



Byron Shire Preliminary Draft Residential Strategy August 2016





Acknowledgement to Country:

Byron Shire Council recognises the traditional owners of this land the Bundjalung of Byron Bay, Arakwal People, the Widjabal People, the Midjungbal People and the wider Bundjalung Nation.

The Council recognises that the most enduring and relevant legacy that Indigenous people offer is their understanding of the significance of land and the local and deep commitment to place.

The Byron Shire Residential Strategy respects and embraces this approach by engaging with the community and acknowledging that our resources are precious and must be looked after for future generations.

Disclaimer:

This document is a draft for public comment and should not be used by anyone as a basis for investment or other private decision-making purposes in relation to land purchases or land uses. Although initial consultation on landowner interest in the areas shown on the exhibited maps will occur during the exhibition process, it must be understood that these maps may be subject to significant changes after the exhibition process, when adopted by Council and/or when endorsed by the Department of Planning and Environment. Therefore potentially affected landowners are encouraged to remain informed and involved throughout the strategy process. This Strategy has no status until formally adopted by Council and endorsed by the Department of Planning and Environment.

Document History

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1. Introduction and Overview – Where are we now?

1.1 Identified issues

Council has undertaken a number of recent studies and investigations which have informed this strategy, either in terms of identifying issues and challenges related to housing or land supply.

The following issues were identified as part of a housing needs analysis undertaken in 2015 for the Byron Shire.

1. Supply and Demand (a): *Byron is a highly desirable place to live and therefore there is a high demand for dwellings.*

Byron Shire is a popular lifestyle location, with a large number of tourists visiting the area each year, as well as tree change and sea change families and retirees moving to the area.

Housing supply appears to have failed to keep pace with population growth, and existing and new housing stock is further eroded by competing demand for short term, high return, holiday and tourist accommodation. This includes a proportion of absentee home owners who have holiday homes in the Shire only occupied for limited periods of time each year.

It is also clear that the existing variety of housing stock is extremely limited and as a result there is a likelihood that some housing product preferences are not being met.

2. Supply and Demand (b): *Compared to demand, land and housing supply is low.*

Some local community members are living in makeshift dwellings – including garages, sheds, and caravan parks. Council changes to encourage secondary dwellings have increased opportunities for people living in makeshift dwellings to access more formal accommodation – from garages into secondary dwellings – and this has been a good outcome for peoples' wellbeing; however it hasn't necessarily meant that extra dwellings have been made available to meet population growth forecasts. Secondary dwellings have also allowed primary home owners to shift into the secondary dwelling in order to rent the primary residence for tourism purposes.

There appears to be limited urban/residential land and the cost of land is high, and developers have indicated they find it difficult to make developments stack up financially given this cost.

Those that are vulnerable and most susceptible to housing affordability issues in Byron Shire include people on low incomes and unemployed, young people and families and older people. Options for older people to live in smaller dwellings in an integrated neighbourhood setting are limited. The number of people 75 years of age and older is expected to double in the Byron Shire between 2011 and 2031 therefore the demand for appropriate accessible dwellings, retirement living, and residential aged care will increase strongly.

3. Affordability: *Housing affordability is an issue impacting some community members, particularly people on low incomes, young people, families, and older people.*

The most acute housing stress experienced in the Northern Rivers Region is occurring in Byron Shire, and mortgage stress and rental stress in the Byron Shire is higher than in New South Wales as a whole. Some local residents are renting single and double garages in Byron Bay and Bangalow, and sometimes people are leaving towns and jobs because the area is unaffordable. In some instances the lack of housing and the alternative housing arrangements people are living in (including garages, caravan parks and cars) can contribute to health and wellbeing impacts.

Accommodation costs seem 'out of step' with local incomes and this might be explained because housing prices are impacted by people moving to the area to retire or to use the property as a holiday home, and investors purchasing a rental property (often with a view to move to the area at some point).

- 4. Community perception (a):** *There is a community perception that smaller lot sizes, and attached dwelling types negatively impact an area. There is a stigma associated with social housing, particularly as a result of the way some of this housing product has been built (in clusters) and managed (poorly maintained), which makes it difficult to argue a case with the community for its expansion. There is also the perception that more diverse housing products will adversely affect the character and attractiveness of the region.*

Local views and perceptions about housing in the Shire present a conundrum for Council's forward planning outcomes. On one hand the community supports efforts to increase housing diversity to enable people to afford and own life cycle appropriate homes; but on the other hand they have an underlying desire to preserve the character of the area which is reflected in larger lots and houses, and rural vistas. Central to the issue are the perceptions that smaller lot sizes, attached dwellings and taller buildings do not suit the character of the area and the strong negative stigma associated with low cost and social housing due to past approaches elsewhere.

The community also prides itself on having a green and ecologically sustainable image and some concern has been expressed that certain urban areas may already be approaching their capacity in terms of liveability.

These perceptions can contribute to public opposition to any residential development that proposes an alternative to the standard blocks and detached houses. This in turn can adversely influence a developer's decision to offer a different product due to concern about the approval timelines and viability.

The challenge for Council is to achieve diverse and affordable housing products, whilst acknowledging and protecting what makes the region unique. Care needs to be taken to ensure that adjustments to regulations do not have any unintentional outcomes including erosion of liveability. Appropriate Council provisions around lot sizes, road widths and other development factors can encourage diverse housing whilst maintaining the town atmosphere and rural outlook.

- 5. Regulation:** *Planning, development regulation could be reviewed – rules regarding development (minimum lot sizes, height limitations, floor space ratios, secondary dwellings requirement), infrastructure charges/development contributions, and flood design standards - could be further explored to consider opportunities to encourage diversity of product and ease costs.*

Council policies, such as infrastructure charges contributions, height restrictions, minimum lot sizes, engineering standards, etc are influencing development outcomes and support the status quo in terms of traditional housing product. Provisions need to be reviewed to allow for more innovation and diversity and ultimately reduce development costs. There are examples of work done by others (example Economic Development Queensland) that support functional, attractive smaller homes on smaller lot sizes, diversity of housing products and more 'mixed' residential neighbourhoods. These could provide a template to adapt for Council purposes.

In particular the LEP needs to be reviewed to include appropriate aims for affordable housing and housing choice, which should be reflected in objectives under the R2 Low Density Residential, R3 Medium Density Residential, B2 Local Centre and B4 Mixed Use zones, where residential development is permitted. This includes secondary dwellings, dual occupancies, attached dwellings, multi-dwelling housing, shop top and seniors housing. The LEP should also prioritise urban consolidation through facilitating redevelopment and infill development opportunities, which in turn will enable more efficient use of services and facilities.

Planning regulation in the Byron Shire has proven to be influential in driving development outcomes. Previous policies including support for secondary dwellings have been taken up by the market, so the

impact of changed regulation cannot be under-estimated. Of course these have other consequences (in the case of secondary dwellings, significant lost revenue for Council in relation to recouped infrastructure charges) and these need to be weighed against other gains.

Individual provisions in the LEP may also be stifling greater diversity and housing opportunities. For example: the definition of shop top housing which only allows it to occur above the retail and commercial component, and not at the rear; the interpretation of heights limits (with a mis-match between allowable storeys and RLs); and floor space ratio (0.4:1) in the B4 Mixed Use Zone in Tweed St, Brunswick Heads, may be limiting potential.

This is reinforced by the new LEP 2014, which has generally maintained a minimum lot size of 600m² in most residential areas to be consistent with past planning controls.

There may also be a disincentive to provide smaller housing options with developer contributions proportionally favouring more bedrooms.

6. *Community perception (b):* *There is a perception that the Byron Shire Council has not been supportive of new development that the process of gaining development approvals is difficult and time consuming, and that development is expensive in comparison to other areas.*

The perception that Council is anti-development contributes to developers pursuing 'safe' development types that are similar to others in the area, rather than pursuing different dwelling types that contribute to diversity.

While this perception is shifting, the perception that Council has restrictive growth policies may also be contributing to financing difficulties, whereby banks are less likely to support projects in the Byron Shire because there is a risk that the project will be delayed in Council decision making and appeals.

Council processes need to be efficient and give certainty to developers about what is acceptable residential development in order to give confidence to the development industry and reduce holding and development costs. Communicating this message to the community (developers and residents) is a challenge for Council, and would require a concerted ongoing effort. If Council processes and planning provisions are not getting good outcomes, this would be even harder to communicate effectively.

1.2 Population and demographics – current situation and future trends

The estimated resident population of the Shire grew slowly between 2006 and 2011 at around 0.4% per year as detailed in Table 1 Population, Byron Shire 2006-2014. In the last few years, the growth rate has been higher – at between 1 and 2%.

Table 1: Population, Byron Shire, 2006-2014

Year	2006	2011	2012r	2013r	2014r	2015p
Estimated Resident Population	30,125	30,712	31,024	31,601	32,099	32,723
Place of Enumeration (on Census night)	30,326	30,964				
Place of Usual Residence	28,765	29,209				

Source: ABS 2016; ABS 2013.

Note: p = preliminary. r = revised.

According to Byron Shire Council projections, the population of the Shire is expected to grow from around 29,210 people in 2011, to 38,140 people in 2031 as detailed in Table 2: Population and Dwelling Projections – Byron Shire Council, Byron Shire and Localities, 2011-2036. This is a compound annual growth rate of 1.3%. Within the Shire, Bangalow is expected to grow strongly at around 3.1% per year. An additional 3,935 dwellings were estimated to be needed between 2011 and 2031 to meet this projected population growth. Given around 650 dwellings had been approved and constructed between 2011 and 2014, and assuming that 7% of total private dwellings might be used for holiday letting, it is estimated that an additional 3,580 dwellings would be needed to meet population growth between 2015 and 2031.

Table 3: Population and Dwelling Projections – Byron Shire Council, Byron Shire and Localities, 2011-2036

Locality	Census 2011	Projections Based on Place of Usual Residence					Additio nal Persons (2011- 2036)	Additio nal Dwellin gs (2016- 2036) 2.4 Persons per Dwellin g	Growt h Rate (2016- 2036)
		2016	2021	2026	2031	2036			
Byron Bay/Suffolk Park	9,167	10,180	11,729	12,755	13,323	13,891	3,711	1,546	1.57%
Brunswick Heads	1,639	2,102	2,359	2,588	2,799	2,835	733	305	1.51%
Ocean Shores	5,667	6,105	6,416	6,627	6,777	6,862	757	315	0.59%
Mullumbimby	3,172	3,532	3,837	4,097	4,594	4,996	1,464	610	1.75%
Bangalow	1,348	1,591	1,949	2,429	2,484	2,515	924	385	2.32%
Total	20,993	23,510	26,291	28,497	29,973	31,091	7,589	3,162	1.41%

Urban		0	0	6	7	9			
Rural North	4,771	4,845	5,092	5,260	5,379	5,447	602	251	0.59%
Rural South	3,445	3,498	3,676	3,797	3,883	3,932	434	181	0.59%
Total Rural	8,216	8,343	8,768	9,057	9,262	9,379	1,036	432	0.59%
Total LGA	29,209	31,853	35,058	37,553	39,239	40,478	8,625	3,594	1.21%

Source: Byron Shire Council 2015.

Note: Localities based on catchments in the Byron Section 94 Contributions Plan.

The *Draft North Coast Regional Plan 2016* outlines that 3,750-4,500 dwellings will be needed by 2036 in addition to the approximately 15,200 dwellings in the Shire at 2011. Holiday dwellings have been included in the Draft Regional Plan housing supply numbers to allow councils to manage tourism related growth. This projection is comparable to Council's 20 year dwelling projections when extrapolated to 2036.

Compared to New South Wales, the Shire has a high proportion of households being lone person households (27.6% compared to 24.2% for NSW), and one parent families (14.7% compared to 11.7% for NSW) as detailed in Table 3 Household structure, Byron Shire and NSW, 2031. Group households also make up a higher proportion of households in the Shire compared to New South Wales. The Shire has lower proportions of couples and couples with families compared to New South Wales.

Table 4: Household structure, Byron Shire and NSW, 2011

Location	Couple family without children	Couple family with children	One parent family	Lone Person Households	Group Households
Byron Shire	24.5%	25.0%	14.7%	27.6%	7.5%
NSW	26.3%	32.7%	11.7%	24.2%	3.8%

Source: ABS 2013.

Note: Assuming that the secondary family in the small number of multi-family households have the same household type as the primary family.

The median age of the Shire population is higher than for NSW and Australia (42 years compared with 38 for NSW and 37 for Australia). The population is ageing, with 20% of the population to be 65 years of age and older by 2026 as detailed in Table 4 Age group projections, Byron Shire, 2011- 2031.

As the older age group make up a higher proportion of the future population it is expected that the proportion of couples and lone person households will increase, and this may encourage demand for smaller, well located dwellings.

Table 5: Age group projections, Byron Shire, 2011-2031

Age	2011	2016	2021	2026	2031
0-14 years	5,650	5,900	6,100	6,300	6,450
15-24 years	3,200	3,250	3,250	3,250	3,450
25-44 years	7,700	7,850	7,950	8,200	8,200
45-64 years	10,150	10,300	10,250	10,050	10,200
65+ years	4,000	5,000	6,050	7,100	7,900
Total	30,700	32,300	33,600	34,900	36,200

Source: NSW Government: Planning and Environment 2015

2. Vision – Where do we want to be?

2.1 Regional context

2.1.1 Settlement Planning Guidelines, 2007

The New South Wales Government Settlement Planning Guidelines were developed to assist councils to prepare local growth management strategies to achieve outcomes and actions outlined in regional plans. The guidelines provide a number of settlement planning principles which, when implemented through local planning policies, assist with providing for efficient and sustainable development of land. Principles related to residential development include:

- *Location* – any new urban settlement should be located within agreed growth areas, and where not included in an agreed growth area, should be located to minimise environmental impacts and be sustainable.
- *Land suitability* – any new urban development should be on suitable and capable land and be away from (or manage) environmental values, resource activities and hazard issues.
- *Land release* – land releases should help to meet dwelling targets and provide housing mix, and consist of 60% single dwellings and 40% multi-unit housing.
- *Settlement form and hierarchy* – future development should strengthen the hierarchy of settlements identified in regional strategies (including supporting multi-functional job centres, minimise urban sprawl and maximise infrastructure and service delivery); provide a mix of houses, jobs and open space; and provide a variety of dwelling types and housing choice (in terms of location, form and affordability).
- *Urban design and heritage* – future development should recognise, protect and be compatible with setting and character; encourage walkability; and support appropriate access to open space.
- *Infrastructure provision* – future development should only be provided where it can be serviced with adequate and cost effective physical and social infrastructure, strengthen the efficiency of existing infrastructure, and not overburden existing infrastructure; minimise the need for travel and maximise the opportunity for public transport use and active transport; not place additional local traffic demand on the Pacific Highway; and not contribute to strip/ribbon development.
- *Employment lands* – industrial land and commercial land should be located with consideration of linkages to settlement areas.
- *Tourism opportunities* – future tourism products and services should not occur at the expense of local environmental or social values.

These principles have been included in the summary of community vision statements in Section 2.3.

2.1.2 Draft North Coast Regional Plan, 2016

The Draft North Coast Regional Plan outlines the following goals which have helped guide the Residential Strategy:

A natural environment, and Aboriginal and historic heritage that is protected, and landscapes that are productive;

- The plan notes that some environmentally sensitive locations in the region are under pressure due to demand for housing and employment land. It suggests that population growth and the spread of low density urban and rural residential development should be managed to ensure these locations are protected.
- Urban growth areas are identified to limit urban expansion. Any variations to the urban growth areas must be consistent with the Urban Growth Area Variation Principles. The plan discourages rural fragmentation and additional rural dwellings on rural agricultural land.
- A coastal area is identified in the regional plan which is the area to the east of the planned Pacific

Highway alignment in the Byron Shire. Urban growth will be directed into mapped urban growth areas in the coastal area and to non-coastal regional centres, towns and villages. New rural residential development will not be permitted in the coastal zone unless already zoned, or in an approved growth management strategy.

