



# **PLANNING PROPOSAL**

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# **CITY OF COFFS HARBOUR**

**Planning Proposal PP-2022-107 - Sugarmill Road, Sapphire Beach**  
**Lot 12 DP 243972, 28 Sugarmill Road, Sapphire Beach**  
**Lot 91 DP 786155, 35 Sugarmill Road, Sapphire Beach**  
**Lot 17 DP 249273, 89 Sugarmill Road, Sapphire Beach**

**February 2025**  
**VERSION 2 Exhibition**

## PLANNING PROPOSAL STATUS

Stage	Version / Date <i>(blank until achieved)</i>
Reported to Council – Initiate s3.33	Version 1 – Pre-Exhibition 14 November 2024
Referred to DPHI s3.34(1)	Version 1 – Pre-Exhibition 18 November 2024
Gateway Determination s3.34(2)	Version 1 – Pre-Exhibition 6 December 2024
Amendments Required:	No
Public Exhibition – Schedule 1 Clause 4 Version 2 - Exhibition	Version 2 - Exhibition 3 February 2025 – 3 March 2025
Reported to Council – Initiate Revised PP s3.33 Version x - Re_Exhibition	
Revised PP Sent to the Minister - s3.35(1) Version x - Re_Exhibition	
Altered Gateway Determination s3.34(2) Version x - Re_Exhibition	
Public Exhibition – Schedule 1 Clause 4 Version x - Re_Exhibition	
Reported to Council – Endorsement (or Making of LEP if delegated) s3.36 Version x - Post Exhibition	
Endorsed by Council for Submission to Minister for Notification (or Making where not delegated) s3.36(2) Version x – Post Exhibition	

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## EXECUTIVE SUMMARY & EXHIBITION INFORMATION

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### **What is a Planning Proposal?**

A planning proposal is a document that explains the intended effect of a proposed local environmental plan (LEP) and sets out the justification for making that plan. Essentially, the preparation of a planning proposal is the first step in making an amendment to Coffs Harbour LEP 2013.

A planning proposal assists those who are responsible for deciding whether an LEP amendment should proceed and is required to be prepared by a relevant planning authority. Council, as a relevant planning authority, is responsible for ensuring that the information contained within a planning proposal is accurate and accords with the *Environmental Planning and Assessment Act 1979* and the NSW Department of Planning, Housing and Infrastructure's *Local Environmental Plan Making Guideline 2023*.

### **What is the Intent of this Planning Proposal?**

The intent of Planning Proposal PP-2022-107 (the planning proposal) is to amend Coffs Harbour LEP 2013 to allow large lot residential development at 28, 35 and 89 Sugarmill Road, Sapphire Beach. The planning proposal seeks to:

- Rezone 28, 35 and 89 Sugarmill Road, Sapphire Beach from Zone RU2 Rural Landscape to part Zone R5 Large Lot Residential and part Zone C2 Environmental Conservation.
- Amend the relevant lot size map to reduce the minimum lot size of 28, 35 and 89 Sugarmill Road, Sapphire Beach from 40 hectares to 6000 m<sup>2</sup>.
- Amend the Coffs Harbour Terrestrial Biodiversity Map over 28, 35 and 89 Sugarmill Road, Sapphire Beach to include the area proposed to be zoned C2 Environmental Conservation as terrestrial biodiversity on the map.
- Enable the development of the land for large lot residential purposes, having regard to the environmental attributes affecting the land.

### **Public Exhibition**

This planning proposal is on public exhibition in accordance with the gateway determination issued by NSW Department of Planning, Housing, and Infrastructure. Copies of the planning proposal and supportive information can be viewed on the City of Coffs Harbour Have Your Say Page <https://haveyoursay.coffsharbour.nsw.gov.au/> for the duration of the exhibition period.

All interested persons are invited to view and make a submission on the planning proposal during the exhibition period. Issues raised by submissions will be reported to the Council for a final decision. Submissions can be made online, or in writing by email or post to:

The General Manager  
City of Coffs Harbour  
Locked Bag 155  
COFFS HARBOUR NSW 2450  
Email: [coffs.council@chcc.nsw.gov.au](mailto:coffs.council@chcc.nsw.gov.au)

**Any questions, contact:**  
Marten Bouma on 02 6648 4657  
or email [marten.bouma@chcc.nsw.gov.au](mailto:marten.bouma@chcc.nsw.gov.au)

*Note: The City is committed to openness and transparency in its decision-making processes. The Government Information (Public Access) Act 2009 requires the City to provide public access to information held unless there are overriding public interest considerations against disclosure. Any submissions received will be made publicly available unless the writer can demonstrate that the release of part or all of the information would*

*not be in the public interest. However, the City would be obliged to release information as required by court order or other specific law.*

*Written submissions must be accompanied, where relevant, by a “Disclosure Statement of Political Donations and Gifts” in accordance with the provisions of the Local Government and Planning Legislation Amendment (Political Donations) Act 2008 No. 44 Disclosure forms are available from the City’s Customer Service Section or on the City’s website [www.coffsharbour.nsw.gov.au/disclosurestatement](http://www.coffsharbour.nsw.gov.au/disclosurestatement).*

## BACKGROUND

Proposal	R5 Large Lot Residential / C2 Environmental Conservation Rezoning
Property Details	Lot 12 DP 243972, 28 Sugarmill Road, Sapphire Beach Lot 91 DP 786155, 35 Sugarmill Road, Sapphire Beach Lot 17 DP 249273, 89 Sugarmill Road, Sapphire Beach
Current Land Use Zone(s)	RU2 Rural Landscape
Proponent	Keiley Hunter
Landowner	K. Grimley (28 Sugarmill Road) I.S. & S.M. Martyn (35 Sugarmill Road) Oakhunt Pty Ltd (89 Sugarmill Road)
Location	A location map is included in Figure 1

This planning proposal has been prepared in accordance with the Environmental Planning and Assessment Act 1979 and *Local Environmental Plan Making Guideline 2023* (NSW Department of Planning, Housing and Infrastructure).

This planning proposal explains the intended effects of a proposed amendment to Coffs Harbour LEP 2013 to enable large lot residential development on three sites on Sugarmill Road, Sapphire Beach.

### The Sites

This planning proposal applies to three sites as detailed in Table 1. The three sites have a combined area of 6.26 hectares (ha) and are shown in Figure 1.

The subject sites are located approximately 7 kilometres north of the Coffs Harbour Central Business District, located on the Mid-North Coast of New South Wales. The sites are located west of the Pacific Highway and are accessed via Sugarmill Road, Sapphire Beach. Each site is currently zoned RU2 Rural Landscape under LEP 2013.

A concept subdivision plan is shown in Appendix 4 and shows 2 lots proposed for each of the sites.

Lot/DP	Address	Land area (ha)	Land use
Lot 12 DP 243972	28 Sugarmill Road, Sapphire Beach	2.03 ha	Rural dwelling / lifestyle
Lot 91 DP 786155	35 Sugarmill Road, Sapphire Beach	2.37 ha	Rural dwelling / lifestyle
Lot 17 DP 249273	89 Sugarmill Road, Sapphire Beach	1.86 ha	Rural dwelling / lifestyle

Table 1: Subject sites

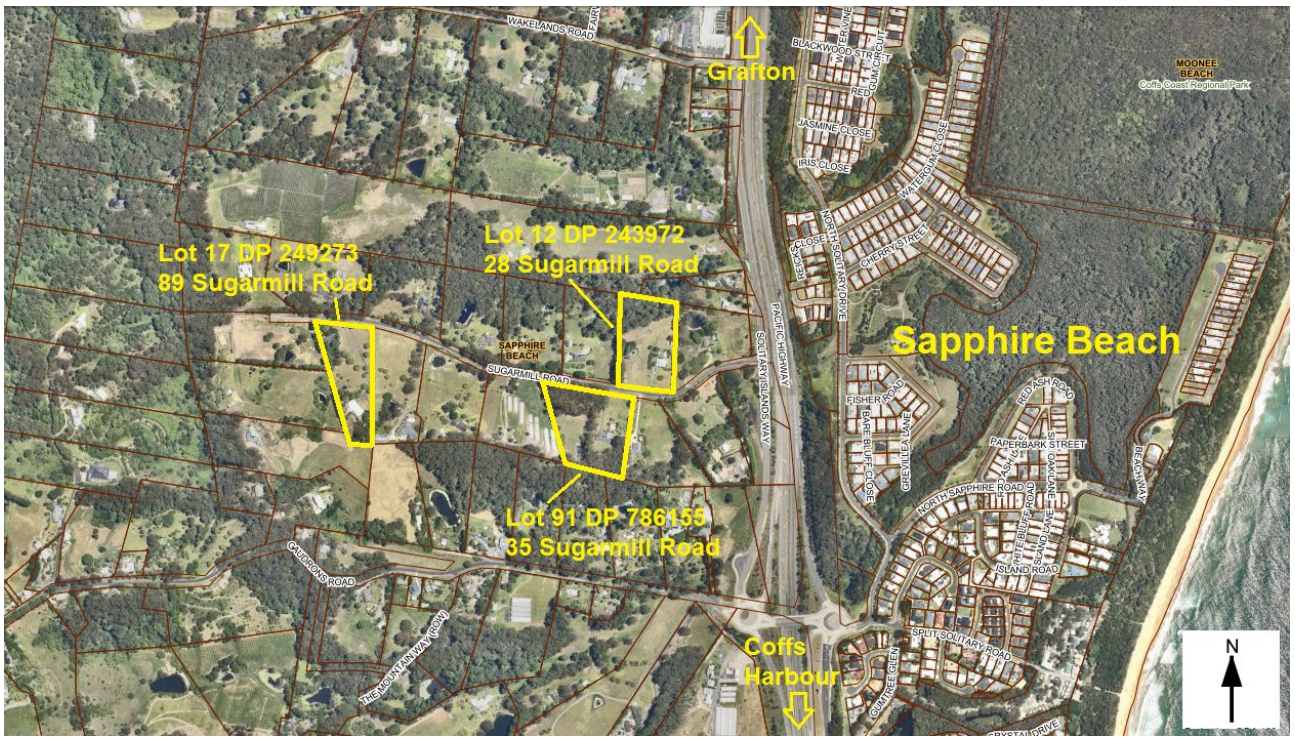


Figure 1: Location Map

## PART 1 – OBJECTIVES OR INTENDED OUTCOMES

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The objectives of this planning proposal are to amend Coffs Harbour LEP 2013 to:

- permit large lot residential development on the subject sites,
- ensure that the Sugarmill Road locality is developed based on sound planning and design principles, and
- ensure that the rezoning and reduction in minimum lot size is consistent with the broad strategic direction for the locality as described by North Coast Regional Plan 2041 and Chapter 6 (Large Lot Residential Lands) of the City's Local Growth Management Strategy (LGMS) 2020.

## PART 2 – EXPLANATION OF PROVISIONS

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The intended outcomes of the planning proposal will be achieved by making the following amendments to LEP 2013 maps:

- Amend the spatial Land Zoning Map to change land currently within Zone RU2 Rural Landscape to Zone R5 Large Lot Residential / Zone C2 Environmental Conservation on all three lots included within this planning proposal.
- Amend the Coffs Harbour Lot Size Map (Sheet LSZ\_005C & Sheet LSZ\_005D) to change land currently subject to a minimum lot size provision AB 40 ha to X2 6,000 m<sup>2</sup>, corresponding with the proposed R5 Large Lot Residential zone on all three lots included within this planning proposal.
- Amend the Coffs Harbour Terrestrial Biodiversity Map (Sheet CL2\_005C & Sheet CL2\_005D) to include the area proposed to be zoned C2 Environmental Conservation as terrestrial biodiversity on the map. All three lots included within this planning proposal will be affected.

All the above amendments to LEP 2013 maps are shown in Part 4 (mapping) of this planning proposal.

## PART 3 – JUSTIFICATION & SITE-SPECIFIC MERIT

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This part provides a response to the following matters in accordance with the *Local Environmental Plan Making Guideline 2023* (NSW Department of Planning, Housing and Infrastructure):

- Section A: Need for the planning proposal
- Section B: Relationship to strategic planning framework
- Section C: Environmental, social and economic impact

### ***Section A – Need for the planning proposal***

#### **1. Is the planning proposal a result of an endorsed local strategic planning statement, strategic study or report?**

Yes. This planning proposal has been prepared in response to a Request to Amend Coffs Harbour Local Environmental Plan (LEP) 2013 lodged on behalf of the landowners. This planning proposal is accompanied by several detailed environmental studies which are included as appendices. The planning proposal has been prepared in line with the findings of the Coffs Harbour Local Growth Management Strategy (LGMS) 2020.



**2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?**

Yes. The planning proposal is considered the best means of achieving the objectives and intended outcomes to amend the zoning and minimum lot size of the subject sites.

**3. Is there a net community benefit?**

The Net Community Benefit Criteria is identified in the NSW Government's publication *The Right Place for Business and Services*. This policy document has a focus on ensuring growth within existing centres and minimising dispersed trip generating development. It applies most appropriately to planning proposals that promote significantly increased residential areas or densities, or significant increased employment areas or the like. This planning proposal will enable the sites to be subdivided and developed for large lot residential purposes under Coffs Harbour LEP 2013, and therefore the criteria in the Net Community Benefit test cannot be properly applied to this planning proposal.

**Section B – Relationship to strategic planning framework**

**4. Will the planning proposal give effect to the objectives and actions contained within the North Coast Regional Plan 2041?**

The proposed LEP amendment is consistent with the relevant goals, objectives, activities, and actions within the North Coast Regional Plan 2041 as follows:

**GOAL 1 – LIVEABLE, SUSTAINABLE AND RESILIENT**

**Objective 1 – Provide well located homes to meet demand.**

*Strategy 1.1 A 10-year supply of zoned and developable residential land is to be provided and maintained in Local Council Plans endorsed by the Department of Planning, Housing and Infrastructure.*

The proposed LEP amendment is not inconsistent with this action, given that it seeks to provide additional housing stock in the LGA.

*Strategy 1.2 Local Council plans are to encourage and facilitate a range of housing options in well located areas.*

The proposed LEP amendment is not inconsistent with this strategy given that it offers additional housing choice in a suitable location.

*Strategy 1.3 Undertake infrastructure service planning to establish land can be feasibly serviced prior to rezoning.*

The proposed LEP amendment is not inconsistent with this strategy as the site can be feasibly serviced to facilitate development.

*Strategy 1.4 Councils in developing their future housing strategies must prioritise new infill development to assist in meeting the region's overall 40% multi-dwelling / small lot housing target and are encouraged to work collaboratively at a subregional level to achieve the target.*

The proposed LEP amendment is not inconsistent with this strategy given it offers additional housing choice in a suitable location, as demonstrated in this planning proposal.

*Strategy 1.5 New rural residential housing is to be located on land which has been approved in a strategy endorsed by the Department of Planning, Housing and Infrastructure and is to be directed away from the coastal strip.*

The proposed LEP amendment is consistent with this strategy given that the land has been identified in the Coffs Harbour Local Growth Management Strategy 2020.

Strategy 1.6 *Councils and LALCs can partner to identify areas which may be appropriate for culturally responsive housing on Country.*

The proposed LEP amendment is not inconsistent with this strategy given that it seeks to provide housing that could be used for this purpose.

Action 2 *Provide guidance to help councils plan for and manage accommodation options for seasonal and itinerant workers.*

The proposed LEP amendment is not inconsistent with this action.

### **Objective 2 – Provide for more affordable and low-cost housing.**

Action 3 *Establish Housing Affordability Roundtables for the Mid North Coast and Northern Rivers subregions with councils, community housing providers, State agencies and the housing development industry to collaborate, build knowledge and identify measures to improve affordability and increase housing diversity.*

The proposed LEP amendment is not inconsistent with this action as it would increase the density and opportunity for additional housing.

### **Objective 3 – Protect regional biodiversity and areas of high environmental value.**

Strategy 3.1 *Strategic planning and local plans must consider opportunities to protect biodiversity values by:*

- *focusing land-use intensification away from HEV assets and implementing the ‘avoid, minimise and offset’ hierarchy in strategic plans, LEPs and planning proposals;*
- *ensuring any impacts from proposed land use intensification on adjoining reserved lands or land that is subject to a conservation agreement are assessed and avoided;*
- *encouraging and facilitating biodiversity certification by Councils at the precinct scale for high growth areas and by individual land holders at the site scale, where appropriate;*
- *updating existing biodiversity mapping with new mapping in LEPs where appropriate;*
- *identifying HEV assets within the planning area at planning proposal stage through site investigations;*
- *applying appropriate mechanisms such as conservation zones and Biodiversity Stewardship Agreements to protect HEV land within a planning area and considering climate change risks to HEV assets;*
- *developing or updating koala habitat maps to strategically conserve koala habitat to help protect, maintain and enhance koala habitat; and*
- *considering marine environments, water catchment areas and groundwater sources to avoid potential development impacts.*

The proposed LEP amendment is not inconsistent with this strategy given that the planning proposal includes land to be included within Zone C2 Environmental Conservation which includes HEV assets.

Strategy 3.2 *In preparing local and strategic plans Councils should:*

- *embed climate change knowledge and adaptation actions; and*
- *consider the needs of climate refuge for threatened species and other key species.*

The proposed LEP amendment is not inconsistent with this strategy.

Collaboration Activity 1:

Work with and assist councils to:

- review biodiversity mapping and related local environmental plan and development control plan provisions;
- improve access to data to enable identification of protected areas including NPWS Estate, Crown Reserves and in-perpetuity private land conservation agreements to inform local planning;
- ensure koala habitat values are included in land-use planning decisions through regional plans, local strategic planning statements and local environmental plans.

Lead Agency: NSW Biodiversity and Conservation Division

The proposed LEP amendment is not inconsistent with this activity given that it seeks to rezone land to include Zone C2 Environmental Conservation where appropriate.

**Objective 4 – Understand, celebrate, and integrate Aboriginal culture.**

Strategy 4.1 Councils prepare cultural heritage mapping with an accompanying Aboriginal cultural management plan in collaboration with Aboriginal communities to protect culturally important sites.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 4.2 Prioritise applying dual names in local Aboriginal language to important places, features or infrastructure in collaboration with the local Aboriginal community.

The proposed LEP amendment is not inconsistent with this strategy.

**Objective 5 – Manage and improve resilience to shocks and stresses, natural hazards and climate change.**

Strategy 5.1 When preparing local strategic plans, councils should be consistent with and adopt the principles outlined in the Strategic Guide to Planning for Natural Hazards.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 5.2 Where significant risk from natural hazard is known or presumed, updated hazard strategies are to inform new land use strategies and be prepared in consultation with emergency service providers and Local Emergency Management Committees (LEMCs). Hazard strategies should investigate options to minimise risk such as voluntary housing buy back schemes.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 5.3 Use local strategic planning and local plans to adapt to climate change and reduce exposure to natural hazards by:

- identifying and assessing the impacts of place-based shocks and stresses;
- taking a risk-based-approach that uses the best available science in consultation with the NSW Government, emergency service providers, local emergency management committees and bush fire risk management committees;
- locating development (including urban release areas and critical infrastructure) away from areas of known high bushfire risk, flood and coastal hazard areas to reduce the community's exposure to natural hazards;
- identifying vulnerable infrastructure assets and considering how they can be protected or adapted;
- building resilience of transport networks in regard to evacuation routes, access for emergencies and, maintaining freight connections;
- identifying industries and locations that would be negatively impacted by climate change and natural hazards and preparing strategies to mitigate negative impacts and identify new paths for growth;

- preparing, reviewing and implementing updated natural hazard management plans and Coastal Management Programs to improve community and environmental resilience which can be incorporated into planning processes early for future development;
- identifying any coastal vulnerability areas;
- updating flood studies and flood risk management plans after a major flood event incorporating new data and lessons learnt; and
- communicating natural hazard risk through updated flood studies and strategic plans.

The proposed LEP amendment is not inconsistent with this strategy.

**Strategy 5.4** Resilience and adaptation plans should consider opportunities to:

- encourage sustainable and resilient building design and materials (such as forest products) including the use of renewable energy to displace carbon intensive or fossil fuel intensive options
- promote sustainable land management including Ecologically Sustainable Forest Management (ESFM)
- address urban heat through building and street design at precinct scale that considers climate change and future climatic conditions to ensure that buildings and public spaces are designed to protect occupants in the event of heatwaves and extreme heat events
- integrate emergency management and recovery needs into new and existing urban areas including evacuation planning, safe access and egress for emergency services personnel, buffer areas, building back better, whole-of-life cycle maintenance and operation costs for critical infrastructure for emergency management
- adopt coastal vulnerability area mapping for areas subject to coastal hazards to inform the community of current and emerging risks
- promote economic diversity, improved environmental, health and well-being outcomes and opportunities for cultural and social connections to build more resilient places and communities.

The proposed LEP amendment is not inconsistent with this strategy, and it will facilitate resilient and adaptive building and land management.

**Strategy 5.5** Partner with local Aboriginal communities to develop land management agreements and policies to support cultural management practices.

The proposed LEP amendment is not inconsistent with this strategy.

**Collaboration Activity 2:**

*Work with councils and agencies and the Transition North Coast Working Group to deliver the North Coast Enabling Regional Adaptation report to provide opportunities for climate change adaptation pathways with the aim of transitioning key regional systems to a more resilient future.*

*Lead Agency: NSW Office of Energy and Climate Change*

The proposed LEP amendment is not inconsistent with this activity.

## **Objective 6 – Create a circular economy.**

**Strategy 6.1** Support the development of circular economy, hubs, infrastructure and activities and consider employment opportunities that may arise from circular economies and industries that harness or develop renewable energy technologies and will aspire towards an employment profile that displays a level of economic self-reliance, and resilience to external forces.

The proposed LEP amendment is not inconsistent with this strategy.

**Strategy 6.2** Use strategic planning and waste management strategies to support a circular economy,

*including dealing with waste from natural disasters and opportunities for new industry specialisations.*

The proposed LEP amendment is not inconsistent with this strategy.

**Objective 7 – Promote renewable energy opportunities.**

Strategy 7.1 *When reviewing LEPs and local strategic planning statements:*

- *ensure current land use zones encourage and promote new renewable energy infrastructure;*
- *identify and mitigate impacts on views, local character and heritage where appropriate; and*
- *undertake detailed hazard studies.*

The proposed LEP amendment is not inconsistent with this strategy.

**Objective 8 – Support the productivity of agricultural land.**

Strategy 8.1 *Local planning should protect and maintain agricultural productive capacity in the region by directing urban, rural residential and other incompatible development away from important farmland.*

The proposed LEP amendment is not inconsistent with this strategy as the sites are currently used for lifestyle residential purposes and are surrounded by similarly used properties of many sizes. While agriculture occurs widely in this area, the area is not identified as important farmland under the Plan.

**Objective 9 – Sustainably manage and conserve water resources.**

Strategy 9.1 *Strategic planning and local plans should consider:*

- *opportunities to encourage riparian and coastal floodplain restoration works;*
- *impacts to water quality, freshwater flows and ecological function from land use change;*
- *water supply availability and issues, constraints and opportunities early in the planning process;*
- *partnering with local Aboriginal communities to care for Country and waterways;*
- *locating, designing, constructing and managing new developments to minimise impacts on water catchments, including downstream waterways and groundwater resources;*
- *possible future diversification of town water sources, including groundwater, stormwater harvesting and recycling;*
- *promoting an integrated water cycle management approach to development;*
- *encouraging the reuse of water in new developments for urban greening and for irrigation purposes;*
- *improving stormwater management and water sensitive urban design;*
- *ensuring sustainable development of higherwater use industries by considering water availability and constraints, supporting more efficient water use and reuse, and locating development where water can be accessed without significantly impacting on other water users or the environment;*
- *identifying and protecting drinking water catchments and storages in strategic planning and local plans; and*
- *opportunities to align local plans with any certified Coastal Management Programs.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 9.2 *Protect marine parks, coastal lakes and estuaries by implementing the NSW*

*Government's Risk-Based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions, with sensitive marine parks, coastal lakes and estuaries prioritised.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 9.3 *Encourage a whole of catchment approach to land use and water management across the region that considers climate change, water security, sustainable demand and growth, the natural environment and investigate options for water management through innovation.*

The proposed LEP amendment is not inconsistent with this strategy.

**Objective 10 – Sustainably manage the productivity of our natural resources.**

Strategy 10.1 *Enable the development of the region's natural, mineral and forestry resources by avoiding interfaces with land uses that are sensitive to impacts from noise, dust and light interference.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 10.2 *Plan for the ongoing productive use of lands with regionally significant construction material resources in locations with established infrastructure and resource accessibility.*

The proposed LEP amendment is not inconsistent with this strategy.

**GOAL 2 – PRODUCTIVE AND CONNECTED**

**Objective 11 – Support cities and centres and coordinate the supply of well-located employment land.**

Strategy 11.1 *Local council plans will support and reinforce cities and centres as a focal point for economic growth and activity.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 11.2 *Utilise strategic planning and land use plans to maintain and enhance the function of established commercial centres by:*

- *simplifying planning controls;*
- *developing active city streets that retain local character;*
- *facilitating a broad range of uses within centres in response to the changing retail environment; and*
- *maximising the transport and community facilities commensurate with the scale of development proposals.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 11.3 *Support existing and new economic activities by ensuring council strategic planning and local plans:*

- *retain, manage and safeguard significant employment lands;*
- *respond to characteristics of the resident workforce and those working in the LGA and neighbouring LGAs;*
- *identify local and subregional specialisations;*
- *address freight, service and delivery considerations;*
- *identify future employment lands and align infrastructure to support these lands;*
- *provide flexibility in local planning controls;*
- *are responsive to future changes in industry to allow a transition to new opportunities;*
- *provide flexibility and facilitate a broad range of commercial, business and retail uses within centres;*

- focus future commercial and retail activity in existing commercial centres, unless there is no other suitable site within existing centres, there is a demonstrated need, or there is positive social and economic benefit to locate activity elsewhere; and
- are supported by infrastructure servicing plans for new employment lands to demonstrate feasibility prior to rezoning.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 11.4 New employment areas are in accordance with an employment land strategy endorsed by the Department of Planning, Housing and Infrastructure.

The proposed LEP amendment is not inconsistent with this strategy.

### **Objective 12 – Create a diverse visitor economy.**

Strategy 12.1 Council strategic planning and local plans should consider opportunities to:

- enhance the amenity, vibrancy and safety of centres and township precincts;
- create green and open spaces that are accessible and well connected and enhance existing green infrastructure in tourist and recreation facilities;
- support the development of places for artistic and cultural activities;
- identify appropriate areas for tourist accommodation and tourism development;
- protect heritage, biodiversity and agriculture to enhance cultural tourism, agri-tourism and eco-tourism;
- partner with local Aboriginal communities to support cultural tourism and connect ventures across the region;
- support appropriate growth of the nighttime economy;
- provide flexibility in planning controls to allow sustainable agritourism and ecotourism;
- improve public access and connection to heritage through innovative interpretation; and
- incorporate transport planning with a focus on active transport modes to connect visitors to key destinations.

The proposed LEP amendment is not inconsistent with this strategy.

### **Objective 13 – Champion Aboriginal self-determination.**

Strategy 13.1 Provide opportunities for the region’s LALCs, Native Title holders and community recognised Aboriginal organisations to utilise the NSW planning system to achieve development aspirations, maximising the flow of benefits generated by land rights to Aboriginal communities through strategic led planning.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 13.2 Prioritise the resolution of unresolved Aboriginal land claims on Crown land.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 13.3 Partner with community recognised Aboriginal organisations to align strategic planning and community aspirations including enhanced Aboriginal economic participation, enterprise and land, sea and water management.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 13.4 Councils consider engaging Aboriginal identified staff within their planning teams to facilitate strong relationship building between councils, Aboriginal communities, and key stakeholders such as Local Aboriginal Land Councils and local Native Title holders.

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 13.5 Councils should establish a formal and transparent relationship with local recognised

Aboriginal organisations and community, such as an advisory committee.

The proposed LEP amendment is not inconsistent with this strategy.

Action 5

*The Department of Planning, Housing and Infrastructure will work with LALCs, Native Title holders and councils by:*

- *meaningfully engaging with LALCs and Native Title holders in the development and review of strategic plans to ensure aspirations are reflected in plans;*
- *building capacity for Aboriginal communities, LALCs and Native Title holders to utilise the planning system; and*
- *incorporating Aboriginal knowledge of the region into plan.*

The proposed LEP amendment is not inconsistent with this action.

**Objective 14 – Deliver new industries of the future.**

Strategy 14.1 *Facilitate agribusiness employment and income-generating opportunities through the regular review of council planning and development controls, including suitable locations for intensive agriculture and agribusiness.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 14.2 *Protect established agriculture clusters and identify expansion opportunities in local plans that avoid land use conflicts, particularly with residential and rural residential land uses.*

The proposed LEP amendment is not inconsistent with this strategy given that it seeks to allow for large lot residential development in a location that has been identified in a Department endorsed growth strategy.

**Objective 15 – Improve state and regional connectivity.**

Strategy 15.1 *Protect proposed and existing transport infrastructure and corridors to ensure network opportunities are not sterilised by incompatible land uses or land fragmentation.*

The proposed LEP amendment is not inconsistent with this strategy.

*Collaboration Activity 4:*

*To ensure that centres experiencing high growth have well planned and sustainable transport options, placed-based Transport Plans will be developed for key cities and centres across the North Coast region.*

*Lead Agency: Transport for NSW*

The proposed LEP amendment is not inconsistent with this activity.

**Objective 16 – Increase active and public transport usage.**

Strategy 16.1 *Encourage active and public transport use by prioritising pedestrian amenity within centres for short everyday trips.*

- *providing a legible, connected and accessible network of pedestrian and cycling facilities;*
- *delivering accessible transit stops and increasing convenience at interchanges to serve an ageing customer;*
- *incorporating emerging anchors and commuting catchments in bus contract renewals;*
- *ensuring new buildings and development include end of trip facilities;*
- *integrating the active transport network with public transport facilities; and*
- *prioritising increased infill housing in appropriate locations to support local walkability and the feasibility of public transport stops.*

The proposed LEP amendment is not inconsistent with this strategy.



Strategy 16.2 *Local plans should encourage the integration of land use and transport and provide for environments that are highly accessible and conducive to walking, cycling and the use of public transport and encourage active travel infrastructure around key trip generators.*

The proposed LEP amendment is not inconsistent with this strategy.

**Objective 17 – Utilise new transport technology.**

Strategy 17.1 *Councils should consider how new transport technology can be supported in local strategic plans, where appropriate.*

The proposed LEP amendment is not inconsistent with this strategy.

**Collaboration Activity 6:**

*Investigate public transport improvements including on-demand services.*

*Lead Agency: Transport for NSW*

The proposed LEP amendment is not inconsistent with this activity.

**GOAL 3 – GROWTH CHANGE AND OPPORTUNITY**

**Objective 18 – Plan for sustainable communities.**

Action 6 *Undertake housing and employment land reviews for the Northern Rivers and Mid North Coast subregions to assess future supply needs and locations.*

The proposed LEP amendment is not inconsistent with this action.

**Objective 19 – Public spaces and green infrastructure support connected and healthy communities.**

Strategy 19.1 *Councils should aim to undertake public space needs analysis and develop public space infrastructure strategies for improving access and quality of all public space to meet community need for public spaces. This could include:*

- *drawing on community feedback to identify the quantity, quality and the type of public space required;*
- *prioritising the delivery of new and improved quality public space to areas of most need;*
- *considering the needs of future and changing populations;*
- *identifying walkable and cycleable connectivity improvements and quality and access requirements that would improve use and enjoyment of existing infrastructure;*
- *consolidating, linking and enhancing high quality open spaces and recreational areas; and*
- *working in partnership with local Aboriginal communities to develop bespoke cultural infrastructure which responds to the needs of Aboriginal communities.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 19.2 *Public space improvements and new development should consider the local conditions, including embracing opportunities for greening and applying water sensitive urban design principles.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 19.3 *Encourage the use of council owned land for temporary community events and creative practices where appropriate by reviewing development controls.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 19.4 *Local environmental plan amendments that propose to reclassify public open space must consider the following:*

- *the role or potential role of the land within the open space network;*
- *how the reclassification is strategically supported by local strategies such as open space or asset rationalisation strategies;*

- where land sales are proposed, details of how sale of land proceeds will be managed; and
- the net benefit or net gain to open space.

The proposed LEP amendment is not inconsistent with this strategy.

### **Objective 20 – Celebrate local character.**

Strategy 20.1 *Ensure strategic planning and local plans recognise and enhance local character through use of local character statements in local plans and in accordance with the NSW Government’s Local Character and Place Guideline.*

The proposed LEP amendment is not inconsistent with this strategy.

Strategy 20.2 *Celebrate buildings of local heritage significance by:*

- retaining the existing use where possible
- establishing a common understanding of appropriate reuses
- exploring history and significance
- considering temporary uses
- designing for future change of use options.

The proposed LEP amendment is not inconsistent with this strategy.

### **Coffs Harbour Narrative**

#### *Regional Priorities*

- *Manage and support growth in Coffs Harbour, anchored by the expanding health, education and creative industries sectors, and Coffs Harbour Airport Enterprise Park.*
- *Deliver suitable housing and job opportunities across the LGA including in Coffs Harbour, Woolgoolga, Moonee Beach, Toormina and Sapphire Beach.*
- *Protect environmental assets that sustain the agricultural and tourism industries.*

#### *Livable and Resilient*

- *Provide mitigation measures in response to climate change.*
- *Support environmentally sustainable development that is responsive to natural hazards.*
- *Retain and protect local biodiversity through effective management of environmental assets and ecological communities.*

#### *Productive and Connected*

- *Develop health, education and aviation precincts at the South Coffs Harbour Enterprise Area and Coffs Harbour Airport Enterprise Park, and new employment land at Woolgoolga and Bonville.*
- *Promote the sustainable use of important farmland areas through encouraging initiatives to support the development of the agricultural sector and agribusiness.*
- *Identify opportunities to expand nature based, adventure and cultural tourism assets including Solitary Islands Marine Park and other coastal, hinterland, and heritage assets, which will support the local ecotourism industry.*

#### *Housing and Place*

- *Enable ‘better places’ through placemaking initiatives, active transport, urban design specific to the North Coast, and facilitation of the ‘20 minute neighbourhood’.*
- *Deliver housing at Woolgoolga, North Boambee Valley and Bonville, and address the temporary worker housing needs associated with the Coffs Harbour Bypass.*

- Enhance the variety of housing options available by promoting a compact urban form in and around the Coffs Harbour city centre and Park Beach.

*Smart, Connected and Accessible (Infrastructure)*

- Increase and strengthen social, economic and strategic links with the Mid North Coast subregion including Bellingen, Clarence Valley and Nambucca LGAs, particularly regarding the delivery of additional employment lands.
- Maximise opportunities associated with the increased connectivity provided by the new Coffs Harbour Bypass.

The proposed LEP amendment is not inconsistent with this narrative.

**5. Is the planning proposal consistent with Council’s endorsed local strategic planning statement, or another endorsed local strategy or strategic plan?**

**Coffs Harbour Local Strategic Planning Statement 2020**

The City adopted its Local Strategic Planning Statement (LSPS) on 25 June 2020. The proposed LEP amendment accords with the vision and planning priorities within the LSPS, in particular:

- *Planning Priority 5: Deliver greater housing supply, choice and diversity.*
- *Action A5.5: Implement remaining actions from the Local Growth Management Strategy as funding allows.*
- *Planning Priority 7: Protect and conserve the natural, rural, built and cultural heritage of Coffs Harbour.*
- *Action A7.3: Implement actions from the Local Growth Management Strategy as funding allows.*

**MyCoffs Community Strategic Plan 2032**

The MyCoffs Community Strategic Plan is based on four overarching themes: Community Wellbeing; Community Prosperity; A Place for Community; and Sustainable Community Leadership. Within each theme there are several sustainable development objectives and outcomes.

The planning proposal supports the vision of the MyCoffs Community Strategic Plan ‘connected, sustainable, thriving’ and will assist in achieving the objectives of the Plan by attracting people to work, live and visit; and by undertaking development that is environmentally, socially, and economically responsible as shown in table 2 below:

Theme	Objective	Relevant Outcomes
A Place for Community: Liveable neighbourhoods with a defined identity	We create liveable spaces that are beautiful and appealing.	The Coffs Harbour area is a place we are proud to call home. Our neighbourhoods have a strong sense of identity and are actively shaped by the local community.
		We reflect our beautiful natural setting throughout our built environment
	We undertake development that is environmentally, socially, and economically	Land use planning and development protects the value and benefits provided by our natural environment
		Population growth is focussed within the existing developed footprint
		Sustainable design and best practice development provide

	responsible	quality housing options
		Local heritage is protected and the stories behind it shared
A Place for Community: We collaborate to deliver opportunities for housing for all	We collaborate to deliver opportunities for housing for all	Development meets the changing needs and expectations of the community
A Place for Community: A natural environment sustained for the future	We protect the diversity of our natural environment	Through collaboration, we protect and enhance our natural environment
		We understand the challenges to our natural environment and act to mitigate them
		Pollution from human activities is minimised
Sustainable Community Leadership: Our leaders give us confidence in the future	We undertake effective engagement and are informed.	All groups in our community are valued and have the opportunity to shape our future
		Decision-making processes are open and transparent
Sustainable Community Leadership: We have effective use of public resources	We effectively manage the planning and provision of regional public services and infrastructure. We collaborate to achieve the best possible future for all the Coffs Harbour area	Our public infrastructure is maintained for its current purpose and for future generations
		Our community continues to have access to high quality public services
		Infrastructure is planned for the long-term and without imposing an unfair burden on future generations

Table 2: MyCoffs Community Strategic Plan Assessment

### Coffs Harbour Local Growth Management Strategy

The City's Local Growth Management Strategy (LGMS) 2020 was endorsed by the (former) Department of Planning and Environment (now Department of Planning, Housing and Infrastructure) in 2020. The purpose of the LGMS is to inform and direct growth in the City to 2040 and to inform the City's Local Strategic Planning Statement 2020.

Chapter 6 Large Lot Residential Lands, of the LGMS identifies the subject sites as being in Precinct 5 (Gaudrons Road/ The Mountain Way) of the Korora, Sapphire, and Moonee Candidate Area. Land in this area is identified for short-term release of large lot residential development (refer Figure 3).

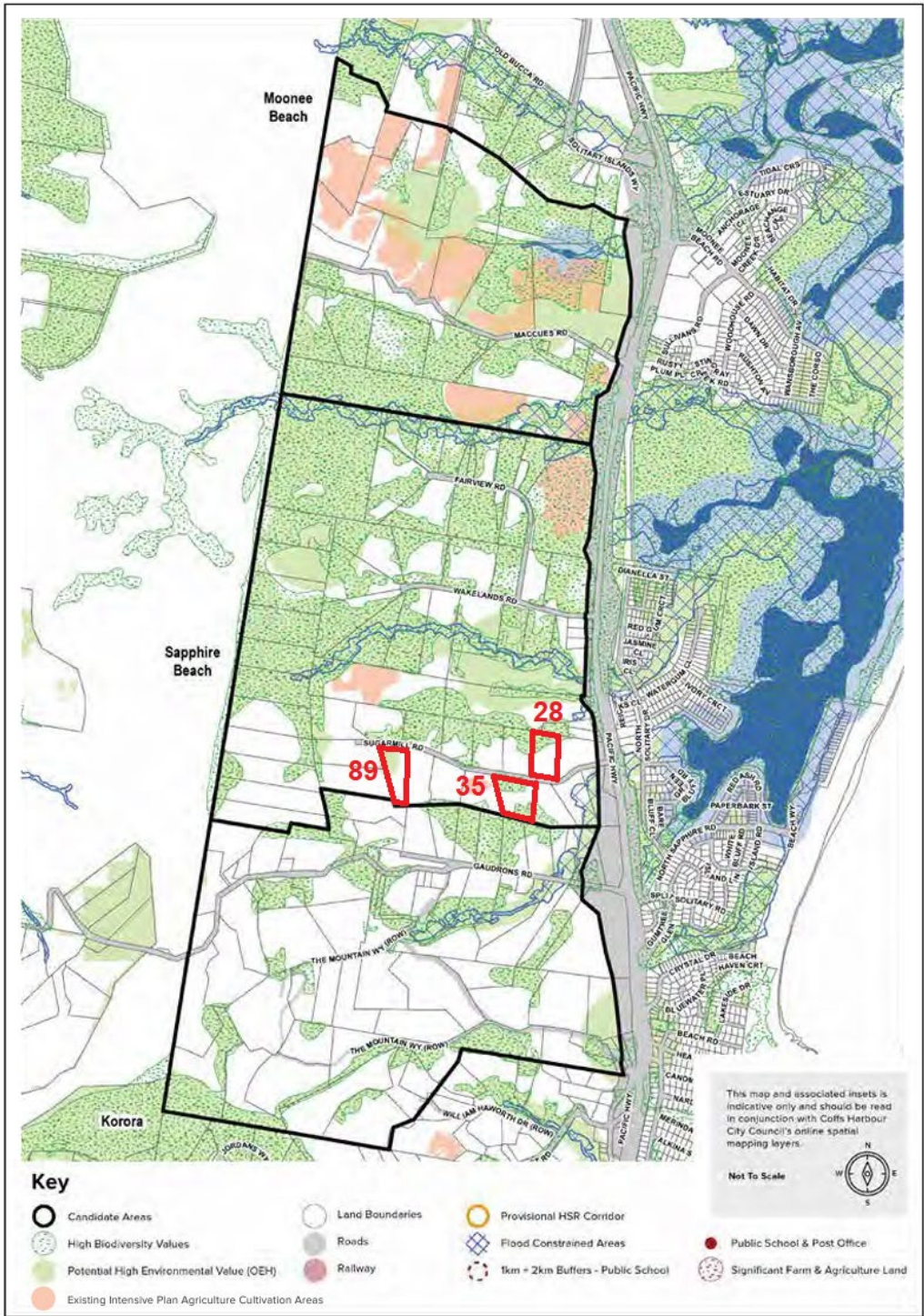


Figure 2 - Korora, Sapphire and Moonee Candidate Area

The Candidate Area was assessed by way of environmental investigations by Eco Logical Australia in 2017. The investigations concluded that precinct 5 is environmentally constrained and economically expensive to service due to projected infrastructure costs associated with road upgrades and potential new road requirements. However, despite the constraints on the land, the LGMS identifies land in Precinct 5 for short-term release as large lot residential development.

A “joint report” was endorsed by Council at its Ordinary Meeting on 10 August 2017, in which it was agreed that proponent-initiated planning proposals can be lodged seeking rezoning of land for large lot residential purposes within the Korora, Sapphire and Moonee Candidate Area (on an individual or precinct or clustered basis) at a time of their choosing. This action was reflected in LGMS 2020.

Chapter 6 – Large Lot Residential addresses the potential reduction of minimum lot size in the R5 zone, where sufficiently justified. Section 6.7 within Chapter 6 of the LGMS states the following:

*‘It is also reasonable that if undeveloped land within zone R5 can justify a reduced lot size, then it should be considered through an applicant-initiated planning proposal. This would allow a merit case for a revised minimum lot size LEP amendment request to be submitted to Council, bearing in mind the underlying reasons for the standard in the first place and the objectives of zone R5.’ (LGMS 2020 Ch. 6 p. 11)*

Coffs Harbour has a range of existing large lot residential lot sizes that reflect past planning subdivision practice. In many cases, lot sizes reflected various constraints including slope, flooding, soil types and water table issues. Minimum lot size requirements were addressed in previous Development Control Plans (e.g., under LEP 2000) prior to being included as a development standard under the Standard Instrument Local Environmental Plan (LEP 2013).

A typical factor affecting lot size in Large Lot Residential zoned areas is onsite sewage management and the potential for the lot/s to be efficiently serviced by an effective onsite sewage management system. The Land Capability Assessment included with this planning proposal (see Appendix 11) demonstrated that a minimum lot size of 6,000m<sup>2</sup> at all three sites would be considered acceptable (also see section 10 of this planning proposal for further information).

Regarding infrastructure upgrades, the LGMS states that:

*“Privately funded planning proposals and subsequent funding of any required infrastructure upgrades will be the responsibility of the landowner/applicant. Subsequently, there will be less financial risk to Council should applicants wish to proceed with planning proposals. Planning proposals would still aim to achieve environmentally sustainable planning outcomes. (LGMS 2020 Ch. 6 p. 13)*

## 6. Is the planning proposal consistent with any other applicable State and Regional Study or Strategies?

### Coffs Harbour Regional City Action Plan 2036

The NSW Government developed the Coffs Harbour Regional City Action Plan (the Plan) to provide a framework to manage and shape the city’s future growth. The Plan was finalised in March 2021 and it identifies 5 overarching goals which incorporate objectives and related actions. This planning proposal is consistent with the following relevant goals, objectives and associated actions within the Plan:

Goal	Objective	Actions	
Live	17. Deliver a city that responds to Coffs Harbour’s unique green cradle setting and offer housing choice.	17.1	Promote a sustainable growth footprint and enhance place-specific character and design outcomes.
		17.4	Support a greater variety and supply of affordable housing.

Table 3: Coffs Harbour Regional City Action Plan 2036

## 7. Is the planning proposal consistent with applicable state environmental planning policies (SEPP)?

The table provided in Appendix 1 provides an assessment of consistency against each State Environmental Planning Policy relevant to the Planning Proposal.

## 8. Is the planning proposal consistent with applicable Ministerial Directions (s9.1 directions)?

The table provided in Appendix 2 provides an assessment of consistency against Ministerial Planning Directions relevant to the Planning Proposal.

## Section C – Environmental, social and economic impact

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

No. A Biodiversity Assessment was prepared for the three sites (Appendix 6). The sites are currently managed as part of existing rural / residential development which includes prevalent landscape plantings and regularly mown / slashed grassland. Areas of intact native eucalypt forest occur on the periphery of each Lot.

Of the three lots, 28 and 35 Sugarmill Road contain mapped Biodiversity Value (BV) land, while 89 Sugarmill Road is not mapped as BV land (see Figure 3 below). It is noted that any impact on BV mapped land would trigger the Biodiversity Offset Scheme (BOS) and the need for a Biodiversity Development Assessment Report (BDAR) to be prepared at the development application stage. Based on the concept lot layout (Appendix 6) it is considered unlikely that the future development of 28 & 35 Sugarmill Road would impact on an area of BV mapped land.

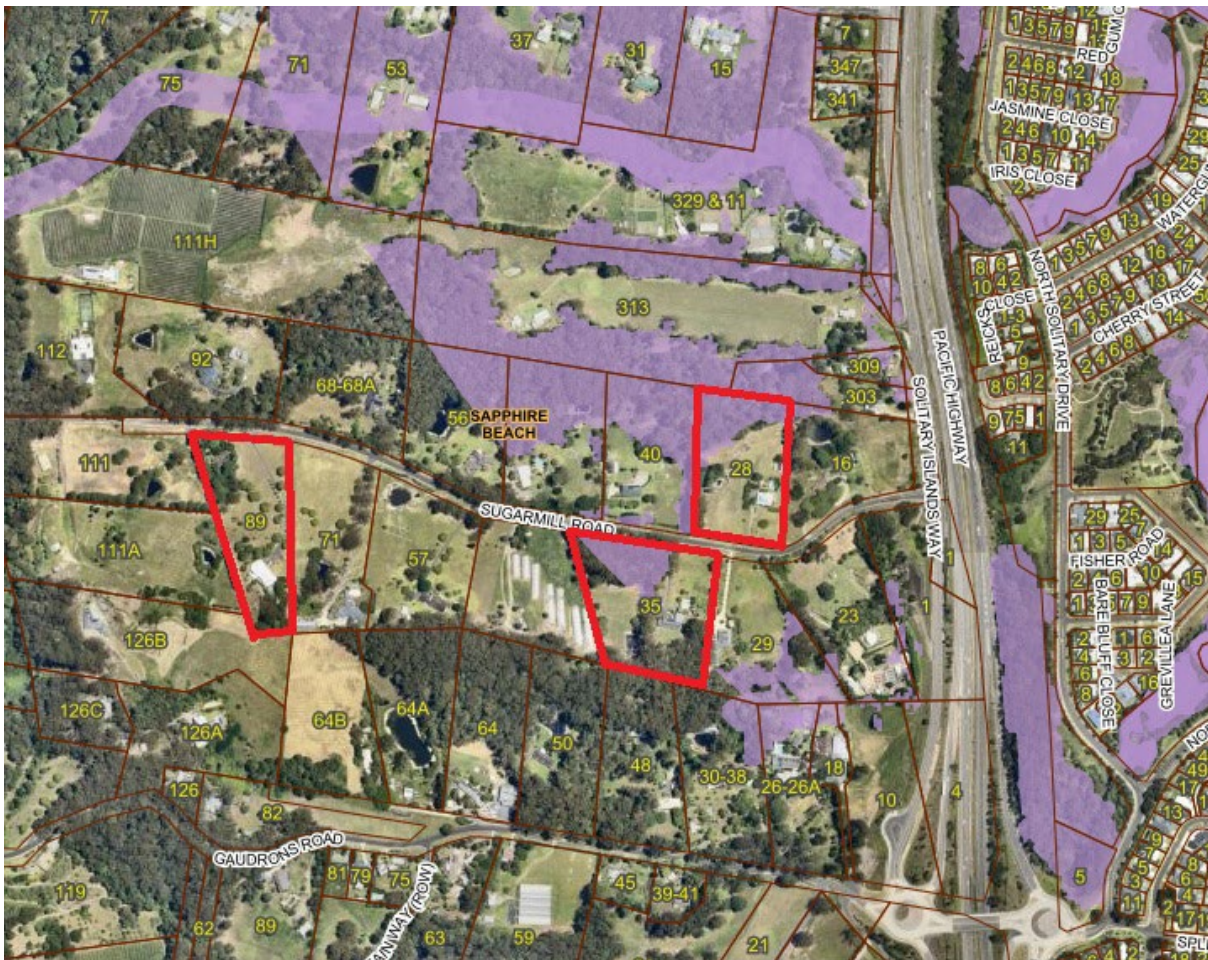


Figure 3 – Biodiversity Values Mapping

Results of field assessment as contained in the Biodiversity Assessment (Appendix 6) include:

- No threatened flora species listed under the *Biodiversity Conservation Act 2016* or *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* occur at the site.
- No TECs listed under the BC or EPBC Act occur at the site.

- No State Environmental Planning Policy (Resilience and Hazards) 2021 (littoral rainforest or coastal wetlands), over-cleared vegetation types, high value arboreal habitats or old growth forests (CHCC, 2021) occur at the site.
- Four discreet areas of native vegetation are recommended for rezoning as E2 Environmental Conservation.
- Koala (*Phascolarctos cinereus*) scats were detected beneath three Swamp Mahogany at 89 Sugarmill Road.
- Koalas are listed as *Vulnerable* under both the BC and EPBC Act.
- The site provides a range of good quality potential fauna habitats including native vegetation, hollow-bearing trees, and aquatic habitats. While no significant habitat for threatened fauna occurs at the site, the site provides potential habitat for several locally occurring threatened fauna species.

The future development of the site, based on the subdivision concept design (Appendix 3), may result in the following potential biodiversity impacts:

- Minor loss of native vegetation
- Minor loss of preferred Koala feed trees
- Minor loss of HBTs
- Minor intensification of human occupation regarding native fauna (e.g., minor increase in traffic movements).
- Introduction of weed species during the construction period.
- Disturbance to fauna during construction and ongoing occupation.
- Fauna roadkill from a minor increase in vehicular traffic.

#### **Recommendations from the Biodiversity Assessment**

To minimise biodiversity impacts which may result from the proposed rezoning and future development of the site, the following measures should be considered at the subdivision stage:

- Proposed C2 zoned areas should be supported and adopted to provide future development controls within areas of consolidated native vegetation and threatened species habitat.
- Clearing of native vegetation (mapped PCTs) should be avoided in the final design of subdivision with building envelopes and associated infrastructure (including boundary fences) to be located within cleared areas.
- Where native vegetation, tree hollows and/or koala habitat requires removal, compensation will be required as per Coffs Harbour DCP 2015.
- Vegetation Management Plans (VMPs) should be required as a condition of consent for those lots including future C2 zoned land. VMPs should include measures to protect and enhance native vegetation and habitat within all C2 zoned land.

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

Yes. Other likely environmental effects resulting from the proposed rezoning are discussed in the following sections:



## Aboriginal Cultural Heritage

An Aboriginal Cultural Heritage Assessment (ACHA) was prepared for the wider Korora Sapphire Moonee Large Lot Residential Candidate Area (Appendix 12). The assessment identified no significant constraints relating to this location with respect to Aboriginal and/or European Heritage.

A site inspection was also undertaken by Cultural Site Officers from the Coffs Harbour and District Local Aboriginal Land Council on 27 September 2021. As a result of the site inspection, no physical evidence of cultural items or sites were found during the inspection and the resulting report included the following recommendations:

1. *Unexpected finds procedure to be implemented to any future ground disturbance works as per relevant cultural heritage protection legislation.*
2. *Contact the Land Council or Heritage Division should any unexpected finds be uncovered.*

## Acid Sulfate Soils

The whole of 28 Sugarmill Road and part of 35 Sugarmill Road are mapped as Class 5 Acid Sulfate soils. Class 5 is a 500m wide buffer zone created around mapped ASS risk soils. A Preliminary Acid Sulfate Soil Assessment was prepared for the planning proposal (Appendix 10) and is summarised as follows:

*The desktop review shows no ASS risk the residual clay subsoils. Biophysical indicators, field screening and soil profiles suggest that the properties are not underlain by ASS.*

*As such ASS are not present at the Site that would be impacted by the proposed rural-residential development, and no further investigations or plans of management are required.*

*If dark grey to black, odorous or waterlogged alluvial sands or clays are encountered during development, then works should be halted until confirmation of the presence of ASS is undertaken and/or remedial strategies developed.*

## Bushfire Risk

All of the land is mapped as Bushfire Prone Land and a Bushfire Risk Assessment was prepared for the planning proposal, that assesses each property (Appendix 5), and a relevant extract from the City's bushfire mapping is below in Figure 4. The Bushfire Risk Assessment concludes that the planning proposal can meet the relevant requirements of Ministerial Direction 4.3 Planning for Bushfire Protection as well as *Planning for Bushfire Protection (PBP) 2019*.

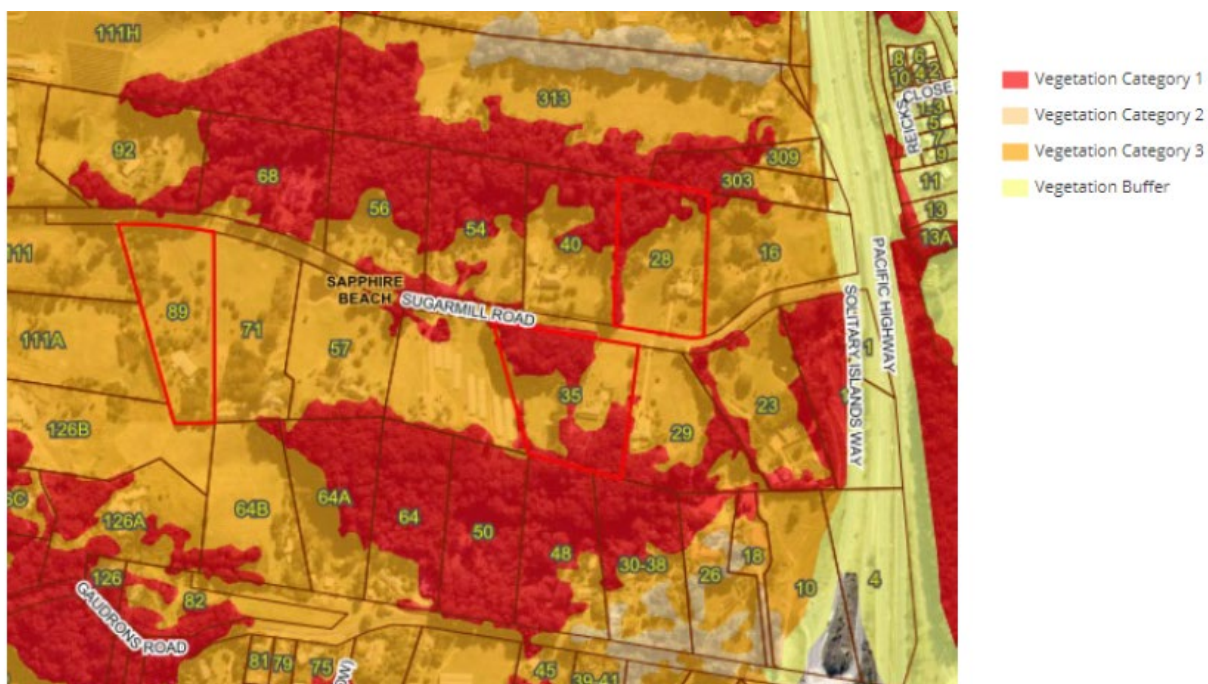


Figure 4 – Bushfire Prone Land

## Land Contamination

An Environmental Site Assessment (ESA) is included with this planning proposal (Appendix 13) and is summarised below:

- No. 35 and 89 Sugarmill Road have been previously used for banana cultivation purposes.
- Broadacre banana cultivation on No.35 and 89 was assessed as contributing to a risk of surface contamination in soils on those properties. The analytical results of detailed sampling across the proposed building envelopes of No.35 and 89, and check sampling on No.28 confirm that concentrations of the heavy metals and OCP analysed were below the investigation criteria.
- The ESA identified that dwellings were approved on the two properties in the late 1970's, with their prior use as grazing or banana plantations.
- The ESA concluded that no further investigations or remediation of soils is required for the proposed large lot residential use of the land.

## Land Use Conflict Risk Assessment

A Land Use Conflict Risk Assessment (LUCRA) has been prepared for the planning proposal (Appendix 8). The LUCRA identified that 28 and 89 Sugarmill Road are at a low risk of conflict with adjoining land uses, while 35 Sugarmill Road has a moderate risk of land use conflict due to proximity to greenhouses located to the west of the indicative building envelope. The LUCRA concluded that the planning proposal is considered suitable despite a moderate risk to 35 Sugarmill Road, subject to the following recommendations:

- Future residential development will be guided by the Coffs Harbour DCP controls aimed to ensure that the agricultural potential of surrounding land is not diminished.
- The potential land use conflict between a future building envelope on 35 Sugarmill Road and the existing greenhouse horticulture land use can be mitigated utilising a vegetation buffer, as long as:
  - A Vegetation Management Plan is prepared by the landowner and approved by the City; and
  - The vegetated buffer is legally secured via a S88B restriction on the land.

Despite the potential for land use conflict between the existing greenhouses and a future building envelope at 35 Sugarmill Road, the following factors have led to this conclusion including:

- The adjoining horticultural land use occurs within a small farm of just over 2 ha in area and involves vegetable cultivation within the confines of seven (7) greenhouse enclosures.
- Land values in the area will inevitably lead to the decline of horticulture and increase in large lot residential land uses, especially given the inclusion of the surrounding lands as a Candidate Area within Chapter 6 of the LGMS 2020.
- No aerial agricultural spraying is known to occur in the area.
- A vegetated landscaped buffer is considered appropriate in terms of impact mitigation and will provide a valuable visual asset between the two properties regardless of the eventual land uses.

The proposed rezoning would permit large lot residential development in an already highly fragmented area predominantly used for hobby farming or lifestyle housing. As outlined above, the LUCRA concludes that the risk of conflict is acceptable subject to appropriate mitigation measures to reduce the risk of conflict, such as the use of separation buffers and landscaping.

## Minimum Lot Size Analysis

Earth Water Consulting (EWC) carried out an assessment of land capability for wastewater disposal and minimum lot size (MLS) analysis (Appendix 9). Six nearby representative lots were selected for the purpose of comparison. All are zoned RU<sub>2</sub> Rural Landscape and are small lots (under 4300 m<sup>2</sup>) likely created as concessional lots under previous planning controls. The comparison properties typically included a dwelling, garage/shed, landscaped trees, shrubs and gardens, driveways, water tanks, and

recreational space. These properties are similar in use, to the development proposed in this application and as shown in the concept subdivision plans (Appendix 3) and therefore minimum lot size and development potential should be comparable.

The assessment assumed that all properties would require an onsite wastewater management system designed for a 5-bedroom dwelling on tank water. Based on the modelling, a primary and reserve environmental management area (EMA) was calculated to 1,010 m<sup>2</sup>. Buffer distances were calculated at greater than 50 m to the nearest bore, 100 m to permanent waterways and 40 m to drainage lines and found that:

- *The comparison properties are between 3,000-4,200m<sup>2</sup> in area, less than the smallest lot: 6,636 m<sup>2</sup> proposed as part of this application.*
- *Apart from the smallest comparison lot (2,800m<sup>2</sup>), each have about 1,200-1,800m<sup>2</sup> of available unconstrained area for effluent disposal. The smaller comparison lot has only a 587m<sup>2</sup> footprint.*
- *Typically, available area for effluent application represents about 30-50% of the total lot area, the smaller the lot, the same development footprint requirements impact on land area available for effluent application.*
- *Allowing for additional developed footprint such as sheds and swimming pools that may not be present currently, and constraints such as buffers to gullies and protected forest vegetation, the minimum 1,010 m<sup>2</sup> footprint typically required for a primary treatment and land application OSMS would still be able to be met. As such given the low slopes and limited site and soil constraints, a minimum 6,000 m<sup>2</sup> lot sizing would be considered acceptable.*
- *The smaller lot sizes require effluent land application in the managed areas around any dwellings, or within forested margins.*
- *To minimize effluent and recreational land use plus ecological protection conflicts, a minimum lot size of at least 6,000 m<sup>2</sup> fully developable area is considered prudent and acceptable.*

Based on the above recommendations, each property within this application has the land capability to accommodate one additional lot as shown on the concept subdivision plans included as Appendix 3.

### **Noise (from the Pacific Highway)**

28 Sugarmill Road is located within the Transport for NSW mapped Pacific Highway Noise Corridor, and therefore an assessment of noise impact to future residential housing has been prepared (Appendix 11) and summarised below.

- As part of determining the suitability of the area for residential housing, an assessment of noise impacts from the Pacific Motorway is required using the guidelines in the NSW Road Noise Policy (RNP) and Development near Rail Corridors and Busy Roads to determine the suitability of the site for residential development (including any requirements for noise mitigation).
- An Acoustic Buffer was determined using Matrix Thornton Report M15387 (which was used to assess the wider KWSM Candidate Area) in which noise contours were published. Those contours were used to determine the noise impact at the site.
- The assessment procedure involved:
  - Obtaining noise data from Report M15387.
  - Setting appropriate limits in rooms.
  - Calculating noise intrusion using different glazing and construction materials.
  - Recommending minimum glazing and ventilation requirements.
- The guideline describes categories of building construction with increasing acoustic performance. At this site, Category 1 constructions will be satisfactory.

- As night-time noise levels are predicted to be below 55dBA, and daytime levels are predicted to be below 60dBA, no acoustic design treatment is required to comply with the requirements of State Environmental Planning Policy (Transport and Infrastructure) 2021.

### **11. Has the planning proposal adequately addressed any social and economic effects?**

Social and economic effects arising from the planning proposal are likely to be positive in terms of the provision of new housing close to urban facilities in the coastal village of Moonee Beach thereby offering housing choice and diversity for existing and future residents. Consistent with the City's LSPS, Moonee Beach has been identified as a priority area for place making with local character statements and place manuals.

The proposed rezoning would permit large lot residential development in an area predominantly used for hobby farming or lifestyle housing. Consideration has been given to the potential for land use conflicts resulting from the proposed rezoning and the risk of conflict has been deemed acceptable subject to appropriate mitigation measures to reduce the risk of conflict such as the use of separation buffers and landscaping.

#### ***Section D – State and Commonwealth interests***

### **12. Is there adequate public infrastructure for the planning proposal?**

Yes. Whilst the sites are not connected to reticulated sewer, mains water or stormwater infrastructure, they have access to a public road, reticulated telecommunications, and electricity. Section C1.8 of The Coffs Harbour Development Control Plan 2015 specifies that the following infrastructure is to be provided as part of subdivision proposals for land zoned R5 Large Lot Residential, in accordance with the City's Planning and Design Development Specifications:

- Roads
- Drainage
- Sealed driveways where servicing two or more resulting lots
- Underground reticulated telecommunications
- Underground reticulated electricity
- National Broadband Network (where available)

Any augmentation to the existing infrastructure required to service future lots would be addressed at the subdivision stage in accordance with the City's Planning and Design Development Specifications.

### **13. What are the views of State and federal public authorities and government agencies consulted in order to inform the Gateway determination?**

The Department of Planning, Housing and Infrastructure issued a Gateway Determination for the planning proposal on 6 December 2024. The Gateway Determination requires consultation on the planning proposal with the following Government Agencies:

- NSW Rural Fire Service
- Coffs Harbour and District Local Aboriginal Land Council
- NSW Resources
- Biodiversity, Conservation and Science Directorate of the Department of Climate Change, Energy, the Environment and Water
- Department of Primary Industries and Regional Development – Agriculture

## **PART 4 – MAPS**

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Proposed maps amendments to Coffs Harbour LEP 2013, as described in Part 2 of this planning proposal, are shown on the next three pages.

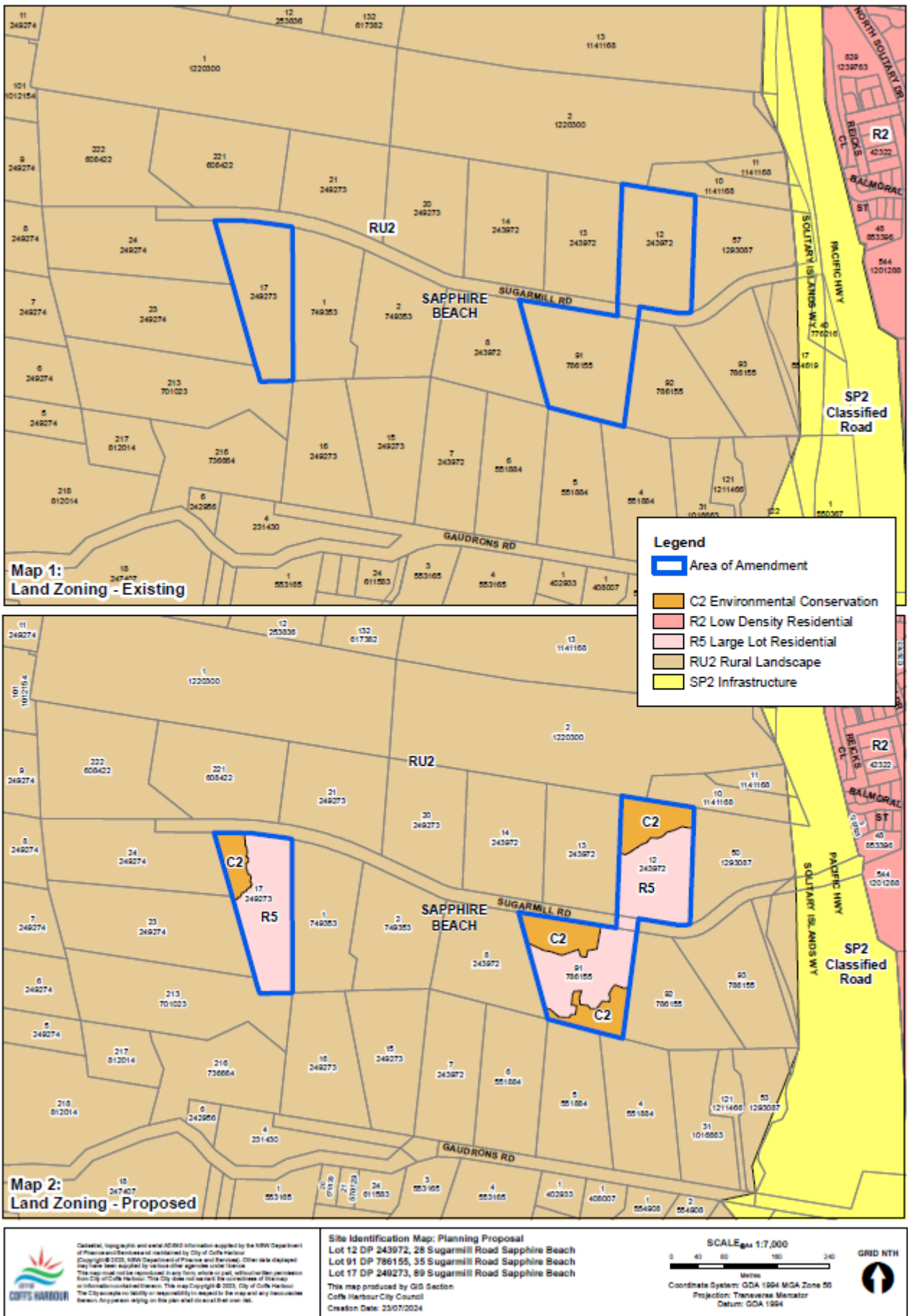


Figure 5: Combined map of existing and proposed amendments to digital Land Zoning Map

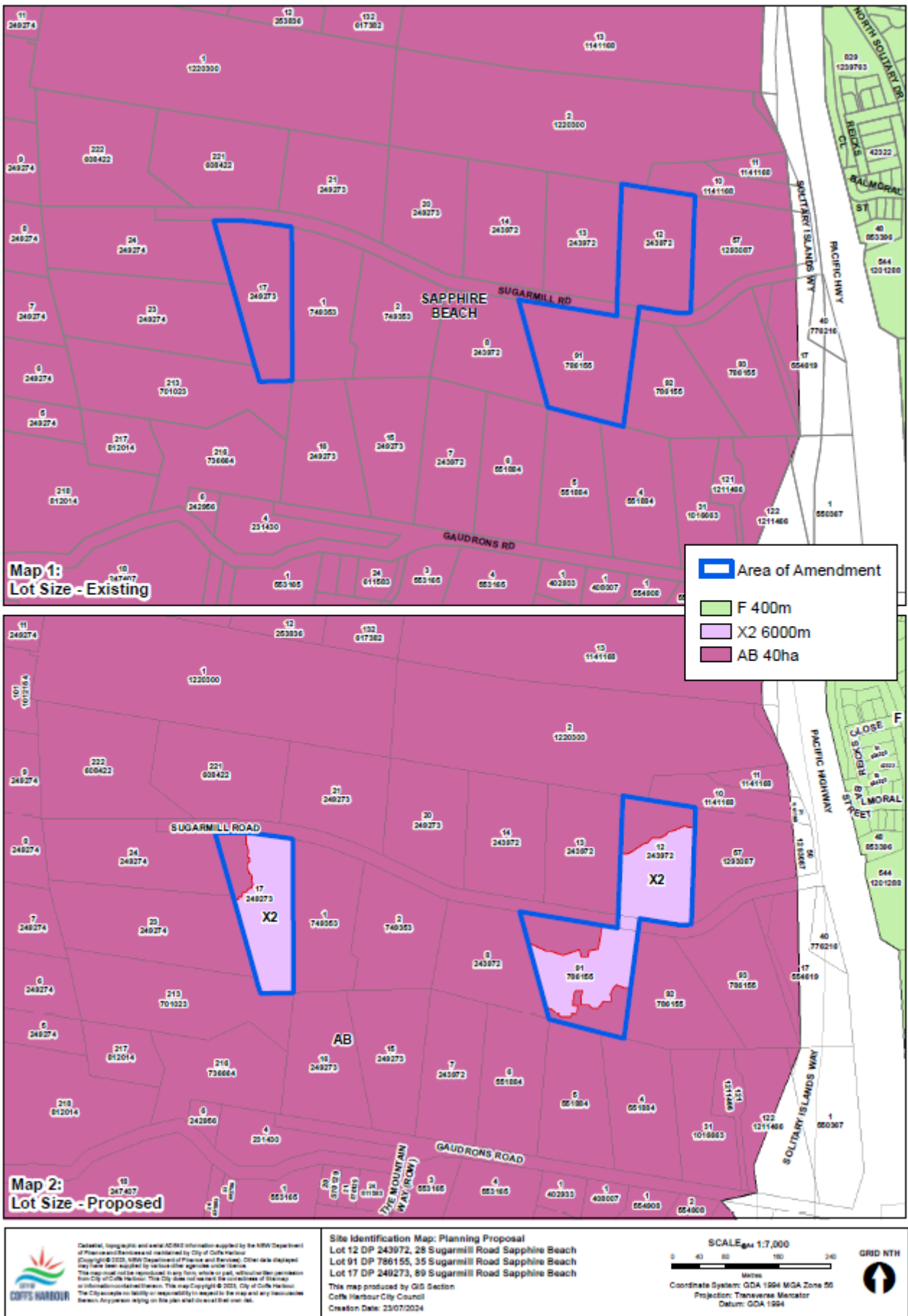


Figure 6: Combined map of existing and proposed amendments to Lot Size Map – Sheet LSZ\_005C

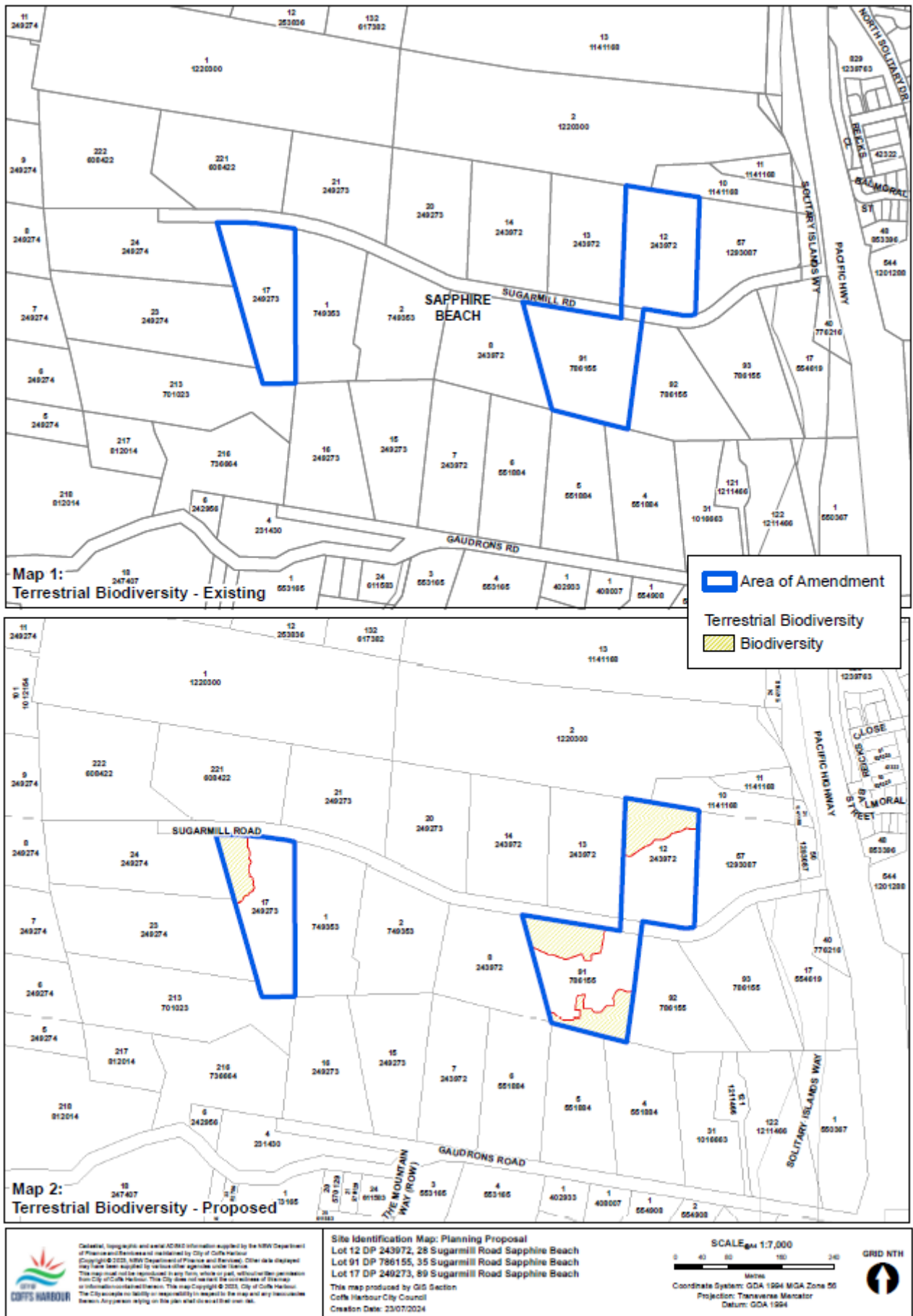


Figure 7: Combined map of existing and proposed amendments to Terrestrial Biodiversity Map – Sheet CL2\_005C



## **PART 5 – COMMUNITY CONSULTATION**

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The Gateway determination issued by the NSW Department of Planning, Housing and Infrastructure has specified the community consultation requirements that must be undertaken for the planning proposal. The City considers that the planning proposal should be exhibited for 28 days, given that it is not a principal LEP and does not seek to reclassify public land.

Public Exhibition of the planning proposal includes the following:

### **Advertisement**

Placement of an online advertisement in the Coffs Newsroom.

### **Consultation with affected owners and adjoining landowners**

Written notification of the public exhibition to the proponent, the landowners, and adjoining/adjacent landowners.

### **Website**

The planning proposal will be made publicly available on the City's Have Your Say Website at: <https://haveyoursay.coffsharbour.nsw.gov.au/>

## PART 6 –PROJECT TIMELINE

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A project timeline is yet to be determined however the anticipated timeframes are provided below in Table 4, noting that the Gateway Determination issued by the NSW Department of Planning, Housing and Infrastructure will specify the date that the planning proposal is to be completed.  
delays in the process.

Table 4: Anticipated Timeline

<b>Milestone</b>	<b>Anticipated Timeframe</b>
Consideration by Council	November 2024
Commencement (date of Gateway determination)	December 2024 – January 2025
Public exhibition & agency consultation	February 2025
Consideration of submissions & reporting to Council for consideration	March 2025
Submission to Minister to make the plan (if not delegated) Submission to Minister for notification of the plan (if delegated)	April 2025
Notification of LEP Amendment	May 2025

**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

State Environmental Planning Policy	Relevant Chapter	Applicable	Consistent	Comment
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Chapter 2 - Vegetation in Non-Rural Areas	No	N/A	This chapter of the Policy is not applicable to the Coffs Harbour local government area.
	Chapter 3 - Koala Habitat Protection 2020	Yes	Yes	<p>The aims of this chapter of the Policy are to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline:</p> <ul style="list-style-type: none"> <li>a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and</li> <li>b) by encouraging the identification of areas of core koala habitat, and</li> <li>c) by encouraging the inclusion of areas of core koala habitat in environment protection zones.</li> </ul> <p>Clause 3.14 - Preparation of local environmental studies is a relevant consideration:</p> <p>(1) If, under a planning proposal, a council proposes to zone or rezone land that is a potential koala habitat or a core koala habitat otherwise than as a conservation zone, the Minister may require the council to prepare an environmental study of the land.</p> <p>(2) The council must prepare the environmental study in accordance with the specifications, if any, relating to the form, content and preparation of the study as have been notified to the council by the Minister.</p> <p>(3) The environmental study must be prepared with regard to the matters, relating to the environment of the land, as determined by the council, subject to the specifications.</p> <p>(4) The council must have regard to an environmental study prepared under this section in preparing the proposed instrument to which the planning proposal relates.</p> <p>(5) Subsection (1) does not apply if a council has, before the commencement of</p>

**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

State Environmental Planning Policy	Relevant Chapter	Applicable	Consistent	Comment
				<p>the subsection, prepared an environmental study of the land.</p> <p>The proposal seeks to rezone land that is potential koala habitat or core koala to a conservation zone, which is consistent with the aims of this policy.</p>
	Chapter 4 - Koala Habitat Protection 2021	Yes	N/A	<p>The aims of this chapter of the Policy are to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.</p> <p>The provisions of this chapter only relate to development assessment processes and the preparation of koala plans of management. In this regard, the proposed LEP amendment does not contain provisions that contradict or hinder the application of this chapter of the SEPP.</p>
	Chapter 6 – Water Catchments	N/A	N/A	<p>The City of Coffs Harbour is not listed in the “land to which this chapter applies” and thus this chapter of the policy does not apply to the Coffs Harbour LGA.</p>
	Chapter 13 – Strategic Conservation Planning	N/A	N/A	<p>The City of Coffs Harbour is not listed in the “land application map” and thus this chapter of the policy does not apply to the Coffs Harbour LGA.</p>
SEPP (Exempt and Complying Development Codes) 2008	N/A – this is a standalone State Environmental Planning Policy	N/A	N/A	<p>This SEPP is not relevant to this planning proposal as the proposed LEP amendment does not contain provisions that contradict or hinder the application of this SEPP.</p>
State Environmental Planning Policy (Housing) 2021	N/A – this is a standalone State Environmental Planning Policy	Yes	Yes	<p>The principles of this Policy are:</p> <ul style="list-style-type: none"> <li>a) enabling the development of diverse housing types, including purpose-built rental housing,</li> <li>b) encouraging the development of housing that will meet the needs of more vulnerable members of the community, including very low to moderate income households, seniors and people with a disability,</li> <li>c) ensuring new housing development provides residents with a reasonable level of amenity, promoting the</li> </ul>

**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

State Environmental Planning Policy	Relevant Chapter	Applicable	Consistent	Comment
				<p>planning and delivery of housing in locations where it will make good use of existing and planned infrastructure and services,</p> <p>d) minimising adverse climate and environmental impacts of new housing development,</p> <p>e) reinforcing the importance of designing housing in a way that reflects and enhances its locality,</p> <p>f) supporting short-term rental accommodation as a home-sharing activity and contributor to local economies, while managing the social and environmental impacts from this use,</p> <p>g) mitigating the loss of existing affordable rental housing.</p> <p>The proposed LEP amendment does not contain provisions that contradict or hinder the application of this SEPP.</p>
State Environmental Planning Policy (Industry and Employment) 2021	Chapter 3 - Advertising and Signage	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it does not relate to advertising and signage.
State Environmental Planning Policy (Planning Systems) 2021.	Chapter 2 -State and Regional Development	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it does not affect or identify development that is State significant infrastructure and/or critical State significant infrastructure.
	Chapter 3 - Aboriginal Land	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as the land is not owned by an Aboriginal Land Council.
	Chapter 4 - Concurrences and Consents	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal.
State Environmental Planning Policy (Precincts— Central River City) 2021	Chapter 2 -State Significant Precincts	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as the land is not located in a state significant precinct.

**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

State Environmental Planning Policy	Relevant Chapter	Applicable	Consistent	Comment
State Environmental Planning Policy (Precincts— Eastern Harbour City) 2021	Chapter 2 -State Significant Precincts	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as the land is not located in a state significant precinct.
State Environmental Planning Policy (Precincts— Regional) 2021	Chapter 2 -State Significant Precincts	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as the land is not located in a state significant precinct.
State Environmental Planning Policy (Primary Production) 2021	Chapter 2 - Primary Production and Rural Development	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as the land does not comprise state significant agricultural land, or important farmland.
State Environmental Planning Policy (Resilience and Hazards) 2021	Chapter 2 - Coastal Management	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as the land is not located in the Coastal Zone.
	Chapter 3 – Hazardous and Offensive Development	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it does not seek to allow hazardous and/or offensive Development.
	Chapter 4 – Remediation of Land	Yes	Yes	<p>The aims of this chapter of the Policy are to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment—</p> <ul style="list-style-type: none"> <li>a) by specifying when consent is required, and when it is not required, for a remediation work, and</li> <li>b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and</li> <li>c) by requiring that a remediation work meet certain standards and notification requirements.</li> </ul> <p>An Environmental Site Assessment (ESA) included with this planning proposal (Appendix 13) notes the following:</p>

**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

State Environmental Planning Policy	Relevant Chapter	Applicable	Consistent	Comment
				<ul style="list-style-type: none"> <li>• No. 35 and 89 Sugarmill Road have been previously used for banana cultivation purposes.</li> <li>• Broadacre banana cultivation on No.35 and 89 was assessed as contributing to a risk of surface contamination in soils on those properties. The analytical results of detailed sampling across the proposed building envelopes of No.35 and 89, and check sampling on No.28 confirm that concentrations of the heavy metals and OCP analysed were below the investigation criteria.</li> <li>• The ESA identified that dwellings were approved on the two properties in the late 1970’s, with their prior use as grazing or banana plantations.</li> <li>• The ESA concluded that no further investigations or remediation of soils is required for the proposed large lot residential use of the land.</li> </ul> <p>The proposed LEP amendment therefore does not contain provisions that contradict or hinder the application of this chapter of the SEPP.</p>
State Environmental Planning Policy (Resources and Energy) 2021	Chapter 2 - Mining, Petroleum Production and Extractive Industries	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it does not constitute mining and/or petroleum development.
State Environmental Planning Policy (Sustainable Buildings) 2022	Chapter 2 - Standards for residential development - BASIX	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it does not propose any specific dwelling design and the proposed LEP amendment does not contain any provisions that contradict the aims of this chapter of the SEPP.
	Chapter 3 - Standards for non-residential development	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal.

**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

<p>State Environmental Planning Policy (Transport and Infrastructure) 2021</p>	<p>Chapter 2 - Infrastructure</p>	<p>Yes</p>	<p>Yes</p>	<p>The aim of this chapter of the Policy is to facilitate the effective delivery of infrastructure across the State by:</p> <ul style="list-style-type: none"> <li>a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and</li> <li>b) providing greater flexibility in the location of infrastructure and service facilities, and</li> <li>c) allowing for the efficient development, redevelopment, or disposal of surplus government owned land, and</li> <li>d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and</li> <li>e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and</li> <li>f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing, and</li> <li>g) providing opportunities for infrastructure to demonstrate good design outcomes.</li> </ul> <p>The proposed LEP amendment does not contain provisions that contradict or hinder the application of this chapter of the SEPP.</p> <p>28 Sugarmill Road is within 200m of the Pacific Highway with noise-sensitive land use development potentially affected by road traffic noise.</p> <p>A Traffic Noise Assessment was included with the application and the assessment concludes that <i>Traffic noise levels at the site of proposed dwellings were predicted based on noise contours published previously. Based on those noise levels, no specific acoustic treatment is required for residential development at this lot.</i></p> <p>Future development will be subject to further assessment against State Environmental Planning Policy (Transport</p>
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**APPENDIX 1 – CONSIDERATION OF STATE ENVIRONMENTAL PLANNING POLICIES**

State Environmental Planning Policy	Relevant Chapter	Applicable	Consistent	Comment
				and Infrastructure) 2021 s2.120 and the Coffs Harbour Development Control Plan D1.20 Amenity Requirements.
	Chapter 3 - Educational Establishments and Child Care Facilities	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it will not affect the provision of educational establishments and / or child care facilities.
	Chapter 4 – Major Infrastructure Corridors	N/A	N/A	This chapter of the SEPP is not relevant to this planning proposal as it does not relate to land that is intended to be used in the future as an infrastructure corridor.

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
<b>Focus area 1: Planning Systems</b>			
<p>1.1 Implementation of Regional Plans</p>	<p>This direction applies to a relevant planning authority when preparing a planning proposal for land to which a Regional Plan has been released by the Minister for Planning and Public Spaces.</p> <p>Planning proposals must be consistent with a Regional Plan released by the Minister for Planning and Public Spaces.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary), that:</p> <p>(a) the extent of inconsistency with the Regional Plan is of minor significance, and</p> <p>(b) the planning proposal achieves the overall intent of the Regional Plan and does not undermine the achievement of the Regional Plan’s vision, land use strategy, goals, directions or actions.</p>	<p>Yes</p>	<p>The proposal does not contain provisions that contradict or hinder the objectives of this Direction.</p> <p>The proposal is considered consistent with the relevant goals, directions and actions within the North Coast Regional Plan 2041 and achieves the overall intent of the Plan – see Section B (4) of this planning proposal.</p>
<p>1.2 Development of Aboriginal Land Council land</p>	<p>This direction does not apply to the Coffs Harbour LGA.</p>	<p>N/A</p>	
<p>1.3 Approval and Referral Requirements</p>	<p>This direction applies to all relevant planning authorities when preparing a planning proposal.</p> <p>A planning proposal to which this direction applies must:</p> <p>(a) minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority, and</p> <p>(b) not contain provisions requiring concurrence, consultation or referral of a Minister or public authority unless the relevant planning authority has obtained the approval of:</p> <p>i. the appropriate Minister or public authority, and</p> <p>ii. the Planning Secretary (or an officer of the Department nominated by the Secretary), prior to undertaking</p>	<p>Yes</p>	<p>The planning proposal does not contain provisions that contradict or hinder the application of this direction.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>community consultation in satisfaction of Schedule 1 to the EP&amp;A Act, and</p> <p>(c) not identify development as designated development unless the relevant planning authority:</p> <p>i. can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the class of development is likely to have a significant impact on the environment, and</p> <p>ii. has obtained the approval of the Planning Secretary (or an officer of the Department nominated by the Secretary) prior to undertaking community consultation in satisfaction of Schedule 1 to the EP&amp;A Act.</p> <p>A planning proposal must be substantially consistent with the terms of this direction.</p>		
<p>1.4 Site Specific Provisions</p>	<p>This direction applies to all relevant planning authorities when preparing a planning proposal that will allow a particular development to be carried out.</p> <p>(1) A planning proposal that will amend another environmental planning instrument in order to allow particular development to be carried out must either:</p> <p>(a) allow that land use to be carried out in the zone the land is situated on, or</p> <p>(b) rezone the site to an existing zone already in the environmental planning instrument that allows that land use without imposing any development standards or requirements in addition to those already contained in that zone, or</p> <p>(c) allow that land use on the relevant land without imposing any development standards or requirements in addition to those already contained in the principal environmental planning instrument being amended.</p> <p>(2) A planning proposal must not contain or refer to drawings that show details of the proposed development.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the</p>	<p>Yes</p>	<p>The planning proposal would rezone the subject sites from Zone RU2 Rural Landscape to Zone R5 Large Lot Residential and Zone C2 Environmental Conservation under Coffs Harbour LEP 2013 to permit the subdivision and development of the land for large lot residential purposes.</p> <p>The planning proposal will not impose any development standards or requirements in addition to those already contained in the principal environmental planning instrument (Coffs Harbour LEP 2013).</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	provisions of the planning proposal that are inconsistent are of minor significance.		
1.4A Exclusion of Development Standards from Variation	This direction does not apply to this planning proposal, as it will not introduce or alter an existing exclusion to clause 4.6 of Coffs Harbour LEP 2013.	N/A	
<b>Focus area 1: Planning Systems – Place Based</b>			
Directions 1.5 – 1.22 do not apply to the Coffs Harbour LGA.			
<b>Focus area 2: Design and Place</b>			
Directions yet to be included.			
<b>Focus area 3: Biodiversity and Conservation</b>			
3.1 Conservation Zones	<p>This direction applies to all relevant planning authorities when preparing a planning proposal.</p> <p>(1) A planning proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas.</p> <p>(2) A planning proposal that applies to land within a conservation zone or land otherwise identified for environment conservation/protection purposes in a LEP must not reduce the conservation standards that apply to the land (including by modifying development standards that apply to the land). This requirement does not apply to a change to a development standard for minimum lot size for a dwelling in accordance with Direction 9.3 (2) of “Rural Lands”.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a strategy approved by the Planning Secretary which:</p> <p>i. gives consideration to the objectives of this direction, and</p>	Yes	<p>An ecological assessment of the three sites identified some areas of environmental significance. A subdivision layout can be designed to protect these areas from development and the land is identified for the intended purpose within a Department approved local strategy (Coffs Harbour LGMS 2020).</p> <p>The planning proposal is therefore considered to be consistent with the Direction.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or</p> <p>(b) justified by a study prepared in support of the planning proposal which gives consideration to the objectives of this direction, or</p> <p>(c) in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which gives consideration to the objective of this direction, or</p> <p>(d) is of minor significance.</p>		
<p>3.2 Heritage Conservation</p>	<p>This direction applies to all relevant planning authorities when preparing a planning proposal.</p> <p>A planning proposal must contain provisions that facilitate the conservation of:</p> <p>(a) items, places, buildings, works, relics, moveable objects or precincts of environmental heritage significance to an area, in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item, area, object or place, identified in a study of the environmental heritage of the area,</p> <p>(b) Aboriginal objects or Aboriginal places that are protected under the <i>National Parks and Wildlife Act 1974</i>, and</p> <p>(c) Aboriginal areas, Aboriginal objects, Aboriginal places or landscapes identified by an Aboriginal heritage survey prepared by or on behalf of an Aboriginal Land Council, Aboriginal body or public authority and provided to the relevant planning authority, which identifies the area, object, place or landscape as being of heritage significance to Aboriginal culture and people.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that:</p> <p>(a) the environmental or indigenous heritage significance of the item, area, object or place is conserved by existing or draft</p>	<p>Yes</p>	<p>An Aboriginal Cultural Heritage Assessment (ACHA) was prepared for the wider Korora Sapphire Moonee Large Lot Residential Candidate Area (Appendix 12). The assessment identified no significant constraints relating to this location with respect to Aboriginal and/or European Heritage.</p> <p>A site inspection was also undertaken by Cultural Site Officers from the Coffs Harbour and District Local Aboriginal Land Council on 27 September 2021. As a result of the site inspection, no physical evidence of cultural items or sites were found during the inspection.</p> <p>While the planning proposal does not contain provisions that inhibit the conservation of heritage items within the areas, the proposed LEP amendment is unlikely to inhibit the conservation of Aboriginal objects or places. Any future development on the land will be subject to the current provisions of the LEP. The planning proposal is therefore considered to be consistent with the Direction.</p>

## APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS

S9.1 Direction	Applicable	Consistent	Comment
	<p>environmental planning instruments, legislation, or regulations that apply to the land, or</p> <p>(b) the provisions of the planning proposal that are inconsistent are of minor significance.</p>		
3.3 Sydney Drinking Water Catchments	This direction does not apply to the Coffs Harbour LGA.	N/A	
3.4 Application of C2 and C3 Zones and Environmental Overlays in Far North Coast LEPs	This direction does not apply to the Coffs Harbour LGA.	N/A	
3.5 Recreation Vehicle Areas	This direction does not apply to this planning proposal, as the proposed LEP amendment will not facilitate recreation vehicle areas.	N/A	
3.6 Strategic Conservation Planning	This direction does not apply to the Coffs Harbour LGA.	N/A	
3.7 Public Bushland	This direction does not apply to the Coffs Harbour LGA.	N/A	
3.8 Willandra Lakes Region	This direction does not apply to the Coffs Harbour LGA.	N/A	
3.9 Sydney Harbour Foreshores and Waterways Area	This direction does not apply to the Coffs Harbour LGA.	N/A	
3.10 Water Catchment Protection	This direction does not apply to the Coffs Harbour LGA.	N/A	
<b>Focus Area 4: Resilience and Hazards</b>			
4.1 Flooding	This direction applies to all relevant planning authorities that are responsible for flood prone land when preparing a planning proposal that creates, removes, or alters a zone or a provision that affects flood prone land.	Yes	<p>The sites are not affected by riverine flooding.</p> <p>Stormwater and associated water quality related issues will</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>(1) A planning proposal must include provisions that give effect to and are consistent with:</p> <ul style="list-style-type: none"> <li>(a) the NSW Flood Prone Land Policy,</li> <li>(b) the principles of the Floodplain Development Manual 2005,</li> <li>(c) the Considering flooding in land use planning guideline 2021, and</li> <li>(d) any adopted flood study and/or floodplain risk management plan prepared in accordance with the principles of the Floodplain Development Manual 2005 and adopted by the relevant council.</li> </ul> <p>(2) A planning proposal must not rezone land within the flood planning area from Recreation, Rural, Special Purpose or Conservation Zones to a Residential, Business, Industrial or Special Purpose Zones.</p> <p>(3) A planning proposal must not contain provisions that apply to the flood planning area which:</p> <ul style="list-style-type: none"> <li>(a) permit development in floodway areas,</li> <li>(b) permit development that will result in significant flood impacts to other properties,</li> <li>(c) permit development for the purposes of residential accommodation in high hazard areas,</li> <li>(d) permit a significant increase in the development and/or dwelling density of that land,</li> <li>(e) permit development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,</li> <li>(f) permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams, drainage canals, levees, still require development consent,</li> <li>(g) are likely to result in a significantly increased requirement for government spending on emergency management</li> </ul>		<p>be considered at the subdivision stage.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road infrastructure, flood mitigation infrastructure and utilities, or</p> <p>(h) permit hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.</p> <p>(4) A planning proposal must not contain provisions that apply to areas between the flood planning area and probable maximum flood to which Special Flood Considerations apply which:</p> <p>(a) permit development in floodway areas,</p> <p>(b) permit development that will result in significant flood impacts to other properties,</p> <p>(c) permit a significant increase in the dwelling density of that land,</p> <p>(d) permit the development of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,</p> <p>(e) are likely to affect the safe occupation of and efficient evacuation of the lot, or</p> <p>(f) are likely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response measures, which can include but not limited to road infrastructure, flood mitigation infrastructure and utilities.</p> <p>(5) For the purposes of preparing a planning proposal, the flood planning area must be consistent with the principles of the Floodplain Development Manual 2005 or as otherwise determined by a Floodplain Risk Management Study or Plan adopted by the relevant council.</p> <p>A planning proposal may be inconsistent with this direction only if the planning proposal authority can satisfy the Planning Secretary (or their nominee) that:</p>		



## APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS

S9.1 Direction	Applicable	Consistent	Comment
	<p>(a) the planning proposal is in accordance with a floodplain risk management study or plan adopted by the relevant council in accordance with the principles and guidelines of the <i>Floodplain Development Manual 2005</i>, or</p> <p>(b) where there is no council adopted floodplain risk management study or plan, the planning proposal is consistent with the flood study adopted by the council prepared in accordance with the principles of the <i>Floodplain Development Manual 2005</i> or</p> <p>(c) the planning proposal is supported by a flood and risk impact assessment accepted by the relevant planning authority and is prepared in accordance with the principles of the <i>Floodplain Development Manual 2005</i> and consistent with the relevant planning authorities' requirements, or</p> <p>(d) the provisions of the planning proposal that are inconsistent are of minor significance as determined by the relevant planning authority.</p>		
4.2 Coastal Management	This direction does not apply to this planning proposal, as the subject sites are not located within the coastal zone.	N/A	
4.3 Planning for Bushfire Protection	<p>This direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect or is in proximity to land mapped as bushfire prone land.</p> <p>In the preparation of a planning proposal, the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a Gateway determination under section 56 of the Act, and prior to undertaking community consultation in satisfaction of section 57 of the Act and consider any comments so made.</p> <p>A planning proposal must:</p> <p>(a) have regard to <i>Planning for Bushfire Protection 2019</i>,</p> <p>(b) introduce controls that avoid placing inappropriate developments in hazardous areas, and</p> <p>(c) ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ).</p>	No	<p>Part of the land is bush fire prone. The planning proposal is currently inconsistent with this Direction because it provides that the Council must consult with the Commissioner of the NSW Rural Fire Service (RFS) following the issue of a Gateway determination and prior to community consultation. Consultation with the RFS is required following receipt of a Gateway determination and prior to undertaking community consultation.</p> <p>Until this consultation has occurred the inconsistency with the Direction is unresolved.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:</p> <ul style="list-style-type: none"> <li>(a) provide an Asset Protection Zone (APZ) incorporating at a minimum: <ul style="list-style-type: none"> <li>(i) an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and</li> <li>(ii) an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,</li> </ul> </li> <li>(b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the <i>Rural Fires Act 1997</i>), the APZ provisions must be complied with,</li> <li>(c) contain provisions for two-way access roads which link to perimeter roads and/or to fire trail networks,</li> <li>(d) contain provisions for adequate water supply for firefighting purposes,</li> <li>(e) minimise the perimeter of the area of land interfacing the hazard which may be developed,</li> <li>(f) introduce controls on the placement of combustible materials in the Inner Protection Area.</li> </ul> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the council has obtained written advice from the Commissioner of the NSW Rural Fire Service to the effect that, notwithstanding the non-compliance, the NSW Rural Fire Service does not object to the progression of the planning proposal.</p>		

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
<p>4.4 Remediation of Contaminated Land</p>	<p>This direction applies when a planning proposal authority prepares a planning proposal that applies to:</p> <ul style="list-style-type: none"> <li>(a) land that is within an investigation area within the meaning of the <i>Contaminated Land Management Act 1997</i>,</li> <li>(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,</li> <li>(c) the extent to which it is proposed to carry out development on it for residential, educational, recreational or childcare purposes, or for the purposes of a hospital – land:               <ul style="list-style-type: none"> <li>i. in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and</li> <li>ii. on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).</li> </ul> </li> </ul> <p>(1) A planning proposal authority must not include in a particular zone (within the meaning of the local environmental plan) any land to which this direction applies if the inclusion of the land in that zone would permit a change of use of the land, unless:</p> <ul style="list-style-type: none"> <li>(a) the planning proposal authority has considered whether the land is contaminated, and</li> <li>(b) if the land is contaminated, the planning proposal authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purposes for which land in the zone concerned is permitted to be used, and</li> <li>(c) if the land requires remediation to be made suitable for any purpose for which land in that zone is permitted to be used, the planning proposal authority is satisfied that the land will be so remediated before the land is used for that purpose.</li> </ul> <p>In order to satisfy itself as to paragraph 1(c), the planning proposal authority may</p>	<p>Yes</p>	<p>Parts of the land are known known to be potentially contaminated from previous agricultural land uses, in particular banana cropping. The land is proposed to be rezoned to facilitate a change of use for residential purposes. The City has considered the results of an Environmental Site Assessment (ESA) undertaken for the land to determine the potential for contamination (Appendix 13). The results are summarised below:</p> <ul style="list-style-type: none"> <li>• No. 35 and 89 Sugarmill Road have been previously used for banana cultivation purposes.</li> <li>• Broadacre banana cultivation on No.35 and 89 was assessed as contributing to a risk of surface contamination in soils on those properties. The analytical results of detailed sampling across the proposed building envelopes of No.35 and 89, and check sampling on No.28 confirm that concentrations of the heavy metals and OCP analysed were below the investigation criteria.</li> <li>• The ESA identified that dwellings were approved on the two properties in the late 1970’s, with their prior use as grazing or banana plantations.</li> <li>• The ESA concluded that no further investigations or remediation of soils should be necessary for the proposed large lot residential use of the land.</li> </ul> <p>With the above in mind, the City considers that the proposed LEP Amendment satisfies Direction 4.4 Remediation of Contaminated Land, as:</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>need to include certain provisions in the local environmental plan.</p> <p>(2) Before including any land to which this direction applies in a particular zone, the planning proposal authority is to obtain and have regard to a report specifying the findings of a preliminary investigation of the land carried out in accordance with the contaminated land planning guidelines.</p>		<ul style="list-style-type: none"> <li>• the application has included a report specifying the findings of a preliminary investigation of the land carried out in accordance with the contaminated land planning guidelines,</li> <li>• although the land is contaminated, the City is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purposes for which land in the zone concerned is permitted to be used, and</li> <li>• if the land requires remediation to be made suitable for any purpose for which land in that zone is permitted to be used, the City is satisfied that the land will be so remediated before the land is used for that purpose.</li> </ul>
<p>4.5 Acid Sulfate Soils</p>	<p>This direction applies to all relevant planning authorities that are responsible for land having a probability of containing acid sulfate soils when preparing a planning proposal that will apply to land having a probability of containing acid sulfate soils as shown on the Acid Sulfate Soils Planning Maps held by the Department of Planning, Housing and Infrastructure.</p> <p>(1) The relevant planning authority must consider the Acid Sulfate Soils Planning Guidelines adopted by the Planning Secretary when preparing a planning proposal that applies to any land identified on the Acid Sulfate Soils Planning Maps as having a probability of acid sulfate soils being present.</p> <p>(2) When a relevant planning authority is preparing a planning proposal to introduce provisions to regulate works in acid sulfate soils, those provisions must be consistent with:</p> <p>(a) the Acid Sulfate Soils Model LEP in the Acid Sulfate Soils Planning Guidelines adopted by the Planning Secretary, or</p>	<p>No</p>	<p>The whole of 28 Sugarmill Road and part of 35 Sugarmill Road are mapped as Class 5 Acid Sulfate soils. Class 5 is a 500m wide buffer zone created around mapped ASS risk soils. A Preliminary Acid Sulfate Soil Assessment was prepared for the planning proposal (Appendix 10) and is summarised as follows:</p> <p><i>The desktop review shows no ASS risk from the residual clay subsoils. Biophysical indicators, field screening and soil profiles suggest that the properties are not underlain by ASS.</i></p> <p><i>As such ASS are not present at the Site that would be impacted by the proposed rural-residential development, and no further investigations or plans of management are required.</i></p> <p><i>If dark grey to black, odorous or waterlogged alluvial sands or clays are encountered during</i></p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>(b) other such provisions provided by the Planning Secretary that are consistent with the Acid Sulfate Soils Planning Guidelines.</p> <p>(3) A relevant planning authority must not prepare a planning proposal that proposes an intensification of land uses on land identified as having a probability of containing acid sulfate soils on the Acid Sulfate Soils Planning Maps unless the relevant planning authority has considered an acid sulfate soils study assessing the appropriateness of the change of land use given the presence of acid sulfate soils. The relevant planning authority must provide a copy of any such study to the Planning Secretary prior to undertaking community consultation in satisfaction of clause 4 of Schedule 1 to the Act.</p> <p>(4) Where provisions referred to under 2(a) and 2(b) above of this direction have not been introduced and the relevant planning authority is preparing a planning proposal that proposes an intensification of land uses on land identified as having a probability of acid sulfate soils on the Acid Sulfate Soils Planning Maps, the planning proposal must contain provisions consistent with 2(a) and 2(b).</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a study prepared in support of the planning proposal which gives consideration to the objective of this direction, or</p> <p>(b) of minor significance.</p>		<p><i>development, then works should be halted until confirmation of the presence of ASS is undertaken and/or remedial strategies developed.</i></p> <p>The inconsistency with the Direction is considered to be justified as; the provisions of the planning proposal that are inconsistent are justified by a study prepared in support of the planning proposal which gives consideration to the objective of Direction 4.5 Acid Sulfate Soils.</p> <p>The delegate of the Secretary of the Minister for Planning and Public Spaces has agreed that this Ministerial Direction is justified in accordance with the terms of the Direction, as outlined in their correspondence dated 6 December 2024.</p>
4.6 Mine Subsidence and Unstable Land	This direction does not apply to this planning proposal, as mine subsidence issues have not been identified at either site.	N/A	
<b>Focus Area 5: Transport and Infrastructure</b>			
5.1 Integrating Land Use and Transport	This direction applies to all relevant planning authorities when preparing a planning proposal that will create, alter or remove a zone or a provision relating to urban land,	Yes	The planning proposal would alter a provision relating to rural land proposed to be zoned

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>including land zoned for residential, business, industrial, village or tourist purposes.</p> <p>(1) A planning proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of:</p> <p>(a) Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and</p> <p>(b) The Right Place for Business and Services – Planning Policy (DUAP 2001).</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a strategy approved by the Planning Secretary which:</p> <p>i. gives consideration to the objective of this direction, and</p> <p>ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or</p> <p>(b) justified by a study prepared in support of the planning proposal which gives consideration to the objective of this direction, or</p> <p>(c) in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which gives consideration to the objective of this direction, or</p> <p>(d) of minor significance.</p>		<p>residential, by reducing the applicable minimum lot size.</p> <p>The proposal is consistent with the Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and The Right Place for Business and Services – Planning Policy (DUAP 2001).</p> <p>The proposal is deemed to be of minor significance as it accords with the City’s Local Growth Management Strategy and will not result in a substantial increase of movement due to the potential of minimal additional lots.</p>
5.2 Reserving Land for Public Purposes	This direction does not apply to this planning proposal, as the proposed LEP amendment will not affect land reserved for a public purpose.	N/A	
5.3 Development Near Regulated Airports and Defence Airfields	This direction does not apply to this planning proposal, as the sites are not located near to a regulated airport or defence airfield.	N/A	

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
5.4 Shooting Ranges	This direction does not apply to the planning proposal, as the sites do not lie adjacent to or adjoining an existing shooting range.	N/A	
<b>Focus area 6: Housing</b>			
6.1 Residential Zones	<p>This direction applies to all relevant planning authorities when preparing a planning proposal that will affect land within an existing or proposed residential zone (including the alteration of any existing residential zone boundary), or any other zone in which significant residential development is permitted or proposed to be permitted.</p> <p>(1) A planning proposal must include provisions that encourage the provision of housing that will:</p> <ul style="list-style-type: none"> <li>(a) broaden the choice of building types and locations available in the housing market, and</li> <li>(b) make more efficient use of existing infrastructure and services, and</li> <li>(c) reduce the consumption of land for housing and associated urban development on the urban fringe, and</li> <li>(d) be of good design.</li> </ul> <p>(2) A planning proposal must, in relation to land to which this direction applies:</p> <ul style="list-style-type: none"> <li>(a) contain a requirement that residential development is not permitted until land is adequately serviced (or arrangements satisfactory to the council, or other appropriate authority, have been made to service it), and</li> <li>(b) not contain provisions which will reduce the permissible residential density of land.</li> </ul> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department</p>	Yes	<p>The proposed amendment will facilitate the creation of additional large lot residential land, which will contribute to the supply of vacant land and increase lifestyle choices in the LGA.</p> <p>However, the planning proposal is inconsistent with the Direction, as it will not make more efficient use of existing infrastructure and services, nor reduce the consumption of land for housing and associated urban development on the urban fringe.</p> <p>The City considers that the inconsistency with the Direction is justified due to the land’s identification for the intended purpose within a Department approved local strategy (LGMS 2020), which:</p> <ul style="list-style-type: none"> <li>i. considers the objective of this direction,</li> <li>ii. identifies the land which is the subject of the planning proposal, and</li> <li>iii. has been prepared in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which considers the objective of this direction.</li> </ul>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a strategy approved by the Planning Secretary which:</p> <ul style="list-style-type: none"> <li>i. gives consideration to the objective of this direction, and</li> <li>ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or</li> </ul> <p>(b) justified by a study prepared in support of the planning proposal which gives consideration to the objective of this direction, or</p> <p>(c) in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which gives consideration to the objective of this direction, or</p> <p>(d) of minor significance.</p>		
<p>6.2 Caravan Parks and Manufactured Home Estates</p>	<p>This direction applies to all relevant planning authorities when preparing a planning proposal.</p> <p>This direction does not apply to Crown land reserved or dedicated for any purposes under the <i>Crown Land Management Act 2016</i>, except Crown land reserved for accommodation purposes, or land dedicated or reserved under the <i>National Parks and Wildlife Act 1974</i>.</p> <p>(1) In identifying suitable zones, locations and provisions for caravan parks in a planning proposal, the relevant planning authority must:</p> <ul style="list-style-type: none"> <li>(a) retain provisions that permit development for the purposes of a caravan park to be carried out on land, and</li> <li>(b) retain the zonings of existing caravan parks, or in the case of a new principal LEP zone the land in accordance with an appropriate zone under the <i>Standard Instrument (Local Environmental Plans) Order 2006</i> that would facilitate the retention of the existing caravan park.</li> </ul> <p>(2) In identifying suitable zones, locations and provisions for manufactured home estates</p>	<p>Yes</p>	<p>Caravan Parks and Manufactured Home Estates are not permissible land uses within the R5 Large Lot Residential zone. This planning proposal does not seek to facilitate the permissibility of either land use on this land.</p>



**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>(MHEs) in a planning proposal, the relevant planning authority must:</p> <p>(a) take into account the categories of land set out in Schedule 6 of <i>State Environmental Planning Policy (Housing)</i> as to where MHEs should not be located,</p> <p>(b) take into account the principles listed in clause 9 Schedule 5 of <i>State Environmental Planning Policy (Housing)</i>(which relevant planning authorities are required to consider when assessing and determining the development and subdivision proposals), and</p> <p>(c) include provisions that the subdivision of MHEs by long term lease of up to 20 years or under the <i>Community Land Development Act 1989</i> be permissible with consent.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a strategy approved by the Planning Secretary which:</p> <ul style="list-style-type: none"> <li>i. gives consideration to the objective of this direction, and</li> <li>ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or</li> </ul> <p>(b) justified by a study prepared in support of the planning proposal which gives consideration to the objective of this direction, or</p> <p>(c) in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which gives consideration to the objective of this direction, or</p> <p>(d) of minor significance.</p>		
<p><b>Focus area 7: Industry and Employment</b></p>			

## APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS

S9.1 Direction	Applicable	Consistent	Comment
7.1 Employment Zones	This direction does not apply to the planning proposal, as it does not affect land within an existing or proposed business or industrial zone.	N/A	
7.2 Reduction in non-hosted short-term rental accommodation period	This direction does not apply to the Coffs Harbour LGA.	N/A	
7.3 Commercial and Retail Development along the Pacific Highway, North Coast	This direction does not apply to the planning proposal, as the planning proposal does not constitute commercial and/or retail development along the Pacific Highway.	N/A	
<b>Focus area 8: Resources and Energy</b>			
8.1 Mining, Petroleum Production and Extractive Industries	<p>This direction applies to all relevant planning authorities when preparing a planning proposal that would have the effect of:</p> <p>(a) prohibiting the mining of coal or other minerals, production of petroleum, or winning or obtaining of extractive materials, or</p> <p>(b) restricting the potential development of resources of coal, other minerals, petroleum or extractive materials which are of State or regional significance by permitting a land use that is likely to be incompatible with such development.</p> <p>(1) In the preparation of a planning proposal affected by this direction, the relevant planning authority must:</p> <p>(a) consult the Secretary of the Department of Primary Industries (DPI) to identify any:</p> <p>i. resources of coal, other minerals, petroleum or extractive material that are of either State or regional significance, and</p> <p>ii. existing mines, petroleum production operations or extractive industries occurring in the area subject to the planning proposal, and</p>	No	<p>The planning proposal is inconsistent with this Direction as the change in zoning from RU2 Rural Landscape to R5 Large Lot Residential will have the effect of prohibiting extractive industries on the land.</p> <p>While the inconsistency is likely of minor significance due to the characteristics of the area and the existing and likely future uses making extractive industries unlikely to be viable, the consistency of the proposal with this Direction remains unresolved until (likely) consultation can be undertaken with NSW Mining, Exploration and Geoscience.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>(b) seek advice from the Secretary of DPI on the development potential of resources identified under (1)(a)(i), and</p> <p>(c) identify and take into consideration issues likely to lead to land use conflict between other land uses and:</p> <ul style="list-style-type: none"> <li>i. development of resources identified under (1)(a)(i), or</li> <li>ii. existing development identified under (1)(a)(ii).</li> </ul> <p>(2) Where a planning proposal prohibits or restricts development of resources identified under (1)(a)(i), or proposes land uses that may create land use conflicts identified under (1)(c), the relevant planning authority must:</p> <ul style="list-style-type: none"> <li>(a) provide the Secretary of DPI with a copy of the planning proposal and notification of the relevant provisions,</li> <li>(b) allow the Secretary of DPI a period of 40 days from the date of notification to provide in writing any objections to the terms of the planning proposal, and</li> <li>(c) include a copy of any objection and supporting information received from the Secretary of DPI with the statement to the Planning Secretary (or an officer of the Department nominated by the Secretary before undertaking community consultation in satisfaction of Schedule 1 to the Act).</li> </ul> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary), that the provisions of the planning proposal that are inconsistent are of minor significance.</p>		
<b>Focus area 9: Primary Production</b>			
9.1 Rural Zones	This direction applies when a relevant planning authority prepares a planning proposal that will affect land within an existing or proposed rural zone (including the alteration of any existing rural zone boundary).	No	<p>The planning proposal is inconsistent with this Direction as it rezones land from a rural zone to a residential zone.</p> <p>The City considers that the inconsistency with the Direction is justified due to the land’s</p>

## APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS

S9.1 Direction	Applicable	Consistent	Comment
	<p>A planning proposal must not rezone land from a rural zone to a residential, business, industrial, village or tourist zone.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a strategy approved by the Planning Secretary which:</p> <ul style="list-style-type: none"> <li>i. gives consideration to the objectives of this direction, and</li> <li>ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or</li> </ul> <p>(b) justified by a study prepared in support of the planning proposal which gives consideration to the objectives of this direction, or</p> <p>(c) in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which gives consideration to the objective of this direction, or</p> <p>(d) is of minor significance.</p>		<p>identification for the intended purpose within a Department approved local strategy (LGMS 2020), which:</p> <ul style="list-style-type: none"> <li>i. considers the objective of this direction,</li> <li>ii. identifies the land, which is the subject of the planning proposal, and</li> <li>iii. has been prepared in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which considers the objective of this direction.</li> </ul> <p>The delegate of the Secretary of the Minister for Planning and Public Spaces has agreed that this Ministerial Direction is justified in accordance with the terms of the Direction, as outlined in their correspondence dated 6 December 2024.</p>
9.2 Rural Lands	<p>This direction applies when a relevant planning authority prepares a planning proposal for land outside the local government areas of lake Macquarie, Newcastle, Wollongong and LGAs in the Greater Sydney Region (as defined in the <i>Greater Sydney Commission Act 2015</i>) other than Wollondilly and Hawkesbury, that:</p> <ul style="list-style-type: none"> <li>(a) will affect land within an existing or proposed rural or conservation zone (including the alteration of any existing rural or conservation zone boundary) or</li> <li>(b) changes the existing minimum lot size on land within a rural or conservation zone.</li> </ul> <p>(1) A planning proposal must:</p> <ul style="list-style-type: none"> <li>(a) be consistent with any applicable strategic plan, including regional and district plans endorsed by the Planning Secretary, and any applicable local strategic planning statement</li> </ul>	No	<p>The planning proposal is inconsistent with this Direction as it does not promote opportunities for investment in productive, diversified, innovative and sustainable rural economic activities; support farmers in exercising their right to farm; or prioritise efforts and consider measures to minimise the fragmentation of rural land and reduce the risk of land use conflict, particularly between residential land uses and other rural land uses. The proposal is however considered to be consistent with the Rural Subdivision Principles set out in Coffs Harbour LEP 2013. The land is also located within an already highly fragmented area.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>(b) consider the significance of agriculture and primary production to the State and rural communities</p> <p>(c) identify and protect environmental values, including but not limited to, maintaining biodiversity, the protection of native vegetation, cultural heritage, and the importance of water resources</p> <p>(d) consider the natural and physical constraints of the land, including but not limited to, topography, size, location, water availability and ground and soil conditions</p> <p>(e) promote opportunities for investment in productive, diversified, innovative and sustainable rural economic activities</p> <p>(f) support farmers in exercising their right to farm</p> <p>(g) prioritise efforts and consider measures to minimise the fragmentation of rural land and reduce the risk of land use conflict, particularly between residential land uses and other rural land use</p> <p>(h) consider State significant agricultural land identified in chapter 2 of the <i>State Environmental Planning Policy (Primary Production) 2021</i> for the purpose of ensuring the ongoing viability of this land</p> <p>(i) consider the social, economic and environmental interests of the community.</p> <p>(2) A planning proposal that changes the existing minimum lot size on land within a rural or conservation zone must demonstrate that it:</p> <p>(a) is consistent with the priority of minimising rural land fragmentation and land use conflict, particularly between residential and other rural land uses</p> <p>(b) will not adversely affect the operation and viability of existing and future rural land uses and related enterprises, including supporting infrastructure and facilities that are essential to rural industries or supply chains</p> <p>(c) where it is for rural residential purposes:</p> <p>i. is appropriately located taking account of the availability of human services, utility infrastructure, transport and proximity to existing centres</p>		<p>The City considers that the inconsistency with the Direction is justified due to the land’s identification for the intended purpose within a Department approved local strategy (LGMS 2020), which:</p> <p>i. considers the objective of this direction,</p> <p>ii. identifies the land, which is the subject of the planning proposal, and</p> <p>iii. has been prepared in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning, Housing and Infrastructure which considers the objective of this direction.</p> <p>The delegate of the Secretary of the Minister for Planning and Public Spaces has agreed that this Ministerial Direction is justified in accordance with the terms of the Direction, as outlined in their correspondence dated 6 December 2024.</p>

**APPENDIX 2 – CONSIDERATION OF MINISTERIAL PLANNING DIRECTIONS**

S9.1 Direction	Applicable	Consistent	Comment
	<p>ii. is necessary taking account of existing and future demand and supply of rural residential land.</p> <p>A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are:</p> <p>(a) justified by a strategy approved by the Planning Secretary and is in force which:</p> <ul style="list-style-type: none"> <li>i. gives consideration to the objectives of this direction, and</li> <li>ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or</li> </ul> <p>(b) is of minor significance.</p>		
9.3 Oyster Aquaculture	This direction does not apply to the planning proposal, as the land is not located within a Priority Oyster Aquaculture Area, or an area identified in the <i>NSW Oyster Industry Sustainable Aquaculture Strategy</i> .	N/A	
9.4 Farmland of State and Regional Significance on the NSW Far North Coast	This direction does not apply to the Coffs Harbour LGA.	N/A	



**Coffs Harbour  
Local Environmental  
Plan 2013  
(Amendment)**

**Planning Proposal**

**Land Zoning Map -  
Site Identification Map  
Part of map file:**

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1800\_COM\_LZN\_005D\_020\_20180621

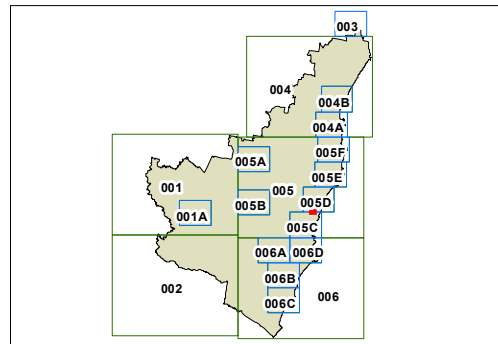
- C2 Environmental Conservation
- R5 Large Lot Residential

**Cadastral**

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- Addendum Data 1/12/2023
- © City of Coffs Harbour

- C2 Environmental Conservation
- R2 Low Density Residential
- R5 Large Lot Residential
- RU2 Rural Landscape
- SP2 Infrastructure

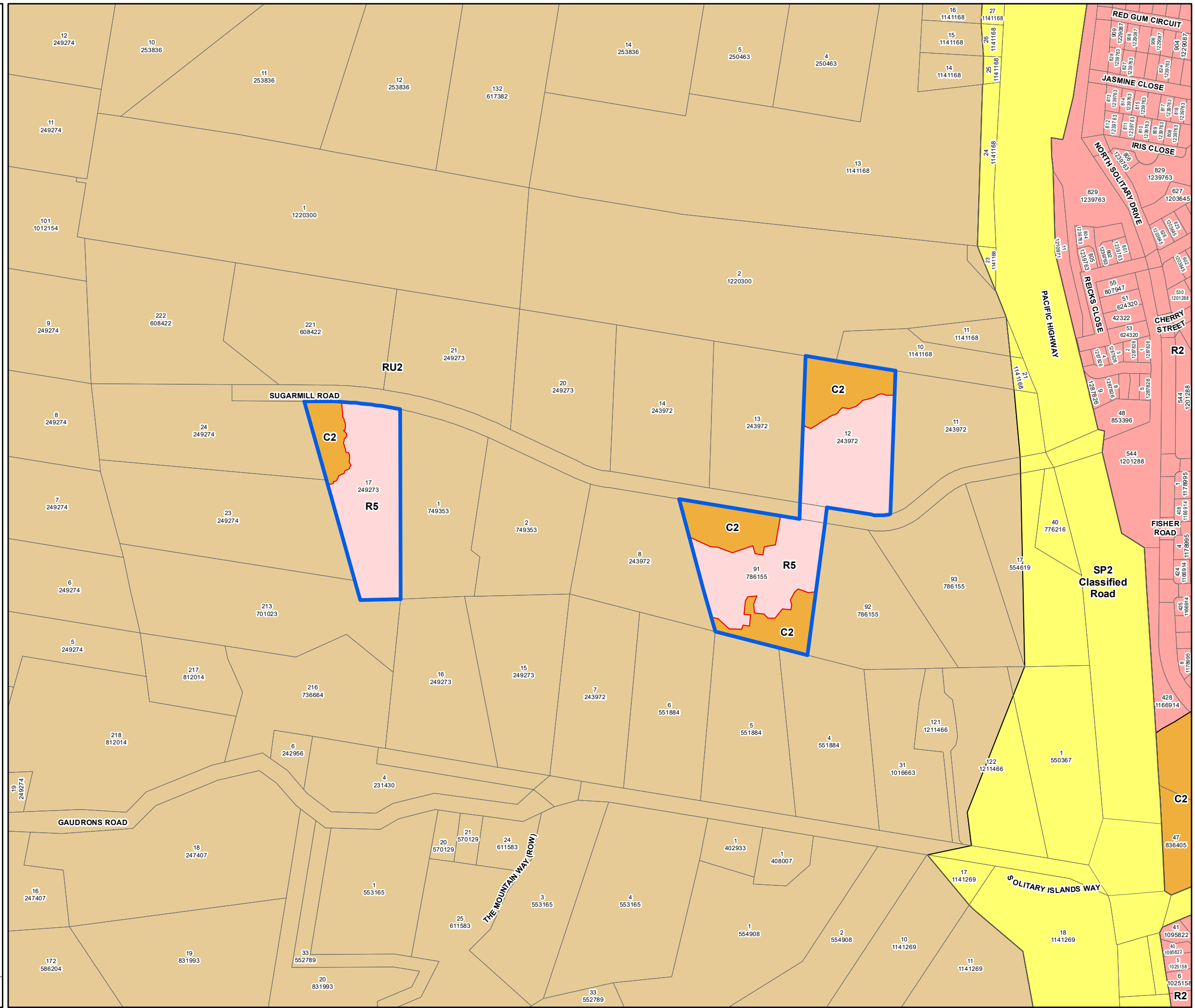
This map is for explanation purposes only.  
This map is not a legal document.



Projection: GDA 1994  
MGA Zone 56

Scale: 1:6,000 @ A3

Map identification number: 1800\_COM\_LZN\_005C\_020\_20201208  
1800\_COM\_LZN\_005D\_020\_20180621





**Coffs Harbour  
Local Environmental  
Plan 2013  
(Amendment)**

**Planning Proposal**

**Lot Size Map -  
Site Identification Map  
Part of map tile:**

1800\_COM\_LSZ\_005C\_020\_20201208  
1800\_COM\_LSZ\_005D\_020\_20170915

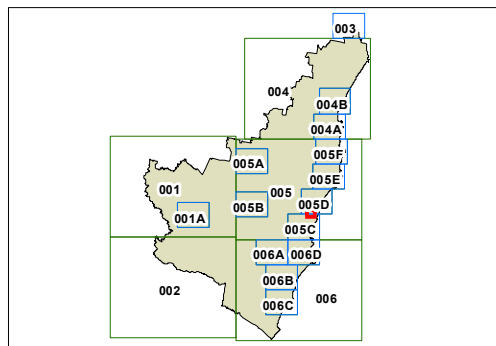
- X2 6000m
- AB 40ha

**Cadastre**

Base Data 1990 © Land and Property Information  
Addendum Data 1/12/2023  
© City of Coffs Harbour

- F 400m
- K 550m
- M 600m
- U1 1200m
- U2 1300m
- W 3000m
- X1 5000m
- X2 6000m
- X3 8000m
- Y 1ha
- Z 2ha
- AB 40ha

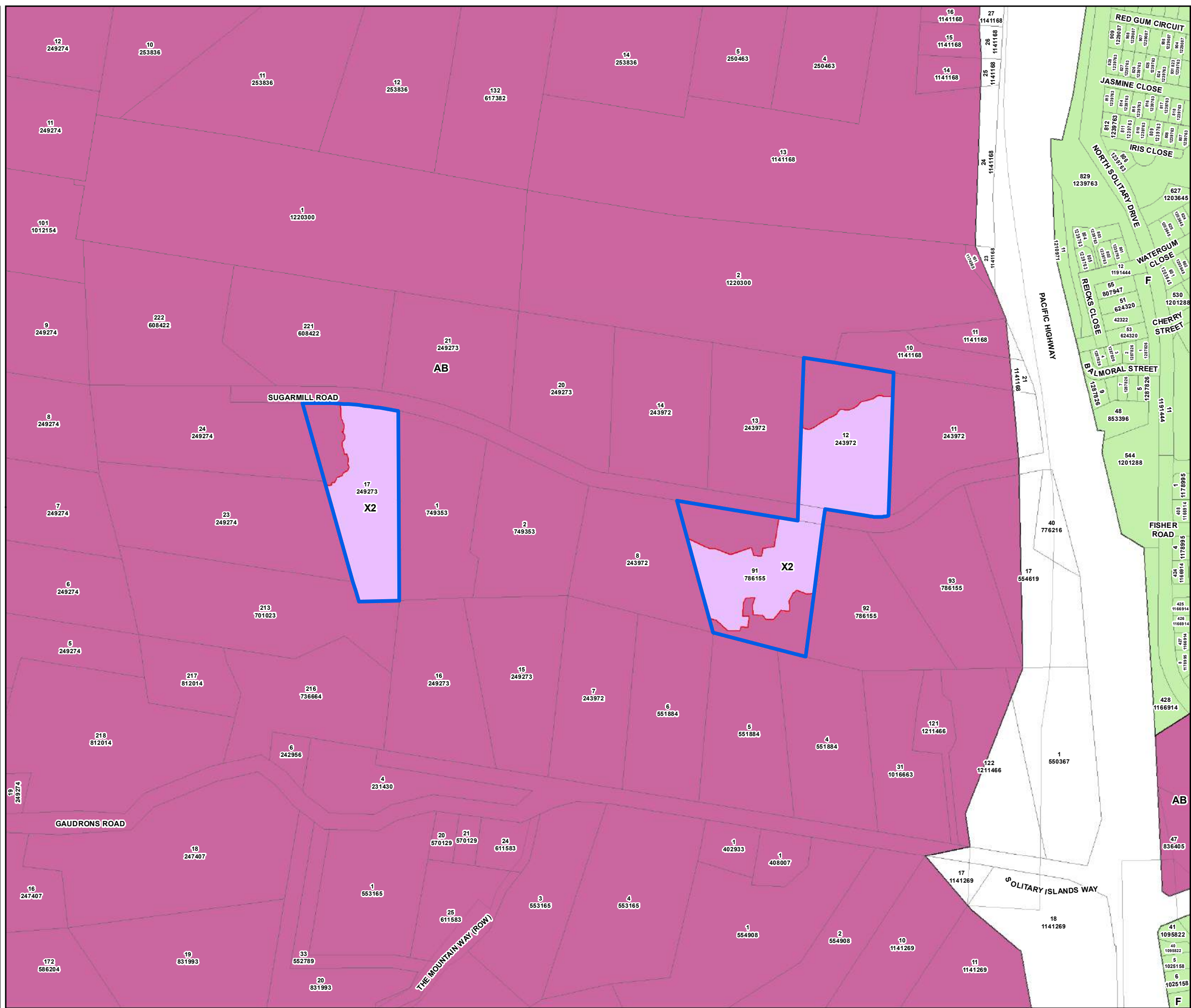
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This map is not a legal document.



Projection: GDA 1994  
MGA Zone 56

Scale: 1:6,000 @ A3

Map identification number: 1800\_COM\_LSZ\_005C\_020\_20201208  
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**Coffs Harbour  
Local Environmental  
Plan 2013  
(Amendment)**

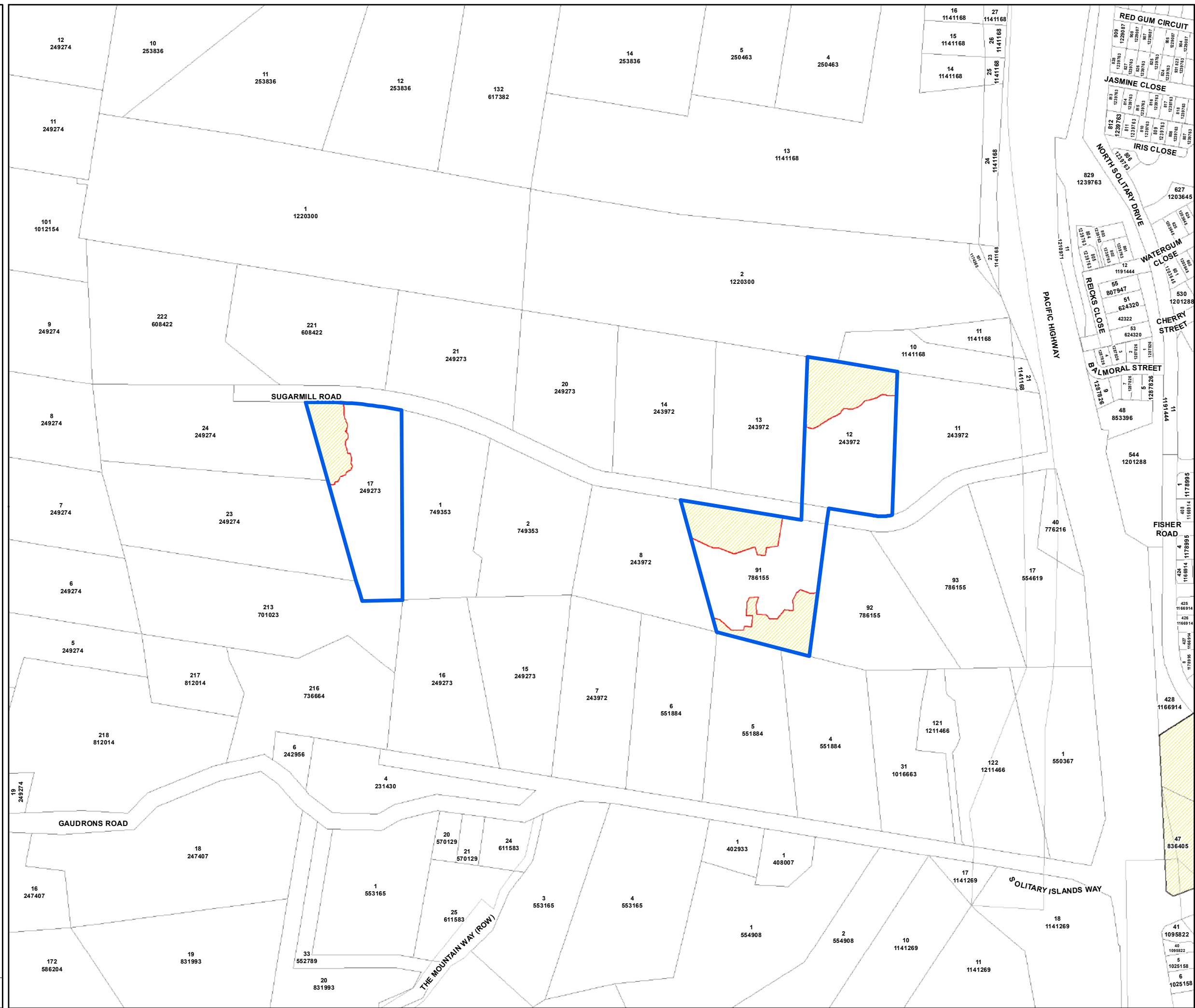
**Planning Proposal**

**Lot Size Map -  
Site Identification Map  
Part of map tile:**

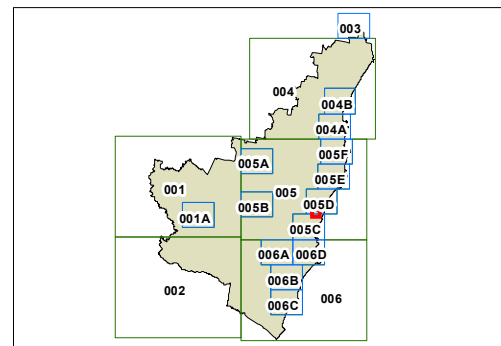
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**Cadastre**

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This map is for explanation purposes only.  
This map is not a legal document.



Projection: GDA 1994  
MGA Zone 56  
Scale: 1:6,000 @ A3

Map identification number: 1800\_COM\_CL2\_005C\_020\_20170915  
1800\_COM\_CL2\_005D\_020\_20170915

- DENOTES PROPOSED E2 ZONE
- DENOTES PROPOSED R5 ZONE
- DENOTES BAL 12.5
- DENOTES BAL 19
- DENOTES BAL 29



(A) PROPOSED BUILDING ENVELOPE



**MID NORTH COAST SURVEYING**  
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CLIENT: K GRIMLEY		TITLE: PROPOSED 2 LOT TORRENS SUBDIVISION - B SUGARMILL ROAD RE-ZONING	REV. E
JOB REF: 1442	SURVEYED: M.N.C.S.	PROJECT: LOT 12 IN D.P.243972 AT 28 SUGARMILL ROAD, SAPPHIRE BEACH	
DATE: 19.12.2022	DRAWN: B.H.	LGA: COFFS HARBOUR CITY COUNCIL	
SCALE: 1:1000	SHEET SIZE: A3		

- DENOTES PROPOSED E2 ZONE
- DENOTES PROPOSED R5 ZONE
- DENOTES BAL 12.5
- DENOTES BAL 19
- DENOTES BAL 29



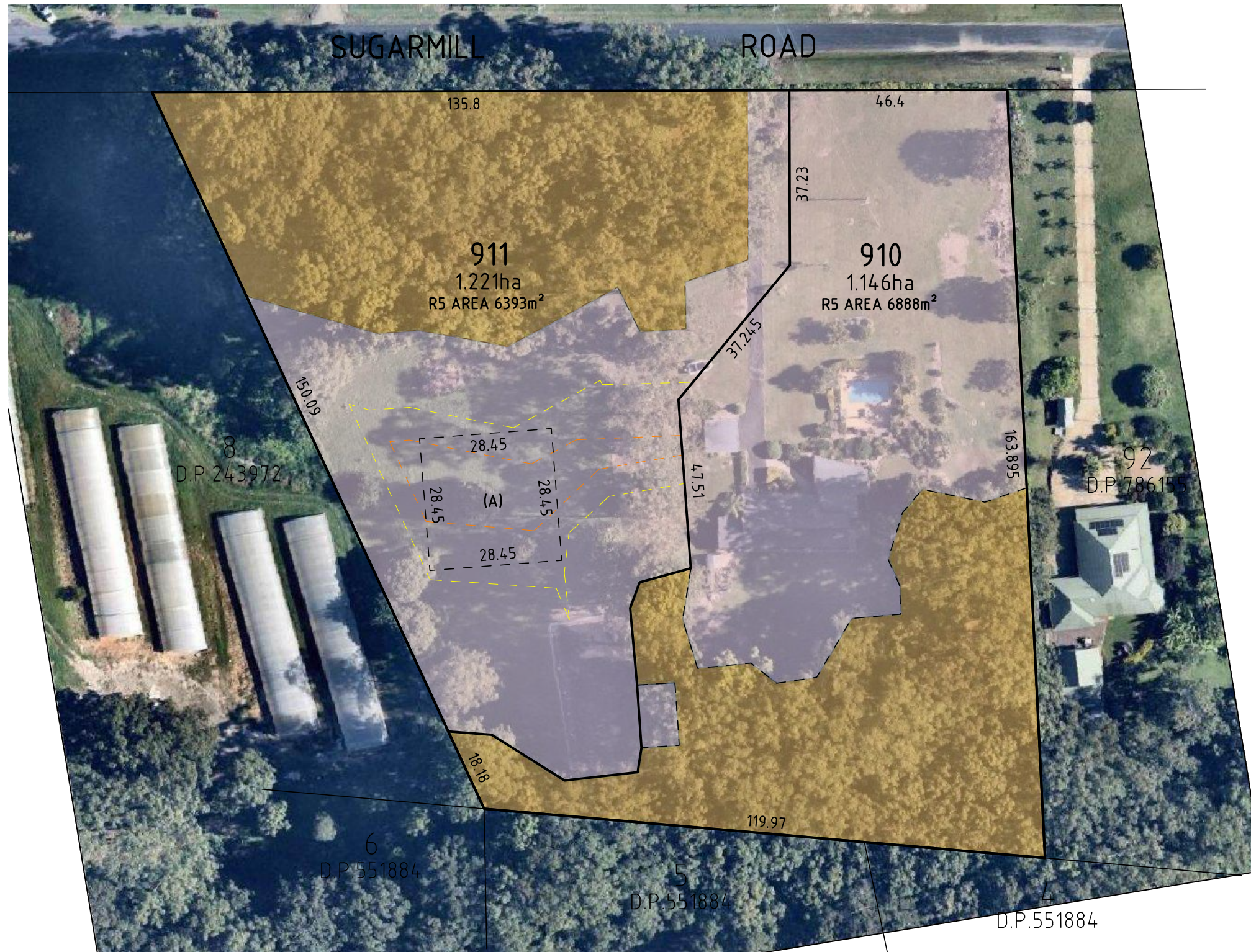
- (A) PROPOSED BUILDING ENVELOPE
- (B) PROPOSED RIGHT OF CARRIAGEWAY 6 WIDE

**MID NORTH COAST SURVEYING**  
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 E. brock@midnorthcoastsurveying.com.au



CLIENT: C ARIANAYAGAM		TITLE: PROPOSED 2 LOT TORRENS SUBDIVISION SUGARMILL ROAD RE-ZONING	REV. D
JOB REF: 1442	SURVEYED: M.N.C.S.	PROJECT: LOT 17 IN D.P.249273 AT 89 SUGARMILL ROAD, SAPPHIRE BEACH	
DATE: 19.12.2022	DRAWN: B.H.	LGA: COFFS HARBOUR CITY COUNCIL	
SCALE: 1:800	SHEET SIZE: A3		

- DENOTES PROPOSED E2 ZONE
- DENOTES PROPOSED R5 ZONE
- DENOTES BAL 12.5
- DENOTES BAL 19
- DENOTES BAL 29



(A) PROPOSED BUILDING ENVELOPE

**MID NORTH COAST SURVEYING**  
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 SAWTELL NSW 2452  
 Doug Alderman M. 0434 438 110  
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CLIENT: I & S MARTYN		TITLE: PROPOSED 2 LOT TORRENS SUBDIVISION - B SUGARMILL ROAD RE-ZONING	REV. F
JOB REF: 1442	SURVEYED: M.N.C.S.	PROJECT: LOT 91 IN D.P.786155 AT 35 SUGARMILL ROAD, SAPPHIRE BEACH	
DATE: 16.09.2021	DRAWN: B.H.	LGA: COFFS HARBOUR CITY COUNCIL	
SCALE: 1:1000	SHEET SIZE: A3		



**BUSH FIRE  
ASSESSMENT  
REPORT**

**Planning Proposal  
Rezoning**

**Lot 12 DP 243972  
No 28 Sugarmill Road  
Sapphire Beach**

**Lot 91 DP 786155  
No 35 Sugarmill Road  
Sapphire Beach**

**Lot 17 DP 249273  
No 89 Sugarmill Road  
Sapphire Beach**

**Mr K Grimley  
Dr I Martyn  
Dr C Arianayagam**

**October 2021**

## 1.0 INTRODUCTION

A Bush Fire Assessment Report has been carried out for a proposed planning rezoning, for the owners of Lot 12 DP 243972 No 28 Sugarmill Road, Sapphire Beach, Lot 91 DP 786155 No 35 Sugarmill Road, Sapphire Beach and Lot 17 DP 249273 No 89 Sugarmill Road, Sapphire Beach.

All current lots have existing dwellings and it is proposed to subdivide each of the lots into two (2) as part of the rezoning.

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

### NOTE

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

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

1. Rural Fires Act 1997.
2. Environmental Planning and Assessment Act 1979 No 203.
3. Building Code of Australia (2019).
4. Council Local Environment Plans and Development Control Plans where applicable.
5. NSW Rural Fire Services, Planning for Bushfire Protection, 2019. (PBP, 2019).
6. AS 3959-2018 Construction of Buildings in Bushfire Prone Areas.

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

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

The report is confidential and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known. Any such party relies on this report at their own risk.

### 1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed rezoning meets the aims and objectives of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 and has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire; and
- Comply where applicable with AS3959 – 2018.

### 1.2 Legislative Framework

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

# Appendix 5 - Bushfire Assessment

The BCA references AS3959 – 2018 as the deemed-to-satisfy (DTS) solution for construction requirements in bushfire prone areas for NSW.

All development on bushfire prone land in NSW should comply with the bushfire protection measures identified within PBP, 2019.

## 1.3 Location

The site is Lot 12 DP 243972 No 28 Sugarmill Road, Sapphire Beach, Lot 91 DP 786155 No 35 Sugarmill Road, Sapphire Beach and Lot 17 DP 249273 No 89 Sugarmill Road, Sapphire Beach.

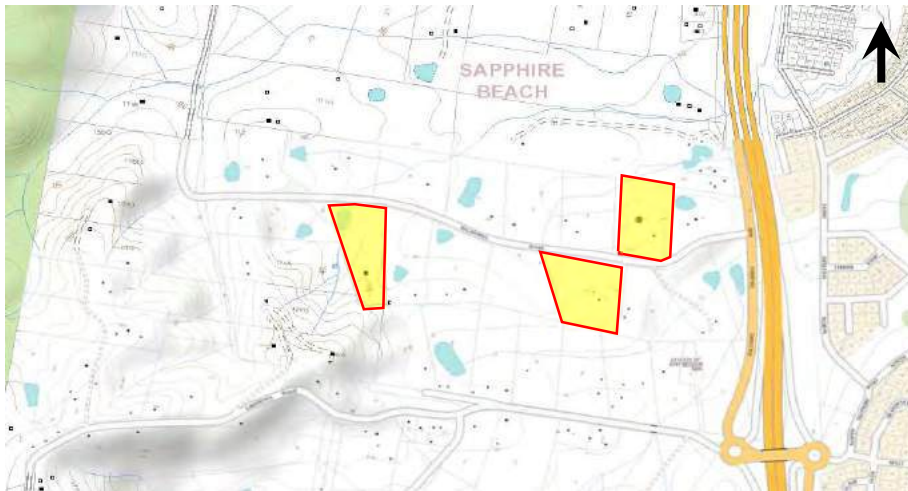
Locality – Sapphire Beach

Local Government Area – Coffs Harbour City Council

Closest Rural Fire Service – Solitary Rural Fire Service

Closest Fire Control Centre – Coffs Harbour

**Figure 1 – Topographic Map**



**Figure 2 – Aerial View**



# Appendix 5 - Bushfire Assessment

## 1.4 Development Proposal and History

The subject sites are:

- No 28 Sugarmill Road – 2.03 hectares into two (2) x lots to be known as Lot 120 + Lot 121.
- No 35 Sugarmill Road – 2.37 hectares into two (2) x lots to be known as Lot 910 + Lot 911.
- No 89 Sugarmill Road – 2.03 hectares into two (2) x lots to be known as Lot 170 + Lot 171.

See **Appendix 1** for the individual layouts.

## 1.5 Isolated Subdivision

With regards to the travel distance which will be further examined in the report consideration has been given to 5.1.1 of Planning for Bush Fire Protection (Isolated Subdivision).

In regards to the requirements of Isolated Subdivision, the following provisions have been considered:

- Larger APZs outside the range prescribed in PBP and increased Bush Fire Attack Level (BAL) to proposed buildings to create a safer area for occupants and fire fighters remaining on site.
- Firefighting water supply and associated firefighting equipment (ie. pump and hose) for each dwelling in addition to any reticulated water supply.

## 2.0 BUSH FIRE ASSESSMENT

### 2.1 Assessment Methodology

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

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

The assessment of slope and vegetation being carried out in accordance with NSW Rural Fire Service, *Planning for Bushfire Protection, 2019*.

### 2.2 Slope Assessment

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

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

The dominant hazard vegetation was identified and the slopes within the vegetation measured.

**Table 1 – Hazard Vegetation Slopes for Rezoning**

#### No 28

	Hazard Aspect	Slope	Upslope/Downslope or Flat
No 28	North	5-10°	Downslope
	West	0-5°	Downslope



# Appendix 5 - Bushfire Assessment

## No 35

	Hazard Aspect	Slope	Upslope/Downslope or Flat
No 35	North	5-10°	Downslope
	South	5-10°	Downslope
	East	0-5°	Downslope
	West	0°	Upslope

## No 89

	Hazard Aspect	Slope	Upslope/Downslope or Flat
No 89	North	5-10°	Downslope
	East	5-10°	Downslope
	West	0-5°	Downslope
		0°	Upslope

## 2.3 Vegetation Assessment

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

The vegetation formations were classified using the system adopted as per Keith (2004) and considering the fuel loads as documented in Planning for Bush Fire Protection, 2019.

### 2.3.1 Vegetation on the Subject Lots

The subject lots in general are a mixture of remnant forest vegetation and mostly grassland that is currently managed.

The remnant forest vegetation positioned on No 35 is currently being managed similar to a woodland hazard.

### 2.3.2 Vegetation on the adjoining lots

The adjacent areas to the north, south and west are of similar vegetation types.

There is residential development to the east of the sites.

The larger hazards include the Orara State Forest approximately 700m from No 89 and the Coffs Regional Park approximately 700m from No 28.

The following table details the hazards for the proposed lots:

**Table 2 – Hazard Vegetation**

## No 28

Hazard Aspect	Vegetation
North	Forest
West	Grassland

# Appendix 5 - Bushfire Assessment

## No 35

Hazard Aspect	Vegetation
North	Woodland
South	Forest
East	Woodland
West	Grassland

## No 89

Hazard Aspect	Vegetation
North	Forest
East	Grassland
West	Forest Grassland

The report assumes that all grassland on the proposed lots will be managed as Asset Protection Zone (IPA)

## 2.4 Hazard

The aeriels for the hazards for the proposed lots:

# Appendix 5 - Bushfire Assessment

**Figure 3: Hazards**

No 28



# Appendix 5 - Bushfire Assessment

## No 35



# Appendix 5 - Bushfire Assessment

## No 89



# Appendix 5 - Bushfire Assessment

With respect to the hazards:

1. The single row of trees between No 28 and the adjoining dwelling to the west have not been considered a hazard, however it is recommended that any dwelling is located a minimum 5m from any canopy. The report assumes that the area under these trees will be continued to be managed. The location and management of this area can be seen in **Photos 2 and 3**. To build a factor of safety into the report the adjoining lot has been considered a grassland hazard, however this area is currently managed.
2. With regards to Lot 35, the area to the north and the area nominated to the south in the hazard mapping has managed ground cover and shrub layer. To build a factor of safety into the report these areas have been considered as a woodland hazard and the hazard to the west has been conservatively assessed as grassland.
3. The vegetation in the northern part of No 89 has been conservatively assessed as forest.

***Figure 4 - Bushfire Hazard Mapping***



***Table 3 – Summary of Hazard Characteristics for Rezoning***

**No 28**

Hazard Aspect	Hazard	Slope
North	Forest	5-10° Downslope
West	Grassland	0-5° Downslope

**No 35**

Hazard Aspect	Hazard	Slope
North	Woodland	5-10° Downslope
South	Forest	5-10° Downslope
East	Woodland	0-5° Downslope
West	Grassland	0° Upslope

# Appendix 5 - Bushfire Assessment

## No 89

Hazard Aspect	Hazard	Slope
North	Forest	5-10° Downslope
East	Grassland	5-10° Downslope
West	Forest Grassland	0-5° Downslope 0° Upslope

### 2.5 Fire Danger Index

The fire weather for the site is assumed on the worst-case scenario. In accordance with NSW Rural Fire Services, the fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

### 3.0 BUSHFIRE THREAT REDUCTION MEASURES

#### 3.1 NSW Rural Fire Services, *Planning for Bushfire Protection, 2019*

The following provisions of PBP 2019 have been identified:

##### 3.1.1 Defendable Space/Asset Protection Zone (APZ)

To ensure that the aims and objectives of NSW Rural Fire Services, PBP, 2019, a defendable space between the asset and the hazard should be provided. The defendable space provides for, minimal separation for safe firefighting, reduced radiant heat, reduced influence of convection driven winds, reduced ember viability and dispersal of smoke.

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

It is recommended that the defendable space for the proposed development be based upon the minimum requirements for Asset Protection Zones as set out in NSW Rural Fire Services, *Planning for Bushfire Protection, 2019*.

#### Table 4 - APZ Requirements (PBP 2019)

## No 28

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)
North	Forest	5-10° Downslope	16m	15m	31m
West	Grassland	0-5° Downslope	11m	-	11m

# Appendix 5 - Bushfire Assessment

## No 35

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)
North	Woodland	5-10° Downslope	17m	-	17m
South	Forest	5-10° Downslope	16m	15m	31m
East	Woodland	0-5° Downslope	13m	-	13m
West	Grassland	0° Upslope	10m	-	10m

## No 89

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)
North	Forest	5-10° Downslope	16m	15m	31m
East	Grassland	5-10° Downslope	12m	-	12m
West	Forest Grassland	0-5° Downslope 0° Upslope	15m 10m	10m -	25m 10m

See **Appendix 2** for the likely Asset Protection Contour lines (i.e. BAL contour lines) and photos.

### 3.1.2 Operational Access and Egress

Access/egress to the proposed lots will be from the existing Council Road, Sugarmill Road.

The existing dwellings on the subject lots all have access and egress provided from Sugarmill Road.

No 28 and 89 are proposing their own access while No 35 may have a shared access.

All access/egress have the slope and dimensions suitable to comply with the deemed to satisfy provisions of PBP, 2019 for property access.

### Table 5

Table 5.3b		
Performance criteria	Acceptable Solution	Comment
The intent may be achieved where:		
Firefighting vehicles can access the dwelling and exit the property safely.	<ul style="list-style-type: none"> <li>There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed</li> </ul>	N/A



# Appendix 5 - Bushfire Assessment

<b>P R O P E R T Y  A C C E S S</b>		<p>dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.</p> <p>In circumstances where this cannot occur the following requirements apply:</p> <ul style="list-style-type: none"> <li>• Minimum 4m carriageway width;</li> <li>• In forest, woodland and heath situations, rural property access roads have passing bays at every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;</li> <li>• A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;</li> <li>• Provide a suitable turning area in accordance with Appendix 3;</li> <li>• Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;</li> <li>• The minimum distance between inner and outer curves is 6m;</li> <li>• The crossfall is not more than 10 degrees;</li> <li>• Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and</li> <li>• A development comprising more than three dwellings has access by dedication of a road and not by right of way.</li> </ul>	<p>To comply</p> <p>All driveways less than 200m.</p> <p>To comply</p> <p>To comply – see <b>Appendix 3.</b></p> <p>To comply</p> <p>To comply</p> <p>To comply</p> <p>To comply – all driveways less than 10°.</p> <p>N/A</p>
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Sugarmill Road does not provide an alternate access/egress. In regard to possible issues with access/egress, consideration has been given to the provisions of Isolated Subdivision as detailed in 5.1.1 of PBP, 2019.

### **3.1.3 Services - Water, Gas and Electricity**

As set out in NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019, developments in bushfire prone areas must maintain a water supply for firefighting purposes.

Electricity supply is available and will be connected to the subject site. It is assumed the power lines will be underground.

Reticulated water supply is not available. It is recommended that a minimum 30,000 litre water supply for firefighting be provided in accordance with PBP, 2019 to the existing dwellings and the proposed dwellings, as seen in **Table 6**.

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

**Table 6**

Table 5.3c			
	Performance Criteria	Acceptable Solutions	Comment
<b>W A T E R  S U P P L I E S</b>	<b>The intent may be achieved where:</b>		
	Inadequate water supplies are provided for firefighting purposes	<ul style="list-style-type: none"> <li>• Reticulated water supply is to be provided to the development where available.</li> <li>• A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.</li> <li>• Static water supplies shall comply with Table 5.3d of the NSW Planning for Bushfire Protection 2019.</li> </ul>	<p>Not available</p> <p>Static water supply required</p> <p>To comply</p>
	Water supplies are located at regular intervals The water supply is accessible and reliable for firefighting operations	<ul style="list-style-type: none"> <li>• Fire hydrant, spacing, design and sizing complies with the relevant clauses of the Australian Standard AS 2419.1 – 2005.</li> <li>• Hydrants are not located within any road carriageway.</li> <li>• Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter road.</li> </ul>	<p>N/A</p> <p>N/A</p> <p>N/A</p>

# Appendix 5 - Bushfire Assessment

	Flows and pressures are appropriate	<ul style="list-style-type: none"> <li>• Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.</li> </ul>	N/A
	The integrity of the water supply is maintained	<ul style="list-style-type: none"> <li>• All above ground water service pipes are metal, including and up to any taps.</li> <li>• Above ground water storage tanks shall be of concrete or metal.</li> </ul>	To comply  To comply
<b>E L E C T R I C I T Y</b>	<p>Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings</p> <p>Regular inspection of lines is undertaken to ensure they are not fouled by branches</p>	<ul style="list-style-type: none"> <li>• Where practical, electrical transmission lines are underground.</li> <li>• Where overhead electrical transmission lines are proposed: <ol style="list-style-type: none"> <li>1. Lines are installed with short pole spacing (30 metres) unless crossing gullies, gorges or riparian areas; and</li> <li>2. No part of a tree is closer to a power line than the distance set out in ISSC3 "Guideline for Managing Vegetation near Power Lines.</li> </ol> </li> </ul>	To comply
<b>G A S  S E R V I C E S</b>	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	<ul style="list-style-type: none"> <li>• Reticulated or bottle gas is installed and maintained in accordance with AS 1596:2014 – The storage and handling of LP Gas, the requirements of relevant authorities and metal piping is to be used.</li> <li>• All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.</li> <li>• Connections to and from gas cylinders are metal.</li> <li>• Polymer-sheathed flexible gas supply lines are not used.</li> <li>• Above ground gas service pipes are metal, including and up to any outlets.</li> </ul>	To comply

# Appendix 5 - Bushfire Assessment

**Table 7**

<b>S T A T I C  W A T E R  S U P P Y</b>	<p>A static water supply is provided for firefighting purposes in areas where reticulated water is not available.</p>	<ul style="list-style-type: none"> <li>Where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>A connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 65mm Storz outlet with a ball valve is fitted to the outlet;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Ball valve and pipes are adequate for water flow and are metal;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Supply pipes from tank to ball valve have the same bore size to ensure flow volume;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>A hardened ground surface for truck access is supplied within 4m;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Above ground tanks are manufactured from concrete or metal;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Raised tanks have their stands constructed from non-combustible material or bush fire resisting timber (See Appendix F of AS3959);</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Unobstructed access can be provided at all times;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Underground tanks are clearly marked;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>All exposed water pipes external to the building are metal, including any fittings;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bushfire attack; any hose and</li> </ul>	To comply

# Appendix 5 - Bushfire Assessment

		<p>reel for firefighting connected to the pump shall be 19mm internal diameter; and</p> <ul style="list-style-type: none"><li>• Fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005.</li></ul>	
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## **3.1.4 Landscaping**

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

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

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

Appendix 4 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019, contains standards that are applicable to the provision and maintenance of Asset Protection Zones.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

## **3.2 Construction of Buildings**

### **3.2.1 General**

The relevant Bushfire Attack Level and Construction Requirements have been determined in accordance with PBP, 2019 and AS 3959 (2018).

### **3.2.2 AS3959 – 2018, PBP 2019, Construction of Buildings in Bushfire Prone Areas**

The following construction requirements in accordance with AS 3959 – 2019 Construction of Buildings in Bushfire Prone Areas and PBP 2019 is required for the bushfire attack categories.

**Table 8**

Bushfire Attack Level (BAL)
BAL - LOW No construction requirements under AS 3959-2018
BAL - 12.5
BAL - 19
BAL - 29
BAL - 40
BAL - FZ

BAL contour lines and photos can be seen in **Appendix 2**.

## 4.0 ISOLATED SUBDIVISION PROVISIONS

With regards to the no alternate access, consideration has been given to 5.1.1 of Planning for Bush Fire Protection (Isolated Subdivision).

In regards to Isolated Subdivision:

- Larger APZs outside of the range prescribed for in PBP and increased Bush Fire Attack Level (BAL) to proposed buildings to create a safer area for occupants and fire fighters remaining on site.

The factors of safety have been considered with respect to the vegetation and slope analysis as can be seen in the hazard section.

- Firefighting water supply and associated firefighting equipment (ie pump and hose for each dwelling in addition to any reticulated supply).

A 30,000 litre water supply in accordance with PBP, 2019 and RFS Fast Fact 3/08 is recommended with a pump and hose reel to be provided to both the existing and the proposed dwelling, as detailed above to ensure a water supply and firefighting infrastructure in times of fire.

## 5.0 EXISTING DWELLINGS

As detailed in PBP, 2019 with regards to existing dwellings it is recommended that the existing dwellings be upgraded to provide ember protection and water supplies for firefighting.

The recommendations with respect to water supply has been previously detailed in the report and it is further recommended that the dwellings are upgraded in accordance with the RFS document *Upgrading of Existing Buildings*. **Appendix 4**.

## 6.0 STRATEGIC PLANNING

Table 4.2.1 of Planning for Bush Fire Protection, 2019 nominated issues with respect to the Strategic Planning considerations.

# Appendix 5 - Bushfire Assessment

**Table 9**

Issue	Detail	Assessment Considerations
<b>Bushfire Landscape Assessment</b>	A bushfire landscape assessment considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape	a) The bushfire hazards in the surrounding area includes: <ul style="list-style-type: none"> <li>• Vegetation</li> <li>• Topography</li> <li>• Weather</li> </ul> b) The potential fire behaviour that might be generated based on the above;           c) Any history of bushfire in the area,           d) Potential fire runs into the site and the intensity of such fire runs.
<b>Land Use Assessment</b>	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses	a) The risk profile of different areas of the development based on the above landscape study;           b) The proposed land use zones and the resultant permitted land uses;           c) The most appropriate siting of different land uses based on risk profiles within the site (i.e not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and           d) The impact of the siting of these uses on APZ provision.
<b>Access and Egress</b>	A study of the existing and proposed road networks both within and external to the masterplan area or site layout	a) The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile;           b) The location of key access routes and direction of travel; and           c) The potential for development to be isolated in the event of a bushfire.
<b>Emergency Service</b>	An assessment of the future impact of new development on emergency services provision	a) Consideration of the increase in demand for emergency services responding to a bushfire emergency (including the need for new stations/bridges); and           b) Impact on the ability of emergency services to carry out fire suppression in a bushfire emergency.
<b>Infrastructure</b>	An assessment of the issues associated with infrastructure provision	a) The ability of the reticulated water system to deal with major bushfire events (particularly in terms of water pressure); and           b) life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.

# Appendix 5 - Bushfire Assessment

<b>Adjoining Land</b>	The impact of new development on adjoining landowners and their ability to undertake bushfire management	a) Consideration of the implications of a change in land use on adjoining land including; <ul style="list-style-type: none"><li>• The ability of adjoining and nearby land to carry a bushfire; and</li><li>• Consideration of increased pressure on adjoining landowners to introduce or increase Bushfire Planning Methods through the implementation of Bushfire Management Plans as a result of the changes in land use.</li></ul>
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**Bush Fire Landscape Assessment.** The adjacent areas to the north, south and west are of similar vegetation types.

There is residential development to the east of the sites.

The larger hazards include the forest to the west approximately 700m from No 89 and the Coffs Regional Park approximately 700m from No 28.

It is recommended that the adjoining development will provide a buffer from the larger hazards as detailed.

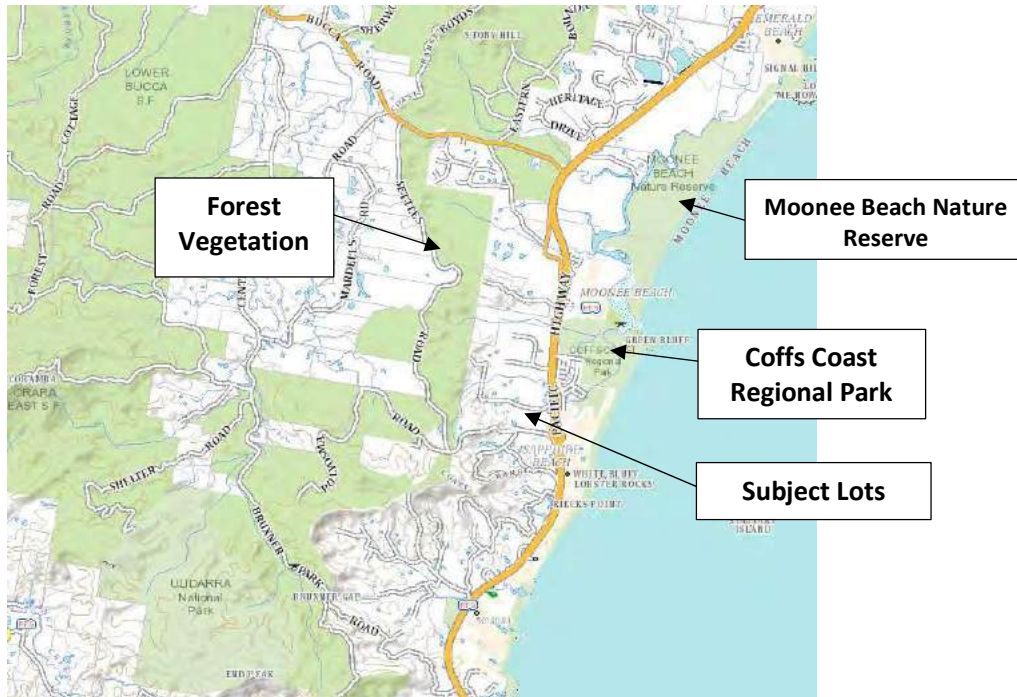
**Figure 5**





# Appendix 5 - Bushfire Assessment

**Figure 6**



- a. **Land Use Assessment.** The sites proposed are equal distance to the road or closer to the road than the existing development. There are no Special Fire Protection Purpose uses identified in the proposal.
- b. **Access and Egress.** There is no alternate egress in Sugarmill Road and there are only three (3) new dwellings proposed, however the report has considered the requirements of Isolated Subdivision as detailed in 5.1.1 of PBP 2019.

With regards to the access/egress there is access and egress available beyond the formed road via the road reserve.

**Photo 1 – Road adjacent to No 28 and No 35**



**Photo 2 – Road to No 89**



**Photo 3 – Road entry to Sugarmill**



- c. **Emergency Services.** It is noted that only three (3) x dwellings are proposed.
- d. **Infrastructure.** The Consultant Planner advises that initial discussions with Council have not indicated infrastructure issues.
- e. **Adjoining Land.** It is not expected that there will be any bushfire implications on the adjoining land. The ability of the adjoining land to carry a bush fire will be reduced due to the additional APZ's.

## 7.0 OTHER CONSIDERATIONS

**Table 10**

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

## 8.0 RECOMMENDATIONS

The following recommendations are considered to be integral to this bush fire risk assessment:

1. An Asset Protection Zones as detailed in Section 3.1.1 of this report are to be provided. The minimum Asset Protection Zones are detailed as BAL 29 in the contour plan.
2. Access and Egress is to be provided as detailed in Section 3.1.2 of this report is to be provided.
3. Services as detailed in Section 3.1.3 of this report is to be provided.
4. Adopt landscaping principles in accordance with Section 3.1.4 of the NSW Rural Fire Services, PBP, 2019.
5. Proposed dwellings are constructed in consideration of BAL Contour Lines and constructed to appropriate BAL's.
6. Existing dwellings are upgraded in accordance with this report.

## 9.0 CONCLUSION

It is suggested that with the implementation of this report, and its recommendations, that the bushfire risk is manageable and will be consistent with the acceptable bushfire protection measure solutions, provided for in Section 4.3.5 of NSW Rural Fire Services, PBP, 2019.

It is noted that with respect to the rezoning there is an increase in density but we are achieving a better outcome with the upgrades to the existing dwellings and the rationalization in Asset Protection Zones (APZ) across the three (3) subject lots.

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

### Assumptions

1. For a satisfactory level of bushfire safety to be achieved, regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.
2. There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
3. The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.

### Limitations

1. The data, methodologies, calculations and conclusions documented within this report specifically relate to the proposed planning rezoning and must not be used for any other purpose.
2. A reassessment will be required to verify consistency with this assessment if there are any alterations and/or additions, or changes to the risk reduction strategy contained in this report.

Regards



Tim Mecham  
Midcoast Building and Environmental

# Appendix 5 - Bushfire Assessment

## 10.0 REFERENCES

- NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019  
AS 3959-2018 ***Construction of Buildings in Bushfire Prone Areas***  
Keith David 2004, Ocean ***Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT***, Department of Environment and Conservation  
**NSW State Government** (1997) Rural Fires Act 1997  
NSW Rural Fire Service – ***Guideline for Bushfire Prone Land Mapping 2002***

# Appendix 5 - Bushfire Assessment

## APPENDIX 1: Rezoning Layouts No 28



# Appendix 5 - Bushfire Assessment

## No 35



# Appendix 5 - Bushfire Assessment

## No 89



# Appendix 5 - Bushfire Assessment

## APPENDIX 2: BAL Contour Lines No 28





# Appendix 5 - Bushfire Assessment

## No 35



# Appendix 5 - Bushfire Assessment

## No 89



# Appendix 5 - Bushfire Assessment

## No 28

**Photo 1 – Hazard to the north of the proposed lot**



**Photo 2 – Hazard to the west of the proposed lot**



**Photo 3 – Looking south to the strip of trees on the western boundary of No 28**



No 35

**Photo 4 – Forest hazard to the south**



**Photo 5 – Grassland hazard to the west**



**Photo 6 – Hazard to the north considered as similar to woodland**



# Appendix 5 - Bushfire Assessment

**No. 89**

**Photo 7 – Grassland hazard to the west**



**Photo 8 – Forest Hazard to the west**



**Photo 9 – Separation between forest hazard on No. 89 and hazard to the north**



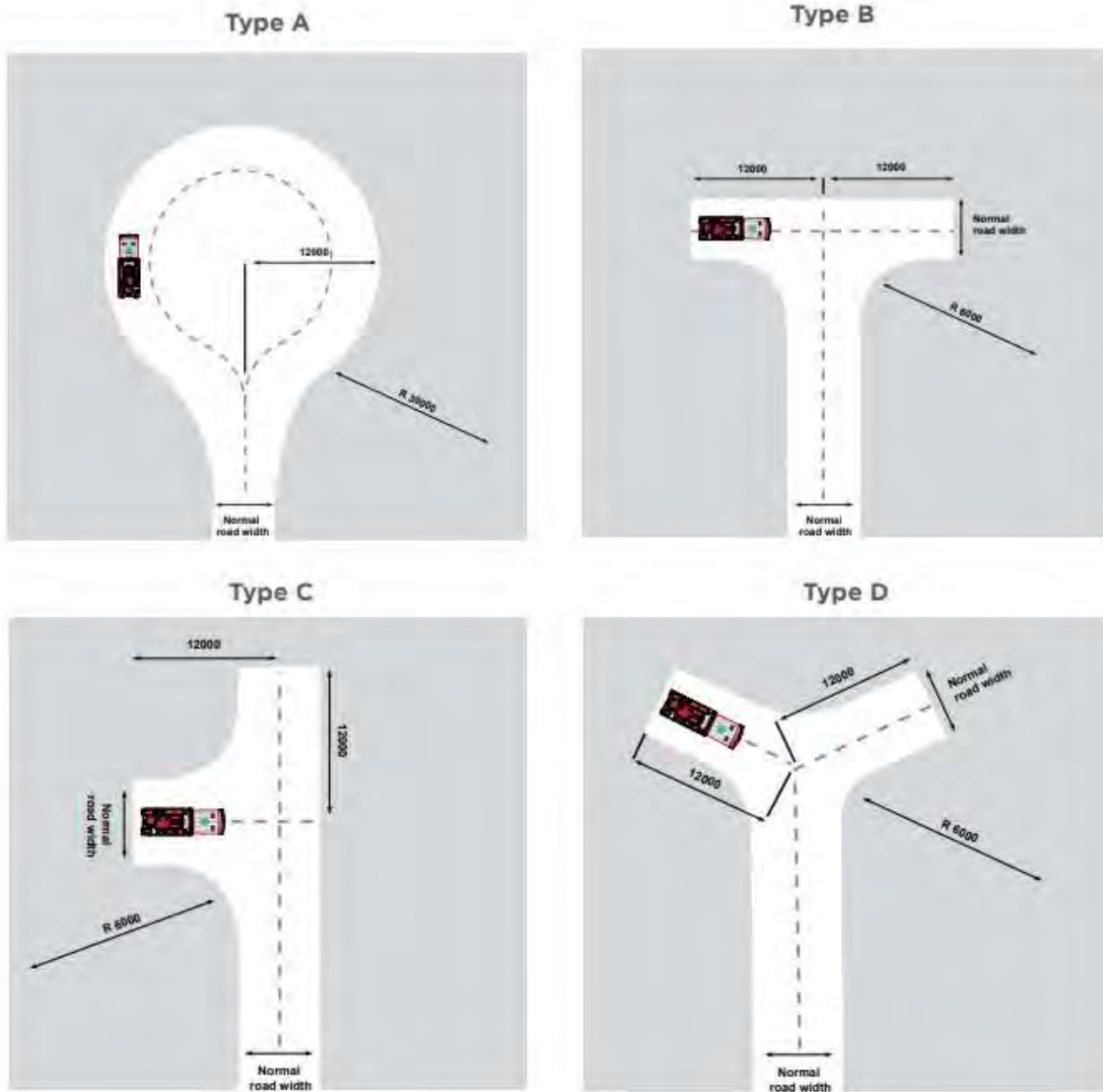
**Photo 10 – Grassland hazard to the east**



## APPENDIX 3 – Turning Head Options

**Figure A3.3**

Multipoint turning options.



## APPENDIX 4



# NSW RURAL FIRE SERVICE



## DEVELOPMENT ASSESSMENT & PLANNING

### Upgrading of Existing Buildings

WORKING TOWARDS A SAFER COMMUNITY



### INTRODUCTION

Bush fire is a major challenge for the community. It has been a natural part of our landscape for thousands of years and remains an ever-present threat.

Due to historic settlement patterns and the need to provide housing for people, development has occurred in areas that are bush fire prone placing lives and property at risk.

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

Through a working relationship with local Councils and the NSW Department of Planning, the NSW RFS has been able to refine and implement bush fire protection for new developments through the NSW

planning system. Since the introduction of these planning and building regulations in August 2002, all new development on bush fire prone land in NSW must comply with the requirements of *Planning for Bush Fire Protection 2006* and Australian Standard 3959-2009 – *Construction of buildings in bushfire-prone areas* (AS3959).

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

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

BUSH FIRE INFORMATION LINE  
**1800 NSW RFS**  
1800 679 737  
[www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)

NSW RURAL FIRE SERVICE DEVELOPMENT ASSESSMENT 2021

1/4



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

The guide provides a range of options that homeowners may wish to consider in determining the level of protection appropriate for their circumstances and risk. These include minimal protection measures such as basic ember proofing, establishment of Asset Protection Zones (APZs) to higher level protection measures such as re-building or upgrading construction elements of the building.

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

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

For further assistance, details regarding suitably qualified consultants can be found on the NSW RFS website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)

## IS UPGRADING MANDATORY?

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

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

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

## UPGRADE PROVISIONS

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

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

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





# Appendix 5 - Bushfire Assessment



BUILDING ELEMENT	MINIMAL PROTECTION MEASURES	ADDITIONAL PROTECTION MEASURES
<b>GENERAL</b>	Seal all gaps (>3mm) around the house (excluding subfloor) with: <ul style="list-style-type: none"> <li>• appropriate joining strips;</li> <li>• flexible silicon based sealant; or</li> <li>• mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.</li> </ul>	<ul style="list-style-type: none"> <li>• Install a bush fire sprayer system. (Please contact a bush fire consultant or relevant industry expert to discuss options)</li> </ul> Seal all gaps (>3mm) around the house (excluding subfloor) with: <ul style="list-style-type: none"> <li>• appropriate joining strips</li> <li>• flexible silicon based sealant; or mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.</li> </ul>
<b>WALLS</b>	Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding when they are being replaced for maintenance or other reasons.	<ul style="list-style-type: none"> <li>• Replace wall materials with non-combustible materials</li> <li>• Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding.</li> </ul>
<b>SUBFLOOR</b>	Removal of combustible materials and keeping areas clear and accessible.	<ul style="list-style-type: none"> <li>• Enclose subfloor with non-combustible material.</li> </ul>
<b>DOORS</b>	Install weather strips, draught excluders or draught seals at the base of side-hung doors.	<ul style="list-style-type: none"> <li>• Replace external doors with non-combustible or solid timber doors with minimum thickness of 35mm.</li> <li>• Replace or over-clad parts of door frames less than 400mm above the ground, decks and similar elements or fittings with non-combustible material.</li> <li>• Install weather strips, draught excluders or draught seals at the base of side-hung doors.</li> </ul>
<b>VENTS &amp; WEEPHOLES</b>	Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.	<ul style="list-style-type: none"> <li>• Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.</li> </ul>
<b>ROOFS</b>	Seal around roofing and roof penetrations with a non-combustible material.  Install sarking with a flammability index of not more than 5 beneath existing roofing when it is being replaced for maintenance or other reasons. If installed, gutter and valley leaf guards shall be non-combustible.	<ul style="list-style-type: none"> <li>• Replace fascia and roof materials with non-combustible materials.</li> <li>• Seal around roofing and roof penetrations with a non-combustible material.</li> <li>• Install sarking with a flammability index of not more than 5 beneath existing roofing.</li> <li>• If installed, gutter and valley leaf guards shall be non-combustible.</li> </ul>
<b>WINDOWS</b>	Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows	<ul style="list-style-type: none"> <li>• Installing appropriately tested shutters to doors and windows</li> <li>• Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and windows</li> <li>• Replacing glass with toughened or laminated safety glass</li> <li>• Replace overhead glazing with 'grade a' safety glass</li> </ul>
<b>EXTERNAL STRUCTURES</b>		<ul style="list-style-type: none"> <li>• External structures to be located &gt;10 metres from the main dwelling.</li> </ul>
<b>DECKING</b>		<ul style="list-style-type: none"> <li>• Replace decking with non-combustible material</li> </ul>



## OTHER REQUIREMENTS

### ASSET PROTECTION ZONES

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

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

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

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

### SERVICES

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

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

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

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

### LANDSCAPING

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

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

The following additional information relating to landscaping is available at [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au):

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

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 For more information please visit [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)  
or contact Development Assessment & Planning on **8741 5175**  
or email [development.assessment@rfs.nsw.gov.au](mailto:development.assessment@rfs.nsw.gov.au).

---

NSW RFS DEVELOPMENT ASSESSMENT 0914 4/4

# Biodiversity Assessment

## Sugarmill Road, Sapphire Beach – Proposed Rezoning



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T 02 6687 7666

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T 02 6651 7666

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Prepared for: Grahame Fry  
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## Appendix 6 - Biodiversity Assessment

<i>UPR</i>	<i>Description</i>	<i>Date Issued</i>	<i>Issued By</i>
3978-1003	First issue - draft	29 October 2021	Jessica O'Leary
3978-1013	Second issue - final	4 November 2021	Jessica O'Leary

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# Executive Summary

### The Site and Proposal

GeoLINK has been engaged to prepare a Biodiversity Assessment Report (BAR) to inform a rezoning planning proposal for the following three properties on Sugarmill Road, Sapphire Beach (the site).

- 28 Sugarmill Road - Lot 12 DP 243972 (PN 1549900) (2.031 hectares (ha))
- 35 Sugarmill Road - Lot 91 DP 786155 (PN 129896) (2.366 ha)
- 89 Sugarmill Road - Lot 17 DP 249273 (PN 1461200) (2.032 ha)

The combined property area 6.429 ha with the land currently managed as part of existing residential development which includes prevalent landscape plantings and regularly mown/ slashed grassland. Areas of intact native eucalypt forest occur on the periphery of each Lot.

The site is currently zoned RU2 (Rural Landscape) under the Coffs Harbour Local Environmental Plan (CHLEP) 2013.

### Biodiversity Value Land

Of the three subject Lots, Lot 12 is depicted as Biodiversity Value (BV) land, the remaining Lots (17 and 91) are not mapped as BV land.

It is noted that any impact on BV mapped land would trigger the Biodiversity Offset Scheme (BOS) and the need for a Biodiversity Development Assessment Report (BDAR) at the development application stage. Based on the concept layout for rezoning it is unlikely that future development of these lots would trigger entry into the BOS and require a BDAR.

### Results of Field Assessment

Results of field assessment are as follows:

- No threatened flora species listed under the *Biodiversity Conservation Act 2016* or *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* occur at the site.
- No TECs listed under the BC or EPBC Act occur at the site.
- No State Environmental Planning Policy Coastal Management (2018) (littoral rainforest or coastal wetlands) (DPIE, 2021), over-cleared vegetation types, high value arboreal habitats or old growth forests (CHCC, 2021) occur at the site.
- Four discreet areas of native vegetation are recommended for rezoning as E2 Environmental Conservation.
- Koala (*Phascolarctos cinereus*) scats were detected beneath three Swamp Mahogany at Lot 17. Koalas are listed as *Vulnerable* under both the BC and EPBC Act.
- The site provides a range of good quality potential fauna habitats including native vegetation, hollow-bearing trees and aquatic habitats. While no significant habitat for threatened fauna occurs at the site, the site provides potential habitat for a number of locally occurring threatened fauna species.

### Potential Impacts

The rezoning (and future development) of the site may result in the following potential biodiversity impacts, which based on the subdivision concept design may include:

## Appendix 6 - Biodiversity Assessment

- Minor loss of native vegetation
- Minor loss of preferred Koala feed trees
- Minor loss of HBTs
- Minor intensification of human occupation with regard to native fauna (e.g. minor increase in traffic movements).
- Introduction of weed species during the construction period.
- Disturbance to fauna during construction and ongoing occupation.
- Fauna roadkill from a minor increase in vehicular traffic.

### Recommendations

To minimise biodiversity impacts which may result from the proposed rezoning and future development of the site, the following measures should be considered:

- Proposed E2 zoned areas should be adopted to provide future development controls within areas of consolidated native vegetation and threatened species habitat.
- Clearing of native vegetation (mapped PCTs) should be avoided in the final design of subdivision with building envelopes and associated infrastructure (including boundary fences) to be located within cleared areas.
- Where native vegetation, tree hollows and/or Koala habitat requires removal, compensation will be required as per the CHDCP.
- Vegetation Management Plans (VMPs) should be required as a condition of consent for those lots including future E2 zoned land. The VMPs should include measures to protect and enhance native vegetation/ habitat within all E2 zoned land.

### Statutory Matters

Review of statutory instruments relevant to the proposed rezoning was completed as follows:

- *State Environmental Planning Policy (SEPP) (Koala Habitat Protection) 2021* applies to all LGAs listed under Schedule 1, which includes the Coffs Harbour LGA. Where an approved Comprehensive Koala Plan of Management (CKPoM) is in place the SEPP defers to this plan. The *Coffs Harbour City Koala Plan of Management (CHCKPoM)* was prepared in accordance with the requirements of the SEPP and introduced in January 1995. Koala Habitat mapping indicates no mapped primary Koala habitat occurs at the site however areas of secondary and tertiary habitat are associated with vegetation on the site. While impacts to mapped Koala habitat is considered unlikely based on the current concept design, compensatory plantings as outlined in the Coffs Harbour DCP would be required for impacts to secondary Koala habitat.
- *Coffs Harbour Development Control Plan - (DCP - Part E1.2 (1) of the DCP outlines compensatory planting requirements for the removal of high conservation value vegetation. According to Part E1.2 (Compensatory Requirements) of the DCP, some of the vegetation at the subject site is considered high conservation value habitat, although unlikely to be impacted by the proposal. Compensatory planting is triggered by removal of the following habitat types on site:*
  - Hollow-bearing trees - 1:20 replacement rate required.
  - Secondary Koala Habitat (not adjacent to primary koala habitat) - 1:3 replacement rate required
  - Riparian Zones - 1:10 replacement rate required
  - Steep Land - 1:3 replacement rate required.
- *Biodiversity Conservation Act 2016 (BC Act):* As part of any future development application the following additional reporting would be required:



## Appendix 6 - Biodiversity Assessment

- For those new lots which impact on BV mapped land and/ or require clearing of over 0.25 ha the BOS will be triggered and a BDAR will be required. It is noted that this includes impacts associated with APZs and future boundary/ fence lines. The BDAR determines biodiversity credits which are required to be purchased by the proponent to offset impacts of the development.
  - For those lots which don't trigger the BOS a revised Biodiversity Assessment Report (BAR) will be required to assess impacts of the final subdivision design. This report would be required to include updated statutory assessments including tests of significance (five-part tests) for potentially impacted threatened species/ TECs as required under the BC Act.
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act): review of Matters of Environmental Significance (MNES) listed in the Act indicates that rezoning and subsequent development of the site is unlikely to significantly affect threatened species or communities listed in the EPBC Act.

# 1. Introduction

## 1.1 Background

GeoLINK has been engaged to prepare a Biodiversity Assessment Report (BAR) to inform a rezoning planning proposal for three properties on Sugarmill Road, Sapphire Beach (the site).

The site locality is shown at **Illustration 1.1**.

This assessment has been prepared to:

- Identify any ecological constraints to the proposed rezoning (e.g. habitat for threatened species or communities listed in the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- Identify any significant trees or fauna habitat features of biodiversity importance; and
- Examine the proposal against relevant statutory requirements.

GeoLINK previously provided advice, which identified biodiversity values/ constraints on the site including areas of High Environmental Value (HEV land) to inform the design of the rezoning and future subdivision including the nomination of suitable land for Environment zoning.

## 1.2 The Site

The site comprises the following three properties:

- 28 Sugarmill Road - Lot 12 DP 243972 (PN 1549900) (2.031 hectares (ha))
- 35 Sugarmill Road - Lot 91 DP 786155 (PN 129896) (2.366 ha)
- 89 Sugarmill Road - Lot 17 DP 249273 (PN 1461200) (2.032 ha)

The combined property area 6.429 ha and is currently managed as part of existing residential development which includes prevalent landscape plantings and regularly mown/ slashed grassland. Areas of intact native eucalypt forest occur on the periphery of each Lot.

The site is currently zoned RU2 (Rural Landscape) under the Coffs Harbour Local Environmental Plan (CHLEP) 2013.

Photographs of the site are provided at **Appendix A**.

## 1.3 Biodiversity Value Land

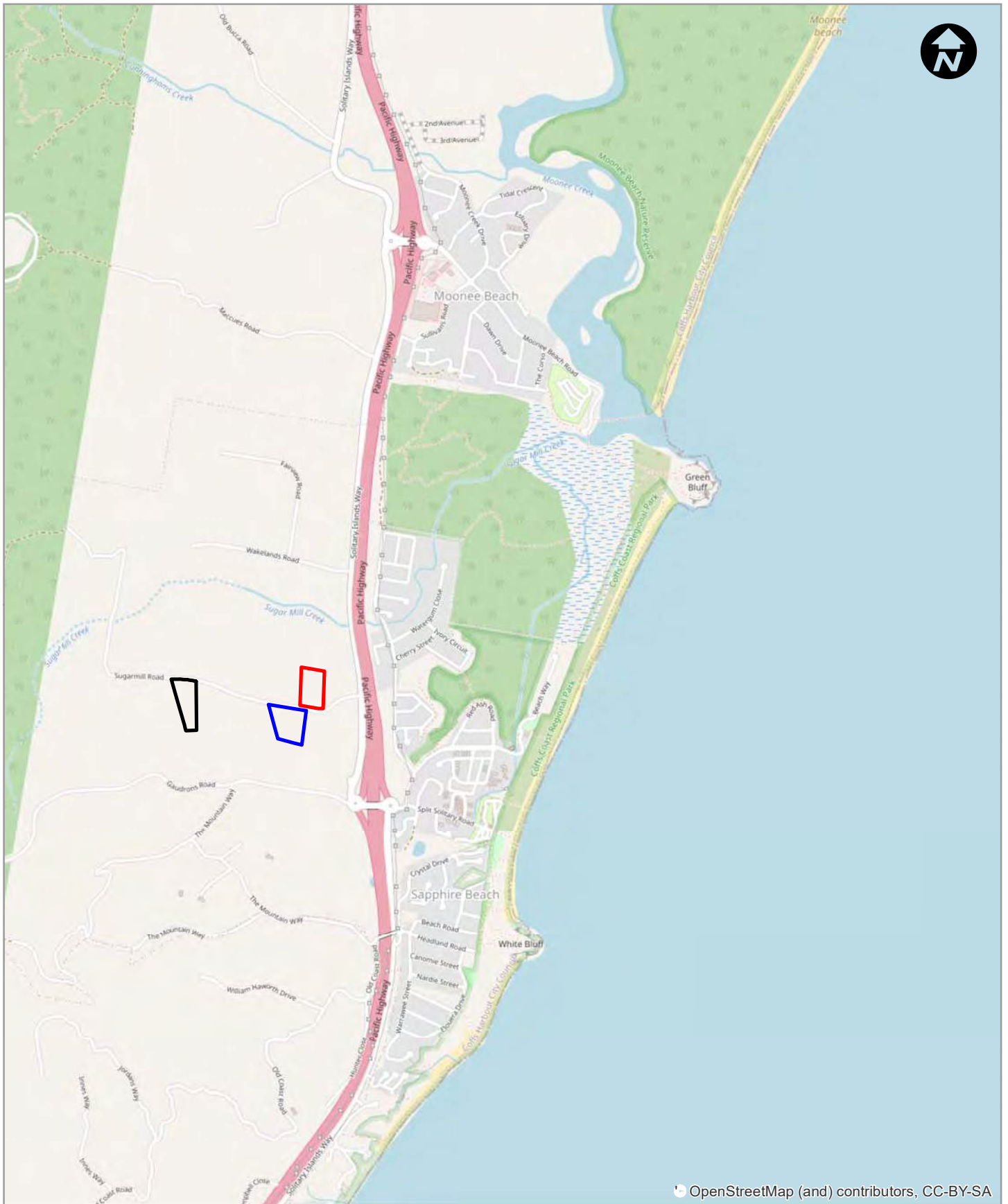
Of the three subject Lots, Lot 12 is depicted as Biodiversity Value (BV) land (refer to **Illustration 1.2**, the remaining Lots (17 and 91) are not mapped as BV land.

It is noted that any impact on BV mapped land would trigger the Biodiversity Offset Scheme (BOS) and the need for a Biodiversity Development Assessment Report (BDAR) to be prepared at the development application stage. Based on the concept layout for rezoning it is unlikely that future development of Lot 12 would impact on an area of BV mapped land.

### 1.4 The Proposal

The proposal is for rezoning of the subject land from RU2 Rural Landscape to R5 Large Lot Residential and E2 Environmental Conservation where appropriate. The proposal also seeks to amend the minimum lot size from 40 ha to permit the creation of additional lots with a minimum lot size of 0.6 hectares or less. A concept design for the proposed subdivision is shown in **Illustration 1.3**.

# Appendix 6 - Biodiversity Assessment



OpenStreetMap (and) contributors, CC-BY-SA

GDA 1994 MGA Zone 56

## LEGEND

- 28 Sugarmill Road
- 35 Sugarmill Road
- 89 Sugarmill Road



Site Locality - Illustration 1.1

# Appendix 6 - Biodiversity Assessment

513200

513800

6656600

6656600

6656400

6656400



513200

513500

513800

GDA 1994 MGA Zone 56

- LEGEND**
- 28 Sugarmill Road
  - 35 Sugarmill Road
  - 89 Sugarmill Road
  - Cadastre
  - Biodiversity Values mapping

0 40 Metres



# Appendix 6 - Biodiversity Assessment



- LEGEND**
- Lot boundary
  - Cadastre
  - Watercourse
  - Concept plan**
  - BAL 12.5
  - BAL 19
  - BAL 29
  - Building envelope
  - Lot subdivision

0 20 Metres

513700 513800 513900 514000 GDA 1994 MGA Zone 56

The Site and Subdivision Concept  
 28 Sugarmill Road  
 Illustration 1.3 - Sheet 1 of 3

Appendix 6 - Biodiversity Assessment

513600

513700

513900



LEGEND

- Lot boundary
- Cadastre
- Watercourse
- Concept plan**
- BAL 12.5
- BAL 19
- BAL 29
- Building envelope
- Lot subdivision

Sugarmill Road

Lot 12  
DP243972

Lot 91  
DP786155



6656400

6656400

6656300

6656300

513600

513700

GDA1994 MGA Zone 56

513900

0 20 Metres



The Site and Subdivision Concept  
35 Sugarmill Road  
Illustration 1.3 - Sheet 2 of 3

# Appendix 6 - Biodiversity Assessment



- LEGEND**
- Lot boundary
  - Cadastre
  - Watercourse
  - Concept plan**
  - BAL 12.5
  - BAL 19
  - BAL 29
  - Building envelope
  - Lot subdivision



Lot 17  
DP249273

Sugarmill Road



The Site and Subdivision Concept  
89 Sugarmill Road  
Illustration 1.3 - Sheet 3 of 3



# 2. Methodology

## 2.1 Desktop Review

The following desktop review was completed prior to field assessment:

- A search of the BioNet Wildlife Atlas (10 km x 10 km grid centred on the site); completed May 2021.
- A search of the Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES) within a 5 km radius of the site; completed May 2021.
- Review of Biodiversity Value mapping (as per the OEH Biodiversity Values Map and Threshold Tool).

Results of database searches are attached at **Appendix B**.

## 2.2 Field Assessment

Field assessment was completed on the 2<sup>nd</sup> and 3<sup>rd</sup> June 2021, using the following methodology:

- Walking survey to identify/ map native vegetation types and identify threatened flora or ecological communities listed in the BC Act or EPBC Act.
- GPS location of isolated paddock trees occurring on the site.
- The Koala Spot Assessment Technique (Phillips and Callaghan, 2011) was employed at the site with three SAT plots surveyed, one on each existing lot.
- Identification of hollow-bearing trees (HBTs) (or other significant habitat features) and potential habitat for threatened fauna.
- Opportunistic fauna survey.

Given that the site is relatively disturbed and generally lacking high quality vegetation/ fauna habitat, the scope of assessment is considered adequate.

## 3. Flora Results

### 3.1 Desktop Analysis

#### 3.1.1 Database Search Results

BioNet search results identified records of 17 threatened flora species (including seven species also listed in the EPBC Act) and up to 12 threatened ecological communities (eight of which are listed under the EPBC Act) within the locality. PMST results identified habitat for 19 threatened flora species and four threatened ecological communities within the locality. Search results are provided at **Appendix B**.

### 3.2 Site Features

#### 3.2.1 Vegetation

Whilst the site has been subject to historical selective clearing, forested parts of the site comprise a mature native canopy including several old growth trees. Native vegetation communities occurring on the site are summarised in **Table 3.1** with vegetation mapping provided at **Illustration 3.1**. Vegetation communities are aligned with plant community types (PCTs) in the BioNet Vegetation Classification based on characteristic species and geographical distribution.

A flora inventory is provided at **Appendix C**.

**Table 3.1 Vegetation Communities**

Relevant Lot number	Plant Community Type Name	Description
Lots 12 and 17	PCT 827 Flooded Gum – Tallowwood – Brush Box moist open forest of the coastal ranges of the North Coast	Associated with the low-lying parts of Lots 12 and 17.  Dominant canopy trees comprise Flooded Gum ( <i>Eucalyptus grandis</i> ), Brush Box ( <i>Lephostemon confertus</i> ), Tallowwood ( <i>Eucalyptus microcorys</i> ) and Turpentine ( <i>Syncarpia glomulifera</i> ). Mid-storey species comprise Scentless Rosewood ( <i>Synoum glandulosum</i> ), White Aspen ( <i>Acronychia oblongifolia</i> ), Sweet Pittosporum ( <i>Pittosporum undulatum</i> ), Large Mock-Olive ( <i>Notelaea longifolia</i> ) and Willow Bottlebrush ( <i>Callistemon salignus</i> ). Groundcover and vine species comprise Rainbow Fern ( <i>Calochlaena dubia</i> ), Mat Rush ( <i>Lomandra longifolia</i> ), Rasp Fern ( <i>Doodia aspera</i> ), Native Yam ( <i>Dioscorea transversa</i> ) and Climbing Guinea Flower ( <i>Hibbertia scandens</i> ).
Lot 91	PCT 695 Blackbutt – Turpentine – Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion	Occurs in the north and south of Lot 91 connected by a planted row of native and introduced trees. The understorey is removed from the patch closer to the road and maintained by mowing.  Dominant canopy trees comprise Blackbutt ( <i>Eucalyptus pilularis</i> ), Turpentine and Tallowwood with occasional Red Mahogany ( <i>Eucalyptus resinifera</i> ), Grey Ironbark ( <i>Eucalyptus siderophloia</i> ), Small-fruited Grey Gum ( <i>Eucalyptus propinqua</i> ) and Pink Bloodwood ( <i>Corymbia gummifera</i> ). The Mid-storey comprises Sweet Pittosporum, Large Mock-Olive, Scentless Rosewood, Forest Oak ( <i>Allocasuarina torulosa</i> ), Orange Thorn ( <i>Pittosporum multiflorum</i> ) and Bolwarra ( <i>Eupomatia laurina</i> ). Groundcover and vine species comprise Gristle Fern ( <i>Blechnum cartilagineum</i> ), Blue Flax-lily ( <i>Dianella caerulea</i> ), Blady grass ( <i>Imperata cylindrica</i> ), Lawyer Vine ( <i>Smilax australis</i> ),

## Appendix 6 - Biodiversity Assessment

Relevant Lot number	Plant Community Type Name	Description
		Climbing Guinea Flower and Sweet Morinda ( <i>Gynochthodes jasminoides</i> ).
All lots	Planted garden ornamentals comprising introduced and native species  Does not align with any PCT	Associated with the planted ornamental gardens generally surrounding the existing dwellings. Various planted trees and shrubs including Mango ( <i>Mangifera indica</i> ), Tibouchina ( <i>Tibouchina granulosa</i> ), Leopard Tree ( <i>Libidibia ferrea</i> ), various palms and a variety of fruit trees including Citrus spp.
Lot 89	Infestation of Cadaghi/ Slash Pine/ Lantana/ Winter Senna  Does not align with any PCT	A patch of forest occurs at the southern end of Lot 17 dominated by Cadaghi ( <i>Corymbia torelliana</i> ), Slash Pine ( <i>Pinus elliottii</i> ), Lantana and Winter Senna ( <i>Senna pendula</i> var. <i>glabrata</i> ) and Crofton Weed ( <i>Ageratina adenophora</i> ).
All lots	Mowed Grasslands  Does not align with any PCT	Associated with cleared areas of the site, dominated by introduced pasture grasses and herbaceous weeds including Vasey Grass ( <i>Paspalum urveilli</i> ), <i>Sporobolus</i> sp. Pigeon Grass ( <i>Setaria sphacelata</i> ) Broad-leaved Paspalum ( <i>Paspalum mandiocanum</i> ), Blue Billy Goat ( <i>Ageratum houstonianum</i> ), Cobblers Pegs ( <i>Bidens Pilosa</i> ) and Flat Weed ( <i>Hypochoeris radicata</i> ).

### 3.2.2 Threatened Flora

No threatened flora species listed under the BC Act or EPBC Act occur at the site.

### 3.2.3 Threatened Ecological Communities (TECs)

No TECs listed under the BC or EPBC Act occur at the site.

### 3.2.4 Other Vegetation Types

No *State Environmental Planning Policy Coastal Management (2018)* (littoral rainforest or coastal wetlands) (DPIE, 2021), over-cleared vegetation types, high value arboreal habitats or old growth forests (CHCC, 2021) occur at the site.

### 3.2.5 Weeds

A number of agricultural and environmental weeds occur as well as the following Priority Weeds as listed in the *Biosecurity Act 2015*:

- Lantana (*Lantana camara*).
- Bitou Bush (*Chrysanthemoides monilifera* subsp. *Rotundata*)

Relevant biosecurity duties must be enacted by land managers for weeds listed as Priority Weeds under the Biosecurity Act.

Weed species recorded at each site are shown in **Appendix C**.

### 3.2.6 Condition

Parts of the sites are highly modified and disturbed from historic clearing and ongoing residential maintenance. Areas of eucalypt forest associated with the site are in moderate to good condition however have been subject to selective logging and encroachment of introduced species where the mid-storey has been historically disturbed.



- LEGEND**
- Lot boundary
  - Cadastre
  - Biodiversity Value mapping (Swift Parrot - important habitat)
  - Proposed E2 Zone
  - Farm dam
  - Watercourse
- Concept plan**
- Building envelope
  - Lot subdivision
  - ✕ SAT plot 2
  - Secondary Koala habitat
  - Tertiary Koala habitat
  - Planted introduced and native garden ornamentals
  - Planted hedge of Blue Lilly Pilly
  - Grassland dominated by introduced pasture grasses and exotic herbs
- Plant Community Type**
- PCT 695 - Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
  - PCT 827 - Flooded Gum - Tallowwood - Brush Box moist open forest of the coastal ranges of the North Coast
  - Hollow-bearing tree
- Tree Inventory**
- Banana Leaf Fig
  - Cadaghi
  - Crepe Myrtle
  - Ficus Tree
  - Lemon Myrtle
  - Leopard Tree (Libidibia ferrea)
- Native to NSW**
- Cheese Tree
  - Flooded gum
  - Native Frangipani
  - Willow Bottlebrush

Species along south eastern boundary occur on adjoining property

Lot 12  
DP243972

Lot 91  
DP786155

Sugarmill Road



# Appendix 6 - Biodiversity Assessment



## LEGEND

- Lot boundary
- Cadastre
- Biodiversity Value mapping (Swift Parrot - important habitat)
- Proposed E2 Zone
- Watercourse
- Concept plan**
- Building envelope
- Lot subdivision
- x SAT plot 1
- Secondary Koala habitat
- Tertiary Koala habitat
- Planted introduced and native garden ornamentals
- Planted hedge of Blue Lilly Pilly
- Planted row of Lemon Scented Gum, Brush Box, Flooded Gum
- Grassland dominated by introduced pasture grasses and exotic herbs
- Plant Community Type**
- PCT 695 - Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
- PCT 827 - Flooded Gum - Tallowwood - Brush Box moist open forest of the coastal ranges of the North Coast
- Hollow-bearing tree
- Tree Inventory**
- African Tulip Tree
- Cadaghi
- Cocos Palm
- Grevillea sp ornamental
- Hibiscus sp ornamental
- Mango
- Red Powerpuff
- Native to NSW**
- Illawarra Flame Tree
- Snow-in-Summer
- Tuckeroo

Proposed lot access to be located along existing sealed access road, no impacts to vegetation within the proposed E2 zone are expected

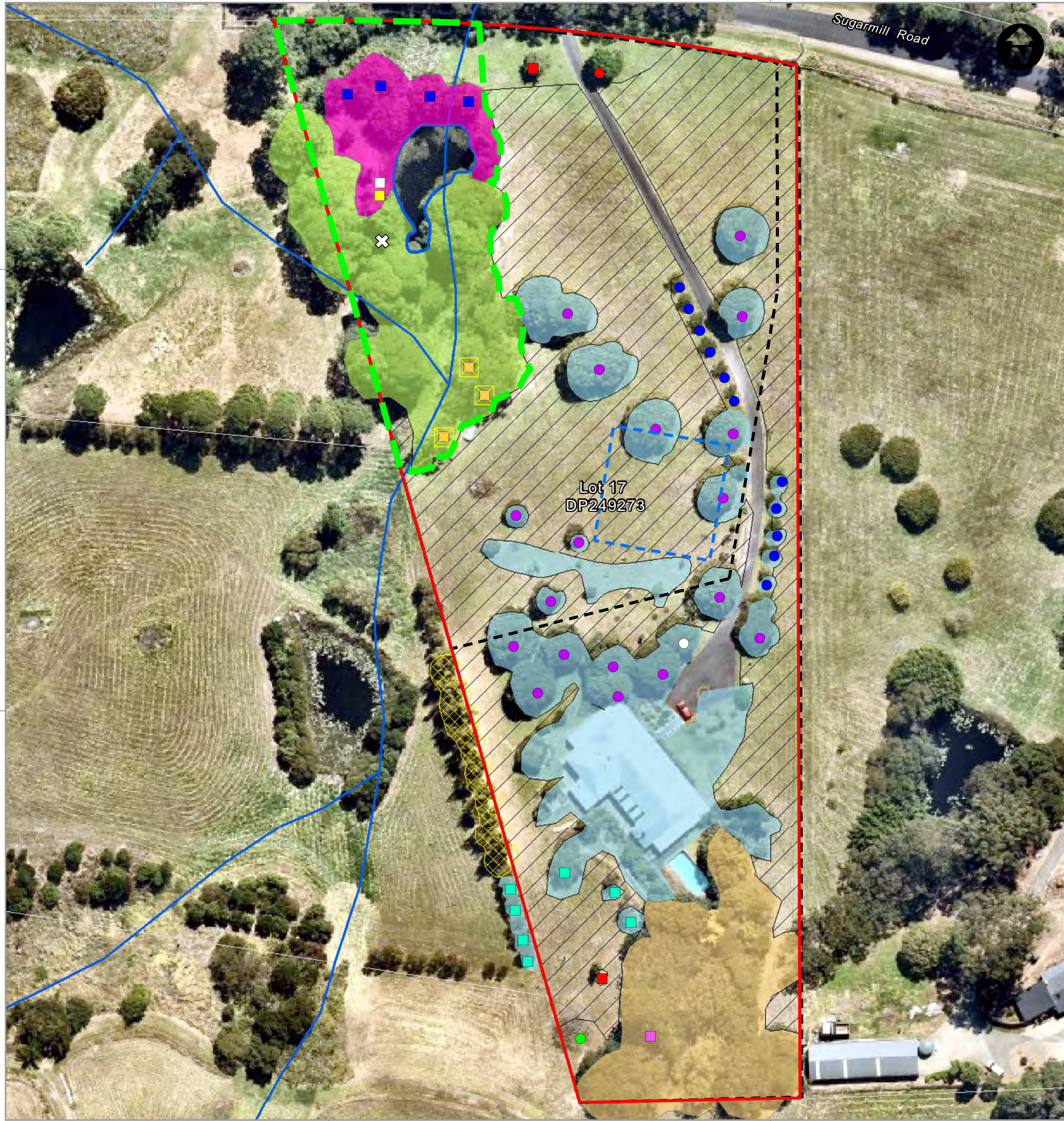
0 20 Metres



# Appendix 6 - Biodiversity Assessment

513200

Sugarmill Road



## LEGEND

- Lot boundary
- Cadastre
- Proposed E2 Zone
- Farm dam
- Watercourse
- Concept plan**
- Building envelope
- Lot subdivision
- Koala scats
- SAT plot 3
- Planted introduced and native garden ornamentals
- Planted native riparian species
- Planted row of Bamboo
- Grassland dominated by introduced pasture grasses and exotic herbs
- Infestation of Cadaghi/ Slash Pine/ Lantana/ Winter Senna
- Plant Community Type**
- PCT 827 - Flooded Gum - Tallowwood - Brush Box moist open forest of the coastal ranges of the North Coast
- Tree Inventory**
- Jacaranda
- Liquid Amber
- Mango
- Silky Oak
- Tibouchina
- Native to NSW**
- Blueberry Ash
- Giant Water Gum
- Hoop Pine
- Illawarra Flame Tree
- Planted Red Bottlebrush
- Swamp Mahogany
- Water gum

Lot 17  
DP249273

513200

513300

GDA 1994 MGA Zone 56

0 20 Metres



Biodiversity Constraints Mapping - 89 Sugarmill Road  
Illustration 3.1 - Sheet 3 of 3

## 4. Fauna Habitat Results

### 4.1 Desktop Analysis

#### 4.1.1 Database Search Results

BioNet search results identified records of 54 threatened fauna species (including 19 species also listed in the EPBC Act) within the locality. PMST results identified habitat for 82 threatened fauna species and 60 migratory fauna species within the locality (refer to search results at **Appendix B**).

### 4.2 Site Features

#### 4.2.1 Habitat Values

The site provides a range of good quality potential fauna habitats summarised as follows:

- *Myrtaceae* species occurring within forested areas provide nectar, pollen and foliage resources for a range of fauna species including birds, flying-foxes, gliders and invertebrates.
- Fruit forage resources from a range of mid-storey rainforest plants for frugivorous fauna species.
- Consolidated areas of vegetation which have connectivity to large areas of native forest within the broader locality for highly mobile species.
- Grassland areas which provide a general foraging resource for locally occurring birds or macropods.
- Swamp Mahogany and Tallowwood provide preferred foraging resources for Koalas.

A fauna inventory is provided at **Appendix D**.

#### 4.2.2 Hollow-bearing Trees (HBT)

Fourteen HBTs were located on the site (five at Lot 12 and nine at Lot 91, refer to **Illustration 3.1**). A moderate number of small to large sized hollows provide potential resources for hollow-obligate species such as nesting birds, arboreal mammals, reptiles and microbats including a range of threatened fauna species. Hollow-bearing tree data is shown in **Appendix E**.

No raptor nests were recorded at the site.

#### 4.2.3 Aquatic habitat

Lot 12: an unnamed tributary of Sugar Mill Creek flows through the northwest corner of Lot 12. A small farm dam also occurs along the western lot boundary.

Lot 17: contains a small farm which is fed by an ephemeral 2<sup>nd</sup> order drainage line.

These features would provide habitat for aquatic species including turtles, native fish, eels, amphibians and invertebrates and a drinking water resource for a range of fauna species.

### 4.3 Threatened Fauna

During SAT plot surveys Koala scats were detected at one site (Lot 17), beneath three Swamp Mahogany trees in the north-western corner of the site. Based on the small area of suitable habitat at the site the vegetation is most likely to provide opportunistic foraging resources and connectivity values through the landscape as opposed to core habitat values for Koalas. As per the CHCKPoM Secondary and Tertiary Koala habitat occurs at the site at Lots 12 and 91 (refer to **Illustration 3.1**).

Due to the occurrence of several flowering and fruiting trees in the myrtaceae family, potential foraging habitat for the Grey-headed Flying-fox occurs. Several species of microchiropteran bats may forage within the site on an opportunistic or seasonal basis as part of broader areas of similar aerial foraging habitat occurring within the locality.

Suitable foraging habitat for Southern Myotis occurs at Lots 12 and 17 (waterway and farm dam) with HBTs at Lots 12 and 91 providing potential roosting/ breeding habitat.

Foraging habitat occurs within the consolidated native vegetation communities for a range of threatened birds including forest owls and rainforest pigeons. Forest Oak, a key diet species for Glossy Black-cockatoo occurs at Lot 91.

Eucalyptus forest provides foraging habitat for threatened glider species, HBTs provide suitable denning/ breeding resources.

#### 4.3.1 Potential for Threatened Fauna Species Occurrence

As per the Important Habitat Map in the Biodiversity Offset Assessment Management System (BOAMS), part of Lot 12 is mapped as 'Important Habitat for Swift Parrot'.

Based on habitats present and BioNet Wildlife Atlas records, a number of threatened fauna species have potential to occur at the site (refer to **Appendix F**). Some of which would require targeted survey as part of the biodiversity assessment required for a future development application. They include (but are not limited to):

- Giant Barred Frog
- Little Lorikeet
- Glossy Black-Cockatoo
- Powerful Owl (foraging habitat)
- Sooty Owl (foraging habitat)
- Barred Cuckoo Shrike
- Squirrel Glider
- Yellow-bellied Glider
- Swift Parrot (foraging habitat)
- White-throated Needle-tail
- Grey-headed Flying-fox (foraging habitat)
- Southern Myotis
- Eastern Coastal Free-tailed Bat
- Little Bent-winged Bat
- Large Bent-winged Bat
- Wompoo Fruit-dove
- Rose-crowned Fruit-Dove
- Yellow-bellied Sheath-tailed Bat
- Koala



## 5. Impacts and Mitigation

### 5.1 Avoid and Minimise

Biodiversity constraints at the site include:

- Area of consolidated native vegetation
- Associated areas of fauna habitat
- Aquatic habitats, farm dams and waterways
- Hollow-bearing trees.

As part of the planning proposal and to inform concept subdivision design GeoLINK prepared advice nominating areas of higher conservation value for retention and rezoning to Environmental Conservation (E2). This advice was used to inform the current subdivision concept designs which shows Asset Protection zones (APZ), dwelling envelopes and site access to be located outside of consolidated areas of native forest communities. Thereby avoiding and minimising impacts on biodiversity.

Areas proposed for E2 zoning are shown in **Illustration 3.1**.

### 5.2 Potential Impacts of Rezoning and Development

#### 5.2.1 Clearing of Native Vegetation

Based on the current concept subdivision layout (refer to **Illustration 1.3**) rezoning and future development of the site would incur a very minor loss of planted native vegetation for purposes of access into the proposed new Lot 91'A'. One hollow-bearing Flooded Gum may be impacted.

Recommendations to avoid or minimise impacts to consolidated forest vegetation have been provided in **sections 5.3** and **5.4** of this report and should be incorporated into subsequent subdivision design prior to finalising.

Final clearing areas would need to be determined at the time of submitting a development application based on final subdivision designs.

#### 5.2.2 Indirect Impacts

Indirect impacts are development related activities not associated with clearing for the development footprint and may include matters such as increased noise, dust, light spill, weeds and pathogens and edge effects that can be reasonably attributed to the development. Based on the construction requirements and nature of the proposed development (residential development), anticipated indirect development may include:

1. Minor short-term disturbance (noise, human activity, machine operations) to locally occurring urban-adapted fauna species during development, construction and operation.
2. Minor potential for reduced water quality and altered hydrology due to works.
3. Minor increased risk of roadkill from increased vehicular movements on surrounding roads. It is noted that this is likely to be very minor given the small number of additional residents likely.

4. Ongoing disturbance to local fauna during occupation of the site from noise, light, human presence.
5. Potential for weeds to be imported to the site and surrounding environments during the construction stage of the proposal.
6. Potential for additional minor impacts on native fauna from additional roaming domestic animals.

### 5.2.3 Prescribed Impacts

Prescribed impacts are those that may affect biodiversity values in addition to, or instead of, impacts from clearing vegetation, and include (as per cl. 6.1 of the BC Regulation):

- *the impacts of development on the habitat of threatened species or ecological communities associated with:*
  - *karst, caves, crevices, cliffs and other geological features of significance*
  - *rocks*
  - *human made structures*
  - *non-native vegetation*
- *the impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range*
- *the impacts of development on movement of threatened species that maintains their life cycle*
- *the impacts of development on water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development)*
- *the impacts of wind turbine strikes on protected animals*
- *the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.*

An analysis of prescribed impacts is detailed in **Table 5.1**.

**Table 5.1 Prescribed impacts**

<b>Prescribed impact</b>	<b>Response</b>
<p><i>the impacts of development on the habitat of threatened species or ecological communities associated with:</i></p> <ul style="list-style-type: none"> <li>- <i>karst, caves, crevices, cliffs and other geological features of significance</i></li> <li>- <i>rocks</i></li> <li>- <i>human made structures</i></li> <li>- <i>non-native vegetation</i></li> </ul>	<p>The site does not support karst geology and no rock features are evident. Human-made structures occur on the site but do not represent habitat for threatened species.</p> <p>Non-native vegetation includes landscaping plantings, gardens and lawns associated with existing residences. This vegetation does not represent likely habitat for any threatened species, with the exception of the introduced Mango trees which may provide forage resources to Grey-headed Flying-fox when preferred nectar recourses are scarce.</p>

## Appendix 6 - Biodiversity Assessment

<b>Prescribed impact</b>	<b>Response</b>
<i>the impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range</i>	The proposed rezoning and future subdivision of the site represents a relatively minor intensification of existing land uses on the site. Additional clearing may be required in parts of the site. The proposal is considered unlikely to adversely affect connectivity for locally occurring threatened species. It is noted that the adoption of proposed E2 zones would provide for the protection of vegetation which would contribute to maintaining connectivity for threatened species.
<i>the impacts of development on movement of threatened species that maintains their life cycle</i>	Refer above
<i>the impacts of development on water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development)</i>	The most substantial waterbody associated with the site is an unnamed tributary of Sugar Mill Creek within Lot 12 which is proposed to be protected with associated vegetation as part of an E2 zone providing a buffer to any adjacent construction works.
<i>the impacts of wind turbine strikes on protected animals</i>	The Proposal is not a wind farm development.
<i>the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community</i>	The Proposal may result in a very minor increase in vehicular traffic on surrounding roads however this given the additional small volume of traffic the change in risk of vehicle strike is considered to be negligible.

### 5.3 Recommendations

To minimise biodiversity impacts which may result from the proposed rezoning and future development of the site, the following measures should be considered:

- Proposed E2 zoned areas (as shown in **Illustration 3.1**) should be adopted to provide future development controls within areas of consolidated native vegetation and threatened species habitat.
- Clearing of native vegetation (mapped PCTs) should be avoided in the final design of subdivision with building envelopes and associated infrastructure (including boundary fences) to be located within cleared areas.
- Where native vegetation, tree hollows and/or Koala habitat requires removal, compensation will be required (refer to **Section 5.4**).
- Vegetation Management Plans (VMPs) should be required as a condition of consent for those lots including future E2 zoned land. The VMPs should include measures to protect and enhance native vegetation/ habitat within all E2 zoned land.

### 5.4 Future Requirements

Based on the site assessment the proposed rezoning and future redevelopment of the site would have relatively low impacts on biodiversity, due mainly to future development avoiding most areas of forested vegetation. In the event the rezoning proposal is accepted, the following requirements would need to be addressed for any future proposal to develop the site:

- Incorporate the recommendations in this assessment (**Section 5.3**) as part of future design.
- As part of any future development application the following additional reporting would be required:
  - For those new lots which impact on BV mapped land and/ or require clearing of over 0.25 ha the BOS will be triggered and a BDAR will be required. It is noted that this includes impacts associated with APZs and future boundary/ fence lines. The BDAR determines biodiversity credits which are required to be purchased by the proponent to offset impacts of the development. It is considered unlikely the BOS will be triggered due to the current concept design largely avoiding impacts to native vegetation or BV land.
  - For those lots which don't trigger the BOS a revised Biodiversity Assessment Report (BAR) will be required to assess impacts of the final subdivision design. This report would be required to include updated statutory assessments including tests of significance (five-part tests) for potentially impacted threatened species/ TECs.
- The BDAR or BAR to be prepared for a future development application will need to address Council's DCP and as such will need to determine compensation requirements and/or vegetation management measures to offset the loss of native vegetation (in addition to Koala habitat) where relevant.

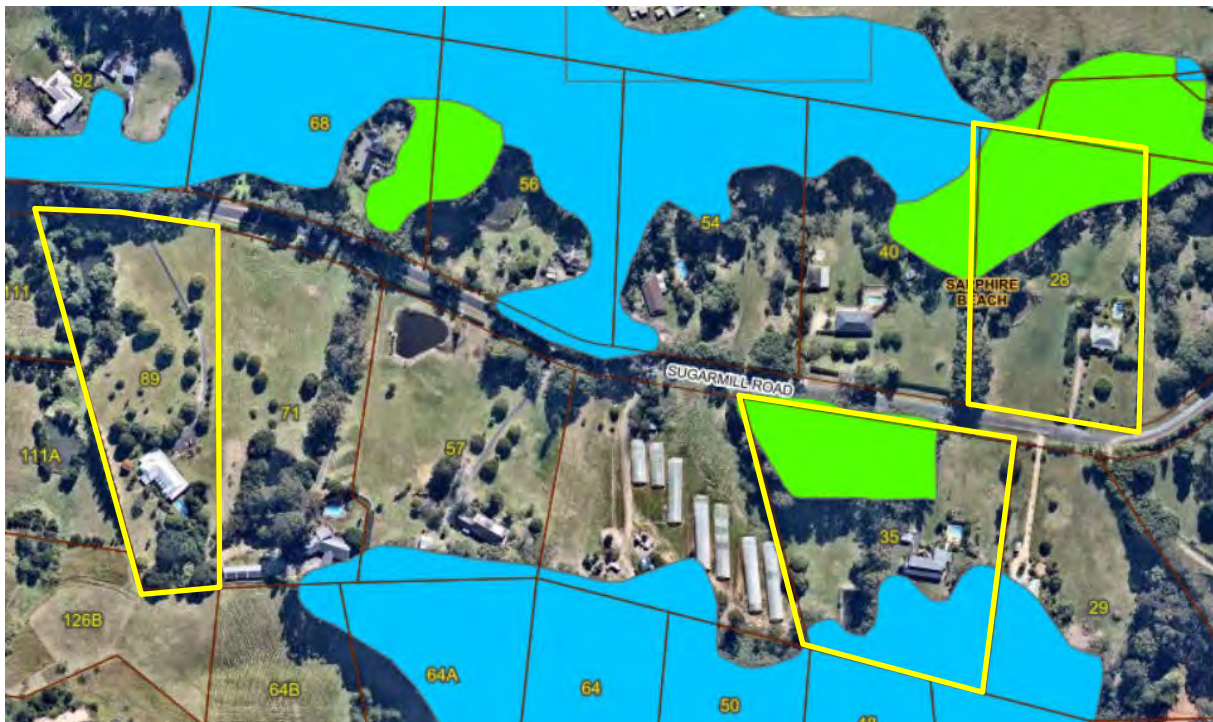
## 6. Statutory Requirements

The following sections examine the findings of the site assessment with regard to relevant statutory requirements which require consideration for the development application.

### 6.1 State Environmental Planning Policy (SEPP) Koala Habitat Protection 2021

State Environmental Planning Policy (Koala Habitat Protection) 2021 applies to all LGAs listed under Schedule 1, which includes the Coffs Harbour LGA. Where an approved Comprehensive Koala Plan of Management (CKPoM) is in place the SEPP defers to this plan. The Coffs Harbour City Koala Plan of Management (CHCKPoM) was prepared in accordance with the requirements of the SEPP and introduced in January 1995.

Koala Habitat mapping for the site as per the CHCKPoM is shown in **Figure 6.1**. No mapped primary Koala habitat occurs at the site however areas of secondary and tertiary habitat are associated with vegetation at the site. Compensatory plantings as outlined in the Coffs Harbour DCP would be required for impacts to secondary Koala habitat (refer to **Section 6.2**) however it is noted that no impacts to secondary Koala habitat are currently proposed as part of the current concept design.



**Figure 6.1 CHCKPoM Koala Habitat Mapping in relation to the site (yellow polygon) (secondary habitat – blue, tertiary habitat - green)**

## 6.2 Coffs Harbour Development Control Plan (DCP) 2015

Part E1.2 (1) of DCP 2015 outlines compensatory planting requirements for the removal of high conservation value vegetation (refer to definitions in **Table 6.1**). According to Part E1.2 (Compensatory Requirements) of the DCP, the vegetation at the subject site is considered high conservation value habitat. Compensatory planting is triggered by removal of the following habitat types on site:

- Hollow-bearing trees - 1:20 replacement rate required
- Secondary Koala Habitat (not adjacent to primary koala habitat) - 1:3 replacement rate required
- Riparian Zones - 1:10 replacement rate required
- Steep Land - 1:3 replacement rate required.

**Table 6.1 High Conservation Value Vegetation Types (as per DCP 2015)**

<i>Description of Habitat Type</i>	<i>Replacement Rate</i>	<i>Does the vegetation to be impacted align with the high conservation value vegetation type description or require compensatory planting?</i>
Native old growth, hollow-bearing or ecologically/aesthetically significant tree	1:20	<b>Possible</b> – a number of HBTs occur at the site. However only one hollow-bearing tree occurs within the development footprint associated with access to Lot 91'A'. Clearing of HBTs would require compensatory plantings at a ratio of 1:20. Numbers of compensatory plantings will be determined at the development application stage.
Endangered Ecological Community, Over-Cleared Vegetation Types and High Value Arboreal Habitats	1:10	No – the vegetation to be impacted by the proposal does not align with this habitat type description and does not trigger the need for compensatory planting.
Primary Koala Habitat	1:5	No – the vegetation to be impacted by the proposal does not align with this habitat type description and does not trigger the need for compensatory planting.
Secondary Koala Habitat (adjacent to primary koala habitat)	1:5	No – the vegetation to be impacted by the proposal does not align with this habitat type description and does not trigger the need for compensatory planting.
Secondary Koala Habitat (not adjacent to primary koala habitat)	1:3	<b>Possible</b> but unlikely – Secondary Koala habitat occurs at both Lots 12 and 91, however it is unlikely this vegetation will be impacted due to proposed E2 zone protections. Should removal of Secondary Koala habitat be unavoidable, compensatory plantings of native trees within relevant Lots will be required at a 1:3 ratio. Numbers of compensatory plantings will be determined at the development application stage.
Riparian Zones	1:10	<b>Possible</b> but unlikely – the vegetation to be impacted by the proposal does not align with this habitat type description and does not trigger the need for compensatory planting. Although riparian vegetation occurs at Lots 12 and 17 associated with ephemeral and permanent waterways.
Steep Land	1:3	<b>Possible</b> but unlikely - the vegetation to be impacted by the proposal does not align with this habitat type description and does not trigger the need for compensatory planting. Although a small portion of the southern end of Lot 17 is mapped as 'steep and erodible lands' under the DCP.
Other	1:2	n/a

## 6.3 Biodiversity Conservation Act 2016 (BC Act)

As part of any future development application the following additional reporting would be required:

- For those new lots which impact on BV mapped land and/ or require clearing of over 0.25 ha the BOS will be triggered and a BDAR will be required. It is noted that this includes impacts associated with APZs and future boundary/ fence lines. The BDAR determines biodiversity credits which are required to be purchased by the proponent to offset impacts of the development.
- For those lots which don't trigger the BOS a revised Biodiversity Assessment Report (BAR) will be required to assess impacts of the final subdivision design. This report would be required to include updated statutory assessments including tests of significance (five-part tests) for potentially impacted threatened species/ TECs as required under the BC Act.

## 6.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act protects/ regulates matters of national environmental significance (MNES), including:

- World heritage properties
- National heritage places
- Wetlands of international importance
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mining)
- A water resource, in relation to coal seam gas development and large coal mining development.

Based on the search results and site assessment, significant impacts to any MNES would not be likely to result from the proposal (refer to **Table 6.2**).

**Table 6.2 Assessment of MNES**

<i>Matter</i>	<i>Potential impact</i>
<b><i>Any impact on a World Heritage property?</i></b>	
No World Heritage properties occur within a 5 km radius of the site.	Nil
<b><i>Any impact on a National Heritage place?</i></b>	
No National Heritage places occur within a 5 km radius of the site.	Nil
<b><i>Any impact on a Wetland of International Importance?</i></b>	
No wetlands of international importance (Ramsar sites) occur within a 5 km radius of the site.	Nil
<b><i>Any impact on the Great Barrier Reef Marine Park?</i></b>	
The Great Barrier Reef Marine park is distant from the site.	Nil
<b><i>Any impact on a Commonwealth marine area?</i></b>	
No Commonwealth marine areas occur within a 5 km radius of the site.	Nil

## Appendix 6 - Biodiversity Assessment

<b>Matter</b>	<b>Potential impact</b>
<b><i>Any impact on nationally threatened species and ecological communities?</i></b>	
Habitat for four threatened ecological communities and 82 threatened species is identified within a 5 km radius of the site. No EPBC listed ecological communities occur at the site. Evidence of Koala use at the site scats beneath Swamp Mahogany (which will not be impacted by the proposal). The Grey-headed Flying-fox may use the site on an opportunistic or seasonal basis when myrtaceous trees are in flower. Given the relatively fragmented and disturbed habitat within the site, the proposal would be unlikely result in the removal of habitat important to any threatened fauna species in a local context and would not contribute significantly to any listed key threatening processes.	Minor
<b><i>Any impact on Migratory species?</i></b>	
Habitat for 60 migratory species is identified within a 5km radius of the site. Given the relatively fragmented and disturbed habitat present at the site, migratory species are unlikely to be significantly affected by the proposal.	Minor



# References

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- Lunney, D., Moon, C., Matthews, A. & Turbill, J. (1999). *Coffs Harbour City Koala Plan of Management (Part A: The Plan)*. National Parks and Wildlife Service and Coffs Harbour City Council, NSW.
- NSW Department of Planning, Industry and Environment (2021). *NSW BioNet Database Search Tool*. [Accessed May 2021]. <http://www.bionet.nsw.gov.au/>
- NSW Department of Planning, Industry and Environment (2020). *Threatened Species Profiles*. [Accessed October 2021]. <https://www.environment.nsw.gov.au/threatenedspeciesapp/>

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**Appendix A**

**Site Photographs**

## Appendix 6 - Biodiversity Assessment

### Photographs of 28 Sugarmill Road - Lot 12 DP 243972



**Plate 1** PCT 827 Flooded Gum – Tallowwood – Brush Box moist open forest associated with the farm dam (foreground) and unnamed tributary of Sugar Mill Creek (background) on existing Lot 12 DP 243972. View to the northwest.



**Plate 2** Yellow line indicates proposed new lot adjacent to existing Lot 12 DP 243972. View to the north.



**Plate 3** Yellow line indicates the proposed lot boundary. Eucalyptus vegetation (PCT 827) is mapped BV land, not to be impacted by the proposal. View to the northwest.

## Appendix 6 - Biodiversity Assessment

### Photographs of 35 Sugarmill Road - Lot 91 DP 786155



**Plate 4** Shows the existing lot and dwelling with cleared land in the foreground, ornamental species associated with landscaped gardens and *PCT 695 Blackbutt – Turpentine – Tallowwood shrubby open forest* in the background. View to the southwest.



**Plate 5** Shows the proposed lot with yellow line indicating the proposed dwelling envelope. Proposed lot access will be from the east (left of image). View to the south.



**Plate 6** Shows the proposed lot with yellow line indicating the proposed dwelling envelope. Proposed lot access will be from the east (right of image). *PCT 695* in background. View to the south.

## Appendix 6 - Biodiversity Assessment

### Photographs of 89 Sugarmill Road - Lot 17 DP 249273



**Plate 7** Shows the existing lot with yellow line indicating the proposed lot boundary (left of image). The proposed existing lot access is shown in pink. View to the north.



**Plate 8** Shows Swamp Mahogany where Koala scats were recorded. Proposed to be zoned E2. View to the southwest.



**Plate 9** Shows the existing farm dam and PCT 827. Proposed to be zoned E2. View to the northwest.









































**Appendix B**

**Database Search Results**

## Appendix 6 - Biodiversity Assessment















Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -30.18 West: 153.09 East: 153.19 South: -30.28] returned a total of 1,702 records of 71 species.

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Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachida e	3075	<i>Mixophyes iteratus</i>		Giant Barred Frog	E1,P,2	E	31	
Animalia	Amphibia	Hylidae	3169	<i>Litoria brevipalmata</i>		Green-lighed Frog	V,P		3	    
Animalia	Reptilia	Cheloniidae	2004	<i>Caretta caretta</i>		Loggerhead Turtle	E1,P	E	2	
Animalia	Reptilia	Cheloniidae	2007	<i>Chelonia mydas</i>		Green Turtle	V,P	V	3	
Animalia	Reptilia	Cheloniidae	2008	<i>Eretmochelys imbricata</i>		Hawksbill Turtle	P	V	3	
Animalia	Reptilia	Elapidae	2677	<i>Hoplocephalus stephensii</i>		Stephens' Banded Snake	V,P		9	
Animalia	Aves	Casuariidae	0001	<i>Dromaius novaehollandiae</i>		Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2,P		1	
Animalia	Aves	Columbidae	0025	<i>Ptilinopus magnificus</i>		Wompoo Fruit-Dove	V,P		64	 
Animalia	Aves	Columbidae	0021	<i>Ptilinopus regina</i>		Rose-crowned Fruit-Dove	V,P		19	
Animalia	Aves	Apodidae	0334	<i>Hirundapus caudacutus</i>		White-throated Needletail	P	V,C,J,K	55	
Animalia	Aves	Procellariidae	0971	<i>Pterodroma solandri</i>		Providence Petrel	V,P		1	 
Animalia	Aves	Ciconiidae	0183	<i>Ephippiorhynchus asiaticus</i>		Black-necked Stork	E1,P		6	
Animalia	Aves	Ardeidae	0196	<i>Ixobrychus flavicollis</i>		Black Bittern	V,P		6	 
Animalia	Aves	Accipitridae	0226	<i>Haliaeetus leucogaster</i>		White-bellied Sea-Eagle	V,P		44	
Animalia	Aves	Accipitridae	0225	<i>Hieraaetus morphnoides</i>		Little Eagle	V,P		6	
Animalia	Aves	Accipitridae	0230	<i>Lophoictinia isura</i>		Square-tailed Kite	V,P,3		3	 
Animalia	Aves	Accipitridae	8739	<i>Pandion cristatus</i>		Eastern Osprey	V,P,3		23	
Animalia	Aves	Gruidae	0177	<i>Grus rubicunda</i>		Brolga	V,P		1	 
Animalia	Aves	Burhinidae	0175	<i>Esacus magnirostris</i>		Beach Stone-curlew	E4A,P		3	
Animalia	Aves	Haematopodida e	0131	<i>Haematopus fuliginosus</i>		Sooty Oystercatcher	V,P		21	
Animalia	Aves	Haematopodida e	0130	<i>Haematopus longirostris</i>		Pied Oystercatcher	E1,P		10	
Animalia	Aves	Laridae	0117	<i>Sternula albifrons</i>		Little Tern	E1,P	C,J,K	2	 
Animalia	Aves	Cacatuidae	0268	<i>Callocephalon fimbriatum</i>		Gang-gang Cockatoo	V,P,3		1	
Animalia	Aves	Cacatuidae	0265	<i>Calyptorhynchus lathamii</i>		Glossy Black-Cockatoo	V,P,2		63	
Animalia	Aves	Psittacidae	0260	<i>Glossopsitta pusilla</i>		Little Lorikeet	V,P		29	 
Animalia	Aves	Psittacidae	0309	<i>Lathamus discolor</i>		Swift Parrot	E1,P,3	CE	19	
Animalia	Aves	Strigidae	0246	<i>Ninox connivens</i>		Barking Owl	V,P,3		1	 
Animalia	Aves	Strigidae	0248	<i>Ninox strenua</i>		Powerful Owl	V,P,3		4	
Animalia	Aves	Tytonidae	0252	<i>Tyto longimembris</i>		Eastern Grass Owl	V,P,3		1	 
Animalia	Aves	Tytonidae	0250	<i>Tyto novaehollandiae</i>		Masked Owl	V,P,3		1	
Animalia	Aves	Tytonidae	9924	<i>Tyto tenebricosa</i>		Sooty Owl	V,P,3		10	 
Animalia	Aves	Climacteridae	8127	<i>Climacteris picumnus victoriae</i>		Brown Treecreeper (eastern subspecies)	V,P		1	
Animalia	Aves	Meliphagidae	0603	<i>Anthochaera phrygia</i>		Regent Honeyeater	E4A,P	CE	3	 
Animalia	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>		Varied Sittella	V,P		11	
Animalia	Aves	Campephagida e	0428	<i>Coracina lineata</i>		Barred Cuckoo-shrike	V,P		4	
Animalia	Aves	Artamidae	8519	<i>Artamus cyanopterus cyanopterus</i>		Dusky Woodswallow	V,P		4	
Animalia	Aves	Petroicidae	0380	<i>Petroica boodang</i>		Scarlet Robin	V,P		2	 
Animalia	Mammalia	Dasyuridae	1008	<i>Dasyurus maculatus</i>		Spotted-tailed Quoll	V,P	E	1	
Animalia	Mammalia	Dasyuridae	1017	<i>Phascogale tapoatafa</i>		Brush-tailed Phascogale	V,P		1	 
Animalia	Mammalia	Dasyuridae	1045	<i>Planigale maculata</i>		Common Planigale	V,P		2	
Animalia	Mammalia	Phascolarctida e	1162	<i>Phascolarctos cinereus</i>		Koala	V,P	V	109	
Animalia	Mammalia	Petauridae	1136	<i>Petaurus australis</i>		Yellow-bellied Glider	V,P		11	 
Animalia	Mammalia	Petauridae	1137	<i>Petaurus norfolcensis</i>		Squirrel Glider	V,P		8	



## Appendix 6 - Biodiversity Assessment

Animalia	Mammalia	Pseudocheiridae	1133	<i>Petauroides volans</i>	Greater Glider	P	V	1	
Animalia	Mammalia	Pteropodidae	1280	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	33	
Animalia	Mammalia	Pteropodidae	1294	<i>Syconycteris australis</i>	Common Blossom-bat	V,P		9	
Animalia	Mammalia	Emballonuridae	1321	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V,P		2	
Animalia	Mammalia	Molossidae	1329	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V,P		3	
Animalia	Mammalia	Vespertilionidae	1357	<i>Myotis macropus</i>	Southern Myotis	V,P		7	
Animalia	Mammalia	Vespertilionidae	1369	<i>Phoniscus papuensis</i>	Golden-tipped Bat	V,P		4	
Animalia	Mammalia	Miniopteridae	1346	<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P		24	
Animalia	Mammalia	Miniopteridae	3330	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		4	
Animalia	Mammalia	Balaenopteridae	1575	<i>Megaptera novaeangliae</i>	Humpback Whale	V,P	V	2	
Animalia	Insecta	Hesperiidae	1023	<i>Ocybadistes knightorum</i>	Black Grass-dart Butterfly	E1		29	
Plantae	Flora	Apocynaceae	1233	<i>Marsdenia longiloba</i>	Slender Marsdenia	E1	V	68	
Plantae	Flora	Apocynaceae	9505	<i>Parsonsia dorrigoensis</i>	Milky Silkpod	V	E	1	
Plantae	Flora	Araceae	10749	<i>Typhonium sp. aff. brownii</i>	Stinky Lily	E1,3		1	
Plantae	Flora	Fabaceae (Faboideae)	2897	<i>Kennedia retrorsa</i>		V	V	2	
Plantae	Flora	Fabaceae (Faboideae)	11644	<i>Pultenaea maritima</i>	Coast Headland Pea	V		9	
Plantae	Flora	Fabaceae (Faboideae)	3032	<i>Sophora tomentosa</i>	Silverbush	E1		5	
Plantae	Flora	Lindsaeaceae	8128	<i>Lindsaea incisa</i>	Slender Screw Fern	E1,3		20	
Plantae	Flora	Myrtaceae	4283	<i>Rhodamnia rubescens</i>	Scrub Turpentine	E4A		31	
Plantae	Flora	Myrtaceae	4284	<i>Rhodomyrtus psidioides</i>	Native Guava	E4A		15	
Plantae	Flora	Orchidaceae	9027	<i>Diuris praecox</i>	Rough Doubletail	V,P,2	V	1	
Plantae	Flora	Poaceae	8979	<i>Alexfloydia repens</i>	Floyd's Grass	E1		8	
Plantae	Flora	Proteaceae	9680	<i>Macadamia integrifolia</i>	Macadamia Nut		V	1	
Plantae	Flora	Rutaceae	9496	<i>Zieria prostrata</i>	Headland Zieria	E1	E	3	
Plantae	Flora	Rutaceae	5847	<i>Zieria smithii</i>	Low growing form of Z. smithii, Diggers Head	E2		2	
Plantae	Flora	Santalaceae	5871	<i>Thesium australe</i>	Austral Toadflax	V	V	8	
Plantae	Flora	Sapotaceae	11957	<i>Niemeyera whitei</i>	Rusty Plum, Plum Boxwood	V		222	
Plantae	Flora	Simaroubaceae	9497	<i>Quassia sp. Moonee Creek</i>	Moonee Quassia	E1	E	585	

## Appendix 6 - Biodiversity Assessment

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Communities in selected area [North: -30.18 West: 153.09 East: 153.19 South: -30.28] returned 0 records for 12 entities.

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Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Community				<i>Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>		Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	V	K	
Community				<i>Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>		Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				<i>Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>		Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	CE	K	
Community				<i>Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions</i>		Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3	CE	K	
Community				<i>Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion</i>		Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3	CE	K	
Community				<i>Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions</i>		Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	E3	E	K	
Community				<i>Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion</i>		Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3		K	
Community				<i>Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>		Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	E	K	
Community				<i>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>		Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				<i>Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions</i>		Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3		K	

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Community	<i>White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and</i>	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	E4B	CE	P	
Community	<i>White Gum Moist Forest in the NSW North Coast Bioregion</i>	White Gum Moist Forest in the NSW North Coast Bioregion	E3		K	



# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 05/07/21 08:02:50

## [Summary](#)

### [Details](#)

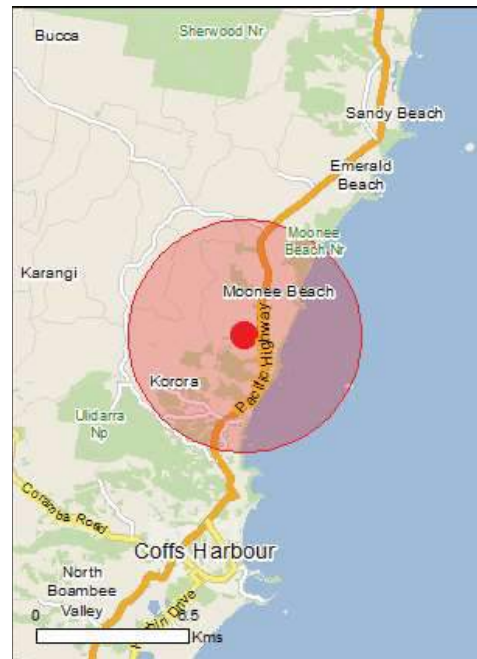
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

### [Caveat](#)

### [Acknowledgements](#)



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[Coordinates](#)

Buffer: 5.0Km



### Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	4
<a href="#">Listed Threatened Species:</a>	82
<a href="#">Listed Migratory Species:</a>	60

### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Land:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	89
<a href="#">Whales and Other Cetaceans:</a>	12
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

### Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	6
<a href="#">Regional Forest Agreements:</a>	1
<a href="#">Invasive Species:</a>	40
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">Key Ecological Features (Marine)</a>	None

## Matters of National Environmental Significance

Listed Threatened Ecological Communities [ Resource Information ]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
<a href="#">Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community</a>	Endangered	Community likely to occur within area
<a href="#">Littoral Rainforest and Coastal Vine Thickets of Eastern Australia</a>	Critically Endangered	Community likely to occur within area
<a href="#">Lowland Rainforest of Subtropical Australia</a>	Critically Endangered	Community likely to occur within area
<a href="#">Subtropical and Temperate Coastal Saltmarsh</a>	Vulnerable	Community likely to occur within area

Listed Threatened Species [ Resource Information ]

Name	Status	Type of Presence
<b>Birds</b>		
<a href="#">Anthochaera phrygia</a> Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Atrichornis rufescens</a> Rufous Scrub-bird [655]	Endangered	Species or species habitat may occur within area
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea antipodensis gibsoni</a> Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Status	Type of Presence
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
<a href="#">Fregetta grallaria grallaria</a> White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Limosa lapponica baueri</a> Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pterodroma leucoptera leucoptera</a> Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
<a href="#">Pterodroma neglecta neglecta</a> Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche bulleri</a> Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
<a href="#">Thalassarche bulleri_platei</a> Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche eremita</a> Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thinornis cucullatus cucullatus</a> Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat may occur within area
<a href="#">Turnix melanogaster</a> Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
<b>Fish</b>		
<a href="#">Epinephelus daemeli</a> Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Hippocampus whitei</a> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
<b>Frogs</b>		
<a href="#">Litoria olongburensis</a> Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat may occur within area
<a href="#">Mixophyes balbus</a> Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Mixophyes iteratus</a> Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat known to occur within area
<b>Insects</b>		
<a href="#">Argynnis hyperbius inconstans</a> Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Phyllodes imperialis smithersi</a> Pink Underwing Moth [86084]	Endangered	Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area



Name	Status	Type of Presence
<a href="#">Chalinolobus dwyeri</a> Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Petauroides volans</a> Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Petrogale penicillata</a> Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Potorous tridactylus tridactylus</a> Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pseudomys novaehollandiae</a> New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<b>Plants</b>		
<a href="#">Acronychia littoralis</a> Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
<a href="#">Arthraxon hispidus</a> Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Cryptostylis hunteriana</a> Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
<a href="#">Cynanchum elegans</a> White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
<a href="#">Haloragis exalata subsp. velutina</a> Tall Velvet Sea-berry [16839]	Vulnerable	Species or species habitat may occur within area
<a href="#">Macadamia integrifolia</a> Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Macadamia tetraphylla</a> Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Marsdenia longiloba</a> Clear Milkvine [2794]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
<a href="#">Parsonia dorrigoensis</a> Milky Silkpod [64684]	Endangered	Species or species habitat likely to occur within area
<a href="#">Persicaria elatior</a> Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area
<a href="#">Phaius australis</a> Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
<a href="#">Plectranthus nitidus</a> Nightcap Plectranthus, Silver Plectranthus [55742]	Endangered	Species or species habitat may occur within area
<a href="#">Rhodamnia rubescens</a> Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Rhodomyrtus psidioides</a> Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Samadera sp. Moonee Creek (J.King s.n. Nov. 1949)</a> [86885]	Endangered	Species or species habitat known to occur within area
<a href="#">Sarcochilus fitzgeraldii</a> Ravine Orchid [19131]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thesium australe</a> Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Tylophora woollsii</a> [20503]	Endangered	Species or species habitat likely to occur within area
<a href="#">Zieria prostrata</a> Headland Zieria [56782]	Endangered	Species or species habitat likely to occur within area
<b>Reptiles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Coeranoscincus reticulatus</a> Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
<b>Sharks</b>		
<a href="#">Carcharias taurus (east coast population)</a> Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species

Name	Status	Type of Presence
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	habitat known to occur within area  Species or species habitat may occur within area

## Appendix 6 - Biodiversity Assessment

### Listed Migratory Species [ Resource Information ]

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
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#### Migratory Marine Birds

<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
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<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
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<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
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<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]		Species or species habitat likely to occur within area
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<a href="#">Ardenna pacifica</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
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<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat may occur within area
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<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
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<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
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<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
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<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
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<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
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<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
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<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within
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Name	Threatened	Type of Presence area
<a href="#">Thalassarche bulleri</a> Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche eremita</a> Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Balaena glacialis australis</a> Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
<a href="#">Manta birostris</a> Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat known to occur within area
<a href="#">Monarcha trivirgatus</a> Spectacled Monarch [610]		Species or species habitat known to occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat likely to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

## Other Matters Protected by the EPBC Act

### Commonwealth Land [\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Telecommunications Commission

### Listed Marine Species [\[ Resource Information \]](#)

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
<b>Birds</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat likely to occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur

Name	Threatened	Type of Presence
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	within area Species or species habitat likely to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat may occur within area
<a href="#">Catharacta skua</a> Great Skua [59472]		Species or species habitat may occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea gibsoni</a> Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat known to occur within area
<a href="#">Monarcha trivirgatus</a> Spectacled Monarch [610]		Species or species habitat known to occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
<a href="#">Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Puffinus griseus</a> Sooty Shearwater [1024]		Species or species habitat likely to occur within area
<a href="#">Puffinus pacificus</a> Wedge-tailed Shearwater [1027]		Breeding known to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
<a href="#">Sterna albifrons</a> Little Tern [813]		Species or species habitat may occur within area
<a href="#">Thalassarche bulleri</a> Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within



Name	Threatened	Type of Presence area
<a href="#">Thalassarche eremita</a> Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche sp. nov.</a> Pacific Albatross [66511]	Vulnerable*	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thinornis rubricollis rubricollis</a> Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat may occur within area
<b>Fish</b>		
<a href="#">Acentronura tentaculata</a> Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
<a href="#">Campichthys tryoni</a> Tryon's Pipefish [66193]		Species or species habitat may occur within area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
<a href="#">Corythoichthys ocellatus</a> Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
<a href="#">Festucalex cinctus</a> Girdled Pipefish [66214]		Species or species habitat may occur within area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Hippichthys cyanospilos</a> Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
<a href="#">Hippichthys heptagonus</a> Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
<a href="#">Hippocampus kelloggi</a> Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
<a href="#">Hippocampus whitei</a> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
<a href="#">Lissocampus runa</a> Javelin Pipefish [66251]		Species or species habitat may occur within area
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area
<a href="#">Micrognathus andersonii</a> Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area
<a href="#">Micrognathus brevis</a> thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
<a href="#">Microphis manadensis</a> Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area
<a href="#">Solegnathus dunckeri</a> Duncker's Pipehorse [66271]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus spinosissimus</a> Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
<a href="#">Solenostomus paradoxus</a> Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area

#### Mammals

<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat may occur within area
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#### Reptiles

<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
<a href="#">Pelamis platurus</a> Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

#### Whales and other Cetaceans

[ Resource Information ]

Name	Status	Type of Presence
<b>Mammals</b>		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area

## Extra Information

State and Territory Reserves	[ <a href="#">Resource Information</a> ]
Name	State
Bruxner Park	NSW
Coffs Coast	NSW
Kororo	NSW
Moonee Beach	NSW
Split Solitary Island	NSW
UNE Special Management Zone No1	NSW

Regional Forest Agreements	[ <a href="#">Resource Information</a> ]
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Note that all areas with completed RFAs have been included.

Name	State
<a href="#">North East NSW RFA</a>	New South Wales

Invasive Species	[ <a href="#">Resource Information</a> ]
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Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
<b>Birds</b>		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur

Name	Status	Type of Presence
<b>Appendix 6 - Biodiversity Assessment</b>		
Passer domesticus House Sparrow [405]		within area Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
<b>Frogs</b>		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
<b>Mammals</b>		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
<b>Plants</b>		

Name	Status	Type of Presence
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

## Reptiles

Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur
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Name

Status

Type of Presence

# Appendix 6 - Biodiversity Assessment

within area

# Caveat

## Appendix 6 - Biodiversity Assessment

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

## Coordinates

-30.22356 153.1402



# Acknowledgements

## Appendix 6 - Biodiversity Assessment

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [Office of Environment and Heritage, New South Wales](#)
- [Department of Environment and Primary Industries, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment, Water and Natural Resources, South Australia](#)
- [Department of Land and Resource Management, Northern Territory](#)
- [Department of Environmental and Heritage Protection, Queensland](#)
- [Department of Parks and Wildlife, Western Australia](#)
- [Environment and Planning Directorate, ACT](#)
- [Birdlife Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Museum Victoria](#)
- [Australian Museum](#)
- [South Australian Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [Geoscience Australia](#)
- [CSIRO](#)
- [Australian Tropical Herbarium, Cairns](#)
- [eBird Australia](#)
- [Australian Government – Australian Antarctic Data Centre](#)
- [Museum and Art Gallery of the Northern Territory](#)
- [Australian Government National Environmental Science Program](#)
- [Australian Institute of Marine Science](#)
- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

Appendix C

Flora Inventory

## Appendix 6 - Biodiversity Assessment

**Table C.1 Flora Inventory**

\* Introduced species, \*\* Species native to Queensland, (P) Planted garden ornamental or native vegetation

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Acanthaceae	<i>Pseuderanthemum variabile</i>	Pastel Flower	N	Y	N
Acanthaceae	<i>Thunbergia grandiflora</i> *	Blue Trumpet Flower	N	Y (P)	N
Aizoaceae	<i>Tetragonia tetragonioides</i>	Warrigal Greens	N	N	Y
Altingiaceae	<i>Liquidamber styraciflua</i> *	Liquidamber	N	N	Y (P)
Amaryllidaceae	<i>Agapanthus africanus</i> *	Lilly of the Nile	N	Y	N
Anacardiaceae	<i>Mangifera indica</i> *	Mango	N	Y (P)	Y (P)
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort	Y	Y	Y
Apocynaceae	<i>Gomphocarpus physocarpus</i> *	Cotton Balloon Bush	N	Y	Y
Apocynaceae	<i>Marsdenia rostrata</i>	Milk Vine	Y	Y	N
Apocynaceae	<i>Parsonsia straminea</i>	Common Silkpod	Y	N	N
Apocynaceae	<i>Plumeria sp.</i> *	Frangipani	N	Y (P)	N
Apocynaceae	<i>Tabernaemontana pandacaqui</i>	Banana Bush	N	Y	N
Araceae	<i>Philodendron xanadu</i> *	Xanadu	Y (P)	N	N
Araceae	<i>Syngonium podophyllum</i> *	Arrowhead Plant	Y (P)	N	N
Araliaceae	<i>Schefflera actinophylla</i> *	Umbrella Tree	Y	Y	Y
Araucariaceae	<i>Araucaria cunninghamii</i>	Hoop Pine	N	N	Y
Arecaceae	<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	Y	N	N
Arecaceae	<i>Dypsis lutescens</i> *	Golden Can Palm	Y (P)	Y (P)	N
Arecaceae	<i>Syagrus romanzoffiana</i> *	Cocos Palm	Y	Y	N
Asparagaceae	<i>Agave attenuate</i> *	Foxtail Agave	Y (P)	Y (P)	Y (P)
Asparagaceae	<i>Asparagus aethiopicus</i> *	Asparagus Fern	Y	Y	Y
Asphodelaceae	<i>Geitonoplesium cymosum</i>	Scrambling Lily	Y	Y	N

## Appendix 6 - Biodiversity Assessment

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Asteraceae	<i>Ageratina adenophora</i> *	Crofton Weed	Y	N	Y
Asteraceae	<i>Ageratum houstonianum</i> *	Blue Billygoat Weed	Y	Y	Y
Asteraceae	<i>Bidens pilosa</i> *	Cobblers Pegs	Y	Y	Y
Asteraceae	<i>Chrysanthemoides monilifera subsp. Rotundata</i> **	Bitou Bush	Y	N	N
Asteliaceae	<i>Cordyline fructosa</i> *	Cordyline	Y	Y	N
Asteliaceae	<i>Cordyline stricta</i>	Narrow-leaved Palm Lily	N	Y	Y
Asteraceae	<i>Hypochaeris radicata</i> *	Cats ear	Y	Y	Y
Asteraceae	<i>Ozothamnus diosmifolius</i>	White Dogwood	N	Y	N
Asteraceae	<i>Sphagneticola trilobata</i> *	Singapore Daisey	N	N	Y
Bignoniaceae	<i>Jacaranda caerulea</i> *	Jacaranda	N	Y (P)	Y (P)
Bignoniaceae	<i>Pyrostegia venusta</i> *	Flamevine	N	N	Y (P)
Bignoniaceae	<i>Spathodea campanulata</i> *	African Tuplip Tree	N	Y (P)	N
Blechnaceae	<i>Blechnum cartilagineum</i>	Gristle Fern	Y	Y	N
Blechnaceae	<i>Doodia aspera</i>	Prickly Rasp Fern	Y	N	N
Campanulaceae	<i>Lobelia purpurascens</i>	Whiteroot	Y	Y	N
Casuarinaceae	<i>Allocasuarina torulosa</i>	Forest Oak	N	Y	N
Commelinaceae	<i>Commelina cyanea</i>	Scurvy Weed	N	Y	N
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	Y	Y	Y
Cyperaceae	<i>Gahnia aspera</i>	Rough Saw-sedge	Y	Y	N
Dennstaedtiaceae	<i>Histiopteris incisa</i>	Bat's Wing Fern	Y	N	N
Dicksoniaceae	<i>Calochlaena dubia</i>	Rainbow Fern	N	Y	N
Dilleniaceae	<i>Hibbertia scandens</i>	Climbing Guinea Flower	Y	Y	Y
Dioscoreaceae	<i>Dioscorea transversa</i>	Native Yam	Y	N	N
Elaeocarpaceae	<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Y	N	Y
Ericaceae	<i>Trochocarpa laurina</i>	Tree Heath	Y	Y	Y
Ericaceae	<i>Rhododendron azalea</i> *	Azalea	N	N	Y (P)

## Appendix 6 - Biodiversity Assessment

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Euphorbiaceae	<i>Euphorbia pulcherrima</i> *	Poinsettia	N	N	Y (P)
Euphorbiaceae	<i>Euphorbia leucocephala</i> *	Snowflake Bush	Y (P)	N	Y (P)
Eupomatiaceae	<i>Eupomatia laurina</i> *	Bolwarra	Y	Y	N
Fabaceae	<i>Libidibia ferrea</i> *	Leopard Tree	Y (P)	N	N
Fabaceae (Caesalpinioideae)	<i>Senna pendula var. glabrata</i> *	Winter Senna	Y	Y	Y
Fabaceae (Faboideae)	<i>Glycine clandestina</i>	Twining Glycine	N	Y	N
Geraniaceae	<i>Geranium solanderi</i>	Native Geranium	N	Y	N
Iridaceae	<i>Dietes sp.*</i>	Lily	Y (P)	N	Y (P)
Lauraceae	<i>Cinnamomum camphora</i> *	Camphor Laurel	Y	Y	Y
Lauraceae	<i>Cryptocarya microneura</i>	Murrogun	N	Y	N
Lauraceae	<i>Cryptocarya rigida</i>	Forest Maple	Y	Y	Y
Lauraceae	<i>Cryptocarya triplinervis var. triplinervis</i>	Three-veined Laurel	Y	N	N
Lomandraceae	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	Y	Y	Y
Lomariopsidaceae	<i>Nephrolepis cordifolia</i> *	Fishbone Fern	N	Y	N
Luzuriagaceae	<i>Geitonoplesium cymosum</i>	Scrambling Lily	Y	Y	N
Magnoliaceae	<i>Ornamental Magnolia sp.*</i>	Magnolia	N	N	Y (P)
Malvaceae	<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	N	Y (P)	Y (P)
Malvaceae	<i>Ornamental Hibiscus sp.*</i>	Hibiscus	N	Y (P)	Y (P)
Melastomataceae	<i>Tibouchina aspera</i> *	Tibouchina	N	N	Y (P)
Meliaceae	<i>Synoum glandulosum subsp. glandulosum</i>	Scentless Rosewood	Y	Y	Y
Meliaceae	<i>Dysoxylum mollissimum subsp. molle</i>	Red bean	Y	N	N
Menispermaceae	<i>Stephania japonica var. discolor</i>	Snake Vine	Y	Y	N
Mimosoideae	<i>Acacia melanoxylon</i>	Blackwood	Y	N	Y
Mimosoideae	<i>Acacia podalyriifolia</i>	Queensland Silver Wattle	N	Y	N
Monimiaceae	<i>Wilkiea huegeliana</i>	Veiny Wilkiea	Y	Y	N
Moraceae	<i>Ficus coronata</i>	Creek Sandpaper Fig	Y	N	N
Moraceae	<i>Ficus rubiginosa</i>	Port Jackson Fig	Y	N	N

## Appendix 6 - Biodiversity Assessment

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Moraceae	<i>Maclura cochinchinensis</i>	Cockspur Thorn	N	Y	N
Moraceae	<i>Morus rubra</i> *	Mulberry	Y	N	N
Myrtaceae	<i>Angophora costata</i>	Smooth-barked Apple	N	Y	N
Myrtaceae	<i>Archirhodomyrtus beckleri</i>	Rose Myrtle	N	Y	N
Myrtaceae	<i>Callistemon salignus</i>	Willow Bottlebrush	Y	N	N
Myrtaceae	<i>Corymbia citriodora</i> **	Lemon Scented Gum	N	Y (P)	N
Myrtaceae	<i>Corymbia intermedia</i>	Pink Bloodwood	N	Y	N
Myrtaceae	<i>Corymbia torelliana</i> **	Cadaghi	Y	Y	Y
Myrtaceae	<i>Eucalyptus grandis</i>	Flooded Gum	Y	Y	N
Myrtaceae	<i>Eucalyptus microcorys</i>	Tallowwood	Y	Y	N
Myrtaceae	<i>Eucalyptus pilularis</i>	Blackbutt	N	Y	N
Myrtaceae	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	N	Y	N
Myrtaceae	<i>Eucalyptus resinifera</i>	Red Mahogany	N	Y	N
Myrtaceae	<i>Eucalyptus robusta</i>	Swamp Mahogany	N	N	Y
Myrtaceae	<i>Eucalyptus siderophloia</i>	Northern Grey Ironbark	N	Y	N
Myrtaceae	<i>Leptospermum sp.</i>	Tea Tree	N	N	Y (P)
Myrtaceae	<i>Lophostemon confertus</i>	Brush Box	Y	Y	Y
Myrtaceae	<i>Syncarpia glomulifera</i>	Turpentine	Y	Y	N
Myrtaceae	<i>Syzygium luehmannii</i>	Riberry	N	Y (P)	N
Myrtaceae	<i>Tristaniopsis laurina</i>	Water Gum	N	Y (P)	N
Myrtaceae	<i>Waterhousea floribunda</i>	Weeping Lily Pily	N	N	Y (P)
Myrtaceae	<i>Xanthostemon chrysanthus</i> **	Golden Penda	N	Y (P)	N
Nymphaeaceae	<i>Nymphaea capensis</i> *	Cape Waterlily	N	N	Y
Ochnaceae	<i>Ochna serrulata</i> *	Mickey Mouse Plant	Y	Y	N
Oleaceae	<i>Ligustrum sinense</i> *	Small-leaved Privet	Y	Y	Y
Oleaceae	<i>Notelaea longifolia</i>	Large Mock-olive	Y	Y	N
Oxalidaceae	<i>Oxalis rubens or exilis</i>	-	N	N	Y

## Appendix 6 - Biodiversity Assessment

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Pandanaceae	<i>Pandanus tectorius</i>	Screw Pine	N	Y (P)	N
Passifloraceae	<i>Passiflora edulis</i> *	Passionfruit	Y	N	N
Passifloraceae	<i>Passiflora suberosa</i> *	Corky Passionflower	Y - 4	N	N
Passifloraceae	<i>Passiflora subpeltata</i> *	White Passionflower	N	Y	Y
Phormiaceae	<i>Dianella caerulea</i>	Blue Flax-lily	Y	Y	Y
Phyllanthaceae	<i>Breynia oblongifolia</i>	Coffee Bush	Y	Y	N
Phyllanthaceae	<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	Cheese Tree	Y	Y	N
Pinaceae	<i>Pinus elliottii</i> *	Slash Pine	N	N	Y
Pittosporaceae	<i>Hymenosporum flavum</i> *	Native Frangipani	Y (P)	N	N
Pittosporaceae	<i>Pittosporum multiflorum</i>	Orange Thorn	Y	N	N
Pittosporaceae	<i>Pittosporum revolutum</i>	Rough Fruit Pittosporum	N	N	Y
Pittosporaceae	<i>Pittosporum undulatum</i>	Sweet Pittosporum	Y	Y	Y
Plantaginaceae	<i>Plantago lanceolata</i> *	Plantain	Y	Y	Y
Poaceae	<i>Bambuseae</i> sp. *	Clumping Bamboo	N	N	Y (P)
Poaceae	<i>Capillipedium spicigerum</i>	Scented Top	N	N	Y
Poaceae	<i>Cenchrus clandestinus</i> *	Kikuyu	Y	Y	Y
Poaceae	<i>Chloris gayana</i> *	Rhodes Grass	N	N	Y
Poaceae	<i>Echinopogon ovatus</i>	Forest Hedgehog Grass	N	Y	N
Poaceae	<i>Entolasia stricta</i>	Wiry Panic	Y	Y	N
Poaceae	<i>Imperata cylindrica</i>	Blady Grass	Y	Y	Y
Poaceae	<i>Oplismenus aemulus</i>	Basket Grass	Y	Y	N
Poaceae	<i>Paspalum mandiocanum</i> *	Broad-leaf Paspalum	Y	Y - 2	N
Poaceae	<i>Paspalum urvillei</i> *	Vasey Grass	Y	Y	Y
Poaceae	<i>Setaria sphacelata</i> *	Pigeon Grass	N	Y	Y
Polypodiaceae	<i>Platynerium bifurcatum</i>	Elkhorn Fern	Y	Y - 4	N
Primulaceae	<i>Ardisia crenata</i> *	Coral berry	Y	Y	N
Primulaceae	<i>Myrsine variabilis</i>	Muttonwood	Y	N	N

## Appendix 6 - Biodiversity Assessment

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Proteaceae	<i>Grevillea robusta</i>	Silky Oak	N	N	Y (P)
Proteaceae	<i>Grevillea baileyana</i> **	Brown Silky Oak	Y	N	N
Proteaceae	<i>Orites excelsus</i>	Mountain Silky Oak	Y	N	N
Proteaceae	<i>Ornamental Grevillea sp.</i>	Grevillea	N	Y (P)	N
Pteridaceae	<i>Adiantum aethiopicum</i>	Maidenhair Fern	N	Y	N
Rhamnaceae	<i>Alphitonia excelsa</i>	Red Ash	Y	N	N
Rosaceae	<i>Photinia robusta</i> *	Red Tip Photinia	Y (P)	N	N
Rosaceae	<i>Rubus parvifolius</i>	Native Raspberry	N	N	Y
Rubiaceae	<i>Gynochthodes jasminoides</i>	Sweet Morinda	Y	Y	Y
Rubiaceae	<i>Psychotria loniceroides</i>	Hairy Psychotria	Y	N	N
Rutaceae	<i>Acronychia wilcoxiana</i>	Silver Aspen	Y	Y	N
Rutaceae	<i>Bergera koenigii</i>	Curry Leaf Tree	N	N	Y (P)
Rutaceae	<i>Citrus x latifolia</i> *	Tahitian Lime	N	Y (P)	N
Rutaceae	<i>Citrus x limon</i> *	Lemon	N	Y (P)	N
Rutaceae	<i>Citrus hystrix</i> *	Kaffir Lime	N	Y (P)	N
Rutaceae	<i>Citrus x taitensis</i> *	Bush Lemon	Y	N	N
Rutaceae	<i>Melicope elleryana</i>	Pink Doughwood	Y	N	Y
Rutaceae	<i>Murraya paniculata</i> *	Orange Jessamine	N	Y (P)	N
Rutaceae	<i>Zieria smithii</i>	Sandfly Zieria	N	Y	N
Sapindaceae	<i>Cupaniopsis anacardioides</i>	Tuckeroo	Y	Y	Y
Sapindaceae	<i>Guioa semiglauca</i>	Guioa	N	Y	N
Sapindaceae	<i>Jagera pseudorhus</i>	Foam Bark Tree	Y	N	N
Smilacaceae	<i>Smilax australis</i>	Lawyer Vine	Y	Y	Y
Smilacaceae	<i>Smilax glycyphylla</i>	Sweet Sarsparilla	N	Y	N
Solanaceae	<i>Cestrum parqui</i> *	Green Cestrum	Y	N	N
Solanaceae	<i>Solanum mauritianum</i> *	Tobacco Bush	N	N	Y
Strelitziaceae	<i>Ravenala madagascariensis</i> *	Travellers Palm	N	Y (P)	N



## Appendix 6 - Biodiversity Assessment

Family	Scientific Name	Common Name	28 Sugarmill Road (Lot 12)	35 Sugarmill Road (Lot 91)	89 Sugarmill Road (Lot 17)
Strelitziaceae	<i>Strelitzia reginae</i> *	Bird of Paradise	N	Y (P)	Y (P)
Theaceae	<i>Camellia sp.</i> *	Camellia	N	N	Y (P)
Verbenaceae	<i>Citharexylum spinosum</i> *	Spiny Fiddlewood	N	N	Y
Verbenaceae	<i>Duranta erecta</i> *	Sky Flower	N	N	Y (P)
Verbenaceae	<i>Lantana camara</i> **	Lantana	Y	Y	Y
Vitaceae	<i>Cayratia clematidea</i>	Native Grape	N	N	Y
Vitaceae	<i>Cissus antarctica</i>	Kangaroo Vine	Y	Y	N
Vitaceae	<i>Cissus hypoglauca</i>	Water Vine	Y	Y	N
Zingiberaceae	<i>Alpinia zerumbet</i> *	Variegated Shell Ginger	Y (P)	N	N

**Appendix D**

**Fauna Inventory**

## Appendix 6 - Biodiversity Assessment

**Table D.1 Fauna Inventory**

<b>Order</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>28 Sugarmill Road</b>	<b>35 Sugarmill Road</b>	<b>89 Sugarmill Road</b>
<b>Avifauna</b>	<i>Chenonetta jubata</i>	Wood Duck	Observed and heard	-	Observed
	<i>Calyptorhynchus funereus</i>	Yellow-tailed Black Cockatoo	Observed flying over site	Observed flying over site	Observed flying over site
	<i>Corvus orru</i>	Toresian Crow	-	-	Heard
	<i>Cracticus nigrogularis</i>	Pied Butcher Bird	-	-	Observed and heard
	<i>Dacelo novaeguineae</i>	Kookaburra	Observed	-	Observed and heard
	<i>Entomyzon cyanotis</i>	Blue-faced Honeyeater	Observed and heard	Observed and heard	Observed and heard
	<i>Eolophus roseicapillus</i>	Galah	-	-	Observed flying over site
	<i>Grallina cyanoleuca</i>	Magpie-lark	-	-	
	<i>Gymnorhina tibicen</i>	Magpie	Observed and heard	-	Observed and heard
	<i>Manorina melanocephala</i>	Noisy Minor	Observed and heard	Observed and heard	-
	<i>Meliphaga lewinii</i>	Lewin's Honeyeater	Heard	Observed and heard	-
	<i>Pardalotus striatus</i>	Striated Pardalote	-	Heard	Heard
	<i>Philemon corniculatus</i>	Noisy Friar Bird	-	Observed and heard	-
	<i>Platycercus eximius</i>	Eastern Rosella	-	Observed and heard	-
	<i>Rhipidura albiscapa</i>	Grey Fantail	Observed and heard	-	Observed and heard
	<i>Rhipidura leucophrys</i>	Willie Wagtail	-	-	Observed and heard
	<i>Strepera graculina</i>	Pied Currawong	-	-	Observed and heard
	<i>Trichoglossus chlorolepidotus</i>	Scaly Breasted Lorikeet	-	Observed and heard	Heard
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	Observed and heard	Observed and heard	Observed and heard	
<i>Vanellus miles</i>	Masked Lapwing	Observed and heard	-	-	
<b>Mammalia</b>	<i>Lepus europaeus</i>	European Hare	Observed	-	-
	<i>Phascolarctos cinereus</i>	Koala	-	-	Scat
	<i>Wallabia bicolor</i>	Swamp Wallaby	Scat	Scat	Scat

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	Trichosurus vulpecula	Common Brushtail Possum	Scat	-	Scat
	Oryctolagus cuniculus	European Rabbit	-	Scat	-

**Appendix E**

**Hollow-bearing Tree Data**

## Appendix 6 - Biodiversity Assessment

**Table E.1 Habitat Tree Data**

Common Name	Scientific Name	Tree Height	Diameter at Breast Height (cm)	Total Hollows	Small Limb Hollow	Medium Limb Hollow	Large Limb Hollow	Small Trunk Hollow	Medium Trunk Hollow	Large Trunk Hollow	Comments	Easting	Northing
Blackbutt	<i>Eucalyptus pilularis</i>	25	98	1	0	1	0	0	0	0	Activity within the hollow from 3 Eastern Rosellas	513730	6656389
Blackbutt	<i>Eucalyptus pilularis</i>	25	142	10	4	5	1	0	0	0	Large old growth tree with significant hollow features	513748	6656407
Flooded Gum	<i>Eucalyptus grandis</i>	18	40	1	0	0	0	1	0	0	Signs of chewing and wear at entry point	513768	6656408
Small-fruited Grey Gum	<i>Eucalyptus propinqua</i>	20	60	6	3	2	0	0	1	0	-	513731	6656416
Small-fruited Grey Gum	<i>Eucalyptus propinqua</i>	20	70	3	1	1	0	1	0	0	-	513738	6656412
Small-fruited Grey Gum	<i>Eucalyptus propinqua</i>	20	70	2	0	2	0	0	0	0	Scratches on trunk	513699	6656420
Blackbutt	<i>Eucalyptus pilularis</i>	30	117	3	2	1	0	0	0	0	-	513692	6656423
Blackbutt	<i>Eucalyptus pilularis</i>	25	112	1	0	0	0	0	1	0	-	513773	6656287
Flooded Gum	<i>Eucalyptus grandis</i>	20	55	1	0	0	0	1	0	0	-	513742	6656352
Small-fruited Grey Gum	<i>Eucalyptus propinqua</i>	17	40	1	0	0	0	1	0	0	-	513697	6656424
Stag	<i>n/a</i>	8	40	1	0	0	0	0	0	0	Broken trunk potential microbat habitat	513841	6656590
Stag	<i>n/a</i>	20	45	5	2	2	0	0	1	0	-	513854	6656595
Stag	<i>n/a</i>	8	40	2	0	0	0	1	0	1	-	513878	6656599
Stag	<i>n/a</i>	10	~40	3	1	1	0	1	0	0	-	513888	6656596
Flooded Gum	<i>Eucalyptus grandis</i>	25	~50	2	0	2	0	0	0	0	-	513812	6656573

**Appendix F**

**Potential for Threatened Fauna Occurrence**

## Appendix 6 - Biodiversity Assessment

**Table F.1 Threatened Fauna Potential Occurrence Assessment\***

\*Migratory/pelagic marine species identified in the search results are not assessed as no habitat occurs at the site

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<b>Amphibians</b>							
<i>Litoria brevipalmata</i>	Green-thighed Frog	V	-	Rainforest, moist to dry eucalypt forest and heath, typically where surface water gathers after rain.	Marginal habitat associated with tributary of Sugar Mill creek.	Low	No
<i>Litoria olongburensis</i>	Olongburra Frog	V	V	Paperbark swamps and sedge swamps of the coastal 'wallum' country amongst sedges and rushes.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Mixophyes balbus</i>	Stuttering Frog	E	V	Cool rainforest, moist eucalypt forest and occasionally along creeks in dry eucalypt forest. Typically at elevations between 200 and 1420m above sea level in their northern range.	Marginal habitat associated with tributary of Sugar Mill Creek, however site is at a lower elevation than typical range.	Low – no Bionet records detected within 10km	No
<i>Mixophyes iteratus</i>	Giant Barred Frog	E	E	Deep, damp leaf litter in rainforests, moist eucalypt forest and near dry eucalypt forest.	Suitable foraging and dispersal habitat and moderate breeding habitat associated with tributary of Sugar Mill Creek.	Moderate	Yes - should suitable habitat (PCT 827 and/or farm dams) be affected by the final subdivision design.
<b>Aves</b>							
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	Dry open forest and woodland with an abundance of nectar-producing eucalypts, particularly box-ironbark woodland, swamp mahogany forests, and riverine sheoak woodlands.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	-	Woodlands and dry open sclerophyll forests, usually dominated by eucalypts; also recorded in shrublands, heathlands and various modified habitats.	Marginal foraging habitat associated with the site.	Low	No
<i>Atrichornis rufescens</i>	Rufous Scrub-bird	V	E	Subtropical, warm temperate, cool temperate rainforest and moist eucalypt forest with rainforest mid-storey. Moist, densely vegetated lower levels with deep leaf litter.	Marginal habitat associated with tributary of Sugar Mill Creek, however site is at a lower elevation than range.	Low – no Bionet records detected within 10km	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Calidris canutus</i>	Red Knot	-	E	Sheltered coasts on mudflats and sandbars of estuaries, harbors, lagoons; occasionally on beaches, reefs.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No



## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Calidris ferruginea</i>	Curllew Sandpiper	E	CE	Tidal mudflats, sandy ocean shores and occasionally inland freshwater or salt-lakes.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Collocephalon fimbriatum</i>	Gang-gang Cockatoo	V	-	Wetter forests and woodlands, timbered watercourses, coastal scrub.	Low quality habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V	-	Sheoaks in coastal forests and woodlands, timbered watercourses, and moist and dry eucalypt forests of the coast and the Great Divide up to 1,000 m.	Foraging habitat associated with occasional Forest Oaks within PCT 695 within Lot 91 (35 Sugarmill Road).	Moderate	No – negligible impacts likely
<i>Climacteris picumnus</i>	Brown Treecreeper	V	-	Eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range, and less commonly on coastal plains and ranges.	Marginal foraging habitat associated with the site.	Low	No
<i>Coracina lineata</i>	Barred Cuckoo-shrike	V	-	Rainforest, eucalypt woodlands, swamp woodlands and timber along watercourses.	Suitable foraging habitat associated with forested areas.	Moderate	No – negligible impacts likely
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Marginal foraging habitat associated with the site.	Low	No
<i>Dromaius novaehollandiae</i>	Emu population in the NSW North Coast Bioregion and Port Stephens LGA	E	-	Open forest, woodland, coastal heath, coastal dunes, wetland areas, tea tree plantations and open farmland, and occasionally in littoral rainforest.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-	Swamps, mangroves, mudflats, dry floodplains.	No suitable habitat at the site.	Low	No
<i>Erythrotriorchis radiatus</i>	Red Goshawk	CE	V	Open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water. Typically found in riparian habitats along or near watercourses or wetlands. Population in NSW is naturally small (probably only one pair), and lies at extreme of the natural range of the species in Australia.	Marginal foraging habitat associated with the site.	Low – no Bionet records detected within 10km	No

## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Esacus magnirostris</i>	Beach Stone-curlew	CE	-	Tidal flats at the mouth of estuaries or on open beaches.	No suitable habitat at the site.	Low	No
<i>Falco hypoleucos</i>	Grey Falcon	E	V	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range.	Marginal foraging habitat associated with the site.	Low – no Bionet records detected within 10km	No
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	Forages in open Eucalyptus forest and woodland; also feeds on Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Suitable foraging habitat at the site. Hollow-bearing trees (Breeding habitat occurs at the site).	Moderate	Yes – should suitable foraging habitat or HBTs be impacted by the final subdivision design. One HBT may require removal for access to the proposed lot at Lot 91.
<i>Grantiella picta</i>	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Grus rubicunda</i>	Brolga	V	-	Shallow swamps, floodplains, grasslands and pastoral lands, usually in pairs or parties.	No suitable habitat at the site.	Low	No
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V	-	Intertidal rocky and coral reefs, mostly ocean shores.	No suitable habitat at the site.	Low	No
<i>Haematopus longirostris</i>	Pied Oystercatcher	E	-	Open beaches, intertidal flats, sandbanks and occasionally rocky headlands.	No suitable habitat at the site.	Low	No
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle	V	-	Coastal habitats and around terrestrial wetlands characterised by the presence of large areas of open water (larger rivers, swamps, lakes, ocean). Habitats may include freshwater swamps, lakes, reservoirs, billabongs, saltmarsh and sewage ponds in addition to bays and inlets, beaches, reefs, lagoons, estuaries and mangroves.	No suitable foraging habitat at the site. No nests occur at the site.	Low	No

## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	Open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used.	Potential to occur foraging over the site as part of broader home range.	Moderate	No – suitable habitat unlikely to be impacted.
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	V	Most often recorded aerial foraging above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy. Breeding does not occur in Australia.	Potential to occur foraging over the site.	Moderate	No – unlikely to be impacted
<i>Ixobrychus flavicollis</i>	Black Bittern	V	-	Dense vegetation fringing and in streams, swamps, tidal creeks and mudflats, particularly amongst swamp sheoaks and mangroves.	No suitable habitat at the site.	Low	No
<i>Lathamus discolor</i>	Swift Parrot	E	CE	On mainland Australia foraging occurs where eucalypts are flowering profusely or where abundant lerp infestations occur. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> , Blackbutt <i>E. pilularis</i> and Yellow Box <i>E. melliodora</i> .	Suitable foraging habitat at the site. Lot 91 is mapped as important Swift Parrot foraging habitat (within BOAMS). Suitable foraging habitat occurs within forest vegetation at Lots 12 and 17.	Moderate	Yes - should suitable foraging habitat be affected by the final subdivision.
<i>Limosa lapponica baueri</i>	Black-tailed Godwit (baueri)	-	V	Found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms. Often occurs around beds of seagrass, and sometimes in nearby saltmarsh or the outer margins of mangrove areas.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No

## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	Dry woodland and open forest, particularly along major rivers and belts of trees in urban or semi-urban areas. Home ranges can extend over at least 100 km <sup>2</sup> .	Marginal foraging habitat, low potential to occur over the site as part of broader range.	Low	No
<i>Ninox connivens</i>	Barking Owl	V	-	Eucalypt woodland, open forest, swamp woodlands and timber along watercourses.	Marginal foraging habitat occurs at the site, no suitable breeding/nesting habitat would be affected by the activity.	Low, only 1 Bionet record within the search area.	No
<i>Ninox strenua</i>	Powerful Owl	V	-	Woodland and open forest to tall moist forest and rainforest. Requires large tracts of forest or woodland habitat but may also occur in fragmented landscapes.	No suitable nesting habitat on the site. Suitable foraging habitat present.	Moderate	No – suitable habitat unlikely to be impacted by the proposal.
<i>Numenius madagascariensis</i>	Eastern Curlew	-	CE	Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats and sometimes saltmarsh of sheltered coasts.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Pandion cristatus</i>	Eastern Osprey	V	-	Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Typically occur in coastal areas but occasionally travel inland along major rivers. Wetland habitats include inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes.	No suitable habitat at the site.	Low	No
<i>Petroica boodang</i>	Scarlet Robin	V	-	Dry eucalypt forests and woodlands with an open and grassy understorey with few scattered shrubs. Both mature and regrowth vegetation are utilised; habitat usually contains abundant logs and fallen timber.	No suitable habitat at the site.	Low	No
<i>Ptilinopus magnificus</i>	Wompoo Fruit-dove	V	-	Rainforests, low-elevation moist eucalypt forest, and Brush Box forests.	Suitable habitat occurs at the site.	High	No – suitable habitat unlikely to be impacted by the proposal.
<i>Ptilinopus regina</i>	Rose-crowned Fruit-dove	V	-	Subtropical and dry rainforest, moist eucalypt forest and swamp forest.	Suitable habitat occurs at the site.	Moderate	No – suitable habitat unlikely to be impacted by the proposal.

## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Rostratula australis</i>	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Sternula albifrons</i>	Little Tern	E	-	Coastal waters, bays, shallow inlets, salt or brackish lakes.	No suitable habitat at the site.	Low	No
<i>Sternula nereis nereis</i>	Australian Fairy Tern		V	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. Feeds in Coastal waters.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Thinornis rubricollis rubricollis</i>	Hooded Plover	CE	V	Open flat sandy beaches and sand dunes. Occasionally tidal bays and estuaries, rock platforms and rocky or sand-covered reefs	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Turnix melanogaster</i>	Black-breasted Button-quail	CE	V	Drier rainforests and vine scrubs, often in association with Hoop Pine and a deep moist leaf litter layer. During drought it may move to adjacent wetter rainforests.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Tyto longimembris</i>	Eastern Grass Owl	V	-	Areas of tall grass, including tussocks in swampy areas, grassy plains, swampy heath, cane grass, sedges on flood plains.	No suitable habitat at the site.	Low	No
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Dry eucalypt forest and woodlands.	No suitable habitat at the site.	Low	No
<i>Tyto tenebricosa</i>	Sooty Owl	V	-	Dry, subtropical and warm temperate rainforests and wet eucalypt forests. Nest in large tree hollows.	No suitable nesting habitat on the site. Suitable foraging habitat present.	Moderate	No – negligible impact likely
<b>Mammals</b>							
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Near cave entrances and crevices in cliffs.	No caves/ cliffs near the site.	Low – no Bionet records detected within 10km	No
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	Dry and moist eucalypt forests and rainforests, fallen hollow logs, large rocky outcrops.	Small areas of marginal foraging habitat associated with the site.	Low	No – negligible impact likely

## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	Occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts in tree hollows.	Potential aerial foraging habitat associated with the site.	Moderate	Yes – should suitable foraging habitat or HBTs be impacted by the final subdivision design. One HBT may require removal for access to the proposed lot at Lot 91.
<i>Miniopterus australis</i>	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest and dense coastal scrub.	Suitable roosting habitat within tree hollows and foraging habitat present.	High	Yes – should suitable foraging habitat or HBTs be impacted by the final subdivision design. One HBT may require removal for access to the proposed lot at Lot 91.
<i>Myotis macropus</i>	Southern Myotis	V	-	Bodies of water, rainforest streams, large lakes, reservoirs.	Suitable roosting habitat within tree hollows and foraging habitat associated with tributary of Sugar Mill Creek and farm dams.	High	Yes – should suitable foraging habitat or HBTs be impacted by the final subdivision design. One HBT may require removal for access to the proposed lot at Lot 91.
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	Forest or woodland, roost in caves, old mines and stormwater channels.	Potential aerial foraging habitat associated with the site.	Moderate	No – negligible impact likely.
<i>Petrogale penicillata</i>	Brush-tailed Rock Wallaby	E	V	North-facing cliffs and dry eucalypt forest and woodland, inhabiting rock crevices, caves, overhangs during the day, and foraging in grassy areas nearby at night.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Petauroides volans</i>	Greater Glider	-	V	Ranges and coastal plains of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands.	Marginal habitat -no suitable denning hollows present.	Low, only 1 Bionet record within the search area.	No

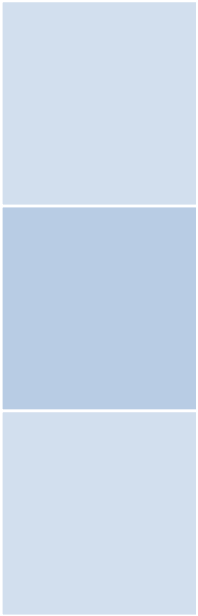
## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Petaurus australis</i>	Yellow-bellied Glider	V	-	Tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Dens in tree hollows of large trees, often in family groups. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	Suitable foraging and denning habitat occurs however forest vegetation at the site is relatively isolated from larger tracts of good quality vegetation.	Low to Moderate	No
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	Blackbutt, bloodwood and ironbark eucalypt forest with heath understorey in coastal areas, and box-ironbark woodlands and River Red Gum forest inland.	Suitable foraging and denning habitat occurs however forest vegetation at the site is relatively isolated from larger tracts of good quality vegetation.	Low to Moderate	No
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V	-	Drier forests and woodlands with hollow-bearing trees and sparse ground cover.	No suitable habitat at the site.	Low	No
<i>Phascolarctos cinereus</i>	Koala	V	V	Appropriate food trees in forests and woodlands, and treed urban areas.	Suitable feed trees at the site.	Known – faecal pellets detected during site survey.	<b>Yes</b>
<i>Phoniscus papuensis</i>	Golden-tipped Bat	V	-	Rainforest and adjacent sclerophyll forest. Roosts in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests.	Potential aerial foraging habitat associated with the site.	Moderate	No – negligible impact likely
<i>Planigale maculata</i>	Common Planigale	V	-	Rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas with surface cover close to water.	Suitable foraging habitat associated with Tributary of Sugar Mill Creek.	Low within the subdivision footprint	No – habitat would not be impacted
<i>Potorous tridactylus</i>	Long-nosed Potoroo	V	V	Cool temperate rainforest, moist and dry forests, and wet heathland, inhabiting dense layers of grass, ferns, vines and shrubs.	Suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	-	V	Occurs in open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	No suitable habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Suitable foraging habitat present. No roost habitat occurs at the site.	High	<b>Yes</b>

## Appendix 6 - Biodiversity Assessment

Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence	Need for five-part test
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V	-	Forages in a variety of habitats, roosts in tree hollows and buildings.	Suitable roosting habitat within tree hollows and foraging habitat present.	High	Yes
<i>Syconycteris australis</i>	Common Blossom-bat	V	-	Feeds in heathland and paperbark swamps; roosts in littoral rainforest. Also recorded in subtropical rainforest, wet sclerophyll forest and other coastal forests.	Suitable foraging habitat associated with tributary of Sugar Mill Creek	Low within the subdivision footprint	No – negligible impact likely
<b>Reptiles</b>							
<i>Coeranoscincus reticulatus</i>	Three-toed Snake-tooth Skink	V	E	Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils.	Poor quality habitat at the site.	Low – no Bionet records detected within 10km	No
<i>Hoplocephalus stephensii</i>	Stephens' Banded Snake	V	-	Rainforest and eucalypt forests and rocky areas up to 950 m.	Poor quality habitat at the site.	Low – no Bionet records detected within 10km	No
<b>Insects</b>							
<i>Argynnis hyperbius</i>	Australian Fritillary	E	CE	Open swampy coastal habitat where the caterpillar's food plant, Arrowhead Violet ( <i>Viola betonicifolia</i> ) occurs.	No suitable habitat at the site. Arrowhead Violet was not detected at the site.	Low – no Bionet records detected within 10km	No
<i>Ocybadistes knightorum</i>	Black Grass-dart Butterfly	E	-	Confined to coastal stands of Swamp Oak and Paperbark where Floyd's Grass grows edging the upper tidal areas of mangroves.	No suitable habitat at the site. Floyds Grass was not detected at the site.	Low	No
<i>Phyllodes imperialis (southern subspecies)</i>	Pink Underwing Moth	E	E	Undisturbed subtropical rainforest below 600 m. Breeding habitat is restricted to areas where the caterpillar's food plant, a native rainforest vine, <i>Carronia multise palea</i> , grows in a collapsed shrub-like form.	No suitable habitat at the site. <i>C. multise palea</i> was not detected at the site.	Low – no Bionet records detected within 10km	No





Sugarmill Road Large Lot  
Residential Precinct  
28, 35 and 89 Sugarmill Road;  
Sapphire Beach

Traffic and Transport Impact  
Assessment

October 2021



Development: Sugarmill Road Large Lot Residential Precinct

Site Address: 28, 35 and 89 Sugarmill Road

Prepared for: Grahame Fry  
Environmental Planning

Document reference: 002 - GF

Document Status	Issue	By	Issued to	Date
Draft	A	GS	GF	25 Oct 2021
Final	A	GS	GF	9 Nov 2021

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**Appendix A Proposed plans of Subdivision**

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**Appendix C Sugarmill Road bus services**

# 1 Introduction

## 1.1 Scope

This Traffic and Transport planning assessment report has been prepared as part of a planning proposal application to Coffs Harbour City Council for rezoning of land at Sugarmill Road Sapphire Beach.

The proposal comprises a potential rezoning of land from RU2 Rural Landscape to R5 Large Lot Residential and E2 Environmental Conservation where appropriate.

This report assesses the impact of the proposed rezoning on the operation of the surrounding transport network infrastructure and levels of service.

# 2 Existing Conditions

## 2.1 Location

The planning proposal encompasses three properties at 28,35 and 89 Sugarmill Road, Sapphire Beach. (Lot 12 DP 243972; Lot 91 DP 786155 and Lot 17 DP 249273 respectively).



**Figure 1 Site location**

The properties jointly encompass approximately 6.4ha and are currently zoned RU2 Rural Landscape. The properties comprise mostly of rural dwellings and associated out buildings with single driveway accesses to Sugarmill Road.

### 2.2 Existing Transport Network

#### Roads

**Solitary Islands Way** is a two-lane rural standard road acting as a service road parallel to the Pacific Highway servicing the northern suburbs of Coffs Harbour through to Woolgoolga. The Solitary Island Way network of service road and grade separated interchange connections to the Pacific Highway was completed in 2016 as part of the Roads and Maritime Services (RMS) Pacific Highway Upgrade program.

Solitary Island Way comprises generally of 3.5m travel lanes, 1.2m shoulders, off-road cycleway and bus lay-bys. The road geometry is generally flat and straight. The speed zone on Solitary Islands Way at the Sugarmill Road Intersection is 80km/h.

**Sugarmill Road** is a two-lane rural road directly servicing 17 rural lots. The road is approximately 1km in length from the intersection at Solitary Island Way to its western end.

Sugarmill Road has a 6.0m – 6.2m wide pavement with shoulders of variable width. The road environment is generally undulating.

The speed zone on Sugarmill Road is not signposted however the horizontal and vertical geometry of the road would indicate a design speed of 60km/h.

#### Intersections

The **Sugarmill Road/Solitary Islands Way** intersection was constructed as an Austroads rural CHR type intersection as part of the Sapphire to Woolgoolga Pacific Highway upgrade project.

The intersection provides a 60m storage length right turn bay to Sugarmill Road with good sight distance in both directions.



**Figure 2 Sugarmill Road at Solitary Islands Way**

### 2.3 Existing Traffic Volumes

As part of the RMS Pacific Highway upgrade project, post opening traffic surveys were carried out on Solitary Islands Way north of Sugarmill Road in 2014. This AADT data was reported in the *Sapphire to Woolgoolga Pacific Highway upgrade Post-construction Operational Noise Report AUGUST 2015*.

The 2014 traffic surveys showed AADT volumes of only 637 vehicles per day on Solitary Islands Way at the Sugarmill Road intersection.

As validation of these low traffic volumes a peak hour intersection turning movement count was undertaken on Solitary Islands Way near the Sugarmill Road intersection at Wakelands Road. The count was undertaken during the morning and afternoon peak hours on Wednesday 21 October 2020.

The count shows traffic volumes consistent with the 2014 RMS data and confirms that comparatively very little traffic would use the Sugarmill Road intersection compared to the standard of intersection which has been provided.

	Solitary Island Way				Wakelands Road	
	Southbound	Left turn in	Northbound	Right turn in	Left turn out	Right turn out
AM	22	14	44	9	11	22
H	2	1	2		2	1
PM	17	12	62	8	6	11
H	3	2	3	1		1

**Peak Hour (8:00am - 9:00am, 4:00pm – 5:00pm) Wakelands Road intersection count 21 Oct 2020.**

Sugarmill Road is a non through roads so indicative daily traffic volumes can be determined from likely traffic generation from the direct access land uses (predominantly residential). Using a development planning generation rate of 10 vehicle trips per lot / per day, the existing traffic volumes on Sugarmill Road would be in the order of: **170 vehicles per day with peak hour movements (12% of ADT) at 21 vehicles per hour.**

	Solitary Island Way				Sugarmill Road	
	Southbound	Left turn in	Northbound	Right turn in	Left turn out	Right turn out
AM	25	5	47	3	5	8
PM	21	7	66	5	3	7

**Estimated Peak Hour (8:00am - 9:00am, 4:00pm – 5:00pm) Sugarmill Road intersection movements 2021.**

### 3 Development Description

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The development comprises a potential rezoning of the three lots indicated in Figure 1 from RU2 Rural Landscape to R5 Large Lot Residential and E2 Environmental Conservation where appropriate.

A preliminary lot layout has been prepared for each lot taking into account the site constraints on each lot.

The preliminary lot plans result in a yield of only one additional lot for each existing lot, a total of three additional lots resulting from the proposal. This is the likely lot yield for the remaining Sugarmill Road lots which could potentially also proceed with rezoning proposals.

Each lot under the current proposal will utilise either an existing driveway access to Sugarmill Road or a new driveway access located to maximise sight distance to Sugarmill Road. There is potential for the two lots created at 35 Sugarmill Road to utilise a shared access at the existing driveway.

#### 28 Sugarmill Road

Proposed Lot 120	existing driveway
Proposed Lot 121	new driveway access

#### 35 Sugarmill Road

Proposed Lot 910	shared existing driveway
Proposed Lot 911	shared existing driveway

#### 89 Sugarmill Road

Proposed Lot 120	existing driveway
Proposed Lot 121	new driveway access

### 4 Traffic Impact Assessment

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#### 4.1 Development Traffic Generation

The following traffic impact modelling and assessment will consider the cumulative impacts on the road and transport network from all potential Sugarmill Road Large Lot residential rezoning.

Using a daily vehicle trip generation rate of 10 per dwelling, the re-development of all existing lots on Sugarmill Road could generate an additional 170 trips per day on Sugarmill Road yielding in the order of **340 vehicles per day** at 2031.

The resulting daily volumes including traffic generated from the proposed development would be well within the bounds of the environmental and amenity capacity of a two-lane rural road.

Peak Hour traffic generation from the proposal can be estimated from RMS and Austroads data with the highest end peak hour residential traffic generation for regional areas at 1 trip per dwelling.

The future rezoning's will consequently generate only 17 additional peak hour trips to the road network.

**4.2 Intersection analysis**

**Solitary Islands Way / Sugarmill Road intersection**

While it is clear that the estimated minor increase in traffic from the proposed rezoning will have no impact on the Solitary Islands Way/Sugarmill Road intersection it would be prudent to carry out a simple assessment of likely intersection performance to gauge the spare capacity of the intersection.

The Solitary Islands Way/Sugarmill Road intersection has been assessed using a SIDRA Intersection model. Input data is the estimated 2021 turning movements from Section 2.3 of this report factored to 2031 volumes (assuming a conservative 3% annual growth) and the likely total potential rezoning development traffic added.

	Solitary Island Way				Sugarmill Road	
	Southbound	Left turn in	Northbound	Right turn in	Left turn out	Right turn out
AM	34	10	65	6	10	16
PM	28	14	90	10	6	14

***Estimated Peak Hour intersection turning movements to 2031 (3% growth)***

Results of SIDRA modelling of the intersection turning movements are summarised in the tables below (Level of Service (LOS) RMS NSW).

2031 PLUS DEVELOPMENT	Peak Hour	Degree of Saturation	Average Delay	LOS
<b>Movement</b>				
Solitary Islands Way right turn in to Sugarmill Road	AM	0.004	5.9	A
	PM	0.007	6.1	A
Solitary Islands Way left turn in to Sugarmill Road	AM	0.043	5.8	A
	PM	0.059	5.8	A
Sugarmill Road left turn out	AM	0.025	6.1	A
	PM	0.020	6.0	A
Sugarmill Road right turn out	AM	0.025	6.3	A
	PM	0.020	6.5	A

The 2031 plus development SIDRA analysis shows that the Solitary Islands Way / Sugarmill Road intersection remains with significant spare capacity for traffic growth in 2031 following the addition of potential traffic generation from likely rezoning.



### 4.3 Coffs Harbour DCP 2015

The requirements of Chapter C1.8 (Infrastructure requirements for rural and large lot residential subdivisions) need to be considered for the proposed development.

Section C1.8 (3) of the DCP requires that:

*'Where access is provided to service more than three resulting lots, the access is to be dedicated as a public road and constructed in accordance with Council's Development Specifications.'*

Road design requirements for new rural roads are specified in Section 3.6 of the Coffs Harbour City Council (CHCC) Development Design Specification 0041 – Geometric Road Layout.

New local rural roads require a minimum 6.0m pavement width with 1.0m shoulders. Sugarmill Road has generally 6.0m-6.2m wide pavement with variable width shoulders. Road verges are structurally sound and clear of obstruction.

The existing Sugarmill road cross section of 6.0m carriageway with wide road verges and clear of hazards is considered adequate for the minor increase in traffic from the proposed development and no road upgrade works are required.

#### **Driveway access points**

All existing and proposed vehicular access driveways required under the rezoning will be able to meet Coffs Harbour City Council Development specifications.

The minimum required sight distance for a domestic property access can be found in Fig 3.2 of AS/NZS 2890.1 Parking Facilities Part 1: Off-street car parking.

For a design speed of 60 km/h the minimum sight distance required is 55 m. An 80 km/h design speed would require 95m sight distance.

Sight distance measured at all existing and proposed driveway access points on straight sections of Sugarmill Road exceed 90m.

The existing driveway access at proposed Lot 120 is located within 70m of a horizontal curve on Sugarmill Road on its eastern approach. The design speed at this point would be less than 60km/h. The measured sight distance to the driveway and to a vehicle turning right into the driveway is 70m which exceeds the required sight distance criteria.

Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment



***Existing access at 28 Sugarmill Road looking west.  
Proposed Lot 120 (Sight distance >90m)***



***Existing access at 28 Sugarmill Road looking east.***

Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment

***Proposed Lot 120 (Sight distance >70m)***



***Proposed access at 28 Sugarmill Road looking west.  
Proposed Lot 121 (Sight distance >90m)***



***Proposed Access at 28 Sugarmill Road looking east.  
Proposed Lot 121 (Sight distance >90m)***

Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment



***Existing access at 35 Sugarmill Road looking west.  
Proposed Lot 910 and 911 (Sight distance >90m)***



***Existing access at 35 Sugarmill Road looking east.  
Proposed Lot 910 and 911 (Sight distance >90m)***

Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment



***Existing access at 89 Sugarmill Road looking west.  
Proposed Lot 171 (Sight distance >90m)***



***Existing access at 89 Sugarmill Road looking east  
Proposed Lot 171 (Sight distance >90m)***

Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment



***Proposed access at 89 Sugarmill Road looking west.  
Proposed Lot 170 (Sight distance >90m)***



***Proposed access at 89 Sugarmill Road looking east.  
Proposed Lot 170 (Sight distance >90m)***

### 4.4 Public Transport and Pedestrian/Cycleway access

Sugarmill Road is served by both Town bus and school bus services with designated bus lay byes located on Solitary Islands Way adjacent the Sugarmill Road intersection. A Bus route map and indicative school bus timetable are included in Appendix C.

The majority of the proposed additional lots will be within 400m-600m of the bus stops located on Solitary Islands Way providing good access to public transport services for the proposed land use density.

Solitary Islands Way benefits from a shared path and shared path network connections to Coffs Harbour and the Northern Beaches constructed as part of the Pacific Highway Sapphire to Woolgoolga Upgrade project. The proposed lots will have good access to the local shared path network.

## 5 Conclusion

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- 1 The proposed Sugarmill Road Large Lot Residential Precinct rezoning will have no impact on traffic safety, level of service or amenity on the Solitary Islands Way - Sugarmill Road intersection.
- 2 The existing Sugarmill road cross section of 6.0m carriageway with wide road verges and clear of hazards is considered adequate for the minor increase in traffic from the proposed development and no road upgrade works are required.
- 3 The proposed vehicular access roads and driveways to the lots proposed under the rezoning will be able to meet Coffs Harbour City Council Development specifications.
- 4 The majority of the proposed residential lots will be within 400m-600m of the bus stops located on Solitary Islands Way providing good access to public transport services for the proposed land use density. The proposed lots will also have good access to the local shared path network.

## 6 References

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*Roads and Maritime Services Guide to Traffic Generating Developments*

*Coffs Harbour City Council AUS-SPEC Specifications*

*Austrroads Guides to Road Design*

*AS/NZS 2890.1 Parking Facilities Part 1: Off-street car parking*

*Sapphire to Woolgoolga Pacific Highway upgrade Post-construction Operational Noise Report AUGUST 2015*

## Appendix A – Plans of Proposed Subdivision

SHEET 1 OF 1 SHEETS





# Appendix 7 - Traffic Assessment, Road Upgrade & Sight Lines Assessment

## Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment

SHEET 1 OF 1 SHEETS



## Sugarmill Road Large Lot Residential Precinct – Traffic Impact Assessment

SHEET 1 OF 1 SHEETS



## Appendix B – SIDRA analysis summaries

### 2031 plus development AM peak

#### MOVEMENT SUMMARY

 **Site: 101 [Solitary Islands Way at Sugarmill Road]**

Solitary Islands Way intersection 2031 plus development AM peak  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
South: Solitary Islands Way											
1	L2	11	20.0	0.043	5.8	LOS A	0.0	0.0	0.00	0.08	56.8
2	T1	68	4.6	0.043	0.0	LOS A	0.0	0.0	0.00	0.08	59.4
Approach		79	6.7	0.043	0.8	NA	0.0	0.0	0.00	0.08	59.0
North: Solitary Islands Way											
8	T1	36	8.8	0.019	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	6	16.7	0.004	5.9	LOS A	0.0	0.1	0.18	0.55	51.9
Approach		42	10.0	0.019	0.9	NA	0.0	0.1	0.03	0.08	58.6
West: Sugarmill Road											
10	L2	11	30.0	0.025	6.1	LOS A	0.1	0.8	0.20	0.56	51.8
12	R2	17	12.5	0.025	6.3	LOS A	0.1	0.8	0.20	0.56	52.0
Approach		27	19.2	0.025	6.2	LOS A	0.1	0.8	0.20	0.56	51.9
All Vehicles		148	9.9	0.043	1.8	NA	0.1	0.8	0.05	0.17	57.5

### 2030 plus development PM peak

#### MOVEMENT SUMMARY

 **Site: 101 [Solitary Islands Way at Sugarmill Road]**

Solitary Islands Way intersection 2031 plus development PM peak  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
South: Solitary Islands Way											
1	L2	15	21.4	0.059	5.8	LOS A	0.0	0.0	0.00	0.08	56.7
2	T1	95	4.4	0.059	0.0	LOS A	0.0	0.0	0.00	0.08	59.4
Approach		109	6.7	0.059	0.8	NA	0.0	0.0	0.00	0.08	59.0
North: Solitary Islands Way											
8	T1	29	14.3	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	11	20.0	0.007	6.1	LOS A	0.0	0.3	0.22	0.55	51.6
Approach		40	15.8	0.017	1.6	NA	0.0	0.3	0.06	0.14	57.5
West: Sugarmill Road											
10	L2	6	16.7	0.020	6.0	LOS A	0.1	0.6	0.24	0.56	52.2
12	R2	15	14.3	0.020	6.5	LOS A	0.1	0.6	0.24	0.56	51.8
Approach		21	15.0	0.020	6.3	LOS A	0.1	0.6	0.24	0.56	51.9
All Vehicles		171	9.9	0.059	1.7	NA	0.1	0.6	0.04	0.15	57.7

## Appendix C – Bus Service

### **FOREST** North Coast Network Map



Example School bus service – Forest Coaches

Route Number	Route Time	Stops
5851	7:55am	Gaudrons Rd*, (R)Solitary Islands Way, Wakelands Rd*, Maccues Rd*, (R)Solitary Islands Overpass, Moonee Beach Rd, The Corso*, (R)The Corso, (R)Rushton Av, (R)Wansborough Av, Dawn/Wansborough*, (L)Dawn St, (R)Woodhouse Rd, Woodhouse Bus shelter*, (L)Moonee Beach Rd, ABC Childcare Centre*, (R)Pacific Hwy, Korora Interchange 8.10 am*, Pacific Hwy, (L)Orlando St, Harbour Dr, Coffs High School 8.20 am*



**de Groot & Benson Pty Ltd**

**Consulting Engineers & Planners**

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11 July 2023

23147

Keiley Hunter  
Keiley Hunter Town Planning  
[keiley@keileyhunter.com.au](mailto:keiley@keileyhunter.com.au)

Dear Keiley

## **SUGARMILL ROAD ASSESSMENT PROPOSED SUBDIVISION OF LOTS 12, 19 & 91.**

This letter reports on an assessment of the existing Sugarmill Road's geometry and its suitability to support the proposed subdivision of No. 28, 35 & 71, being lots 12 DP243972, 91 DP786155 and 17 DP249273 respectively.

The existing Sugarmill Road is a no-through road approximately 1 km long running east-west. It connects to Solitary Islands Way at its eastern end. A no-through private road continues from its western end, servicing six properties. The land is currently zoned Rural Landscape RU2 with the road servicing a total of approximately 23 properties, typically of 2 to 4 Ha in size. As it is no-through it only serves these properties and carries no through traffic.

The proposed subdivisions will create one extra lot within each of three subject lots, lifting the properties serviced to 26. At an average of 9 vehicle trips per dwelling per day (Guide to Traffic Generating Development, RTA 2002), this amounts to 207 vehicles per day (vpd), increasing to 234 vpd with the development. This is the expected traffic at the intersection of Sugarmill Road and Solitary Islands Way. It will diminish with distance along Sugarmill Road past each property access.

Sugarmill Road has a flexible gravel pavement with a nominal 6m wide bitumen spray seal wearing surface with grassed shoulders and roadside table drains with no kerb and gutter. The bends have superelevation, there are several crests, sags with culverts and longitudinal grades of up to 20%.

Under Council's current Auspec 0041 Geometric Road Layout and the land zoning, the required geometry is given in Table 3.2. At 234 vpd, the road, or at least its eastern end, can be classified as a Local Major Road (200 – 2000 vpd). Further west it can be classified as a Local Minor Road (<200 vpd). The difference in classification is somewhat irrelevant as both have the same geometric requirements of 6 m seal width and 1 m shoulders (that can be unsealed) within a 20 m wide road reserve.

Where topography and geometry allow, Local Major roads are to be designed for 80 kmph while Local Minor roads are to be designed for 60 kmph. There is no posted speed limit on the existing road and the legal speed limit carries through from Solitary Islands Way at 80 kmph. The road geometry and sight distances are such that few motorists would reach the speed limit. The 85<sup>th</sup> percentile speed is more likely only 60 kmph.



A site inspection was undertaken on 10 July 2023. The existing pavement and seal are in reasonably good condition. It is unknown if any major repairs or re-seals have been undertaken since the road's construction of more than thirty years ago. If not, then their condition is remarkably good given the pavement's age.

The existing road has been surveyed by MNC Surveying with the seal width measured every 30 m as per the attached. The widths vary from 5.32 to 6.33 m, with an average of 5.97 m. On initial inspection, the road has grassed shoulders. These generally propagate for a metre or so on the same plane as the bitumen seal but sit a little proud. Upon probing, these are in fact gravel shoulders that, over the years, grass has colonised. The grass, trapping sediment washed off the road, has slowly grown slightly proud of the seal.

Beyond the shoulders and where in cutting, the surface generally dips to shallow grassed longitudinal table drains before battering up. Where in fill runoff sheets off the shoulders, down any batters and off into the adjacent properties. Runoff off the seal is in places interrupted by the proud grass over the shoulders. In heavy rain, some channelling of runoff along the seal edges will result.

When compared against the AUSPEC design requirements, the road formation is mostly compliant. Although colonised by grass, it has trafficable shoulders on much the same plane as the adjacent seal. The seal width varies with approximately half the length less than 6 m and half over. Generally, that less than 6 m is only by 0.1 m.

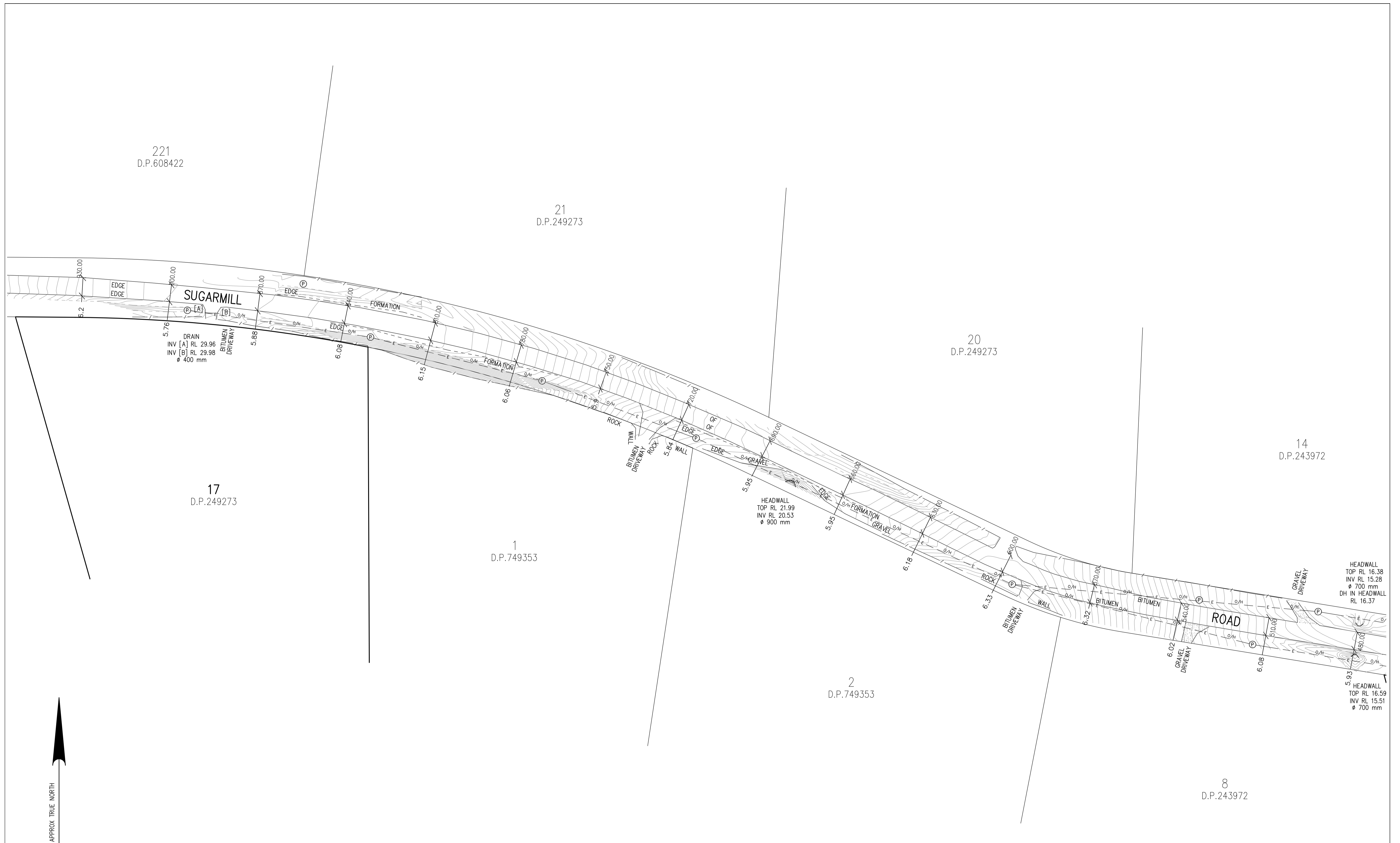
Works to widen the seal to 6 m along most of the narrow sections would achieve very little, be expensive and potentially cause more harm than good to the existing pavement that, over the years, has proved to be durable. Given the slight increase in traffic generated by the proposal, such works are not considered warranted with one exception.

One section, the narrowest, does warrant some widening works. The third drawing attached shows the bend between CH 140 and 280 where the seal is at its narrowest. Being on a bend with reduced sight distance, widening of the seal to at least 6.0 m is warranted, with this work best undertaken on the north side (inside of bend). Further, the longitudinal gradient through the section is quite flat as the road also passes over a gentle crest. Accumulated sediment and grass growth has all but filled the original shallow table drain on the north side. With the seal widening, the reshaping of a 1m wide gravel shoulder and a deepening of the grass table drain should also be undertaken.

Yours sincerely

Graham Knight

Director



LEGEND:  
⊕ = POWER POLE

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AMENDMENT	DATE	AMENDMENT DETAILS	AUTHORISED BY

CLIENT:  
**MARTYN, GRIMLEY, ARIANAYAGAM**

APPROVED ON BEHALF OF  
-----  
CITY ENGINEER      DATE

**MID NORTH COAST SURVEYING**  
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SCALE: 1:600      JOB No: 1442

DATE: 01.09.2022      YOUR REF:

DATUM: AHD      SURVEYED: L.C.

ORIGIN: GNSS-RTK      DESIGNED:

SHEET SIZE  
**A1**  
CAUTION  
DO NOT SCALE

DRAWN: C.A.  
CHECKED: B.H.

TITLE  
PROJECT

THE MINIMUM FLOOR LEVEL IS TO BE CONFIRMED BY THE BUILDER ON RELEASE OF THE D.I.A. FROM COUNCIL. THE SURVEYOR IS TO BE ADVISED IN WRITING PRIOR TO BUILDING A SLAB. THE SLAB SHOULD NOT BE POURED OR A TIMBER FLOOR ERECTED PRIOR TO APPROVAL OF A SURVEY CERTIFICATE. A FULL BOUNDARY SURVEY IS REQUIRED TO CERTIFY THE ACCURACY OF THE BOUNDARY MARKS FORMED. THE TITLE IS TO BE RECHECKED TO ENSURE ALL EASEMENTS, COVENANTS, RIGHTS AND RESTRICTIONS ARE SHOWN. THE PLAN REPRESENTS VISUAL TOPOGRAPHICAL DETAIL ONLY. THE NATURE AND POSITION OF ANY UNDERGROUND SERVICES WAS NOT INVESTIGATED AT THE TIME OF SURVEY. BURNAGE AND SEWAGE INFORMATION IS TO BE CONFIRMED ON RECEIPT OF THE DATA FROM COUNCIL. THE POSITION OF SERVICES INCLUDING SEWER JUNCTIONS AND INSPECTION POINTS MAY HAVE BEEN OBTAINED THROUGH VERBAL ADVICE FROM COUNCIL.

LOT IN D.P.  
Street: Sugarmill Road  
Suburb: Sapphire Beach  
Local Auth: C.H.C.C.  
Parish: Moonee  
County: Fitzroy  
Area:

Contour Interval: 0.25  
Electricity: Overhead  
Telephone: Overhead  
Stormwater: Front  
Water: No  
Road: Bitumen  
Kerb: Nil  
Sewage: Septic  
Footpath: Nil

FILE No.1442

**SHEET 1 OF 2**

COUNCIL DRAWING No.







RECOMMENDED PAVEMENT WIDENING, SUGAR MILL ROAD

# Appendix 7 - Traffic Assessment, Road Upgrade & Sight Lines Assessment

**George Stulle Traffic Engineering** – 3 Montgomery Close Safety Beach NSW 2456

Ph. 0418 2193 58

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27 June 2022

The General Manager  
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[coffs.council@chcc.nsw.gov.au](mailto:coffs.council@chcc.nsw.gov.au)

Dear Sir,

**RE: Planning Proposal PP-2022-107, 28, 35 and 89 Sugarmill Road Sapphire Beach**

I refer to Council correspondence of 27 May 2022 requesting additional information to support the Planning Proposal application PP-2022-107, 28, 35 and 89 Sugarmill Road Sapphire Beach.

This letter addresses the issues raised in relation to sight distance assessments undertaken in the Traffic and Parking Impact Assessment report October 2021 included as part of the application.

- *Please provide clarification in relation to the sight distance requirements. Noting that the sight distance requirements are for the posted or general speed limit unless the 85th percentile speed is more than 5km above the limit, in which case the tabulated speed to the nearest 85th percentile should be adopted;*
- *Please relocate the existing access to Lot 120 at 28 Sugarmill Road to be compliant with AS2890.1;*

Table 3.2.4 of AS 2890.1 provides entering sight distance requirements at vehicular access driveways for increments of 'frontage road speed' and includes a notation, as detailed in Councils letter, that the frontage road speed to be used in the table should be the posted or general speed limit unless there is evidence that the 85<sup>th</sup> percentile speed is higher.

To be reasonably applied, this notation must rely on the 'frontage road' having been subject to a speed review to determine whether the general speed limit should apply, as it would obviously be correct to use the table if the 85<sup>th</sup> percentile speed could be shown to be lower than the general limit on an unposted road.

Section 2.3 of the Transport for NSW Speed Zoning guidelines specifies that:

*The speed limit must not exceed the maximum assessed speed for the road, taking into account key factors such as crash profile, road function, road use, roadside development, road characteristics, traffic mix, crash history, the presence of vulnerable road users, and the number, type and frequency of driveways and intersections which indicate potential conflict points.*

As detailed in the Sugarmill Road Traffic Impact Assessment report, Sugarmill Road demonstrates clear horizontal and vertical alignment road characteristics, roadside development and traffic mix which would warrant a speed zone of 60km/h. This would be consistent with nearby roads of similar characteristics such as Gaudrons Road and Wakelands Road which do have 60km/h speed zones.

# Appendix 7 - Traffic Assessment, Road Upgrade & Sight Lines Assessment

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Nevertheless, the sight distance assessments undertaken in the Sugarmill Road Traffic Impact Assessment report were based on the higher criteria for an 80km/h speed environment. This was based on physical assessment of the speed environment which demonstrates a comfortable driving speed of 60km/h and a driving limit due to horizontal and vertical alignment of 80km/h.

It was also noted in the report that Sugarmill Road is not a through road and is only 1.0km in length providing access to a limited number of rural residential lots. Traffic characteristics on Sugarmill Road will therefore be predominantly local traffic with good knowledge of road and access features further limiting the likelihood of excessive speeds.

Regarding the existing driveway to proposed Lot 120 at 28 Sugarmill Road, as detailed in the Sugarmill Road Traffic Impact Assessment report this access services an existing house with well-established crossover and driveway. The existing driveway has no crash history and the rezoning proposal does not alter any traffic generation or road safety considerations as traffic volumes on Sugarmill Road remain low.

The driveway is located close to a horizontal curve on Sugarmill Road on its eastern approach with radius such that the 85<sup>th</sup> percentile speed on the curve would be less than 60km/h. Right turn movements from the driveway will not be required so the critical sight distances will be to the west and to a vehicle turning in to the property from the east. Sight distance to the west exceed the 95m required for an 80km/h speed environment and the measured sight distance from the east to a vehicle turning right into the driveway is 70m which exceeds the required sight distance criteria.

The sight distance assessments undertaken as part of the Sugarmill Road Traffic Impact assessment show that the proposed driveway access points can meet the requirements of Section 3.2.4 of AS 2890.1 sight distance at access driveway exits. The existing access to proposed Lot 120 at 28 Sugarmill Road is compliant with AS2890.1 and does not warrant relocation.

Please contact me if any further information is required.

Kind regards,



George Stulle BEng  
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P. 0418219358

# Land Use Conflict Risk Assessment

## Planning Proposal

- 28 Sugarmill Road - Lot 12 DP 243972
- 35 Sugarmill Road - Lot 91 DP 786155
- 89 Sugarmill Road - Lot 17 DP 249273

6 January 2022

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# 1. Introduction

Keiley Hunter Town Planning has been engaged by three landowners to undertake a Land Use Conflict Risk Assessment (LUCRA) to accompany a Planning Proposal for land located at the following properties in Sapphire Beach north of Coffs Harbour:

- Property 1: 28 Sugarmill Road - Lot 12 DP 243972 (2.034 ha)
- Property 2: 35 Sugarmill Road - Lot 91 DP 786155 (2.367 ha)
- Property 3: 89 Sugarmill Road - Lot 17 DP 249273 (1.855 ha)

The purpose of the Planning Proposal is to amend the Coffs Harbour LEP 2013 to enable large lot residential development of each property.

Planning Proposal Pre-lodgement meeting notes from CHCC (8 April 2021) indicated that a LUCRA is required to support this proposal due to surrounding agricultural land uses.

The subject properties are currently zoned RU2 Rural Landscape. The intent of the Planning Proposal is to rezone the land to enable large lot residential subdivision as shown at Illustration 1,1 below. The primary land use conflict constraint to future residential subdivision is the greenhouses (horticulture), located immediately west of Property 2.

**Illustration 1.1 Proposed Zone amendments**

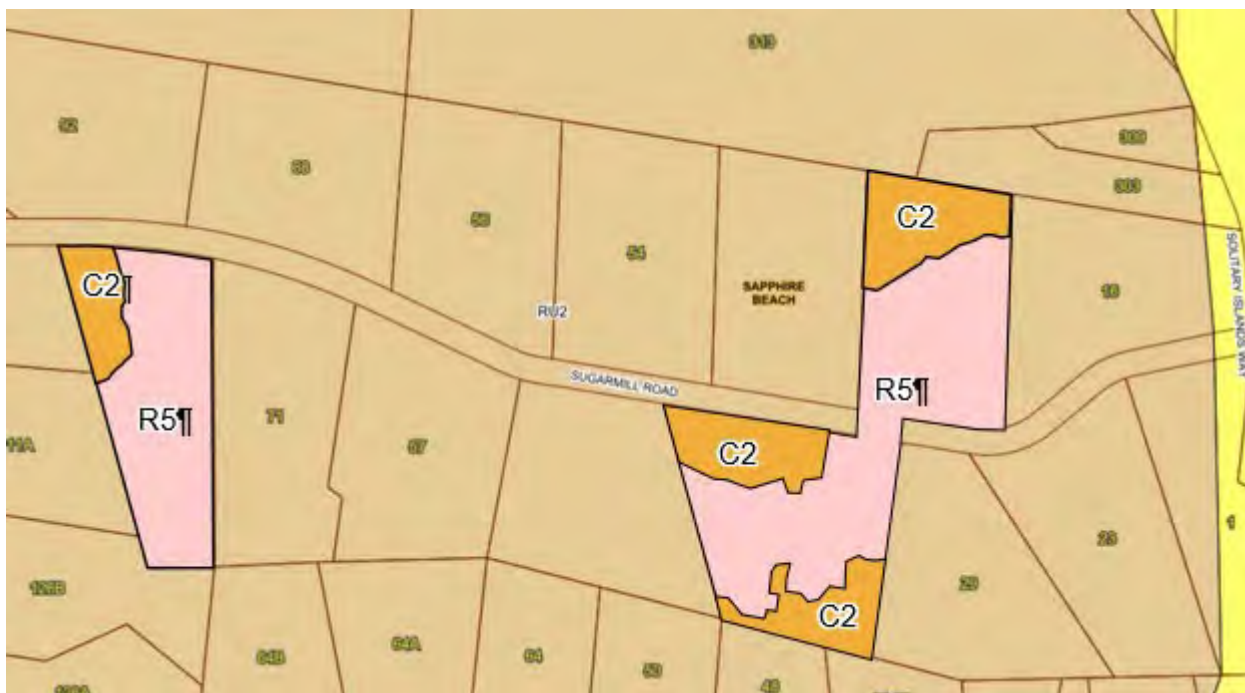
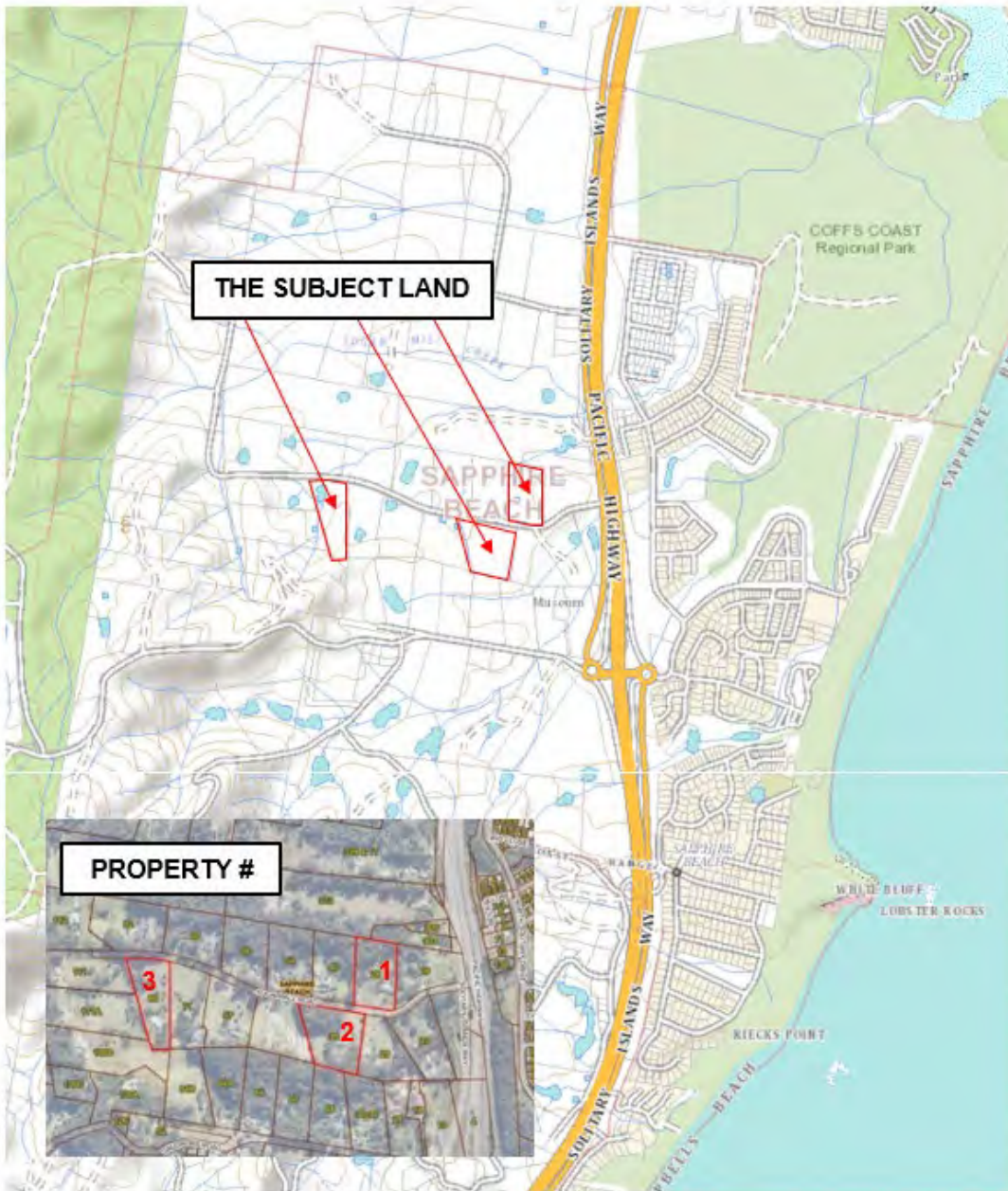


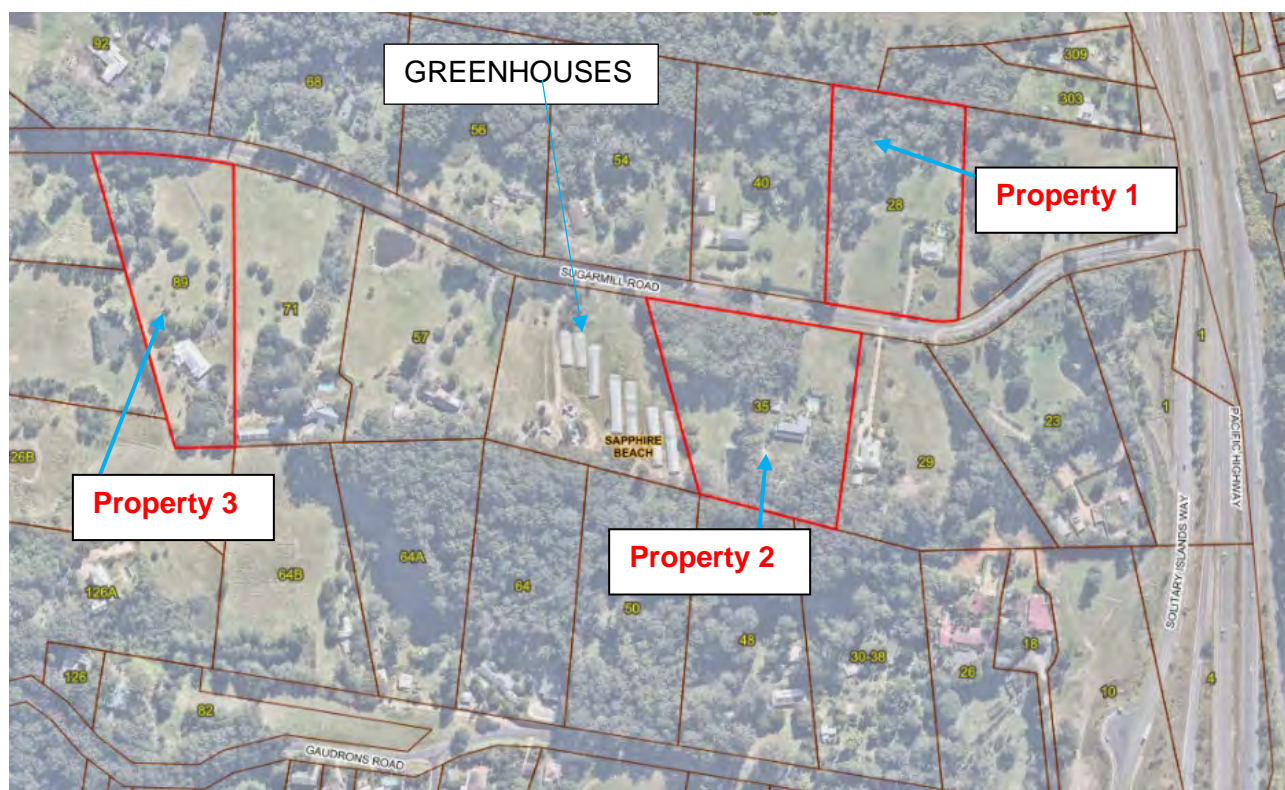
Illustration 1.2 Site Locality



Source: Sixmaps 2021



**Illustration 1.2 Subject Land (Aerial)**



**Source: CHCC 2021**

The *Living and Working in Rural Areas Handbook* (Department of Primary Industries et. al 2007) recommends buffer distances from primary industry to residential development. The recommended buffer distances from **greenhouse and controlled environment horticulture** to residential areas and rural dwellings 200 metres.

The *Living and Working in Rural Areas Handbook* (DPI 2007) is referenced in Councils Development Control Plan (DCP).

NSW DPI has also produced the following guidelines to assist in LUCRA assessments:

- Interim Guidelines 'Buffer Zones to Reduce Land Use Conflict with Agriculture', Primefact 1624, November 2018.
- *Land Use Conflict Risk Assessment Guide, Factsheet*, 2011, Primefact 1134.
- *Managing biosecurity risks in land use planning and development guide*, October 2020
- *Guidelines for the Development of Controlled Environmental Horticulture, Planning Greenhouse and Hydroponic Horticulture in NSW*, 2005

Typical conflicts which may arise between agricultural activities and residential development are shown in **Table 1.1** below:

**Table 1.1: Typical Conflicts**

Noise	<ul style="list-style-type: none"> <li>• Farming equipment, pumps, spray machines, transport.</li> <li>• Ancillary equipment associated with on-farming processing.</li> </ul>
Odour and dust	<ul style="list-style-type: none"> <li>• Fertilisers and chemicals</li> </ul>

## Appendix 8 - Land Use Conflict Risk Assessment

	<ul style="list-style-type: none"> <li>• Vehicle movements</li> </ul>
Lights	<ul style="list-style-type: none"> <li>• Security lights</li> </ul>
Health concerns	<ul style="list-style-type: none"> <li>• Chemicals</li> <li>• Spray Drift</li> </ul>
Weed management	<ul style="list-style-type: none"> <li>• Unmanaged weed incursion onto farmland.</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Access</li> <li>• Pumping</li> <li>• Quantity and quality</li> <li>• Runoff, sedimentation</li> </ul>
Domestic animals	<ul style="list-style-type: none"> <li>• Barking dogs</li> <li>• Feral dogs and cats</li> </ul>
Smoke and ash	<ul style="list-style-type: none"> <li>• Burning of pasture, stubble or 'rubbish'</li> </ul>
Visual	<ul style="list-style-type: none"> <li>• Intrusion in the landscape (greenhouses and supporting farm infrastructure).</li> </ul>

Chapter 6 of *Living and Working in Rural Areas Handbook* (NSW DPI et. al 2007) provides guidance in the assessment and mitigation of potential land use conflict matters. This Planning Proposal will enable subdivision of the subject properties, therefore subdivisions, *Chapter C1.5 Subdivision – Design Requirements for Rural and Large Lot Residential Zones of Councils DCP* is referenced below.

*Subdivisions are to incorporate adequate buffers between dwelling envelopes and adjoining agricultural land to ensure that the agricultural potential of those lands will not be diminished (refer to the Land Use Conflict Risk Assessment Guide prepared by the NSW Department of Primary Industries). (Control C1.5(2))*

This LUCRA has considered land use interface issues and risks between rural land uses and future Large Lot Residential development and has been prepared in accordance with the *Land Use Conflict Risk Assessment Guide* and aims to:

- Objectively assess the effect and level of proposed land use on neighbouring land uses;
- Identify the risk of conflict between neighbouring land uses;
- Consider development control and buffer requirements within the context of likely land use conflict;
- Recommend strategies to help minimise conflict at Development Application stage for future subdivision proposals.

## 2. Site Assessments

### 2.1 Land use change and development proposed.

The subject properties currently support single dwellings and ancillary structures. There are no agricultural activities being undertaken on any of the subject lands. The subject properties are generally cleared, managed land comprising native and exotic vegetation. There are stands of established native vegetation on all three properties, which are proposed to be retained and zoned as C2 Environmental Conservation under the accompanying Planning Proposal.

Land use changes resulting from the rezoning are future subdivisions to create one additional lot within each property. Overall, the rezoning will result in three additional vacant lots suitable for lifestyle dwelling purposes. Property 2 adjoins existing horticulture and is the only property at risk of conflict between the existing rural land use and a future additional dwelling.

**Table 2.1: Land Use Change**

Property	Proposed Lot	Lot Area	Zone Area (m <sup>2</sup> )	Improvements
1	120	1.37 ha	R5 - 7,323 C2 - 6,377	Existing dwelling, ancillary buildings, swimming pool, driveway
	121	6,636 m <sup>2</sup>	R5 – 6,636	Vacant, existing dam
2	910	1.172 ha	R5 - 6,888 C2 - 4,832	Existing dwelling, ancillary buildings, swimming pool, driveway
	911	1.195 ha	R5 - 6,393 C2 - 5,557	Vacant, tennis court
3	170	8,325 m <sup>2</sup>	R5 – 8,325	Existing dwelling, ancillary buildings, swimming pool, bitumen driveway
	171	1.2 ha	R5 – 8,400 C2 - 3,600	Vacant, bitumen driveway

The adjoining property (Lot 8 DP 243972) is only 2.113 ha in area and is a small scale horticultural farm accommodating seven (7) greenhouses used for vegetable production. Intensive plant agriculture, including horticulture, is permissible without consent in the RU2 zone. It should be noted that Farm Buildings (greenhouses) are development that requires consent. Farm buildings are a structure the use of which is ancillary to an agricultural use of the landholding on which it is situated and includes a hay shed, stock holding yard, machinery shed, shearing shed, silo, storage tank, outbuilding or the like, but does not include a dwelling. The greenhouses are within 85 m of the existing dwelling at Property 2. The following assumptions are made:

1. The farm buildings (greenhouses) are unauthorised, ie, were erected without consent.
2. Development consent was granted for the farm buildings.

There is a direct line of sight from Property 2 (35 Sugarmill Road) westerly towards a greenhouse horticulture activity.

**Illustration 2.2 Property 2 – Future Subdivision**



Source: MNC, Rev F, Proposed 2 Lot Torrens Subdivision – 35 Sugarmill Road Sapphire Beach

## 2.2 Site Conditions

The site is located on the southern side of Sugarmill Road on gently undulating terrain.

The soils within the subject site consist of duplex soil comprising light to medium clay. Runoff from the existing greenhouse horticulture activities is minimal and contained, and any runoff will be in a south to south-westerly direction, away from any existing dwellings or proposed building envelopes.

The greenhouses adjoining Property 2 (35 Sugarmill Road) are located within Lot 8 DP 243972. These are the only horticultural activities within the rezoning area.

## 2.3 Meteorology

Due to its latitude and proximity to the coast, Sapphire Beach has a coastal sub-tropical climate. As a result, daily temperatures are in the warm to very warm range during summer months (18 – 25°C) and are milder during the winter months 9 – 19°C).

Rainfall is mainly distributed throughout November to May with 1,121mm (72) of the mean annual rainfall of 1563mm falling during this period. The highest monthly rainfall occurs in February/March while the months July-October are much drier, generally receiving less than 100mm each.

Evaporation levels between September and January often exceed rainfall levels. However, as evaporation rates are low during the winter months, rainfall exceeds evaporation on an annual basis.

## Appendix 8 - Land Use Conflict Risk Assessment

The Coffs Harbour MO AWS is situated at an elevation of 5m, approximately 25km south of the site. The site opened in 1943 and closed on 29 August 2015. The records include the period 1943 to 2015 (see Table 2.2).

**Table 2.2. Monthly Climate Statistics – Coffs Harbour MO (1943 – 2010)**

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
<b>Temperature</b>															
Mean maximum temperature (°C)	27.0	26.8	26.0	24.1	21.4	19.4	18.8	19.8	22.0	23.7	25.0	26.3	23.4	65	1943 2015
Mean minimum temperature (°C)	19.5	19.5	18.1	15.2	11.7	9.1	7.6	8.2	11.0	13.8	16.2	18.1	14.0	65	1943 2015
<b>Rainfall</b>															
Mean rainfall (mm)	187.5	224.8	234.6	178.4	160.8	120.8	72.5	79.5	59.9	96.3	144.7	144.9	1699.0	63	1943 2015
Decile 5 (median) rainfall (mm)	151.2	179.0	205.1	135.9	117.4	90.0	54.3	40.7	35.4	74.7	130.4	114.0	1612.2	67	1943 2015
Mean number of days of rain $\geq$ 1mm	9.4	9.7	10.8	8.5	7.7	6.3	4.5	4.5	4.5	6.7	8.2	8.4	89.2	59	1943 2015
<b>Other daily elements</b>															
Mean daily sunshine (hours)	7.6	7.3	7.1	7.2	6.7	6.6	7.2	8.3	8.5	8.1	7.9	7.9	7.5	47	1967 2015
Mean number of clear days	7.0	5.9	8.3	9.8	10.3	11.2	14.1	15.2	13.9	10.4	8.1	7.9	122.1	62	1943 2010
Mean number of cloudy days	12.8	12.8	12.2	10.7	10.7	9.7	8.0	6.8	6.5	9.8	11.2	12.0	123.2	62	1943 2010
<b>9 am conditions</b>															
Mean 9am temperature (°C)	23.9	23.4	22.5	20.5	17.3	14.6	13.8	15.4	18.5	20.6	21.9	23.4	19.7	62	1943 2013
Mean 9am relative humidity (%)	72	75	74	71	71	71	67	60	56	61	65	68	68	59	1943 2013
Mean 9am wind speed (km/h)	14.5	13.4	13.0	12.0	10.7	10.5	10.3	11.5	14.4	15.6	15.8	15.1	13.1	61	1943 2010
<b>3 pm conditions</b>															
Mean 3pm temperature (°C)	25.3	25.3	24.5	22.7	20.2	18.4	17.7	18.5	20.2	21.5	22.9	24.4	21.8	62	1943 2010
Mean 3pm relative humidity (%)	69	71	69	65	62	59	54	53	57	63	65	68	63	59	1943 2010
Mean 3pm wind speed (km/h)	22.4	20.9	19.4	17.0	14.6	14.7	15.5	18.2	21.7	22.9	23.7	22.5	19.5	62	1943 2010
Red = highest; Blue = lowest															

### Wind Regime

The wind regime for the site is based on annual wind roses for Coffs Harbour Meteorological Observations Automatic Weather Station (MO AWS).

Annual wind roses for the times of 9am and 3pm are shown in Plate 2.1. the wind roses are based on records from 1943 to 2015. The annual wind roses indicate that light to moderate winds are generally experienced from all directions. The wind roses also indicate the following:

Winds in the mornings are typically light to moderate to heavy winds from the south west, with lighter winds from the south, north and west

Winds in the afternoon are typically more moderate winds from the north-east, south, south east and east; and

Calm conditions are experienced 15% of the time at 9am in the morning and only 3% of the time at 3pm in the afternoons.

*\*The Coffs Harbour Weather Station results whilst not necessarily reflective as the exact wind patterns at the subject site have nevertheless been used to provide a guide as to the long-term wind regime patterns in the locality.*

## 2.4 Site Inspection

A site assessment was undertaken on 2 November 2021 by Keiley Hunter. On the day of the site assessment the weather was generally fine and partly cloudy. The site inspection confirmed the presence of greenhouses at Lot 8 DP 243972. Site photos are provided below.



**Property 1: 28 Sugarmill Road.**



**Property 2: 35 Sugarmill Road.**

## Appendix 8 - Land Use Conflict Risk Assessment



**Property 3: 89 Sugarmill Road.**



**Greenhouses at Lot DP 243972**



**View of the greenhouse activity from Property 2**

## Appendix 8 - Land Use Conflict Risk Assessment



**Greenhouse viewed to the southwest from Sugarmill Road, near the entry gate.**



**View of the greenhouse activity, viewed to the west from Sugarmill Road.**

### 2.5 Greenhouse Horticulture

The existing greenhouse horticulture activity (Lot 8 DP 243972) is located approximately 20 m west of the proposed building envelope within proposed Lot 911 at Property 2 (35 Sugarmill Road).

The matters at Section 2.6 below have been identified as potential land use conflicts between the existing greenhouses and the future building envelope at proposed Lot 911.



**Illustration 2.3**      **Building Envelope – Proposed Lot 911**



Source: CHCC 2021

### 2.6 Agricultural Chemical Spray Drift

The off-target movement of agricultural chemicals can be a cause for concern to future residents in proximity to horticultural areas, largely based on fears of exposure to agricultural chemicals but also due to detection of odours associated with the chemical (<https://chemqual.com.au/chemical-use-risk-assessment/>).

*Living and Working in Rural Areas* guidelines for greenhouse horticulture setbacks to residential development recommend a minimum separation width of 200m where open ground conditions apply.

Separation distances may be reduced where a vegetated and/or landscaped buffer element can be satisfactorily implemented and maintained. *Buffers created by vegetation planting and physical landscaping work. These buffers can reduce airborne-created conflict such as chemical spray drift. (Managing Biosecurity Risks in Land Use Planning and Development Guide).*

### 2.7 Odour

Odour from horticulture can arise from use of chemical sprays, fertilisers (inorganic and organic), effluent disposal and composting, however, odour impacts are more prevalent from agriculture such as feedlots, piggeries, chicken farms, dairies and the like.

### 2.8 Noise

The most likely types of noise associated with agricultural activity which may lead to land use conflict is noise from pumps and machinery (tractors, mowers) operation.

Given the low intensity of the adjoining land use it is unlikely that noisy activities will occur at night. Noise from general farming operations (tractor use, spraying etc), vehicle movements, pruning of trees and general farm activities is a normal part of farming and horticultural production.

### 2.9 Dust

The main sources of dust from the adjoining greenhouses is from vehicle movements. The ground around the greenhouses is under grass and unlikely to raise dust. Winds in the mornings are typically light to moderate to heavy winds from the south-west. Winds in the afternoon are typically more moderate winds from the north-east. Calm conditions are experienced 15% of the time at 9am in the morning and only 3% of the time at 3pm in the afternoons.

Separation distances and vegetated buffers will be effective in reducing conflict resulting from dust.

### 2.10 Weeds and Pests

Pests primarily include flies and rodents. Weed incursion between properties can occur from self-seeding and runners. In the subject case, both properties are regularly maintained and managed, reducing the likelihood of weed invasion. The greenhouses are used for vegetable production with produce harvested well before ripening, reducing the likelihood of pest invasion.

### 2.11 Operating Times

General farm operations are usually during daylight hours. This is expected to remain the case.

### 2.12 Chemical Use

Volatile components of chemicals sprayed may affect neighbours if not used in accordance with manufacturer and workplace health and safety requirements. Spraying during adverse weather conditions should also be avoided that may impact on neighbours. The greenhouse structures mitigate spraydrift to the surrounding environment.

### 2.13 Surface Water and Sediment Runoff

Runoff from the existing greenhouse horticulture activities is minimal and contained, with runoff directed towards the dam to the north of the property, well away from Property 2.

A future dwelling within the building envelope nominated within proposed Lot 911 will not result in any additional surface runoff impacting upon the adjoining greenhouse horticulture activity.

### 2.14 Traffic and Access

Access for the future proposed large lot residential properties is from Sugarmill Road, which connects to Solitary Islands Way. It is considered that there will be no significant land use conflicts with respect to the traffic and access between the proposed rezoning of the subject lands for large lot residential use and the existing greenhouse horticulture activity.

# 3. Land Use Conflict Risk Assessment

## 3.1 Introduction

In this report, a risk assessment matrix is used to rank the potential Land Use Conflicts in terms of significance. The matrix assesses the environmental/public health and amenity impacts according to the:

- Probability of occurrence; and
- Severity of impact

The procedure of environmental/public health and amenity hazard identification and risk control are performed in three stages:

1. Environmental/public health and amenity hazard identification;
2. Risk assessment and ranking;
3. Risk control development

### **Procedure:**

1. Prepare LUCRA Hazard Identification and Risk Control form
2. List all hazards associated with each activity
3. Assess and rank the risk arising from each hazard before “controls” are applied on the LUCRA form.
4. Develop controls that minimise the probability and consequence of each risk using the five level methods. Record these controls on the form.
5. Re-rank each risk with the control in place to ensure that the risk has been reduced to an acceptable level. If the risk ranking is not deemed to be acceptable consideration should be given to whether the proposed activity should be allowed to proceed.

**Source: Land Use Conflict Risk Assessment Guide - October 2011, NSW DPI**

## 3.2 Risk Assessment and Risk Ranking

It is necessary to differentiate between an ‘environmental hazard’ and an ‘environmental risk’. ‘Hazard’ indicates the potential for harm, while ‘risk’ refers to the probability of that harm occurring. For example, the presence of chemicals stored in a building is a hazard, but while the chemicals are stored appropriately, the risk is negligible. **Table 3.1** defines the hazard risks used in this report.

The Risks Ratings (severity of the risks) have been established by assessing the consequences of the risks and the likelihood of the risks occurring.

## Appendix 8 - Land Use Conflict Risk Assessment

**Table 3.1: Measure of Consequence**

Level	Descriptor	Description	Examples/Implications
1	Severe	<ul style="list-style-type: none"> <li>Severe and/or permanent damage to the environment</li> <li>Irreversible with management</li> </ul>	<ul style="list-style-type: none"> <li>Damage or death to animals, fish, birds or plants</li> <li>Long term damage to soil or water</li> <li>Odours so offensive some people are evacuated or leave voluntarily</li> <li>Many public complaints and serious damage to Council's reputation</li> <li>Contravenes Protection of the Environment &amp; Operations Act and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act.</li> </ul>
2	Major	<ul style="list-style-type: none"> <li>Serious and/or long-term impact to the environment</li> <li>Long-term management implications</li> </ul>	<ul style="list-style-type: none"> <li>Water, soil or air impacted badly, possibly in the long term.</li> <li>Limited damage to animals, fish or birds or plants</li> <li>Some public complaints – impacts pass quickly</li> <li>Contravenes the conditions of Council's licences, permits and the POEO Act</li> <li>Likely prosecution.</li> </ul>
3	Moderate	<ul style="list-style-type: none"> <li>Moderate and/or medium-term impact to the environment</li> <li>Some ongoing management implications</li> </ul>	<ul style="list-style-type: none"> <li>Water, soil or air known to be affected, probably in the short term</li> <li>No damage to plants or animals</li> <li>Public unaware and no complaints to Council</li> <li>May contravene the conditions of Council's Licences and the POEO Act</li> <li>Unlikely to result in prosecution.</li> </ul>
4	Minor	<ul style="list-style-type: none"> <li>Minor and/or short-term impact to the environment</li> <li>Can be effectively managed as part of normal operations</li> </ul>	<ul style="list-style-type: none"> <li>Theoretically could affect the environment or people but no impacts noticed</li> <li>No complaints to Council</li> <li>Does not affect the legal compliance status of Council.</li> </ul>
5	Negligible	<ul style="list-style-type: none"> <li>Very minor impact to the environment</li> <li>Can be effectively managed as part of normal operations</li> </ul>	<ul style="list-style-type: none"> <li>No measurable or identifiable impact on the environment.</li> </ul>

Source: Table 4: Land Use Conflict Risk Assessment Guide - October 2011, NSW DPI

## Appendix 8 - Land Use Conflict Risk Assessment

This report utilises an enhanced measure of likelihood of risk approach 1, which provides for five levels of probability (A-E). The five levels of probability are set out below in **Table 3.2**.

**Table 3.2: Probability Table**

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or "I've heard of it happening"
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

### 3.3 Risk Ranking Method

For each event, the appropriate 'probability' (ie. a letter A to E) and 'consequence' (ie. a number 1 to 5) is selected. The consequences (environmental impacts) are combined with a 'probability' (of those outcomes) in the Risk Ranking Table (**Table 3.3**) to identify the risk rank of each environmental impact (eg. a 'consequence' 3 with 'probability' D, yields a risk rank 9). The table yields a risk rank from 25 to 1 for each set of 'probabilities' and 'consequences'. A rank of 25 is the highest magnitude of risk that is a highly likely, very serious event. A rank of 1 represents the lowest magnitude or risk, an almost impossible, very low consequence event.

**Table 3.3: Risk Ranking Table**

PROBABILITY	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

Source: Land Use Conflict Risk Assessment Guide - October 2011, NSW DPI

#### NOTE:

- A risk ranking of 25-11 is deemed as an unacceptable risk
- A risk ranking of 10-1 is deemed as an acceptable risk

Thus, the objective is to endeavour to identify and define controls to lower risk to a ranking of 10 or below.

## 3.4 Risk Reduction Controls

The process of risk reduction is one of looking at controls that have an effect on probability such as the implementation of certain procedures; new technology or scientific controls that might lower the risk probability values.

It is also appropriate to look at controls which affect consequences eg. staff supply with a mechanism to change impacts or better communications established. Such matters can sometimes lead to the lowering of the consequences.

**Table 3.4: LUCRA Site Assessments**

Site Feature	Condition/comments	Potential Conflict
Residential Development/ buffer Distances	<p>Default Buffer distances to Residential development:</p> <ul style="list-style-type: none"> <li>• 200m to greenhouse and controlled environment horticulture.</li> </ul> <p>The closest point of the existing greenhouses to the existing dwellings and the proposed building envelopes are approximately:</p> <p><u>Property 1:</u> Ex. dwelling: 245m BE on proposed Lot 121: 185m</p> <p><u>Property 2:</u> Ex. dwelling: 90m <b>BE on proposed Lot 911: 20m</b></p> <p><u>Property 3:</u> Ex. dwelling: 240m BE on proposed Lot 171: 250m</p>	<p><u>Property 1:</u> Minor</p> <p><u>Property 2:</u> Moderate</p> <p><u>Property 3:</u> Negligible</p>
Site Location: Vehicular Access	<p>Access for all properties is from Sugarmill Road which connects to Solitary Islands Way. There will be no significant land use conflicts with respect to the traffic and access arising from the three additional lots resulting from the proposed rezoning and the existing greenhouse horticulture activity.</p>	Minor
Exposure	<p>At 9am the dominant wind is from the south west (32%), while at 3pm the dominant wind direction is mixed between north east (29%) and southerly (21%) (BOM 2018).</p> <p>The annual wind roses indicate that light to moderate winds are generally experienced</p>	Low-Moderate

## Appendix 8 - Land Use Conflict Risk Assessment

Site Feature	Condition/comments	Potential Conflict
	<p>from all directions. The wind roses also indicate the following:</p> <ul style="list-style-type: none"> <li>• Winds in the mornings are typically light to moderate to heavy winds from the south west, with lighter winds from the south, north and west;</li> <li>• Winds in the afternoon are typically more moderate winds from the north-east, south, south east and east; and</li> <li>• Calm conditions are experienced 15% of the time at 9am in the morning and only 3% of the time at 3pm in the afternoons.</li> </ul>	
Site Drainage and Water Pollution	No change to existing drainage.	Negligible
Agricultural Chemical Spray Drift	Any chemical spray is expected to be confined to within the greenhouses.	Minor
Odour	Odour from greenhouse horticulture can arise from use of chemical sprays, fertilisers (inorganic and organic) and composting. Any effect from odours is expected to be confined to within the greenhouses.	Minor
Noise	Given the intermittent use of machinery, the likelihood of noise impacts from the existing greenhouse activities are deemed to be low to negligible.	Low to negligible
Dust	The land surrounding the greenhouses is managed grassland. The horticultural farm is small (7 greenhouses) with low traffic generation.	Low to moderate

### Separation Distance

Based on the proximity of the existing greenhouse horticulture activity located to the west (Lot 8 DP 243972) to Property 2 (35 Sugarmill Road), it is recommended that a vegetated buffer be planted to provide an effective safeguard to any residual spray drift or odour which may escape the confines of the greenhouses.

At Development Application stage (for subdivision and/or dwelling), a vegetated screen is to be planted as part of a Vegetation Management Plan (VMP) to be lodged concurrently with any Development Application.

**Note:** The *Pesticides Act 1999* regulates the use of pesticides in NSW. Management practices must either eliminate spray drift or at least minimise it to a level where it will not cause adverse health impacts.

# 4. Discussion

## 4.1 Separation Distances

A default separation distance of 200 m width is recommended between *greenhouse and controlled environment horticulture* and residential development. In practice, the actual width of the buffer is dependent on existing site conditions. In the subject case, the existing greenhouses are separated from the existing dwelling at Property 2 by a distance of 90 m.

The indicative building envelope for proposed Lot 911 is 20 m from the existing greenhouses.

The LUCRA identified that the highest risk factor is agricultural spray drift and odour.

Future residential development should be designed to minimise instances of incompatibility such that normal farming practices are not inhibited. Where such instances do arise, measures to ameliorate potential conflicts should be devised wherever possible.

When considering potential land use conflict between residential and agricultural activities is important to recognise that all agricultural activities:

- Should incorporate reasonable and practicable measures to protect the environment in accordance with the *Protection of the Environment Operations Act (POEO) 2010* and associated industry specific guidelines; and
- Are legally conducted as required by other legislation covering workplace health and safety, and the use and handling of agricultural chemicals.

Nevertheless, certain activities practised by even the most careful and responsible farmer may result in a nuisance to adjacent residential areas through, for example, unavoidable odour drift and noise impacts.

## 4.2 Control Measures

### 4.2.1 Buffers

The use of vegetated buffers to separate incompatible land uses reduces the need for separation distances.

Vegetated/landscaped buffers can also contribute to increased biodiversity, shade, visual improvements, soil stability, water quality and amenity. The role of appropriately designed vegetative buffers in intercepting chemical drift and providing visual barriers is noted in *Managing Biosecurity Risks in Land Use Planning and Development Guide*. Vegetated buffers have other advantages in that they:

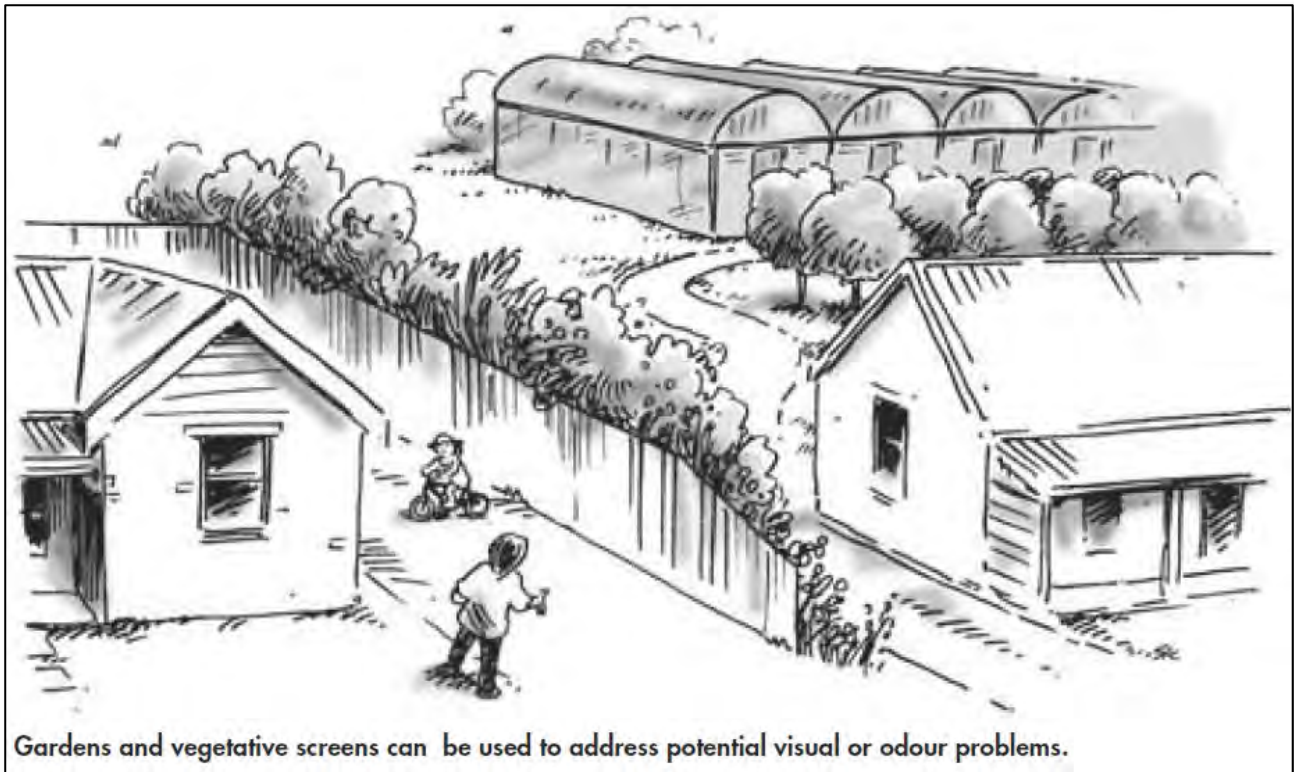
- Create habitat and corridors for wildlife
- Increase the biological diversity of an area, thus assisting in pest control;
- Favourably influence the microclimate;
- Are aesthetically pleasing;
- Contribute to the reduction of noise, odour and dust impacts.

Vegetated/landscaped buffers take time to establish, therefore it is recommended that suitable trees/plants are established as soon as possible along part of the western boundary between Property 2 and the existing greenhouses.



## Appendix 8 - Land Use Conflict Risk Assessment

It is recommended that, pending the rezoning, at Development Application stage for either a subdivision or a dwelling, a Vegetation Management Plan and a suitable Section 88B instrument to secure the planting area, is prepared for the landscaped buffer and approved by Council.



Source: NSW DPI, Guidelines for the Development of Controlled Environment Horticulture, 2005.

### 4.2.2 Competing land values – Agriculture of Residential?

The existing greenhouses are an established adjoining landuse and should not be jeopardised by future development resulting from the rezoning. To date, there has been no conflict between neighbours.

The continued use of Lot 8 DP 243972 for intensive plant agriculture (horticulture) may be contingent upon a number of factors including the higher value of the land for residential development than for agriculture given the size of the property and its location nearby Sapphire Beach.

Lot 8 DP 243972 is predominantly cleared land with potential land capability to accommodate at least two separate lots with dwelling areas.

### 4.2.3 Agricultural land use guidelines and controls

Controlled environment horticulture is managed by a number of legislative framework of environmental requirements, controls and guidelines (*Managing Biosecurity Risks in Land Use Planning and Development Guide*).

# 5. Conclusions and Recommendations

This LUCRA has been prepared to support the Planning Proposal for the rezoning of three properties at Sugarmill Road for large lot residential and environmental protection purposes and is based on:

- Site visits to each property.
- A review of aerial photography.
- A review of surrounding land uses.
- Discussions with each property owner.

The LUCRA concludes that the *Planning Proposal - Sugarmill Road R5 Large Lot Residential* is considered suitable and will be consistent with surrounding land uses subject to the recommendations provided further below:

- Future residential development will be guided by the Coffs Harbour DCP controls aimed to ensure that the agricultural potential of surrounding land is not diminished.
- The potential land use conflict between a future building envelope at 35 Sugarmill Road and the existing greenhouse horticulture land use can be mitigated utilising a vegetation buffer, ensuring that:
  - A Vegetation Management Plan is to be prepared by the landowner and approved by Council; and
  - The vegetated buffer is to be legally secured via a S88B restriction on the land.

Despite the potential for land use conflict between the existing greenhouses and a future building envelope at 35 Sugarmill Road, the following factors have led to this conclusion including:

- The adjoining horticultural land use occurs within a small farm of just over 2 ha in area and involves vegetable cultivation within the confines of seven (7) greenhouse enclosures.
- Land values in the area will inevitably lead to the decline of horticulture and increase in residential land use.
- No aerial agricultural spraying is known to occur in the area.
- A vegetated landscaped buffer is considered appropriate in terms of impact mitigation and will provide a valuable visual asset between the two properties regardless of the eventual land uses.

# MLS and LCA at 28, 35 and 89 Sugarmill Road, Sapphire Beach



3 November 2021

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For: Mr Keiran Grimley, Dr Chandran Arianayagam and  
Dr Ian Martyn:

Authored by: Strider Duerinckx

Ref	Ver	Date	Distribution
2021-165-02	A	3/11/21	Client, Planner

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# Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

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## Appendices

Appendix A Borehole Logs

Appendix B Soil Chemistry

Appendix C Water and Nutrient Balance

## 1 Introduction

Earth Water Consulting Pty Limited (EWC) were engaged by Grahame Fry on behalf of parties Mr Keiran Grimley, Dr Chandran Arianayagam and Dr Ian Martyn to undertake a Minimum Lot Size (MLS) and Land Capability Assessment (LCA) for the proposed subdivision of 28, 35 and 89 Sugarmill Road, Sapphire Beach, as shown on Figure 1.

The purpose of the MLS and LCA is to show that wastewater from an On-site Sewage Management System (OSMS) can be sustainably applied on the proposed lots.

## 2 Proposed Development

Based on plans of the proposed subdivision layout by Mid North Coast Surveys, it is understood that it is proposed to subdivide the subject properties as follows in **Table 1** and shown in Figure 2.

**Table 1: Property Details**

Existing Property	Lot & DP	Existing Size (m <sup>2</sup> )	Proposed No. of Lots	Proposed Lot Sizes (m <sup>2</sup> )
<b>No. 28</b>	L12, DP243972	20,336	2	6,636-13,700
<b>No. 35</b>	L91, DP786155	23,660	2	11,500-12,100
<b>No. 89</b>	L17, DP249273	20,325	2	11,290-8,977

## 3 Scope of Work

The MLS and LCA were undertaken by Strider Duerinckx of EWC. The study methodology included:

- A desktop review of Site conditions including geology, hydrogeology, soils, and landscape features;
- A site inspection to map site and soil constraints plus an audit of the existing dwelling OSMS in relation to the proposed subdivision boundary;
- Drilling of four boreholes to assess soil conditions across the Site;
- Assessment of a range of site constraints including landform, slope, aspect, drainage, flooding and proximity to sensitive environments;
- A minimum lot size analysis involving the review of a number of nearby lot sizes, developed, constrained and available land area footprints;
- Analysis of two selected soil samples for a range of chemical properties including pH, EC, dispersibility, PSorp, CEC and ESP;
- Estimation of likely wastewater loads (quantity and quality) from future dwellings on the proposed lot, and undertake confirmation water and nutrient balance modelling to size suitable land application areas;

- Determining an appropriate level of wastewater treatment and the preferred method of land application of effluent to overcome the constraints on the proposed lots.

## 4 Site Details and Existing OSMS

The properties are zoned RU2 (rural landscape). The proposed disturbance zones for dwellings and wastewater are located in the existing cleared areas.

### 4.1.1 No. 28 Sugarmill Road

Twenty Eight Sugarmill Road is located on the northern downslope side of the road. The property is dominated by cleared land with a gentle north-facing slope in the upper southern portion, and a forested section in the lower northern third.

A mapped intermittent drainage is located in the forested northwestern corner of the property, and a dam is present in the western portion of the cleared land.

The existing dwelling, gazebo, swimming pool and shed are located in the southeastern portion.

The existing OSMS consists of an older concrete septic tank ~ 2.4kL and a single absorption trench located to the north of the dwelling. The absorption trench will be located within required buffers to the proposed lot boundary and will need to be upgraded.



Photograph 1 – Looking west from the dwelling on Lot 120 across the boundary line towards the proposed Lot 121. The dam on the right of the image will require filling and decommission.

## Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

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Photograph 2 – Looking south across the southern portion of proposed Lot 121 with the building envelope towards the road frontage.



Photograph 3 – The existing Septic tank on Lot 120.



### 4.1.2 No. 35 Sugarmill Road

Thirty Five Sugarmill Road is located on the southern uphill side of the road.

The groundsurface slopes gently to the north down from a low ridgeline spur in the upper southern portion of the property, and an intermittent drainage alignment drains along the western boundary to the north. There are cleared sections of land in the northeastern and southwestern portions of the property, and stands of large Blackbutt and Angophora eucalypt trees in the north western portion of the property.

An existing dwelling is present in the elevated southeastern portion, with a carport and swimming pool adjacent, and a tennis court towards the southwestern corner boundary.

The existing OSMS consists of a relatively new (4 to 5 years old) 3kl concrete septic tank and absorption trenches with three inspection ports and a distribution box, located on the eastern side of the dwelling and swimming pool (Figure 3). The existing trench is located at an appropriate distance of the proposed Lot 910/911 boundary to provide sufficient buffers.



Photograph 4 – Looking southwest across Proposed Lot 911 towards the proposed building envelope on the RH side of the photograph. The recommended EMA is located in the background over the existing tennis court.



Photograph 5 – Looking west across the central section of the proposed Lot 911.

### 4.1.3 No. 89 Sugarmill Road

Eighty Nine Sugarmill Road is located on the southern uphill side of the road.

The ground surface drops down from a ridgeline spur on the southern boundary, with a generally northwest facing downward slope towards the northern boundary of the property. An intermittent drainage enters the property on the western boundary and drains north into a farm dam, and then subsequently exits the property on the northern boundary (Figure 3).

An existing dwelling is present in the elevated southern portion of the property, with a sealed driveway leading from the road edge.

The existing OSMS consists of an older concrete septic tank ~2.4kL in size, and single absorption trench of unknown size and dimensions, located on the northwestern corner of the dwelling (Figure 3). The system, while old, appeared to be operating adequately at the time of inspection. The absorption trench will be located within required buffers to the proposed lot boundary and will need to be upgraded.

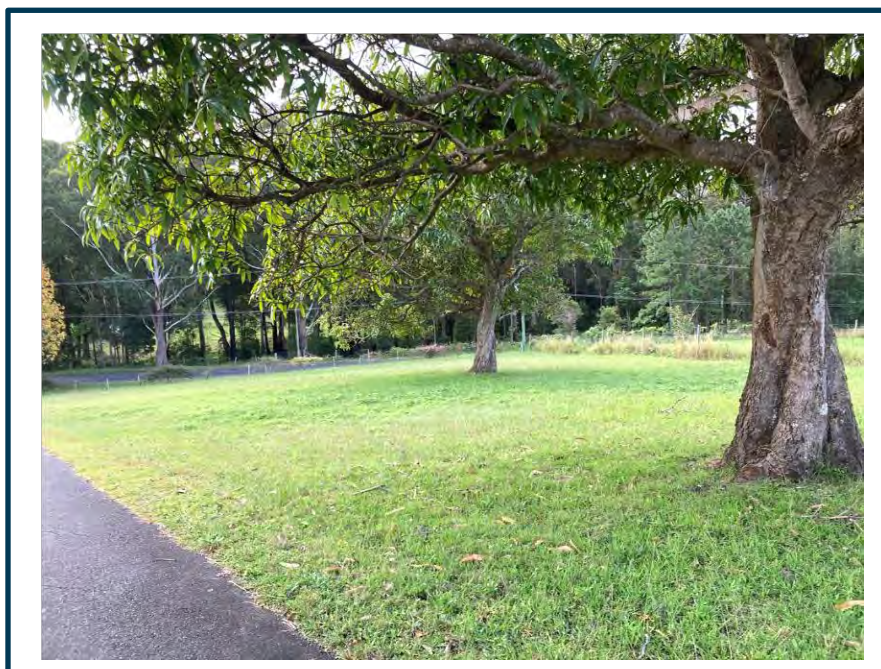
## Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

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Photograph 6 – Looking south towards Lot 171 building envelope in the southern portion of that Lot.



Photograph 7 – Looking north across proposed Lot 171, with access for proposed Lot 170 from the road edge on the right side of the image, and the proposed EMA for Lot 171 on the grassed area downslope of the mango trees.



Photograph 8 –The mapped intermittent drainage on proposed Lot 171. The existing dam is in the trees on the left of the image.

## 4.2 Site Constraints

Table 2 summarises the Site constraints for the primary and reserve EMAs for each of the proposed lots. These are discussed in terms of the degree of limitation they present (i.e. minor, moderate or major limitation) for on-site effluent application. Reference is made to the rating scale described in Table 4 of DLG (1998). Site features are presented in Figure 3.

Lot 121 is at No.28, Lot 171 is at No.35, and 911 is at No.89 Sugarmill Road.

**Table 2: Site Constraints**

Constraint	Degree of Limitation		
	Minor	Moderate	Major
<b>Landform:</b> Lot 121 – Linear convergent mid slope Lot 170 – Waxing divergent mid slope Lot 911 – Waxing planar mid slope	171, 911	121	
<b>Exposure:</b> Lots 120, 121, 910, 911 - Good exposure. Minimal trees near the proposed EMAs. <b>Lots 170, 171, some shading to the east.</b>	121, 911	171	


## Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

Constraint	Degree of Limitation		
	Minor	Moderate	Major
<p><b>Slope:</b> Lots 121, 171 - Gentle slopes of 0-10% to the west and north. Lot 911 – Moderate slopes of 10-12% to the north.</p>	121	171, 911	
<p><b>Rocks and Rock Outcrops:</b> No rock outcrops were observed on the Site.</p>	All lots		
<p><b>Erosion Potential:</b> Active erosion risk is lower on the gentle slopes and higher on steeper. Erodible subsoils are present.</p>	121	171, 911	
<p><b>Climate:</b> The Site experiences a sub-tropical-temperate climate, typical of north-eastern NSW.</p>	All lots		
<p><b>Vegetation:</b> All lots – relatively cleared with forest margins</p>	All lots		
<p><b>Fill:</b> No filling on the proposed EMAs</p>	All lots		
<p><b>Surface Waters:</b> An intermittent drainage line passes through Lots 171 and 911, however these drainage lines are outside the buffer restriction for the EMA on this Lot. All Lots- &gt;40m</p>	All Lots		
<p><b>Groundwater: (NSW Office of Water: Groundwater Bore Search)</b> A number of licensed bores are located along Sugarmill Road.</p>			All lots

# Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

Constraint	Degree of Limitation		
	Minor	Moderate	Major
 <p>There are no registered bores on the subject properties. The closest bores are located about 70m to the north, northeast and east of the properties. GW300482 was drilled to 90m, but no useful aquifer details are provided. GW307371 was drilled to 38m depth with a hard and cracked black and brown shale aquifers encountered at between 18 and 22m and between 31 sand 36m depth. Groundwater vulnerability? Clay subsoil, distance and deep groundwater depth indicate that the risk to groundwater would be minimal.</p>			
<p><b>Stormwater run-on and upslope seepage:</b>                      Lot 171– mid to lower slope position with runon risk.                      Lots 121,911 – mid slope position.</p>	121, 911	171	
<p><b>Flood Potential:</b>                      The proposed EMAs are not impacted by 1:100 year flood extents on the CHCC flood mapping.</p>	All lots		

## 4.3 Soil Survey and Description

### 4.3.1 Regional Soils

We reviewed the Soil Landscapes of the Coffs Harbour 1:100,000 Sheet (Milford, 1999) which indicates that the properties are generally underlain by the Megan Soil Landscape (Table 3).

**Table 3: Soil Landscape**

Proposed Lots	Soil Landscape	Type	Typical Profile	Limitations
All Lots	Megan	Erosional	moderately deep to deep (>100 cm), well drained structured Red Earths, Brown Earths, Yellow Earths, Brown, Yellow or Red Podzolic Soils and Krasnozems.	strongly acid, aluminium toxicity potential and low subsoil fertility, stoney (localised) steep slopes (localised), high water erosion hazard (localised).

Soils were assessed by drilling four (4) boreholes (Figure 3) to 1.2m depth or refusal. In general, these soils comprised:

- Approximately 100-200mm of clay loam topsoil, dark brown to black, some pale brown mottling, with moderate to strong structure; overlying
- Approximately 200-450mm of clay loam subsoil, brown with pale red or orange mottling;
- Approximately 300 - 600mm of light clay, pale red or orange brown, with slight red, grey and white mottling; overlying
- At least 200mm of light to medium clay, either pale red orange or white grey with orange or white mottling.

There was variability in the soil profile with position on the landscape but all consisted of the clay loam over light clay profile typical of the Megan Soil Landscape.

Competent bedrock was not encountered in the boreholes. The borehole logs are provided in Appendix A.



Photograph 9 – BH1 soil profile.

## 4.4 Soil Chemistry

Table 4 summarises the key soil physical and chemical assessments. Reference is made to the rating scale described in Table 6 of DLG (1998). Two samples were selected for laboratory analysis (BH1 0.5-0.7). The laboratory report is included in Appendix B.

**Table 4: Soil Assessment**

Parameter	Constraint		
	Minor	Moderate	Major
<p><b>Depth to bedrock or hardpan (m):</b> Boreholes were terminated at 1.2m depth in soil. It is believed that competent bedrock will be located at &gt;1.5m based on soil landscape and position.</p>	All lots		
<p><b>Depth to high soil watertable:</b> The depth of the vadose zone (i.e. non-saturated soil material above watertable) was greater than 1.2m at the time of the investigation. The depth to the permanent groundwater aquifer is expected to be more than 7m depth based on local groundwater bores.</p>	All lots		
<p><b>Coarse Fragments (%):</b> The subsoils contained &lt;20% coarse fragments.</p>	All lots		
<p><b>Hydraulic loading rate:</b> Soil structure: Strong Soil texture: Light clays Permeability category: Category 5a Hydraulic loading recommended: 8mm/day for primary, and 12mm/day secondary treated effluent into an absorption bed field and 3mm/day for SSI. Reasons for the hydraulic loading recommendation: Strongly structured clay subsoils.</p>		All lots	
<p><b>pH:</b> 3.99 pH Units from. Acidic coastal soils.</p>			All lots
<p><b>Electrical Conductivity (dS/m):</b> 0.235dS/m. Not saline.</p>	All lots		
<p><b>Dispersiveness:</b></p>		All lots	



Parameter	Constraint		
	Minor	Moderate	Major
Class 3/6 (Slake 2). The instability of these aggregates is expected to increase slightly with the application of effluent.			
<b>Sodicity (ESP):</b> ESP of 1.1%. The ESP infers a minimal potential for structural degradation.	All lots		
<b>Cation Exchange Capacity:</b> CEC was measured at 20.4 cmol/kg, which indicates that the soils have a high ability to accept and release excess nutrients from effluent.	All lots		
<b>Phosphorus Adsorption:</b> Psorp of 18,590kg/ha were reported in the subsoils.	All lots		

## 5 Minimum Lot Size (MLS) Analysis

A minimum lot size analysis and modelling were completed to determine the maximum lot density suitable for subdivision on the Site.

### 5.1 Methodology

When considering the suitability for a lot to sustainably manage wastewater on-site, we typically refer to ‘available effluent management area’. This broadly refers to available areas (i.e. not built out or used for a conflicting purpose) where OSMS will not be unduly constrained by site and soil characteristics. Available area on a developed lot is determined by the following factors:

- total building area (including dwellings, sheds, pools etc.) which includes a defined building envelope but may extend beyond with additional improvements to a property, such as driveways and paths (impervious areas), and gardens/vegetated areas unsuitable for effluent reuse;
- dams, intermittent and permanent watercourses running through lots;
- maintenance of appropriate buffer distances from property boundaries, buildings, driveways and paths, dams and watercourses;
- flood prone land;
- excessive slope;
- excessively shallow soils;
- heavy (clay) soils with low permeability;

- excessively poor drainage, shallow groundwater and/or stormwater run-on; and
- excessive shading by vegetation.

The residual areas (areas not otherwise occupied by improvements, buffers, restrictions or conservation vegetation) were then calculated for the selected lots (Figure 8), and the available area compared to the wastewater envelope required.

## 5.2 MLS Buffer Distances

Buffer distances from EMAs are typically enforced to minimise risk to public health, maintain public amenity and protect sensitive environments. Generally, adopted environmental buffers for secondary treated effluent land applied into absorption trenches/ beds based on DLG (1998) are:

- 250m from domestic groundwater bores;
- 100m from permanent watercourses;
- 40m from intermittent watercourses and dams;
- 6m from downslope property boundaries and 3m from upslope property boundaries; and
- 6m from downslope buildings and 3m from upslope buildings.

In addition, developed areas such as inground water tanks and swimming pools were also buffered.

Primary treatment was selected as default due to proposed lots in the current investigation area being ~10,000m<sup>2</sup>.

## 5.3 MLS Comparative Lots Assessed

Six nearby representative lots were selected that have already been subdivided (Table 5) (Figure 4). The lots ranged in size from 2,887-4,212m<sup>2</sup> area. The next available lot sizes greater than this on Wakelands and Gaudrons Road were 20,000m<sup>2</sup>, and given the 6636-13,700m<sup>2</sup> proposed for the properties the larger lot size was not considered appropriate to compare to. As such the smaller lots assessed provide a worst case scenario of OSMS restrictions.

**Table 5: Comparative Lots Assessed**

Address	Lot Area (m <sup>2</sup> )	Zoning
<b>39-41 Gaudrons Road</b>	4,005	RU2
<b>45 Gaudrons Road</b>	4,001	RU2
<b>75 Gaudrons Road</b>	4,212	RU2
<b>7 Wakelands Road</b>	2,887	RU2
<b>341 Solitary Islands Way</b>	3,282	RU2
<b>347 Solitary Islands Way</b>	3,008	RU2

The properties typically included a dwelling, garage/shed, landscaped trees, shrubs and gardens, driveways, water tanks, and recreational space. This development style will be similar to that proposed for the Site and therefore minimum lot size and development potential should be consistent.

## 5.4 MLS Assessed Available EMA

**Table 6** and **Error! Reference source not found.** shows the assessment of available effluent management areas for each of the assessed lots. As is evident, the variability of lot sizes, on-lot improvements and restrictions of developed lots makes selection of a “typical” lot difficult, however comparison of the site constraints indicates that minimum lot size is the most significant issue to address.

**Table 6: Minimum Lot Size Assessment Results**

Id	Lot Area (m <sup>2</sup> )	Developed Area (m <sup>2</sup> ) <sup>1</sup>	Total Restricted Area (m <sup>2</sup> ) <sup>2</sup>	Available Eff. Application Area (m <sup>2</sup> )	Percent of Lot Available for Eff. Disp. (%)	>1010m <sup>2</sup> Area Available for Secondary Treatment?
39-41	4,005	1,293	2,142	1,873	47	Yes
45	4,001	1,166	2,154	1,843	46	Yes
75	4,212	1,564	2,377	1,827	43	Yes
7	2,887	704	2,639	587	20	No
341	3,282	970	2,213	1,069	33	No
347	3,008	748	1,871	1,137	38	No

1. House, driveway, shed etc  
2. Includes developed area, protected vegetation and buffers to waterways and boundaries

## 5.5 Discussion

A comparison of nearby properties suggests that:

- The assessed properties are between 3,000-4,000m<sup>2</sup> in footprint, less than the minimum 6,636m<sup>2</sup> proposed;
- Except for the smallest lot, No.7, of ~2,800m<sup>2</sup>, each have about 1,200-1,800m<sup>2</sup> of available unconstrained area for effluent application. The smaller lot has only 587m<sup>2</sup> footprint;
- Typically available area for effluent application represents about 30-50% of the total lot area, the smaller the lot, the same development footprint requirements impact on land area available for effluent application; and
- Allowing for additional developed footprint such as sheds and swimming pools that may not be present currently, and constraints such as buffers to gullies and protected forest vegetation, the minimum 1,010m<sup>2</sup> footprint typically required for a primary treatment and land application

OSMS would still be able to be met. As such given the low slopes and limited site and soil constraints, a minimum 6,000m<sup>2</sup> lot sizing would be considered acceptable.

## 6 Recommended OSMS Combination

Due to the cost of reticulated sewerage provision by Council, it is expected that the properties will not be seweraged in the foreseeable future.

Based on the site and soil constraints and subdivision boundaries, the minimum treatment and land application combination selected for 28, 35 and 89 Sugarmill Road, Sapphire Beach are:

- Treatment to a primary standard and subsurface application into an appropriately sized absorption bed field.

During future development application for a particular dwelling on lots of 8,000m<sup>2</sup> or more, with judicious placement of the dwelling and improvements, and limiting wastewater generation volumes, alternative OSMS combinations may be considered acceptable including treatment to a secondary standard and land application by subsurface irrigation, or wet or dry compost systems.

## 7 Effluent Management Areas

### 7.1 Design Hydraulic Load

For hydraulic loading purposes a proposed dwelling of five bedrooms on tank water was assumed for the proposed lots. AS/NZS1547:2012 recommends that a wastewater generation load of 120L per person per day for households supplied by tank water be used as a basis for wastewater system design. The hydraulic load for the existing and proposed dwellings is based on 1.5 persons per bedroom. The design hydraulic loading for a four bedroom dwelling under full occupancy is presented in Table 7.

**Table 7: Proposed Design Hydraulic Load**

No. of Bedrooms	Design Wastewater Load (L/day)
4	720

## 7.2 Sizing of Effluent Management Areas

Water balance modelling was undertaken to determine sustainable effluent application rates, and from this estimate the necessary size of the EMA required for effluent to be applied from a primary treatment system trench or beds. The procedures used in the water balance generally follow the *AS/NZS 1547:2012* standard and DLG (1998) Guideline. The water balance used is a monthly nominated area model. These calculations determined minimum EMAs for given effluent loads for each month of the year. The water balance can be expressed by the following equation:

$$\text{Precipitation} + \text{Effluent Applied} = \text{Evapotranspiration} + \text{Percolation} + \text{Storage}$$

The input data and results for the primary treated trench/ bed water balance are presented in Table 8, and calculation sheets in Appendix C.

A conservative nutrient balance was also undertaken, which calculates the minimum buffer around a trench or bed to enable nutrients to be assimilated by the soils and vegetation. The nutrient balance used here is based on the simplistic DLG (1998) methodology, but improves this by more accurately accounting for natural nutrient cycles and processes. It acknowledges that a proportion of nitrogen will be retained in the soil through processes such as ammonification (the conversion of organic nitrogen to ammonia) and a certain amount will be lost by denitrification, microbial digestion and volatilisation. A summary of the nutrient balance is provided in Table 8.

**Table 8: Inputs and Results of Primary Treatment Modelling**

Data Parameter	Units	Value	Comments
<b>Hydraulic load</b>	L/day	720	6 persons occupancy.
<b>Precipitation</b>	mm/month	Coffs Harbour	BoM, Median monthly.
<b>Pan Evaporation</b>	mm/month	Coffs Harbour MO	BoM, mean monthly.
<b>Retained rainfall</b>	unitless	0.85	Proportion of rainfall that remains onsite and infiltrates the soil, allowing for 15% runoff.
<b>Crop Factor</b>	unitless	0.6-0.8	Expected annual range for vegetation based on monthly values.
<b>Design Loading Rate (DLR) - Primary</b>	mm/day	8	Maximum rate for design purposes, based on strongly structured clay subsoils.
<b>Effluent total nitrogen concentration</b>	mg/L	60	Target effluent quality for secondary treatment systems.
<b>Effluent total phosphorus concentration</b>	mg/L	15	Target effluent quality for primary treatment systems.
<b>Soil phosphorus sorption capacity</b>	kg/ha	18,590	Value based on soil testing.

## Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

Data Parameter	Units	Value	Comments
Nitrogen uptake rate by plants	kg/Ha/yr	250	Conservative estimated value.
Phosphorus uptake rate by plants	kg/Ha/yr	25	Conservative estimated value.
Design life of system (for nutrient management)	years	50	Reasonable minimum service life for system.
Minimum primary treatment trench/ bed basal area for hydraulic load (m <sup>2</sup> )			105m <sup>2</sup> (258m <sup>2</sup> absorption trench field footprint)
Minimum area for total phosphorus load (m <sup>2</sup> )			180m <sup>2</sup>
Minimum area for total nitrogen load (m <sup>2</sup> )			505m <sup>2</sup>

Based on modelling an EMA and reserve EMA of 505m<sup>2</sup> each have been nominated for a future four bedroom dwelling, totalling 1010m<sup>2</sup>. The proposed locations of the EMAs are shown on Figure 5, including reserve EMAs of 505m<sup>2</sup> for existing dwellings.

The actual size and configuration of the EMAs will be dependent on a wastewater management plan at the time of dwelling development planning and application to install or upgrade an OSMS.

## 8 Upgrades to Existing OSMS

Upgrades to the existing OSMS are required on 28 and 89 Sugarmill Road to enable the proposed subdivision.

For 28 Sugarmill Road, the absorption trench is located within the 12m setback to the proposed boundary. A replacement primary treatment EMA of 505m<sup>2</sup> has been allocated on the Lot 120 plus a reserve EMA.

For 89 Sugarmill Road, the absorption trench is also located within the 12m setback to the proposed boundary. A replacement secondary treatment EMA of 252m<sup>2</sup> has been allocated on the Lot 170 plus a reserve EMA. Secondary treatment is required to meet reduced buffers to the boundaries and intermittent waterways from that lot.

## 9 Buffers

Buffer distances or setbacks from EMAs are required to minimise risk to public health, maintain public amenity and protect sensitive environments. The buffers from DLG (1998) are presented in **Table 9** below.

## Appendix 9 - Land Capability Assessment

28, 35 and 89 Sugarmill Road, Sapphire Beach

**Table 9: Available Buffers**

Site Feature	DLG (1998) Buffer	Achievable?
<b>Intermittent watercourses, drainage channels and dams</b>	40m	<b>Yes</b>
<b>Permanent waterways</b>	100m	<b>Yes</b>
<b>Domestic groundwater bore</b>	250m	<b>No, 70m.</b>
<b>Property boundary</b>	Primary - 6m downslope / sideslope of, and 12m sideslope or upslope of	<b>Yes</b>
<b>Driveway and building</b>	6m downslope of / 3m upslope of	<b>Yes</b>

Although all the recommended EMAs fall within the 250m buffer to a domestic groundwater bore required by DLG (1998), this guideline did not provide any scientific justification for that buffer and the document is dated about 22 years ago. Appendix R of AS/NZS1547:2012, a more recent document and a national standard provides the ability to risk assess buffers based on site and soil constraints. The maximum risk assessed buffer in AS/NZS1547:2012 to bores or wells is 50m for high risk scenarios such as primary treated wastewater, shallow high resource groundwater, aquifers in highly porous soils or rock, and surface or above ground effluent land application. The recommended minimum OSMS combination poses a lower risk than this worst case, and the local groundwater aquifer is relatively deep at >40m depth beneath a substantial clay soil layer. As such a lesser risk assessed buffer would be expected.

In any case, all recommended EMAs would be located >50m from the nearest bores.

## 10 Conclusions & Recommendations

Having undertaken a minimum lot size and land capability assessment for the proposed subdivision of 28, 35 and 89 Sugarmill Road, Sapphire Beach, EWC consider that there is the opportunity for the sustainable application of wastewater following subdivision of the existing properties into smaller lots (Table 10).

**Table 10: Summary of Development Recommendations**

Property	Minimum Lot Size (m <sup>2</sup> )	Minimum OSMS Combination
28 Sugarmill	6,000	Primary treatment and subsurface land application over 505m <sup>2</sup> .
35 Sugarmill	6,000	
89 Sugarmill	6,000	

For any future system we recommend that:

- A dwelling specific OSMS should be designed by an experienced professional, taking into account the assumptions and recommendations contained in this report; and
- An OSMS should be installed by a suitably qualified plumber, ensuring that effluent is distributed evenly across the entire area serviced.

## 11 References

Coffs Harbour City Council (2015) *On-site Sewage Management Strategy 2015*, Coffs Harbour.

Department of Local Government et al. (1998). *Environment & Health Protection Guidelines: On-site Sewage Management for Single Households*.

Milford, H. B., (1999) *Soil Landscapes of the Coffs Harbour 1:100 000 Sheet*, Department of Land and Water Conservation Soil Landscape Series.

Standards Australia / Standards New Zealand (2012). *AS/NZS 1547:2012 On-site Domestic-wastewater Management*.



# FIGURES

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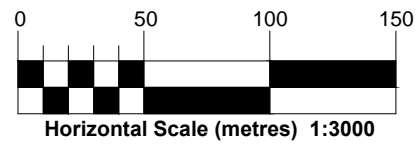
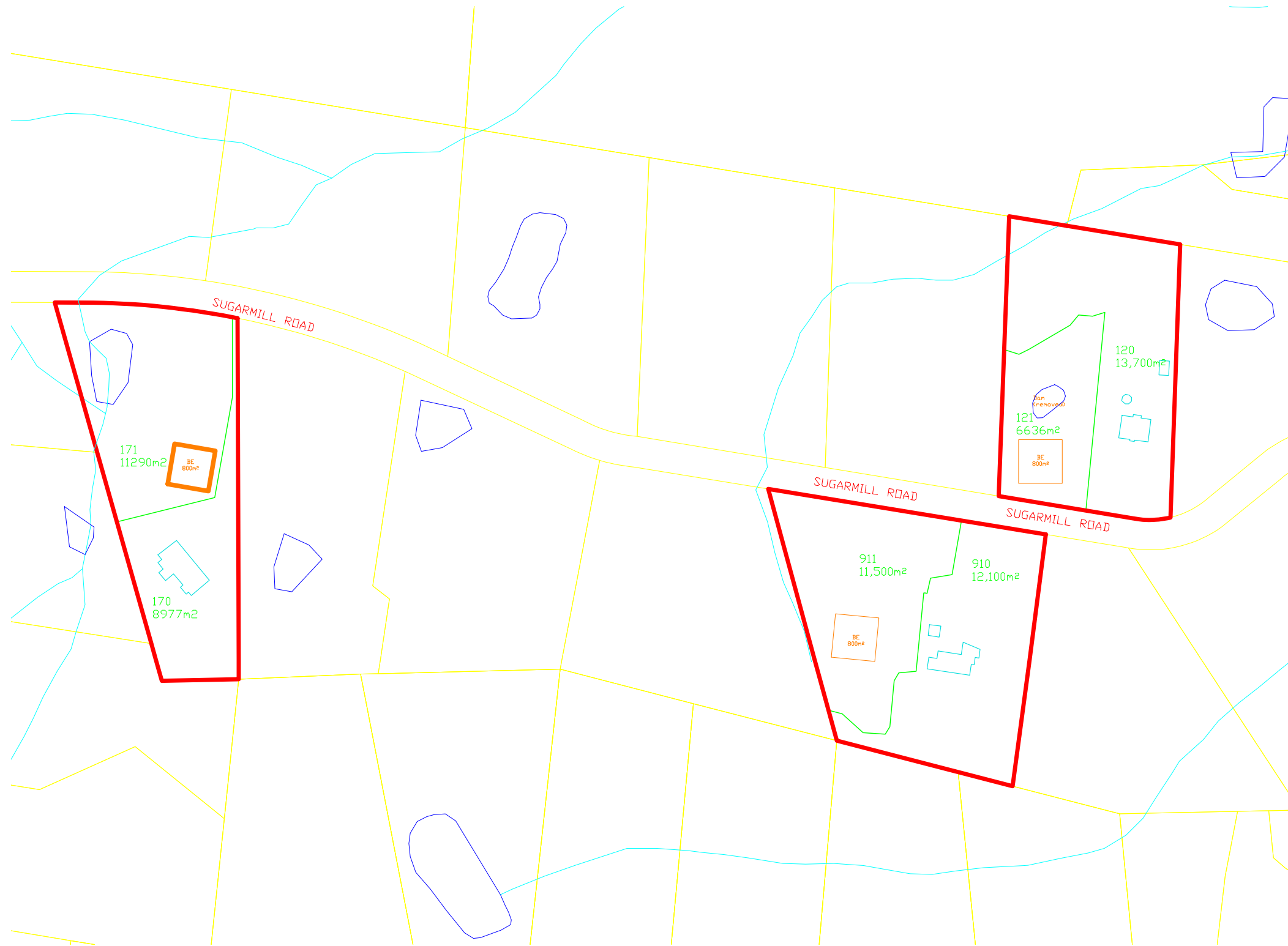
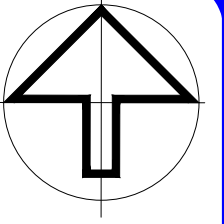
# Appendix 9 - Land Capability Assessment



## LEGEND

- Property Boundaries
- Adjacent Lots
- Intermittent waterways
- Dams

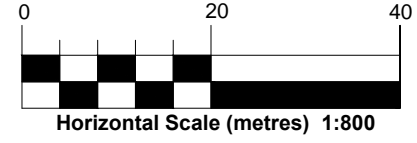
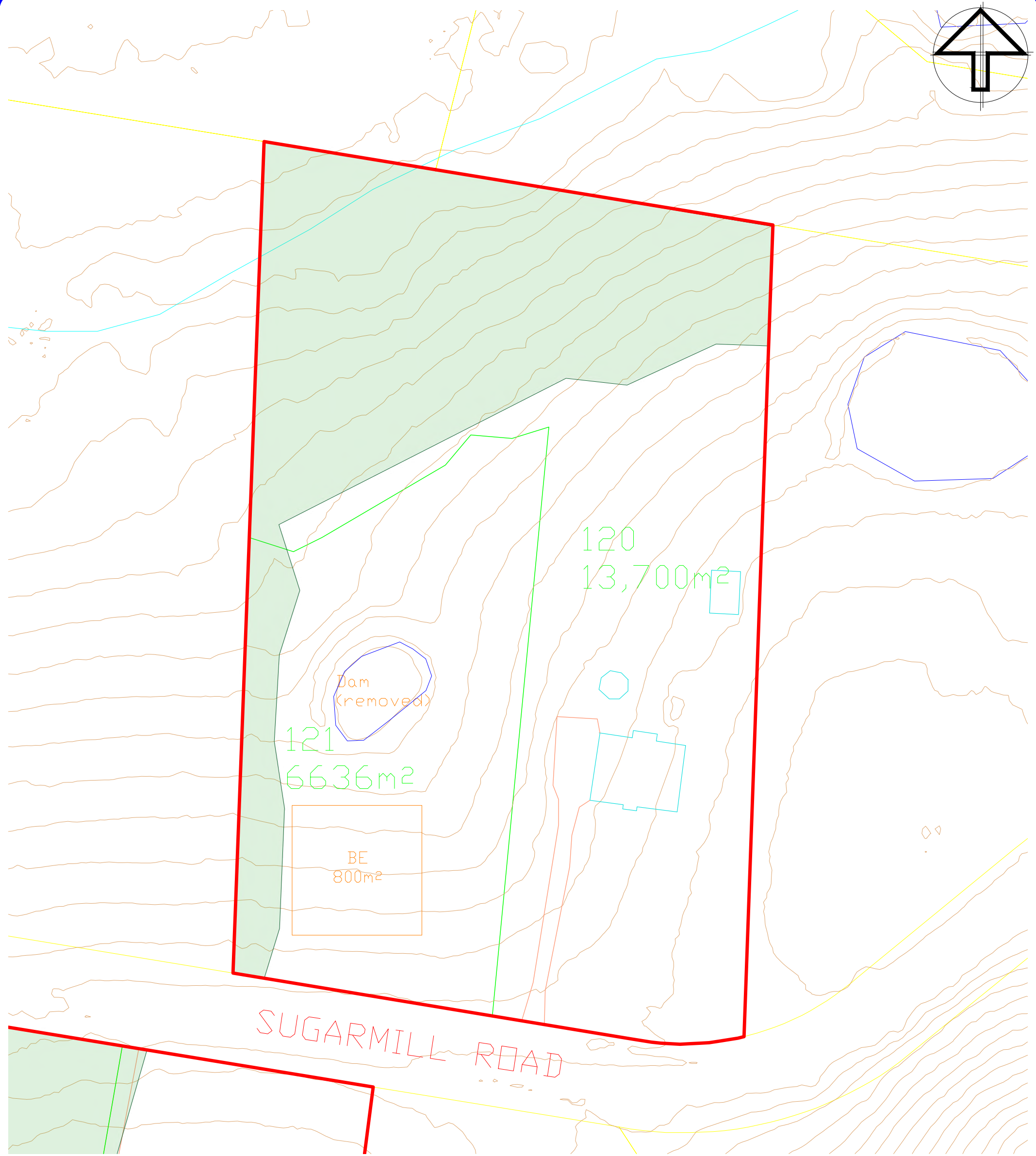
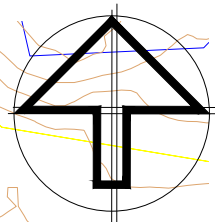
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FIGURE Figure 1					
SHEET	ISSUE	AUTHOR	DATE	SCALE	PROJECT
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**LEGEND**

- Property Boundaries
- Adjacent Lots
- Intermittent waterways
- Dams
- Proposed Subdivision Bdy
- Proposed Building Envelope

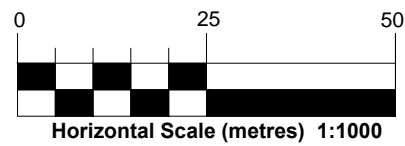
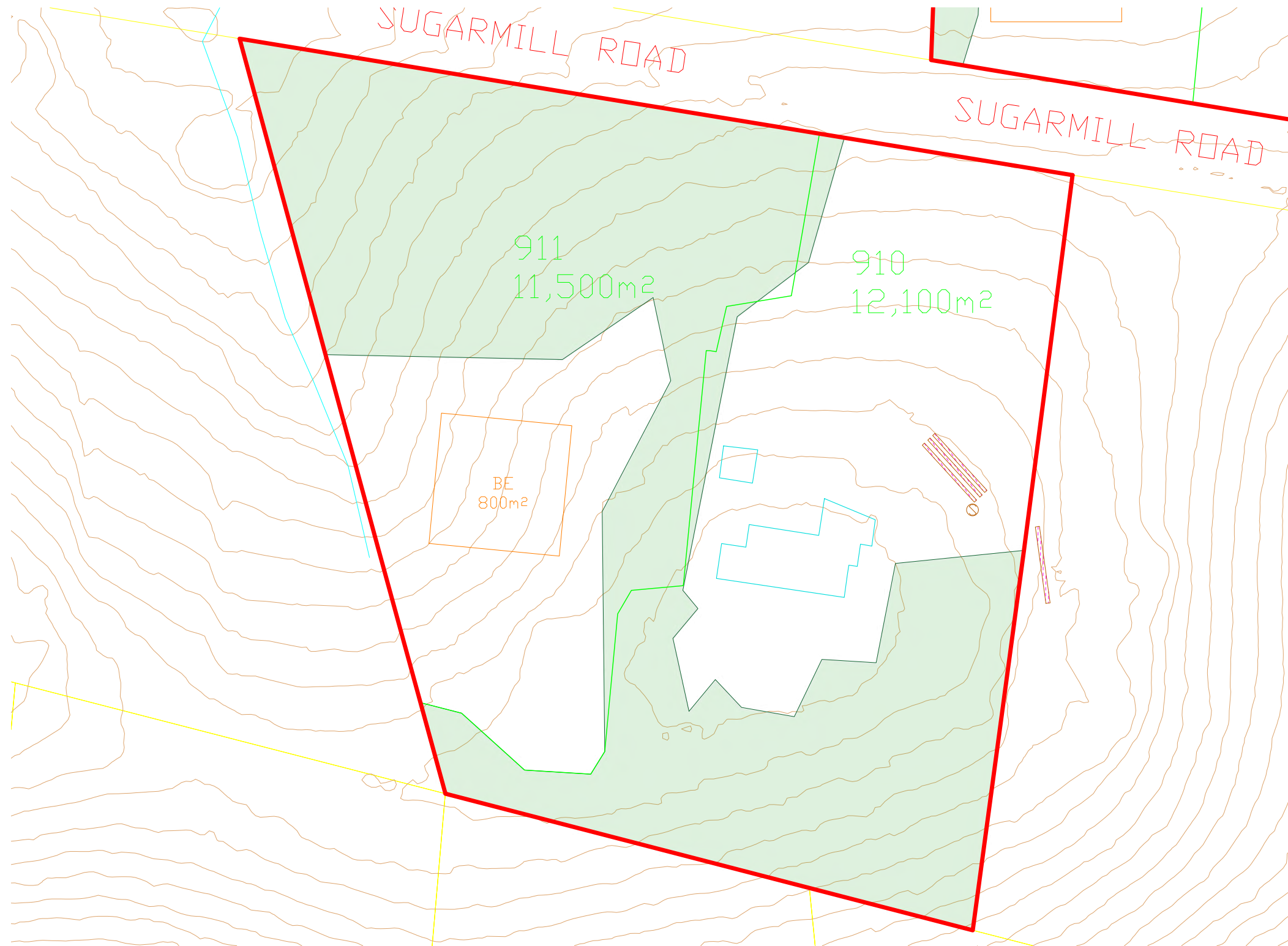
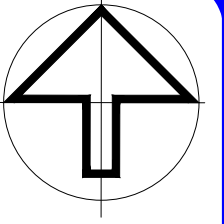
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PROJECT LCA for 28, 35 and 89 Sugarmill Road, Sapphire Beach		SHEET 1 OF 4	ISSUE A
AUTHOR SD	DATE 2/11/21	SCALE 1:3,000	CLIENT Grimley, Arianayagam & Martyn
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- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - - - Intermittent waterways
  - Dams
  - Contour (1m)
  - Existing Vegetation Outline
  - Proposed Building Envelope



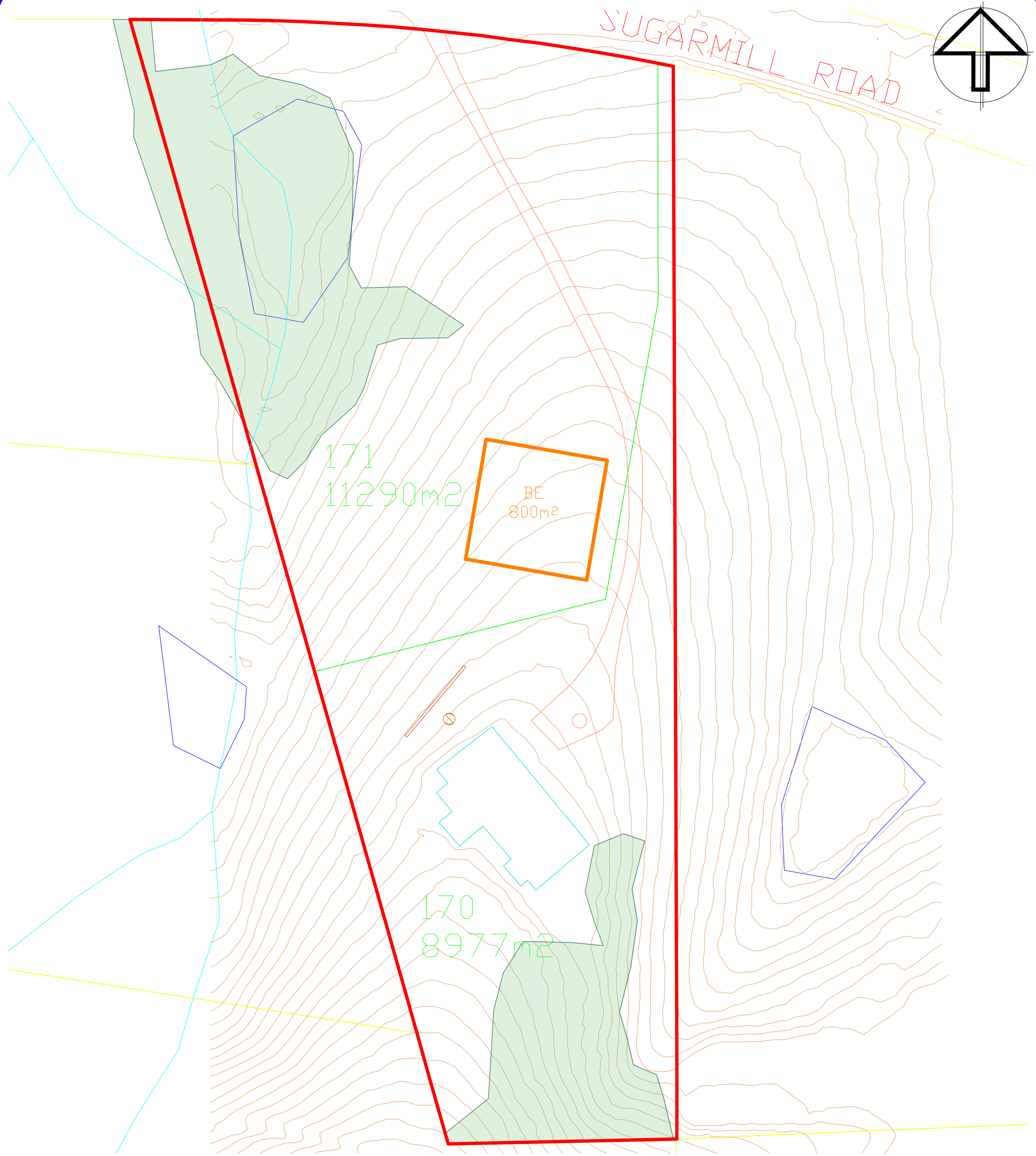
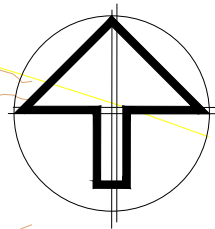
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PROJECT LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach		CLIENT Grimley, Arianayagam & Martyn	
AUTHOR SD	DATE 28/10/21	SCALE 1:800	PROJECT 2021-165
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**LEGEND**

- Property Boundaries
- Adjacent Lots
- Intermittent waterways
- Dams
- Contour (1m)
- Existing Vegetation Outline
- Proposed Building Envelope

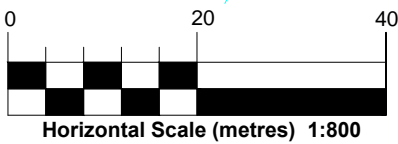
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<b>AUTHOR</b> SD		<b>DATE</b> 2/11/21	<b>SCALE</b> 1:1,000
		<b>CLIENT</b> Grimley, Arianayagam & Martyn	
		<b>PROJECT</b> 2021-165	



171  
11290m<sup>2</sup>

BE  
800m<sup>2</sup>

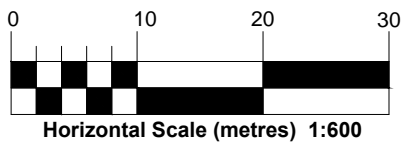
170  
8977m<sup>2</sup>



- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - Intermittent waterways
  - Dams
  - Contour (1m)
  - Existing Vegetation Outline
  - Proposed Building Envelope



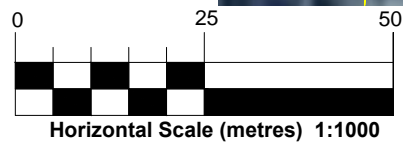
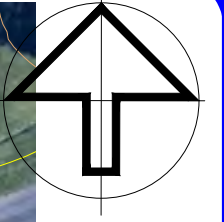
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<p><b>CLIENT</b> Grimley, Arianayagam &amp; Martyn</p>		<p><b>PROJECT</b> 2021-165</p>	
<p><b>AUTHOR</b> SD</p>	<p><b>DATE</b> 28/10/21</p>	<p><b>SCALE</b> 1:800</p>	



- |                        |                             |                          |
|------------------------|-----------------------------|--------------------------|
| <b>LEGEND</b>          | Dams                        | Existing OSMS Bed        |
| Property Boundaries    | Contour (1m)                | Approx Borehole Location |
| Adjacent Lots          | Existing Vegetation Outline |                          |
| Intermittent waterways | Existing OSMS Tank          |                          |



TITLE 28 Sugarmill Road Existing Site Layout			FIGURE Figure 3	
PROJECT LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach			SHEET 1 OF 3	
			ISSUE A	
CLIENT Grimley, Arianayagam & Martyn				
AUTHOR SD	DATE 28/10/21	SCALE 1:600	PROJECT 2021-165	

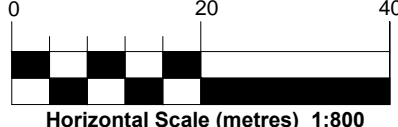


LEGEND

- Property Boundaries
- Adjacent Lots
- Intermittent waterways
- Dams
- Contour (1m)
- Existing Vegetation Outline
- S Existing OSMS Tank
- ▨ Existing OSMS Bed
- ⊕ Approx Borehole Location

TITLE 35 Sugarmill Road, Existing Site Layout		FIGURE Figure 3	
PROJECT LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach		SHEET 2 OF 3	ISSUE B
AUTHOR SD	DATE 17/09/21	SCALE 1:1000	CLIENT Grimley, Martyn and Arianayagam
PROJECT 2021-165			





- |                        |                             |                          |
|------------------------|-----------------------------|--------------------------|
| <b>LEGEND</b>          | Dams                        | Existing OSMS Bed        |
| Property Boundaries    | Contour (1m)                | Approx Borehole Location |
| Adjacent Lots          | Existing Vegetation Outline |                          |
| Intermittent waterways | Existing OSMS Tank          |                          |



TITLE 89 Sugarmill Road Existing Site Layout		FIGURE Figure 3	
PROJECT LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach		SHEET 3 OF 3	ISSUE A
CLIENT Grimley, Arianayagam & Martyn		PROJECT 2021-165	
AUTHOR SD	DATE 7/9/21	SCALE 1:800	



7 Wakeland, 341 and 347 Solitary Is. Way

39-41 & 45 Gaudrons Road

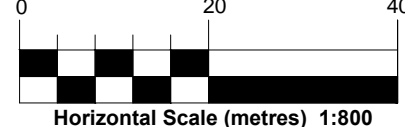
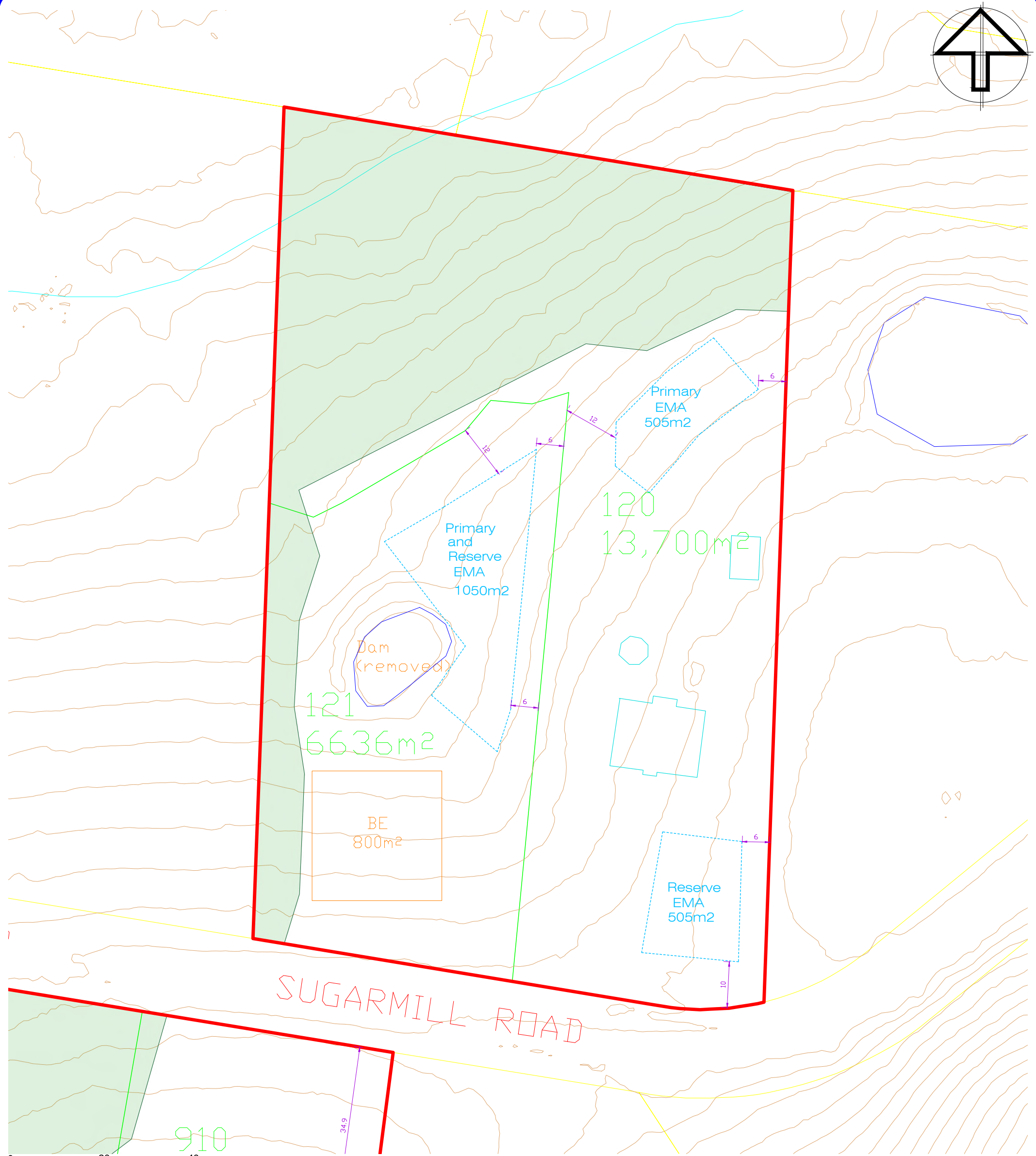
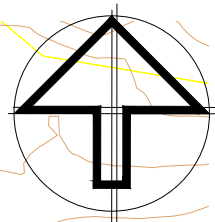
75 Gaudrons Road



**LEGEND**

- Property Boundary
- Adjacent Lot
- Drainage Alignment
- EMA Restricted Area
- EMA Available Area

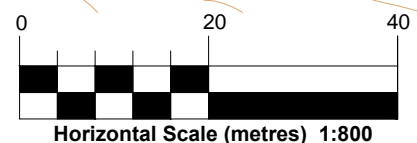
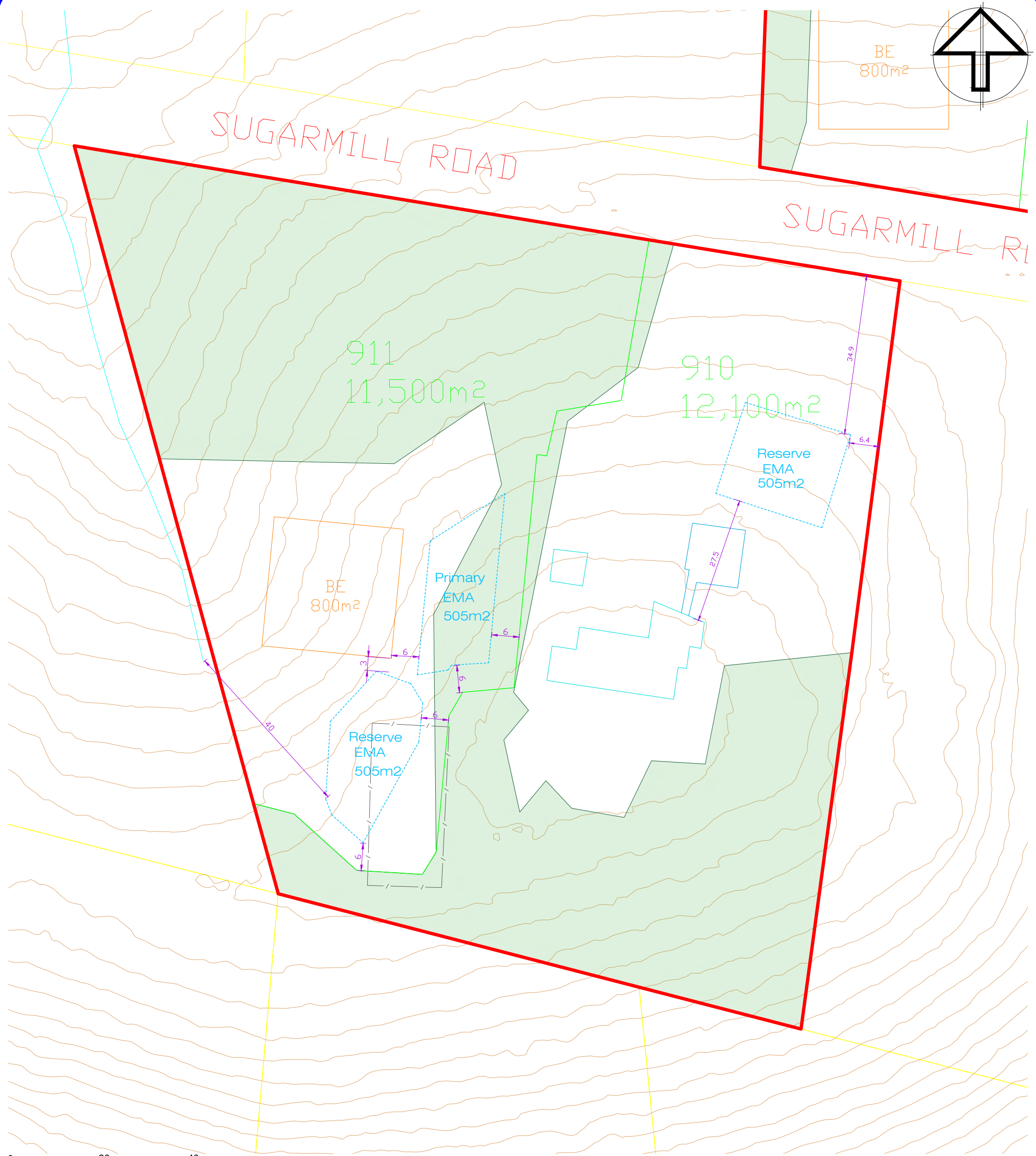
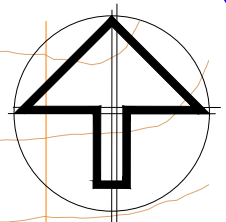
TITLE Comparative Lot Size Constraints			FIGURE Figure 4	
PROJECT LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach			SHEET 1 OF 1	ISSUE A
AUTHOR SD	DATE 28/10/21	SCALE 1:1,000	CLIENT Grimley, Arianayagam & Martyn	
			PROJECT 2021-165	



- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - Intermittent waterways
  - Dams
  - Contour (1m)
  - Existing Vegetation Outline
  - Proposed Building Envelope
  - Recommended EMA



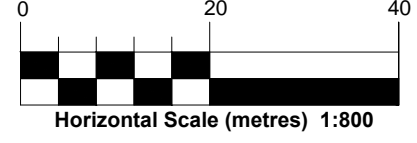
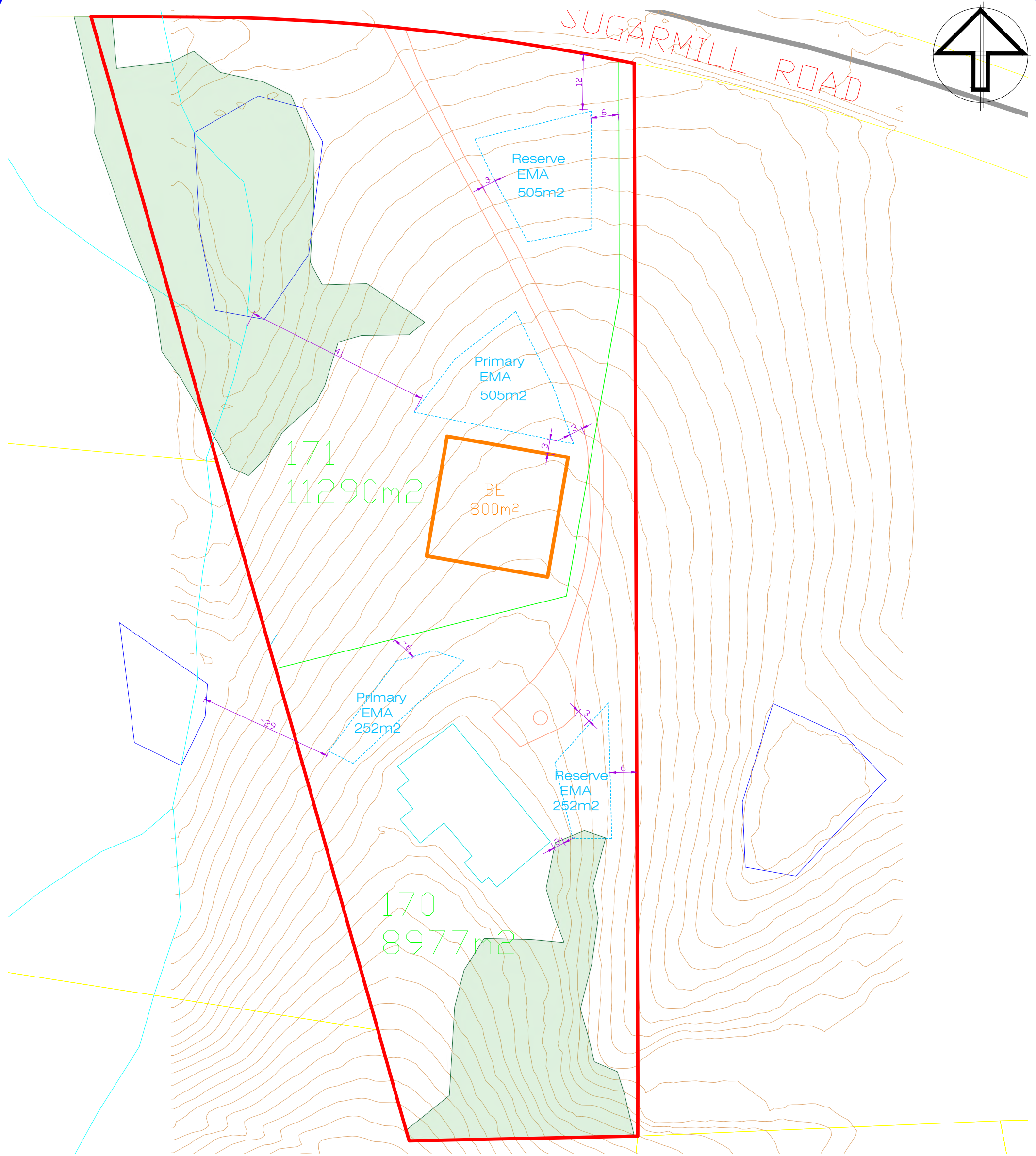
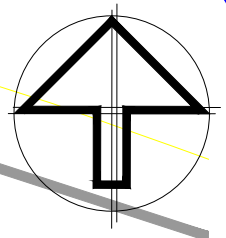
<b>TITLE</b> 28 Sugarmill Recommended Effluent Management Areas		<b>FIGURE</b> Figure 5	
<b>PROJECT</b> LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach		<b>SHEET</b> 1 OF 3 <b>ISSUE</b> A	
<b>AUTHOR</b> SD		<b>CLIENT</b> Grimley, Arianayagam & Martyn	
<b>DATE</b> 28/10/21	<b>SCALE</b> 1:800	<b>PROJECT</b> 2021-165	



- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - Intermittent waterways
  - Dams
  - Contour (1m)
  - Existing Vegetation Outline
  - Proposed Building Envelope
  - Recommended EMA



TITLE 35 Sugarmill Recommended Effluent Management Areas		FIGURE Figure 5	
PROJECT LCA for 28, 35 & 89 Sugarmill Road, Sapphire Beach		SHEET 2 OF 3 ISSUE A	
CLIENT Grimley, Arianayagam & Martyn		PROJECT 2021-165	
AUTHOR SD	DATE 28/10/21	SCALE 1:800	




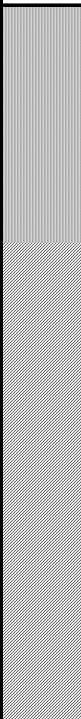
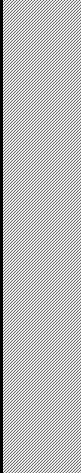
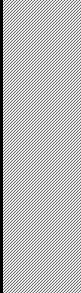
- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - Intermittent waterways
  - Dams
  - Contour (1m)
  - Existing Vegetation Outline
  - Proposed Building Envelope
  - Recommended EMA



<p><b>TITLE</b> 89 Sugarmills Road Recommended Effluent Management Areas</p>		<p><b>FIGURE</b> Figure 5</p>	
<p><b>PROJECT</b> LCA for 28, 35 &amp; 89 Sugarmill Road, Sapphire Beach</p>		<p><b>SHEET</b> 3 OF 3 <b>ISSUE</b> A</p>	
<p><b>AUTHOR</b> SD</p>		<p><b>CLIENT</b> Grimley, Arianayagam &amp; Martyn</p>	
<p><b>DATE</b> 28/10/21</p>	<p><b>SCALE</b> 1:1000</p>	<p><b>PROJECT</b> 2021-165</p>	

# APPENDIX A

---

 <h1 style="text-align: right;">Soil Borelog</h1>											
Project ref: 2021-165							Borehole No: BH1				
Client:							Logged by: NS				
Address: 28 Sugarmill Rd Sapphire Beach							Drilling date: 25/05/2021				
							Drilling method: Power auger				
							Borehole location: Figure 2				
							Borehole coords:				
PROFILE DESCRIPTION											
Depth (m)	Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments	
0.1			A1	Clay Loam	Moderate	Black/Dark Brown	Nil	Nil	SM	Topsoil	
0.2			A2	Clay Loam	Strong	Pale Brown	Pale Orange	Nil	SM	Transferral	
0.3											
0.4											
0.5	S		B2	Light Clay	Strong	Pale Red	Pale Brown	Nil	SM	Residual	
0.6											
0.7											
0.8				Light Clay	Strong	Pale Red Orange	White	Nil	SM	Residual	
0.9											
1.0											
1.1											
1.2											
1.3					Borehole terminated at 1.2m						
1.4											
1.5											
<u>Moisture condition</u>											
	D	Dry		M	Moist		W	Wet / saturated			
	SM	Slightly moist		VM	Very moist						

Depth (m)		Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments
0.1				A1	Clay Loam	Moderate	Black/Dark Brown	Nil	Nil	SM	Topsoil
0.2				A2	Clay Loam	Strong	Dark Brown	Pale Orange	Nil	SM	Transferral
0.3											
0.4											
0.5	S			B2	Light Clay	Strong	Pale Red	Pale Orange, White, Grey	Nil	SM	Residual
0.6											
0.7											
0.8					Light Clay	Strong	Pale Red Orange	White	Nil	SM	Residual
0.9											
1.0	S										
1.1											
1.2											
1.3				Borehole terminated at 1.2m							
1.4											
1.5											

<b>Moisture condition</b>			
D	Dry	M	Moist
SM	Slightly moist	VM	Very moist
		W	Wet / saturated



# Soil Borelog

<b>Borehole No:</b>	<b>BH2</b>
Logged by:	NS
Drilling date:	25/05/2021
Drilling method:	Power auger
Borehole location:	Figure 2
Borehole coords:	513864, 6656545

Project ref: 2021-165

Client:

Address: 28 Sugarmill Rd Sapphire Beach



Depth (m)		Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments
0.1				A1	Clay Loam	Strong	Dark Brown	Pale Brown	Nil	SM	Topsoil Charcoal
0.2				B1	Clay Loam	Strong	Pale Brown	Pale Red Orange	< 5%	SM	Transferral
0.3											
0.4											
0.5											
0.6	s										
0.7				B2	Light Clay	Strong	Pale Orange Brown	Pale Red	Nil	SM	Residual
0.8											
0.9											
1.0											
1.1				B3	Light Clay	Strong	Orange/Pale Red	White/Pale	Nil		Residual
1.2											
1.3			Borehole terminated at 1.2m								
1.4											
1.5											

<u>Moisture condition</u>	
D	Dry
SM	Slightly moist
M	Moist
VM	Very moist
W	Wet / saturated

Depth (m)		Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments
0.1				A1	Clay Loam	Strong	Dark Brown	Black	Nil	D to SM	Topsoil
0.2				B1	Clay Loam	Strong	Pale Brown	Orange, Red, Dark Brown	< 5%	SM	Residual
0.3											
0.4											
0.5											
0.6				B2	Light Clay	Strong	Pale Brown Grey	Pale Orange	Nil	SM	Residual
0.7	s										
0.8											
0.9				B3	Medium Clay	Strong	White/Pale Grey				Residual
1.0											
1.1											
1.2			Borehole terminated at 1.2m								XW Bedrock
1.3											
1.4											
1.5											

<b>Moisture condition</b>			
D	Dry	M	Moist
SM	Slightly moist	VM	Very moist
		W	Wet / saturated

# APPENDIX B

---

**WASTEWATER DISPOSAL SOIL ASSESSMENT**

1 sample supplied by Earth Water Consulting Pty Ltd on 27/5/2021 - Lab Job No. K7414

Analysis requested by Strider Duerinckx. - Your Project: BH1 0.5-0.7

PO Box 50 BELLINGEN NSW 2454

	<b>SAMPLE 1 BH1</b>
<i>Job No.</i>	K7414/1
Description	Clay
Moisture Content (% moisture)	24
Emerson Aggregate Stability Test (SAR 5 Solution) note 12	EAT Class 3/6, Slake 2 <sup>see note 12</sup>
Soil pH (1:5 CaCl <sub>2</sub> )	3.99
Soil Conductivity (1:5 water dS/m)	0.027
Soil Conductivity (as EC <sub>e</sub> dS/m) <sup>note 10</sup>	0.235
Native NaOH Phosphorus (mg/kg P)	6.56
<b>Residual phosphorus remaining in solution from the initial phosphate phosphorus</b>	
Initial Phosphorus concentration (ppm P)	<b>30</b>
72 hour - 3 Day (ppm P)	4.07
120 hour - 5 Day (ppm P)	3.99
168 hour - 7 Day (ppm P)	3.76
Equilibrium Phosphorus (ppm P)	3.61
<b>EXCHANGEABLE CATIONS</b>	
Calcium (cmol+/kg)	0.54
Magnesium (cmol+/kg)	2.09
Potassium (cmol+/kg)	0.10
Sodium (cmol+/kg)	0.21
Aluminium (cmol+/kg)	1.11
Hydrogen (cmol+/kg)	16.34
ECEC (effective cation exchange capacity)(cmol+/kg)	20.4
Exchangeable Calcium %	2.6
Exchangeable Magnesium %	10.2
Exchangeable Potassium %	0.5
Exchangeable Sodium % (ESP)	1.1
Exchangeable Aluminium %	5.4
Exchangeable Hydrogen %	80.1
Calcium/ Magnesium Ratio	0.26

**Notes:**

- 1: ECEC = Effective Cation Exchange Capacity = sum of the exchangeable Mg, Ca, Na, K, H and Al
- 2: Exchangeable bases determined using standard Ammonium Acetate extract (Method 15D3) with no pretreatment for soluble salts. When Conductivity  $\geq 0.25$  dS/m soluble salts are removed (Method 15E2).
3. ppm = mg/kg dried soil
4. Insitu P determined using 0.1M NaOH and shaking for 24 hrs before determining phosphate
5. Soils were crushed using a ceramic grinding head and mill; five 1g subsamples of each soil were used to which 40ml of 0.1M NaCl with Xppm phosphorus was added to each. The samples were shaken on an orbital shaker
6. Exchangeable sodium percentage (ESP) is calculated as sodium (cmol+/kg) divided by ECEC
7. All results as dry weight DW - soils were dried at 60C for 48hrs prior to crushing and analysis.
8. Phosphorus Capacity method from Ryden and Pratt, 1980.
9. Aluminium detection limit is 0.05 cmol+/kg; Hydrogen detection limit is 0.1 cmol+/kg.  
However for calculation purposes a value of 0 is used.
10. For conductivity 1 dS/m = 1 mS/cm = 1000  $\mu$ S/cm; EC<sub>e</sub> conversions: sand loam 14, loam 9.5; clay loam 8.6; heavy clay 5.8
11. 1 cmol+/kg = 1 meq/100g
12. Emerson Aggregate Stability Test (EAST) for Wastewater applications (see Sheet 3 - Patterson, 2015). MEAT Class 1: Slaking, complete dispersion; Class 2: Slaking, some dispersion; Class 3-6: Slaking 1 slight to 3 complete, No dispersion; Class 7: No slaking, yes swelling; Class 8: No slaking, no swelling.
13. Analysis conducted between sample arrival date and reporting date.
14. .. Denotes not requested.
15. This report is not to be reproduced except in full.
16. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).



## PHOSPHORUS SORPTION TRIAL

1 sample supplied by Earth Water Consulting Pty Ltd on 27/5/2021 - Lab Job No. K7414

Analysis requested by Strider Duerinckx. - Your Project: BH1 0.5-0.7

### Calculations for Equilibrium Absorption Maximum for Soil provided

I.D.	JOB NO.	Equilibrium P mg P/L (in solution)	Added P mg P/L	P Sorb at Equil. mg P/kg	Native P mg P/kg	Equilibrium P Sorption Level µg P/g soil	Divide Ø (from Table)	Equilibrium Absorption Maximum (B) µg P/g soil
BH1	K7414/1	3.6	30	1056	7	1062	0.62	1,710

### Calculations for phosphorus sorption capacity

	JOB NO.	Equilibrium Absorption Maximum (B) µg P/g soil	multiply by theta of wastewater to be applie (=X)	minus the native P (=Y)	kg P sorption / hectare (to a depth of 15cm) (1.95 is a correction factor for density, etc)	kg P sorption / hectare (to a depth of 100cm) (1.95 is a correction factor for density, etc)
BH1	K7414/1	1710	(=B x theta)	(=X -native P)	(=Y x 1.95)	(=Y x 1.95 x 100/15)

### EXAMPLE 1 - Calculations for phosphorus sorption capacity using a wastewater phosphorus of 15mg/L P

	JOB NO.	Equilibrium Absorption Maximum (B) µg P/g soil	multiply by theta of wastewater to be applie (ie. 0.84)	minus the native P (=Y)	kg P sorption / hectare (to a depth of 15cm) (1.95 is a correction factor for density, etc)	kg P sorption / hectare (to a depth of 100cm) (1.95 is a correction factor for density, etc)
BH1	K7414/1	1710	1437	1430	2,789	18,590



# APPENDIX C

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# Appendix 9 - Land Capability Assessment

## Nominated Area Water Balance & Storage Calculations

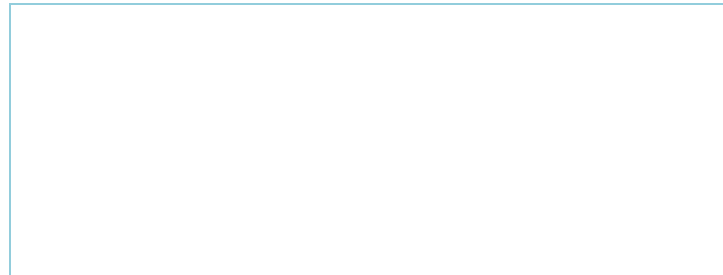
Site Address: Sugarmill Road, Sapphire Beach

Proj Ref: 2021-165



Flow Allowance		120	l/p/d
No. of bedrooms		4	bdr
Occupancy		1.5	p/room
Design Wastewater Flow	Q	720	L/day
Daily DLR		8.0	mm/day
Crop Factor	C	0.6-0.8	unitless
Retained Rainfall Coefficient	RRc	0.85	unitless
Void Space Ratio	V	0.3	unitless
Nominated Land Application Area	N	105	sqm
Trench/Bed wetted thickness	Ww	0.1	m
Rainfall Data	Coffs Harbour Rainfall Data (monthly median)		
Evaporation Data	Coffs Harbour MO- Average		

Notes:



Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D	\	days	31	28	31	30	31	30	31	31	30	31	30	31	365
Median Rainfall	R	\	mm/month	151.2	179	205.1	135.9	117.4	90	54.3	40.7	35.4	74.7	130.4	114.1	1612.2
Average Evaporation	E	\	mm/month	192.2	156.8	148.8	117	86.8	69	77.5	105.4	135	161.2	171	192.2	0
Crop Factor	C			0.80	0.80	0.80	0.70	0.70	0.60	0.60	0.60	0.70	0.70	0.80	0.80	
<b>OUTPUTS</b>																
Evapotranspiration	ET	ExC	mm/month	154	125	119	82	61	41	47	63	95	113	137	154	1189.94
Percolation	B	DLRxD	mm/month	248.0	224	248.0	240.0	248.0	240.0	248.0	248.0	240.0	248.0	240.0	248.0	2920.0
Outputs		ET+B	mm/month	401.8	349.44	367.0	321.9	308.8	281.4	294.5	311.2	334.5	360.8	376.8	401.8	4109.9
<b>INPUTS</b>																
Retained Rainfall	RR	R*RRc	mm/month	128.52	152.15	174.335	115.515	99.79	76.5	46.155	34.595	30.09	63.495	110.84	96.985	1128.97
Effluent Irrigation	W	(QxD)/L	mm/month	212.6	192.0	212.6	205.7	212.6	205.7	212.6	212.6	205.7	212.6	205.7	212.6	2502.9
Inputs		RR+W	mm/month	341.1	344.2	386.9	321.2	312.4	282.2	258.7	247.2	235.8	276.1	316.6	309.6	3631.8
<b>STORAGE CALCULATION</b>																
Storage remaining from previous month			mm/month		0.0	0.0	66.2	64.0	76.0	78.7	0.0	0.0	0.0	0.0	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-202.2	-17.6	66.2	-2.2	12.0	2.7	-119.2	-213.6	-329.0	-282.6	-200.8	-307.3	-271.8
Cumulative Storage	M		mm	0.0	0.0	66.2	64.0	76.0	78.7	0.0	0.0	0.0	0.0	0.0	0.0	284.9
Maximum Bed Storage Depth for Area	BS		mm	78.70	Is the calculated storage acceptable?			Yes, storage is conservative								
<b>Nominated trench width</b>																
		0.9														
<b>Total length based on nominated width</b>																
		116.7														
<b>No. of beds</b>																
		8														
<b>Individual bed lengths</b>																
		14.6														
<b>Individual Bed footprints</b>																
		13.1														
<b>Spacing between beds</b>																
		1.5														
<b>Total bed area</b>																
		258														
<b>Nutrient uptake zone</b>																
		403	2m buffer nutrient uptake allowance													



# Nutrient Balance

**Proj Ref:** 2021-165

**Site Address:** Sugarmill Road, Sapphire Beach

**Notes:**

## INPUT DATA

Hydraulic Load	720	L/Day
Effluent N Concentration	60	mg/L
% Lost to Soil Processes	0.2	Decimal
Total N Loss to Soil	8640	mg/day
Effluent P Concentration	15	mg/L
Design Life of System	50	yrs
Crop N Uptake	250 kg/ha/yr =	68 mg/m <sup>2</sup> /day
Crop P Uptake	25 kg/ha/yr =	7 mg/m <sup>2</sup> /day
P-sorption analytical result in soil	18590	kg/ha
% of Predicted P-sorp	0.75	Decimal

## Nitrogen Balance

Nitrogen uptake ability in vegetation	68	mg/m <sup>2</sup> /day
Nitrogen loading in wastewater	34560	mg/day
Area required for nitrogen	<b>505</b>	m <sup>2</sup>

## Phosphorus Balance

P adsorbed	1.39425	kg/m <sup>2</sup>
P uptake	0.125	kg/m <sup>2</sup>
P generated	273.75	kg
Area required for Phosphorus	<b>180</b>	m <sup>2</sup>



# Preliminary Acid Sulfate Soil Assessment at 28 and 35 Sugarmill Road, Sapphire Beach



3 November 2021

---

For: Mr Keiran Grimley and Dr Ian Martyn

Authored by: Strider Duerinckx

Ref	Ver	Date	Distribution
2021-165-04	A	3/11/21	Client, Planner

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- Figure 1 Site Location
- Figure 2 Site Layout and Sample Locations

## Appendices

- Appendix A Borehole Logs
- Appendix B Laboratory Reports

## 1 Introduction

Earth Water Consulting Pty Limited (EWC) was engaged by Mr Keiran Grimley and Dr Ian Martyn (the “Client”) to undertake a preliminary Acid Sulfate Soil Assessment (PASS) for 28 and 35 Sugarmill Road, Sapphire Beach (the “Site”) (Figure 1).

## 2 Proposed Development

We understand that it is proposed to rezone and subdivide each property into 2 lots to be used for rural-residential living. Lots 120 and 121 would be located on 28 Sugarmill Road and 910 and 911 on 35 Sugarmill Road.

## 3 Scope of Work

This report presents the results of PASS investigations, undertaken in reference to the Acid Sulfate Soil Manual (ASSMAC, 1998), and CHCC LEP Part 7 Acid Sulfate Soils. The scope of work included:

- A desktop review of surface, geology, hydrogeology, geomorphic and ASS risk conditions;
- A site inspection and walkover to assess for indicative ASS biomes and features;
- Drilling of one borehole per property to the depth of 1.2m;
- Collection of 4 soil samples at various soil profiles present and analysis for field pH<sub>f</sub> and pH<sub>ox</sub>; and
- Preparation of this Preliminary ASS report which describes the results of our investigation.

## 4 Site Description

### 4.1 Site Identification

The Site details are provided in Table 1 and shown in Figure 1. The Site is zoned RU2, rural landscape.

**Table 1 - Site Identification**

Address	Lot ID	Approx Area (ha)
No. 28 Sugarmill Road, Sapphire Beach	Lot 12 DP 243972	20,336
No. 35 Sugarmill Road, Sapphire Beach	Lot 91 DP 786155	23,660

### 4.2 Location and Features

The properties are located either side of Sugarmill Road, with number 28 on the northern side, and 35 on the southern side.

These properties are located on undulating low hills separated by forested drainage lines and are mainly cleared.

Typical Site details are shown in **Photograph 1** (No. 28) and **Photograph 2** (No. 35).



**Photograph 1 No. 28-**  
Looking north across the proposed Lot 121 building envelope.



**Photograph 2 No. 35 -**  
Looking west across proposed Lot 911 with an existing vegetation patch downslope of the of the proposed building envelope.

## 5 Geology and Hydrogeology

### 5.1 Geology

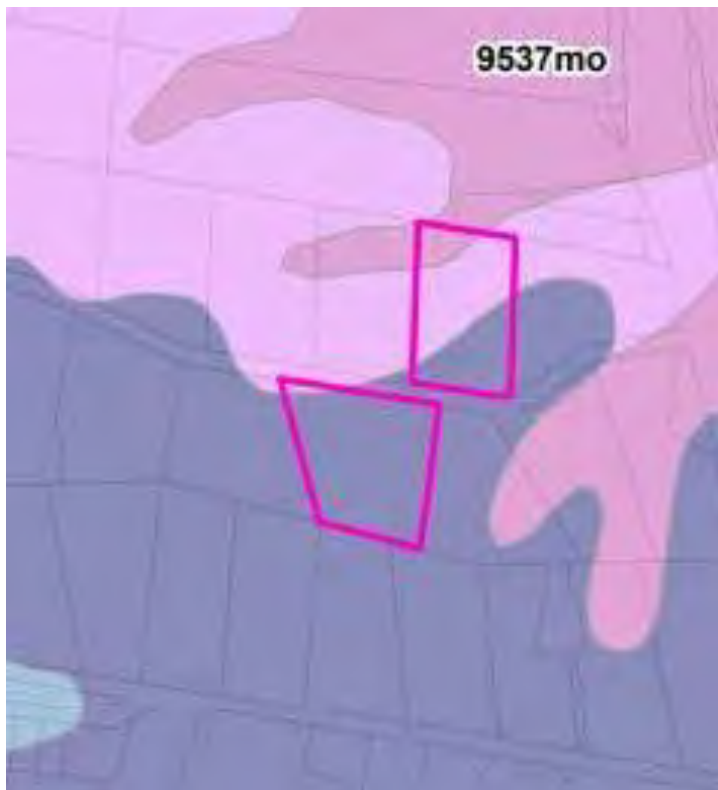
The Site is underlain by the Coramba beds. These are comprised of lithofeldspathic wacke, minor siltstone, mudstone, metabasalt, jasper and rare calcareous siltstone.

### 5.2 Soils

The properties are underlain by a combination of soils, which include the Ulong, Moonee and Megan soil landscapes. Generally, 28 Sugarmill Road is underlain by a combination of the Ulong (central portion) and Megan (southern portion) Soil Landscapes. Number 35 Sugarmill Road is almost entirely underlain by the Megan soil landscape, with a small section underlain by the Ulong landscape in the northwestern corner of the property.

The Ulong soil landscape is located on undulating to rolling low hills to hills on Late Carboniferous-aged metasediments with local relief up to 90m. Soils are moderately deep (>100cm), red and brown earths, and red and yellow podzols.

The Megan Soil Landscape is located in a slightly elevated position in the landscape. Soils are moderately deep to deep, well drained structured red and brown earths and red and brown podzolic soils with moderately deep to deep (>100cm) structured yellow earths and yellow podzolic soils in drier situations, and moderately deep to deep well drained Krasnozems in moistest sites.



**Photograph 3.** Mapped soil landscape and subject properties (pink).

## 6 Acid Sulfate Soils

### 6.1 Mapped Occurrences of ASS

Coffs Harbour City Council Local Environmental Plan (LEP, 2013) and Coffs Harbour City Council Planning and Environment Spatial Maps- ASS layers that are derived from the published ASS risk mapping, indicates that the Site is underlain by mapped “Class 5” ASS risk. No.28 is completely underlain and No. 35 is partially underlain.

Class 5 denotes areas where acid sulfate soils are not typically found but is a 500m wide buffer zone created around mapped ASS risk soils. As such, a low probability of ASS exists at the Site and the PASS investigation is precautionary only.



**Photograph 4.** Mapped ASS risk and subject properties location (pink).

In accordance with Part 7 of the LEP, development consent is required for the carrying out of the following works;

**Within Mapped Class 5** – Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

As the lowest point of the Site is around 9.5mAHD, well above the 5m criteria, and standard rural-residential development is not expected to permanently lower groundwater, it is unlikely that the proposed subdivision and future development would trigger any ASS provisions. Notwithstanding, this PASS investigation has been undertaken for confirmation of the local ASS risk.

Mapped ASS probability mapping provided on eSpade 2.1m indicates that mapped low and high probably ASS soils are present east of the Pacific Highway only. The high probably pf ASS is at <1m below the groundsurface and low probability at 1-3m below the groundsurface.



**Photograph 5.** Published ASS probability mapping. Subject property's locations red outline.

## 7 Subsurface Conditions

Site soils were observed by drilling three (3) boreholes (BH1-BH3) to a maximum depth of 1.2m using a powered auger. The location of the boreholes are shown in Figure 2 and a copy of the borehole logs are presented in Appendix A.

Natural soil profiles were observed in the boreholes, and were found to be representative of their associated residual soil landscapes.

The lithology encountered included a pale brown clay loam underlain by pale red residual clay, grading with depth to white and grey mottling.

Alluvial soils were not encountered. Strong jarosite and iron mottling was also not observed in the natural soils. No rotten egg odours, shell pieces, dark grey to black anaerobic soils or muds were encountered.

No groundwater inflow was observed in the boreholes to the maximum depth of 1.2m drilled.

## 7.1 Biophysical Indicators

The proposed development is situated above 9.5m AHD on a moderately to gently sloping land surface. Dominant tree species in the lower forested zone included moist eucalypt forest. No vegetation strongly associated with ASS soil presence was observed.

No surface water seepage was observed or standing water swampy ground.

## 7.2 ASS Screening Test Results

Two soil samples were collected from BH1 (0.4-0.6 and 0.9-1.1m) and two soil samples were collected from BH2 (0.4-0.6 and 0.9-1.1m) were selected for field screening tests to determine their likelihood of containing Potential or Actual ASS (Pass/Aass) and whether further laboratory analyses would be necessary. The selected soil samples were placed in a chilled container (~4 C) and only removed when analysis was conducted.

Samples were forwarded to Eurofins laboratory at Sydney for initial screening analysis. The lab report is included in Appendix B and summarised in **Table 2**.

**Table 2 – Summary of Field Screening**

Sample Location	Sample Depth (m)	pH <sub>f</sub> (1:5)	pH <sub>fox</sub> (1:5)	pH Change	Reaction
BH1	0.4-0.6	6.1	4.8	-1.3	No reaction to slight
BH1	0.9-1.1	5.5	4.7	-0.8	
BH2	0.4-0.6	5.5	4.5	-1.0	
BH2	0.9-1.1	5.2	4.4	-0.8	

Typically, pH<sub>f</sub> readings <4.0-4.5 indicate the presence of Aass.

Typically, pH<sub>fox</sub> readings of <3.0-3.5 can indicate the presence of Potential Acid Sulfate Soils (Pass).

Typically changes of >1 pH unit and preferably >2 pH units can indicate the presence of Pass.

Oxidation reaction rate and intensity can be indicators of Pass.

In summary, the pH<sub>f</sub> and pH<sub>fox</sub> of all analysed samples were found to be below the Aass and Pass indicator threshold limits and reaction rates were low.

## 8 Conclusions and Recommendations

The desktop review shows no ASS risk the residual clay subsoils. Biophysical indicators, field screening and soil profiles suggest that the properties are not underlain by ASS.



As such ASS are concluded to not be present at the Site that would be impacted by the proposed rural-residential developments, and no further investigations or plans of management are required. If dark grey to black, odorous or waterlogged alluvial sands or clays are encountered during development, then works should be halted until confirmation of the presence of ASS is undertaken and/or remedial strategies developed at that time.

## 9 References

Coffs Harbour City Council Local Environmental Plan 2013.

Milford H.B, (1997), *Moonee Beach 1:25,000 Acid Sulfate Soil Risk Map*. Edition 2. Department of Land & Water Conservation.

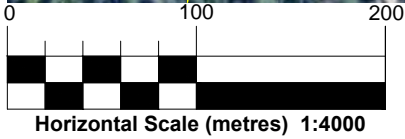
Milford H.B, (1999), *Soil Landscapes of the Coffs Harbour 1:100,000 Sheet Report*. Department of Conservation and Land Management.

Stone Y, Ahern C.R., and Blunden B (1998), *Acid Sulfate Soil Manual 1998*. Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia.

# FIGURES

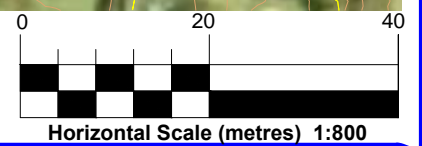
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# Appendix 10 - Preliminary Acid Sulphate Soils Assessment



- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - Intermittent waterways
  - - - Dams

TITLE Site Location		PROJECT Preliminary ASS Investigation for 28 and 35 Sugarmill Road, Sapphire Beach			CLIENT Grimley & Martyn
FIGURE Figure 1					
SHEET 1 OF 1	ISSUE A	AUTHOR SD	DATE 3/11/21	SCALE 1:8000	PROJECT 2021-165



LEGEND

- Property Boundary
- Drainage Alignment
- Dam
- Contour Line (1m)
- CHCC LEP ASS Class
- Existing Building
- Existing Driveway
- Approximate BH Location



TITLE Site Layout and Sample Locations		FIGURE Figure 2	
PROJECT Prelim ASS Investigation for 28 and 35 Sugarmill Road, Sapphire Beach		SHEET 1 OF 1	ISSUE A
AUTHOR SD	DATE 3/11/21	SCALE 1:800	PROJECT 2021-165
CLIENT Grimley & Martyn			

# APPENDIX A

---



# Soil Borelog

<b>Borehole No:</b>	<b>BH1</b>
Logged by:	NS
Drilling date:	25/05/2021

Project ref:	2021-165	Drilling method:	Power auger
Client:		Borehole location:	Figure 2
Address:	28 Sugarmill Rd Sapphire Beach	Borehole coords:	

## PROFILE DESCRIPTION

Depth (m)	Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments	
0.1			A1	Clay Loam	Moderate	Black/Dark Brown	Nil	Nil	SM	Topsoil	
0.2			A2	Clay Loam	Strong	Pale Brown	Pale Orange	Nil	SM	Transferral	
0.3											
0.4											
0.5	S		B2	Light Clay	Strong	Pale Red	Pale Brown	Nil	SM	Residual	
0.6											
0.7											
0.8				Light Clay	Strong	Pale Red Orange	White	Nil	SM	Residual	
0.9											
1.0											
1.1											
1.2											
1.3			Borehole terminated at 1.2m								
1.4											
1.5											

### Moisture condition

D	Dry	M	Moist	W	Wet / saturated
SM	Slightly moist	VM	Very moist		



# Soil Borelog

Project ref: 2021-165		<b>Borehole No:</b> BH2
Client:		Logged by: NS
Address: 28 Sugarmill Rd Sapphire Beach		Drilling date: 25/05/2021
		Drilling method: Power auger
		Borehole location: Figure 2
		Borehole coords: 513864, 6656545

## PROFILE DESCRIPTION

Depth (m)	Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments	
0.1			A1	Clay Loam	Moderate	Black/Dark Brown	Nil	Nil	SM	Topsoil	
0.2			A2	Clay Loam	Strong	Dark Brown	Pale Orange	Nil	SM	Transferral	
0.3											
0.4											
0.5	S		B2	Light Clay	Strong	Pale Red	Pale Orange, White, Grey	Nil	SM	Residual	
0.6											
0.7											
0.8					Light Clay	Strong	Pale Red Orange	White	Nil	SM	Residual
0.9											
1.0	S										
1.1											
1.2											
1.3			Borehole terminated at 1.2m								
1.4											
1.5											

### Moisture condition

D	Dry	M	Moist	W	Wet / saturated
SM	Slightly moist	VM	Very moist		

EARTH WATER CONSULTING		Soil Borelog								
Project ref: 2021-165		Borehole No: BH3								
Client:		Logged by: NS								
Address: 35 Sugarmill Rd Sapphire Beach		Drilling date: 25/05/2021								
		Drilling method: Power Auger								
		Borehole location: Figure 2								
		Borehole coords: 513723, 6656354								
PROFILE DESCRIPTION										
Depth (m)	Sampling depth/name	Graphic Log	Horizon	Texture	Structure	Colour	Mottles	Coarse Fragments	Moisture Condition	Comments
0.1			A1	Clay Loam	Strong	Dark Brown	Pale Brown	Nil	SM	Topsoil Charcoal
0.2			B1	Clay Loam	Strong	Pale Brown	Pale Red Orange	< 5%	SM	Transferral
0.3										
0.4										
0.5										
0.6	s		B2	Light Clay	Strong	Pale Orange Brown	Pale Red	Nil	SM	Residual
0.7										
0.8										
0.9										
1.0										
1.1			B3	Light Clay	Strong	Orange/Pale Red	White/Pale	Nil		Residual
1.2										
1.3			Borehole terminated at 1.2m							
1.4										
1.5										
<u>Moisture condition</u>										
D	Dry		M	Moist		W	Wet / saturated			
SM	Slightly moist		VM	Very moist						



# APPENDIX B

---

Earth Water Consulting Pty Limited  
2-16 Lourdes Avenue  
Urunga  
NSW 2455



NATA Accredited  
Accreditation Number 1261  
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing  
NATA is a signatory to the ILAC Mutual Recognition  
Arrangement for the mutual recognition of the  
equivalence of testing, medical testing, calibration,  
inspection and proficiency testing scheme providers  
reports.

Attention: **Strider Duerinckx**

Report **798700-S**  
Project name **SUGAR MILL RD**  
Project ID **2021-165**  
Received Date **May 27, 2021**

Client Sample ID			BH1 0.4-0.6	BH1 0.9-1.1	BH2 0.4-0.6	BH2 0.9-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-My56120	S21-My56121	S21-My56122	S21-My56123
Date Sampled			May 25, 2021	May 25, 2021	May 25, 2021	May 25, 2021
Test/Reference	LOR	Unit				
<b>Acid Sulfate Soils Field pH Test</b>						
pH-F (Field pH test)*	0.1	pH Units	6.1	5.5	5.5	5.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.8	4.7	4.5	4.4
Reaction Ratings* <sup>S05</sup>	-	comment	1.0	1.0	1.0	1.0

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

**Description**

Acid Sulfate Soils Field pH Test

**Testing Site**

Sydney

**Extracted**

May 31, 2021

**Holding Time**

7 Days

- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests

**Australia**

**Melbourne**  
6 Monterey Road  
Dandenong South VIC 3175  
Phone : +61 3 8564 5000  
NATA # 1261  
Site # 1254 & 14271

**Sydney**  
Unit F3, Building F  
16 Mars Road  
Lane Cove West NSW 2066  
Phone : +61 2 9900 8400  
NATA # 1261 Site # 18217

**Brisbane**  
1/21 Smallwood Place  
Murarrie QLD 4172  
Phone : +61 7 3902 4600  
NATA # 1261 Site # 20794

**Perth**  
46-48 Banksia Road  
Welshpool WA 6106  
Phone : +61 8 9251 9600  
NATA # 1261  
Site # 23736

**Newcastle**  
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Mayfield East NSW 2304  
PO Box 60 Wickham 2293  
Phone : +61 2 4968 8448  
NATA # 1261 Site # 25079

**New Zealand**

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Penrose, Auckland 1061  
Phone : +64 9 526 45 51  
IANZ # 1327

**Christchurch**  
43 Detroit Drive  
Rolleston, Christchurch 7675  
Phone : 0800 856 450  
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

<b>Company Name:</b>	Earth Water Consulting Pty Limited	<b>Order No.:</b>		<b>Received:</b>	May 27, 2021 9:25 AM
<b>Address:</b>	2-16 Lourdes Avenue Urunga NSW 2455	<b>Report #:</b>	798700	<b>Due:</b>	Jun 3, 2021
<b>Project Name:</b>	SUGAR MILL RD	<b>Phone:</b>	0402 6083 96	<b>Priority:</b>	5 Day
<b>Project ID:</b>	2021-165	<b>Fax:</b>		<b>Contact Name:</b>	Strider Duerinckx
<b>Eurofins Analytical Services Manager : Andrew Black</b>					

<b>Sample Detail</b>						Acid Sulfate Soils Field pH Test
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>						
<b>Sydney Laboratory - NATA Site # 18217</b>						
<b>Brisbane Laboratory - NATA Site # 20794</b>						
<b>Perth Laboratory - NATA Site # 23736</b>						
<b>Mayfield Laboratory - NATA Site # 25079</b>						
<b>External Laboratory</b>						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	BH1 0.4-0.6	May 25, 2021		Soil	S21-My56120	X
2	BH1 0.9-1.1	May 25, 2021		Soil	S21-My56121	X
3	BH2 0.4-0.6	May 25, 2021		Soil	S21-My56122	X
4	BH2 0.9-1.1	May 25, 2021		Soil	S21-My56123	X
<b>Test Counts</b>						4

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Comments**

**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

**Authorised by:**

Andrew Black                      Analytical Services Manager



**Glenn Jackson**  
**General Manager**

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



**CHAIN OF CUSTODY RECORD**

Environ Intpt AEN 50 005 005 521

Sydney Laboratory  
Unit 19 Bldg F 18 Mars Road Lane Cove NSW 2086  
02 9900 8400 EnvironSamples@environ.com

Brisbane Laboratory  
Unit 1 21 Shalwood Place Marooch QLD 4172  
07 3902 4900 EnvironSampleQLD@environ.com

Perth Laboratory  
Unit 2 91 Leach Highway Kewdale WA 6105  
08 9251 9800 EnvironSampleWA@environ.com

Melbourne Laboratory  
2 Argyleon Town Close Oakleigh VIC 3186  
03 8804 5000 EnvironSampleVIC@environ.com

Company: Earth Water Consulting Pty Limited

Address: Unit 6 / 1A Marina Crescent, Urunga NSW 2455

Contact Name: Strider Duennick

Phone No: 0402609396

Special Directions:

Purchase Order: 2021-165

Quote ID No: Earth Water Consulting

Client Sample ID: BH1 0-4-0.6

Sample Date/Time: 25/5

Matrix: S

Project No: 2021-165

Project Name: Sugar Mill Rd.

Project Manager: Strider  
EOD Format: Yes

Analyses: ASS pH Field Screen

No	Client Sample ID	Sample Date/Time	Matrix	Total Counts	Method at Shipment	Received By	Received By	Signature	Date	Time	Signature	Date	Time
1	BH1 0-4-0.6	25/5	S	4	<input checked="" type="checkbox"/> Counter #	RAV	RAV	[Signature]	27/5/21	9:25am	[Signature]	27/5/21	15:12
2	BH1 0-9-1.1		S		<input type="checkbox"/> Hand Delivered								
3	BH2 0-4-0.6		S		<input type="checkbox"/> Postal								
4	BH2 0-9-1.1		S		<input type="checkbox"/> Postal								
5													
6													
7													
8													
9													
10													

- 500mL Plastic
- 250mL Plastic
- 125mL Plastic
- 200mL Amber Glass
- 40mL Vial
- 500mL PFAS-PET
- Jar (Glass or HDPE)

Required Turnaround Time

Overnight (reporting by 9am)

Same day

2 days

3 days (Standard)

3 days

Other

Sample Comments: Dangerous Goods Hazard Warning

Handled over by: Strider

Email for invoice: strider@ewcon.com.au

Email for Results: strider@ewcon.com.au



144 Oxley Island Road  
Oxley Island NSW 2430

P: 61 (2) 6553 2577

E: info@matrixthornton.com.au

W: www.matrixthornton.com.au

ABN: 61 002 929 857

Structural ▶ Civil ▶ Mechanical ▶ Acoustic

# Traffic Noise Intrusion into Development at 28 Sugarmill Road Sapphire Beach

Report No. M21170.01

Site: 28 Sugarmill Road,  
Sapphire Beach NSW

Prepared by: Philip Thornton BE(UNSW) MIEAust CPEng NER  
Acoustic Consultant  
Matrix Thornton Consulting Engineers

Date: May 2021

## SUMMARY

A new residential development lot is proposed at 28 Sugarmill Road, Sapphire Beach.

Traffic noise levels at the site of proposed dwellings were predicted based on noise contours published previously.

Based on those noise levels, no specific acoustic treatment is recommended other than the use of minimum Category 1 building elements (described in the Appendix).



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## 1. INTRODUCTION

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A new residential lot is proposed at 28 Sugarmill Road, Sapphire Beach. Council have advised that the lot is situated within the Pacific Highway Acoustic Buffer and traffic noise impacts on any proposed dwellings needs to be investigated in accordance with Clause 101 of the Infrastructure SEPP (2007) and the NSW Department of Planning Development Near Rail Corridors and Busy Roads – Interim Guideline (2008).

The Acoustic Buffer was determined using Matrix Thornton Report M15387 in which noise contours were published. Those contours were used to determine the noise impact at the site.

## 2. PURPOSE OF THE REPORT

---

Assessment procedures will include:

- Obtain noise data from Report M15387.
- Setting the appropriate limits in the rooms.
- Calculate noise intrusion using different glazing and construction materials.
- Recommend minimum glazing and ventilation requirements.
- Prepare a report on these findings acceptable to Council.

## 3. LOCATION

---

The site location is shown on in Figure 3-1.



Figure 3-1 Site Location

## 4. NOISE OBJECTIVES

State Environmental Planning Policy (Infrastructure) 2007 (SEPP) Clause 102 states the following with regard to road traffic noise impacts on non-road developments.

*102: Impact of road noise or vibration on non-road development*

- (1) *This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:*
  - (a) *a building for residential use,*
  - (b) *a place of public worship,*
  - (c) *a hospital,*
  - (d) *an educational establishment or child care centre.*
- (2) *Before determining a development application for development to which this clause applies, the consent authority must take into consideration any guidelines that are issued by the Director-General for the purposes of this clause and published in the Gazette.*
- (3) *If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:*
  - (a) *in any bedroom in the building—35 dB(A) at any time between 10 pm and 7 am,*
  - (b) *anywhere else in the building (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.*

The NSW Department of Planning *Development Near Rail Corridors and Busy Roads – Interim Guideline* gives guidelines for application of the SEPP, including the following:

*The night-time ‘sleeping areas’ criterion is 5dBA more stringent than the ‘living areas’ criteria to promote passive acoustic design principles. For example, designing the building such that sleeping areas are less exposed to road or rail noise than living areas may result in less onerous requirements for glazing, wall construction and acoustic seals.*

*If internal noise levels with windows or doors open exceed the criteria by more than 10dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia.*

### Building Envelope Noise Reduction

The criteria detailed in the SEPP (Infrastructure) 2007 refer to internal noise levels.

Most buildings will achieve an internal noise level 10dBA below the external noise level with the windows open, without providing additional treatment.

Based on the SEPP criteria and the indication that the minimum noise reduction by a building façade, the mitigation requirements for various noise levels are given in Table 4-1. Note that all the external noise level criteria above refer to free-field noise levels.

Day time Noise – L <sub>Aeq, 15hr</sub> dBA	Night time Noise to Sleeping Areas– L <sub>Aeq, 9hr</sub> dBA	Mitigation Requirements
Up to 60	Up to 55	No Requirement
61-65	55-60	Mechanical Ventilation
>65	>60	Acoustic Design

Table 4-1 Acoustic Requirements

Note: Day is defined as 7.00am to 10.00pm, Monday to Saturday; 8.00am to 6.00pm Sunday and Public Holidays.  
Night is defined as 10.00pm to 7.00am, Monday to Saturday; 10.00pm to 8.00am Sunday and Public Holidays.

## 5. TRAFFIC NOISE LEVELS ACROSS THE LOT

There are no details of the proposed subdivision at this stage. Therefore, we will calculate the worst noise impact at the site.

Matrix Thornton Report M15387 gives noise levels at 2m and 4.5m from ground level, representing the noise impact at ground floor rooms, and first floor rooms of any future dwellings. As we don't know which type of dwelling will be built, we will quote the results for ground floor and first floor rooms.

Based on that report the traffic noise levels at the most affected part of the site are predicted to be:

Daytime ground floor -  $L_{Aeq,15hr}$  55 dBA; and  
 Night time ground floor -  $L_{Aeq,9hr}$  52 dBA.

Daytime first floor -  $L_{Aeq,15hr}$  57 dBA; and  
 Night time first floor -  $L_{Aeq,9hr}$  53 dBA.

The worst case is for night time at 4.5m height.

**Figure 5-1 shows the night time 4.5m contours published in Matrix Thornton Report M15387.**

Figure 5-2 shows a close up of the same contour as it traverses the site.

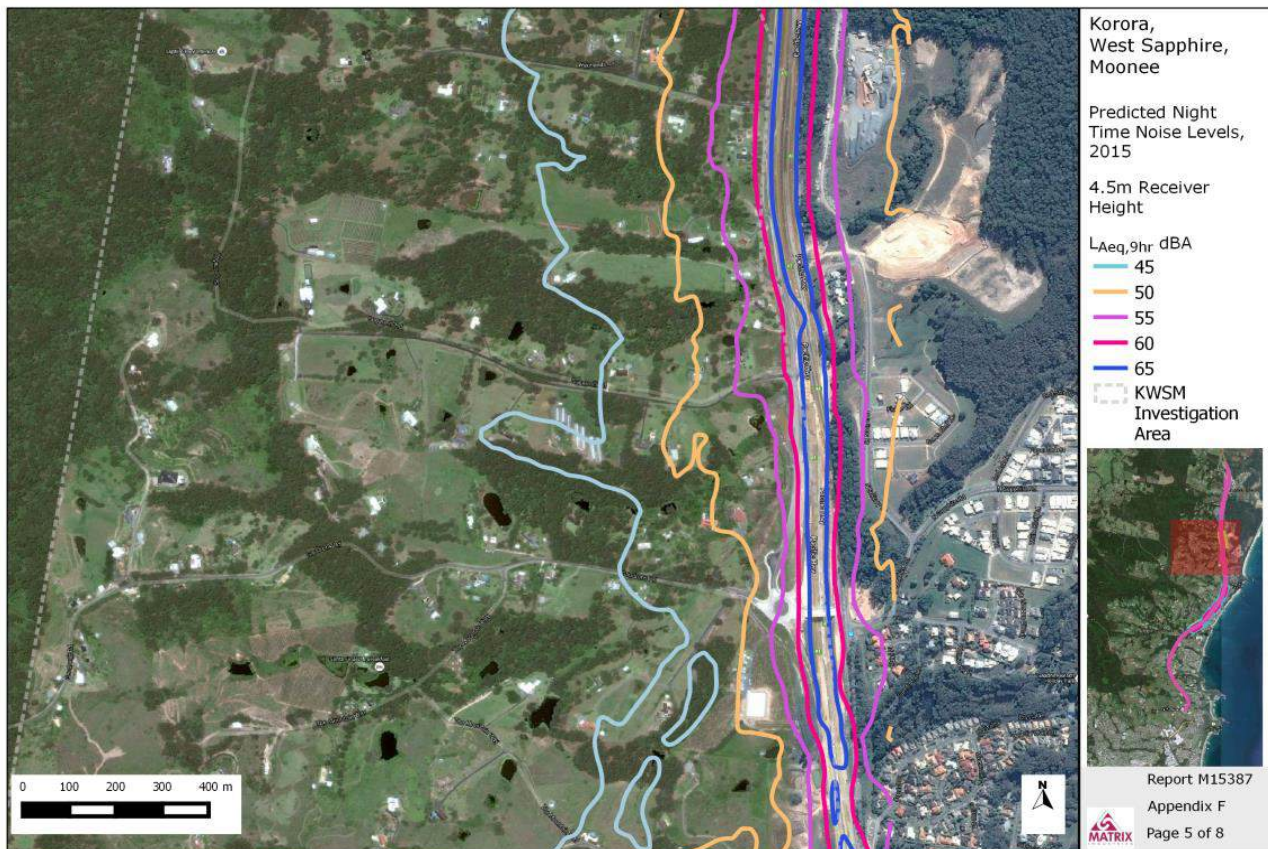


Figure 5-1 Night Time First Floor Noise Contours

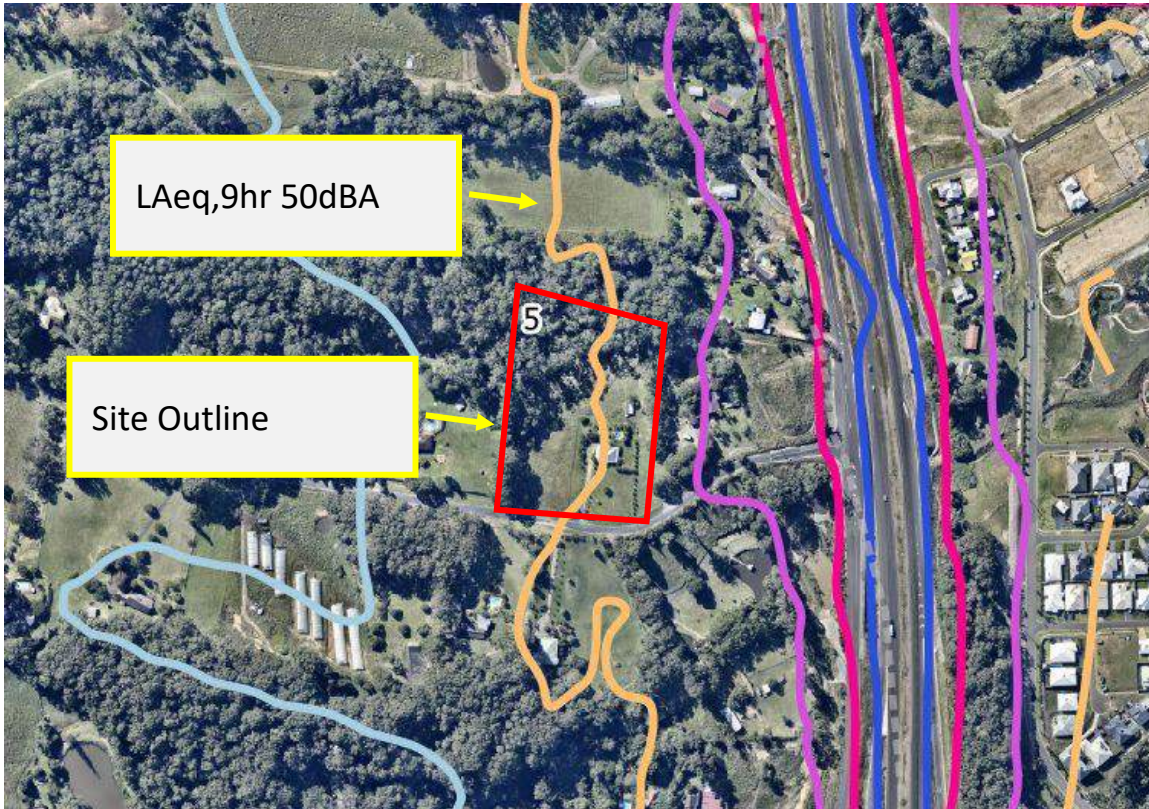


Figure 5-2 Night Time First Floor Noise Contours at Site

## 6. Assessment and Recommendations

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As night time noise levels are predicted to be below 55dBA at all locations, and daytime levels are predicted to be below 60dBA, no acoustic design treatment is required to comply with the SEPP requirement. Standard building elements will be satisfactory as described below.

### Building Element Categories

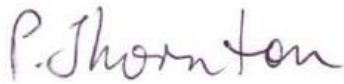
The guideline describes categories of building construction with increasing acoustic performance. At this site Category 1 constructions will be satisfactory. See Appendix B for a description of Category 1 building elements.

## 7. CONCLUSION

---

Traffic noise levels at the site of proposed dwellings were predicted based on noise contours published previously.

Based on those noise levels, no specific acoustic treatment is required for residential development at this lot.



Philip Thornton BE(UNSW) MIE(Aust)  
Acoustic Consultant  
Chartered Professional Engineer





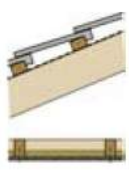

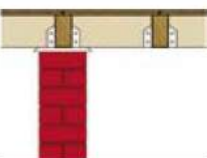



## Appendix A: Glossary of Acoustic Terms

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Assessment Period	The period in a day over which assessments are made.
dB(A)	Unit of sound level in A-weighted decibels. The A-weighting approximates the sensitivity of the human ear by filtering these frequencies. The dB(A) measurement is considered representative of average human hearing.
$L_{Aeq}$	The A-weighted equivalent continuous sound pressure level, used to quantify the average noise level over a time period.
$L_{A10}$	The A-weighted sound pressure level exceeded for 10% of the measurement period. It is usually used as the descriptor for intrusive noise level.
$L_{A90}$	The A-weighted sound pressure level exceeded for 90% of the measurement period. It is usually used as the descriptor for background noise level.
$L_{Aeq15min}$	Refers to the A-weighted energy averaged equivalent noise level over a 15 minute time period.
$L_{Cpeak}$	The highest instantaneous C-weighted sound pressure level over the measurement period. It is usually used for high impulsive noise.
$L_{Amax}$	The maximum A-weighted sound pressure level for the measurement period.
Loudness	A 3dB(A) change in sound pressure level is just noticeable or perceptible to the average human ear; a 5dB(A) increase is quite noticeable and a 10dB(A) increase is typically perceived as a doubling in loudness.
RBL	The overall single figure background level representing the assessment period over the whole monitoring period. For the short-term method of assessment, the RBL is the measured $L_{A90, 15min}$ value, or where a number of measurements have been made, the lowest $L_{A90, 15min}$ value.

## Appendix B: Category 1 Building Elements

Category No.	Building Element	Standard Constructions	sample
1	<b>Windows/Sliding Doors</b>	Openable with minimum 4mm monolithic glass and standard weather seals	
	<b>Frontage Facade</b>	<b>Timber Frame or Cladding:</b> 6mm fibre cement sheeting or weatherboards or plank cladding externally, 90mm deep timber stud or 92mm metal stud, 13mm standard plasterboard internally	
		<b>Brick Veneer:</b> 110mm brick, 90mm timber stud or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, 10mm standard plasterboard internally	
		<b>Double Brick Cavity:</b> 2 leaves of 110mm brickwork separated by 50mm gap	
	<b>Roof</b>	Pitched concrete or terracotta tile or metal sheet roof with sarking, 10mm plasterboard ceiling fixed to ceiling joists, R1.5 insulation batts in roof cavity.	
	<b>Entry Door</b>	35mm solid core timber door fitted with full perimeter acoustic seals	
	<b>Floor</b>	1 layer of 19mm structural floor boards, timber joist on piers	
		Concrete slab floor on ground	





## Coffs Harbour & District Local Aboriginal Land Council

Cnr Pacific Highway & Arthur Street, Coffs Harbour NSW 2450  
 PO Box 6150, Coffs Harbour Plaza NSW 2450  
 Phone (02) 6652 8740 Fax: (02) 6652 5923

### CLIENT DETAILS

<b>Client Name:</b>	Dr Chandran Arianayagam Mr Kieran Grimley Dr Ian Martyn
<b>Site for inspection</b>	28 Sugarmill Road, Sapphire Beach, 35 Sugarmill Road, Sapphire Beach, 89 Sugarmill Road, Sapphire Beach
<b>Client contact name</b>	Graeme Fry

### COFFS HARBOUR AND DISTRICT LOCAL ABORIGINAL LAND COUNCIL

<b>Site officer name</b>	Uncle Ian Brown & Aunty Luana Ferguson
<b>Date</b>	Monday 27 <sup>th</sup> September 2021
<b>Start Time</b>	9:30am – 13:30pm
<b>Nature of the works</b>	Rezoning

### SITE OFFICER OBSERVATIONS

Artefacts	Dreaming site	Midden material	Campsite	Ceremony ground
None	None	None	None	None

Scar trees	Skeletal remains	Increase site	Men/Women's area	Other (specify)
None	None	None	None	N/A

### **Notes – Sites Officer only**

- The area of interest was fully examined by one Senior Cultural Site Officer and one Cultural Site Officer.
- No physical evidence of cultural items or sites were found.

### **Recommendations**

1. Unexpected finds procedure to be implemented to any future ground disturbance works as per relevant cultural heritage protection legislation.
2. Contact the Land Council or Heritage Division should any unexpected finds be uncovered.

Observations compiled by Senior Sites Officer, Uncle Ian Brown.  
 Report approved and signed off by:

Matthew Smith  
 Programs Coordinator  
 CH&DLALC  
 28<sup>th</sup> September 2021

SEPTEMBER 2015

## Korora West Sapphire Moonee Large Lot Residential Constrains Study: Heritage Assessment



### COFFS HARBOUR

PREPARED FOR COFFS HARBOUR CITY COUNCIL



**Report Reference:**

Hill, T., Towers J and Robins, T. 2015 *Korora West Sapphire Moonee Large Lot residential study: Heritage Assessment* Everick Heritage Consultants Pty Ltd unpublished report prepared for Coffs Harbour City Council.

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**Document Status:**

Rev No.	Version	Author(s)	Amended Sections	Date	Authorised
1	Draft	T. Hill	All	05.06.15	T. Robins
2	Draft	T.Hill	All	20.08.15	T. Robins
3	Draft	T. Hill	All	10.09.15	T. Robins
4	Draft	T. Hill	All	15.09.15	T. Robins

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## EXECUTIVE SUMMARY

The following is a report detailing the Heritage Study for the proposed Korora, West Sapphire, Moonee Large Lot Residential Study north of Coffs Harbour, NSW (the 'Project'). The lands subject to assessment are identified in Figure 2 (the 'Study Area'). The intent of this investigation is to identify any significant heritage places, objects or issues that might be considered as constraints to future development of these areas.

The brief for this project was to “undertake an assessment as to the items or areas of Aboriginal cultural heritage, as well as post-European settlement heritage” and provide “Appropriate management strategies ... if Aboriginal or post-European settlement sites of significance are found”.

The methods employed in this assessment included:

- a) a search of relevant Aboriginal heritage registers;
- b) a brief review of the archaeological and cultural heritage assessments pertinent to the potential heritage values associated with the Study Area;
- c) a review historic aerial photographs of the Study Area; and
- d) a series of site inspections across the Study Area designed to sample priority areas based on the literature review ;
- e) assessment of the potential for the Study Area to contain significant Aboriginal and European heritage and the impact that future development may have on significance heritage places and objects.

A search was conducted on 5 August 2015 of the OEH Aboriginal Heritage Information Management System (AHIMS service number 184338) the Project Area. The search returned a total of nine (9) listings for Aboriginal Cultural Heritage sites within the Project Area. All of the recorded sites within the Project Area are open sites- being either artefact scatters with overall low density of artefacts or isolated finds. The recorded sites are located on lower valleys and slopes in the eastern section of the Project Area- with the exception of Korara 2 and PAD which is located off a relatively large ridgeline approximately 75 masl and therefore possibly mapped inaccurately. The AHIMS entry does not include any report or permit reference numbers to confirm the accuracy of this site.



Given the scale of the study area and the methodological constraints identified by similar studies (i.e. Hudson 2009) the study methodology aimed to broadly understand the landscape in the context of the Due Diligence Code of Practice, and particularly Question 2b “Is the activity in an area where landscape features indicate the presence of Aboriginal cultural heritage?” The study included a vehicle-based visual inspection of the Study Area to document the characteristics of slope; aspect; disturbance and proximity to mapped creeks. The second part of the methodology was to use digital models to define areas which met the criteria under the Due Diligence Code of Practice which would require additional investigation. These areas were mapped and compared to the areas identified as being available for access for fieldwork through land-owner support/ approval.

Based on the investigations undertaken as part of the Study it is possible to identify the following results:

There are no gazetted Aboriginal Places or Listed Historic Heritage items within the Project Area.

There are not declared historic heritage items

A total of 38 PADs were mapped using the terrain mapping data. This process allowed the identification of several ‘trends’ of relevance to the project, being;

- A high correlation between known sites and PAD areas;
- A trend towards great frequency of PAD areas to the east of the Project Area;
- A trend towards larger PAD areas to the north of the Project Area;
- An overall trend of roads and existing dwellings being located on PAD areas leading to significant disturbance;
- A relatively low number of PADs which are considered ‘undisturbed’

The investigation of potential constraints for the release of additional rural residential blocks in the Project Area has identified no significant constraints with respect to Aboriginal and European Heritage. No Aboriginal Places or Items listed under the Heritage Act are recorded within the Project Area. With respect to known Aboriginal sites and PADs the Due Diligence Code of Practice provides an adequate system for the identification and management of the types of sites likely to occur within the Project Area. There is the potential for some areas of the Project Area- particularly around Moonee Creek- to



contain regionally significant archaeological sites. The study identified a general trend towards larger potential archaeological deposits in the northern and eastern sections of the Project Area.

The Due Diligence Code of Practice is considered to provide an adequate system for the protection of Aboriginal sites that are known within the Project Area. It is recommended that the Due Diligence Code of Practice is used as a framework for assessment of potential impacts to Aboriginal heritage during all future rezoning or development applications within the Project Area. It is recommended that Coffs Harbour City Council formally consults with the OEH with regard to the practical application of the Code of Practice for future rezoning and development applications- particularly with respect to individual residential dwellings and agricultural infrastructure.




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## DEFINITIONS

The following definitions apply to the terms used in this report:

**Aboriginal Object** means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

**Aboriginal Place** means any place declared to be an Aboriginal place (under s. 84 of the NPW Act) by the Minister administering the NPW Act, by order published in the NSW Government Gazette, because the Minister is of the opinion that the place is or was of special significance with respect to Aboriginal culture. It may or may not contain Aboriginal Objects.

**ACHCR Guidelines** means the OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010).

**Archaeological Code of Practice** means the OEH Code of Practice for Archaeological Conduct in New South Wales (2010).

**Due Diligence Code** means the OEH Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010).

**Heritage Act** means the NSW Heritage Act 2009

**LEP** means the Coffs Harbour Local Environment Plan 2013

**NPW Act** means the National Parks and Wildlife Act 1974 (NSW).

**NPW Regulations** means the National Parks and Wildlife Regulations 2009 (NSW).

**OEH** means the New South Wales Office of Environment and Heritage.

**Project Area** means the land subject to this assessment, being the hinterland areas of Korora, West Sapphire and Moonee as identified by Coffs Harbour City Council and as illustrated in Figure 2.

**Study Area** means the land subject to this assessment, being 'unconstrained' potential large lot residential areas in Korora, West Sapphire and Moonee as identified by Coffs Harbour City Council and as illustrated in Figure 2.

**The Consultant** means qualified archaeological staff and/or contractors of Everick Heritage Consultants Pty Ltd.



## 1. INTRODUCTION

### 1.1 Purpose of the Archaeological Investigation

The following is a report detailing the Heritage Study for the proposed Korora, West Sapphire, Moonee Large Lot Residential Study Area north of Coffs Harbour, NSW (the 'Project'). The lands subject to assessment are identified in Figure 1 and Figure 2 (the 'Study Area').

The intent of this investigation is to identify any significant heritage places, objects or issues that might be considered as constraints to future development of these areas.

### 1.2 Proponent, Project Brief & Methodology

Everick Heritage Consultants (the 'Consultant') were commissioned by Coffs Harbour City Council on to undertake the heritage assessment for the Study. Eco Logical Australia Pty Ltd have been engaged by Coffs Harbour City Council to undertake and project manage the broader Planning Constraints Study of which the Heritage Study is one component.

The brief for this project was to "undertake an assessment as to the items or areas of Aboriginal cultural heritage, as well as post-European settlement heritage" and provide "Appropriate management strategies ... if Aboriginal or post-European settlement sites of significance are found".

The methods employed in this assessment included:

- a) a search of relevant Aboriginal heritage registers;
- b) a brief review of the archaeological and cultural heritage assessments pertinent to the potential heritage values associated with the Study Area;
- c) a review historic aerial photographs of the Study Area; and
- d) a series of site inspections across the Study Area designed to sample priority areas based on the literature review ;



- e) assessment of the potential for the Study Area to contain significant Aboriginal and European heritage and the impact that future development may have on significance heritage places and objects.

## 1.3 Description of the Project Area

The Project Area includes lands west of the Pacific Highway; north of West Korora Road; east of the Sealy Lookout Drive and Orara East State Forest, and south of the Moonee/Pacific Highway/ Solitary Islands Way interchange. The area relevant to the Study includes the following major roads Maccues Road; Fairview and Wakelands Roads; Gaudrons Road; The Mountain Way; Bruxner Park Road and West Korora Road and linked smaller roads (Figure 2).

## 1.4 Report Authorship

The desktop study was undertaken by Senior Archaeologists Tim Hill and Frances Wiig and qualified Archaeologist Jordan Towers. The field inspection was conducted by Senior Archaeologist Tim Hill. This report was written by Tim Hill, Frances Wiig, Jordan Towers and Everick Director Tim Robins.



Figure 1: General location of Project Area.

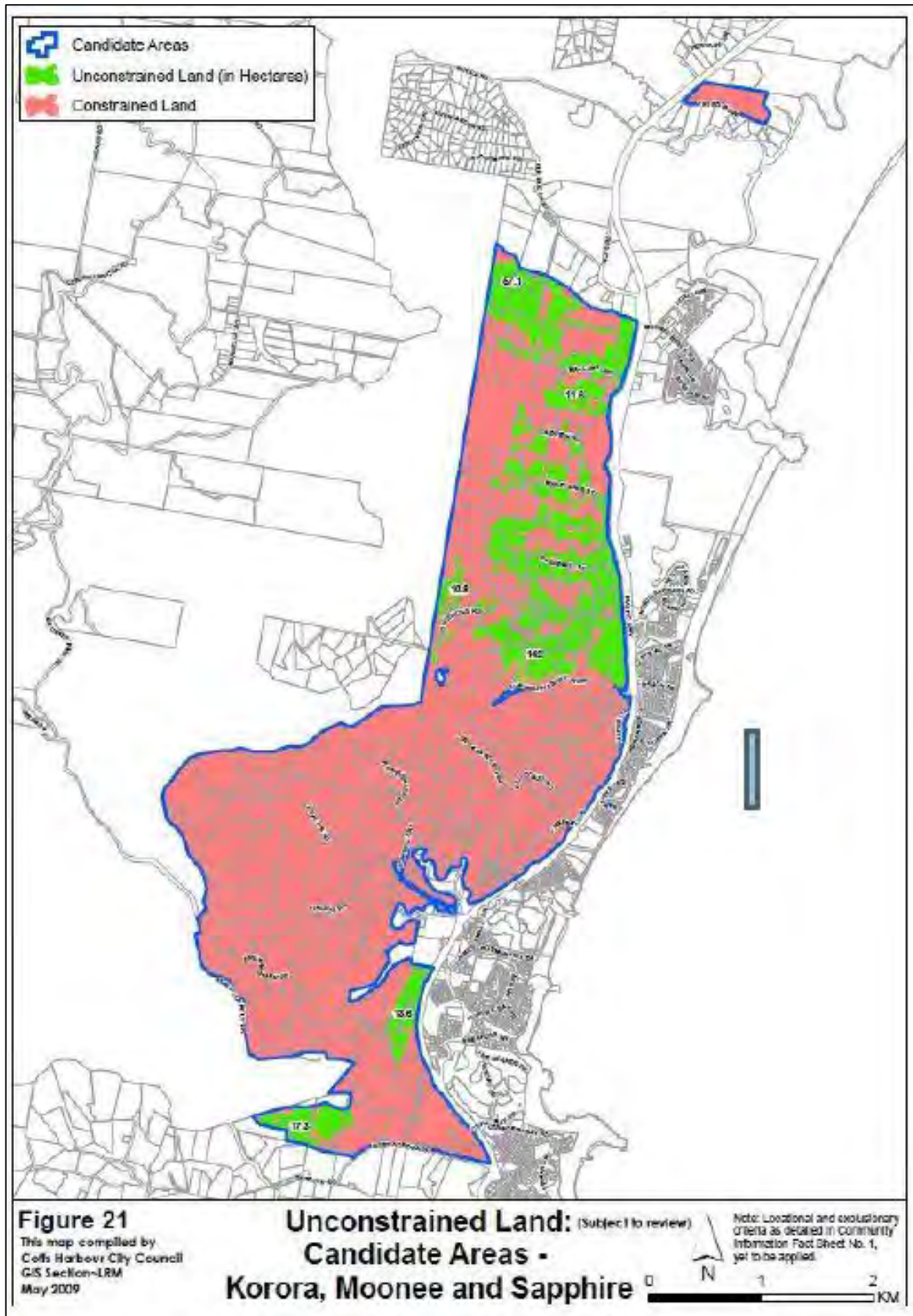


Figure 2: Project Area constrained and unconstrained lands



## 2. LEGISLATIVE AND PLANNING CONTEXT

The following legislation provides the context for cultural heritage in NSW: the *National Parks and Wildlife Act 1974* (NSW), the *Environmental Planning and Assessment Act 1979* (NSW) and the *Heritage Act 1977* (NSW) and local council Environmental Plans and Development Control Plans. The Commonwealth also has a role in the protection of nationally significant cultural heritage through the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth), *The Protection of Movable Cultural Heritage Act 1986* (Cth) and the *Historic Shipwrecks Act 1976* (Cth).

For the purposes of this Study it is the State and local legislation that are most relevant for residential development projects. The consent authorities will be the Coffs Harbour City Council and, where a referral agency is required, the OEH. Approval from the OEH will also be required should proposed residential works impact on identified Aboriginal Objects, Places or listed Heritage properties. The information below lists the legislative and policy framework within which this assessment is set.

### 2.1 The National Parks and Wildlife Act 1974 (NSW) and the National Parks and Wildlife Regulations 2009 (NSW)

The *National Parks and Wildlife Act 1974* (NSW) (NPW Act) is the primary legislation concerning the identification and protection of Aboriginal cultural heritage. It provides for the management of both Aboriginal Objects and Aboriginal Places. Under the NPW Act, an Aboriginal Object is any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, regardless of whether the evidence of habitation occurred before or after non-Aboriginal settlement of the land. This means that every Aboriginal Object – regardless of its size or seeming isolation from other Objects – is protected under the Act.

An Aboriginal Place is an area of particular significance to Aboriginal people which has been *declared* an Aboriginal Place by the Minister. The drafting of this legislation reflects the traditional focus on Objects, rather than on areas of significance such as story places and ceremonial grounds. However, a gradual shift in cultural heritage management practices is occurring towards recognising the value of identifying the significance of areas to Indigenous peoples beyond their physical attributes. With the introduction of the *National Parks and Wildlife Amendment Act 2010* (NSW) the former offence provisions under Section 86 of ‘disturbing’, ‘moving’, ‘removing’ or ‘taking possession’ of Aboriginal Objects or Places





have been replaced by the new offence of 'harming or desecrating'. The definition of 'harm' is 'destroying, defacing or damaging an Object'. Importantly in the context of the management recommendations in this assessment, harm to an Object that is 'trivial or negligible' will not constitute an offence.

The new amendments also significantly strengthen the penalty provisions. The issue of intent to harm Aboriginal cultural heritage has been formally addressed by separating it from inadvertent harm. The penalty for individuals who inadvertently harm Aboriginal Objects has been set at up to \$55,000, while for corporations it is \$220,000. Also introduced is the concept of '*circumstances of aggravation*' which allows for harsher penalties (up to \$110,000) for individuals who inadvertently harm Aboriginal heritage in the course of undertaking a commercial activity or have a record for committing similar offences. For those who knowingly harm Aboriginal cultural heritage, the penalty will rise substantially. The maximum penalty will be set at \$275,000 or one year imprisonment for individuals, while for corporations it will rise to \$1,100,000.

Where a land user has or is likely to undertake activities that will harm Aboriginal Objects, the Director General (OEH) has a range of enforcement powers, including stop work orders, interim protection orders and remediation orders. The amended regulations also allow for a number of penalties in support of these provisions. The NPWA also now includes a range of defense provisions for unintentionally harming Aboriginal Objects:

- a) undertaking activities that are prescribed as '*Low Impact*';
- b) acting in accordance with the new Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010) ('*Due Diligence Code*');
- c) using a consulting archaeologist who correctly applies the OEH *Code of Practice for Archaeological Conduct in New South Wales* (2010) ("*Archaeological Code of Practice*") (see Appendix A); and
- d) acting in accordance with an Aboriginal Heritage Impact Permit (AHIP).

### 2.1.1 '*Low Impact Activities*'

The new regulations allow for a range of low impact activities to be undertaken without the need to consult the OEH or a consulting archaeologist. Generally, those who undertake activities of this nature



will not be committing an offence, even if they inadvertently harm Aboriginal Objects. These activities include:

- a) Maintenance – For example on existing roads and tracks, or on existing utilities such as underground power cables and sewage lines.
- b) Farming and Land Management – for land previously disturbed, activities such as cropping, grazing, bores, fencing, erosions control etc. \*
- c) Removal of dead or dying vegetation - only if there is minimal ground disturbance.
- d) Environmental rehabilitation – weed removal, bush regeneration.
- e) Development in accordance with a Development Certificate issued under the EPA Act 1979 (provided the land is previously disturbed). \*
- f) Down hole logging, sampling and coring using hand held equipment.
- g) Geochemical surveying, seismic surveying, costeaming or drilling. \*

\* This defense is only available where the land has been disturbed by previous activity. Disturbance is defined as a clear and observable change to the land's surface, including but not limited to land disturbed by the following: soil ploughing; urban development; rural infrastructure (such as dams and fences); roads, trails and walking tracks; pipelines, transmission lines; and storm water drainage and other similar infrastructure.

## 2.2 Due Diligence Code of Practice for the Protection of Aboriginal Objects

The Due Diligence Code has been applied in Section 8 of this assessment. It operates by posing a series of questions for land users before they commence development. These questions are based around assessing previous ground disturbance. An activity will generally be unlikely to harm Aboriginal Objects where it:

- a) will cause no additional ground disturbance; or
- b) is in a developed area; or
- c) is in a significantly disturbed area.



Where these criteria are not fulfilled, further assessment for Aboriginal cultural heritage will typically be required prior to commencing the activity.

## 2.3 The ACHCRP (2010)

The OEH has published the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010) (ACHCRP). These requirements replaced the former *Interim Community Consultation Requirements for Applicants* (2004) (ICCR) as of 12 April 2010. The ACHCRP provide an acceptable framework for conducting Aboriginal community consultation in preparation for Aboriginal Heritage Impact Permits. Proponents are also required to follow the ACHCRP where undertaking a project that is likely to impact on cultural heritage and/or where required by the consent authority.

## 2.4 The Coffs Harbour Local Environmental Plan 2013

The Coffs Harbour LEP 2013 provides statutory protection for items already listed as being of heritage significance (Schedule 5), items that fall under the ambit of the *Heritage Act 1977* (NSW) and Aboriginal Objects under the *National Parks and Wildlife Act 1974* (NSW). It aims to ensure best practice components of the heritage decision making process are followed.

For listed heritage items, or building, work, relic or tree and heritage conservation areas, the following action can only be carried out with the consent of the Coffs Harbour City Council:

- a) demolishing or moving a heritage item or a building, work, relic or tree within a heritage conservation area;
- b) altering a heritage item or a building, work, relic, tree or place within a heritage conservation area, including (in the case of a building) making changes to the detail, fabric, finish or appearance of its exterior;
- c) altering a heritage item that is a building by making structural changes to its interior;
- d) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed;



- e) disturbing or excavating a heritage conservation area that is a place of Aboriginal heritage significance;
- f) erecting a building on land on which a heritage item is located or that is within a heritage conservation area; and
- g) subdividing land on which a heritage item is located or that is within a heritage conservation area.

In addition, Council may not grant development consent without considering the effect the proposed development will have on the heritage significance of heritage item or heritage conservation area concerned.

Furthermore, in regards to Aboriginal heritage significance (Part 5.10.8) the consent authority must, before granting consent under this clause to the carrying out of development in a place of Aboriginal heritage significance:

- a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place; and
- b) notify the local Aboriginal communities (in such way as it thinks appropriate) about the application and take into consideration any response received within 28 days after the notice is sent.

## 3. LANDSCAPE CONTEXT

### 3.1 Environment Locality

The Project Area consists of series of roughly east flowing drainage systems including the upper tributaries of Sugarmill Creek (Moonee); Pine Brush Creek (Korora) and Jordans Creek (Korora). The escarpment to the west includes Sealy Lookout (approximately 300m asl), Bruxner Gap (approx. 200m asl) and Coast Range. Most of the Project Area has been cleared for agriculture, horticulture or residential development.



### 3.2 Geology & Soils

The Geology of the Project Area is uniform- being part of the broad 'Coramba Beds' which are typical of the region north of Coffs Harbour. The Coramba beds date to the Carboniferous period and include Greywacke, Slate and Siliceous argillite (a metamorphosed volcanic).

The majority of the Project Area is located within the Megan landscape (Milford 1999: 66) which are described as "Rolling low hills to hills on Late Carboniferous metasediments of the Coffs Harbour association in the Coast Range and Gleniffer-Bonville Hills. Local relief to 90 m, occasionally to 200 m; slopes typically 5 - 20%, occasionally to 33%; elevation to 317 m. Partially cleared, tall open-forest and tall closed- forest" Milford 1999:96). Soils are typically "moderately deep to deep (>100 cm), well-drained structured Red Earths (Gn3.11), Brown Earths (Gn3.21), Brown Podzolic Soils (Db4.11) and Red Podzolic Soils (Dr2.11), with moderately deep to deep (>100 cm), structured Yellow Earths (Gn3.21; Gn3.71) and Yellow Podzolic Soils (Dy4.11) in drier situations, and moderately deep to deep (>120 cm), well-drained Krasnozems (Gn3.11; Gn3.14) in the moistest sites" Milford 1999:96)

Other landscape types in the Project Area include;

**Bobo** being "very steep to precipitous hills on late Carboniferous metasediments of the Coffs Harbour association in the Coast Range and Great Escarpment. Local relief to 260 m; slopes >50%; elevation up to 590 m. Partially cleared, tall open and tall closed-forest" (Milford 1999:176). Soils are typically "moderately deep, weakly structured Red Earths (Gn3.11, Gn4.11), with deep, imperfectly drained Red Podzolic Soils (Dr2.11) on footslopes and very shallow, well-drained Lithosols (Um1.23) on very steep slopes with shallow soils" (Milford 1999:176).

**Moonee** being "undulating rises, footslopes and drainage plains adjacent to steeper low hills and hills on Carboniferous metasediments of the Coffs Harbour association in the Coast Range and Gleniffer Bonville Hills. Local relief <30 m; slopes typically 3- 5%, occasionally 10%; elevation <20 m. Extensively cleared, tall open-forest and tall closed-forest" (Milford 1999:93). Soils are typically "Moderately deep to deep (>100 cm), poorly drained Humic Gleys (Uf6.41; Gn3.91) (Milford 1999:93).

**Suicide** being "steep hills and dissected valleys on Late Carboniferous metasediments of the Coffs Harbour association along the Coast Range. Local relief 100 - 300 m; slopes 33 - 56%; elevation up to



590 m. Partially closed and tall closed-forest” (Milford 1999:50). Soils are typically “moderately deep to deep (>100cm), well- drained, stony structured Yellow Earths (Gn3.71) on crests and upper slopes, with stony Lithosols (Um1.41) and structured Red Earths (Gn3.11) on mid-slopes and footslopes.” (Milford 1999:50)

**Ulong** being Landscape— undulating to rolling low hills on Late Carboniferous metasediments of the Coffs Harbour association in the Coast Range and Gleniffer-Bonville Hills. Local relief to 90 m; slopes 5 - 20%, occasionally to 33%; elevation to 360 m. Partially cleared, tall open- forest and tall closed-forest” (Milford 1999:75). Soils are typically “moderately deep to deep (>100 cm), well- drained structured Red Earths (Gn3.11), Brown Earths (Gn3.71), Red Podzolic Soils (Dr4.11) and Yellow Podzolic Soils (Dy2.12), plus deep (>150 cm), well- drained Krasnozems (Gn3.21; Gn3.14) in moistest areas, and moderately deep (>100 cm), imperfectly-drained structured Yellow Earths (Gn3.71) and Yellow Podzolic Soils (Dy2.21; Dy2.41; Dy4.21) in drier areas” Milford 199:750

### 3.3 Vegetation

#### 3.3.1 *Megan Landscape*

Based on descriptions of undisturbed areas of forest the following model is proposed for the Megan Landscape;

“Mostly uncleared, tall open-forest in the north and tall closed-forest in the south. Because of climatic variation, the native vegetation varies markedly from north to south across this landscape. Tall open-forest (wet sclerophyll forest) dominated by tallowwood (*Eucalyptus microcorys*) and Sydney blue gum (*E. saligna*) [Forest Types 46 and 47] occurs extensively on crests and slopes. The drier exposed crests are occupied by tall open-forest dominated by narrow leaved white mahogany (*E. acmenoides*), spotted gum (*Corymbia maculata*), grey ironbark (*E. paniculata*) and small-fruited grey gum (*E. propinqua*) [Forest Types 60 and 74]. Moderately sheltered valley floors are dominated by brush box (*Lophostemon confertus*) [Forest Type 53] with a dense rainforest understorey, whilst the most sheltered gullies harbour various types of depauperate rainforest. Common dominant species include hoop pine (*Araucaria cunninghamii*) [Forest Type 21], yellow carabeen (*Sloanea woollsii*), crabapple (*Schizomeria ovata*), sassafras (*Doryphora sassafras*), corkwood (*Calcdcluvia paniculosa*) and silver sycamore (*Cryptocarya glaucescens*) [Forest Type 2/3], and sassafras, = fig, e.g., Moreton



Bay fig (*Ficus macrophylla*), giant stinging tree (*Dendrocnide excelsa*) and grey myrtle (*Backhousia myrtifolia*) [Forest Type 6/23]. The boundary between tall open-forest and tall closed-forest on lower valley sides is often abrupt and pronounced. Rainforest becomes more prevalent towards the south, becoming dominated by black booyong (*Argyrodendron actinophyllum*), coachwood (*Ceratopetalum apetalum*) and crabapple (*Schizomeria ovata*) [Forest Type 5/11], with species such as tallowwood (*E. microcorys*), blackbutt (*E. pilularis*) [Forest Type 36], Sydney blue gum (*E. saligna*) [Forest Types 46 and 47] and brush box (*Lophostemon confertus*) [Forest Type 53] persisting on more exposed north-facing slopes. (Millford 1999:63-64)

### 3.3.2 *Bobo*

Based on descriptions of undisturbed areas of forest the following model is proposed for the Bobo Landscape;

Partially cleared, tall closed-forest grading to tall open-forest on more exposed crests and north-facing slopes. On steep to very steep valley sides, a tall open-forest (wet sclerophyll forest) exists dominated by narrow-leaved white mahogany (*Eucalyptus acmenoides*), red mahogany (*E. resinifera*), small-fruited grey gum (*E. propinqua*) and grey ironbark (*E. paniculata*) [Forest Type 60], and tallowwood (*E. microcorys*) and Sydney blue gum (*E. saligna*) [Forest Types 46 and 47]. The drier north-west facing slopes are occupied by a tall open-forest (dry sclerophyll forest) dominated by small-fruited grey gum (*E. propinqua*), grey ironbark (*E. paniculata*), white mahogany (*E. umbra* ssp. *carnea*) and narrow-leaved white mahogany (*E. acmenoides*) [Forest Type 62], whilst in sheltered valley floors is found a tall closed-forest (depauperate dry rainforest) dominated by hoop pine (*Araucaria cunninghamii*) [Forest Type 21]. The most sheltered, moistest gullies harbour localised patches of tall closed-forest (subtropical rainforest) dominated by corkwood (*Caldcluvia paniculosa*), crabapple (*Schizomeria ovata*), yellow carabeen (*Sloanea woollsii*), sassafras (*Doryphora sassafras*) and silver sycamore (*Cryptocarya glaucescens*) [Forest Type 2/3] Millford 1999:176)

### 3.3.3 *Moonee*

Based on descriptions of undisturbed areas of forest the following model is proposed for the Moonee Landscape;



Extensively cleared, tall closed-forest and tall open-forest generally replaced by native and improved pastures. In the southern parts, the tall closed-forest was dominated by species from both subtropical and warm temperate rainforest, including black booyong (*Argyrodendron actinophyllum*), coachwood (*Ceratopetalum apetalum*) and crabapple (*Schizomeria ovata*) [Forest Type 5/11], various *Ficus* species, giant stinging tree (*Dendrocnide excelsa*) and various species of myrtle [Forest Type 6/23]. Towards the northern parts, tall open-forest (wet sclerophyll forest) species become more dominant, including Sydney blue gum (*Eucalyptus saligna*), tallowwood (*E. microcorys*) [Forest Type 47], and narrow-leaved white mahogany (*E. acmenoides*), red mahogany (*E. resinifera*), grey ironbark (*E. paniculata*) and small-fruited grey gym (*E. propinqua*) [Forest Type 60] (Milford 1999:93)

#### 3.3.4 *Suicide*

Based on descriptions of undisturbed areas of forest the following model is proposed for the Suicide Landscape;

Partially cleared, tall closed-forest grading to tall, open-forest on more exposed crests and north facing slopes. Tall closed-forest (subtropical rainforest) dominated by black booyong (*Argyrodendron actinophyllum*), coachwood (*Ceratopetalum apetalum*) and crabapple (*Schizomeria ovata*) [Forest Type 5/11] occupies the most favourable locations on lower slopes and valley floors, with hoop pine (*Araucaria cunninghamii*) [Forest Type 21] and brush box (*Lophostemon confertus*) [Forest Type 53] often found growing along its margins. Tall closed-forest (depauperate subtropical rainforest) dominated by various figs (*Ficus* spp.), giant stinging tree (*Dendrocnide excelsa*) and myrtle [Forest Type 6/23] occurs in moderately favourable positions on less sheltered lower slopes. Upslope, tall open-forest (wet sclerophyll forest) dominated by tallowwood (*Eucalyptus microcorys*) and Sydney blue gum (*E. saligna*) [Forest Type 47] is common, grading to tall open-forest (dry sclerophyll forest) dominated by blackbutt (*E. pilularis*) [Forest Type 37] on ridges and north-facing upper slopes. (Milford 1999:50)

#### 3.3.5 *Ulong*

Based on descriptions of undisturbed areas of forest the following model is proposed for the Ulong Landscape;





Tall closed-forest, grading to tall open-forest on more exposed crests and north-facing slopes, particularly towards the northern range of this landscape. The drier exposed crests in the far north are occupied by a tall open-forest dominated by blackbutt (*Eucalyptus pilularis*) [ForestTypes37and38], spotted gum (*Corymbia maculata*), grey ironbark (*E. paniculata*) and small-fruited grey gum (*E. propinqua*) [Forest Type 74]. A tall open-forest (wetsclerophyll forest) dominated by tallowwood (*E. microcorys*) and Sydney blue gum (*E. saligna*) [Forest Types 46 and 47] becomes more prevalent on slopes to the south, with occasional slopes dominated by flooded gum (*E. grandis*) [Forest Type 48]. Sheltered valley floors are dominated by brush box (*Lophostemon confertus*) [Forest Type 53], along with other tree species plus a dense rainforest understorey, whilst the deepest, most sheltered gullies harbour tall closed-forest (depauperate subtropical rainforest). Dominant species include black booyong (*Argyrodendron actinophyllum*)

### 3.4 Historic Aerial photos

#### 3.4.1 1954/56

The historic aerial images from the mid 1950's are not complete- however it is possible identify the extent of land clearing for horticulture that had taken place prior to 1956 (Figure 41 and Figure 42). The aerial images show that most of the northern slopes in the Korora Basin have been cleared with established vegetation on the southern aspects of most ridgelines and some lower alluvial areas. Whilst the resolution of the images is not perfect it does not appear that there are a significant number of dams – however most of the access tracks and roads present today are visible. There are many residential and farm buildings present. The largest section of what appears to intact or regrowth bushland is located south of Maccues Road. The study area at Tiki Road is almost completed regrowth or intact forest.

#### 3.4.2 1969

The 1969 historic aerial shows an overall intensification of the horticulture industry with many additional tracks and access ways through the banana plantations (Figure 43). Whilst there has been some breakup of forests in the lower slopes and alluvial areas the overall pattern remains of forested upper southerly slopes and ridgelines. The large forest area south of Maccues road shows some clearing throughout-



especially in the south western section. The Tiki Road section remain intact forest. One noticeable change is the development of nearby Moonee beach from just a caravan park to what appears to be a small village.

### 3.4.3 1979

The 1979 aerial image shows a similar pattern of intensification of the banana industry and a gradual breaking up of the large forest in the north of the Study Area (Figure 44). Forested ridgelines are visibly more prominent as small stands or patches of mature forest have been removed. Several larger dams are visible and many more residential dwellings are present in the eastern lower areas. The development of Korora, Sapphire Beach and Moonee Beach into residential areas is notable. The Tiki Road area remain intact or regrowth forest.

### 3.4.4 1989

The 1989 image shows a significant increase in what appears to be residential development across the entire Study Area (Figure 45). This includes the development of townships along the coastline just outside the Study Area. The large areas of forest near Moonee Beach have been significant affected during this period with what appears to be a rural residential development and there are many new residential houses on the major roads in the Korora Basin. The Tiki Road portion of the Study Area has also been partially cleared.

## 4. DATABASE SEARCHES.

### 4.1 The OEH Aboriginal Heritage Information Management System (AHIMS)

Care should be taken when using the AHIMS database to reach conclusions about site prevalence or distribution. For example, a lack of sites in a given area should not be seen as evidence that the area was not occupied by Aboriginal people. It may simply be an indication that it has not been surveyed, or that the survey was undertaken in areas of poor surface visibility. Further to this, care needs to be taken when looking at the classification of sites. For example, the decision to classify a site an Open Campsite containing shell rather than a Midden can be a highly subjective exercise, the threshold for which may vary between archaeologists.



A search was conducted on 5 August 2015 of the OEH Aboriginal Heritage Information Management System (AHIMS service number 184338) the Project Area (Table 1 and Figure 3). The search returned a total of nine (9) listings for Aboriginal Cultural Heritage sites within the Project Area. All of the recorded sites within the Project Area are open sites- being either artefact scatters with overall low density of artefacts or isolated finds. The recorded sites are located on lower valleys and slopes in the eastern section of the Project Area- with the exception of Korara 2 and PAD which is located off a relatively large ridgeline approximately 75 masl and therefore possibly mapped inaccurately. The AHIMS entry does not include any report or permit reference numbers to confirm the accuracy of this site.

The AHIMS search indicates that the following sites have been destroyed (#22-1-0212 S2W-2; #22-1-0399 Sartour OS 1 and #22-1-0400 Sartour ISO 2) and subject to a permit (#22-1-0085 Diggers Beach 2 permit no. 1128; #22-1-0192 Sapphire One permit no. 1986) which may have involved relocation.

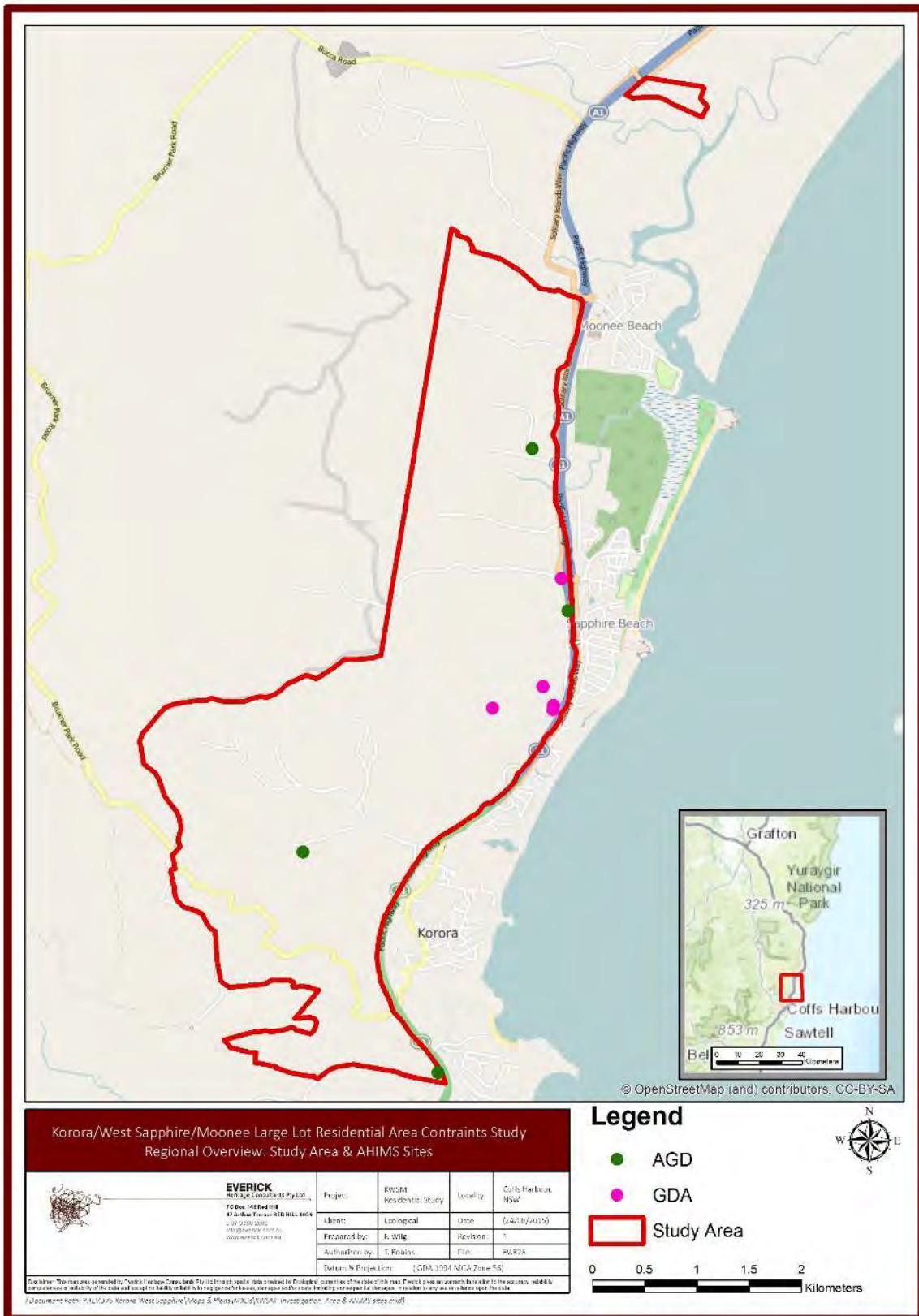


Figure 3: Recorded Aboriginal sites in the Project Area

**Table 1: AHIMS Search Results**

<i>Site Number</i>	<i>Name</i>	<i>Easting</i>	<i>Northing</i>	<i>Site 'Features'</i>
22-1-0212	S2W-2	514083	6655959	Open site/ artefact (4)
22-1-0364	Korara 2 and PAD	513424	6654719	Artefact (1) and PAD
22-1-0391	S2W-20	514000	6654705	Open site/ Artefact (1)
22-1-0399	Sartor OS1	513905	6654924	Artefact (1)
22-1-0400	Sartor ISO 2	514004	6654746	Artefact (1)
22-1-0085	Diggers Beach 2	512900	6651220	Open Site/ Artefact (1)
22-1-0143	CHSS-2	513800	6657190	Open Site/ Artefact (3)
22-1-0192	Sapphire One	514145	6655639	Open Site/ Artefact (4)
22-1-0301	Finlays Road	511608	6653331	Open site/ Artefact (1)



### 4.2 Other Heritage Registers: Aboriginal & Historic Cultural Heritage

The following heritage registers were accessed on 5 August 2015:

**The National Heritage List** (Australian Heritage Council): Contains no Aboriginal heritage listings within the Project Area.

**Commonwealth Heritage List** (Australian Heritage Council): Contains no Aboriginal heritage listings within the Project Area.

**Register of the National Estate** (Australian Heritage Council): Contains no Aboriginal heritage listings within the Project Area.

**The State Heritage Register** (NSW Heritage Office): Contains no Aboriginal heritage listings within the Project Area.

**The State Heritage Inventory:** Contains no Aboriginal heritage listings within the Project Area.

**The Register of the National Trust of Australia:** Contains no Aboriginal heritage listings within the Project Area.

**Coffs Harbour Local Environment Plan 2013 (LEP):** Contains no Aboriginal heritage listings within the Project Area.



## 5. ARCHAEOLOGICAL SYNTHESIS AND PREDICTIONS

### 5.1 European History of the Korora West Sapphire Moonee.

The first historical documents relating to the Coffs Harbour area were the naming of the 'Solitary Islands' by James Cook in May 1770, with additionally mapping by Matthew Flinders in 1779. However, despite the early records from 1791 of two runaway convicts William and Mary Bryan and their two children running away to the area, it was not until 1847 that the next record of the settlement exists, with Captain John Korff taking shelter at the southern Headland of the now 'Coffs Harbour'. European settlement of the area was relatively late compared to the Bellinger and Clarence Rivers;

There was at least some cedar getting at Coffs Creek by Walter Harvie and George Tucker in 1865, with the camp set up by Harvie and Tucker being one of the earliest known semi-permanent settlements in the Coffs Harbour area. Timber getters often employed the services of Aboriginal bushmen who had the knowledge and skills to rapidly identify Cedar trees. (Thomas 2013:2)

The township of 'Woogoolga' was first gazetted in 1888, (subsequently changed to Woolgoolga in 1966) following initial settlement in the 1870's. Three major phases of settlement themes can be defined within the Coffs Harbour area which have had cumulative impacts within the general Study Area, being;

**Forestry and forest related industries:** This phase of settlement includes the very early extraction of cedar and later more broad extraction of remaining eucalypt species. This later process of clearing has historic linkages to the settlement of the area post World War 1 and the clearing of land by returned soldiers for early agriculture and horticulture.

**Horticulture and agriculture:** Farming has played an important role in the study area and has had the most significant impact on the physical landscape. Large areas of land have been cleared and regrowth managed for grazing and horticulture. Significant early crops include bananas, sugar cane and pineapples. Some agricultural diversification has taken place, and contemporary land use includes blueberries, aquaculture and nuts (macadamias particularly). A number of market gardens have operated within the area and are consistent with the historical process of dividing agricultural land into



smaller lots as the wider district population increases. This phase has had the most significant historical effects on the Project Area.

**Mining:** Old parish maps document the Orara Gold Field as being proclaimed in 1881 and covered part of the Study area. Two historic mines are known in the Project Area- being the Sea Breeze (circa 1938) and Golden Arrow (circa 1931-33) mines. These mines produced 652 and 248 ounces of gold respectively.

([http://www.treasureenterprises.com/gold%20prospecting%20information/gold\\_prospecting\\_locations\\_new%20south%20wales.htm](http://www.treasureenterprises.com/gold%20prospecting%20information/gold_prospecting_locations_new%20south%20wales.htm)). Compared to other industries mining has had a very small physical impact on the landscape and potential heritage values.

**Residential development:** This process of urbanisation has increased significantly since the 1980's and is most noticeable around the small coastal settlements such as Moonee. This urbanisation has mostly been contained within areas already cleared as a result of forestry and horticulture, however has significantly changed water courses and drainage. Rural residential development of the 'hinterland' areas to the west of the Pacific Highway has had a lesser impact on heritage values than the higher density development typically of areas east of the Highway. A key element of the process of urbanisation in the Project area has been the establishment of 'holiday villages'- such as Moonee Beach- typified by small fishing huts and campgrounds which became popular post World War Two and especially in the 1960's.

## 5.2 Aboriginal History

The study area is located within the Gumbayngirr Nation/Language Area which is broadly known to include the lands north of Nambucca Heads, south of the Clarence River and west up to the Great Dividing Range (Thomas 2013:1). Many of the Place Names within the Study Area are known to be derived from Gumbayngirr names- often associated to species which were locally abundant in the area. These include Moonee which is understood to be derived from the word "Munee- a paddymelon. Moonee Moonee meant plenty of paddymelons (a small wallaby found here in great numbers by early settlers). (GNB 159)"

([http://www.gnb.nsw.gov.au/place\\_naming/placename\\_search/extract?id=anwGWyrXKW](http://www.gnb.nsw.gov.au/place_naming/placename_search/extract?id=anwGWyrXKW)) and Bucca which is understood to be derived from the Gumbayngirr word "Crooked, or, crooked creek. (Reed,





1969)" ([http://www.gnb.nsw.gov.au/place\\_naming/placename\\_search/extract?id=KWwGvqsyIt](http://www.gnb.nsw.gov.au/place_naming/placename_search/extract?id=KWwGvqsyIt)).

However- the most comprehensive historical account of Aboriginal place names (Ryan 1964) assigns no names to Coffs Harbour, Korora or Sapphire and assigns the term Moonee to the Nambucca Valley (however does translate the term to Paddymelon) (Ryan 1964:24). Ryan (1964:29) does however provide an interpretation of the names for South Solitary and North Solitary Islands (Boonyoongoody and Atoonda respectively) to the Woolgoolga area. Following on from this account it is obvious that his source was from the Woolgoolga area- which accounts for the lack of place names assigned to Coffs Harbour.

Estimates of the numbers of Aboriginal people at the period of first settlement has been critical to understanding the indigenous history of north-eastern New South Wales. Given the problematic nature of population estimates, the latter and more 'general' observations of Mathews (1898:66) which simply concluded that "hunting grounds would be comparatively small" in the coastal districts is more useful than heavily qualified estimates which infer 'carrying capacity'- as was the thinking in the late 1800s/

Radcliffe Brown (in Lane 1970:V.8) concludes for the coastal areas that population densities would be in the order of 'one person to every three square miles'. Estimates of tribal groups in the order of 200 individuals are relatively common amongst ethnohistoric and anthropological literature (ie. Lane 1970 for the Nambucca River district immediately south). An additional element to this discussion of population density is the differentiation of the coastal and escarpment areas where it is generally accepted had lower and much more mobile Aboriginal populations. For the larger River systems (Nambucca, Clarence and Macleay) the concept of more intensive use of the coast as compared to the up-river and escarpment is generally accepted (i.e. McBryde 1974, Godwin 1990).

However, a uniqueness of the Coffs Harbour area is the close proximity of the Great Dividing Range to the Coast. No other 'district' on the North Coast has such a narrow coastal zone, or such a short distance between the very different environments of coast and elevated/cold forests, and no significant River system. There is however great potential for pathways and routes between the coast and escarpment/hinterland however, these are not necessarily represented archaeologically through the discard of Aboriginal Objects or noted in early ethnohistorical accounts. Any observations from the relatively late settlement of the Coffs Harbour area would also be biased as Gumbayngirr people



generally would have had some 25 years of contact with European settlers by the time detailed records of Aboriginal life in Coffs Harbour were produced.

The relatively limited amount of ethno historical information available for Coffs Harbour has been collated for the Coffs Harbour by-pass project which is focussed on the edge of the Coffs Harbour escarpment and therefore an analogous environment to the Study Area (Connell Wagner 2004). This report surmises that;

“Away from the immediate coast shifting camp seems to have been frequent, “occurring about monthly as the game in the immediate vicinity became exhausted ... it took several months to give each ground in the locale its turn” (McFarlane 1934-5). Base camps were established in areas protected from the elements by dense vegetation (McFarlane 1934-5). According to Dawson (1935), “the middle of each day was spent around the fire where the venison or game was procured, and the remnant of the meal... was carried back to camp for evening consumption” (Connell Wagner 2004:5).

The study suggests that a mode of occupation focussed around ‘base camps’ which provided a degree of protection from the elements surrounded by a series of smaller ‘resource-specific’ sites in between. The study places populations (in terms of size of group per camp) at 50 with groups as large as 200 recorded at Sawtell/ Bonville Creek. The study (Connell Wagner 2004:6) also makes specific reference to the sub-coastal area- indicating that permanent occupation of these areas was rare- with use being typically during travel to another location:

“At Karangi 4km inland of the options corridors, for example, there were few Aborigines (Kelly 1987), although many passed through “on their way to somewhere else” (Secomb 1986:46)”

Historic camps in the Coffs Harbour area tended to be on Public land and nearby to small townships where there was access to water either naturally occurring or at a public tap. The main camping areas identified by Goulding (2001:64,65) area Corindi Lake, inland from Arrawara, Nana Glen (junction of Orara River and Bucca Bucca Creek), Happy Valley in Coffs Harbour, Coffs Creek/Fitzroy Oval, Wongala Estate and Yellow Rock. Generally speaking the historical experiences of Aboriginal people has been one of exclusion up until the 1960’s (i.e Calley 1956:201). The nature of historic Aboriginal camps and



economy within the historic period is such that it is unlikely these types of 'sites' will be present in the historic record of the study area. The Connell Wagner study of the Coffs bypass identified that the majority of historic Aboriginal camps were on Crown Land within 1 or 2km of the coastline- however noted that Aboriginal people were regularly employed on two banana plantations at Bruxner Park in the 19540's and 1950's (Connell Wagner 2004:6). The authors make one specific reference to the 'Ferguson Camp' at Korora:

"Throughout the 1940's and 1950's, an Aboriginal camp (known as Ferguson's camp) was occupied at Bunnies Beach, Charlesworth Bay. Aboriginal people from this camp regarded Jordans Creek as an important resource collection area (Connell Wagner 2004:6).

### 5.3 Relevant archaeological and Cultural Heritage Assessments

#### 5.3.1 *Woolgoolga to Sapphire Highway Upgrade*

The only major archaeological assessment within the Study Area relates to the Sapphire to Woolgoolga Highway upgrade (Collins 2007). This study identified seven archaeological sites and eight areas of potential archaeological deposit (PADs). The confirmed sites comprise four scatters of stone artefacts (S2W-2, 4, 7 and 12) and three isolated artefact finds (S2W-3, 5 and 6). The study also identified a potential historic Burial near Moonee (Portion 41) which could not be specifically located. This burial may exist with the Study Area. Whilst the overall sample (number) of recorded sites was small the results provide an indication of the types of sites which would be expected even 1 or 2 km west of the coastline and complex estuary/ lake systems- being open stone artefact scatters and open campsites.

#### 5.3.2 *Coffs Harbour Highway Bypass*

The Connell Wagner assessment of the Coffs Harbour bypass- although south of the Study Area- is a useful reference document as it is in a roughly analogous environmental landscape. This report concluded;

For the most part, the two Inner Bypass options traverse a highly disturbed landscape that offers little potential for the preservation of in situ Aboriginal archaeological sites. A number of specific areas where archaeological potential is assessed to be moderate or high have been identified, but no archaeological sites are currently known on either option. Two stone



artefacts have nevertheless been recorded within 50m of the options' common southern end, presenting the possibility that similar materials may be intercepted by the options themselves. The areas of predicted archaeological sensitivity are predictions only and require field testing. Even though there are currently no Aboriginal cultural heritage constraints to development of either option, this situation could change if a significant site is detected during future field survey. (Connell Wagner 2004:18)

### 5.3.3 *Coffs Harbour- Urunga Forestry Management Areas*

The Coffs Harbour- Urunga Forestry Management study provides the most comprehensive regional assessment of the archaeological values and potential of the Coffs Coast hinterland. The study included parts of Orara East State Forest- and whilst it is acknowledged that the sub-coastal zone which comprises the Study Area is was not included within the Davies study some of its findings have practical application for future Due Diligence studies regionally as the study was structured around 'landsystems' (Davies 2003). Overall the sampling strategy was biased towards the location of open campsites, stone artefact scatters and isolated finds- however found a strong correlation between the amount of slope and the sandiness of soils (Davies 58-59). The Study concluded that the majority of sites occurred on the crests of spurs in areas which would have been dry sclerophyll forest. Regionally the majority of sites in the area were associated with the dissected escarpment and ranges with relatively few sites found on near coastal low hills and rises. However, the study found that whilst site 'density' was greater in the escarpment area the number of artefacts per site was much lower. This finding supports a model of greater mobility through the escarpment and a relative absence of permanent camps when compared resource rich marine and estuarine areas of the coastline.

### 5.3.4 *The Lakes Estate*

A series of archaeological investigations have been undertaken for the surround 'