs, Burnett, Lockyer Valley, South East Qld, Southern Qld, Northern NSW	YES	07 4632 3499 0407 423 499 brownsdon@bigpond.com	Phone Mobile Fax Email Web
Action Locating Sydney, Newcastle, Wollongong	YES	02 9671 5600 0415 228 466 info@actionlocating.com.au	Phone Mobile Fax Email Web
Advanced Ground Locations Pty Ltd Newcastle, Hunter Valley, Central Coast	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	02 4930 3195 0412 497 488 02 4930 3222 steve_agl@hotmail.com www.advancedgroundlocations.com	Phone Mobile Fax Email Web
All About Pipes All of NSW	NO	1300 634 200 0408 790 010 02 9606 2325 work@allaboutpipes.com.au www.allaboutpipes.com.au	Phone Mobile Fax Email Web
Alpha Plant Locations Queensland – South-East, South-West, Central & Central-West areas. NSW – North-East & North-West areas. Available to travel further if required.	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	0429 968 812 07 3818 6595 tombraun@bigpond.com	Phone Mobile Fax Email Web
Aquabend Utility Detection Central Coast, Upper Hunter, Hunter Valley, Mid North Coast and surrounding areas	YES	0488 925 432 aquabend@hotmail.com	Phone Mobile Fax Email Web
Armidale Electrical North West and Northern Tablelands	YES	02 6772 3702 0412 377 477 02 6772 8092 office@tritechsecurity.com.au	Phone Mobile Fax Email Web
Australian Locating Services Pty Ltd All of ACT & NSW	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	1300 761 545 0412 227 434 02 9531 2169 admin@locating.com.au www.locating.com.au	Phone Mobile Fax Email Web
Australian Subsurface Pty Ltd All of ACT & NSW	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	0427 879 600 admin@australiansubsurface.com www.australiansubsurface.com	Phone Mobile Fax Email Web
Cable & Pipe Locations Pty Ltd Armidale, Casino, Coffs Harbour, Dorrigo, Glenn Innes, Grafton, Inverell, Kempsey, Lismore, Nambucca, Port Macquarie, Tamworth, Taree, Tenterfield, Yamba	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	0408 730 430 sabuckley@bigpond.com www.cableandpipelocations.com.au	Phone Mobile Fax Email Web
Cable & Pipe Search Coffs Harbour, Grafton, Yamba, Bellingen, Dorrigo, Armidale, Tamworth, Guyra, Glenn Innes, Inverell, Tenterfield, Kempsey, Port Macquarie, Taree, Macksville and surrounding districts.	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	0418 660 823 0400 030 314 office@cableandpipesearch.com.au www.cableandpipesearch.com.au	Phone Mobile Fax Email Web

Telstra Accredited Plant Locators – New South Wales. NORTH

Cardno Brisbane, Ipswich, Toowoomba Region, Gold Coast, Sunshine Coast, Mackay and Northern New South Wales		1300 224 664 07 3806 5711 cardnoaus@cardno.com.au	Phone Fax Email Web
Chris Bates & Associates Mid North Coast, Newcastle, Hunter Valley and Central Coast		02 4928 1519 0408 427 391 chrisbatesandassociates@yahoo.com.au	Phone Mobile Fax Email
Darryl Smith Electrical Grafton	NO	02 6642 3731 0439 423 731 02 6642 4319 office@dsmithelectrical.com.au	Phone Mobile Fax Email Web
Down Under Pipeline Surveys Pty Ltd	NO	02 4653 1286 0418 675 374 02 4653 1747 office@dups.com.au www.dups.com.au	Phone Mobile Fax Email Web
Downunder Locations (NSW) Pty Ltd South East Qld and Northern New South Wales – Brisbane to Ballina/Tweed Heads		0438 243 856 07 5523 0702 downunderlocations@gmail.com	Phone Mobile Fax Email Web
Dynamic Excavations Brisbane, Gold Coast, Toowoomba, Sunshine Coast, Northern NSW, Ballina, Sydney and surrounding districts		07 5564 8142 0418 596 066 marco@dynamicexcavations.com.au www.dynamicexcavations.com.au	Phone Mobile Email Web
Electrostar NSW North West including Tablelands (Armidale, Glenn Innes) Hunter Valley, Newcastle to Grafton	YES	0429 620 999 0428 658 707 02 6762 0213 admin@electrostar.com.au www.electrostar.com.au	Phone Mobile Fax Email Web
Expert Service Locating Pty Ltd Sunshine Coast, South East Qld, Brisbane, Gold Coast & Northern NSW		0420 346 477 info@expertservicelocating.com.au www.expertservicelocating.com.au	Phone Mobile Fax Email Web
Eye Spy Cable & Pipe Pty Ltd South East Qld, Sunshine Coast, Brisbane, Gold Coast and Northern NSW	NO	0419 652 604 07 3818 2764 eyespy.location@optusnet.com.au	Phone Mobile Fax Email Web
Farmer Enterprises & Co Pty Ltd	YES	07 4671 2443 0429 622 897 07 4671 2443 gidalot1@bigpond.com	Phone Mobile Fax Email Web
G B Geotechnics (Australia) Pty Ltd All areas of New South Wales	NO	02 9890 2122 0403 153 651 jamie@gbgoz.com.au	Phone Mobile Fax Email Web
G & C McCorkindale Dubbo, Young, Wagga, Yass, Goulburn, Orange, Temora, West Wyalong, Forbes & most NSW country regions		0488 520 482 0408 822 428 02 6382 2639 locatelt@bigpond.net.au	Phone Mobile Fax Email Web
GeoRadar Locating / A1 Trenching & Excavating North, West NSW & Upper Hunter and North Coast areas (Newcastle north)	YES	0428 603 925 laurie@a1trench.com	Phone Mobile Fax Email Web
Geotrace Pty Ltd All Areas, Hills District, Sydney, Wollongong, Newcastle, ACT, Sutherland, Bankstown, Richmond, Burwood, Rose Bay, Balmain	YES	02 8824 6654 0417 147 945 02 8824 5637 info@geotrace.com.au www.geotrace.com.au	Phone Mobile Fax Email Web

Telstra Accredited Plant Locators – New South Wales. NORTH

Ground Scan Locating All of NSW	YES	0414 640 640 02 6332 2599 gscan1@bigpond.com	Phone Mobile Fax Email Web
How Deep Water Leaks Pipe & Cable Location Service Runaway Bay, Gold Coast, Brisbane, The Tweed, Northern Rivers, Murwillumbah, Far North NSW	YES	0412 214 810 lex@howdeeplocations.com.au www.howdeeplocations.com.au	Phone Mobile Fax Email Web
Hunter Ground Search Central Coast, Newcastle, Hunter Valley, Mid North Coast and west to Tamworth, Liverpool Plains and Dubbo.		02 4953 1244 0418 684 819 02 4953 1233 huntergroundsearch@bigpond.com	Phone Mobile Fax Email Web
Hydro Digga All of NSW, ACT & South East Qld		0447 774 000 locator@hydrodigga.com	Phone Mobile Fax Email Web
Hydrovac Excavations (Aust) Pty Ltd Brisbane, Ipswich, Toowoomba Region, Gold Coast, Sunshine Coast, Gympie Region & Northern New South Wales		07 5433 1811 07 5433 1911 enquiries@hydrovac.com.au	Phone Mobile Fax Email Web
JNC Group Australia Pty Ltd Armidale and North West	NO	02 6772 9980 0413 305 218 02 6772 0781 jeremyblanch@bigpond.com	Phone Mobile Fax Email Web
John's Cable Location Pty Ltd Lismore area including Murwillumbah, and Tenterfield to Ballina		0415 458 152 johnscablelocation@yahoo.com.au	Phone Mobile Fax Email Web
K & K Directional Drilling Tamworth	YES	02 6762 6424 0429 087 657 02 6762 6424 kkdrilling@bigpond.com	Phone Mobile Fax Email Web
KCE Pty Ltd	NO	02 4922 5000 0404 849 112 02 4922 5001 davidh@kce.com.au	Phone Mobile Fax Email Web
Lambert Locations Pty Ltd South East Qld, Northern New South Wales		1300 150 035 0418 150 035 admin@lambertlocations.com.au www.lambertlocations.com.au	Phone Mobile Fax Email Web
Locate And Detection Specialists (LADS) Northern NSW, Gold Coast, Brisbane, Sunshine Coast, Toowoomba and surrounding regions.		0479 115 237 admin@ladsqld.com.au www.ladsqld.com.au	Phone Mobile Fax Email Web
Locating Services Pty Ltd Hawkesbury, Canberra and all of NSW		0403 065 510 sam.romano1@outlook.com	Phone Mobile Fax Email Web
Lynco Pty Ltd t/as Lyntet Communications Dubbo depot, covering Forbes, Grenfell, Parkes, Bourke, Bourke North, Nyngan, Coonabarabran, Coonamble, Mudgee, Narromine, Wellington, Orange, Molong, Yeoval, Coolah, Dunedoo, Gilgandra, Mendooran		0409 811 673 lyntet@bigpond.com.au	Phone Mobile Fax Email Web
Mid North Coast Hydro Digging & Service Locating Pty Ltd From Newcastle to Coffs Harbour and all areas of Mid North Coast and Hinterlands	YES	02 6584 8568 0418 409 465 djblack1@bigpond.com	Phone Mobile Fax Email Web

Telstra Accredited Plant Locators – New South Wales. NORTH

Mirait Technologies Australia Central Coast and Hunter Valley	YES	02 4329 9900 0434 560 994 02 4329 9950 servicelocations@mirait.com.au	Phone Mobile Fax Email Web
MSG Locating North and North West NSW	YES	02 6760 7722 0448 674 601 02 6760 7755 msglocating@tpecivil.com.au	Phone Mobile Fax Email Web
Network Protection Specialists Tweed Heads, Brisbane, Gold Coast, Northern Rivers	YES	0418 257 527 Nps.dean@gmail.com	Phone Mobile Fax Email Web
Newcastle Locating Services Newcastle, Hunter Valley, Upper Hunter Valley, Port Stephens	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	02 4933 5160 0410 698 599 02 4933 5150 afarcas@bigpond.com	Phone Mobile Fax Email Web
On Point Utility Locating Pty Ltd Sydney, Parramatta, Penrith, Wollongong, Central Coast, Highlands, Goulburn, Blue Mountains	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	1300 ON POINT 0405 149 529 info@onpointlocating.com.au www.onpointlocating.com.au	Phone Mobile Fax Email Web
Online Pipe & Cable Locating Pty Ltd Sydney, Newcastle, Canberra, Central Coast, Wollongong, Blue Mountains and Port Macquarie	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	1300 665 384 0418 402 234 02 9676 6127 office@onlinepipe.com.au	Phone Mobile Fax Email Web
P B Civil Pty Ltd North Lismaore, North Coast of NSW	NO	02 6621 7171 0412 753 002 pbcivil@bigpond.com	Phone Mobile Fax Email Web
PBH Civil Pty Ltd	NO	02 6585 5621 0434 268 872 mail@pbhcivil.com.au	Phone Mobile Fax Email Web
Provac Australia Brisbane, Ipswich, Gold Coast, Northern NSW – and surrounding areas	DIAL BEFORE YOU DIG CERTIFIED LOCATOR	1300 734 772 0450 268 012 enquiries@provac.net.au www.provac.net.au	Phone Mobile Fax Email Web
Riteway Traffic Control Pty Ltd Central Coast – Newcastle/Hunter	YES	0419 212 969 kbrowne@ritewaytc.com.au	Phone Mobile Fax Email Web
Rubicof Pty Ltd Gosford, Newcastle, Taree	YES	02 4990 5718 0418 683 451 02 4991 2600 rubicof@optusnet.com.au	Phone Mobile Fax Email Web
Rutherford Electrical Engineering Services	NO	02 4932 7344 02 4932 5219 kmaher@ruthelect.com.au	Phone Mobile Fax Email Web
Safe Dig Vacuum Excavation Pty Ltd	NO	07 3376 0856 0408 880 262 07 3376 1258 admin@safedig.com.au	Phone Mobile Fax Email Web
Safety 1 Pty Ltd Tamworth, Gunnedah, Muswellbrook to Tenterfield, across to Lightning Ridge and Walgett, Coonabarabran	YES	0429 817 216 clhutton@bigpond.com	Phone Mobile Fax Email Web

Telstra Accredited Plant Locators – New South Wales. NORTH

Service Locate Pty Ltd Brisbane & Gold Coast areas. And Northern Rivers.		0424 906 777 admin@servicelocate.com.au www.servicelocate.com.au	Phone Mobile Fax Email Web
Suk Truk Services Pty Ltd Lower & Upper Hunter Valley, Mid North Coast, Central Coast, Newcastle	YES	0419 125 551 02 4938 3418 suktrukservices@bigpond.com	Phone Mobile Fax Email Web
SureSearch Sydney, Penrith, Richmond, Wollongong, Katoomba, Macarthur, Central Coast, Newcastle, Maitland, Hunter Valley, Port Macquarie		1300 884 520 0408 221 046 info@suresearch.com.au www.suresearch.com.au	Phone Mobile Fax Email Web
Tamworth Precision Excavations	NO	02 6760 7722 0428 668 728 02 6760 7755 info@tpecivil.com.au	Phone Mobile Fax Email Web
Utility I.D. All areas Queensland and New South Wales	YES	0401 202 515 info@utilityid.com.au www.utilityid.com.au	Phone Mobile Fax Email Web
Utility Location Services Sydney, Central Coast, Newcastle, Port Macquarie and surrounding areas, Lismore, Coffs Harbour		07 3907 3552 0400 573 752 07 9807 9899 ryan@utilitylocationservices.com.au www.utilitylocationservices.com.au	Phone Mobile Fax Email Web
Vac Group Operations Pty Ltd t/as Earthspy		1300 822 834 0447 466 331 www.vacgroup.com.au	Phone Mobile Fax Email Web
Vertex Power & Process NSW areas – Broken Hill, Menindee, Wilcannia, Ivanhoe & surrounding areas. SA areas – Eastern Regions of SA including Olary Mingary & Cockburn	YES	08 8088 4301 0428 154 450 08 8087 5729 admin@vertexpp.com.au www.vertexpp.com.au	Phone Mobile Fax Email Web
Zane Pye t/as SEEK LOCATIONS Foster, Glouster, Port Macquarie, Karuah, Kempsey and surrounding areas	YES	0407 256 858 seek@seeklocations.com.au www.seeklocations.com.au	Phone Mobile Fax Email Web

IT'S HOW WE CONNECT

DUTY OF CARE

TELSTRA CORPORATON ACN 051 775 556

IMPORTANT:

When working in the vicinity of telecommunications plant you have a "Duty of Care" that must be observed. Please read and understand all the information and disclaimers provided below.

Telstra network is complex and requires expert knowledge to interpret information, to identify and locate components, to pothole underground assets for validation and to safely work around assets without causing damage. If you are not an expert and/or qualified in these areas then you should not be attempting these activities. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

The 4 essential steps that must be undertaken to prevent damage to Telstra assets are listed below. Construction activities must not commence without first undertaking these steps.

(The following pages contain more detail on each step below and the contact details to seek further advice. AS5488-2013 is the Australian Standard for the Classification of Subsurface Utility Information.)

1 Dial Before You Dig -Telstra Plans :

- *The essential **first** step in preventing damage*.

You must have current Telstra plans via the DBYD process. Telstra advises that the accuracy of the information provided by Telstra conforms to Quality Level D as defined in AS5488-2013. This means the information is indicative only, not a precise location. **The actual location may differ substantially from that shown on the plans** - refer to steps 2 & 3 to determine actual location prior to commencing construction.

2 Telstra Accredited Plant Locator :

- *The essential **second** step in preventing damage.*

To be able to trace and identify individual subsurface cables and ducts requires access to Telstra pits and manholes. Only a Telstra Accredited Plant Locator (TAPL) is authorised to access Telstra network for locating purposes. A TAPL can interpret plans, validate visible assets and access pits and manholes to undertake electronic detection of underground assets prior to further validation. All Telstra assets must be located, validated and protected prior to commencing construction. If you are not authorised to do so by Telstra, you should not be accessing Telstra network or locating Telstra network.

3 Validation :

- *The essential **third** step in preventing damage.*

All Telstra assets must be positively identified (i.e. validated), by physically sighting them. For underground assets this can be done by potholing by hand or using non-destructive vacuum extraction methods (Refer to 'validation' as defined in AS5488-2013 QL-A). **Underground assets located by electronic detection alone (step 2), are not deemed to be 'validated' and should not be used for construction purposes.** Some TAPL's can assist with non-destructive potholing for validation purposes. **If you cannot validate the Telstra network you should not proceed with construction**. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

4 Protection :

- *The essential **fourth** step in preventing damage.*

Telstra assets must be protected to avoid damage from construction activities. Minimum working distances around Telstra network must be maintained. These distances are provided in this document. Telstra can also provide advice and assistance in regards to protection – refer to the following pages.

STEP 1 – Dial Before You Dig -Telstra Plans:

The actual location of Telstra assets may differ substantially from that shown on the plans. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for the accuracy shown on the plans. Steps 2 and 3 must be undertaken to determine actual location of network.

- Telstra DBYD plans are not suitable for displaying Telstra network within a Telstra exchange site. For advice on Telstra network within a Telstra exchange site contact Telstra Plan Services.
- Telstra owns and retains the copyright in all plans and details provided in conjunction with the applicant's request. The applicant is authorised to use the plans and details only for the purpose indicated in the applicant's request. The applicant must not use the plans or details for any other purpose.
- Telstra plans or other details are provided only for the use of the applicant, its servants, agents or Telstra Accredited Plant Locators. The applicant may not give the plans or details to any parties other than these, and may not generate profit from commercialising the plans or details.
- Please contact Telstra Plan Services immediately should you locate Telstra assets not indicated on these plans.
- Telstra, its servants or agents shall not be liable for any loss or damage caused or occasioned by the use of plans and or details so supplied to the applicant, its servants and agents, and the applicant agrees to indemnify Telstra against any claim or demand for any such loss or damage.
- Please ensure Telstra plans and information provided remains on-site at all times throughout the inspection, location and construction phase of any works.
- Telstra plans are valid for 60 days after issue and should be replaced if required after the 60 days.

- **Emergency situations - receiving Telstra plans** Telstra's automated mapping system (TAMS) will provide a fast response for emergency situations (faster than an operator can provide manually via a phone call - see below for fast response requirements). Automated responses are normally available 24/7.

  To receive a fast automated response from Telstra your request must **-**

  - Be a web request lodged at DBYD (**www.1100.com.au**). The request will be then forwarded to Telstra.
  - Contain your current email address so you can receive the automated email response.
  - Be for the purposes of 'mechanical excavation' or other ground breaking DBYD activity. (Requests with activity types such as conveyancing, planning & design or other non-digging activities may not be responded to until the next business day).
  - Be for an area less than 350 metres in size to obtain a PDF map (over 350 metres will default to DWF due to size) this does not include congested CBD areas where only DWF may be supplied.
  - Be for an area less than 2500 metres in size to obtain a DWF map (CBD's less)

- **Data Extraction Fees.** In some instances a data extraction fee may be applicable for the supply of Telstra information. Typically a data extraction fee may apply to large projects or requests to be supplied in non-standard formats. For further details contact Telstra Plan Services.

- **Electronic plans - PDF and DWF maps** If you have received Telstra maps via email you will have received the maps as either a PDF file (for smaller areas) or DWF file (for larger area requests). All requests over approximately *350m or in congested CBD areas can only be supplied in DWF format. There are size limits on what can be provided. (* actual size depends on geographic location of requested area). If you are unable to launch any one of the softcopy files for viewing and printing, you may need to download and install one or more of the free viewing and printing products such as Adobe Acrobat Reader (for PDF files) or Autodesk Design Review (for DWF files) available from the internet

  - **Pdf files -** PDF is the default softcopy format for all requests for areas up to approx *350m in length. (*depends on geographic location of request). The PDF file is nominally formatted to A3 portrait sheet however it can be printed on any size sheet that your printer supports, e.g. either as the full sheet or selected areas to suit needs and legibility. (to print a selected area zoom up and print 'current view') If there are multiple layers of Telstra network you may receive up to 2 sheets in the single PDF file attachment supplied. There are three types or layers of network normally recorded - local network, mains cables or a combined layer of local and mains (usually displayed for rural or semi-rural areas). If mains cable network is present in addition to local cables (i.e. as separate layer in a particular area), the mains will be shown on a separate sheet. The mains cable information should be read in conjunction with the local cable information.

  - **DWF files** – DWF is the default softcopy format for all requests for areas that are over 350m in length. Maximum length for a DWF automated response is approx 2500m - depending on geographic

location of request (manually-processed plans may provide larger coverage). The DWF files differ from PDF in that DWF are vector files made up of layers that can be turned on or off and are not formatted to a specific sheet size. This makes them ideal for larger areas and for transmitting electronically.

- ***How to view Telstra DWF files –***
  Telstra DWF files come with all layers turned on. You may need to turn individual layers on or off for viewing and printing clarity. Individual layer names are CC (main cable/conduit), DA (distribution area network) and sometimes a combined layer - CAC. Layer details can be viewed by either picking off the side menu or by selecting 'window' then 'layers' off the top menu bar. Use 'layers' to turn individual layers off or on (double click or right click on layer icon).
- ***How to print Telstra DWF files –***
  DWF files can be printed on any size sheet – either their entirety or by selected areas of interest. Some DWF coverage areas are large and are not suited to printing legibly on a single A4 sheet - you may need several prints if you only have an A4 printer. Alternatively, an A3, A1 or larger printer could be used. To print, zoom in or out and then, by changing the 'print range' settings, you can print what is displayed on your screen to suit your paper size. If you only have a small printer, e.g. A4, you may need to zoom until the text is legible for printing (which is why you may need several prints). To print what is displayed on your screen the 'view' setting should be changed from 'full page' to 'current view'. The 'current sheet' setting should also be selected. You may need to print layers separately for clarity and legibility. (Details above on how to turn layers on or off)
- ***How to change the background colour from white to black (when viewing) Telstra DWF files –***
  If using Autodesk Design Review the background colour can be changed by selecting 'Tools' then 'options' then 'sheet'. Tick the box 'override published paper colours' and select the colour required using the tab provided.

STEP 2 - Telstra Accredited Plant Locator (TAPL):

Utilising a TAPL is an essential part of the process to identify network and to trace subsurface network prior to validating. A TAPL can provide plan interpretation, identification and electronic detection. This will assist in determining the position of subsurface assets prior to potholing (validating). Some TAPL's can also assist in validating underground detected network. Electronic detection is only an indication of the existence of underground network and can be subject to interference from other services and local conditions. Electronic detection should not be used solely to determine location for construction purposes. The electronic (indicative) subsurface measurements must be proven by physically sighting the asset (see step 3 - Validation).

- All TAPL's locating Telstra network must be able to produce a current photo ID card issued by Telstra. A list of TAPL's is provided with the Telstra Dial Before You Dig plans.
- Telstra does not permit external parties (non-Telstra) to access or conduct work on our network. Only Telstra staff, Telstra contractors or locators whom are correctly accredited are authorised to work on or access our manholes, pits, ducts, cables etc. This is for safety as well as for legal reasons.

  It is a criminal offence under the *Criminal Code Act 1995* (Cth) to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by Telstra as a result of any such unauthorised works may be claimed against you.

- Optic fibre cable locations must be performed by a locator with Telstra optic fibre cable location accreditation. The locators with optic fibre cable location accreditation are indicated by a 'yes' in the column headed 'Fibre' in the lists of locators that are published with the Telstra DBYD plans. Telstra Accredited Plant Locators that are DBYD Certified Locators are also fibre accredited. Inspection of photo ID cards will confirm whether locators are just copper accredited or copper + fibre accredited.
- The details of any contract, agreement or retainer for site assistance to locate telecommunications plant shall be for you to decide and agree with the Telstra Accredited Plant Locator engaged. Telstra is not a party to any contract entered into between you and a Telstra Accredited Plant Locator.
- Payment for the site assistance will be your responsibility and payment details should be agreed before the engagement is confirmed.

- Telstra does not accept any liability or responsibility for the performance of or advice given by a Telstra Accredited Plant Locator. Accreditation is an initiative taken by Telstra towards the establishment and maintenance of competency standards. However, performance and the advice given will always depend on the nature of the individual engagement.
- Neither the Telstra Accredited Plant Locator nor any of its employees are an employee or agent for Telstra. Telstra is not liable for any damage or loss caused by the Telstra Accredited Plant Locator or its employees.

- **Electronically derived subsurface measurements (e.g. depths/alignments by locating devices)**

  All locator provided measurements for Telstra assets must have the AS5488-2013 quality level specified - (e.g. QL-A, B, C or D). These quality levels define the accuracy of subsurface information and are critical for determining how the information is later used – for example if suitable for excavation purposes.

  1) ***An example of a subsurface measurement with no quality level specified – (i.e. not to be used)***

     Telstra cover - **0.9m**

     *The measurement above has no AS5488-2013 quality level specified and **should not** be provided by a locator or used for design or construction. This is because it is not known whether the measurement is actual or derived (where 'actual' means validated and 'derived' means assumed and not validated, e.g. electronic or other). Typically damages occur by constructors incorrectly using unvalidated measurements as actual measurements.*

  2) ***An example of a subsurface measurement with quality level B specified –***

     Telstra cover - **0.9m** (QL-B)

     Where (QL-B) complies with AS5488-2013 QL-B (for example an electronic location that complies with QL-B)

     (Note QL-B means it has not been validated and should not be used for construction purposes around Telstra network, however it would assist further investigation to determine the actual location)

  3) ***An example of a subsurface measurement with the quality level A specified –***

     Telstra cover - **0.6m** (QL-A)

     Where (QL-A) complies with AS5488-2013 QL-A (and is deemed suitable for excavation purposes). *In this example the asset has been electronically located first, (QL-B) and then physically exposed (QL-A).*

     Note -Telstra will seek compensation for damages caused to it its property and losses caused to Telstra and its customers if unvalidated subsurface measurements are used for construction and subsequently result in damage to Telstra assets. Only measurements conforming to AS5488-2013 (QL-A) are deemed by Telstra to be validated measurements.

- **Rural landowners** Where Telstra-owned cable crosses agricultural land, Telstra may provide on-site assistance with cable location. **You must contact Telstra Plan Services to determine eligibility and to request the service**.

  Please note the following –

  - If eligible, the location assistance must be approved and organised by Telstra. Telstra will not pay for a location that has not been approved and facilitated by Telstra (Telstra is not responsible for payment assistance when a customer engages a locator directly).
  - The exact location, including depth of cables**,** must be validated by potholing, which may not be covered by this service.
  - This service is nominally only available to assist private rural land owners.
  - This service nominally covers one hour on-site only. Any time required in addition to Telstra-funded time can be purchased directly from the assigned Telstra Accredited Plant Locator.
  - This service does not apply to previously located network at the same location (i.e. it is a once off).
  - This service does not apply to other carriers' cables (marked as 'OC' on Telstra plans).

STEP 3 – *Validation:

After utilising a Telstra Accredited Plant Locator and prior to commencing construction, any electronically detected underground network must be positively identified (validated) by physically sighting it. This can be done by careful hand digging or using non-destructive water jet methods to expose the network.

*Validation as defined in AS5488-2013 (QL-A).

Manual potholing needs to be undertaken with extreme care and by employing techniques least likely to damage cables. For example, align shovel blades and trowels parallel to the cable rather than digging across the cable. Some Telstra Accredited Plant Locators are able to provide or assist with non-destructive potholing methods to enable validation of underground cables and ducts.

If you cannot validate the underground network then you should not proceed with construction. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

Important note: *The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing or damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate appropriate measures having regard to the nature of this risk. For further information -*

http://ucm.in.telstra.com.au/about/media/emergencies-incidents/asbestos/index.htm?ssSourceSiteId=consumer-advice

STEP 4 – Protection:

You must maintain the following minimum clearance distances between construction activity and the validated position of Telstra plant.

Jackhammers/Pneumatic Breakers	*Not within 1.0m of **actual validated location.***
Vibrating Plate or Wacker Packer Compactor	*Not within 0.5m of **actual validated location** of Telstra ducts.* *300mm compact clearance cover before compactor can be used across Telstra ducts.*
Boring Equipment (in-line, horizontal and vertical)	*Not within 2.0m of **actual validated location**.* *Constructor to hand dig or use non-destructive water jet method (pothole) and expose plant.*
Heavy Vehicle Traffic (over 3 tonnes)	*Not to be driven across Telstra ducts (or plant) with less than 600mm cover.* *Constructor to check actual depth via hand digging.*
Mechanical Excavators, Farm ploughing and Tree Removal	*Not within 1.0m of **actual validated location.*** *Constructor to hand dig or use non-destructive water jet method (pot-hole) and expose plant.*

- For blasting or controlled fire burning please contact Telstra Plan Services for advice.
- If conducting roadworks all existing Telstra pits and manholes should be a minimum of 1.2m in from the back of kerb after the completion of your work.
- All Telstra conduit should have the following minimum depth of cover after the completion of ground work:-
    - **Footway 450mm**

- **Roadway 450mm at drain invert and 600mm at road centre crown**

- For clearance distances relating to Telstra pillars, cabinets and RIMs/RCMs please contact Telstra Plan Services.

- If Telstra plant is situated wholly or partly where you plan to work (i.e. in conflict), then Telstra's Network Integrity Group must be contacted to discuss possible engineering solutions.
  Please phone **1800 810 443** or email NetworkIntegrity@team.telstra.com

- You are not permitted to relocate or alter or repair any Telstra assets or network under any circumstances.

  It is a criminal offence under the *Criminal Code Act 1995* (Cth) to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by Telstra as a result of any such unauthorised works may be claimed against you.

  Only Telstra and its contractors may access and conduct works on Telstra's network (including its plant and assets). This requirement is to ensure that Telstra can protect the integrity of its network, avoid disruption to services and ensure that the relocation meets Telstra's requirements.

- If Telstra relocation or protection works are part of the agreed solution, then payment to Telstra for the cost of this work shall be the responsibility of the principal developer, constructor or person for whom the work is performed. The principal developer or constructor will be required to provide Telstra with the details of their proposed work showing how Telstra's plant is to be accommodated and these details must be approved by the Regional Network Integrity Manager prior to the commencement of site works.
  Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com
  Further information -
  https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets

  Damage to Telstra's network must be reported immediately -
  https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment

- You will be held responsible for all plant damage that occurs or any impacts to Telstra's network as a result of your construction activities. This includes interfering with plant, conducting unauthorised modification works and interfering with Telstra's assets in a way that prevents Telstra from accessing or using its assets in the future.

- Telstra reserves all rights to recover compensation for loss or damage to its cable network or other property including consequential losses.

FURTHER INFORMATION:

NATURAL DISASTERS

Natural Disasters include (amongst other things) earthquakes, cyclones, floods and tsunamis.
In the case of such events, urgent requests for plans or information relating to the location of Telstra network can be made directly to Telstra Network Integrity Team Managers as follows:

NSW – John McInerney 0419 485 795

QLD – Glenn Swift 0419 660 147

VIC/TAS - David Povazan 0417 300 947

SA/NT - Mick Weaver 0419 828 703

WA - Angus Beresford-Peirse 0419 123 589

TELSTRA PLAN SERVICES - for all Telstra Dial Before You Dig related enquiries

Email - **Telstra.Plans@team.telstra.com**

Phone - 1800 653 935 (general enquiries, business hours only)

*Telstra DBYD plan information -	Shalin	07 3455 2997
	Anthony	07 3455 2365
Advice on preventing damage -	Glen	07 3455 1011
	Lachlan	07 3455 3132
Accredited plant locator enquiries -	Mike	0477 377 036
	Taylor	0477 365 666
Road closures -	Megan	07 3455 0834
	Lachlan	07 3455 3132
Telstra easements -	Glen	07 3455 1011

**Please note - to make a Telstra plan enquiry the plans must be current (within 60 days of issue). If your plans have expired you will need to submit a new request via DBYD prior to contacting Telstra Plan Services.*

Information for new developments (developers, builders, home owners)
Telstra Smart Communities - https://www.telstra.com.au/smart-community

Asset relocations
Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com

https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets

Telstra offers free Cable Awareness Presentations, if you believe you or your company would benefit from this offer please contact Network Integrity on 1800 810 443 or NetworkIntegrity@team.telstra.com

PRIVACY NOTE

Your information has been provided to Telstra by DBYD to enable Telstra to respond to your DBYD request. Telstra keeps your information in accordance with its privacy statement entitled "Protecting Your Privacy" which can be obtained from Telstra either by calling 1800 039 059 or visiting our website at www.telstra.com.au/privacy

LEGEND

IT'S HOW WE CONNECT

For more info contact a Telstra Accredited Locater or Telstra Plan Services 1800 653 935

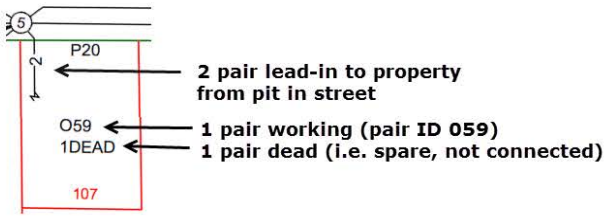
Exchange
(major cable present)

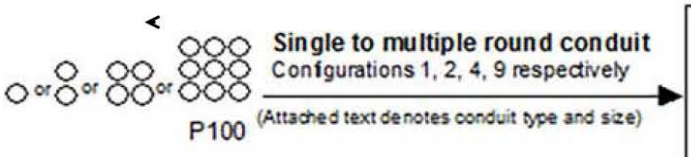
Footway access chamber
(can vary from 1-lid to 12-lid)

or **Pillar/cabinet**
(above the ground / free standing)

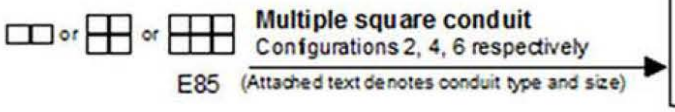
Above ground complex equipment housing (eg RIM)
Please Note: This equipment is powered by 240V electricity.

OC **other carrier**





Single to multiple round conduit
Configurations 1, 2, 4, 9 respectively
(Attached text denotes conduit type and size)



Multiple square conduit
Configurations 2, 4, 6 respectively
(Attached text denotes conduit type and size)

Some examples of conduit type and size:
A - Asbestos cement, P - PVC / plastic, C - Concrete, GI - Galvanised iron, E - Earthenware.
Conduit sizes *nominally* range from 20mm to 100mm.

P50	50mm PVC conduit
P100	100mm PVC conduit
A100	100mm asbestos cement conduit
E 85	85mm square earthenware conduit

Cable jointing pit
(number indicating pit type)

Elevated cable joint
(above ground joint on buried cable)

Telstra Plant in shared utility trench

Aerial Cable
(above ground)

Aerial Cable
(attached to joint use pole e.g. power)

Direct buried cable

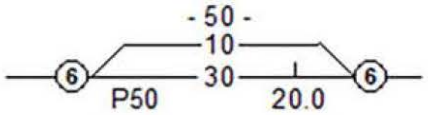
M **Marker post installed**

TR **Buried transponder**

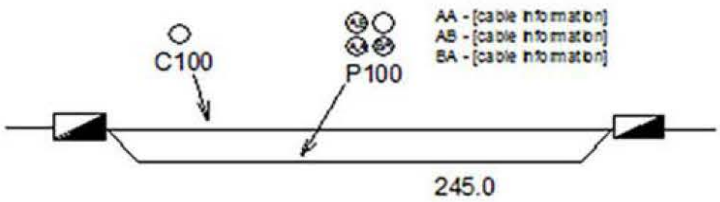
MT **Marker, transponder**

SMOF **Optical fibre cable direct buried**

Some examples of how to read Telstra plans:



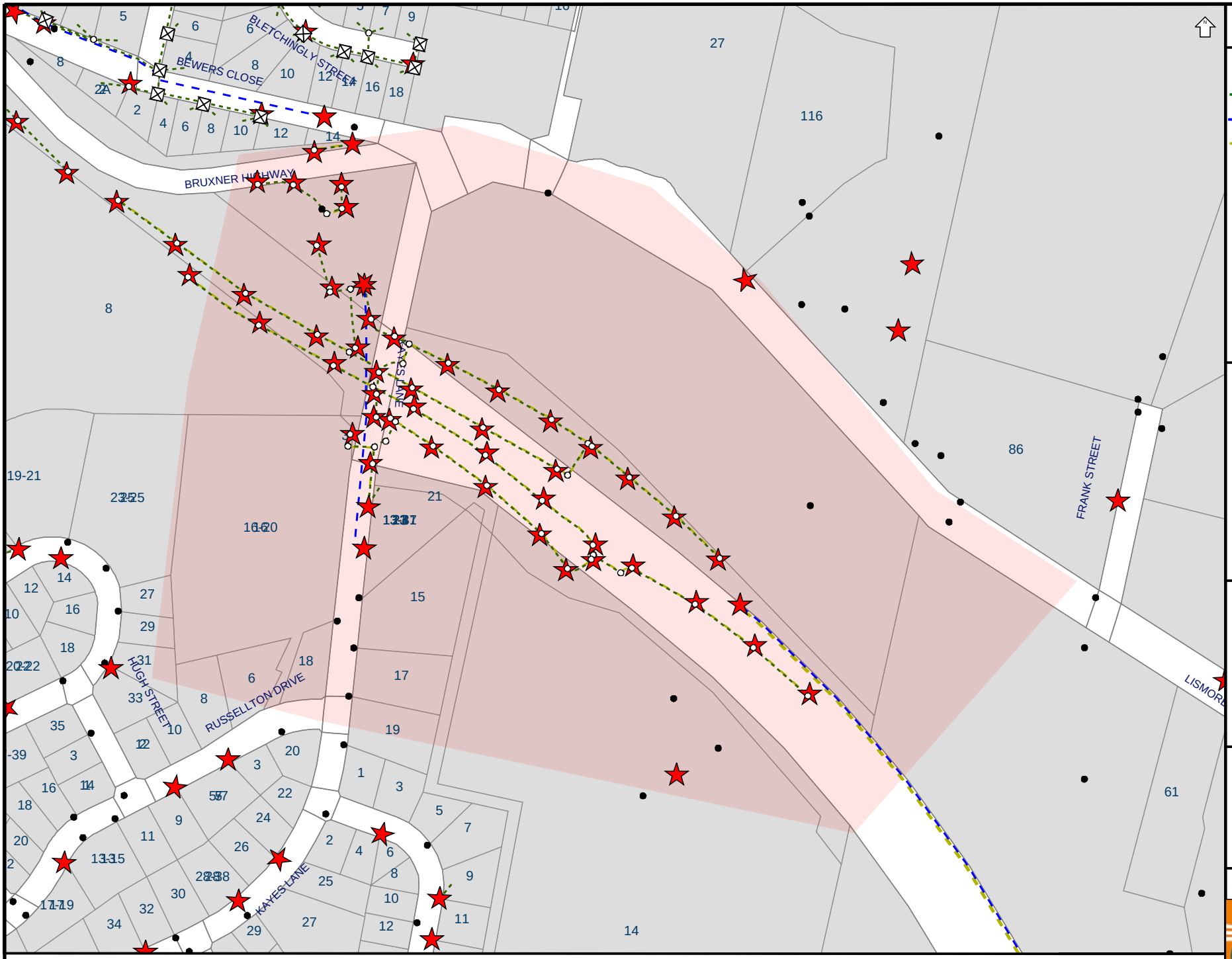
One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits, 20.0m apart, with a direct buried 30-pair cable along the same route.



Two separate conduit runs between two footway access chambers (manholes) 245m apart. A nest of four 100mm PVC conduits (P100) containing assorted cables in three ducts (one being empty) and one empty 100mm concrete duct (C100) along the same route.

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans. FURTHER ON SITE INVESTIGATION IS REQUIRED TO VALIDATE THE EXACT LOCATION OF TELSTRA PLANT PRIOR TO COMMENCING CONSTRUCTION WORK. A plant location service is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works. The exact position of Telstra assets can only be validated by physically exposing it. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

APPENDIX C – DIAL BEFORE YOU DIG – ESSENTIAL ENERGY



Overhead wires not shown
LOOK UP & LIVE!

LEGEND

- LV Underground Cable
- HV Underground Cable
- Underground Pipe
- Underground Earth or Wires
- Ground Substation
- Pole
- Cubicle
- Pit
- Area of Interest

Critical Assets
Contact Essential Energy on 13 23 91

- Zone Substation
- Underground Cable
- Underground Fibre

Proposed Works
Area of proposed works

Proposed assets are shown as orange symbols

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 13/10/2016

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 | SCALE: 1:4129

Job Number: 11351959 Sequence number: 56224357 Job location: Dulcet Lane, Alstonville

Map Centre: 153° 25' 33.9", -28° 49' 57.5"

essential energy

CABLE/PIPE LOCATION

Assets were found in the search area

COMPANY NAME:	Planit Engineering
ATTENTION:	Mr Michiel Kamphorst
EMAIL:	michielk@planitengineering.com.au
SEARCH LOCATION:	Dulcet Lane Alstonville NSW 2477
SEQUENCE NO:	56224357
DATE:	Thursday, 13 October 2016

Provision of Plans:
Please find enclosed plans depicting approximate locations of **Essential Energy** assets in the search location***. The excavator must not assume that there may not be assets owned by other network operators in the search location.***

Underground assets searched for	Underground assets found
Essential Energy Electrical	☑
Essential Energy Water & Sewerage	☐

Plans are updated from time to time to record changes to underground assets and may be updated by Essential Energy without notice. In the event that excavation does not commence within 28 days of receipt of a plan, a new plan should be obtained.

The excavator must retain the plans on site for the duration of the works.

The excavator shall report all damage made to Essential Energy assets immediately. Note that damage includes gouges, dents, holes and gas escapes.

IN CASE OF EMERGENCY OR TO REPORT DAMAGE:
PHONE 13 20 80

DISCLAIMER

Please be aware that plans may **not** reflect alterations to surface levels or the position of roads, buildings, fences etc. **Cable and pipe locations are approximate** and the plans are **not** suitable for scaling purposes. *Essential Energy does not retain plans for privately-owned underground electrical or water & sewerage assets located on private property. Privately-owned underground electrical assets located on private property are the responsibility of the owner.*

The plans have been prepared for Essential Energy's sole use and benefit. **Essential Energy cannot and does not warrant the accuracy or completeness of the plans**. Essential Energy supplies them at no cost with the object of reducing the serious risk of unintentional damage being caused to its cables and pipes. **Essential Energy does not accept any responsibility for any omissions, inaccuracies or errors in the plans, or any reliance place on the material. Any reliance placed on any plan provided in response to your request is at your own risk.**

www.essentialenergy.com.au
ABN 37 428 185 226
PO Box 5730 Port Macquarie NSW 2444
Telephone: 13 23 91 Facsimile: 1800 354 636

Essential Energy retains all intellectual and industrial property rights which exists or may exist in or with respect to the plan(s). The material provided is not to be copies or distributed beyond you.

You release Essential Energy from and against all claims, demands, actions and proceedings arising out of or in any way related to the use of the provided material.

Location of Assets on Site:
The plans indicate only that cables and pipes may exist in the general vicinity – they do not pinpoint the exact location of the cables and pipes.

If it is found that the location of cables or pipes on the plans can be improved, please notify Essential Energy on 13 23 91 (or fax 1800 354 636).

All individuals have a duty of care they must observe when working in the vicinity of underground cables and pipes. It is the **excavator's responsibility to visually expose the underground cables and pipes manually**, **ie. by using hand-held tools and non-destructive pot-holing techniques prior to any mechanical excavation.** The excavator will be held responsible for all damage caused to the Essential Energy network or cables and pipes, and for the costs associated with the repair of any such damage. The excavator will also be held responsible for all damage caused to any persons.

When digging in the vicinity of underground assets, persons should observe the requirements of the applicable Codes of Practice published by the NSW Work Cover Authority or Safe Work Australia, and any amendments from time to time by the Authorities, including although not limited to:

- Excavation Work
- Managing Electrical Risks in the workplace
- How to manage and control asbestos in the workplace

(Please refer to https://www.workcover.nsw.gov.au/law-and-policy/legislation-and-codes/codes-of-practice).

When digging in the vicinity of **electrical assets** persons should observe the requirements of the **Electricity Supply Act 1995.**
Persons excavating near live underground electrical reticulation and/or earthing cables **must exercise extreme caution at all times and adhere to the requirements of Essential Energy's Electrical Safety Rules.** (These are available on our website: http://www.essentialenergy.com.au/content/safety-community and include

- **Work near Essential Energy's Underground Assets:**
  http://www.essentialenergy.com.au/asset/cms/pdf/contestableWorks/CEOP8041.pdf , and
- **Asbestos Fact Sheet**:
  http://www.essentialenergy.com.au/asset/cms/pdf/safety/AsbestosFactSheet.pdf

In some situations these procedures call for work to be performed by authorised staff.
Should there be any doubt as to the exact location of any underground electrical assets, and the potential for conflict with live underground cables caused by excavation at your work site, you should contact **13 23 91** to arrange for an on-site visit by an Essential Energy representative**.** No construction or mechanical excavation work is to commence prior to this on-site visit and approval being obtained.

When digging in the vicinity of **water or sewer assets** persons should observe the requirements of the **Water Management Act 2000.**
Should there be any doubt as to the exact location of any underground water and sewer assets, and the potential for conflict with underground water and sewer pipes caused by excavation at your work site, you should contact **13 23 91** to arrange for an on-site visit**.** No construction or excavation work is to commence prior to this on-site visit and approval being obtained.

Prior Notification:
Please note that for excavation depths greater than 250mm near power poles and stays you should allow for **advance notice** in your construction program to permit Essential Energy time to allocate the necessary field resources to carry out the inspection at the site a **minimum of fourteen (14) working days prior to work commencing**. This service may incur a fee and this can be negotiated with the local Area Coordinator at the time of making the appointment. Failure to give reasonable notice to the local Area Coordinator may result in disruption to Essential Energy's planned works program in the district and could incur an extra charge over and above the normal rate for this service.

For further information please call 13 23 91.

www.essentialenergy.com.au
ABN 37 428 185 226
PO Box 5730 Port Macquarie NSW 2444
Telephone: 13 23 91 Facsimile: 1800 354 636

ELECTRICITY SAFETY WHILE EXCAVATING

When working near underground electrical infrastructure

NSW legislation requires people who are planning to do excavation work to obtain copies of underground electricity cable plans through Dial Before you Dig (Phone 1100) and to make sure that the plans are no more than 30 days old when excavation commences.

The aim of the legislation is to ensure that when workers dig or drive items near underground electricity cables, ducting, and pipes, they will establish the exact location of the cables and thus avoid coming into contact with them or damaging them. These items carry vital services such as electricity, water, gas and communications, and establishing their location before digging will help ensure worker safety and prevent damage to the network which may cause disruption of essential services to local communities.

Excavate safely and protect underground assets

Dial Before You Dig (DBYD) is the first step to excavating safely. You should use DBYD when you will be undertaking (but not restricted to) the following:

- Any excavation using machinery digging deeper than 150mm. This includes but is not restricted to back hoes, excavators, borers & kanger hammers (ploughing or ripping activities)
- Any excavation using hand tools deeper than 300mm which includes shovels, spades and crow bars
- Any vertical or horizontal boring.

Note: The above examples are general and may not cover all situations in the regulations where a DBYD would be required e.g. driving metal posts in the ground.

Regardless of the size of your project you should lodge an enquiry with DBYD before commencing work. This applies to small tasks like backyard landscaping, driving items into the ground as well as heavy work such as directional boring or directional drilling. DBYD strive to respond to enquiries within two business days.

Dial Before You Dig

- Phone 1100
- Web www.1100.com.au
- Download the DBYD iPhone app

DIAL BEFORE YOU DIG
www.1100.com.au
The Essential First Step

When a DBYD has been obtained, contact Essential Energy on **13 23 91** to identify any underground pipes and/or cables in the vicinity of excavation works to be carried out. Allow at least **two weeks or 10 working days advance notice** in your construction program to permit Essential Energy time to allocate the necessary field resources to carry out an onsite inspection if required. This service may incur a fee & should be stated at the time of making the appointment.

In the event the excavation does not commence within 28 days of receipt of a plan, a new plan should be obtained. The excavator **must** retain the plans on site for the duration of the excavation works.

Your responsibility

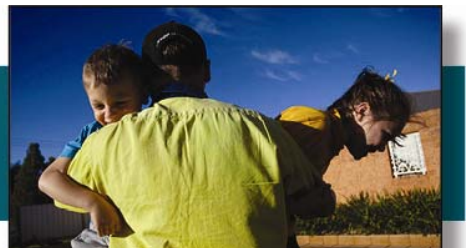
All individuals have a duty of care they must observe when working in the vicinity of underground cables, ducts and pipes. Be aware of the requirement set out in the latest WorkCover Codes of Practice 'Work near Underground Assets Guideline' and 'Work near Overhead Powerlines' which can be viewed at **www.workcover.nsw.gov.au** or you can purchase a copy of the Code of Practice by contacting WorkCover on 1300 799 003.

You should also be familiar with Essential Energy's operational procedures 'Work near Essential Energy's underground assets' CEOP8041 and 'Construction work near electricity network' CEOP1116, which can be found at essentialenergy.com.au/construction

- Employers: If you're an employer or employing someone to excavate, complete construction or drive items into the ground even at home you have a legal obligation to ensure their safety
- Excavators: It is the excavator's responsibility to visually expose the underground pipes and cables manually before any construction begins.

Note – when excavating involving high pressure water or compressed air to break up the ground, which is then removed by a powerful vacuum unit to expose critical utilities after they have been electronically located to confirm identity, size, number of services and depth, checks should be carried out to ensure the pressure is acceptable for all cables and other assets which may be found prior to commencing pot holing by this method. Warning: CONSAC cables shouldn't be potholed by this method and must be de-energised before any work carried out near them. It's recommended to only use air/vacuum equipment to pot hole that operates at or less than 13,790Kpa (2000psi).

Be safe, because they need you



No Go Zone for powered excavation

Extract from WorkCover "**Work near Underground Assets**"

TABLE 1: Types of assets and limits of underground approach

Assets	Clearances	No Go Zone for Powered Excavation	Controls	Typical Depths
Low voltage electricity cables – voltages less than or equal to 1000V (1kV)	Close proximity with the use of hand tools	300 mm	Must contact asset owner for specific conditions	450 – 750 mm
Electricity conductors from 11,000V (11kV) up to 33,000V (33 kV)	Close proximity with the use of hand tools	600 mm	Must contact asset owner for specific conditions	900 mm
Underground sub-transmission cables 33,000V up to 132,000V (132 kV)	Must contact asset owner	Must contact asset owner	Must be carried out under the supervision of the asset owner	900 mm
High Voltage Electricity cables – voltages from 1000V (1kV) up to (33 kV)	Close proximity with the use of hand tools	Must contact asset owner	Must contact asset owner for specific conditions	600 – 1000 mm
Extra High Voltage Electricity Transmission cables – voltages above (132 kV) and 330,000V (330 kV)	Must contact asset owner	Must contact asset owner	Work must be carried out under the supervision of the asset owner	800 – 1200 mm

How to expose cables or pipes

Location plans provide an indication of the presence of underground assets only; they do not pinpoint the exact location. This is why manual exposure is required, which can be done by potholing. Underground assets must first be exposed by pot-holing with non-conductive tools to identify their location. Excavation with hand tools shall be carried out carefully up to, but not closer than, the minimum distances specified in Table 1. Several potholes may need to be dug manually to determine and satisfy yourself of the exact locations of cables or pipes to avoid any mishaps. Manual pot-holing needs to be undertaken with extreme care, common sense and while employing techniques least likely to damage cables. For example, orientate shovel blades and trowels parallel to the cable rather than digging across the cable. Look out for sand, plastic strips or specially marked bricks when excavating, which signal the presence of underground cables.

Only once all underground assets have been located, marked and protected against damage can the excavation proceed with caution.

No Go Zone for powered excavation

Directional boring is powered excavation and contact with the asset owner must be made before excavation takes place. For directional boring across the line of an asset a minimum clearance of **300 mm** from the asset shall be maintained. When boring across the line of an underground asset, the location of the asset/s shall be positively proven by hand digging (pot-holing) or by another approved method and a safety observer appointed.

Note: Where the risk assessment identifies a potential risk of making contact with either underground assets, safety observer/s would be required. The safety observer's responsibility is to ensure that approach distances from underground and overhead assets are maintained.

For boring under electricity cables, the only true way of knowing where the directional drill is, is to "see" it. It is necessary to excavate a slit trench at right angles to the approaching drill and 500mm deeper than the asset being protected and beside the cables to confirm the depth of the cables and ensure the drill is not within the minimum approach distance of the cable (specified in Table 1).

For directional boring parallel to the asset and at the level of the asset, a clearance of **500 mm** shall be maintained from the edge of the nearest asset and pot holed at 10m intervals to ensure clearances are maintained with a safety observer appointed.

The four Ps of safe excavation

1. Plan – Plan your job. Use the Dial Before You Dig service before your job is due to begin to help keep your project safe. Contact Essential Energy on 13 23 91 to identify any underground pipes and/or cables in the vicinity
2. Pothole – Potholing (digging by hand) is a method to assist in establishing the exact location of all underground infrastructure. Only use air/vacuum equipment to pot hole that operates at or less than 13,790Kpa (2000psi)
3. Protect - Protecting and supporting exposed infrastructure is the excavator's responsibility. Always erect safety barriers in areas at risk to protect underground networks
4. Proceed – But ONLY when you have planned, potholed and put the protective measures in place.

Digging safely

You cannot be too careful when it comes to safe excavation. Avoiding underground ducting pipe and cable damage is as simple as having the right tools, the right skills and the right information.

- Study the plans you receive from asset owners thoroughly
- Check to see if they relate to the area you requested and make sure you understand them. If you are unclear about what the symbols mean or how to proceed, contact the relevant network owner
- Check the work area for other forms of electrical equipment, including street lights, ground substations, phone boxes or traffic lights – all good indicators that underground cables will be present
- Remember underground cables can also be present even if overhead powerlines have been identified
- Never assume the depth or alignment of pipes and cables. Installed networks assets may not have been installed in a straight line
- Always observe any instructions stated on the plans provided by the asset owner
- Remember, plans and maps identifying the location of underground cables and depths can alter after road upgrades or developments and underground assets may be as little as a few millimetres below the surface
- Other service lines (for example gas mains (pipes) and communication cables) can also be present. Shared trenches are frequently used on underground runs to premises
- New electrical cables are sometimes laid using existing old conduits
- Various methods of protecting underground cables may be utilised (for example electrical bricks, conduits, concrete or flat PVC barriers) or may be direct buried or installed by under-boring methods which may have no visual disturbance of the ground
- Ensure overhead & electrical structures aren't undermined during excavation.

Earth cables

Earth cables are an important part of all electrical installations and have two main purposes:

- To safeguard against the possibility of danger to life
- To maintain the good working order of the electrical network.

They can have potentially dangerous electrical current flowing through them. Usually they have a green and yellow covering but could be a bare cable buried directly in the ground.

Even if the map provided does not show underground cables, earth cables may be present. These earth cables are usually associated with electrical equipment located on the pole such as transformers, switching equipment, permanent earthing points or Padmount / kiosk subs.

It's recommended that if any excavation is to take place within **10m** of a power pole with a cable running down it into the ground, contact is made with Essential Energy on **13 23 91** to have the earthing system located. While an effort is made to install the earthing under the powerline and guy if installed, sometimes circumstances may require a variation to this, so done assume where they are installed. The distance and configuration that the earthing cable is installed varies due to the soil conditions and system type (e.g. Single wire earth return (SWER)).

Additional earthing electrodes stakes may be installed to ensure the required earthing reading is obtained.

WARNING:SWER installations

- Contacting SWER earthing can be deadly
- Voltage is present on SWER transformer earthing systems either at 12.7 kV or 19.1kV
- NO excavation is allowed within 10 metres of a SWER transformer pole.

Excavating around electrical poles

Anyone intending to excavate around any electrical item risks serious injury or death as a result of contact with underground cables or the earthing system.

Assets around poles

For excavation depths greater than 250mm near power poles and stays you must arrange for an Essential Energy representative to attend the worksite 2 weeks prior to work commencing. Call Essential Energy on 13 23 91. More information is available in Essential Energy's operational procedure, 'Work near Essential Energy's underground assets: CEOP8041' which can be found at essentialenergy.com.au/construction

Unless otherwise agreed, underground assets and other obstructions around poles are to be kept a minimum distance of 300mm from the periphery of the pole, to allow inspections by the asset owner employees.

No excavation within 10 metres of a SWER transformer pole is to occur without the approval of the local electricity asset owner. It should be noted that the NSW Service and Installation Rules require a sketch of the underground service/consumers mains to be marked inside the switchboard.

The risks are higher for those earthing systems of the SWER constructions as the earthing is utilised as the return path.

Be safe, because they need you

Typically any electrical item installed on a pole will have an earth wire running down the pole into the ground, which includes:

- Transformers in urban and rural situations
- Isolation, protection and regulation items.

Transformers located on the ground (padmount and kiosk), besides having underground electrical cables, will have an earthing system installed around them.

Damaged earthing

If an earth cable has been damaged, maintain a clearance of eight (8) meters and contact Essential Energy on 13 23 91. **DONT ATTEMPT** to re-join the cable - this will place you at serious risk.

Operating near underground cables and earths

- Underground cables should never be moved or relocated unless under the express authority of the organisation or person responsible for the powerlines
- The excavator shall report all damage made to Essential Energy assets immediately. Damage includes: gouges, dents, holes and gas escapes
- Never undermine poles, cables, earthing cable, pad-mount and kiosk substations.

Above: Poles with become unstable if undermined

Make sure it can't go wrong

You should ensure that people at work, their equipment (tools and plant) or materials do not come within close proximity to underground powerlines unless:

- A written risk assessment has been completed and a safe system of work implemented
- The relevant safety precautions and worker training requirements, including WorkCover Codes of Practice and Essential Energy's requirements, have been implemented and complied with.

If working in close proximity to underground cables is unavoidable and the risk assessment has been completed, the following should be considered to control the risks and ensure work safety:

- Have the power switched off by Essential Energy
- Consider all conductors as live unless it is positively known they have been de-energised
- Where appropriate, provide ground markings to identify location and warn workers of the presence of underground power and other assets.

Emergency situations

In the event that contact with an underground powerline occurs or cables are exposed or damaged, remembering the following points could help save a life:

- If the situation is at all life threatening, immediately contact the Emergency Services on 000 (triple zero)
- Call Essential Energy's 24-hour supply interruptions line – **13 20 80** to switch off the power if required or report damage or exposure cables / conduits

- If any other underground assets are damaged you should contact the affected asset owners immediately
- Treat underground cables as alive, even if they appear to be dead
- Keep everyone at least eight metres away from the incident site, the person or any machinery making contact with underground cable

- Don't panic or touch the person receiving the electric shock – this could place you at risk
- Untrained, unequipped persons should not attempt to rescue a person receiving an electric shock. All too often secondary deaths occur when others go to the aid of earlier victims
- Remain on/inside the machinery until the supply is disconnected
- If possible, break contact between the machinery and underground cable.

For more information

Essential Energy's Public Safety team is available to facilitate Electrical Awareness sessions and discuss any questions relating to electrical safety. For more information on electrical safety please call

- Essential Energy General Enquiries 13 23 91
- Essential Energy Supply Interruptions 13 20 80
- WorkCover NSW 13 10 50
- Dial Before You Dig www.1100.com.au 1100
- Follow us
- or visit essentialenergy.com.au/safety

Safety first: Before you dig or drive items into the ground

1. Contact DBYD
2. DO NOT attempt to excavate with in 10m of any power pole or electrical item
3. Contact Essential Energy on 13 23 91 for assistance to locate cables and earthing
4. Locate asset: Pot-hole
5. Proceed only if you have satisfied yourself it is safe.

Be safe, because they need you

APPENDIX D – DIAL BEFORE YOU DIG – BALLINA SHIRE COUNCIL

Enquiries refer
Civil Services Group
in reply please quote
DBYD Sequence No : 56224356

11/10/2016

Mr Michiel Kamphorst
PO Box 161
Lennox Head, NSW
2478

Dear Mr Michiel Kamphorst

Re: Dial Before You Dig -
Dulcet Lane, Alstonville

I refer to your notification through the 1100 Dial Before You Dig service requesting the location of Ballina Shire Council's underground assets.

Affected Infrastructure:	Council's Assets
DBYD Sequence Number:	56224356
DBYD Job No:	11351959
Location of Works:	Dulcet Lane, Alstonville

Caution!

DO NOT COMMENCE EXCAVATION BEFORE CALLING CIVIL SERVICES GROUP ON (02) 6686 4444

Civil Services Group
Ballina Shire Council

www.ballina.nsw.gov.au
Telephone: (02) 6686 4444

P.T.O

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Please read and understand all the information below.

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- For the location of private utility services, Ballina Shire Council suggests contracting a qualified services locator.

DUTY OF CARE

- It is an offence to destroy survey marks under Section 24 of the Surveying Act 2002, with significant penalties payable to the Surveyor General and third parties. Please review the Land & Property Information > Surveying > Surveying Services > Survey Marks All About Protecting Them for all requirements.
- When digging in the vicinity of underground assets, persons should observe the requirements of the Work Near Underground Assets Guideline published by the Work Cover Authority and other relevant guidelines and legislation.
- When excavating in Ballina Shire Council area, it is the responsibility of the owner or any consultant or contractor engaged by the owner to always obtain plans from the Council at least five days prior to the commencement of work.
- Dig safely. Prior to commencement of mechanical excavation, underground assets must be located by non evasive excavation e.g. pot holing, vacuum excavation.
- It is an offence to pollute waters. In the case of contamination of the excavation with sediment or de-watering, you will need to refer to Section 120 of *Protection of the Environment Operations Act*, 1997. If De-watering, an application for a groundwater licence (under part 5 of the *Water Act 1912*) is required from the NSW Office of Water.
- Any information displayed incorrectly on Council's plans should immediately be reported to Civil Services Group on **(02) 6686 4444**.

ANY DAMAGE TO A COUNCIL ASSET MUST BE IMMEDIATELY REPORTED TO BALLINA SHIRE COUNCIL ON (02) 6686 4444 or AFTER HOURS ON (02) 6626 6954

Council reserves the right to recover compensation for loss or damage and repairs costs to any of its assets irrespective of provision of plans or undertaking locations on site.

FURTHER ASSISTANCE

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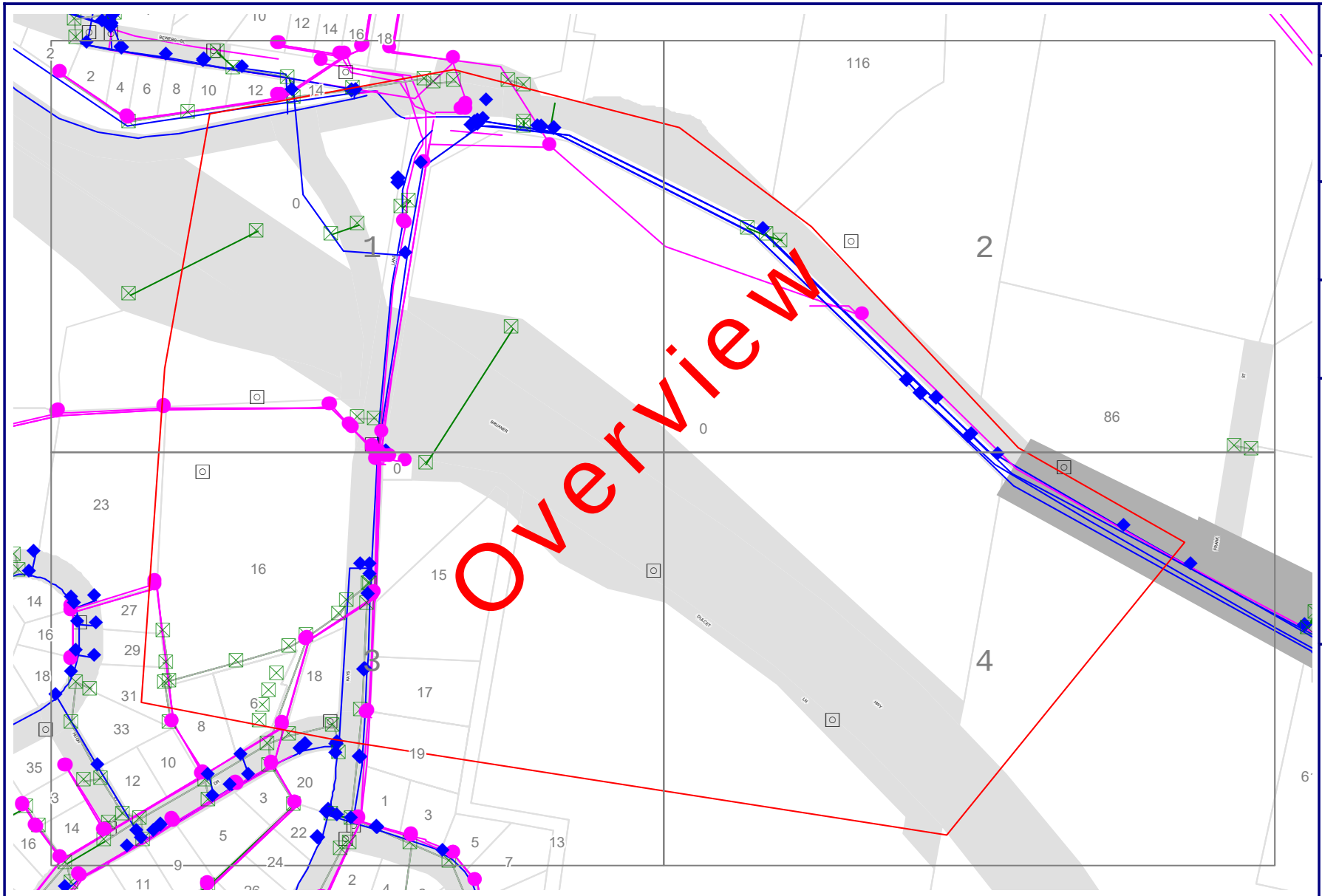
DIAL BEFORE YOU DIG www.1100.com.au
The Essential First Step.



Legend

WATER

- Water
- Recycled Water

SEWER

- Sewer

STORMWATER

- Stormwater

OTHER

- Information not complete
- SCIMS Survey Control Point
- Property Boundary ID: House Number (4)
- Road Reserve
- Rivers

DIAL BEFORE YOU DIG www.1100.com.au
The Essential First Step.

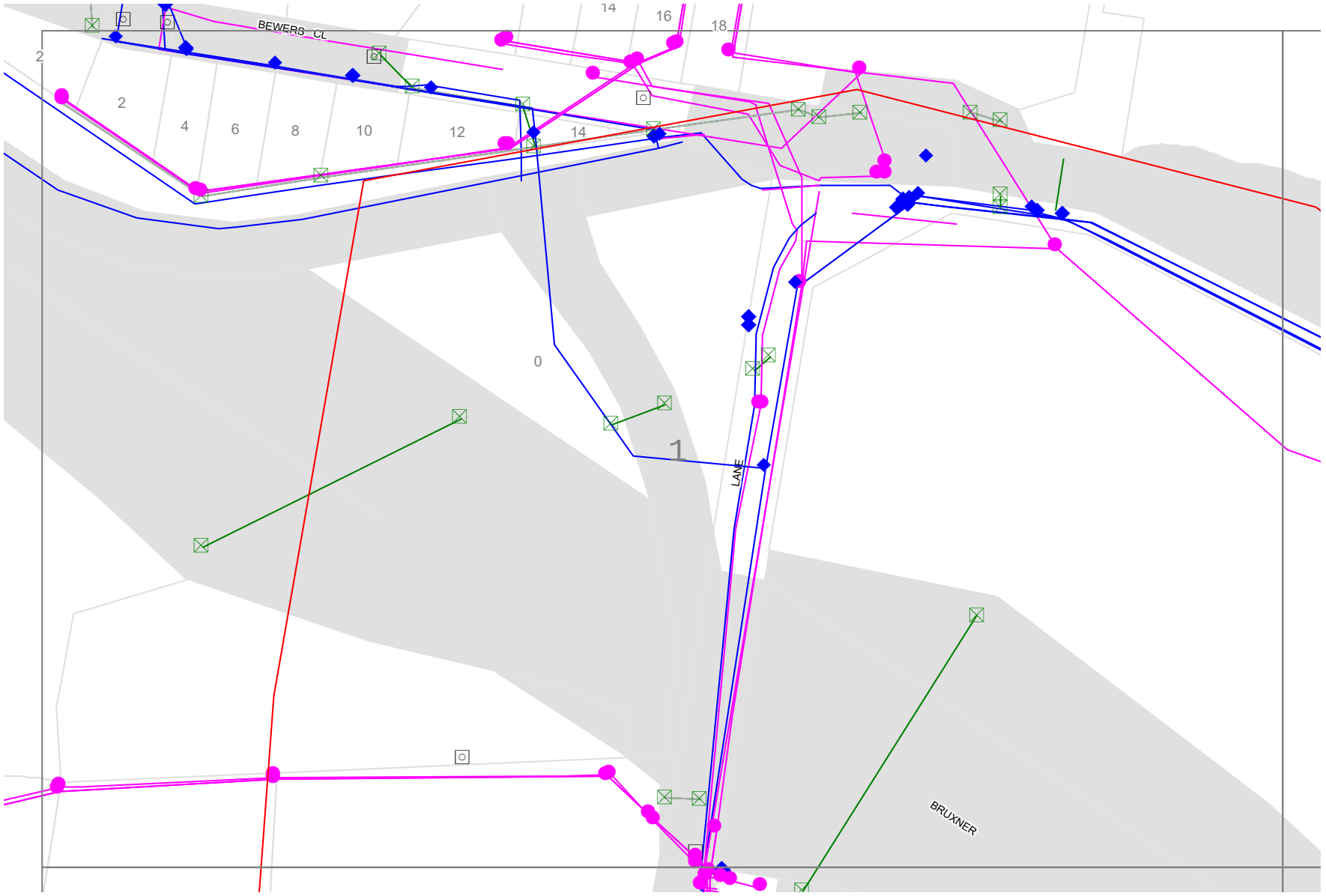
N W E S
Not to scale

Affected Infrastructure :	Council Assets
DBYD Sequence Number :	56224356
DBYD Job Number :	11351959
Location of Works :	Dulcet Lane, Alstonville, NSW, 2477

For all enquiries contact :
Civil Services Group
(02) 6686 4444
www.ballina.nsw.gov.au

ballina shire council

ISSUE DATE : 11/10/2016



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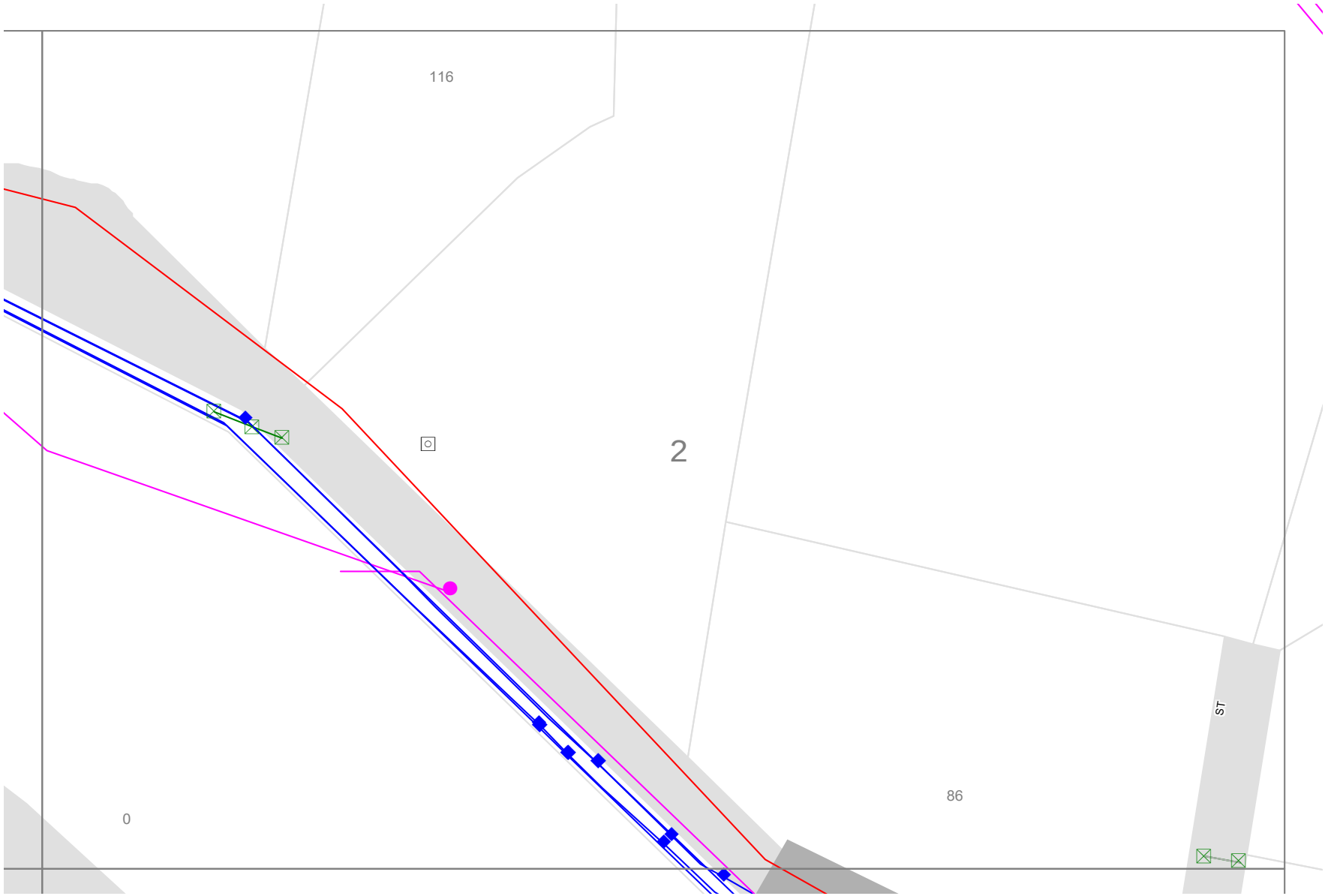

Legend

WATER

- Water
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SEWER

- Sewer

STORMWATER

- Stormwater

OTHER

- Information not complete
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- 4 — Property Boundary ID: House Number
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- Rivers

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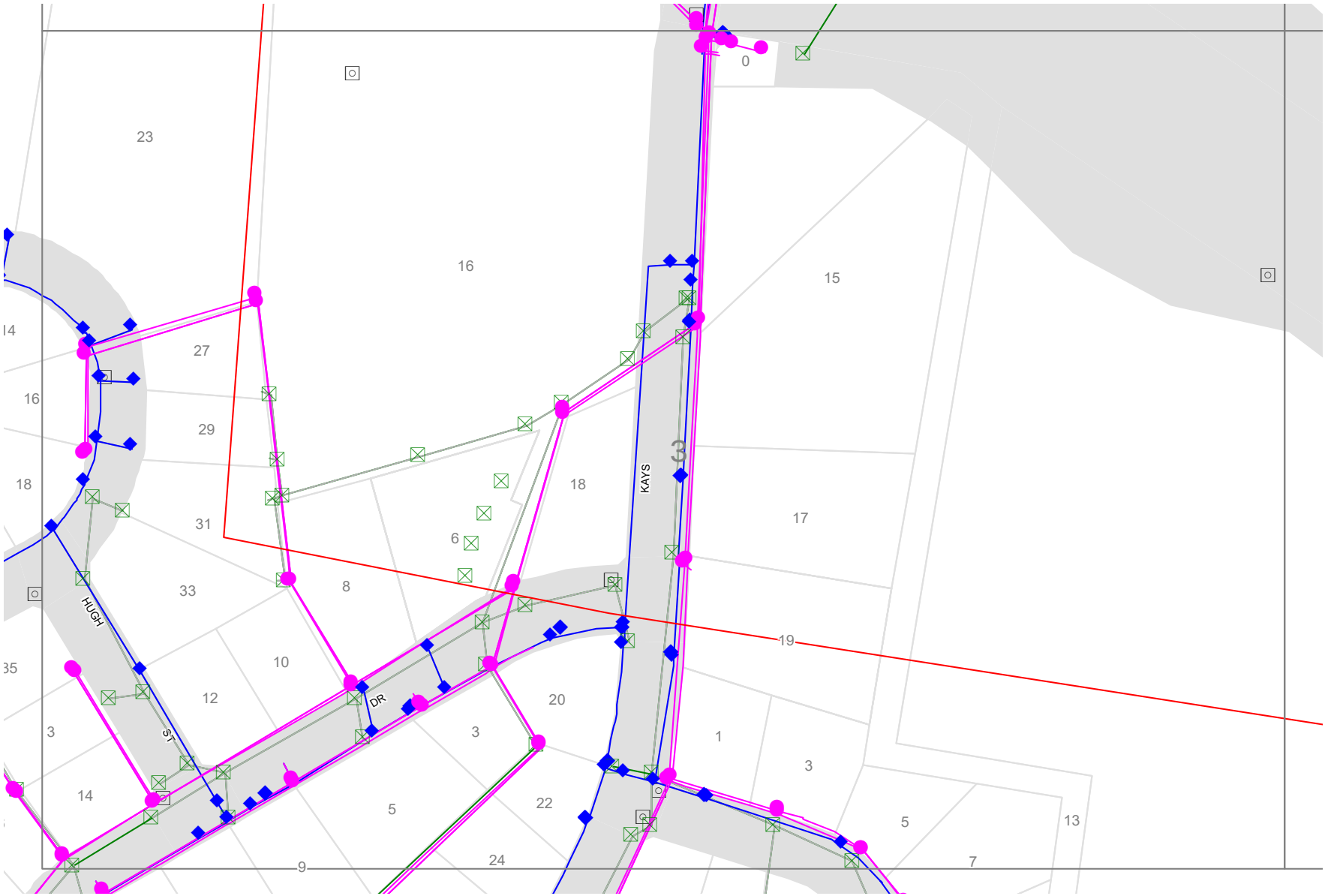

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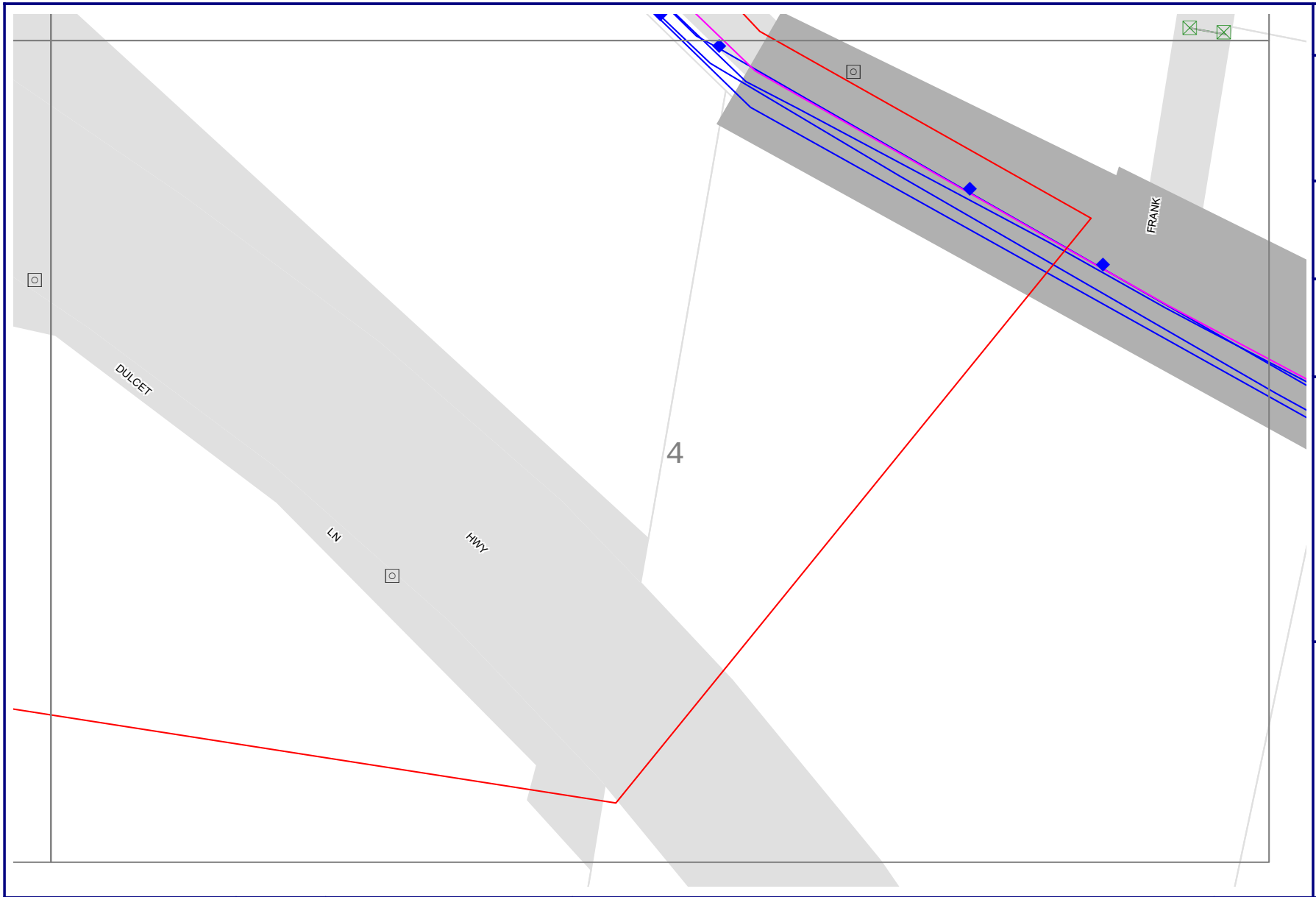

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SEWER

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STORMWATER

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OTHER

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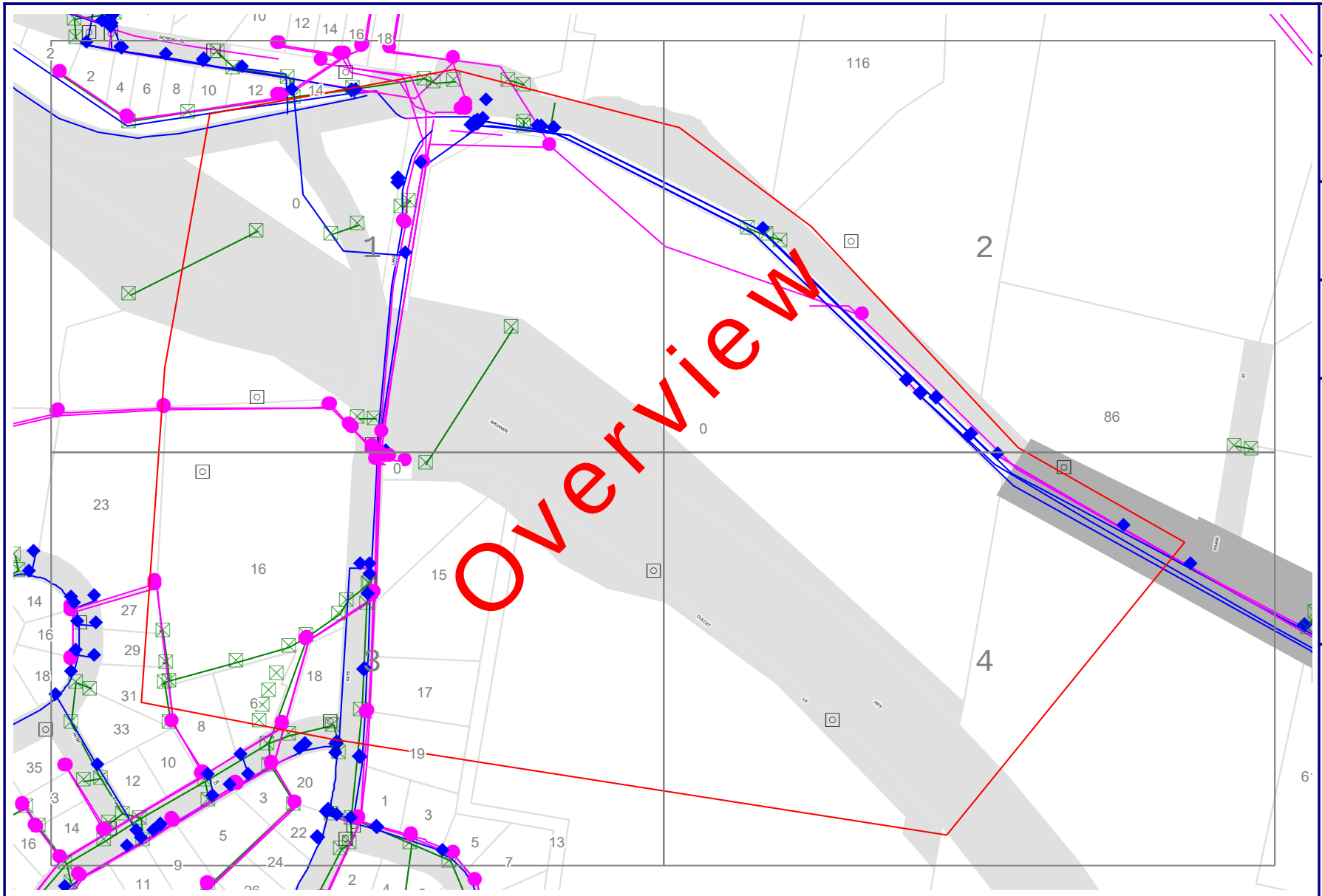

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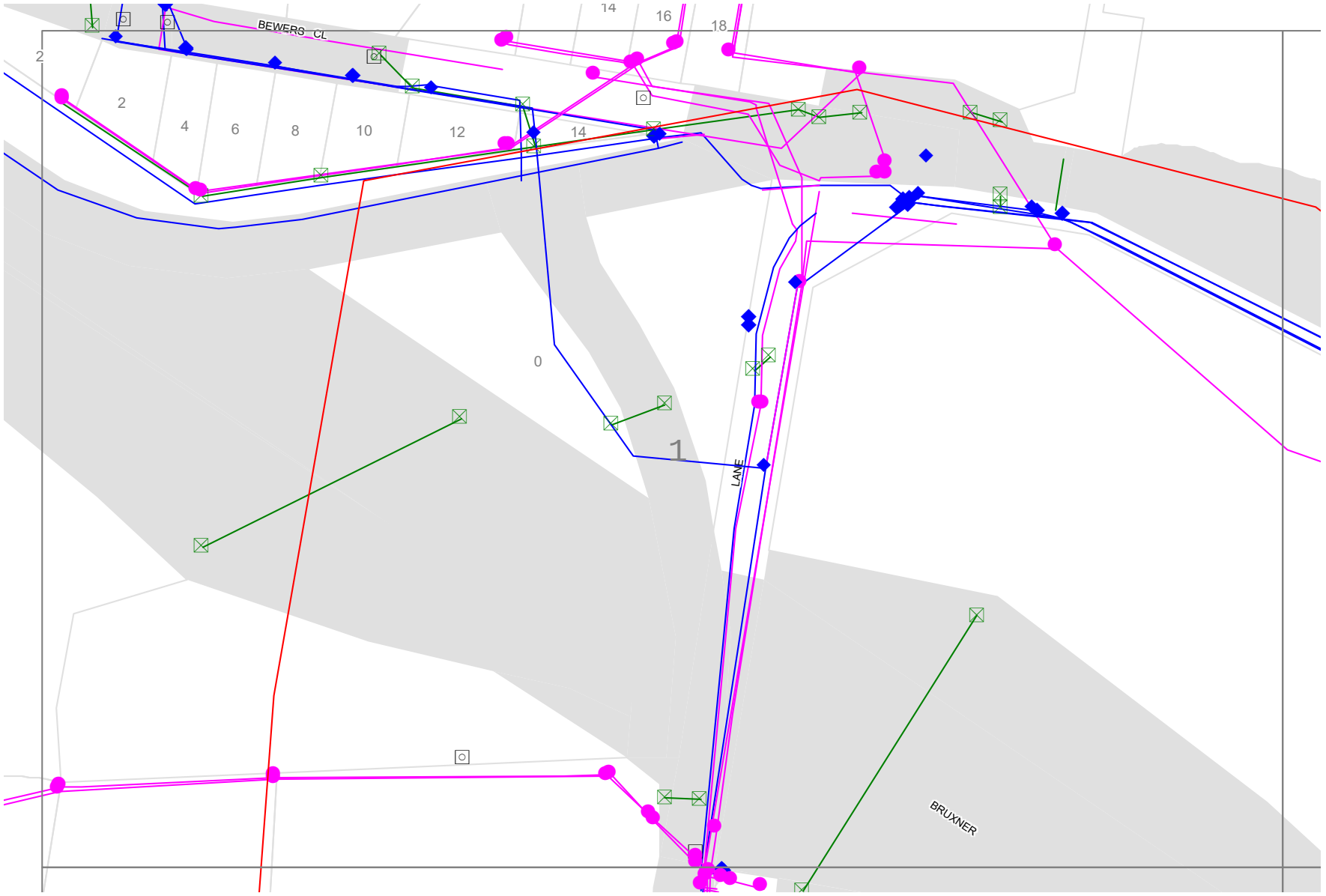

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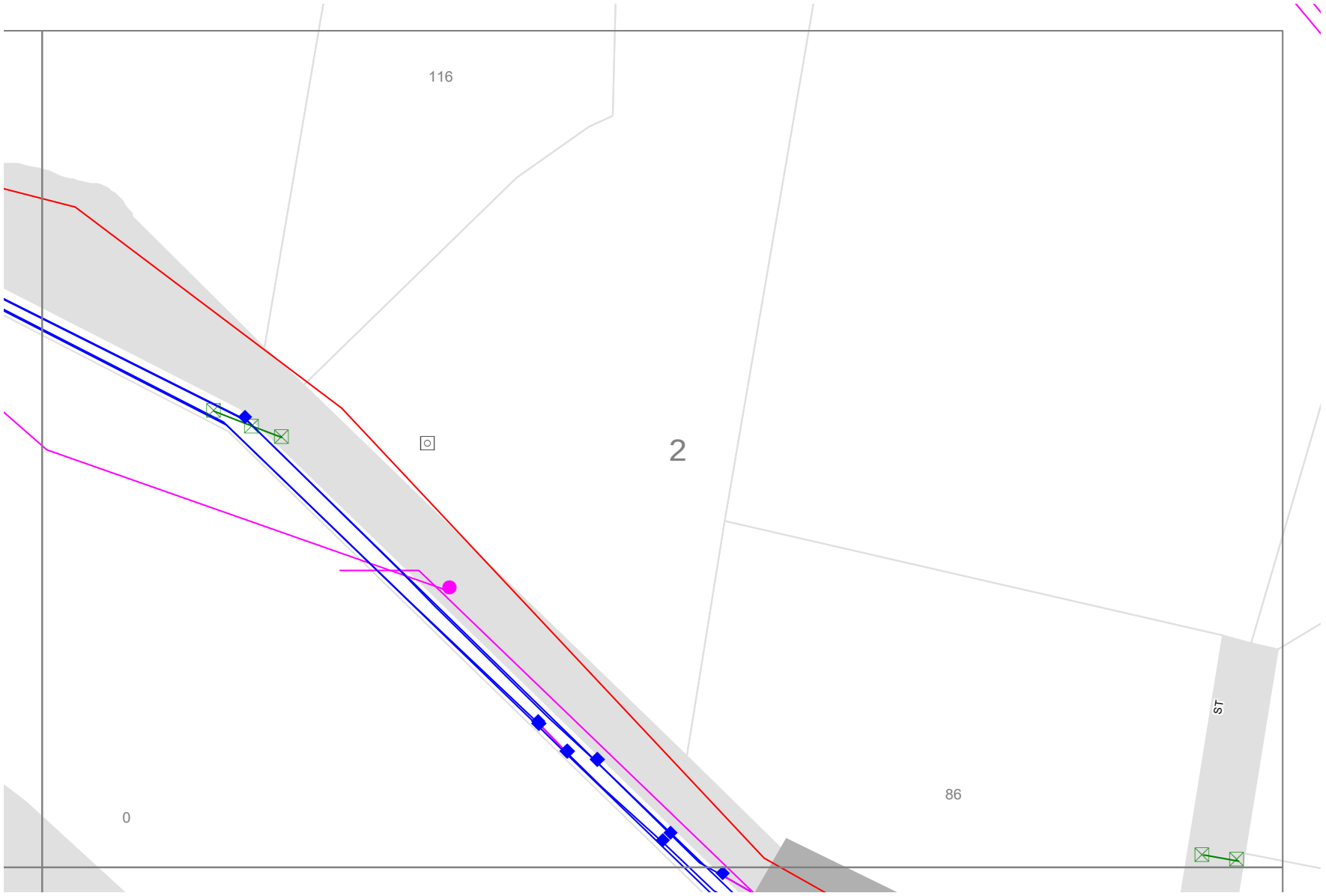

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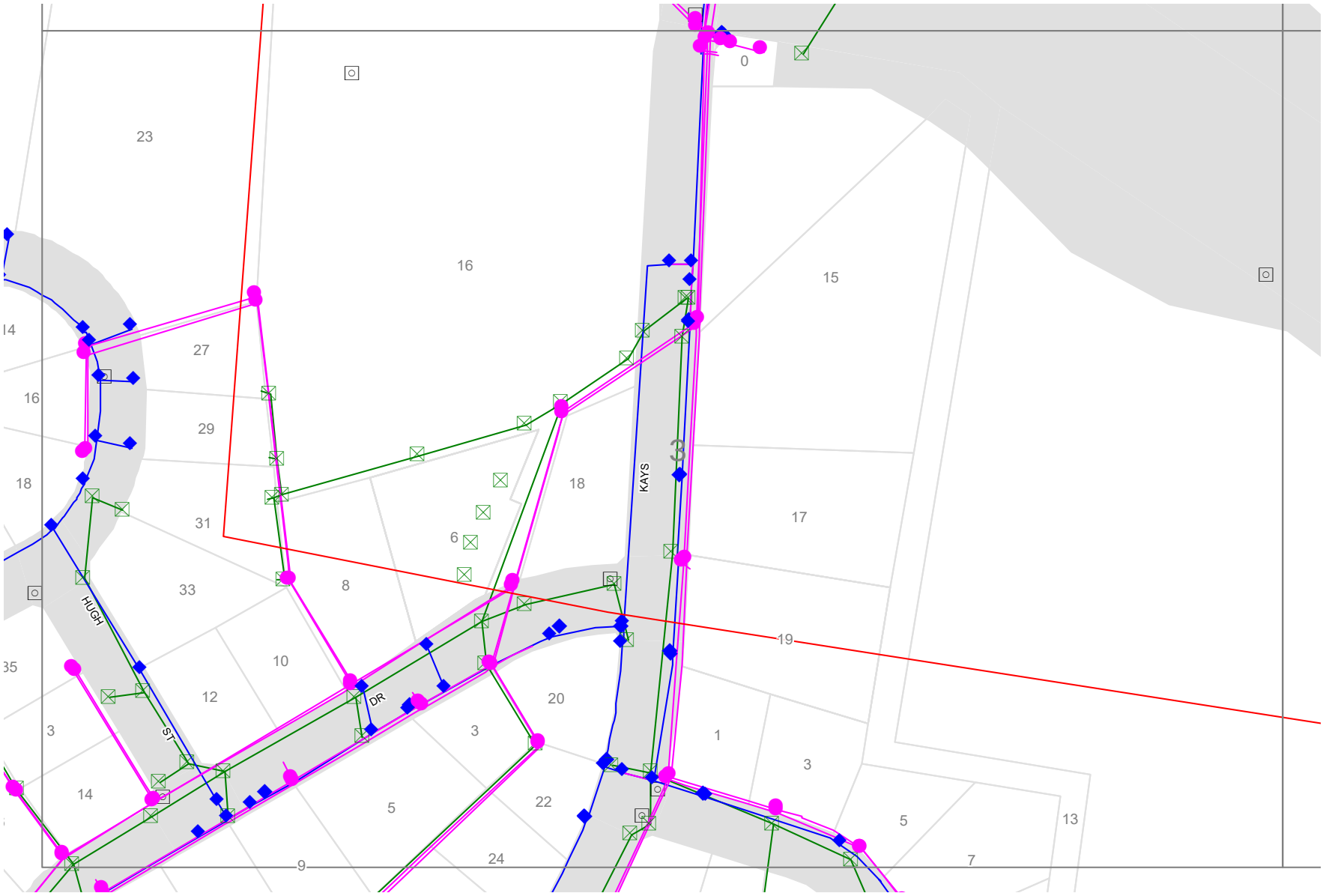

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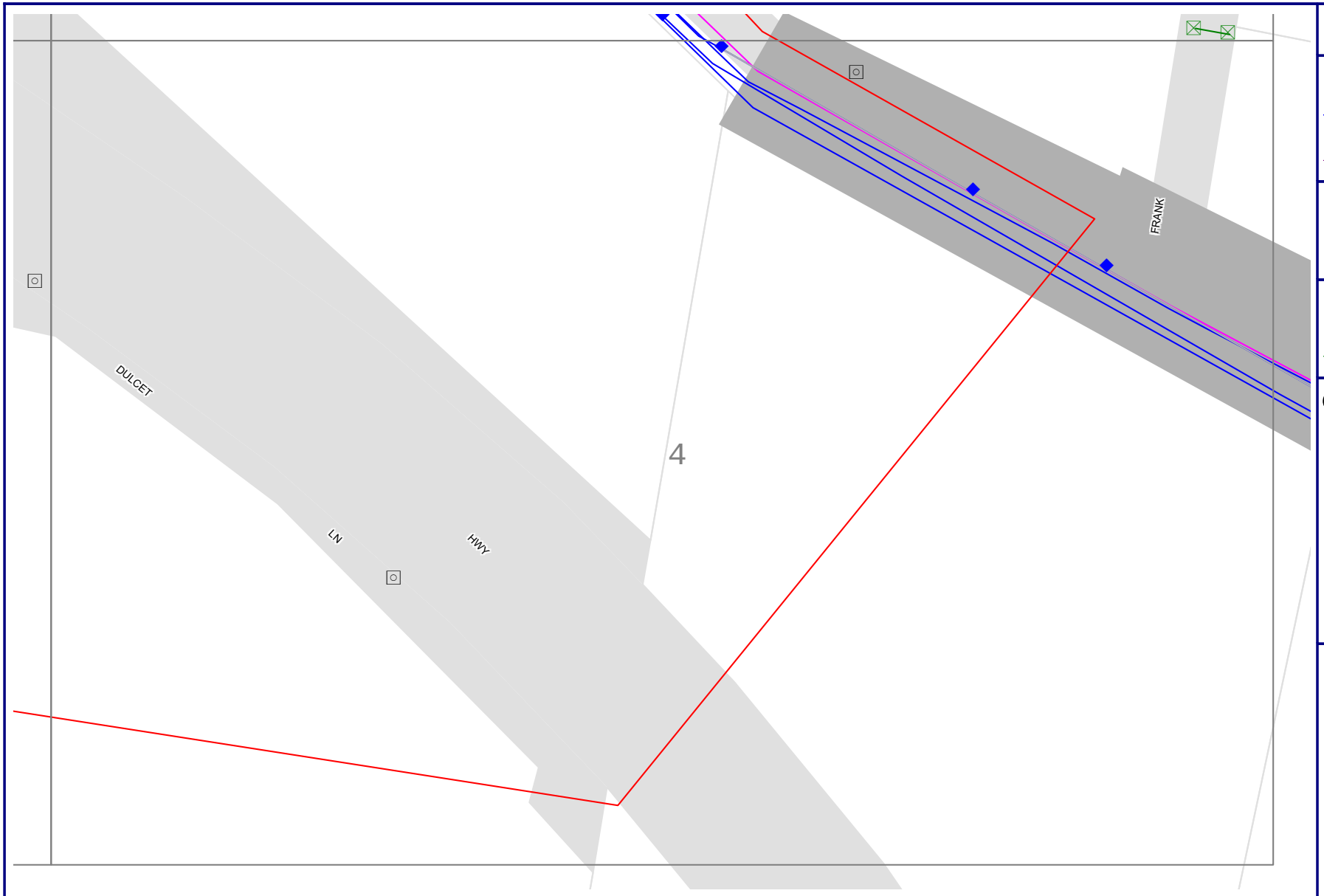

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ISSUE DATE : 11/10/2016

Enquiries refer
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in reply please quote
DBYD Sequence No : 56224356

11/10/2016

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PO Box 161
Lennox Head, NSW
2478

Dear Mr Michiel Kamphorst

Re: Dial Before You Dig -
Dulcet Lane, Alstonville

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Affected Infrastructure:	Council's Assets
DBYD Sequence Number:	56224356
DBYD Job No:	11351959
Location of Works:	Dulcet Lane, Alstonville

Please find attached your requested plan(s).

It is important that all attached material is read and understood prior to proceeding with any works. Please also note that a Section 138 Roads Act Approval is required prior to any works in the road(s). This form is available on Ballina Shire Council's website.

Please contact the Civil Services Group on (02) 6686 4444 if you have any questions regarding underground assets.

Civil Services Group
Ballina Shire Council

www.ballina.nsw.gov.au

P.T.O

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APPENDIX E – PRELIMINARY OSD CALCULATIONS

Project : Verandah Lifestyle Estate, Wollongbar
Ref. No. : J5105
Description : Detention required for site

Pre-development Discharge Rate

Catchment Area		5.20 ha
Design ARI		100 years
Fraction Impervious (F_i)		0.8
Rainfall Intensity for 1 hr duration, 10 yr ARI ($^1I_{10}$)		58.9 mm/hr
Co-efficient of Runoff (refer QUDM 2007 section 4.05)		0.83
Time of Concentration (t_c) (refer QUDM section 4.06.6c)		21.57 mins
Overland sheet flow path length (m)	360	
Horton's surface roughness factor (n)	0.045	
Slope of surface (%)	10.0	
Rainfall Intensity for 100yr ARI		160.46 mm/hr

Pre-development Discharge Rate (Q = C.I.A)	*(peak outflow rate)*	1924 L/sec
	Volume	2490 m^3

Post-development Discharge Rate

Q = C x I x A	C	I	A
Catchment 1 - Roof	1.0	287.13	2.08
Catchment 2 - Impervious	1.0	287.13	2.08
Catchment 3 - Pervious (Porous Paving)	0.5	287.13	0
Catchment 4 - Pervious (Grid Pavers)	0.2	287.13	0
Catchment 5 - Garden/Grass	0.3	287.13	1.04
Total Catchment Area			5.20 ha
Design ARI			100 years
Fraction Impervious (F_i)			0.8
Rainfall Intensity for 1 hr duration, 10 yr ARI ($^1I_{10}$)			58.9 mm/hr
Co-efficient of Runoff (refer QUDM 2007 section 4.05)			1.0
Time of Concentration (t_c) (refer QUDM section 4.06.6c)			5.00 mins
#REF!			287.13 mm/hr

Post-development Discharge Rate (Q = C.I.A)	*(peak inflow rate)*	3567 L/sec
	Volume	1070 m^3

Detention Basin Sizing (preliminary)

Reduction ratio (r) (refer QUDM Section 5.05.1)		0.46
Method: Culp (1948)		315.7 m^3
Method: Boyd (1989)		492.9 m^3
Method: Carroll (1990)		326.8 m^3
Method: Basha (1994)		404.3 m^3
	Maximum	492.9 m^3

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 7
LEP Amendment Request
Planning Proposal
Urban Growth Variation Criteria Assessment
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

Attachment 7 – Urban Growth Area Variation Principles

Policy	The variation needs to be consistent with the objectives and outcomes in the North Coast Regional Plan 2036 and any relevant Section 117 Directions and State Environmental Planning Policies, and should consider the intent of any applicable local growth management strategy

Comment:

While the proposal does rely on a variation to the Urban Growth Area Principles, this planning proposal request seeks to demonstrate that this variation has merit.

The proposal would provide new housing supply and diversity on land which adjoins an existing urban settlement and in an area particularly suited for affordable and seniors housing opportunity. Development of the land would not impact significant environmental, aboriginal or farmland resources and would maintain a clear inter-urban break between the villages of Alstonville and Wollongbar. Development of the site is aligned with existing infrastructure. Extensions to existing services would not generate additional cost to government.

The proposal in this regard, and as discussed throughout this planning proposal request is consistent with the objectives and outcomes in the North Coast Regional Plan, is justified against the relevant section 9.1 (former 117) Directions and SEPPs and meets the intent of the Ballina local growth management strategy.

Infrastructure	The variation needs to consider the use of committed and planned major transport, water and sewerage infrastructure, and have no cost to government. The variation should only be permitted if adequate and cost-effective infrastructure can be provided to match the expected population.

Comment:

The site is located on the periphery of the Wollongbar residential area. Power and telecommunication services are currently available to the property.

Preliminary engineering assessments have been undertaken to determine various civil matters including traffic and access, water and sewer reticulation, stormwater drainage, electricity and communications.

Environmental and Farmland Protection	The variation should avoid areas: • of high environmental or heritage value; and • mapped as important farmland, unless consistent with the interim variation criteria prior to finalising the farmland mapping review.

Comment:

<u>Environmental or heritage value</u>

The site is predominantly clear of vegetation and used low scale grazing purposes. The likelihood of the land containing high environmental or heritage value is low.

With that said, measures to protect areas of vegetation and cultural significance can be determined under any future DA that seeks to undertake works onsite. The concept plan particularly indicates that the adjoining existing mature vegetation in the north west of the site, as well as the natural drainage areas onsite can be protected as part of the site's redevelopment.

Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or development controls are required to manage it.

Important farmland

The site is mapped as important farmland. The use of the land as a manufactured home estate is consistent with the Important Farmland Interim Variation Criteria as discussed under **Attachment 9** of this planning proposal request.

The proposal is supported by an agricultural land use capability assessment which also confirms that the land is not capable of supporting sustainable agricultural production.

Land Use Conflict	The variation must be appropriately separated from incompatible land uses, including agricultural activities, sewage treatment plants, waste facilities and productive resource lands.

Comment:

Roadways, including the Bruxner Highway, a township, an industrial precinct and rural residential land border the site. The site is therefore physically separated from workable horticultural farm land.

Mature vegetation barriers exist along Lismore Road, which assist horticultural activities on land to the north and reduce conflict between these two land uses. Similar vegetation barriers exist in the area, where horticultural activities are occurring adjacent to the townships of Wollongbar and Alstonville. Further screening of the site would be provided through vegetation planting along the site's boundaries, as indicated in the concept plan for the site.

The proposal is supported by an agricultural land use capability assessment which confirms that a manufactured home estate on the land would not increase the likelihood of conflict and does not impact on current or future agricultural activities in the locality.

The site does not adjoin nor is it close to any sewage treatment plant, waste facilities or land mapped as containing mineral resources.

Avoiding Risks	The variation must avoid physically constrained land identified as: • flood prone; • bushfire-prone; • highly erodible; • having a severe slope; and • having acid sulfate soils

Comment:

The site is not flood prone, not highly erodible, not steep nor subject to acid sulfate soils.

It is within a bushfire prone buffer area, associated with existing mature vegetation located to the north of Lismore Road. Lismore Road in this regard establishes a formalised and perpetually maintained asset protection zone between the site and this bushfire prone vegetation.

Further bushfire protection measures can be accommodated on the land through design measures such as setting residential sites back from existing vegetation, perimeter roadways, cleared open space areas and water supply. Over 80m setback to the existing vegetation is indicated in the concept plan for the site. Consultation with the NSW Rural Fire Service will be requirement under this planning proposal process and should be undertaken post Gateway determination.

The northern portion of the site is mapped as erodible / landslip land by Council. This is associated with the drainage areas which traverse this northern part of the site. As indicated in the concept development plan, the actual manufactured home estate (dwellings, roadways and facilities) would be setback from this drainage area to ensure it does not impact on natural drainage flows in the area. The proposal would in this regard be setback from 'landslip land'. This erodible land does not preclude servicing the site either.

Heritage	The variation must protect and manage Aboriginal and non-Aboriginal heritage.
Comment: The site is cleared and used for low scale grazing purposes. It is surrounded by land which has been developed for infrastructure, urban or rural residential purposes. The likelihood of aboriginal significance on the land is low. Measures to manage cultural significance can be investigated and determined under any future DA that seeks to undertake works onsite. Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or development controls are required to manage it.	
Coastal Area	Only minor and contiguous variations to urban growth areas in the coastal area will be considered due to its environmental sensitivity and the range of land uses competing for this limited area.
Comment: The site is not within the coastal area. While not a rezoning, the site is contiguous with urban growth area land and not environmentally sensitive land.	

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 8
LEP Amendment Request
Planning Proposal
Farmland Variation Criteria Assessment
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

Attachment 8 Important Farmland Interim Variation Criteria

Land may be suitable for other uses other than farmland if:	
Agricultural Capability	• The land is isolated from other important farmland and is not capable of supporting sustainable agricultural production
Comment: The site is 7ha in area. It is bound by Lismore Road to the north and the Alstonville Bypass/Bruxner Highway to the south. Immediately, south of the Bruxner Highway is the Russellton Industrial Precinct. Immediately north east of Lismore Road is the residential area of Wollongbar. The site is physically disassociated with the workable horticultural farm land further to the north and south-east, making continued or even intensified agricultural use difficult. This is a direct result of the construction of the Bruxner Highway. The proposal is supported by an agricultural land use capability assessment which confirms that the land is not capable of supporting sustainable agricultural production.	
Land use conflict	• The land use does not increase the likelihood of conflict and does not impact on current or future agricultural activities in the locality
Comment: Roadways, a township, an industrial precinct and rural residential land border the site. The site is therefore physically separated from workable horticultural farm land. Mature vegetation barriers exist along Lismore Road, which assist horticultural activities on land to the north and reduce conflict between these two land uses. Similar vegetation barriers exist in the area, where horticultural activities are occurring adjacent to the townships of Wollongbar and Alstonville. Further screening of the site would be provided through vegetation planting along the site's boundaries, as indicated in the concept plan for the site. The proposal is supported by an agricultural land use capability assessment which confirms that a manufactured home estate on the land would not increase the likelihood of conflict and does not impact on current or future agricultural activities in the locality.	
Infrastructure	• The delivery of infrastructure (utilities, transport, open space, communications and stormwater) required to service the land is physically and economically feasible at no cost to State and Local Government
Comment: The site is located on the periphery of the Wollongbar residential area. Power and telecommunication services are currently available to the property. Preliminary engineering assessments have been undertaken to determine various civil matters including traffic and access, water and sewer reticulation, stormwater drainage, electricity and communications.	
Environment and heritage	• The proposed land uses do not have an adverse impact on areas of high environmental value, and Aboriginal or historic heritage significance
Comment: The site is predominantly clear of vegetation and used for low scale grazing purposes. It is surrounded by land which has been developed for infrastructure or urban purposes. The	

likelihood of aboriginal significance on the land is low and the concept development plan indicates that mature vegetation to the north west of the site would be retained.

Measures to manage cultural significance can be investigated and determined under any future DA that seeks to undertake works onsite. Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or development controls are required to manage it.

Avoiding risk	• Risks associated with physically constrained land are identified and avoided, including:
	  • flood prone;
	  • bushfire-prone;
	  • highly erodible;
	  • severe slope; and
	  • acid sulfate soils.

Comment:

The site is not flood prone, not highly erodible, not steep nor subject to acid sulfate soils.

It is within a bushfire prone buffer area, associated with existing mature vegetation located to the north of Lismore Road. Lismore Road in this regard establishes a formalised and perpetually maintained asset protection zone between the site and this bushfire prone vegetation.

Further bushfire protection measures can be accommodated on the land through design measures such as setting residential sites back from existing vegetation, perimeter roadways, cleared open space areas and water supply. Over 80m setback to the existing vegetation is indicated in the concept plan for the site. Consultation with the NSW Rural Fire Service will be requirement under this planning proposal process and should be undertaken post Gateway determination.

The northern portion of the site is mapped as erodible / landslip land by Council. This is associated with the drainage areas which traverse this northern part of the site. As indicated in the concept development plan, the actual manufactured home estate (dwellings, roadways and facilities) would be setback from this drainage area to ensure it does not impact on natural drainage flows in the area. The proposal would in this regard be setback from 'landslip land'. This erodible land does not preclude servicing the site either.

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 9
LEP Amendment Request
Planning Proposal
Soil Samples
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

ORIENTATION

SCALE 1:1 600

20 40 60 80 metres

ROBINA

PO Box 4115 Robina QLD4230 07 5578 9944
Email robina@access.gs **www.access.gs**

LEGEND

- Borehole location
- Observation location
- Site boundary

SOURCES

Image: Google Earth Pro 2016
Site Boundary: NSW Globe, NSW Government

PROJECT	CLIENT	DRAWING
PRELIMINARY AGRICULTURAL LAND ASSESSMENT	GREENLIFE PROPERTIES PTY LTD C/- PLANIT CONSULTING	BOREHOLE AND OBSERVATION LOCATIONS

SCALE	DATE	DRAWN	CHECKED	PROJECT	DRAWING	REVISION
1:1 600@A3	21/11/2017	AJS	PLM	11777	001	-

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/3) **light clay**; very few, fine gravelly, angular tabular charcoal fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.2			Dark reddish brown (5YR 3/4) **light clay**; few, fine gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.2 – 0.3				
0.3 – 0.4				
0.4 – 0.5				
0.5 – 0.6				
0.6 – 0.7			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; firm consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural
0.7 – 0.8				
0.8 – 0.9				
0.9 – 1				
1 – 1.1				

BOREHOLE

BH1

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	1.2mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	AAK	**EASTING**	541750
LOCATION	Alstonville, NSW	**DRILL METHOD**	Hand Auger	**LOGGED BY**	AAK	**NORTHING**	6810432

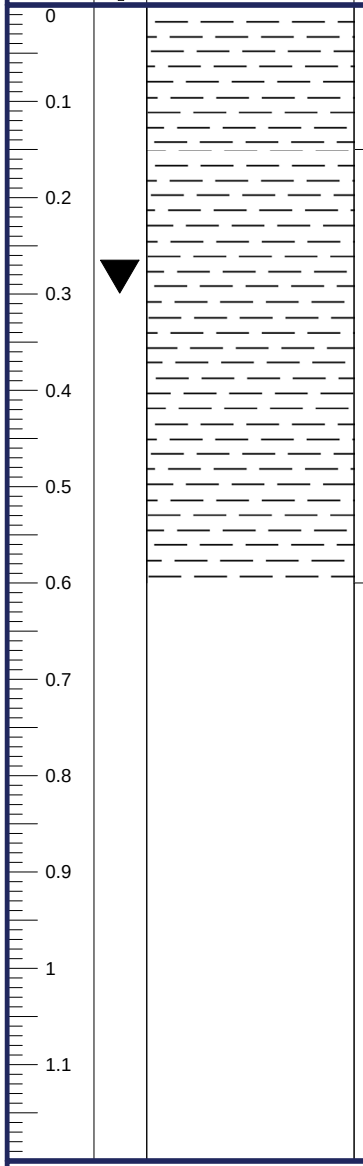
GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/4) **light clay**; no coarse fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.5			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular tabular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.5 – 1.1			Dark reddish brown (5YR 3/4) **light clay**; no coarse fragments; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural

BOREHOLE BH2

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	1.2mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	AAK	**EASTING**	541601
LOCATION	Alstonville, NSW	**DRILL METHOD**	Hand Auger	**LOGGED BY**	AAK	**NORTHING**	6810505

GILBERT SUTHERLAND



SOIL DESCRIPTION	ORIGIN
Very dark greyish brown (10YR 3/2) **light medium clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; wet; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; clear change to;	Natural
Dark yellowish brown (10YR 4/4) **light medium clay** with clear transitions to many, medium sized, distinct, dark yellowish brown (10YR 3/6) and sharp boundaries to few, fine sized, distinct, black (10YR 2/1) mottles; few, coarse gravelly, angular coarse fragments that are the same as the substrate material; wet; moderate, 2-5mm subangular blocky structure; weak consistence; few, very fine roots; borehole terminated at 0.6mBGL due to refusal on coarse gravel.	Natural

BOREHOLE BH3

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0.6mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	AAK	**EASTING**	541471
LOCATION	Alstonville, NSW	**DRILL METHOD**	Hand Auger	**LOGGED BY**	AAK	**NORTHING**	6810681

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Very dark greyish brown (10YR 3/2) **light medium clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; wet; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; clear change to;	Natural
0.1 – 0.4	▼		Dark yellowish brown (10YR 4/4) **light medium clay** with clear transitions to many, medium sized, distinct, dark yellowish brown (10YR 3/6) and sharp boundaries to few, fine sized, distinct, black (10YR 2/1) mottles; few, coarse gravelly, angular coarse fragments that are the same as the substrate material; wet; moderate, 2-5mm subangular blocky structure; weak consistence; few, very fine roots; borehole terminated at 0.4mBGL due to refusal on coarse gravel.	Natural

0.4 0.5 0.6 0.7 0.8 0.9 1 1.1

BOREHOLE

BH3A

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0.6mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	AAK	**EASTING**	541472
LOCATION	Alstonville, NSW	**DRILL METHOD**	Hand Auger	**LOGGED BY**	AAK	**NORTHING**	6810682

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/3) **light clay**; very few, fine gravelly, angular tabular charcoal fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.6			Dark reddish brown (5YR 3/4) **light clay**; few, fine gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.6 – 1.1			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; firm consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural

BOREHOLE OBS1

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541497
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810647

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0			Dark greyish brown (10YR 4/2) **medium clay** hydrosol; no coarse fragments; wet; moderate, 2-5mm subangular blocky structure; firm consistence; many, very fine roots.	Natural
0.1				
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8				
0.9				
1				
1.1				

BOREHOLE OBS2

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541442
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810708

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0			Dark greyish brown (10YR 4/2) **medium clay** hydrosol; no coarse fragments; wet; moderate, 2-5mm subangular blocky structure; firm consistence; many, very fine roots.	Natural
0.1				
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8				
0.9				
1				
1.1				

BOREHOLE OBS3

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541577
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810681

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0			Dark greyish brown (10YR 4/2) **medium clay** hydrosol; no coarse fragments; wet; moderate, 2-5mm subangular blocky structure; firm consistence; many, very fine roots.	Natural
0.1				
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8				
0.9				
1				
1.1				

BOREHOLE

OBS4

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541650
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810587

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/3) **light clay**; very few, fine gravelly, angular tabular charcoal fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.6			Dark reddish brown (5YR 3/4) **light clay**; few, fine gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.6 – 1.1			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; firm consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural

BOREHOLE OBS5

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541730
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810523

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/3) **light clay**; very few, fine gravelly, angular tabular charcoal fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.2			Dark reddish brown (5YR 3/4) **light clay**; few, fine gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.2 – 0.3				
0.3 – 0.4				
0.4 – 0.5				
0.5 – 0.6				
0.6 – 0.7			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; firm consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural
0.7 – 0.8				
0.8 – 0.9				
0.9 – 1				
1 – 1.1				

BOREHOLE

OBS6

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541800
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810404

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/3) **light clay**; very few, fine gravelly, angular tabular charcoal fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.2			Dark reddish brown (5YR 3/4) **light clay**; few, fine gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.2 – 0.3				
0.3 – 0.4				
0.4 – 0.5				
0.5 – 0.6				
0.6 – 0.7			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; firm consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural
0.7 – 0.8				
0.8 – 0.9				
0.9 – 1				
1 – 1.1				
1.1				

BOREHOLE

OBS7

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541593
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810585

GILBERT SUTHERLAND

DEPTH (mBGL)	GROUNDWATER	GRAPHIC LOG	SOIL DESCRIPTION	ORIGIN
0 – 0.1			Dark brown (7.5YR 3/3) **light clay**; very few, fine gravelly, angular tabular charcoal fragments; dry; moderate, <2mm subangular blocky structure; firm consistence; abundant, very fine roots; gradual change to;	Natural
0.1 – 0.2			Dark reddish brown (5YR 3/4) **light clay**; few, fine gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; weak consistence; many, very fine roots; diffuse change to;	Natural
0.2 – 0.3				
0.3 – 0.4				
0.4 – 0.5				
0.5 – 0.6				
0.6 – 0.7			Dark reddish brown (5YR 3/4) **light clay**; very few, medium gravelly, angular coarse fragments that are the same as the substrate material; moderately moist; moderate, 2-5mm subangular blocky structure; firm consistence; few, very fine roots; borehole terminated at 1.2mBGL.	Natural
0.7 – 0.8				
0.8 – 0.9				
0.9 – 1				
1 – 1.1				
1.1				

BOREHOLE

OBS8

CLIENT	Greenlife Properties Pty Ltd C/- Planit Consulting	**PROJECT No.**	11777	**TOTAL DEPTH**	0mBGL	**DRILL DATE**	26-Sep-17
PROJECT	Preliminary Agricultural Land Assessment	**SURFACE RL**	Not surveyed	**DRILLED BY**	N/A	**EASTING**	541820
LOCATION	Alstonville, NSW	**DRILL METHOD**	Observation	**LOGGED BY**	AAK	**NORTHING**	6810485

GILBERT SUTHERLAND

Attachment 2 – Soil sample laboratory certificates

Phosyn Analytical, 1/60 Junction Road,
Andrews, Queensland 4220, Australia
Tel: +61 7 5568 8700
Fax: +61 7 5522 0720
Email: phosynanalytical@phosyn.com.au

Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 0-50

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-001 / SCB1408

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.9
pH [1:5 CaCl2]	4.9
Organic Matter (%)	19.8
CEC (meq/100g)	7.85
EC [1:5 H2O] (dS/m)	0.09
NO3-N (ppm)	12.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	30
Potassium[Am. Acet.] (meq/100g)	0.63
Calcium[Am. Acet.] (meq/100g)	4.11
Magnesium[Am. Acet.] (meq/100g)	2.77
Sulphur [MCP] (ppm)	34
Boron[CaCl2] (ppm)	0.8
Copper [DTPA] (ppm)	1.2
Iron [DTPA] (ppm)	114
Manganese [DTPA] (ppm)	33.4
Zinc [DTPA] (ppm)	5.7
Sodium[Am. Acet.] (meq/100g)	0.2
Aluminium[KCl] (meq/100g)	0.18
Chloride (ppm)	46
Ca base saturation (%)	52.4
K base saturation (%)	8.1
Mg base saturation (%)	35.2
Na base saturation (%)	1.9
Al base saturation (%)	2.30

Date Printed : 04/10/2017

Phosyn Analytical, 1/60 Junction Road,
Andrews, Queensland 4220, Australia
Tel: +61 7 5568 8700
Fax: +61 7 5522 0720
Email: phosynanalytical@phosyn.com.au

Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 0-50

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-001 / SCB1408

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.5
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	17.0
Sodium (ppm)	35.0
Calcium (ppm)	823.0
Magnesium (ppm)	332.0
Potassium (ppm)	248.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

You should consult your local agronomist/consultant before deciding upon any course of action based on this report. Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

Please Note

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Date Printed : 04/10/2017

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Andrews, Queensland 4220, Australia
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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 50-150

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-002 / SCB1409

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.9
pH [1:5 CaCl2]	4.8
Organic Matter (%)	15.3
CEC (meq/100g)	4.11
EC [1:5 H2O] (dS/m)	0.05
NO3-N (ppm)	8.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	28
Potassium[Am. Acet.] (meq/100g)	0.54
Calcium[Am. Acet.] (meq/100g)	2.18
Magnesium[Am. Acet.] (meq/100g)	1.18
Sulphur [MCP] (ppm)	57
Boron[CaCl2] (ppm)	0.5
Copper [DTPA] (ppm)	0.9
Iron [DTPA] (ppm)	76
Manganese [DTPA] (ppm)	16.4
Zinc [DTPA] (ppm)	1.8
Sodium[Am. Acet.] (meq/100g)	0.1
Aluminium[KCl] (meq/100g)	0.10
Chloride (ppm)	28
Ca base saturation (%)	53.2
K base saturation (%)	13.2
Mg base saturation (%)	28.8
Na base saturation (%)	2.4
Al base saturation (%)	2.40

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C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 50-150

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-002 / SCB1409

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.8
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	9.0
Sodium (ppm)	22.0
Calcium (ppm)	436.0
Magnesium (ppm)	142.0
Potassium (ppm)	212.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 150-300

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-003 / SCB1410

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.4
pH [1:5 CaCl2]	4.5
Organic Matter (%)	11.8
CEC (meq/100g)	1.57
EC [1:5 H2O] (dS/m)	0.04
NO3-N (ppm)	4.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	24
Potassium[Am. Acet.] (meq/100g)	0.21
Calcium[Am. Acet.] (meq/100g)	0.67
Magnesium[Am. Acet.] (meq/100g)	0.36
Sulphur [MCP] (ppm)	156
Boron[CaCl2] (ppm)	0.3
Copper [DTPA] (ppm)	0.5
Iron [DTPA] (ppm)	43
Manganese [DTPA] (ppm)	3.8
Zinc [DTPA] (ppm)	0.3
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.30
Chloride (ppm)	21
Ca base saturation (%)	42.4
K base saturation (%)	13.1
Mg base saturation (%)	22.9
Na base saturation (%)	2.6
Al base saturation (%)	19.00

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Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 150-300

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-003 / SCB1410

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.9
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	27.0
Sodium (ppm)	< 18.4
Calcium (ppm)	134.0
Magnesium (ppm)	43.0
Potassium (ppm)	80.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 300-600

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-004 / SCB1411

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.1
pH [1:5 CaCl2]	4.5
Organic Matter (%)	10.1
CEC (meq/100g)	0.93
EC [1:5 H2O] (dS/m)	0.03
NO3-N (ppm)	3.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	27
Potassium[Am. Acet.] (meq/100g)	0.05
Calcium[Am. Acet.] (meq/100g)	0.41
Magnesium[Am. Acet.] (meq/100g)	0.18
Sulphur [MCP] (ppm)	225
Boron[CaCl2] (ppm)	0.3
Copper [DTPA] (ppm)	0.2
Iron [DTPA] (ppm)	29
Manganese [DTPA] (ppm)	1.4
Zinc [DTPA] (ppm)	0.1
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.27
Chloride (ppm)	20
Ca base saturation (%)	44.0
K base saturation (%)	5.0
Mg base saturation (%)	19.0
Na base saturation (%)	3.0
Al base saturation (%)	29.00

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ROBINA
QLD

Sample Ref BH01 300-600

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-004 / SCB1411

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	2.3
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	24.0
Sodium (ppm)	< 18.4
Calcium (ppm)	82.0
Magnesium (ppm)	21.0
Potassium (ppm)	18.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH01 600-1000

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-005 / SCB1412

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.0
pH [1:5 CaCl2]	4.6
Organic Matter (%)	8.1
CEC (meq/100g)	0.80
EC [1:5 H2O] (dS/m)	0.04
NO3-N (ppm)	2.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	22
Potassium[Am. Acet.] (meq/100g)	0.02
Calcium[Am. Acet.] (meq/100g)	0.53
Magnesium[Am. Acet.] (meq/100g)	0.07
Sulphur [MCP] (ppm)	384
Boron[CaCl2] (ppm)	0.2
Copper [DTPA] (ppm)	< 0.1
Iron [DTPA] (ppm)	12
Manganese [DTPA] (ppm)	0.4
Zinc [DTPA] (ppm)	< 0.1
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.14
Chloride (ppm)	29
Ca base saturation (%)	66.6
K base saturation (%)	2.5
Mg base saturation (%)	8.6
Na base saturation (%)	4.9
Al base saturation (%)	17.30

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Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
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ROBINA
QLD

Sample Ref BH01 600-1000

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-005 / SCB1412

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	7.7
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	12.0
Sodium (ppm)	< 18.4
Calcium (ppm)	106.0
Magnesium (ppm)	8.0
Potassium (ppm)	8.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
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ROBINA
QLD

Sample Ref BH02 0-50

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-006 / SCB1413

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	6.1
pH [1:5 CaCl2]	5.1
Organic Matter (%)	21.1
CEC (meq/100g)	8.17
EC [1:5 H2O] (dS/m)	0.07
NO3-N (ppm)	8.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	25
Potassium[Am. Acet.] (meq/100g)	0.70
Calcium[Am. Acet.] (meq/100g)	4.54
Magnesium[Am. Acet.] (meq/100g)	2.76
Sulphur [MCP] (ppm)	25
Boron[CaCl2] (ppm)	0.5
Copper [DTPA] (ppm)	1.8
Iron [DTPA] (ppm)	123
Manganese [DTPA] (ppm)	37.6
Zinc [DTPA] (ppm)	4.1
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.09
Chloride (ppm)	35
Ca base saturation (%)	55.6
K base saturation (%)	8.5
Mg base saturation (%)	33.8
Na base saturation (%)	1.0
Al base saturation (%)	1.10

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ROBINA
QLD

Sample Ref BH02 0-50

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-006 / SCB1413

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.6
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	8.0
Sodium (ppm)	< 18.4
Calcium (ppm)	908.0
Magnesium (ppm)	332.0
Potassium (ppm)	272.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH02 50-100

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-007 / SCB1414

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	6.1
pH [1:5 CaCl2]	5.0
Organic Matter (%)	18.1
CEC (meq/100g)	6.50
EC [1:5 H2O] (dS/m)	0.05
NO3-N (ppm)	5.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	20
Potassium[Am. Acet.] (meq/100g)	0.64
Calcium[Am. Acet.] (meq/100g)	3.73
Magnesium[Am. Acet.] (meq/100g)	2.00
Sulphur [MCP] (ppm)	37
Boron[CaCl2] (ppm)	0.4
Copper [DTPA] (ppm)	1.9
Iron [DTPA] (ppm)	91
Manganese [DTPA] (ppm)	25.0
Zinc [DTPA] (ppm)	2.1
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.07
Chloride (ppm)	24
Ca base saturation (%)	57.4
K base saturation (%)	9.8
Mg base saturation (%)	30.8
Na base saturation (%)	0.9
Al base saturation (%)	1.10

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ROBINA
QLD

Sample Ref BH02 50-100

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-007 / SCB1414

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.9
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	6.0
Sodium (ppm)	< 18.4
Calcium (ppm)	747.0
Magnesium (ppm)	240.0
Potassium (ppm)	248.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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QLD

Sample Ref BH02 100-300

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-008 / SCB1415

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.7
pH [1:5 CaCl2]	4.7
Organic Matter (%)	14.6
CEC (meq/100g)	2.43
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	2.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	20
Potassium[Am. Acet.] (meq/100g)	0.17
Calcium[Am. Acet.] (meq/100g)	1.39
Magnesium[Am. Acet.] (meq/100g)	0.72
Sulphur [MCP] (ppm)	64
Boron[CaCl2] (ppm)	0.3
Copper [DTPA] (ppm)	1.1
Iron [DTPA] (ppm)	55
Manganese [DTPA] (ppm)	4.3
Zinc [DTPA] (ppm)	0.3
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.11
Chloride (ppm)	19
Ca base saturation (%)	57.2
K base saturation (%)	7.0
Mg base saturation (%)	29.5
Na base saturation (%)	1.8
Al base saturation (%)	4.60

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Email: phosynanalytical@phosyn.com.au

Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH02 100-300

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-008 / SCB1415

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.9
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	10.0
Sodium (ppm)	< 18.4
Calcium (ppm)	278.0
Magnesium (ppm)	86.0
Potassium (ppm)	67.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

You should consult your local agronomist/consultant before deciding upon any course of action based on this report. Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

Please Note

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AFS/01-44-12 CERTIFIED

ASPAC CERTIFIED

Date Printed : 04/10/2017

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH02 300-550

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-009 / SCB1416

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.6
pH [1:5 CaCl2]	4.8
Organic Matter (%)	11.8
CEC (meq/100g)	2.08
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	2.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	25
Potassium[Am. Acet.] (meq/100g)	0.05
Calcium[Am. Acet.] (meq/100g)	1.27
Magnesium[Am. Acet.] (meq/100g)	0.57
Sulphur [MCP] (ppm)	87
Boron[CaCl2] (ppm)	0.3
Copper [DTPA] (ppm)	0.4
Iron [DTPA] (ppm)	38
Manganese [DTPA] (ppm)	3.4
Zinc [DTPA] (ppm)	0.2
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.15
Chloride (ppm)	13
Ca base saturation (%)	61.3
K base saturation (%)	2.6
Mg base saturation (%)	27.3
Na base saturation (%)	1.5
Al base saturation (%)	7.20

Date Printed : 04/10/2017

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH02 300-550

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-009 / SCB1416

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	2.3
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	14.0
Sodium (ppm)	< 18.4
Calcium (ppm)	255.0
Magnesium (ppm)	68.0
Potassium (ppm)	21.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH02 550-1000

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-010 / SCB1417

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.9
pH [1:5 CaCl2]	5.3
Organic Matter (%)	10.1
CEC (meq/100g)	2.87
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	1.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	28
Potassium[Am. Acet.] (meq/100g)	0.06
Calcium[Am. Acet.] (meq/100g)	1.84
Magnesium[Am. Acet.] (meq/100g)	0.63
Sulphur [MCP] (ppm)	73
Boron[CaCl2] (ppm)	0.1
Copper [DTPA] (ppm)	0.2
Iron [DTPA] (ppm)	22
Manganese [DTPA] (ppm)	2.0
Zinc [DTPA] (ppm)	0.2
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.28
Chloride (ppm)	22
Ca base saturation (%)	64.1
K base saturation (%)	2.2
Mg base saturation (%)	22.0
Na base saturation (%)	1.8
Al base saturation (%)	9.90

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH02 550-1000

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-010 / SCB1417

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	2.9
Texture	SANDY CLAY
Colour	RED BROWN
Aluminium (ppm)	26.0
Sodium (ppm)	< 18.4
Calcium (ppm)	369.0
Magnesium (ppm)	76.0
Potassium (ppm)	25.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

You should consult your local agronomist/consultant before deciding upon any course of action based on this report. Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 0-50

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-011 / SCB1418

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.0
pH [1:5 CaCl2]	4.0
Organic Matter (%)	26.1
CEC (meq/100g)	3.26
EC [1:5 H2O] (dS/m)	0.06
NO3-N (ppm)	< 1.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	19
Potassium[Am. Acet.] (meq/100g)	0.07
Calcium[Am. Acet.] (meq/100g)	0.62
Magnesium[Am. Acet.] (meq/100g)	0.42
Sulphur [MCP] (ppm)	72
Boron[CaCl2] (ppm)	0.4
Copper [DTPA] (ppm)	0.1
Iron [DTPA] (ppm)	574
Manganese [DTPA] (ppm)	0.7
Zinc [DTPA] (ppm)	0.2
Sodium[Am. Acet.] (meq/100g)	0.2
Aluminium[KCl] (meq/100g)	1.99
Chloride (ppm)	32
Ca base saturation (%)	19.0
K base saturation (%)	2.0
Mg base saturation (%)	12.8
Na base saturation (%)	5.1
Al base saturation (%)	61.10

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 0-50

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-011 / SCB1418

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.5
Texture	SANDY LOAM
Colour	BROWN
Aluminium (ppm)	179.0
Sodium (ppm)	38.0
Calcium (ppm)	124.0
Magnesium (ppm)	50.0
Potassium (ppm)	26.0
Lime Requirement (t/ha)	2.38

Additional Comments

You should consult your local agronomist/consultant before deciding upon any course of action based on this report. Soil analyses performed and reported on samples dried at 40ºC and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70ºC and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 50-150

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-012 / SCB1419

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.2
pH [1:5 CaCl2]	4.0
Organic Matter (%)	24.1
CEC (meq/100g)	3.95
EC [1:5 H2O] (dS/m)	0.04
NO3-N (ppm)	< 1.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	21
Potassium[Am. Acet.] (meq/100g)	0.05
Calcium[Am. Acet.] (meq/100g)	0.63
Magnesium[Am. Acet.] (meq/100g)	0.52
Sulphur [MCP] (ppm)	68
Boron[CaCl2] (ppm)	0.4
Copper [DTPA] (ppm)	< 0.1
Iron [DTPA] (ppm)	522
Manganese [DTPA] (ppm)	0.7
Zinc [DTPA] (ppm)	< 0.1
Sodium[Am. Acet.] (meq/100g)	0.2
Aluminium[KCl] (meq/100g)	2.57
Chloride (ppm)	27
Ca base saturation (%)	16.0
K base saturation (%)	1.2
Mg base saturation (%)	13.2
Na base saturation (%)	4.4
Al base saturation (%)	65.20

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 50-150

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-012 / SCB1419

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.2
Texture	SANDY LOAM
Colour	BROWN
Aluminium (ppm)	232.0
Sodium (ppm)	40.0
Calcium (ppm)	126.0
Magnesium (ppm)	62.0
Potassium (ppm)	18.0
Lime Requirement (t/ha)	3.09

Additional Comments

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 150-300

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-013 / SCB1420

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.3
pH [1:5 CaCl2]	4.0
Organic Matter (%)	14.1
CEC (meq/100g)	3.59
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	< 1.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	37
Potassium[Am. Acet.] (meq/100g)	0.02
Calcium[Am. Acet.] (meq/100g)	0.54
Magnesium[Am. Acet.] (meq/100g)	0.50
Sulphur [MCP] (ppm)	31
Boron[CaCl2] (ppm)	0.5
Copper [DTPA] (ppm)	< 0.1
Iron [DTPA] (ppm)	274
Manganese [DTPA] (ppm)	0.5
Zinc [DTPA] (ppm)	< 0.1
Sodium[Am. Acet.] (meq/100g)	0.2
Aluminium[KCl] (meq/100g)	2.36
Chloride (ppm)	18
Ca base saturation (%)	15.0
K base saturation (%)	0.7
Mg base saturation (%)	14.0
Na base saturation (%)	4.6
Al base saturation (%)	65.80

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 150-300

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-013 / SCB1420

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.1
Texture	SANDY LOAM
Colour	BROWN
Aluminium (ppm)	213.0
Sodium (ppm)	38.0
Calcium (ppm)	107.0
Magnesium (ppm)	60.0
Potassium (ppm)	9.0
Lime Requirement (t/ha)	2.84

Additional Comments

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 300-600

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-014 / SCB1421

Crop DATA ONLY

Analysis	Result
pH [1:5 H2O]	5.4
pH [1:5 CaCl2]	4.0
Organic Matter (%)	12.5
CEC (meq/100g)	3.39
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	< 1.0
NH4-N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	48
Potassium[Am. Acet.] (meq/100g)	0.03
Calcium[Am. Acet.] (meq/100g)	0.60
Magnesium[Am. Acet.] (meq/100g)	0.60
Sulphur [MCP] (ppm)	23
Boron[CaCl2] (ppm)	0.5
Copper [DTPA] (ppm)	0.1
Iron [DTPA] (ppm)	216
Manganese [DTPA] (ppm)	0.4
Zinc [DTPA] (ppm)	< 0.1
Sodium[Am. Acet.] (meq/100g)	0.2
Aluminium[KCl] (meq/100g)	1.97
Chloride (ppm)	16
Ca base saturation (%)	17.7
K base saturation (%)	0.9
Mg base saturation (%)	17.7
Na base saturation (%)	5.6
Al base saturation (%)	58.20

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Analysis Results (SOIL)

Customer ALSTONVILLE
C/- GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref BH03 300-600

Date Received 28/09/2017 (Date Sampled: 26/09/2017)

Sample No B099497-014 / SCB1421

Crop DATA ONLY

Analysis	Result
Ca:Mg Ratio	1.0
Texture	SANDY LOAM
Colour	BROWN
Aluminium (ppm)	177.0
Sodium (ppm)	43.0
Calcium (ppm)	120.0
Magnesium (ppm)	72.0
Potassium (ppm)	12.0
Lime Requirement (t/ha)	2.34

Additional Comments

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Date Printed : 04/10/2017

SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 10
Addendum to Planning Proposal Request
Verandah Lifestyle Estate

Ordinary Meeting 27/9/18

5th September 2018

The General Manager
Ballina Shire Council
PO Box 450
BALLINA NSW 2478

Attn: Simon Scott

Planning Proposal Request - Verandah Lifestyle Estate, Wollongbar

Dear Sir,

I am writing on behalf of Greenlife Properties Pty Ltd in relation to the subject planning proposal request.

Our initial request considered the proposed local environmental plan (LEP) amendment against the Alstonville Strategic Plan 2017 – 2037, given the site is technically located in Alstonville and that this Strategic Plan was the only adopted local strategic plan for the area at the time our submission was made.

Given the recent resolution and exhibition of the draft Wollongbar Planning and Environmental Study, we have undertaken a review of this Draft Strategic Study in the context of the proposed LEP amendment. We would appreciate that the information provided below be considered as an addendum to our request and further justification under **Question 4 - Is the planning proposal consistent with the local council's Community Strategic Plan, or other local strategic plan?**

Draft Wollongbar Planning and Environmental Study

Historical Planning

The Draft Strategy provides a detailed history of the planning, population growth and demand for housing in and around Wollongbar. It confirms that in 2003, 79 hectares of land at the Wollongbar Urban Expansion Area was rezoned to accommodate 1067 dwellings or 2880 people. These housing and population projections were downgraded in 2006 due to site constraints, and still to today, much of this land remains undeveloped for residential purposes.

Since this release in 2003, Council has been investigating alternative release sites however none have progressed and rather, Council is now rereviewing opportunities and constraints in these areas to inform a future Strategic Plan to guide growth in Wollongbar. We do not contend with this planning approach and would appreciate any opportunity to work with Council staff to consider this site as part of this strategic review. We do consider that the site-specific characteristics of the subject site present this land as an immediate opportunity for providing desired and needed housing opportunity on the Plateau supporting the planning proposal request to progress prior to Council finalising this strategic review would not undermine Council's historical or future strategic plan for the Plateau.

Housing Demand

The Draft Study states that demand for new housing is currently being satisfied through residential subdivisions which cater predominantly for single dwelling houses, with only limited dual occupancy lots being provided and no new medium density housing product. It also notes that the population age profile in Wollongbar is younger than Ballina Shire in general.

Our initial submission is supported by an independent housing demand analysis, which confirms there is strong demand and attraction for buying and living on the Plateau, particularly by seniors, but raises concern that the only available residential land is within the Wollongbar Urban Release Area, that this land is already zoned and predominantly being released as standard residential product, that it is

further away from town centre services then the subject site and in many parts is steep, bushfire prone and determined under existing development approvals and structure plans. This zoned land in this regard is not particularly favourable for new seniors housing ventures or purchasers, when considering its characteristics and likely return over standard residential density housing product. The Draft Study also confirms that there are no aged care facilities currently operating out of Wollongbar, which would be a contributing factor to the age profile of the area and despite a demand for such housing.

Environmental Constraints

The Draft Study confirms that the current urban boundary was generally defined by significant areas and biodiversity hotspots, including remnant Big Scrub subtropical rainforest, cultural significance and recorded threatened species. The land subject to this request does not contain these constraints and our request indicates a willingness to investigate any perceived potential constraints further at no cost to Council.

Dwelling Capacity within Wollongbar

The Draft Study highlights some uncertainty with regard to housing supply on the Plateau. It notes that planned future housing supply could almost halve if the already zoned land in the Wollongbar Urban Expansion Area is not developed as initially intended. Approximately 50% of this zoned land is owned by one landholder group, who has indicated a desire to develop it for seniors and other community housing forms. Not only is this an indication that this form of housing type is in high demand on the Plateau, but it also raises concern that the housing market is effectively being controlled by one landholder group. While this landholder group has indicated that it has plans to investigate its options for the area, the timing of this review and when actual development applications or even rezoning requests is unknown.

Releasing suitable land for new seniors housing opportunity, such as the land subject to our request, would not only ensure a competitive market is maintained on the Plateau, assisting housing prices, but may also encourage / persuade more standard residential product within the Wollongbar Urban Expansion Area.

The Draft Study has recognised this uncertainty and highlights that a contingency plan for alternative development opportunities may be warranted. The Draft Study therefore has undertaken a SWOT analysis of possible other land in the area, and this has included the land subject to this planning proposal request (refer to Annexure 5 – Page 92 of the Draft Study).

Site	Strength	Weakness	Opportunity	Threat
7, Lot 10, DP 1059499, Lismore Road, Alstonville 	Approximately 7ha of vacant rural land. Land form not slope constrained	Land forms part of the urban buffer between Wollongbar and Alstonville. State significant farmland Part of lot impacted by bushfire prone land and landslip constraints. Isolated site with relatively poor connectivity with existing Wollongbar urban area. Part of land adversely impacted by drainage constraints. Noise impact from adjoining Bruxner Highway	Requires detailed assessment to determine potential of this land for purposes other than agricultural uses. Rural buffer assists to prevent easterly expansion of Wollongbar urban areas.	None identified at preliminary assessment stage.

We agree with the SWOT analysis that this lands size, vacancy and lack of slope are strengths for future development. We contend to the weaknesses raised in the SWOT analysis though, as outlined below:

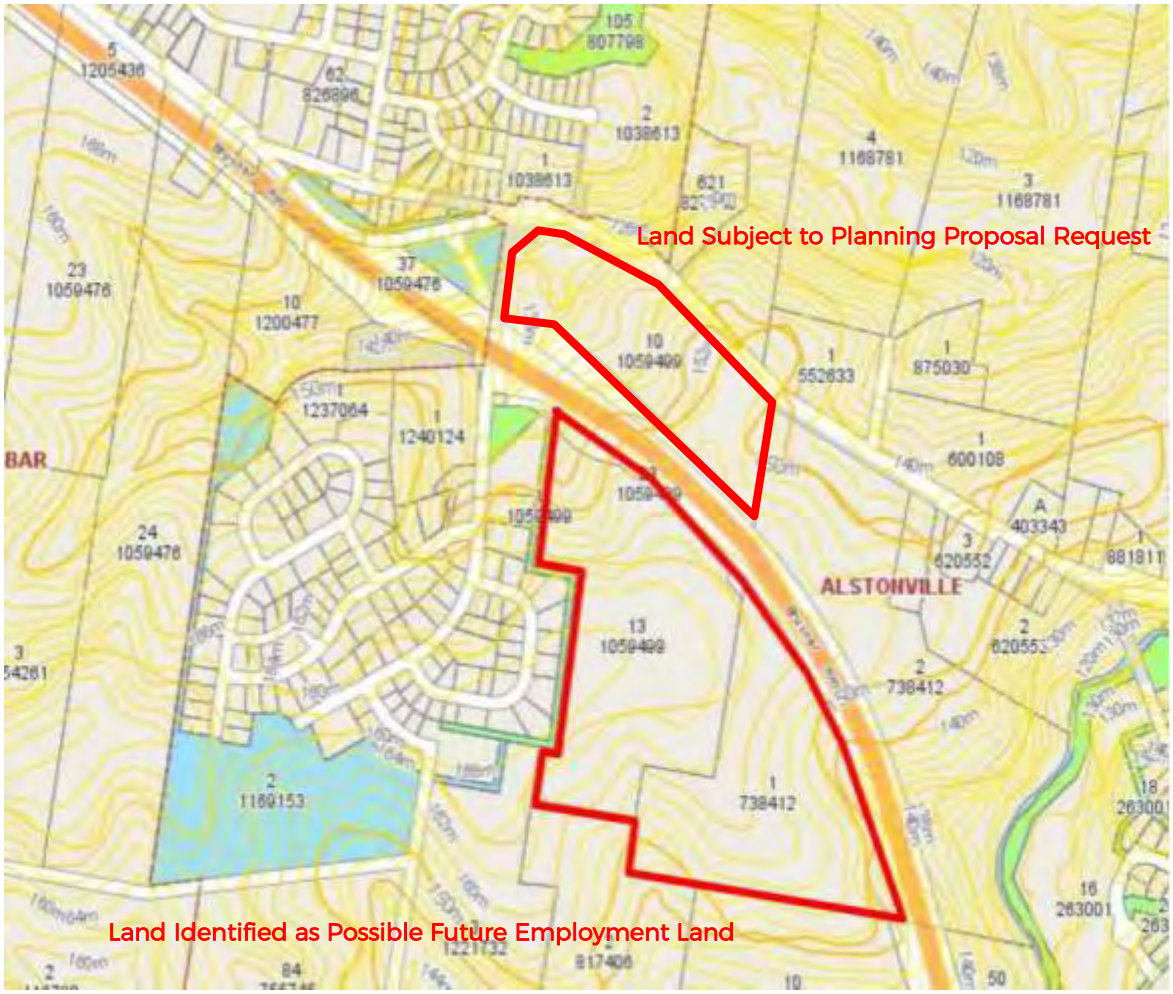
Weaknesses – Listed Under Draft Study	Comment
Land forms part of the urban buffer between Wollongbar and Alstonville	While the proposal does represent an extension of the existing urban boundary, the inter urban break between Wollongbar and Alstonville is not compromised. A visual impact analysis has been undertaken to determine how development of the site as proposed, may influence how the landscape / existing inter-urban break is experienced (**Attachment 5**). This assessment confirms that the site represents a minor portion of the overall visual catchment area and its development, as proposed, would not have any significant adverse impact or loss of user / visual experience at key viewing locations and for those travelling along roadway corridors in the area. This means that the rural vistas, separation between villages, and continued productive rural hinterland is maintained.
State significant farmland	The potential for the site to be used for intensive agricultural activities is low as is its potential to impact wider agricultural activities. This is due to the size of the site and that it adjoins two road corridors, residential development to the north-west and industrial land to the south west. This is confirmed under a supporting agricultural land capability assessment provided under **Attachment 2** of our initial request. This state significant farmland categorisation is not preclusive. The North Coast Regional Plan does note that some mapped farmland may not be suitable for agricultural production and includes interim variation criteria to allow an alternative land use to be considered. The proposal meets the requirements of the variation criteria, confirming that an alternative use on the land will not have a detrimental impact on the area's farmland resources (refer to **Attachment 8** under our initial request).
Part of lot impacted by bushfire prone land and landslip constraints	<u>Bushfire</u> The site is within a bushfire prone buffer area, associated with existing mature vegetation located to the north of Lismore Road. Lismore Road in this regard establishes a formalised and perpetually maintained asset protection zone between the site and this bushfire prone vegetation. Further bushfire protection measures can be accommodated on the land through design measures such as setting residential sites back from existing vegetation, perimeter roadways, cleared open space areas and water supply. This

	planning proposal request indicates that bushfire risk can be investigated further and at no cost of Council. Consultation with the NSW Rural Fire Service would also be a requirement under this planning proposal process. <u>Landslip</u> The northern portion of the site is mapped as erodible / landslip land. This is associated with the drainage areas which traverse this northern part of the site. As indicated in our concept development plan, the actual manufactured home estate (dwellings, roadways and facilities) would be setback from this drainage area to ensure it does not impact on natural drainage flows in the area. The proposal would in this regard be setback from 'landslip land'. This erodible land does not preclude servicing the site either.
Isolated site with relatively poor connectivity with existing Wollongbar urban area	This land is located closer to the existing township of Wollongbar than the Wollongbar Urban Expansion Area. It has great access via Lismore Road to both Wollongbar and Alstonville, is serviced by an existing share path along Lismore Road and is flagged to be linked by a new share / cycle path to Wollongbar under Council's Pedestrian Access and Mobility Plan.
Part of land adversely impacted by drainage constraints	As noted above, the northern portion of the site is mapped as erodible / landslip land, associated with the drainage areas which traverse this northern part of the site. As indicated in our concept development plan, the actual manufactured home estate (dwellings, roadways and facilities) would be setback from this drainage area to ensure it does not impact on natural drainage flows in the area. The proposal would in this regard be setback from 'drainage land'. This drainage land does not preclude servicing the site either.
Noise impact from adjoining Bruxner Highway	Separation and noise attenuation from the Bruxner Highway are provided by the existing vegetated road mound which fronts this roadway, Further noise attenuation measures can be investigated and implemented under any future development proposal to ensure residential amenity is achieved at the site. The investigation into this constraint can be undertaken as part of this planning proposal request at no cost of Council.

Russleton Industrial Expansion Area

The Draft Study indicates that land throughout and around the Russleton Industrial Estate is being investigated for potentially supporting new industrial development. This would not only assist with job opportunity for residents in the area, but importantly also indicates that an expansion to the existing urban boundaries may be becoming necessary. Land to the east of Wollongbar and the Industrial Estate, which immediately adjoins the subject site, has been flagged as potentially suitable expansion land.

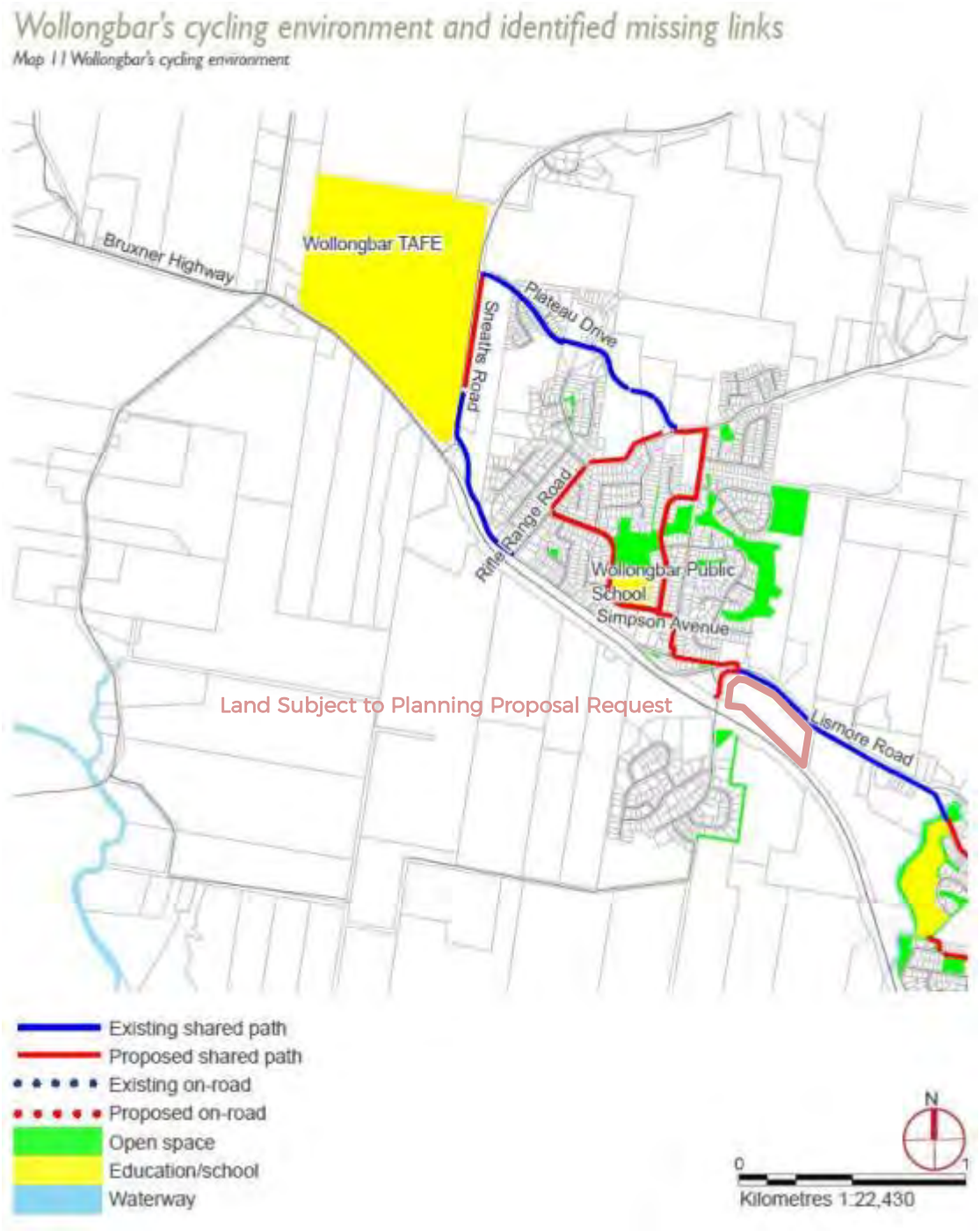
This aligns with our planning proposal request that development in this area is suitable and would not detrimentally impact wider agricultural practices, environmental resources or scenic character.



Infrastructure Provision

The Draft Study confirms that the site is serviced by an existing share path along Lismore Road and is flagged to be linked by a new share / cycle path to Wollongbar under Council's Pedestrian Access and Mobility Plan. This would assist with access to and from the site with wider services.

Any necessary upgrades to trunk services in the area to service the site would be determined as part of these proposed site investigations and provided at no cost to Council.



Conclusion

The matters raised under the Draft Study provide significant scope for new land and housing opportunity in and around Wollongbar to be considered.

While our request for a LEP amendment precedes the finalisation of the Wollongbar Strategic Plan, we believe that this land is suitable for a manufactured home estate and that a manufactured home estate at the site would provide important housing and public benefit.

We therefore would appreciate any opportunity to work with Council to progress this request for a Gateway determination.

Should you have any questions regarding this document, it is requested that you contact our office on (02) 6674 5001.

Yours sincerely,

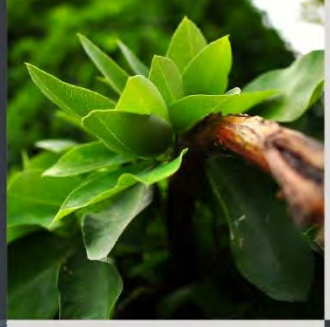
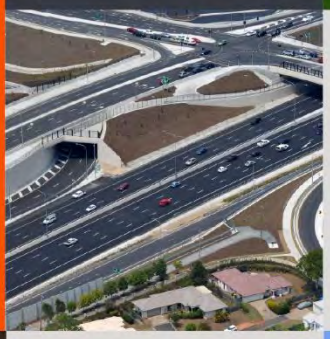
Luke Blandford
Planit Consulting Pty Ltd

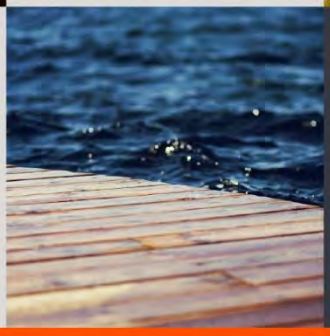
SEPARATE ATTACHMENT

Item 9.2 Planning Proposal
Verandah Lifestyle Estate Wollongbar

Attachment 11
LEP Amendment Request
Planning Proposal
Lismore Road, Wollongbar
Greenlife Properties Pty Ltd

Ordinary Meeting 27/9/18

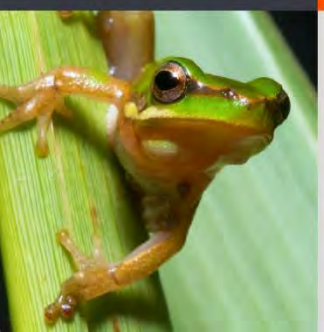
Planning Proposal

Verandah Lifestyle Estate, Wollongbar

Lot 10 in DP1059499
Lismore Road, Alstonville

Prepared for Greenlife Properties Pty Ltd
By Planit Consulting Pty Ltd

July 2018



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Document Control

Issue	Date	Description	Prepared By	Checked By
1	Nov. 2017	Draft v1	SH	AS
2	July 2018	Final v2	SH	AS

Disclaimer

Contents

Introduction and Context

i.i Brief

This planning proposal request relates to land at Lismore Road, Alstonville, known as Lot 10 in DP 1059499 and is associated with a proposed development known as 'Verandah Lifestyle Estate, Wollongbar'.

Our submission seeks to demonstrate the appropriateness for the site to be developed and used as a manufactured home estate, providing additional housing diversity and affordable living opportunity within the Alstonsville Plateau.

Consequently, we are requesting Ballina Shire Council's support to pursue a planning proposal over the site that would seek to amend the local planning provisions applying to the land to allow consideration of a development application for such a use.

This request has been prepared in accordance with the requirements of 'A guide to preparing planning proposals', Department of Planning and Environment, August 2016.

i.ii Property Description

The site is legally described as Lot 10 in DP 1059499. It is 7.04ha in area, vacant and currently utilised for low scale cattle grazing purposes, primarily to keep the site maintained. Some mature vegetation aligns the site's north western boundaries however the site itself is predominantly clear of all mature vegetation. A number of natural overland flow drainage lines traverse the site in its north west.

The site is bound by Lismore Road to the north and the Alstonville Bypass/Bruxner Highway to the south. Immediately south of the Bruxner Highway is the Russellton Industrial Precinct. Immediately north east of Lismore Road is the residential area of Wollongbar. A cattle grazing property and small rural residential estate is located to the east. Land being used for horticulture, particularly macadamia nut growing, is located to the north and south west.

While the site is technically within Alstonville, it is on the fringe of the Wollongbar Township. Wollongbar provides a small community shopping centre within 700m walking distance to the site, with tenancies including a Foodworks supermarket, post office, medical centre, dentist, chemist, hairdresser, cafe and a tavern. Other community infrastructure and facilities include a primary school and sports oval, as well as a TAFE Campus located on Sneaths Road.

More widely, the site is located 600m northwest of the Alstonville urban boundary and approximately 1.5km north west of Alstonville's town centre, 18km west of Ballina and 15km east of Lismore. Figure 1 and 2 below show the site context and site itself.

Figure 1. Location Map - Verandah Lifestyle Estate, Wollongbar

Figure 2. Site Map - Verandah Lifestyle Estate, Wollongbar

i.iii Site Improvements and Constraints

Bushfire

A portion of the site is situated within a bushfire prone buffer area. This is associated with a strand of mature vegetation located north of the site and opposite Lismore Road.

Referral of the planning proposal to the NSW RFS Commissioner will be required as part of the planning proposal process. A Bushfire Safety Authority Report can be prepared if requested to ensure the intended future use of the site can achieve the requirements of Planning for Bushfire Protection 2006.

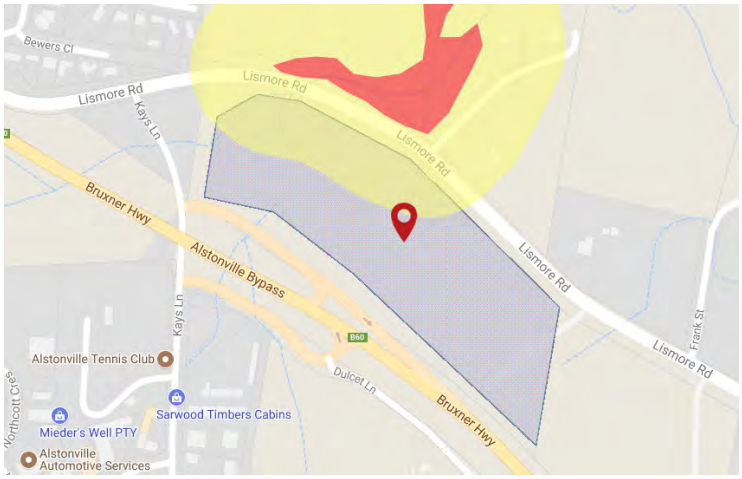

Figure 3. Bushfire Prone Land

Agricultural Suitability

The site is mapped as Biophysical Strategic Agricultural Land.

While it is mapped, the site is not contiguous with surrounding Biophysical Strategic Agricultural Land given its location between two roadways, being the Bruxner Highway (Alstonville Bypass) and Lismore Road.

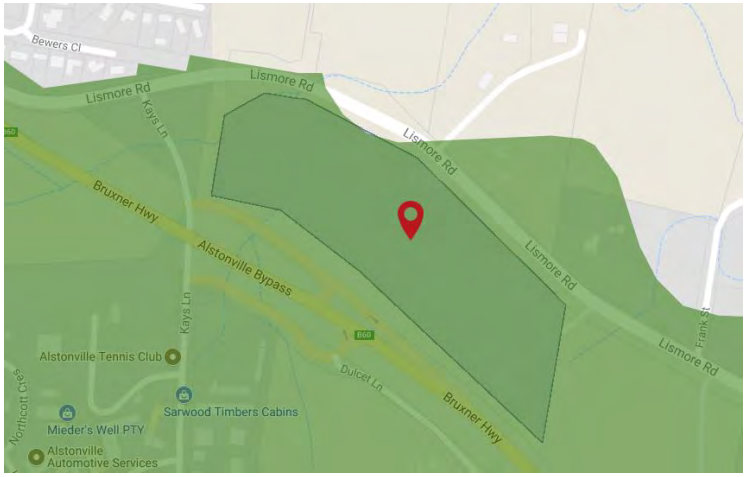

Figure 4. Agricultural Suitability Land

Significant Vegetation

The site does not contain significant vegetation and is not mapped as koala habitat.

It is also not mapped as containing biodiversity observation data under the NSW Bionet Atlas,

Figure 5. Preferred Koala Habitat Land

Waterways

The site is not mapped as flood prone land, is not within a drinking water catchment, though it is traversed by natural drainage lines in its north west.

Drainage would be a key consideration under any future detailed design and has been considered as part of the concept layout and servicing strategies under this request.

Figure 6. Waterways

State Significant Farmland

The site and surrounding rural land is mapped as State Significant Farmland.

It is acknowledged that this mapping is based off soil type and does not consider the site's characteristics in terms of size, proximity to urban land or adjoining roadways.

Further detail is provided throughout this proposal and attachments which confirm that the site is suitable for redevelopment, despite this farmland classification.

Figure 7. State Significant Farmland

Land Slip

The north west portion of the site has been mapped as a potential land slip area.

This is generally associated with the drainage areas traversing the site.

Drainage and this erodible land has been a key consideration in the preparation of a concept layout over the site and do not present as constraints that would preclude the land being considered for more intensive uses.

Figure 8. Land Slip

Services

The site is located on the periphery of the Wollongbar residential area. Power and telecommunication services are currently available to the property.

Preliminary engineering assessments have been undertaken to determine various civil matters including traffic and access, water and sewer reticulation, stormwater drainage, electricity and communications. The findings of these assessments are discussed in more detail under Part 1 of this planning proposal request.

i.iv Concept Development Outcome

Greenlife Properties Pty Ltd provides seniors housing estates across Australia, which allow residents to buy and own their home in a land lease community.

The land is owned by Greenlife Properties Pty Ltd who is seeking to develop it as a manufactured home estate, introducing a modern, affordable, and energy efficient housing product within the Alstonville and Wollongbar region.

A concept layout has been prepared to inform how the subject site could be developed as a manufactured home estate, considering the site attributes, surrounding characteristics and increasing needs of the community (Refer to Figure 9 and Attachment 1).

The concept plan indicates up to 125 self-contained homes being accommodated onsite, with additional community facilities including a club house, gym, swimming pool, tennis court, garden and BBQ areas, visitor parking and a village bus service.

Landscaping / Open Space Provision

Perimeter vegetation planting has been provided, minimising potential for land use conflict, reducing visibility of the estate from surrounding roadways and creating an attractive living environment. The extensive area of open space available on-site ensures the provision of outdoor living areas as well as protection and rehabilitation of natural assets, including the drainage areas and adjoining existing mature vegetation.

Access

Direct road access is indicated off Lismore Road and would likely be serviced by a boom gate set back from the road. All dwelling sites will have direct access to the proposed internal private roadway network.

An onsite parking space will be provided for each individual dwelling. Additional visitor car parking will also be provided and has been allocated adjacent to the community facilities centre and throughout the site. Parking for emergency vehicles and a private bus would also be provided.

Pedestrian pathways are provided throughout the site, promoting physical activity and pedestrian connectivity with the surrounding recreational areas and commercial centres.

A preliminary traffic and access analysis has been undertaken to review the proposed concept proposal and has confirmed that safe vehicular and pedestrian access arrangements can be made to and from the site and that access and roadways can comply with the relevant state and local road design requirements.

Figure 9. Proposed concept plan demonstrating future Verandah Lifestyle Estate, Wollongbar

The Planning Proposal Request

Part 1 - Objectives and Intended Outcomes

This request is seeking a review of the local planning controls that apply to the site, while also demonstrating that the land is suitable for accommodating a manufactured home estate. It seeks to demonstrate that the development of the site for this purpose would not only benefit housing opportunity, particularly for seniors, and would not detract or significantly reduce separation between these two Plateau villages.

To this end, the objectives and intended outcomes of the planning proposal request are to:

- demonstrate that the site is suitable for accommodating a manufactured home estate and that such a use is compatible with the surrounding area and future intended land uses; and
- applying local planning provisions to the site, that would facilitate its use as a manufactured home estate.

Part 2 - Explanation of Provisions

This section discusses in detail how the objectives and intended outcomes of this planning proposal request can be achieved through a preferred approach.

Alternative options for achieving the intended outcome are discussed in more detail throughout Part 3 of this report.

2.1 Permissibility

Achieving permissibility will require an enabling clause to be inserted into either the Ballina LEP 1987 or Ballina LEP 2012. This is summarised below.

- Manufactured home estates are excluded from the land use definitions under the Standard Instrument (SI) Local Environmental Plan (LEP) and cannot be inserted within the land use tables of a SI LEP.
- *State Environmental Planning Policy (SEPP) 36 – Manufactured Home Estates* helps to facilitate the establishment of manufactured home estates and permits this land use wherever a 'caravan park' is permitted under a LEP. The SEPP does identify land exclusions from this permissibility provision however, and this includes the subject site.
- The subject land is deferred from the Ballina LEP 2012 due to the deferral of environmental zones on the Far North Coast. This site is therefore currently zoned and controlled under the provisions of the Ballina LEP 1987.
- The site is zoned as 7(i) Environmental Protection (Urban Buffer) Zone, under the Ballina LEP 1987, which prohibits caravan parks (refer to **Figure 9**). The permissibility provisions under the Manufactured Homes Estate SEPP therefore do not apply to the site.
- The RU1 Primary Production and RU2 Rural Landscape zones under the Ballina LEP 2012 do permit caravan parks. Merely including the site in the Ballina LEP 2012 and applying a rural zone to it would not achieve permissibility under the SEPP. This is because Schedule 2 of SEPP 36 explicitly excludes land in the Ballina LGA, which is not reserved for an urban use and not identified under an endorsed urban planning or growth strategy.

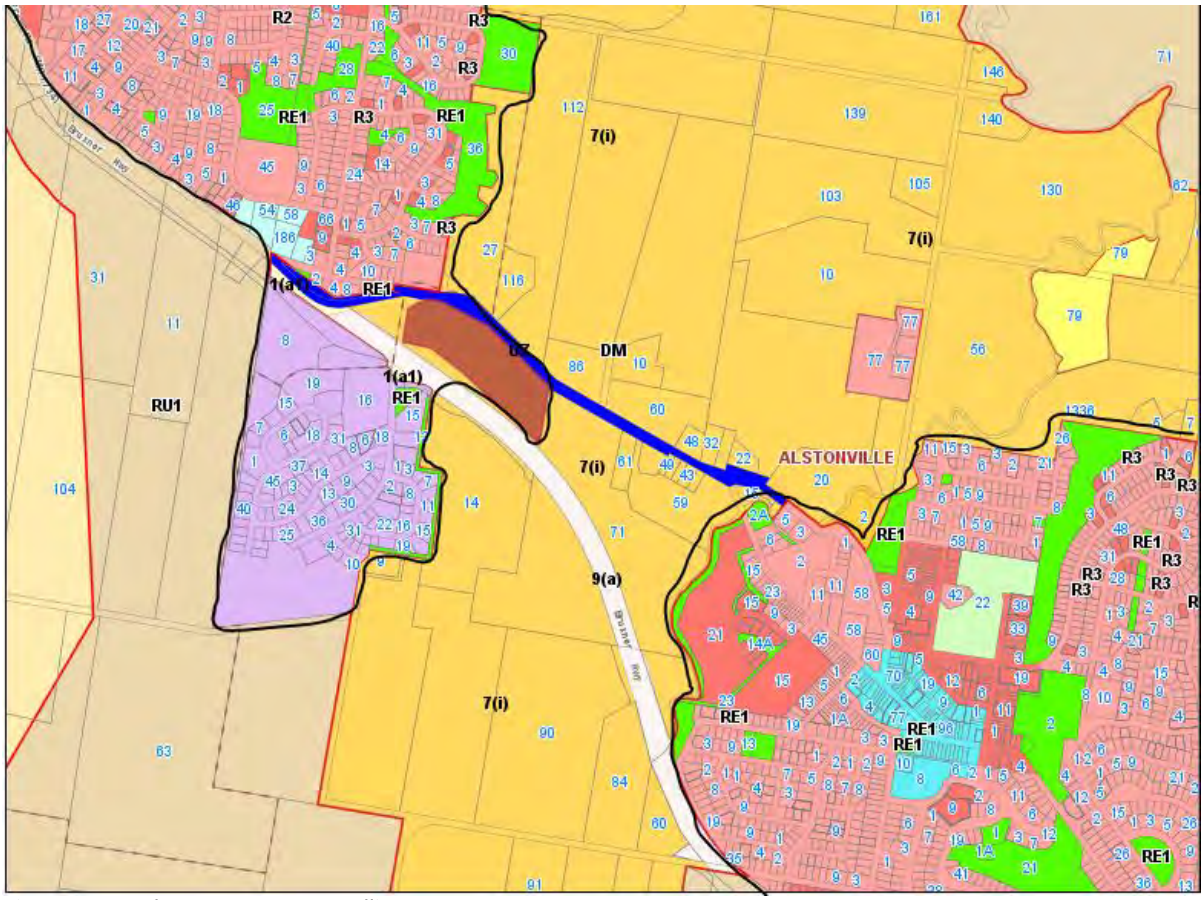

Figure 10: Land Use Zone Map – Ballina IntraMaps

2.2 Retaining the land under Ballina LEP 1987

Irrespective of an enabling clause being inserted into the Ballina LEP 1987 to permit a manufactured home estate at the site, any future proposal for this use would need to be considered against the relevant land use zone objectives (amongst other considerations).

The 7(i) Environmental Protection (Urban Buffer) Zone has been applied to land on the Plateau to limit urban sprawl in the area and retain the identity, character and separation of the Wollongbar and Alstonville villages.

The objectives of the 7(i) zone are:

> *Objectives of Zone No 7(i) Environmental Protection (Urban Buffer)*
>
> *a) The primary objective is to create a rural buffer in the locality of Alstonville and Wollongbar and to prevent development of an urban character within any part of the zone which is likely to be seen by existing or likely future residents of the villages of Alstonville and Wollongbar or from a major road in the locality.*
> *b) The secondary objective is to enable development as permitted by the primary and secondary objectives of Zone No 1 (a1), except for development which would conflict with the primary objective of this zone (note: the objectives of Zone No 1(a1) relate to promoting agricultural production on land suitable for purposeful agricultural production, maintaining rural character and not creating unreasonable demands on public amenities and services).*
> *c) The exception of these objectives is development of land within the zone for public works and services, outside the parameters specified in the primary and secondary objectives*

It is acknowledged that a manufactured home estate is not consistent with the hard line primary objective of the zone, which seeks to preclude urban character development outside of the existing footprint.

A manufactured home estate on land could be considered consistent with the secondary objectives of the 7(i) zone where it is demonstrated to:

- not impact land suitable for purposeful agricultural production;
- not detrimentally impact wider agricultural practices; and
- not create unreasonable demands on public infrastructure and services

Our submission seeks to demonstrate that the site and a manufactured home estate upon it, would meet these secondary objectives and would not have a detrimental impact on the rural buffer / inter urban break between the two villages. This means that permitting a manufactured home estate on the land could be considered consistent with the objectives of the zone.

Given the above, the inclusion of an enabling clause under the Ballina LEP 1987 is a suitable means for achieving the objectives and intended outcomes of this request.

2.3 Proposed Amendment to the Ballina LEP 1987

In short, the following Ballina LEP 1987 amendments would be required in relation to Lot 10 in DP1059499 under this proposal:

- Include a new enabling clause after Clause 38 in the LEP that would confirm that a manufactured home estate is a permissible land use at the site; and
- Include a map to identify the site referenced in the clause.

A draft clause which could achieve the intended outcome is listed below:

1) *This clause applies to the following land at Lismore Road, Alstonville, as shown edged heavy black on the map marked "Ballina Local Environmental Plan 1987 (Amendment No)" deposited in the office of Ballina Shire Council:*
    a. *Lot 10 DP 1059499*
2) *Despite any other provision of this Plan, development consent may be granted for development on land to which this clause applies for the purpose of a manufactured home estate.*

In this clause, manufactured home estate has the same meaning as in has the same meaning as in State Environmental Planning Policy No 36—Manufactured Home Estates..

Part 3 - Justification

Section A - Need for Planning Proposal

Q1 - Is the planning proposal a result of any strategic study or report?

The land is not identified for urban release under any endorsed local or state planning strategy or plan.

Despite this, the proposal's strategic and site-specific merit has been confirmed when considering the relevant local and state plans and site-specific studies which form part and support this planning proposal request.

Manufactured Housing Estates

Manufactured home estates have developed as a desirable alternative form of residential accommodation, particularly for seniors. This change in lifestyle and residential choice has encouraged the NSW Government to investigate ways for improving the planning and approval processes around manufactured homes estates. To date, this popular new land use remains excluded from land use zone tables under all NSW local environmental plans as well as many local and regional growth strategies.

Changes in household types, demographics and needs as well as technology and construction improvements have created strong market demand for this type of dwelling product and lifestyle,

Unlike aged care homes developed under *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004,* manufactured home estates are managed under the *Residential (Land Lease) Communities Act 2013*. This means that residents can own their own home but lease the land (often subsidised by the Federal Government). They also appeal to those seeking to move into retirement accommodation but not wanting to be burdened by retirement village rule structures, fees and/or live in a typical 'caravan park'.

Housing Supply

A housing supply analysis was undertaken in 2016 as part of the preparation of this planning proposal request **(Attachment 3)**.

The analysis confirmed that the average number of houses being established in Ballina Shire, but outside the major townships of Ballina, Lennox and Skennars Head has been steadily increasing since 2013 and that residential land purchases have significantly increased in Wollongbar since 2013. This growth in the market can be attributed to the Wollongbar Urban Expansion Area but does indicate a strong demand and attraction for buying and living on the Plateau.

Not surprisingly, this market analysis confirmed high unit costs and low unit sales in Wollongbar, due to low availability in the area, while manufactured homes, were recorded to be selling for less than $100,000 of the area's median unit price.

The analysis confirmed that there are no aged care facilities currently operating out of Wollongbar, and only two in Alstonville. This is despite the Alstonville / Wollongbar area having a greater proportion of persons aged over 50 years, a greater number of lone person households, a lower household income and a greater aging population than the State averages. The proposal would assist to close this gap in the market and meet the needs of this retiring aging population, by providing innovative, smaller and affordable housing product in a purposefully built estate.

With specific regard to supply, the housing supply analysis estimated that there was capacity for approximately 586 new homes in the local area, when considering zoned and undeveloped land, but a demand for 990 new homes up to 2036. The analysis confirmed that demand for these 586 new dwelling sites would be surpassed by 2028, 10 years from today. It also raised concern that 90% of

these new home sites were all located in the one release area, being the Wollongbar Urban Expansion Area.

Establishing a manufactured home estate on the site would therefore contribute to housing choice in the area, but also contribute to the diversity in living options outside of the Wollongbar Urban Expansion Area and closer to the Wollongbar town centre.

Site Suitability

The suitability of the site being developed and used as a manufactured home estate is discussed throughout this planning proposal request and within the supporting studies.

The site-specific studies confirm that the land is not constrained, not productive farmland and its development would not detrimentally impact surrounding agricultural practices, visual experience or urban services.

With specific regard to location, the land is detached from surrounding agricultural land as a result of the Bruxner Highway and Lismore Road. Images demonstrating the land being disconnected with the surrounding land as a result of the former highway planning and construction are indicated below.

Figure 11: 2000 – The site aligned rural land– Ballina Shire Spatial Services

Figure 12: 2004 – The site aligned rural land– Ballina Shire Spatial Services

Figure 13: 2009 – Planning for Bruxner Highway, disconnecting the site from adjoining rural land– Ballina Shire Spatial Services

Figure 14: 2012 – Bruxner Highway has disconnected the site from adjoining rural land– Ballina Shire Spatial Services

The site is located within 700m walking distance to the Wollongbar town centre. This town centre provides a range of commercial and community facilities and services, recreational facilities and social establishments such as the Wollongbar Tavern. The Alstonville town centre is located 1.5km from the site and includes a greater range of services, including a full line shopping centre and other health, retail, commercial, social and service providers. The site is closer to these town centres than any other land identified for urban release in these existing villages.

While the proposal does represent an extension of the existing urban boundary, the inter urban break between Wollongbar and Alstonville is not compromised. The western portion of the site aligns with the urban footprint of Wollongbar and the Russleton Industrial Estate. The eastern boundary of the Russleton Industrial Estate is approximately 750m from the closest western boundary of Alstonville. The most eastern point of the site is approximately 600m from the closest residential zone boundary of Alstonville. This means that the proposal represents an encroachment into the inter urban break by approximately 150m, and yet a break of more than 600m is retained between the two villages (Refer to **Figure 15**). As demonstrated in the concept plan, this extended footprint would be softened when viewed from the surrounding roadways by perimeter vegetation planting.

A visual impact analysis has been undertaken to determine how development of the site as proposed, may influence how the landscape / existing inter-urban break is experienced (**Attachment 5**). This assessment confirms that the site represents a minor portion of the overall visual catchment area and its development, as proposed, would not have any significant adverse impact or loss of user / visual experience at key viewing locations and for those travelling along roadway corridors in the area.

This means that the rural vistas, separation between villages, and continued productive rural hinterland is maintained.

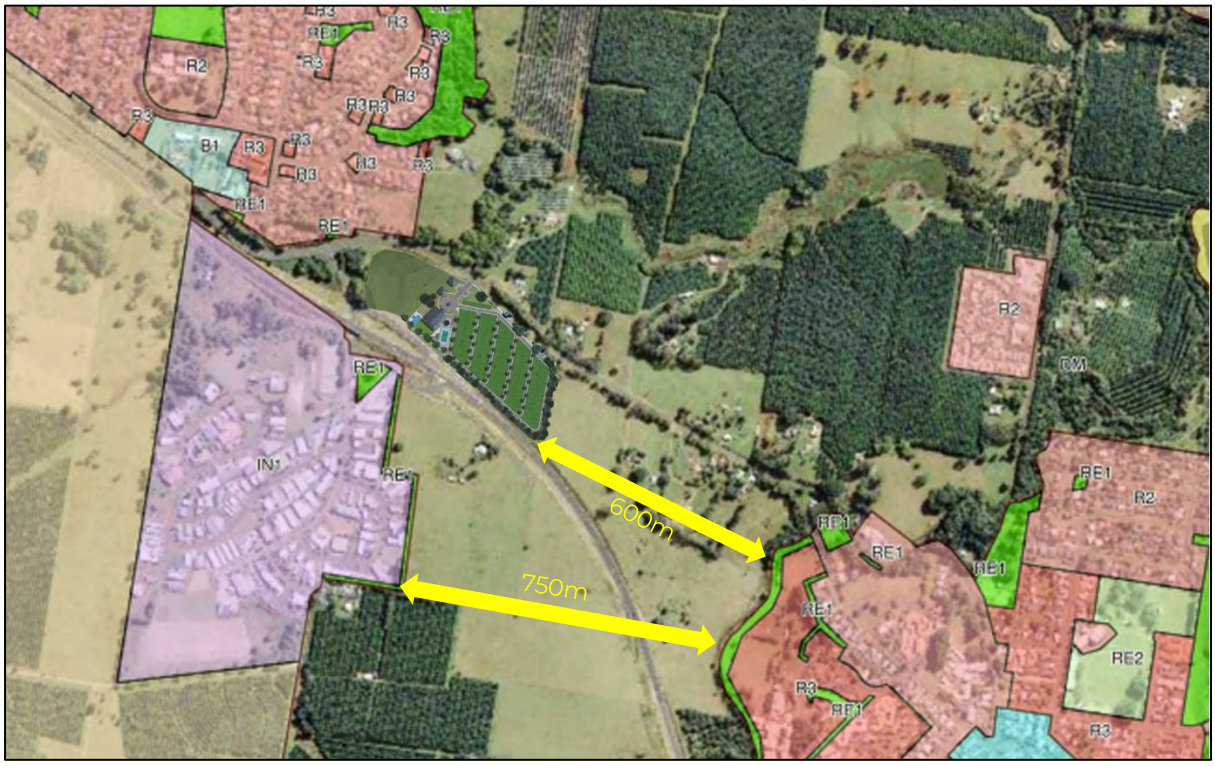

Figure 15: Urban Breaks

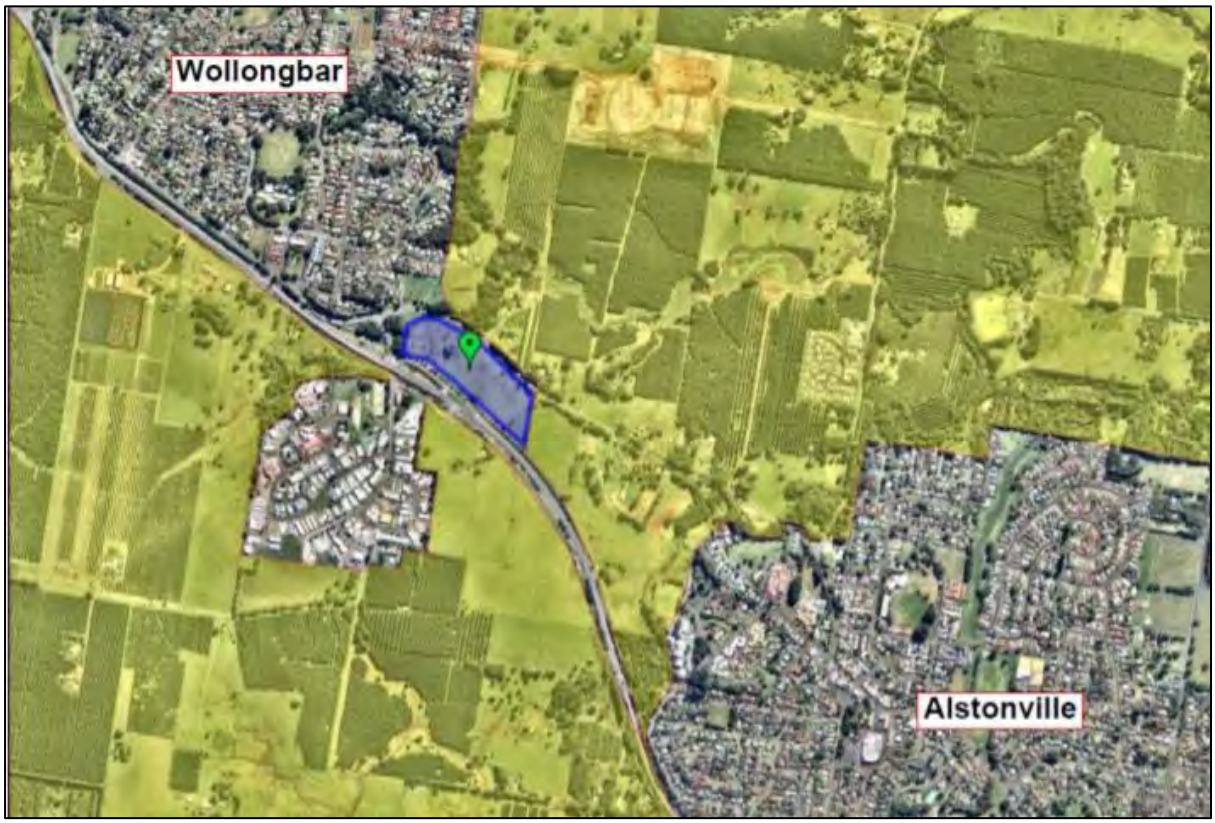

Figure 16: Rural Separation Retained

Q2 - Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The proposal seeks to enable the use of the site as a manufactured home estate by including an enabling / additional permitted use clause under the Ballina LEP 1987.

Other options for achieving the intended outcomes have been considered and disregarded, as summarised below:

Option	Comments
Including the site in the Ballina LEP 2012, applying a rural zone and relevant development controls and inserting an additional permitted use clause.	• Refer to commentary below.
Including the site in the Ballina LEP 2012, but not zoning the land and applying an additional permitted use clause or limiting clause.	• Difficult for Council to implement when considering suitability without land use zone objectives; and • Creates opportunity for unintended development proposals.
Including in Ballina LEP 2012, including an enabling clause, zoning the site rural but not applying development standard provisions (given the controls for a manufactured home estate are applied under other State Acts and Policies).	• Inconsistent with Council's resolution to retain 7(i) zone; and • Inconsistent with the development standards for all other RU1 zoned land under the Ballina LEP 2012.
Applying an alternative zone that would permit a manufactured home estate through the provisions under the SEPP (ie. zone it medium density residential).	• Inconsistent with Council's resolution to retain 7(i) zone; and • Could encourage unintended development also permitted under the zone.
Inserting 'manufactured home estates' into the land use table for the 7(i) zone.	• The legality of this proposal is questioned; and • Could encourage unintended development also permitted under the zone.
DCP Provisions.	• Does not resolve permissibility

Alternative Approach - Including the land in Ballina LEP 2012

It is acknowledged that in April 2017, Council resolved to retain the existing zones and controls applying to land that is deferred from the Ballina LEP 2012, given the requirements of the Northern Councils Environmental Zone Review – Final Recommendations are not consistent with Council's historical strategic zoning for the Plateau.

An alternative means for achieving the intended outcome of this planning proposal request would however, be to include this land into Ballina LEP 2012 and applying a land use zone and development provisions that would permit this use. This would also ensure 'current planning controls' apply to the land, which reflect the site's characteristics, its primary use and would facilitate opportunity for a manufactured home estate to be considered over the land.

State significant farmland under the Ballina LEP 2012 is zoned RU1 Primary Production. Applying a RU1 zone to the site would therefore be consistent with Council's strategic approach for zoning state significant farmland.

This would also be consistent with the Final Recommendations under the Northern Councils E Zone Review, as the land is not primarily used for environmental protection or management purposes and it does not contain vegetation which would meet the E2 or E3 criteria.

While 'tourist and visitor accommodation (i.e. caravan parks)' is a permitted land use in the RU1 zone, an enabling clause could would still need to be inserted under Schedule 1 to allow a manufactured home estate to be considered at the site. This is because of the provisions under SEPP 36 (as discussed previously in this report).
The objectives of the RU1 zone are:

Objectives of zone

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To maintain the rural, cultural and landscape character of the locality.*
- *To enable development that is compatible with the rural and environmental nature of the land.*
- *To ensure that there is not unreasonable or uneconomic demands for the provision of public infrastructure*

A manufactured home estate on the land could be considered consistent with the RU1 zone objectives, where it is demonstrated to:

- not impact land suitable for purposeful agricultural production;
- not detrimentally impact wider agricultural practices; and
- not create unreasonable demands on public infrastructure and services.

Our submission seeks to demonstrate that the site and a manufactured home estate upon it, would meet these outcomes.

The Ballina LEP also applies a minimum lot size requirement of 40ha and height of building control of 8m to state significant farmland. While a manufactured home estate is guided by the controls under the Local Government Regulations and SEPP 36, applying the same lot size and height of building controls to the land would ensure a consistent zoning approach and limit undesirable development opportunities over the land.

In short, the following Ballina LEP 2012 amendments would be required in relation to Lot 10 in DP 1059499 if it was preferred to amend Ballina LEP 2012 rather than Ballina LEP 1987:

- Include the land into Ballina LEP 2012 by amending the Land Application Map - Sheet LAP_001
- Including a new clause under Schedule 1 of the LEP that would confirm that a manufactured home estate is a permissible land use at the site
- Rezoning the site from 7(i) Environmental Protection (Urban Buffer) Zone under the Ballina LEP 1987 to RU1 Primary Production Zone under the Ballina LEP 2012, by amending the Land Use Zone Map – Sheets LZN_001B and LZN_002A
- Applying a 40 hectare minimum lot size provision to the site by amending the Minimum Lot Size Map – Sheet LZN_002
- Applying an 8m building height limit by amending the Height of Buildings Map - Sheet HOB_001 and HOB_002

There are no other mapped planning controls under the Ballina LEP 2012, which apply to the surrounding area. No mapping amendments other than those listed above would therefore be required.

Map tiles identifying the current and proposed zone, as well as the proposed controls for the site can be provided if this approach was supported.

In recognition of Council's resolution for retaining the 7(i) this alternative approach has not been proposed as a preferred approach for achieving the intended development outcomes for this proposal.

Section B - Relationship to strategic planning framework

Q3 - Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub – regional strategy (including exhibited draft strategies)?

North Coast Regional Plan 2036

The focus goals under the Regional Plan which are directly applicable to this planning proposal request are:

- Goal 1: The most stunning environment in NSW;
- Goal 2: A thriving, interconnected economy;
- Goal 3: Vibrant and engaged communities; and
- Goal 4: Great housing choice and lifestyle options.

Goal 1. The most stunning environment in NSW

The Regional Plan lists important planning principles to ensure the protection and improvement of the Region's highly valued environment. It recognises that most urban settlements on the North Coast are separated by 'green breaks', giving the Region a distinctive character.

Principle 1: Direct Growth to Identified Urban Growth Areas seeks to protect these 'green breaks' and enable efficient infrastructure and service delivery and use by directing growth to mapped growth areas.

The Regional Plan does provide some flexibility, to allow variations to these mapped growth boundaries where they meet strict *Urban Growth Area Variation Principles* and considered through a rezoning process.

This land has not been excluded from a growth area as an anomaly. It is acknowledged that the growth area aligns with the existing zoned land for Wollongbar and Alstonville. Our submission does seek to demonstrate however that the use of the site as a manufactured home estate:

- would not impact on workable important agricultural land
- would not significantly reduce the inter-urban / green break and character between Wollongbar and Alstonville
- can be suitably serviced without burdening existing infrastructure and would be responding to a housing and demographic need for the area.
-

The proposal is consistent with the Urban Growth Area Variation Principles as outlined under **Attachment 7** of this report and achieves the intent of Goal 1 under the Regional Plan.

Goal 2. A thriving, interconnected economy

The 7ha site is physically non-contiguous with the adjacent farm land, making continued or even intensified agricultural use difficult. This is evident given the site is only used for low intensity grazing purposes, generally for upkeeping the site. More intense horticulture farming is being undertaken further north and south of the site and on land which is not adjoining key transport corridors, an industrial precinct and a residential township.

The site is mapped as State Significant Farmland and Goal 2 under the Regional Plan seeks to ensure important mapped farmland is protected for long-term agricultural production.

The Regional Plan does note that some mapped farmland may not be suitable for agricultural production and therefore includes interim variation criteria to allow an alternative land use to be considered, prior to a more detailed review of the Northern Rivers Farmland Protection Project (2005) being undertaken. The proposal meets the requirements of the variation criteria, confirming that an alternative use on the land will not have a detrimental impact on the area's farmland resources (refer to **Attachment 8**).

Manufactured home estates are an important residential accommodation option particularly for seniors, providing an alternative and affordable living arrangement. Such a use on this sterilised agricultural site can therefore create new housing opportunity while not impacting on wider agricultural practices.

The proposal is consistent with Goal 2.

Goal 3: Vibrant and engaged communities

Goal 3 acknowledges the Region's identity as being shaped by its culture, environment and communities and seeks to ensure growth in the Region respects and builds upon and around this legacy.

Actions under Direction 18 indicate that Aboriginal cultural heritage assessments are to be undertaken to ensure impacts to Aboriginal cultural heritage are minimised and appropriate heritage management mechanisms are identified.

The land has historically been cleared and used for low scale grazing and is surrounded by urban infrastructure. The likelihood of the site containing significant aboriginal items is low. Measures to protect cultural significance can be determined under any future DA that seeks to undertake works onsite. Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or development controls are required to manage it.

Direction 21 seeks to ensure the cost-effective and efficient use of infrastructure by directing development towards existing infrastructure. The site is located on the periphery of the Wollongbar residential area. Power and telecommunication services are currently available to the property.

Preliminary engineering assessments have been undertaken to confirm that the land can be serviced by all necessary utility infrastructure and roadways, at no additional cost to Council or the State government.

The proposal is consistent with Goal 3.

Goal 4: Great Housing Choice and Lifestyle Options

Goal 4 recognises that household sizes and make up is changing and that different approaches to housing delivery is required on the North Coast.

Manufactured home estates are being developed as an alternative affordable housing for seniors. They are increasingly being developed and used to provide a form of permanent accommodation throughout NSW.

Goal 4 provides that one of the ways that Council can help to improve housing affordability is "*promotion of new caravan parks and manufactured home estates on unconstrained land in existing settlements and new land release areas in the urban growth areas*.".

While not within an existing settlement area or urban growth area, this planning proposal request seeks to demonstrate that the site is suitable for a manufactured home estate and its development would be contiguous to the existing growth area of Wollongbar.

The site's development as a manufactured home estate would create new housing diversity and affordability opportunity on the Plateau, meeting the needs of the community and consistency with the directions and actions under Goal 4.

The proposal is consistent with the Regional Plan. There are no directions or actions under this Plan which preclude the land being considered for more intensive land uses.

Q4 - Is the planning proposal consistent with the local council's Community Strategic Plan, or other local strategic plan?

Alstonville Strategic Plan 2017 – 2037

The Alstonville Strategic Plan and supporting Alstonville Planning and Environment Study 2017 has been prepared by Council to guide land use planning within the Alstonville Plateau.

The Alstonville Planning and Environment Study 2017 specifically recognises the significant demand for additional selfcare seniors accommodation on the Plateau. Council's Community Report Alstonville 2036, which also helped inform the Plan, confirms that elderly people living in the area are seeking to live in a medium density / townhouse style home that is close to services, rather than their current large, relatively vacant house.

The actions under the Strategic Plan seek to retain the existing urban growth boundary of Alstonville and increase densities within the village's existing zoned areas. While this will assist with providing greater housing stock in Alstonville, it is not particularly favourable for new seniors housing ventures, when considering the costs associated with purchasing zoned, fragmented and developed land and its likely return over normal medium density housing product.

The site is not used for productive agricultural purposes, is closer to the Wollongbar shopping facilities and services than the Wollongbar Urban Expansion Area, and with limited land availability for new seniors housing product, presents as a significant strategic opportunity for accommodating new and desirable seniors housing in the area.

It is acknowledged that the proposal's intent, to allow a manufactured home estate on the site, is not consistent with the Strategy's hard line that the urban growth boundary should not be expanded, but as discussed throughout this report, a significant inter urban break between the two Plateau villages would still be retained if the site was used for residential purposes nor would the development of the site impact usable agricultural land nor detrimentally impact visual experiences or surrounding agricultural practices.

The actions under the Strategy to provide new housing opportunity for the future population of Alstonville, retain an inter urban break on the Plateau and protect significant farmland would all be achieved under this proposal.

Ballina Shire Affordable Housing Strategy

Council prepared a Housing Affordability Strategy in 2010, which outlines initiatives for improving housing affordability in Ballina Shire. Permitting a manufactured home estate on the land is consistent with the themes and initiatives under this Strategy.

Ballina Shire Growth Management Strategy

The Ballina Shire Growth Management Strategy provides the local framework for managing population and employment growth in Ballina Shire.

The Strategy's actions for Wollongbar relate to population growth within it. Specifically, the actions include:

- accommodating the expected growth for the area within the Wollongbar Urban Expansion Area;
- maintaining the inter-urban break with Alstonville;
- providing more sporting facilities;
- protecting cultural significance; and
- exploring a third village.

The notion of a third village is currently not being pursued by Council, because of other significant land releases in the Shire occurring closer to the coast. This means that the only land available for new development in Wollongbar is through infill or within the Wollongbar Urban Expansion Area.

The existing village of Wollongbar is fragmented and primarily zoned R2 low density, a zone that prohibits manufactured home estates. This means that the only land in Wollongbar which realistically could be used as a manufactured home estate is within the Wollongbar Urban Expansion Area, which is further away from the village town centre then the subject site and in many parts is steep, bushfire prone and determined under existing development approvals and structure plans.

An inter urban break would still be retained if the subject site was developed and used as a manufactured home estate, cultural significance would not be impacted and ancillary lifestyle facilities such as a gym, swimming pool and tennis court would be provided on the land. The proposal in this regard achieves many of the actions under Council's Strategy.

Q5 - Is the planning proposal consistent with applicable state environmental planning policies?

State Environmental Planning Policies – SEPPs

The following SEPPs are applicable to this proposal:

SEPP 36 Manufactured Home Estates

SEPP 36 helps to facilitate the establishment of manufactured home estates and permits this land use wherever caravan parks are permissible under a LEP, unless the land is specifically excluded.

This land is excluded from the provisions of clause 6 under the SEPP, as it is within the Ballina LGA, not zoned urban and not identified for urban use under an endorsed growth strategy or plan. This means that a manufactured home estate is not made a permissible land use by the SEPP. Inserting an enabling clause into the LEP would however mean that a DA would not need to rely on the provisions under the SEPP for permissibility.

The land is not excluded from other provisions under the SEPP and therefore any future DA for a manufactured home estate on the land would need to demonstrate consistency with its heads of consideration, contained under clause 9.

These heads of consideration generally relate to service availability and managing impacts on the environment, heritage and wider area. This report is supported by various site-specific studies which confirm the suitability of the land and that a manufactured home estate on the site would not detrimentally impact these consideration matters.

SEPP 55 Remediation of Land

SEPP 55 provides a statewide planning approach to the remediation of contaminated land. This policy aims to promote the remediation of contaminated land to reduce the risk of harm to human health or any other aspect of the environment.

Under Clause 6, a public authority must not rezone land unless:

- *the planning authority has considered whether the land is contaminated, and*
- *if the land is contaminated, the planning authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purposes for which land in the zone concerned is permitted to be used, and*
- *if the land requires remediation to be made suitable for any purpose for which land in that zone is permitted to be used, the planning authority is satisfied that the land will be so remediated before the land is used for that purpose.*

The site has historically been used for low scale grazing purposes. Former agricultural capability testing has been undertaken, and while this testing was considering the suitability of the soil for agricultural purposes, the samples did not indicate likely contamination (**Attachment 9 – Soil Samples**). This provides some indication that contamination risk is low.

Further soil testing could be undertaken as part of any future DA process or as part of this proposal process, if deemed to be required.

SEPP 44 Koala Habitat Protection

SEPP 44 encourages the conservation and management of natural vegetation areas that provide habitat for Koalas to ensure permanent free-living populations will be maintained over their present range.

As noted previously under this report, the site is not mapped under Council's Koala Management Strategy to contain Koala habitat. This Strategy contains *The Ballina Shire Core Koala Habitat Comprehensive Plan of Management*, which was approved by the Department of Planning on 6 July 2017. No further Koala habitat testing is considered necessary as part of this proposed planning proposal request.

Rural Lands SEPP

The Rural Lands SEPP seeks to facilitate the orderly and economic use and development of rural lands for rural and related purposes. It contains Planning Principles to assist in the management, development and protection of rural lands to promote the social, economic and environmental welfare of the State

These principles area:

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.*

The proposal is consistent with the principles under the SEPP given that:

- The potential for the site to be used for intensive agricultural activities is low, given its size and that it adjoins two road corridors, residential development to the north-west and industrial land to the south west. This is also confirmed under a supporting agricultural land capability assessment provided under Attachment 2.
- The proposal would permit opportunities for new rural lifestyle settlement.
- The site assessments supporting this proposal request have confirmed that the site can be adequately serviced and that there will be minimal impact on natural resources.

Q6 - Is the planning proposal consistent with applicable Ministerial Directions (s.9.1 Directions)?

9.1 Direction	Objective of the Direction	Is proposal consistent ?	Comments
1.2 Rural Zones	The objective of this direction is to protect the agricultural production value of rural land	No	The proposal will increase the permissible density of rural land, by permitting a manufactured home estate upon it. The inconsistency with this Direction is justified as it will not reduce the agricultural production value of rural land. The site is not workable productive land and its development would not impact surrounding agricultural practices. This is confirmed under an Agricultural Capability Assessment (refer to **Attachment 2**). The inconsistency with this Direction is therefore justified.
1.5 Rural Lands	The objectives of this direction are to: (a) protect the agricultural production value of rural land, (b) facilitate the orderly and economic development of rural lands for rural and related purposes	Yes	The proposal is consistent with the rural planning principles under the SEPP (refer to the above assessment of the Rural Lands SEPP)
2.1 Environment Protection Zones	The objective of this direction is to protect and conserve environmentally sensitive areas.	No	The proposal does seek to allow development on land zoned as an environmental protection buffer (an environmental zone which is not supported under the Northern Councils Environmental Zone Review). An inter urban break between Wollongbar and Alstonville would still be retained. The proposal is in accordance with the North Coast Regional Plan which considers this Direction. The inconsistency with this Direction is justified.
2.3 Heritage Conservation	The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance.	Yes	The likelihood of aboriginal significance on the land is low. Measures to protect cultural significance can be determined under any future DA that seeks to undertake works onsite. Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or

			development controls are required to manage it.
2.4 Recreational Vehicle Areas	The objective of this direction is to protect sensitive land or land with significant conservation values from adverse impacts from recreation vehicles.	Yes	The planning proposal will not enable land to be developed for the purpose of a recreation vehicle area
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	Yes	The planning proposal will allow consideration of increased housing diversity and lifestyle choice in the locality.
3.2 Caravan Parks and Manufactured Home Estates	The objectives of this direction are to provide for a variety of housing types, and to provide opportunities for caravan parks and manufactured home estates.	Yes	The proposal seeks to facilitate the use of the site as a manufactured home estate.
3.3 Home Occupations	The objective of this direction is to encourage the carrying out of low-impact small businesses in dwelling houses.	Yes	The proposal does not alter the provisions under the LEP which relate to home occupations.
3.4 Integrating Land Use and Transport	The objective of this direction is to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve the certain planning objectives relating to access, transport and the like.	Yes	The site adjoins urban land and is close to the centre of Wollongbar Public buses service Lismore Road.
4.4 Planning for Bushfire Protection	The objectives of this direction are 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 to encourage sound management of bush fire prone areas.	Unresolved	The site is within a bushfire prone buffer area, associated with existing mature vegetation located to the north of Lismore Road. Lismore Road in this regard establishes a formalised and perpetually maintained asset protection zone between the site and this bushfire prone vegetation. Further bushfire protection measures can be accommodated on the land through design measures such as setting residential sites back from existing vegetation, perimeter roadways, cleared open space areas and water supply. Over 80m setback to the existing vegetation is indicated in the concept plan for the site. Consultation with the NSW Rural Fire Service will be requirement under this planning proposal process and should be undertaken post

			Gateway determination.
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	The objectives of this direction are: (a) to ensure that the best agricultural land will be available for current and future generations to grow food and fibre, (b) to provide more certainty on the status of the best agricultural land, thereby assisting councils with their local strategic settlement planning, and (c) to reduce land use conflict arising between agricultural use and non-agricultural use of farmland as caused by urban encroachment into farming areas.	No	The proposal seeks to permit a manufactured home estate on land that is mapped as state significant farmland. The proposal is consistent with the North Coast Regional Plan and specifically its 'important farmland interim variation criteria'. Inconsistency with this Direction is justified.
5.10 Implementation of Regional Plans	The objective of this direction is to give legal effect to the vision, land use strategy, goals, directions and actions contained in Regional Plans.	Yes	As discussed in this report, the proposal is consistent with the goals, principles, directions, actions and variation criteria under the North Coast Regional Plan.
6.1 Approval and Referral Requirements	The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development.	Yes	The proposal includes no additional referral or concurrence requirement. All existing applicable referrals applying to the site will be undertaken at DA stage.
6.2 Reserving Land for Public Purpose	The objectives of this direction are to facilitate the provision of public services and facilities by reserving land for public purposes, and to facilitate the removal of reservations of land for public purposes where the land is no longer required for acquisition.	Yes	The proposal does not create, alter or reduce zonings or reservations that apply to public land.
6.3 Site Specific Provisions	The objective of this direction is to discourage unnecessarily restrictive site-specific planning controls	No	The proposal seeks to permit a manufactured home estate on the land via an additional permitted use clause under the Ballina LEP 1987. Part 3 of this report discusses in detail why an enabling clause is the best means for achieving the intent of the proposal, for both implementing the clause and ensuring undesirable development is not encouraged in other areas of the LGA. The inconsistency with this Direction is justified.

Section C - Environmental, social and economic impact

Q7 - 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?

There are no known or expected areas of critical habitat, threatened species populations or ecological communities or their habitat upon the subject site.

Measures to protect areas of adjoining mature vegetation can be determined under any future DA that seeks to undertake works onsite. The concept plan indicates that the existing mature vegetation adjoining the site in the north west, as well as the natural drainage areas onsite, being protected as part of the site's redevelopment.

Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the adjoining vegetation and if further site-specific provisions or development controls are required to manage it.

Q8 - Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

The site is generally cleared and unconstrained. The site is contiguous with existing residential development to the north west. Its development would be compatible with surrounding land uses and would not significantly reduce the inter urban break between the Wollongbar and Alstonville villages.

The site-specific studies which form part of this planning proposal request confirm that the land is suitable for accommodating a manufactured home estate and that development of the land for this purpose is not likely to generate any significant or detrimental impacts.

Further site testing and detailed management responses would be undertaken as part of any future DA process.

Q9 - How has the planning proposal adequately addressed any social and economic effects?

The proposal seeks to provide additional housing diversity and affordability in Wollongbar, which is a rural village with an aging demographic and below State average household income.

The site is located close to existing social and community infrastructure within both Wollongbar and Alstonville including a full line shopping centre, a wide range of commercial, health and community services, recreation and sporting facilities and bus services.

The proposal would provide housing supply and diversity, specific to the local housing needs and on a site ideally suited for seniors housing (manufactured homes), while maintaining an inter urban break between Alstonville.

This planning proposal request demonstrates that development of the site will have positive social and economic effects.

Section D - State and Commonwealth interests

Q10 - Is there adequate public infrastructure for the planning proposal?

The proposal will not result in any significant demand on public infrastructure.

All required utility infrastructure including power, telecommunications, sewer, water and stormwater services are available and either already on or located close to the site (refer to the attached Engineering Report). While minor extensions to some infrastructure services would be required, this would not be cost prohibitive nor require funding from the government.

A review of the proposed access arrangement into the site has been undertaken and is provided within the traffic impact assessment. This review confirms that there is adequate sight and turning distances for vehicles accessing and existing the site and sight distance for vehicles travelling along Lismore Road.

Q11 - What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

Following the initial determination of the Gateway determination, formal views of relevant authorities shall be sought and considered.

Part 4 - Mapping

For the purposes of community consultation, the mapping contained within this Report, is considered appropriate for identifying the site and its characteristics. The concept development layout for the site will assist the community in understanding the potential development outcome on the land.

Mapping which would form part of the legal instrument will be prepared prior to the drafting of the LEP amendment. This would generally be limited to a site map for the purposes of identifying the land referred to under the new additional permitted use clause

Part 5 – Community Consultation

Public exhibition of the planning proposal will be undertaken to inform the community and seek feedback. As a minimum, it is envisaged that Council would notify its community via a notice:

- in a local newspaper
- on the Council website
- in writing to adjoining landowners

In addition to this minimum requirement, Greenlife Properties Ltd Pty propose to undertake a wider stakeholder engagement strategy, including community centric communications.

Regarding impacts:

- the proposal is consistent with the pattern of adjacent land use zones & land uses;
- the proposal is consistent with the strategic planning framework;
- the proposal does not represent any significant infrastructure issues;
- the proposal is not a principal LEP; and
- the proposal does not involve reclassification of public land.

The proposal therefore would meet the 'low impact' threshold, only requiring exhibition for 14 days. This timeframe could be extended if it was considered appropriate or necessary.

Part 6 – Project Timeline

The following timeline is provided to assist the Gateway in determining a timeframe for finalising the Plan. It will also provide as a mechanism for monitoring the progress of the planning proposal through the plan making process.

Anticipated Gateway Determination		2 months
Completion of required technical information		1 month
Government Agency consultation		1 month
Public Exhibition (14 days)		14 days
Consideration of submissions/proposal post exhibition		1 month
Submit to finalise LEP		1 month
RPA will make the LEP		1 month
	Total	8 months