Focus growth opportunities to create a great place to live and work;

- Employment and population growth is supported in *Regional Cities*, and *Regional Centres* provide complementary lifestyle and housing choice, infrastructure and services and employment land supply. No regional cities or centres are identified in the Byron Shire, however Mullumbimby and Byron Bay are identified as towns/villages and are therefore envisaged as centres for jobs and higher order services.
- The plan suggests that continued development along the coast (assumed to be the coastal zone) may lead to underuse of infrastructure and services in major centres outside the coastal area, and increased pressure on the fragile coastal environment. This will need to be managed.
- New housing will be located in identified regional cities and urban growth areas, to protect environmentally sensitive coastal and rural landscapes. Additional urban growth areas can be identified by local governments to feed into the regional plan mapping.
- The regional plan suggests that farmland, bushland, floodplains or environmental features that separate urban settlements contribute to the distinctive character of the region and should be protected.
- Future growth should be directed to locations that can sustain additional development and are readily serviced. Housing should be located close to centres and in the least constrained areas. Commercial development should be focused in existing centres.

Housing choice, with homes that meet the needs of changing communities;

- The plan notes that over 90% of the region's population growth to 2036 will be people over 65 years of age. In terms of household type, couple-only and single-person households are expected to increase and grow demand for smaller and multi-dwelling housing. It suggests that 40% of new housing should be multi-unit housing. A range of smaller lot housing should be provided in local environment plans or planning strategies.
- Local growth management plans should identify adequate land for housing to put downward pressure on house prices, maximise efficient and effective use of infrastructure, and provide work.
- The Byron Shire local government area should plan for 3,750-4,500 additional dwellings by 2036 (above the number of dwellings in 2011), which includes holiday dwellings.
- The plan notes that Byron Shire may not have sufficient capacity in their urban growth areas to meet the need for housing, and therefore additional urban land may need to be identified and included in the regional plan before it is finalised.

A prosperous economy with services and infrastructure;

- The draft regional plan supports the provision of local job opportunities for residents in a diverse range of industries, including agriculture, manufacturing, healthcare, education, tourism and retail. Actions to support tourism, health and education are outlined.
- Land for employment growth, and growth in commercial centres - where social, economic and transport infrastructure has already been provided - should be supported.

Improved transport connectivity and freight networks.

- Transport networks are acknowledged as being important drivers for jobs and the draft regional plan provides a number of directions and actions to support the efficiency of the Pacific Highway, deliver local benefits to by-passed towns, and provide development land around airports.

The Draft Regional Plan may be amended prior to being adopted by the State Government, and may further shape this strategy once it is finalised.

2.2 Local context

2.2.1 Community Strategic Plan , 2012

The Community Strategic Plan (CSP) was endorsed by Byron Shire Council in June 2012 and captures the community's vision and aspirations for the Shire. Relevant findings from the CSP community consultation and strategies to achieve the vision have been summarised in the themes below where of relevance to the residential strategy.

Economy – A sustainable and diverse economy which provides innovative employment and investment opportunities in harmony with our ecological and social aims.

- Distinctive towns and villages, and the outstanding physical environment are part of the foundation of the local economy.
- Future challenges include an ageing population.

Society and culture – Resilient, creative and active communities with a strong sense of local identity and place.

- Meeting the needs of a diverse community and visitors is a challenge for the Shire including providing access to and supporting local services and facilities. Services that need to be provided include emergency services, and health care services. A lack of funding and available resources make it challenging to meet community expectations.
- Community consultation suggested that affordable housing was an issue.

Environment – Our natural and built environment is improved for each generation.

- Community consultation suggested that:
 - the environment and biodiversity needed greater emphasis,
 - there was insufficient affordable public transport options in the Shire – it was recognised that public transport would reduce environmental impacts from car travel,
 - there was a need for sustainable urban development including minimising over-development of sub-divisions in rural areas,
 - there was a lack of available land to allow the next generation of locals to live in the Shire, and
 - there was a need for urban development to include best-practice higher density and mixed use development close to facilities and green space while still providing a sense of living in a natural place.
- It was suggested that innovative and sustainable urban design should be used to reduce impacts on the environment and encourage development with reduced reliance on cars.

Community infrastructure – Services and infrastructure that sustains, connects and integrates our communities and environment.

- It was stated that in some areas, Council does not have the resources to maintain assets at the level expected by the community. This is partly due to new residents expecting services and infrastructure at a higher standard such as in a major city, and tourism pressures on infrastructure without the commensurate increase in revenue to the council.
- Community consultation noted this pressure coming from tourism related expenses/investment compared to the low ratepayer base. The community also expressed a need for more integrated public transport.

- There is a need to plan for the provision of community facilities, future traffic demands, and water, sewerage and stormwater infrastructure.
- Other strategies focused on the need to encourage sustainable and accessible transport solutions between towns and villages rather than relying on car transport.

2.2.2 Town Strategies

There does not appear to be any Council documents which define the role/hierarchy of each of the towns/villages in the Shire.

Settlement Strategies for Byron Bay and Suffolk Park, Mullumbimby, Bangalow and Brunswick Heads were completed from 2002 to 2004. Although the strategies are now out of date a review of these has been undertaken and included in **Appendix A** as supporting reference material.

2.2.3 Byron Bay Town Centre Masterplan 2016

The Town Centre Masterplan notes that:

- There is a need to preserve the eclectic village character of the centre with increased density and high quality design.
- Local residential living in upper floors of town centre buildings should be supported;
- The appropriate 11.5m (3 storey) height limit should be extended to support the newly defined edge of the town centre heart (as shown in the figure below).
- Community input suggested: the need to retain the village character, maintain three storey building height limit, allow residential uses in the core town centre zone, and consider relaxing site parking requirements.
- The Johnson Street South area should incrementally transition into a mixed use district with medium density living (offering a diverse array of dwelling types to support varying demographics) and local businesses.
- Floor space ratio requirements could be amended or removed in order to support fine grain development.

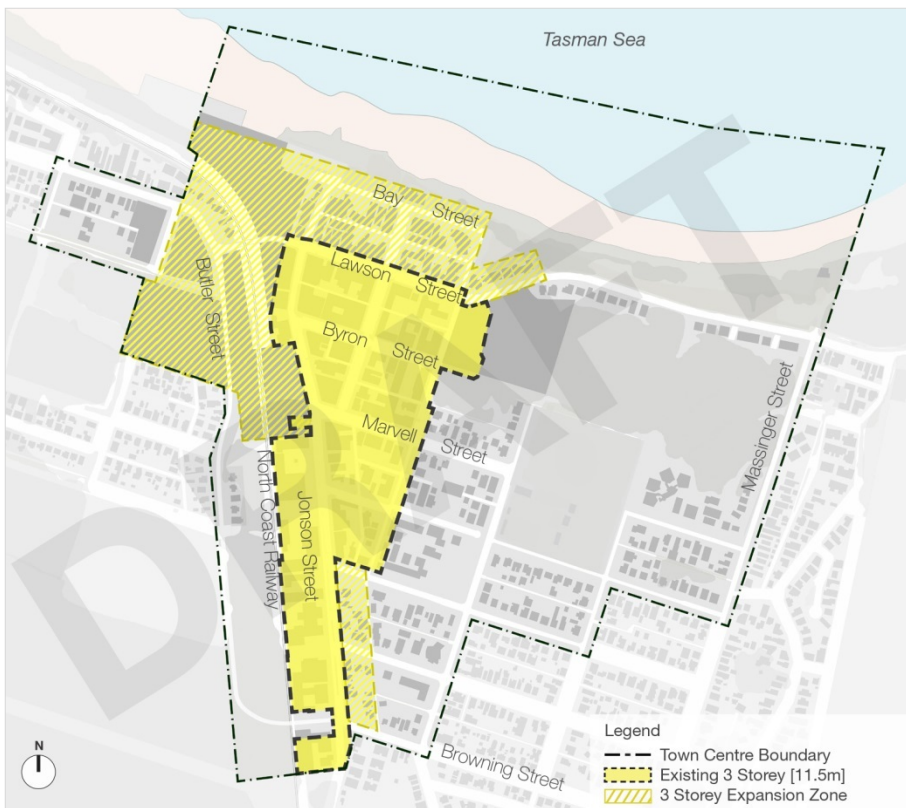


Figure 1: Byron Bay Town Centre Masterplan proposed extension to 11.5m height limit area

2.3 Community vision statements

The following community vision statements or guiding principles were compiled based on policies and literature reviewed in this section. These community vision statements helped inform the mapping analysis and residential development strategies.

- **Environmental values should be protected.**

There is a strong community preference for the protection of environmental values in the Shire. This preference manifests itself in the following ways of relevance to the residential strategy:

- The limiting of urban expansion to protect the natural characteristics and precious biodiversity of the Shire;
- Encouraging urban form and transport options that reduce reliance on the use of private motor vehicles to get around;
- Sustainable building design and materials.

- **Good quality agricultural land should be protected.**

Protection of agricultural land should take place through:

- Limited expansion of urban development onto rural lands;
- Limited additional dwellings on rural land that might reduce agricultural activities, although some tourism activities might be supported;
- Limited fragmentation of rural agricultural land.

- **Local heritage/distinctive character should be protected.**

Heritage and character are important values to be protected in the Shire including:

- Heritage conservation areas identified in Bangalow, Byron Bay and Mullumbimby and included in Local Environment Plan (LEP) 2014 - The scale and form of the buildings in these areas form part of the heritage designation as it is noted in the Community-Based Heritage Study 2007. For

Bangalow, the heritage statement notes single and two-storey buildings; for the Kingsley Street precinct in Byron Bay, the large lots are noted; and for the Shirley Street precinct in Byron Bay, the modest single-storey dwellings are noted;

- Urban breaks (of farmland, bushland, floodplains or environment features) contribute to maintaining the distinctive character of towns in the Shire;
- The low density nature of the existing towns and of the Shire is a characteristic to be preserved.

- **Urban consolidation (with limited contiguous urban expansion) should be supported.**

As well as limiting urban expansion to protect environmental values and maintaining the distinctive character of the Shire, it should also be supported to contribute to the efficient provision of infrastructure. The high number of tourists which visit the Shire (and the high ratio of tourists to local residents) can put pressure on the sustainability of Council's budget and impact the provision of infrastructure.

The preferred form of infill development is small scale, being secondary dwellings (garden flats, granny flats) or dual occupancy, though at specified locations such as the Byron town and Mullumbimby town centres, some form of 2-3 storey apartments, row housing or other small scale attached housing will be allowable.

- **New residential development should match with expected population characteristics and allow future generations to live in the Shire.**

The need for additional housing in the Shire includes:

- Affordable housing for a variety of household types, including key workers and for future generations of the existing population;
- Matching housing types to the needs of the future population –greater housing diversity including smaller housing and multi-unit dwellings for smaller households (couple-only and single-person households) as this household type is expected to make up a larger proportion of the future population. Designs need to focus on innovative, sustainable and best-practice design so as to contribute to the character of the Shire;
- Secondary dwellings and dual occupancy could contribute to additional affordable housing provision, rather than, for example, townhouses, terrace houses, small scale apartment buildings, etc.

- **Town centres should include some mixed-use and residential uses.**

There are options for residential uses and mixed use redevelopment of town centres including:

- Residential uses on the upper floors of buildings within the Byron Bay town centre area, and mixed use and medium density living in other areas of the Byron Bay town centre area;
- Additional population growth through redevelopment and higher residential densities in the town centre of Mullumbimby may also be appropriate.

3. Mapping Analysis

3.1 Methodology of mapping analysis

Mapping analysis has been used to assist in identifying opportunity areas and capacity for residential uses. The mapping analysis was broken into two separate streams – greenfield residential land analysis, and residential infill analysis. These have separate methodologies, assumptions and limitations which are outlined briefly below. For the purpose of this report, greenfield residential land includes land which is vacant or under-developed. It does not include lots identified as infill opportunity within existing urban areas. Greenfield sites were determined through the analysis below.

3.1.1 Methodology of greenfield residential land mapping analysis

The methodology for the greenfield residential land analysis has been summarised in the Table 1 of **Appendix B**. Beginning with all lots within the Shire, lots were progressively included or excluded from the analysis based on, for example:

- zoning, tenure, ownership and current uses;
- proximity to urban centres;
- topography;
- ecological constraints;
- various hazards such as bushfire and flooding risks;
- aerial photography;
- the local knowledge of Council officers regarding existing/approved development; etc.

3.1.2 Methodology for residential infill analysis

A separate infill analysis was undertaken which involved assessing the amount of land and likelihood of redevelopment of land within urban areas. A brief summary of the methodology is included below.

An infill analysis has been conducted on areas zoned for residential, limited to: 2(a) Residential Zone; R2 Low Density Residential; and R3 Medium Density Residential.

The dataset was reviewed by Council officers to exclude any lots that were built to their full capacity or not suitable for infill development based on local knowledge and site visits.

Only lots greater than 900m² have been included in the analysis as having infill potential. Rather than assume that these lots could be redeveloped at a certain density, a more pragmatic analysis was undertaken which involved considering the lots in increments of 900m². The lot ranges therefore were: 900m² – 1,800m²; 1,800m² – 2,700m²; 2,700m² – 3,600m²; 3,600m² – 4,500m²; and lots greater than 4,500m². A yield multiplying factor was applied to each of the lots under 4,500m², and a dwelling density (and allowance for open space and roads) was used to estimate the number of dwellings that lots over 4,500m² might yield.

The full methodology is included in **Appendix E**.

3.2 Results of analysis

3.2.1 Results of greenfield residential land analysis

The results of the analysis to identify potential sites of new greenfield development have been provided Table 5 Summary of results of greenfield analysis. Sites contributing to dwelling yield calculations have been shown, and have been ordered by area of interest category – approved for residential, vacant residential zoned land, and possible area for residential.

A comprehensive table showing all sites considered in the analysis ordered by site number has been provided in **Appendix C** and maps showing the locations of the sites are included as **Appendix D**.

The analysis suggests that an additional 2,001 dwellings could be provided in the areas of interest in the short to medium term through new greenfield development.

Table 6: Summary of results of greenfield analysis

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
Areas contributing to dwelling yield					
22	Approved for residential	Bayshore Drive, Byron Bay Lot 3 DP1004514	<ul style="list-style-type: none"> - Development application – Habitat Development - DA Approval – 28 Dwellings (DA2015.353.1) 	4.9 ha	28 dwellings
31	Approved for residential	Ballina Road, Bangalow Lot 22 DP1070522	<ul style="list-style-type: none"> - Development application - 50 lots (DA10.2011.474.1) work about to commence 	5.4 ha	50 dwellings
24	Vacant residential zoned land	West Byron	<ul style="list-style-type: none"> - No Development Application yet 	55 ha	Approximately 850 dwellings
1	Possible area for residential	Immediately west of Billinudgel village	<ul style="list-style-type: none"> - Billinudgel Village Extension - Adjoins Village - Medium – high suitability - Services can be augmented - zoning allows for multiple uses including residential, caravan parks, commercial/retail and industrial uses - Some constraints – flooding and slope 	11.2 ha	60 dwellings. Land may be used for other commercial purposes closer to village centre
8	Possible area for residential	Tallowwood Estate	<ul style="list-style-type: none"> - Planning Proposal for residential expansion underway (Gateway Determination issued 27/5/16) - Zone boundaries being reconfigured 	12 ha	95 Dwellings
13	Possible area for residential	Stuart Street, Mullumbimby Lot 22 DP1073165	<ul style="list-style-type: none"> - Potential for affordable housing - Within 1km town catchment - Requires engineering review - Low-medium flooding constraint – requires further flood assessment - Farmland constraint needs to be resolved - Council owned land - Railway corridor 	28.5 ha (Approx. 10 - 12 ha developable)	100 dwellings

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
14	Possible area for residential	Ann Street, Mullumbimby Lot 1 DP1032298	<ul style="list-style-type: none"> - Potential housing precinct – possible higher density - Within 1km town catchment - Contains areas of low constraint - Requires engineering review - Minor flooding – requires further flood assessment - Contains waterways buffer - Farmland constraint needs to be resolved - Railway corridor – needs at least pedestrian cycle access across rail line if not second road crossing 	14.6 ha	150 dwellings
17	Possible area for residential	Saddle Road	<ul style="list-style-type: none"> - Identified in Rural Land Use Strategy - Water and sewer available subject to geology / geotechnical - Farmland constraint needs to be resolved - Ridgeline and visual issues - Requires safe access from Gulgan Road - School - Public or Private 	133.9 ha	Approximately 400 dwellings
18	Possible area for residential	Bayside Way and Kingsford Drive, Brunswick Heads Lot 100 DP1070724 Lot 1 DP871039	<ul style="list-style-type: none"> - Development applications - 50 Lots (DA10.2015.795.1 – yet to be determined by council) - 163 Lots (Concept approval by Department of Planning – Work yet to commence) 	37.9 ha	213 Dwellings
25	Part possible area for residential and part not suitable - highly constrained	Ewingsdale Road, Byron Bay Lot 350 DP755695	<p>East section – Possible area</p> <ul style="list-style-type: none"> - Potential residential - add to Shirley street tourism precinct - Flood prone – will require further flood assessment <p>West section – not suitable</p> <ul style="list-style-type: none"> - Low lying flood prone 	15.4 ha (Approx. 1.2 ha developable)	20 dwellings
29	Possible area for residential	Granuaille Crescent, Bangalow Lot 233 DP 1194657	<ul style="list-style-type: none"> - Adjoins existing residential zoned areas - Old housing stock - Only Area south of Rankin Drive should be rezoned residential 	1.28 ha	Approximately 10 dwellings
32	Possible area for residential	Ballina Road, Bangalow Old Highway	<ul style="list-style-type: none"> - Within 1km town catchment - Old housing stock 	15.5 ha	Approximately 25 dwellings

3.2.2 Results of residential infill analysis

The results of the analysis to quantify the level of infill development that might be achieved in the urban areas of the Shire are included in the Table 7: Summary of results of residential infill analysis. (Tables showing the calculations and results for each urban area are included in **Appendix F** and maps showing the locations of the possible sites suitable for infill development are included as **Appendix G**.)

The analysis suggests that an additional 784 dwellings could be provided within the urban areas of Byron Bay, Suffolk Park, Mullumbimby, Bangalow, Brunswick Heads, New Brighton and Ocean Shores based on the assumptions used.

Table 8: Summary of results of residential infill analysis

Location	Assumed Dwelling Yield (Dwellings)
Byron Bay and Suffolk Park	170.2
Mullumbimby	106.4
Bangalow	81
Brunswick Heads	21.1
New Brighton and Ocean Shores ¹ .	405.9
Total assumed infill dwellings	784.6

- ¹. Infill figures do not take into account slip prone land which (upon further investigation) may reduce actual infill potential for Ocean Shores locality.

3.3 Summary of results

The results of the analysis are summarised in Table 7 Potential dwelling yield for Byron Shire following. The table includes:

- Dwellings already approved for residential development since 2011 – these are included here because the dwelling targets are based on 2011 as a starting date (*Row A*);
- The results of the greenfield residential land mapping analysis (2,001 additional dwellings) (*Row B, Row C and Row E*);
- A separate review of vacant land in the Shire based on aerial photography (*Row D*);
- Land identified in the draft Rural Land Use Strategy that could accommodate additional dwellings within rural areas (*Row F*).
- The results of the residential infill mapping analysis (784 additional dwellings) (*Row G*);

The analysis has identified land for 5,481 additional dwellings (from a base year of 2011) (*Row H*).

Only sites included in the dwelling yield targets are summarised in Table 7. A more detailed summary of the results is included in **Appendix H**.

Table 9: Potential dwelling yield for Byron Shire

Row Number	Category	Description	Included in Dwelling Yield Target	Timeframe	Complexity	No. of Dwellings	Area (Ha)
Areas contributing to dwelling yield							
Row A	Approved urban dwellings, dual occupancies and secondary dwellings since 2011	Number of approved dwellings for new houses, secondary dwellings, dual occupancies, medium density and subdivisions from 2011 to 31 May 2016.	Yes	Completed	N/A	1,543	N/A
Row B	Approved for residential	Areas containing development applications.	Yes	In progress	N/A	78	10
Row C	Vacant / under developed residential zone land	Areas zoned residential and currently vacant land and examined as part of the greenfield residential land analysis.	Yes	Short-medium	Low	850	55
Row D	Vacant / under developed residential zone land	Areas zoned residential and currently vacant land. This involved a secondary analysis of all vacant zoned residential land through the examination of aerial photography.	Yes	Short-medium	Low	853	175
Row E	Possible areas for residential development	Areas with low or manageable constraints that are considered possible for residential development.	Yes	Short-medium	Low - medium	1,073	248

Row Number	Category	Description	Included in Dwelling Yield Target	Timeframe	Complexity	No. of Dwellings	Area (Ha)
Row F	Draft Rural Land Use Strategy	Areas extracted from the latest draft Rural Land Use Strategy (as reported to 4 August 2016 council meeting) for dwellings within the rural area (ie. rural residential and secondary dwellings)	Yes	Short-medium	Low - medium	75 (rural residential) * 225 (secondary dwellings)	45 N/A
Row G	Infill	Infill within existing residential developed areas	Yes	Short-medium	Low - medium	784	Refer to infill analysis
Row H	Total					5,481	

* Note: Figure is unconfirmed pending state government endorsement of draft Rural Land Use Strategy

3.4 Greenfield/infill development split

In order to provide some indication of the split between greenfield and infill development indicated in the results of the mapping analysis, a further analysis has been undertaken. For this analysis, only potential future dwelling yield has been considered. Dwellings that have been provided since 2011 and dwellings that are approved already have been excluded. A number of the future dwellings are to be provided in rural areas of the Shire, primarily through the establishment of rural residential and secondary dwellings (*Row C and Row E* from **Table 8**). The secondary dwellings have been included as infill development for the purpose of this analysis. The total potential future yield being considered in this analysis therefore reduces to some 3,860 dwellings.

If these total future dwellings are then split between greenfield and infill residential development as shown in **Table 8**, the resulting greenfield/infill split is 52 per cent to 48 per cent.

Table 10: Potential future dwelling yield for Byron Shire – greenfield and infill split

	Infill/ Greenfield	Category	Timeframe	No. of Dwellings
Row A	Greenfield	Vacant/under-developed residential zone land and examined as part of the greenfield residential analysis (West Byron) (<i>Row C</i> from Table 7)	Short-medium	850
Row B	Greenfield	Possible areas for residential development (<i>Row E</i> from Table 7)	Short-medium	1,073
Row C	Greenfield	Possible new areas for rural residential development (draft Rural Land Use Strategy)	Short-medium	75 *
Total greenfield (52%)				1,998
Row D	Infill	Vacant/under-developed residential zone land (<i>Row D</i> from Table 7)	Short-medium	853
Row E	Infill	Secondary dwellings in rural areas	Short-medium	225
Row F	Infill	Infill within existing residential developed areas (<i>Row G</i> from Table 7)	Short-medium	784
Total infill (48%)				1,862
Total of potential future dwelling yield (100%)				3,860

The mapping analysis results (in **Table 7**) show that the dwelling target of 3,750-4,500 outlined in the *Draft North Coast Regional Plan 2016* can be achieved. However, what has not been considered is whether this split of urban infill versus new greenfield development (outlined in **Table 8**) should be pursued or some other split based on further considerations for Council such as financial, infrastructure delivery, and lifestyle implications. For example, the provision of infrastructure to service new greenfield development in some areas may be expensive for Council, compared to other areas. Therefore, sequencing of future residential as well as infrastructure servicing and financial commitments of Council should be further considered in ultimately pursuing a particular form of development. These additional considerations for the provision of residential development are discussed in Section 5 below.

* Note: Figure is unconfirmed pending state government endorsement of draft Rural Land Use Strategy

4. Strategic Response – How can we get there?

4.1 Existing available residential areas

A proportion of future housing supply required to meet local and regional aspirations will be met through current residential building approvals and approved subdivisions. For the purposes of this study, it was assumed that these existing approvals will proceed to construction and occupancy.

The number of approved dwellings for new houses, secondary dwellings, dual occupancies, medium density and residential subdivisions from 2011 to 31 May 2016 was estimated to be 1,621 dwellings.

Similarly, there is an amount of appropriately zoned land within the Shire already which is available for take up for residential purposes. Barring any individual owner reluctance or market incentive to capitalise on this potential, broadly speaking, the land identified in this analysis is not significantly constrained in terms of its suitability for residential.

The number of dwellings estimated to be delivered on appropriately zoned vacant land including West Byron was estimated to be 1,703 dwellings.

Together, new and approved development and appropriately zoned vacant land is expected to deliver 3,324 dwellings or approximately 60% of the total identified dwelling capacity (5,481 dwellings).

4.2 New land release

Future areas suitable for residential development have been identified that satisfy the criteria outlined in the mapping analysis.

More detailed investigations into the localised sequencing of the release of this land, will be dependent on further consideration (and/or investigation) of existing infrastructure capacity because of capacity or age of existing assets.

A small number of possible areas for residential development were identified. These areas were estimated to deliver around 1,073 dwellings or approximately 20% of the total identified dwelling capacity (5,481 dwellings).

Land has also been identified for further consideration beyond the 2031 timeframe however these areas have not been included in dwelling estimates.

4.3 Rural lifestyle living

In terms of rural lifestyle living, 300 dwellings have been included in the dwelling estimates that might result from additional dwellings in the rural area through sub-division, secondary dwellings etc., or 5% of the total identified dwelling capacity (5,481 dwellings).

The draft Byron Shire Rural Land Use Strategy recognises that “while rural lifestyle living remains a relevant part of the housing mix, it represents primarily a ‘lifestyle choice’ with most of our Shire’s future housing needs to be provided by our urban villages. As the majority of the Shire’s future population growth will be housed in our urban areas, it is vital that any potential urban land is not used for this form of settlement.” Therefore, areas identified as being unsuitable for urban residential development in this study may be further considered in future strategy reviews, however no estimate of the number of dwellings that would be provided under this scenario has been included in the dwelling estimates in this report.

4.4 Infill development

Infill within the existing residential developed areas was estimated to deliver around 784 dwellings, or 14% of the total identified dwelling capacity (5,481 dwellings).

This estimate was based on a range of assumptions about the redevelopment of existing residential land for duplexes and semi-attached dwellings. It was also assumed that only 20% of lots that were suitable for

redevelopment would be redeveloped in the 20 year time frame of the study (2016-2036). These are considered fairly conservative estimates.

4.5 Mapping analysis

The mapping analysis has provided one possible breakdown of dwellings to 2036 in terms of:

- Development on appropriately zoned vacant residential land;
- Possible new release areas for residential development;
- Additional dwellings in rural areas; and
- Infill development in urban areas.

Council may choose to pursue a different breakdown of residential development informed by the values of the local community, for example, a higher proportion of dwellings might be provided as infill development if the community would prefer this form of development over opening up new areas of land for greenfield development.

Various take up scenarios could be modelled based on different parameters and assumptions and would require additional analysis.

Three strategic responses are outlined in further detail below: supporting housing diversity, innovative development on special opportunity sites, and supporting affordable housing/living.

5. Other Strategic Considerations

5.1 Supporting housing diversity

The Byron Shire Housing Needs Report (2015) noted the need for a range of regulatory planning changes to support and incentivise housing diversity in the Shire. These changes were intended to create a development environment that encouraged greater dwelling yields on a range of residential blocks to support different housing products including duplex and other semi-detached housing, and low scale apartment style projects. Existing planning provisions, including: minimum lot sizes; floor space ratio; and building heights may be limiting the potential take up of more diverse housing products in the Shire.

The mapping analysis estimated that 48% of future housing could be provided through infill development compared to 52% for greenfield development – in particular through redevelopment of larger lots for duplex, terrace, integrated or apartment style housing. The assumptions in the mapping analysis may only be realised by ensuring that planning provisions to encourage and support housing choice are in place (in combination with other Council actions). Similarly, a higher proportion of future dwellings being provided as infill development (such as duplexes, semi-detached, shop-top development, etc) could be pursued if supported by Council and the community.

Housing diversity and infill development is not only essential for ensuring that the Shire can meet future housing demand, but to provide housing that:

- Is well located in relation to existing employment and services, reducing the reliance on car based transport;
- Has the potential to fill the gap in for housing products missing within the Shire – including more affordable housing for key workers, housing for seniors and older persons, and housing for young persons and couples; and
- Does not contribute to ongoing, unnecessary urban sprawl with its associated cost implications for infrastructure delivery and servicing.

[Note: This section of strategy work is yet to be completed]

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Appendices

Appendix A. Review of settlement strategies

All of the strategies note community preference to maintain the natural environment and oppose significant additional population growth in the towns. They suggest that there are limited additional areas for further residential development around the towns.

The settlement strategies identify the following areas for possible residential development: the area now referred to as West Byron, some additional areas near Ewingsdale (for rural residential development), small areas that extend existing residential areas in Mullumbimby (including an area to the south of Prince St), the area now being developed as Tallowood Estate in Mullumbimby, very limited areas in Bangalow that slightly extend existing residential areas, and unconstrained land to the south of Bayside Brunswick (however this land was identified as being subject to investigation for a school).

Settlement Strategy Byron Bay and Suffolk Park 2002

Vision statement for Byron Bay and Suffolk Park:

- A sustainable natural environment with extensive environmental repair;
- A sustainable built environment based on a small low density community;
- A socially resilient community with a variety of employment based on locally owned and operated small businesses;
- An economically viable community based on ESD guidelines which diversifies beyond tourism; and
- The sustainable management of infrastructure providing a balance between environment, tourism and employment.

For **Byron Bay** the strategy suggests:

- Future urban development be limited to existing 2(a) (Residential Zone) and 3(a) (Business Zone), and the 7(f2) (Urban Coastal Lands Zone).
- That urban consolidation is achieved through redevelopment and increased residential density in the 3(a) (Business Zone) in the town centre.
- Design guidelines be development to retain character of streetscapes, building styles and development pattern.

For **Suffolk Park** the strategy suggests:

- That Suffolk Park is to remain a detached housing area, with no increases in density such as through dual occupancy or medium density development.
- That there is some potential to extend to the south and west along the foothills of the escarpment, but this is limited by potential conflict with Batson's quarry and need to retain views of escarpment.

The strategy identified investigation areas around Byron Bay (see **Figure 1** below). Some of the areas were found to be inappropriate for residential development:

- Area 1 is impacted by flooding and may be limited to use as a bus terminal or car park.
- Area 2 north of Ewingsdale Road may be unsuitable for residential subdivision due to constraints.
- Area 3 has already been subdivided as rural residential area. Residential densities would be possible but traffic would be an issue on Ewingsdale Road. Community consultation undertaken for the project identified strong opposition to urban density at Ewingsdale.

Other investigation areas were identified as having some potential for residential/rural residential development:

- Area 2 south of Ewingsdale Road (now referred to as 'West Byron') may be appropriate for residential subdivision – it is easily serviced for water, sewer and electricity - however it would increase traffic to Ewingsdale Road and is not supported by the community.
- Area 4 is southwest of existing rural residential area and could be used for rural residential development in the future.
- Land deferred from Byron Rural Settlement Strategy 1998 has potential for holiday cabin development, rural residential or eco-village development.

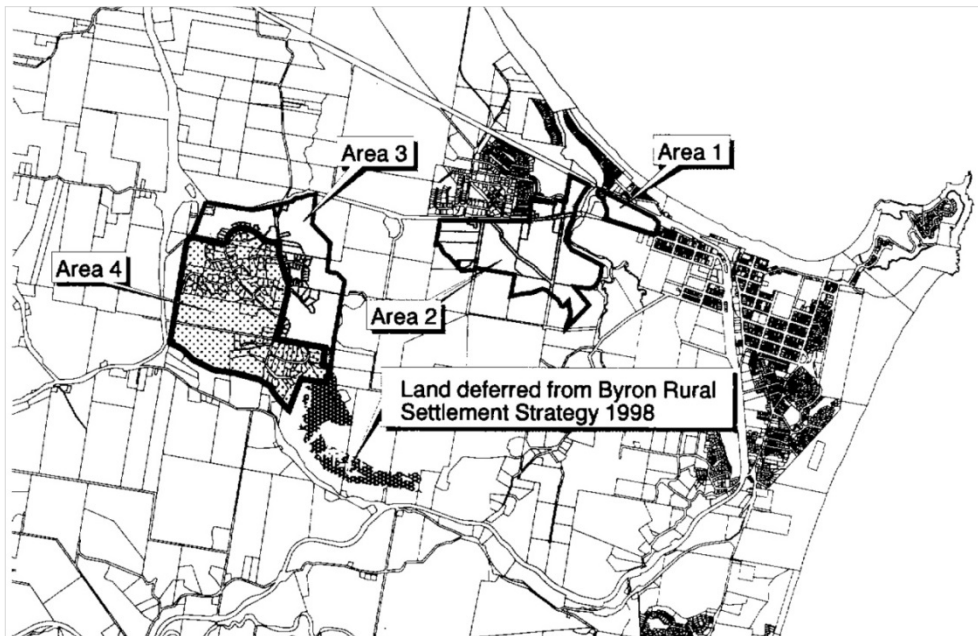


Figure A1: Investigation areas of the Byron Bay and Suffolk Park Settlement Strategy 2002

The settlement strategy identified no additional land for new residential subdivision and suggested that, apart from the completion of subdivisions already underway, any additional future population growth would need to be concentrated in the Byron Bay town centre, as well as some dual occupancy and medium density precincts. It noted that some land owners were simply not interested in redevelopment of their land, and therefore any theoretical yield from infill development may not be achieved.

The strategy assessed 1(d)(Investigation Zone) lands. It recommended that none of these parcels be used for residential development (other than an expansion of a nursing home on to one site). It suggested rezoning of these sites to reflect environmental values on the sites and to provide better public and landowner confidence as to what land uses are likely to occur in these areas.

The strategy also suggested changes to the existing 2(a)(Residential Zone) to redefine residential uses and densities in different localities. It suggested that allowing dwelling houses, dual occupancy, residential flat buildings, motels, and hostels throughout this zone (only subject to development controls such as minimum lot sizes and setbacks) has contributed to flats being scattered throughout predominately single dwelling house areas with poor integration into the streetscape. The zone also allows certain kinds of shops and it suggests that these are reviewed.

Settlement Strategy Mullumbimby 2003

Vision statement for Mullumbimby: Mullumbimby, where people respect the rural character of the town including its:

- Role as a service centre;
- Environment;

- Sense of community;
- Cultural diversity;
- Spirit of innovation and leadership;
- Rural connections; and
- Built heritage.

The strategy suggests that:

- The community is not in favour of significant additional population;
- There is capacity for limited growth; but does not endorse ongoing growth beyond what is ecologically, physically, economically and socially sustainable.
- There was no additional land available for rezoning for residential settlement without further investigation.
- Medium density development be permitted in the town centre and in some new development areas;
- Subdivision design, lot sizes and built design to reflect a country town and the opportunity to experience a rural lifestyle;
- Garden flats be permitted to provide additional variety of housing and affordable housing;
- Valued characteristics of the central area of town include wide streets, large blocks, consistent building line, uniformity in height and interesting facades;
- There is a need for affordable and aged housing.
- There are limited additional areas with sustainable opportunities for further development around Mullumbimby due to physical constraints.
- Further development be limited until after inadequacies in infrastructure are addressed including pedestrian and bike links to the west, footbridge across the creek and school facilities upgraded.

The following investigation areas were identified as having some potential for residential/rural residential development:

- Area 2 is affected by flood and proposed riparian buffers to the creek and may yield 50 lots in the long term.
- Area 4 is suitable for residential development, caravan park or mobile home park. May yield 40 residential lots.
- Area 6 (now referred to as 'Tallowood Estate') is already zoned for residential development and may yield around 270 lots.

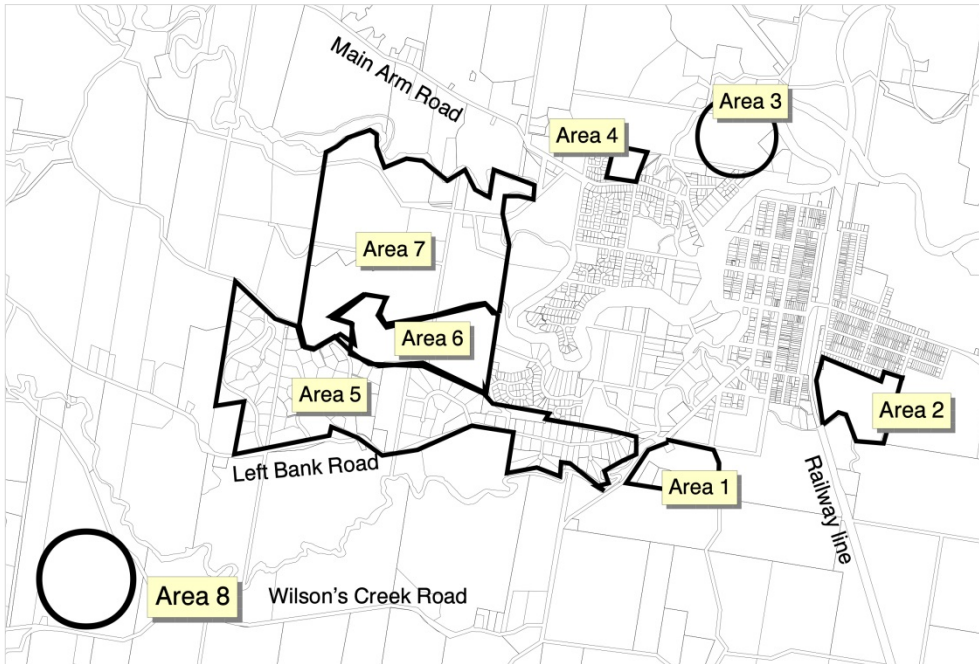


Figure A2: Investigation areas of the Mullumbimby Settlement Strategy 2003

Settlement Strategy Bangalow 2003

Vision statement for Bangalow:

- A healthy environment to live, work and raise a family;
- A village rich in history and heritage, a socially resilient community and economically viable centre, providing a range of services to the people of the community and the surrounding area; and
- Nestled in the hills, surrounded by natural beauty and rich in ecological bio-diversity.

The strategy notes that:

- The community is not in favour of significant additional population;
- Land in Bangalow was in demand at the time of writing due to the limited availability of land in Byron Bay and the strategic position in relation to Lismore, Ballina and Byron Bay.
- Allowing garden flats and dual occupancy development within the village boundary is supported, as is higher density development in the 3(a) (Business Zone) area.
- Staged release of land is proposed to allow limited residential area expansion.

The following investigation areas were identified as having some potential for residential/rural residential development:

- The strategy found that residential lots could be provided in Area 3 (16 lots), Area 4 (possible mobile home park with 40 sites), Area 6 (45 lots), Area 7 (10-15 lots plus additional in long term) and Area 8 (potential lots in long term).



Figure A3: Investigation areas of the Bangalow Settlement Strategy 2003

Settlement Strategy Brunswick Heads 2004

Vision statement for Brunswick Heads:

- A restored and protected river environment;
- A family-friendly coastal village;
- A dynamic local business sector with developments underpinned by principles of environmental sustainability;
- Employment opportunities for all residents;
- A diversity of views, values and lifestyles;
- Linked to neighbouring communities.

The strategy notes that:

- The only unconstrained area available for expansion may be southward of Bayside Brunswick, however this area was also under investigation as a site for a new high school (see figure below).
- Other than this area, there is no more developable land in the Brunswick Heads village catchment.
- Garden flats and dual purpose dwellings might contribute to meeting housing needs including providing affordable housing, rental income and/or housing for small households.

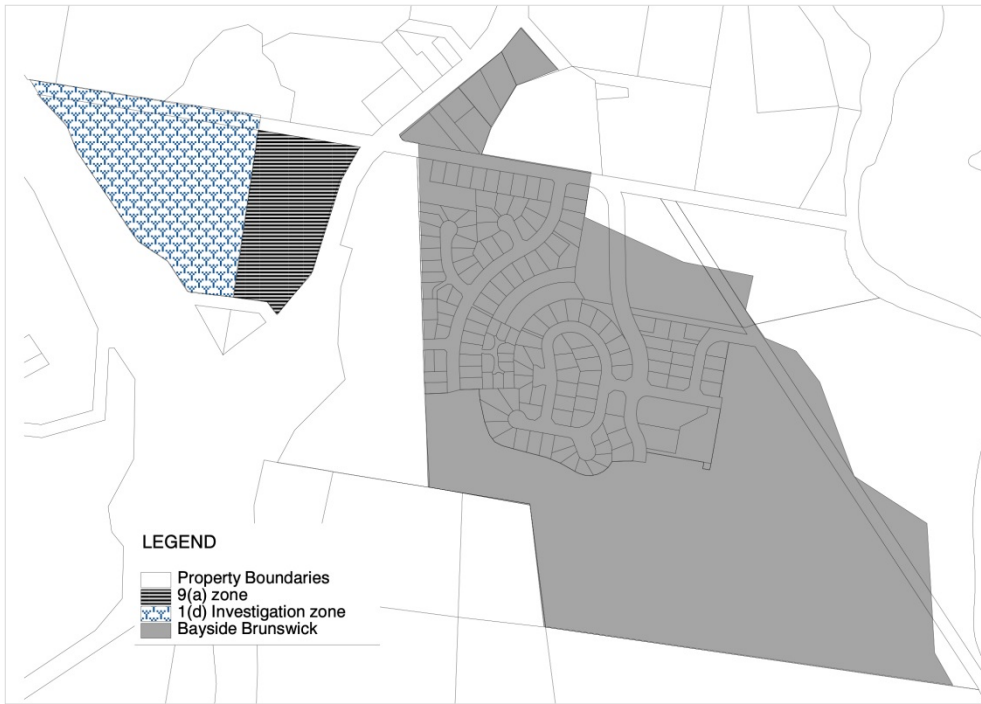


Figure A4: Possible future residential expansion area south of Bayside Brunswick

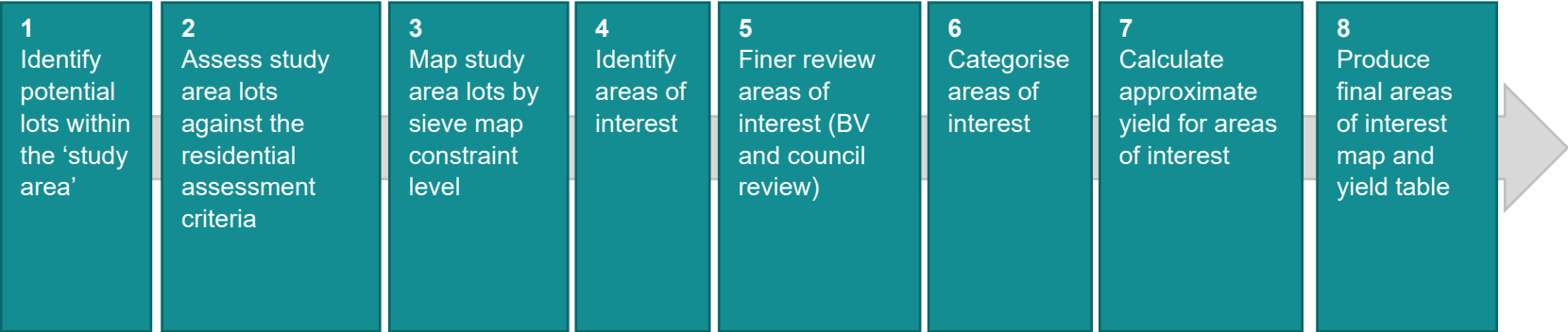
Appendix B. Greenfield analysis methodology

The methodology for the greenfield residential land analysis has been summarised in the Table B and Figure B Methodology of greenfield residential land analysis.

Table B1: Methodology of greenfield residential land analysis

Stage	GIS Process	Description of task
1	Identification of study areas.	Starting with all lots in the Byron Shire Council area, lots were marked for inclusion or exclusion in study areas based on zoning, tenure, proximity to towns, areas previously identified by council for further analysis, etc.
2	Assessment of study areas against the criteria for residential potential	Starting with the lots identified in Stage 1 (study areas), a constraints analysis and sieve mapping process was undertaken to exclude sites with significant impediments to use for residential purposes – these included sites with high environmental value vegetation, wetlands, acid sulphate soils, bushfire hazard, flood hazard, etc.
3	Mapping of study area lots by sieve map constraints level	Starting with the lots identified in Stage 1 (study areas), a map was created overlaying these lots with high, medium and low constraints levels from the assessment in Stage 2.
4	Identification of areas of interest	The analysis produced in Stage 3, and using an automated GIS process guided by the criteria for site assessment, lots were eliminated from the study areas that were deemed not suitable for residential uses. The remaining lots were identified as areas of interest for further analysis.
5	Finer review of areas of interest including Council review	Starting with the areas of interest identified in Stage 4, a more detailed analysis was undertaken. Council and staff from Buckley Vann reviewed the Stage 4 results to include local knowledge in the analysis, and also included examination of aerial photos, local heritage, hillside and ridgeline protection, local history of the site, etc.
6	Categorisation of areas of interest	Areas of interest were categorised into a number of categories which were determined at this stage of the analysis. The categories are explained in part 6 of the methodology below.
7	Calculation of approximate yield for areas of interest	Each category was assigned an estimated yield density (dwellings per hectare) and other factors such as road and open space land requirements were assumed.
8	Production of final areas of interest maps and yield tables	Produce final maps and tables.

Figure B1: Methodology of greenfield residential land analysis



Methodology of greenfield residential land analysis key assumptions and limitations:

- A range of assumptions were built in to the mapping analysis methodology – including for example, assumptions about:
 - Excluding land more than a certain distance from town or village centres so as to not encourage urban sprawl and a lack of access to services for future residents;
 - Excluding lots zoned for extractive resources, forestry, open space, water catchment, etc.
 - The level of constraint posed by a particular hazard, for example, the level of constraint posed by erosion was considered to be very high if within the immediate impact zone from coastal erosion events, medium if within the 50 year line, and low if within the 100 year line.

Using different assumptions may provide a different result to the analysis, for example, a smaller or larger number of areas of interest may have been identified for more detailed investigation.

- Sites identified as areas of interest were subjected to further investigation. This involved additional inputs such as an examination of aerial photos, local heritage considerations, hillside and ridgeline protection, local history, and input from Council officers about the suitability of specific parcels of land for residential development. Local knowledge of the areas of interest was relied upon to both allocate lots into different categories (for example, whether possible areas for residential development versus possible residential, subject to further assessment) and also in estimating approximate dwelling yield for the particular sites. This is not necessarily a limitation of the study, as local knowledge is an important input, and may be more accurate than using a blanket dwelling density assumption of 'X' dwellings per hectare.
- It was assumed that land categorised as: approved for residential; vacant and under developed residential zoned land; and possible areas for residential development, could deliver additional dwellings in the short-medium term, and therefore were the only three categories of land included in dwelling yield calculations. Land categorised as: possible residential subject to further assessment; conversion of rural residential to residential; and possible rural residential subject to further assessment, could deliver land in the medium-long term but were not included in dwelling yield calculations.
- The timing or staging of development has been generally reflected in the categorisation of the sites. This includes categories that are subject to further investigation at a later date. Beyond this, detailed assessment of timing and staging of development of sites has not been included in the process.
- Infrastructure capacity was not considered as part of this analysis. The efficient provision of infrastructure is a key consideration that will need to be investigated further as part of the next stage of the strategy.

Stage 1. Study Area Criteria

Criteria used to identify lots that will be included in the study area (lots that will be assessed for residential potential using the 'residential potential - site assessment criteria below'). Use cadastral dataset as a base and add fields to capture information in the Table B1.1 Study Area Criteria below.

Table B 1.1 Study area criteria

Category	Dataset	Criteria – Lots to be included or excluded from the study area
Major towns buffer	Major_Towns.shp (adjusted manually to include Suffolk Park, Bangalow and Brunswick Heads)	Include lots that intersect the 5km buffer from the major town boundary (eg Byron Bay/ Suffolk Park, Mullumbimby) Include lots within 1 km of town centre (edge of Business Zone - B2 – eg walkable cycleable etc) (Not including Ocean Shores)
Village scale localities	Not applicable	Include lots within 2km from village scale localities (eg Ewingsdale, Billinudgel)
Zoning	LEP_Hybrid_1988-2014_Zones.shp	Include or exclude lots within the following zones in the study area: See Table B 1.2 below
Potential Development Areas (provided by Council)	Pot_Urban_Dev_Areas.shp	Include all land within potential development areas.
Development Applications	Excel table provided by council	Include lots with existing or future residential development applications (information provided by council)
Draft North Coast Regional Plan	Digitised	Add as information purpose on map only. Layers included existing employment land, proposed urban land and urban growth areas. These layers were not included on the final maps.
Council Owned Land	Is this community_land_140316 Operational_land_140316	Council to mark up on hard copy map which sites to include
Crown Land	Crown_Reserve_140316.shp	Council to mark up on hard copy map which sites to include
Any industrial/commercial/ community/openspace to be converted		Council to mark up on hard copy map any areas outside of this sites listed above that could be considered for zoning conversion

Table B 1.2: Zoning analysis

Zones to be included or excluded from the study area (subject to the criteria above).

Included	Excluded
RU1 Primary Production	1(c1) Small Holdings (c1) Zone
RU2 Rural Landscape	1(c2) Cross Hatched Small Holdings (c2) Zone
1(a) Cross Hatched General Rural Zone Refer to Clause 38A	Refer to Clause 11
1(a) Cross Hatched General Rural Zone Refer to Clause 38A and Clause 38B	1(c2) Small Holdings (c2) Zone
1(a) General Rural Zone	2(a) Cross Hatched Residential Zone Refer to Clause 14
1(a) Hatched General Rural Zone Refer to Clause 38	2(a) Hatched Residential Zone Refer to Clause 29AA
1(b1) Agricultural Protection (b1) Zone	6(b) Private Open Space Zone
1(b1) Cross Hatched Agricultural Protection (b1) Zone Refer to Clause 38A and Clause 38B	7(a) Wetlands Zone
1(b2) Agricultural Protection (b2) Zone	7(b) Coastal Habitat Zone
1(d) Investigatin Zone	7(c) Water Catchment Zone
1(d) Investigation Zone	7(d) Scenic / Escarpment Zone
2(a) Residential Zone	7(f1) Coastal Lands (f1) Zone
2(t) Tourist Area Zone	7(j) Scientific Zone
2(v) Village Zone	7(k) Cross Hatched Habitat Zone Refer to Clause 38A and Clause 38B
3(a) Business Zone	7(k) Habitat Zone
4(a) Industrial Zone	8(a) National Parks and Nature Reserve Zone
B1 Neighbourhood Centre	E1 National Parks and Nature Reserves
B1(WB) Neighbourhood Centre	E2(WB) Environmental Conservation
B2 Local Centre	E3(WB) Environmental Management
B4 Local Centre	RE1(WB) Public Recreation
B4 Mixed Use	SP1 Special Activities
B7 Business Park	SP2 Infrastructure
IN1 General Industrial	W1 Natural Waterways
IN2 Light Industrial	W2 Recreational Waterways
IN2(WB) Light Industrial	
R2 Low Density Residential	
R2(WB) Low Density Residential	
R3 Medium Density Residential	
R3(WB) Medium Density Residential	
R5 Large Lot Residential	
RE1 Mixed Use	
RE1 Public Recreation	
RE2 Private Recreation	
RU5 Village	
SP2 Special Activities	
SP3 Tourist	
Unzoned Land	
9(a) Proposed Road Reserve Zone	
7(f2) Urban Coastal Lands (f2) Zone	

Stage 2. Residential Potential - Site Assessment Criteria

Assess lots within the study area (determined by the process documented in Stage 1 above) against the following criteria to determine the areas of interest for residential use through a constraints analysis and sieve map process. Constraint levels included the following and are detailed in Table B2:

- Very high/excluded
- High
- Medium
- Low/included

Table B2: Residential potential - site assessment criteria

Category	Description	Dataset	Sieve Map Constraint Level
Environment	High conservation vegetation Vegetation types	ByronVeg2016_HEV_27JanREV	High
Wetlands Littoral rainforest Riparian buffer	SEPP (State Environmental Planning Policy)	SEPP_14_090316.shp (wetlands and 100m buffer) SEPP_26_090316.shp (Littoral rainforest and 100m buffer) SEPP_71 (coastal protection buffer) River Buffer (100 m)	Very High/Exclude Very High/Exclude Medium Low
Rural Land Use Study		Unconstrained_Rural_Dev_land.shp Assessable_Rural_Dev_land.shp Generally identified for further consideration under the draft rural land use strategy except for areas A – G (H) which have come out as potential urban development areas. For rural lots, include areas of unconstrained land/assessable rural development land and exclude remaining (constrained) areas.	Low/Included
Agricultural land	Farm land protection	Farm_protect_s117_090316.shp <ul style="list-style-type: none"> • Areas within 1km of major towns <u>include</u> areas mapped as farm land protection. • Areas beyond 1km of major towns and villages <u>consider</u> areas mapped as farm land protection. • Committed Urban Use or Rural Residential • National Parks 	Low Medium Low/Include Very High/Exclude
Acid sulphate soils		Acid_Sulphate_Soils_090316.shp Class 1 and 2 – Usually low lying, tidal and flood prone in any case	High
Bushfire	Bushfire hazard	Bushfire_Vegetation_Categories_090316.shp Category 1 is basically your eucalypt forest – highly hazardous etc,	High Low

Category	Description	Dataset	Sieve Map Constraint Level
		Category 2 and 3 contain a mixture of vegetation types including grass lands, pasture, exotic forests (eg camphor laurel), rainforest etc.	
Coastal Hazards	Coastal erosion hazard Area Erosion precincts	Coastal_Erosion_Hazard_Areas_090316.shp Erosion_Precinct_1_090316.shp (Immediate impact zone from coastal erosion events) Erosion_Precinct_2_090316.shp (Up to the 50 year line) Erosion_Precinct_3_090316.shp (Up to the 100 year line)	Low Very High/Excluded Medium Low
Flood	Flood 1 in 100 year	Flood_1_in_100yr_090316.shp	High
Topography	Slip prone land Slope	Slip_Prone_Land_090316.shp Percentage_Slope_150316 <ul style="list-style-type: none"> • 18 • 10 - 18 	Very High Very High Medium
Cattle Dip Sites	DIP	Dip_Sites_090316.shp Dip_Buffers_090316.shp	Low
Mineral resources	Mineral resources	Mineral_Resources_s117_090316.shp <ul style="list-style-type: none"> • Mineral Area (Identified) • Mineral Area (potential) • Buffers 	High Medium Low

Stage 3. Sieve map

Map 'study area lots' using a sieve mapping technique using red for 'high', orange for 'medium' and green for 'low' constraint levels to assist with identifying 'areas of interest.'

Stage 4. Identify areas of interest

Using the sieve map above and the GIS automated process guided by the criteria for site assessment, eliminate areas from the study area lots that are not suitable for residential uses to create 'areas of interest' for residential use. Areas not suitable for residential uses included those that did not match the criteria above.

Stage 5. Finer review areas of interest (BV and council review)

Conduct a finer review of the 'areas of interest'. This was conducted in a joint meeting with Buckley Vann project team and Council. The process involved examination of each area of interest through an interactive mapping arrangement to allow for review of data layers and constraints for each site. The review process included discussion on the following items:

- Sieve mapping process
- Aerial photo examination
- Development applications
- Determine existing land use by the residential land use dataset provided or aerial photography to

eliminate sites not available for future residential

- Local heritage
- Hillside and ridgeline protection
- Building height
- Cost effectiveness of connection to services and transport routes
- Local history of the site and surrounding area including historical community views (by council)
- Draft Rural Land Use Strategy

Stage 6. Areas of Interest Categories

Create categories to assign to areas of interest based on characteristic and dwelling yields. Table B6 Areas of Interest Categories, describes the categories derived and that formed the basis for dwelling yield analysis.

Table B6: Areas of interest categories

Category	Description	Included in Dwelling Yield Target
Approved for residential	Areas containing development approvals or residential interest/activity.	Yes
Vacant / under developed residential zone land	This involved a secondary analysis of all vacant zoned residential land through the examination of aerial photography.	Yes
Possible areas for residential development	Areas with low or manageable constraints that are considered possible for residential development.	Yes
Possible residential subject to further assessment	Areas containing constraints that require further assessment before determining if residential development is feasible.	No
Conversion of rural residential to residential	Rural residential land that could be investigated for conversion to residential through further assessment and negotiations with land owners.	No
Possible rural residential subject to further assessment	Areas containing constraints that require further assessment and/or resolution before determining if rural residential development is feasible.	No
Future investigation – medium to high suitability	Long-term timeframe of areas containing predominately low – medium constraints that require further assessment before determining if residential development is feasible.	No
Future investigation – low suitability	Long-term timeframe of areas containing predominately medium – high constraints that require further assessment before determining if residential development is feasible.	No
Not suitable – highly constrained	Areas not suitable for residential development due to high levels of constraints	No
Other non-residential uses	Site identified as greenfield but designated for non-residential uses	No

Stage 7. Calculate approximate yield for areas of interest

Dwelling yields for areas of interests where predominately calculated in the project team meeting. This process was done by reviewing constraints, area of land suitable for residential use, development applications, local knowledge and local context. Yields were further refined through discussions with council's infrastructure officer.

The following dwelling yield equation provided a guide for greenfield areas:

$$\text{Site area} \times \text{yield category (dwelling per hectare)} \times \text{road/open space \% assumption} = \text{dwelling yield}$$

Stage 8. Final maps and dwelling yield results table (Greenfield and Infill development)

Table B8 Preliminary Residential Strategy Maps details the final maps and tables produced.

Table B8: Preliminary Residential Strategy Maps

Map Number	Map Title
1	Constraints Sieve Map
2a	Areas of Interest - North
2b	Areas of Interest - South
3a	Infill Analysis – Byron Bay and Suffolk Park
3b	Infill Analysis – Mullumbimby
3c	Infill Analysis – Bangalow
3d	Infill Analysis – Brunswick Heads
3e	Infill Analysis – New Brighton and Ocean Shores ¹ .

- ¹. Infill figures do not take into account slip prone land which (upon further investigation) may reduce actual infill potential for Ocean Shores locality.

Appendix C. Greenfield analysis results

Table C1: Greenfield analysis results

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
1	Possible area for residential	Immediately west of Billinudgel village	<ul style="list-style-type: none"> - Billinudgel Village Extension - Adjoins Village - Medium – high suitability - Services can be augmented - zoning allows for multiple uses including residential, caravan parks, commercial/retail and industrial uses - Some constraints – flooding and slope 	11.2 ha	60 dwellings. Land may be used for other commercial purposes closer to village centre
2	Future investigation – low suitability	West of Billinudgel	<ul style="list-style-type: none"> - Possible long term residential / employment land - Identified in Rural Land use Strategy - Small area of future village expansion (mixed use) - Not ideal for general residential in short-term but possibly longer term potential pending (i) village expansion of Site 1 above and (ii) future employment land strategy (to be prepared) - Flooding, farmland and slope constraints - Sewer available and water can be provided 	89.4 ha	Nil - Should be deferred for further consideration after 2036
3	Future investigation - low suitability	In between Billinudgel and Mullumbimby Dudgeons Road	<ul style="list-style-type: none"> - Identified in Rural Land Use Strategy - Low suitability for residential uses - Road and access issues - Very isolated from urban areas - Farmland and slope constraints - Possible rural residential or residential use in the future subject to adequate infrastructure servicing being available 	200 ha	Nil - Should be deferred from consideration until there is adequate infrastructure servicing available

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
4	Future investigation - low suitability	North of Mullumbimby	<ul style="list-style-type: none"> - Identified in Rural Land Use Strategy - Isolated from urban areas - Farmland, slope and bushfire constraints - Possible rural residential or residential use in the future subject to adequate infrastructure servicing being available 	102 ha	Nil - Should be deferred from consideration until there is adequate infrastructure servicing available
5	Future investigation - medium-high suitability	Immediately north of Mullumbimby	<ul style="list-style-type: none"> - Low residential density - Adjacent to town centre edge - Can be serviced - Flooding, slope and bushfire constraints (upslope) - Visual amenity issues – steeper elevated slopes may need to be quarantined/protected 	33 ha	200 Dwellings
6	Future investigation - medium-high suitability	West of Mullumbimby	<ul style="list-style-type: none"> - Identified in Rural Land Use Strategy - Defer bulk of land to 20+ year period - No infrastructure or constructed road - Slope and farmland constraints - Limited potential for rural residential or general residential unless access/infrastructure can be addressed - Needs new access road and bridge across Main arm of Brunswick River into town - Ridgetop potentially part of Mooball Spur Habitat corridor - 	98.6 ha	Nil - Should be deferred for further consideration after 2036
7	Possible residential subject to further assessment	North of Tallowwood Estate	<ul style="list-style-type: none"> - Minor potential addition for land immediately north of Clays Road and west of tallowwood Estate - Reliant on infrastructure study and completion of Tallowwood Estate - Tallowwood rezoning proposal 	14.3 ha	65 Dwelling
8	Possible area for residential	Tallowwood Estate	<ul style="list-style-type: none"> - Planning Proposal for residential expansion underway (Gateway Determination issued 27/5/16) - Zone boundaries being reconfigured 	12 ha	95 Dwellings

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
9	Not suitable - highly constrained	West of Mullumbimby	<ul style="list-style-type: none"> - Identified in Rural Land Use Strategy - No infrastructure or constructed road - Slope (extreme) and farmland constraints - Considered not suitable for residential uses - Ridgetop part of Mooball Spur Habitat corridor 	52.6 ha	Nil
10	Conversion of rural residential to residential	South-west of Mullumbimby	<ul style="list-style-type: none"> - Possible option for sewer extension - Consideration of infrastructure costs - Slope and farmland constraints - Potential to convert rural residential to general residential - Can already apply for a duplex - Rezoning consideration to increase yield - Could be better opportunities - Would Requires broad support from existing land owners to proceed (eg 75%) to rezoning 	105.4 ha	Up to 100 dwellings
11	Possible residential subject to further assessment	Azalea Street, Mullumbimby Lot 188 DP728535	<ul style="list-style-type: none"> - Hospital site – possible contamination - Potential for residential subject to further assessment - Slope issues - May be more suited to convert to aged care/ Senior Living 	4.1 ha	30 dwellings
12	Conversion of rural residential to residential	Some rural residential sites within Mullumbimby	<ul style="list-style-type: none"> - Provide policy direction for rezoning to residential - Small Pockets of isolated rural residential land - Is serviced or could be serviced - Surrounded by urban zoned residential land - Natural extension of town urban boundaries - Not highly constrained by hazards (flooding or bushfire) ecological values or surrounding farming activities - Needs strong support of landowners to be rezoned - Minor yield growth 	12 ha	Up to 100 dwellings

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
13	Possible area for residential	Stuart Street, Mullumbimby Lot 22 DP1073165	<ul style="list-style-type: none"> - Potential for affordable housing - Within 1km town catchment - Requires engineering review - Low-medium flooding constraint – requires further flood assessment - Farmland constraint needs to be resolved - Council owned land - Railway corridor 	28.5 ha (Approx. 10 - 12 ha developable)	100 dwellings
14	Possible area for residential	Ann Street, Mullumbimby Lot 1 DP1032298	<ul style="list-style-type: none"> - Potential housing precinct – possible higher density - Within 1km town catchment - Contains areas of low constraint - Requires engineering review - Minor flooding – requires further flood assessment - Contains waterways buffer - Farmland constraint needs to be resolved - Railway corridor – needs at least pedestrian cycle access across rail line if not second road crossing 	14.6 ha	150 dwellings
15	Future investigation – low suitability	Ann Street and New City Road, Mullumbimby Lot 1 DP781835 Lot 2 DP1032298	<ul style="list-style-type: none"> - For further discussion - Partly within 1km town catchment - Contains limited areas of low constraint - Medium-high Flooding constraint - Farmland constraint needs to be resolved 	67 ha	Nil – Should be deferred for further consideration after 2036
16	Not suitable - highly constrained	Queen Street, Mullumbimby Lot 65 DP 1203042	<ul style="list-style-type: none"> - Medium Flooding constraint – requires further flooding assessment - Within 1km town catchment - Farmland constraint needs to be resolved 	45.3 ha	Nil – Should be deferred for further consideration after 2036
17	Possible area for residential	Saddle Road	<ul style="list-style-type: none"> - Identified in Rural Land Use Strategy - Water and sewer available subject to geology / geotechnical - Farmland constraint needs to be resolved - Ridgeline and visual issues - Requires safe access from Gulgan Road - School - Public or Private 	133.9 ha	Approximately 400 dwellings

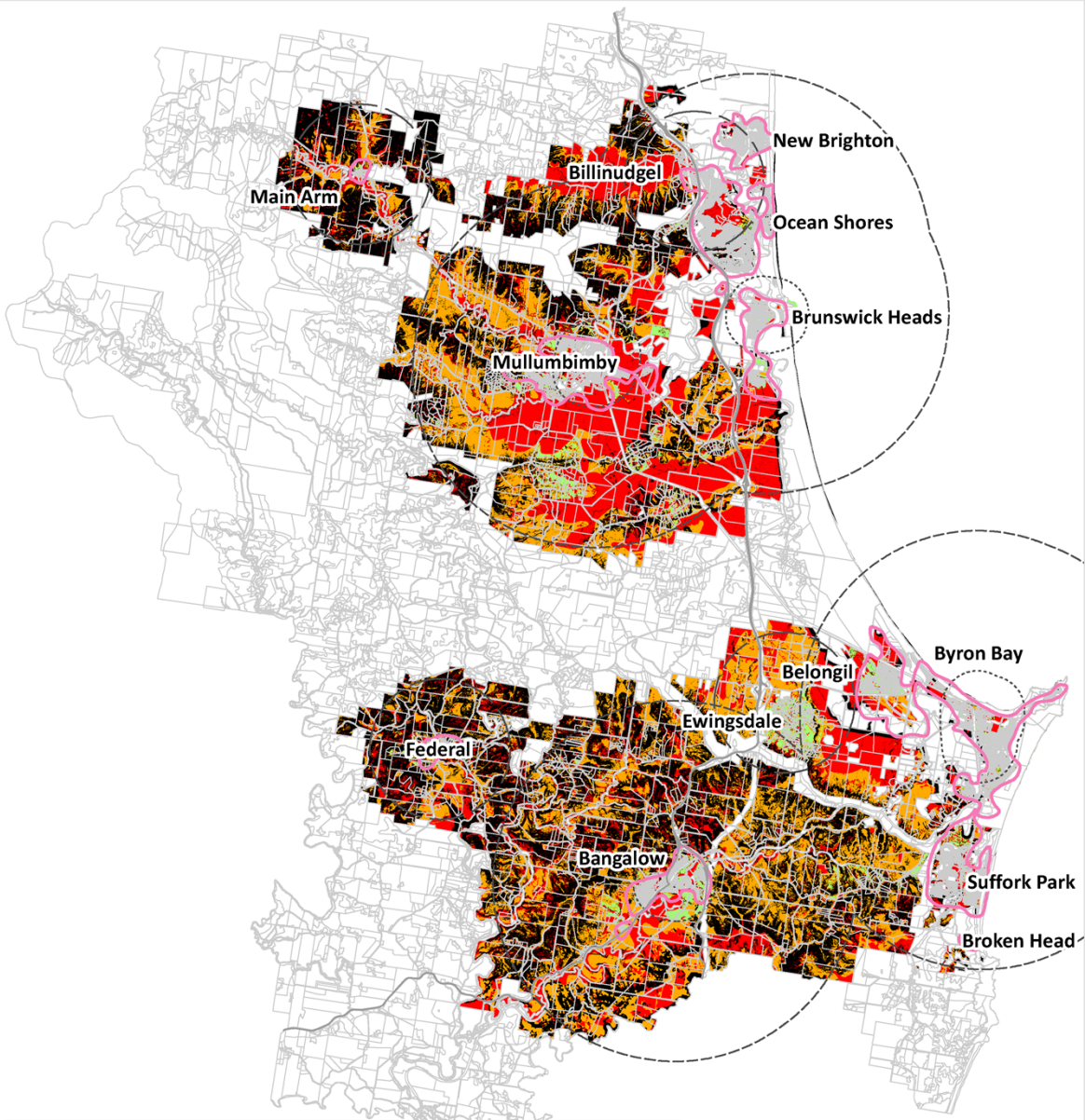
Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
18	Possible area for residential	Bayside Way and Kingsford Drive, Brunswick Heads Lot 100 DP1070724 Lot 1 DP871039	<ul style="list-style-type: none"> - Development applications - 50 Lots (DA10.2015.795.1 – yet to be determined by council) - 163 Lots (Concept approval by Department of Planning – Work yet to commence) 	37.9 ha	213 Dwellings
19	Future investigation - low suitability	North and west of Ewingsdale	<ul style="list-style-type: none"> - Highly constrained by farmland - 20+ consideration - For further discussion 	743.3 ha	Nil
20	Other Use – medical precinct and seniors living	Ewingsdale Road, Ewingsdale Lot 101 DP1140936	<ul style="list-style-type: none"> - Rezoning concept for seniors living and medical precinct refused by Council - General concept though has potential to provide broader base to economy – with new hospital anchoring other specialist services - Access issues on Ewingsdale road - Land to date not in any strategy 	14.4 ha	Nil <i>But if in strategy – 150 to 200 dwellings</i>
21	Conversion of rural residential to residential	Land Zoned R5 at Ewingsdale	<ul style="list-style-type: none"> - Potential for sewer extension - Needs strong support from land owners to be rezoned as per Map Site 10 and 34 - Will depend on age of existing housing stock - Ewingsdale would need further facilities including neighbourhood shop opportunities and become more of a village 	245.6 ha	May yield up to 200 dwellings over 20 year period
22	Approved for residential	Bayshore Drive, Byron Bay Lot 3 DP1004514	<ul style="list-style-type: none"> - Development application – Habitat Development - DA Approval – 28 Dwellings (DA2015.353.1) 	4.9 ha	28 dwellings
23	Other Use - industrial	Ewingsdale Road, Ewingsdale Lot 181 DP755695	<ul style="list-style-type: none"> - Ex Chicken Processing Plant to go to industrial - Rezoning application lodged but yet to be determined 	18.3 ha	Nil
24	Vacant residential zoned land	West Byron	<ul style="list-style-type: none"> - No Development Application yet 	55 ha	Approximately 850 dwellings

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
25	Part possible area for residential and part not suitable - highly constrained	Ewingsdale Road, Ewingsdale Lot 350 DP755695	East section – Possible area - Potential residential - add to Shirley street tourism precinct - Flood prone – will require further flood assessment West section – not suitable - Low lying flood prone	15.4 ha (Approx. 1.2 ha developable)	20 dwellings
26	Other Use – tourism	Shirley Lane, Byron Bay	- Potential to transition into tourism zone - Reflects current usage		Nil
27	Not suitable - highly constrained	South east Ewingsdale	- Access issues - Ridgeline and visual amenity issues - Farmland constraints - Isolated from urban areas	186.3 ha	Nil
28	Possible area for residential subject to further assessment	Skidders Shoot	- Access requires formal road extension across Rail Corridor onto Bangalow Road - Some potential subject to the completion of West Byron release area, landowner support and adequate infrastructure servicing	230 ha	400+ dwellings
29	Possible area for residential	Granuaille Crescent, Bangalow Lot 233 DP 1194657	- Adjoins existing residential zoned areas - Old housing stock - Area south of Rankin Drive should be rezoned residential	1.2 ha	Approximately 10 dwellings
30	Other Uses – potential industrial	Bangalow Road, Bangalow Lot 103 DP1158494	- Depot site for highway upgrade - For rehabilitation - Contains endangered species - Access to highway	38.7 ha	Nil
31	Approved for residential	Ballina Road, Bangalow Lot 22 DP1070522	- Development application - 50 lots (DA10.2011.474.1) work about to commence	5.4 ha	50 dwellings
32	Possible area for residential	Ballina Road, Bangalow Old Highway	- Within 1km town catchment - Old housing stock - Needs to be rezoned residential	15.5 ha	Approximately 25 dwellings

Site No.	Area of Interest Category	Location	Site Details/Residential Potential	Approx. Area (ha)	Estimated Dwelling Yield
33	Possible area for residential subject to further assessment	Ballina Road, Bangalow Lot 3 DP1164722, Lot 1 DP 614715, Lot 3 DP 702168 & Lot 1 DP 931195	<ul style="list-style-type: none"> - Interest for aged care or school with some residential – potentially 200 lots - Affected by regionally significant farmland (entire site), sensitive rural farmland-rated use and DWC buffer constraints - Farmland constraint needs to be resolved 	32.3 ha (Approx. 8 ha developable)	Potentially 60 dwellings
34	Other Uses – rural industrial	Lismore Road, Bangalow Lot 1 DP806211	<ul style="list-style-type: none"> - Expansion of rural industrial 	24.8 ha	Nil
35	Possible area for residential subject to further assessment	Lot 60 DP817888	<ul style="list-style-type: none"> - Owned by Dept. of Education - Subject to negotiation 	3 ha	To be determined
36	Possible rural residential subject to further assessment	West of Broken Head	<ul style="list-style-type: none"> - Old quarry site - Requires rehabilitation as per development consent - Ecological constraints - Cultural Site – Taylors Lake to East - Any rural residential subject to further review and above issues being addressed 	25.6 ha	Nil - Should be deferred from consideration until rehabilitation requirements are met.

Appendix D. Greenfield analysis maps

Byron Residential Strategy - Constraints Sieve Map



Sieve Map - Constraint Level:

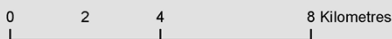
- Very High
- High
- Medium
- Low
- Sites excluded from the study area
- Major towns catchment area (5km from town centre)

- Major town centre catchment area (1km from town centre)
 - Village catchment area (2km from village centre)
 - Cadastre
 - Urban Growth Areas (approximate only)
- Draft Regional Plan - Urban Growth Area Map (approximate only)**

DRAFT BYRON RESIDENTIAL STRATEGY	MAP 1
CONSTRAINTS SIEVE MAP	



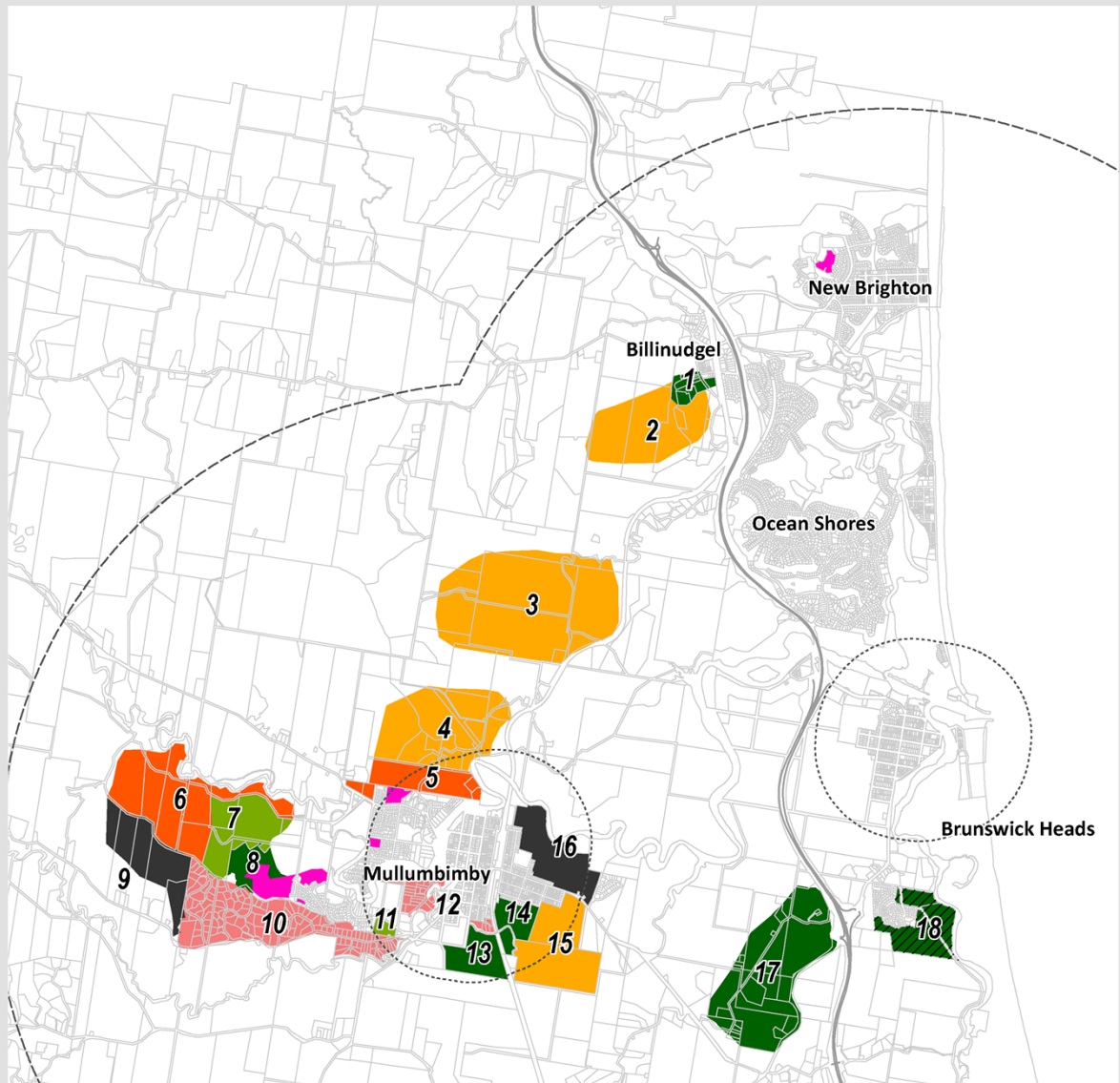
Disclaimer - While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no warranty is given that the information contained on this map is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of the information prior to using it. Note - The information shown on this map is a copyright of the Byron Shire Council and the NSW Department of Lands.



1:115,000 @ A3 size



Byron Residential Strategy - Areas of Interest - North



Areas of Interest

Areas contributing to dwelling yield

- Approved for residential
- Vacant/under developed residential zoned land
- Possible area for residential

Areas not contributing to dwelling yield

- Possible residential subject to further assess
- Conversion of rural residential to residential
- Possible rural residential subject to further assessment

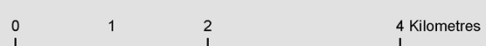
- Future Investigation - medium to high suitability
- Future Investigation - low suitability
- Not suitable - highly constrained
- Other non-residential uses
- Sites contains residential development activity
- Major towns catchment area (5km from town centre)
- Major town centre catchment area (1km from town centre)
- Cadastre

DRAFT BYRON RESIDENTIAL STRATEGY MAP 2a

AREAS OF INTEREST - NORTH



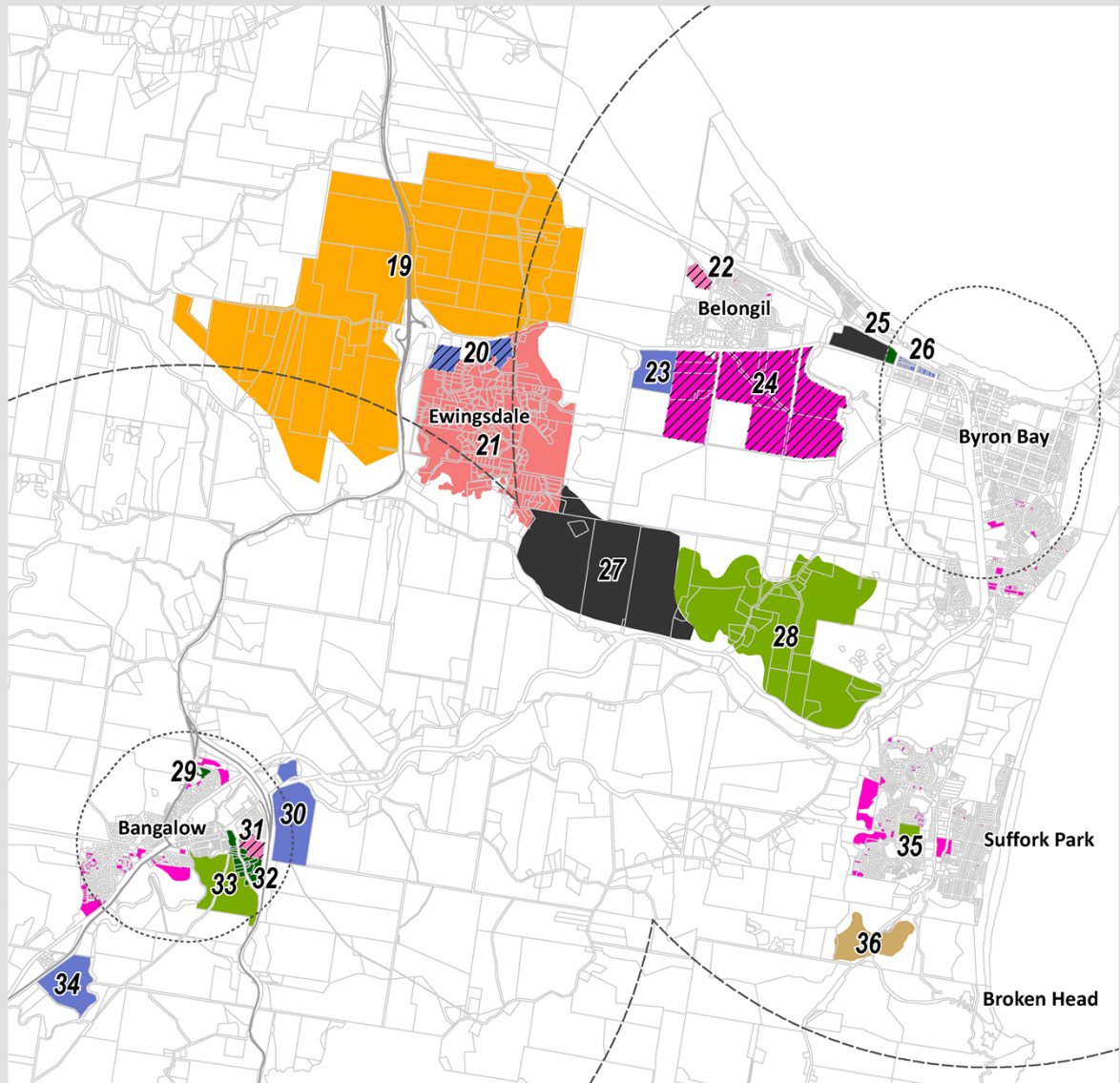
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1:45,000 @ A3 size



Byron Residential Strategy - Areas of Interest - South



Areas of Interest

Areas contributing to dwelling yield

- Approved for residential
- Vacant/under developed residential zoned land
- Possible area for residential
- Possible residential subject to further assess
- Conversion of rural residential to residential
- Possible rural residential subject to further assessment

- Future Investigation - medium to high suitability
- Future Investigation - low suitability
- Not suitable - highly constrained
- Other non-residential uses
- Sites contains residential development activity
- Major towns catchment area (5km from town centre)
- Major town centre catchment area (1km from town centre)
- Cadastre

DRAFT BYRON RESIDENTIAL STRATEGY MAP 2b

AREAS OF INTEREST - SOUTH



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0 1 2 4 Kilometres

1:45,000 @ A3 size



Appendix E. Residential infill analysis methodology

Assumptions and limitations:

- It was assumed that infill development might consist of two different development forms:
 - Duplex (one dwelling on 450m²); or
 - Strata-titled dwellings (one dwelling on 300m²).

A 900m² parcel of land would therefore yield either 2 duplex units, or 3 strata-titled dwellings. It was assumed that these would be provided at a 50/50 split and hence for each incremental site area of 900m², an average of 2.5 additional dwellings could be provided. Assuming that the site already has one dwelling located on it, an additional 1.5 dwellings could be provided for a 900 m² block, an additional 4 dwellings on an 1800m² block, etc. These yield multiplying factors are summarised in the Table E1 Lot Size Average Yield below:

Table E1: Lot size average yield

Lot Size	Average Yield multiplying factor (no. of lots per lot size ranges)
900-1,800m ²	2.5 - 1 existing dwelling = 1.5
1,800-2,700m ²	5 - 1 existing dwelling = 4
2,700-3,600m ²	7.5 - 1 existing dwelling = 6.5
3,600-4,500m ²	10 - 1 existing dwelling = 9.5

- For lots greater than 4,500m² a dwelling per hectare approach was used at 25 dwellings per hectare (400m² lots) minus 20% for open space and roads.
- Not all lots that have potential to be redeveloped at a higher density will be developed. Therefore an uptake of infill potential of 20 per cent was assumed for all lot sizes.
- There are significant limitations to this quantitative approach and it should be considered an indication of the level of infill development that could take place if the assumptions prove to be correct. If the assumptions are incorrect then the outcomes could be significantly different.
- Infrastructure capacity was not considered as part of this analysis. The efficient provision of infrastructure is a key consideration that will need to be investigated further as part of the next stage of works.

Appendix F. Residential infill analysis results

Please note: A different methodology is used for lots between 900-4,500m² and lots over 4,500m² so these have been presented differently in the tables below.

Table F1: Byron Bay and Suffolk Park

Lot Size	Number of Lots (Lots)	Yield multiplying factor (no. of lots per lot size ranges)	Assumed uptake percentage	Assumed dwelling yield (Dwellings)	
900-1,800m ²	373	1.5	20%	111.9	
1,800-2,700m ²	28	4	20%	22.4	
2,700-3,600m ²	6	6.5	20%	7.8	
3,600-4,500m ²	4	9	20%	7.2	
Lot size	Area of Lots (ha)	Dwellings per hectare (400m ²)	Assumed percentage of open space and roads	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
4,500m ² +	5.23	25	20%	20%	20.92
Assumed Total Dwelling Yield					170

Table F2: Mullumbimby

Lot Size	Number of Lots (Lots)	Yield multiplying factor (no. of lots per lot size ranges)	Assumed uptake percentage	Assumed dwelling yield (Dwellings)	
900-1,800m ²	164	1.5	20%	49.2	
1,800-2,700m ²	13	4	20%	10.4	
2,700-3,600m ²	11	6.5	20%	14.3	
3,600-4,500m ²	15	9	20%	27	
Lot size	Area of Lots (ha)	Dwellings per hectare (400m ²)	Assumed percentage of open space and roads	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
4,500m ² +	1.38	25	20%	20%	5.52
Assumed Total Dwelling Yield					106

Table F3: Bangalow

Lot Size	Number of Lots (Lots)	Yield multiplying factor (no. of lots per lot size ranges)	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
900-1,800m ²	154	1.5	20%	46.2
1,800-2,700m ²	18	4	20%	14.4
2,700-3,600m ²	0	6.5	20%	0
3,600-4,500m ²	4	9	20%	7.2
Assumed Total Dwelling Yield				
				81

Lot size	Area of Lots (ha)	Dwellings per hectare (400m ²)	Assumed percentage of open space and roads	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
4,500m ² +	3.30	25	20%	20%	13.2
Assumed Total Dwelling Yield					
				81	

Table F4: Brunswick Heads

Lot Size	Number of Lots (Lots)	Yield multiplying factor (no. of lots per lot size ranges)	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
900-1,800m ²	51	1.5	20%	15.3
1,800-2,700m ²	5	4	20%	4
2,700-3,600m ²	0	6.5	20%	0
3,600-4,500m ²	1	9	20%	1.8
Assumed Total Dwelling Yield				
				21

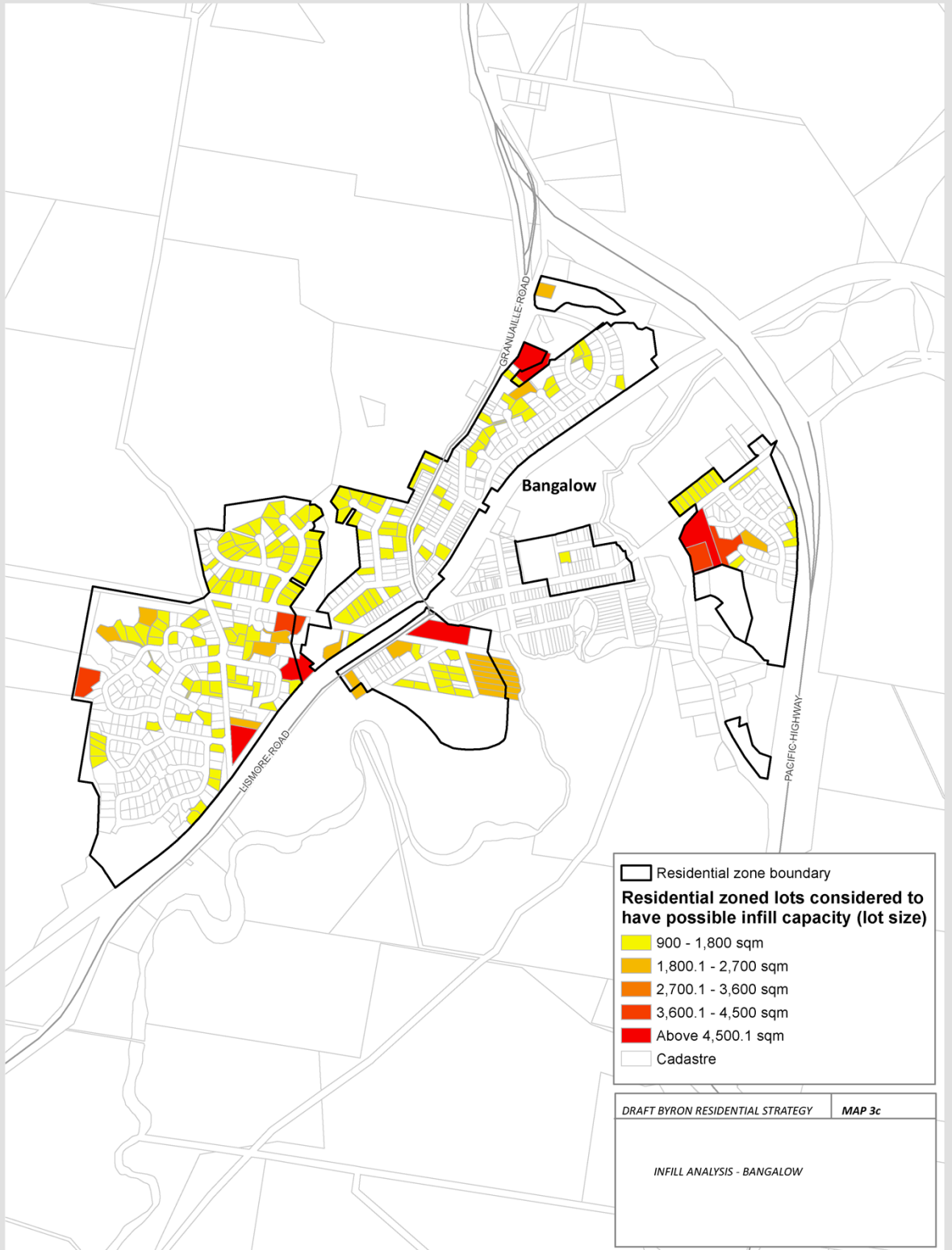
Lot size	Area of Lots (ha)	Dwellings per hectare (400m ²)	Assumed percentage of open space and roads	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
4,500m ² +	0	0	20%	20%	0
Assumed Total Dwelling Yield					
				21	

Table F5: New Brighton and Ocean Shores

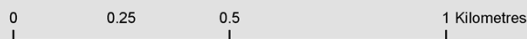
Lot Size	Number of Lots (Lots)	Yield multiplying factor (no. of lots per lot size ranges)	Assumed uptake percentage	Assumed dwelling yield (Dwellings)	
900-1,800m ²	935	1.5	20%	280.5	
1,800-2,700m ²	72	4	20%	57.6	
2,700-3,600m ²	8	6.5	20%	10.4	
3,600-4,500m ²	9	9	20%	16.2	
Lot size					
Lot size	Area of Lots (ha)	Dwellings per hectare (400m ²)	Assumed percentage of open space and roads	Assumed uptake percentage	Assumed dwelling yield (Dwellings)
4,500m ² +	10.29	25	20%	20%	41.16
Assumed Total Dwelling Yield					405

Appendix G. Residential infill analysis maps

Byron Residential Strategy - Infill Analysis - Bangalow



Disclaimer : While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no warranty is given that the information contained on this map is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of the information prior to using it.
 Note : The information shown on this map is a copyright of the Byron Shire Council and the NSW Department of Lands.

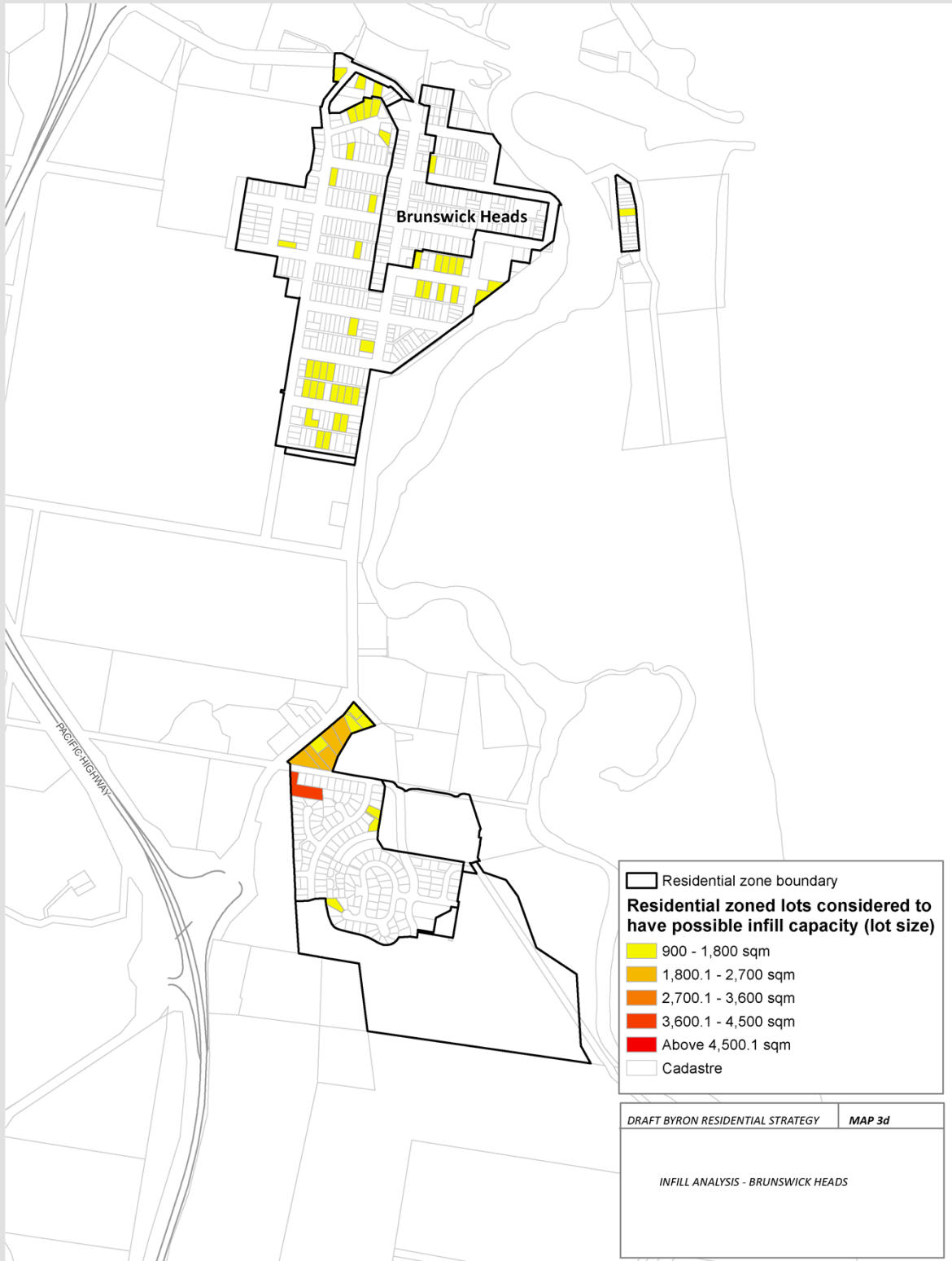


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Date: 22/06/2016

Byron Residential Strategy - Infill Analysis - Brunswick Heads



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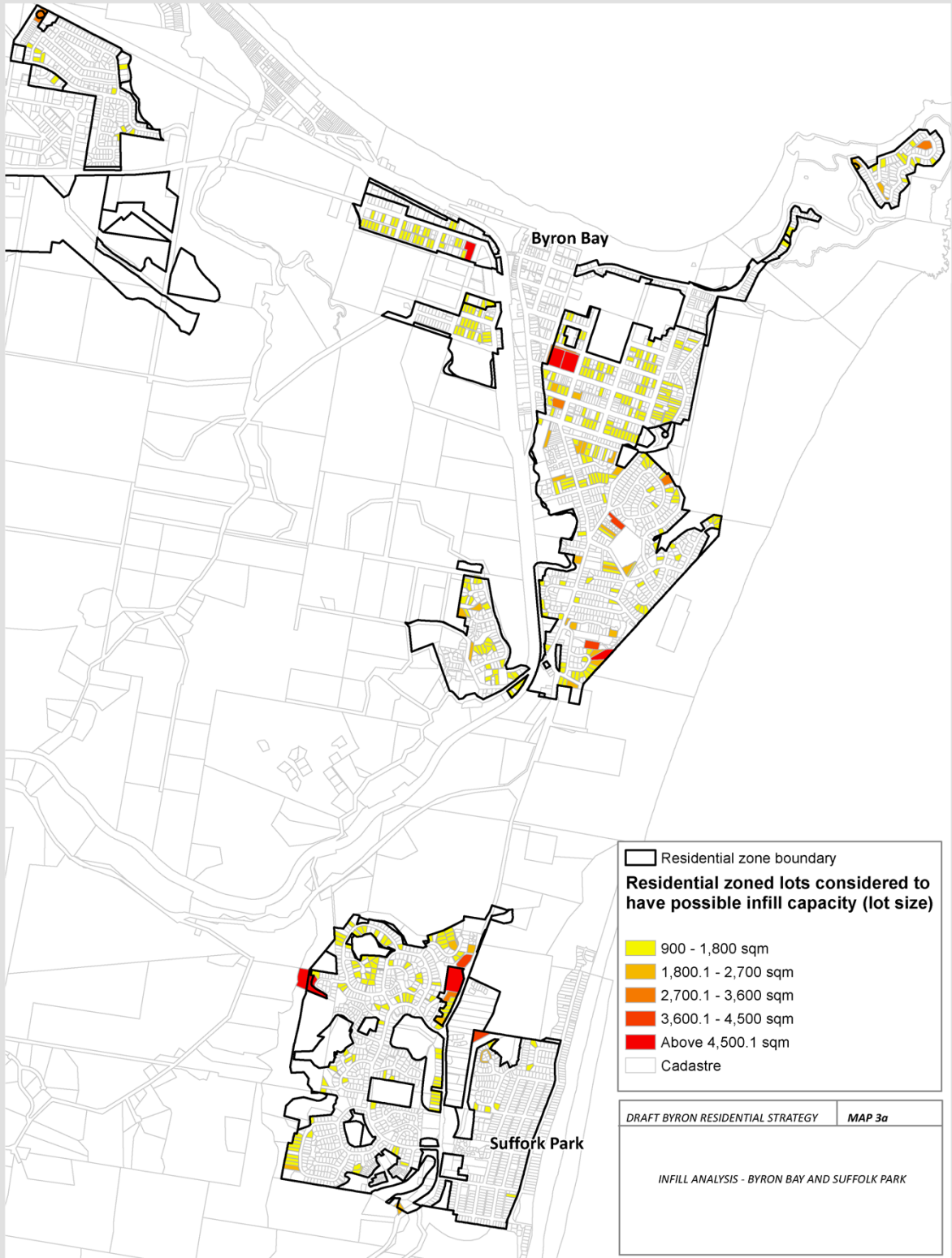


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Date: 22/06/2016

Byron Residential Strategy - Infill Analysis - Byron Bay and Suffolk Park



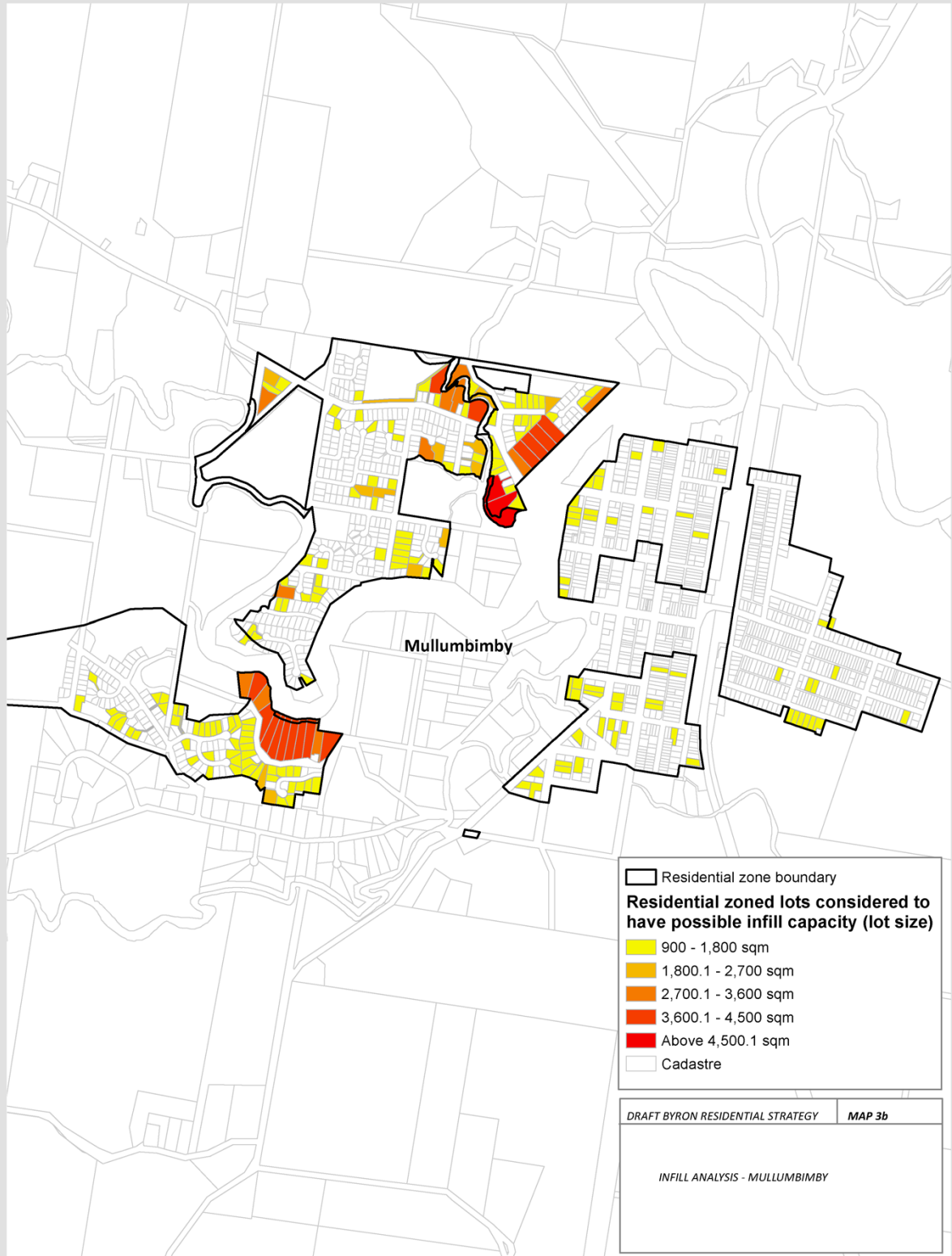
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Byron Residential Strategy - Infill Analysis - Mullumbimby



Residential zone boundary
Residential zoned lots considered to have possible infill capacity (lot size)
 900 - 1,800 sqm
 1,800.1 - 2,700 sqm
 2,700.1 - 3,600 sqm
 3,600.1 - 4,500 sqm
 Above 4,500.1 sqm
 Cadastre

DRAFT BYRON RESIDENTIAL STRATEGY MAP 3b

 INFILL ANALYSIS - MULLUMBIMBY



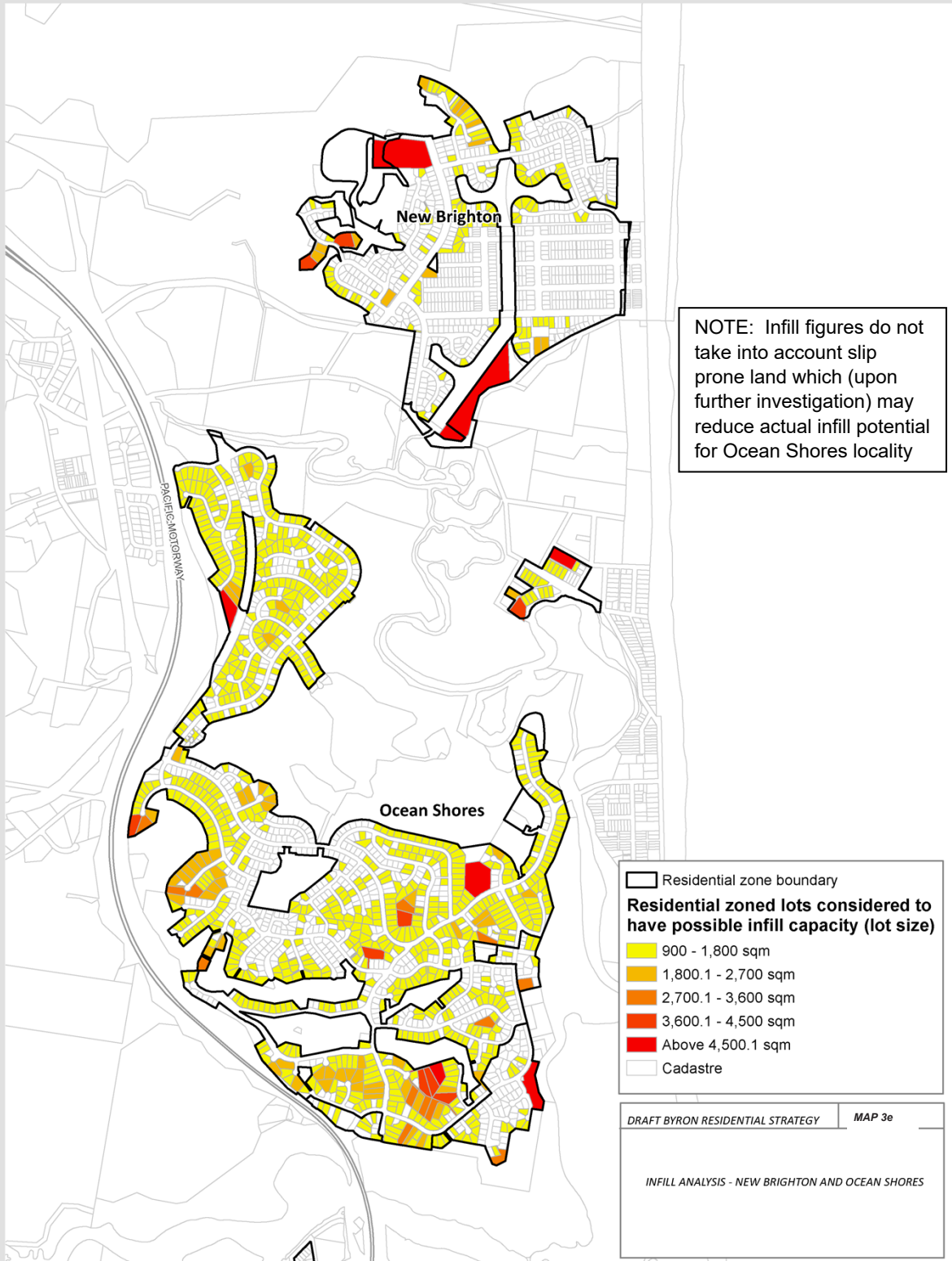
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Byron Residential Strategy - Infill Analysis - New Brighton and Ocean Shores



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0 0.25 0.5 1 Kilometres

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Appendix H. Summary of results

Table H1: Summary of results

Category	Description	Included in Dwelling Yield Target	Indicative Sequence of Development	Complexity	No. of Dwellings	Area (Ha)
Sites included in the dwelling yield target for this strategy:						
Approved dwellings, dual occupancies and secondary dwellings since 2011	Number of approved dwellings for new houses, secondary dwellings, dual occupancies, medium density and subdivisions since 2011 to 31 May 2016.	Yes	Completed	N/A	1,543	N/A
Approved for residential	Areas containing development applications.	Yes	In progress	N/A	78	10
Vacant / under developed residential zone land	Areas zoned residential and currently vacant land. This involved a secondary analysis of all vacant zoned residential land through the examination of aerial photography.	Yes	Short-medium	Low	1,703	230
Possible areas for residential development	Areas with low or manageable constraints that are considered possible for residential development.	Yes	Short-medium	Low - medium	1,073	248
Draft Rural Land Use Strategy	Areas extracted from the draft Rural Land Use Strategy for dwellings within the rural area (eg. rural residential; secondary dwellings)	Yes	Short-medium	Low - medium	300	N/A

Category	Description	Included in Dwelling Yield Target	Indicative Sequence of Development	Complexity	No. of Dwellings	Area (Ha)
Infill	Infill within existing residential developed areas	Yes	Short-medium	Low - medium	784	Refer to infill analysis
Sites <u>not</u> included in the dwelling yield target for this strategy and subject to further investigation:						
Possible residential subject to further assessment	Areas containing constraints that require further assessment before determining if residential development is feasible.	No	Medium-Long	Medium	Refer to site analysis table	317
Conversion of rural residential to residential	Rural residential land that could be investigated for conversion to residential through further assessment and negotiations with land owners.	No	Medium-Long	Medium	Refer to site analysis table	120
Possible rural residential subject to further assessment	Areas containing constraints that require further assessment before determining if rural residential development is feasible.	No	Medium-Long	Medium	Refer to site analysis table	25
Future investigation – medium to high suitability	Long-term timeframe of areas containing predominately low – medium constraints that require further assessment before determining if residential development is feasible.	No	Long (consideration after 2036)	Medium - High	Refer to site analysis table	135

Category	Description	Included in Dwelling Yield Target	Indicative Sequence of Development	Complexity	No. of Dwellings	Area (Ha)
Future investigation – low suitability	Long-term timeframe of areas containing predominately medium – high constraints that require further assessment before determining if residential development is feasible.	No	Very Long	High	Refer to site analysis table	1,200
Not suitable – highly constrained	Areas not suitable for residential development due to high levels of constraints	No	N/A	Very high	N/A	298
Other non-residential uses	Site identified as greenfield however designated for non-residential uses	No	N/A	N/A	N/A	100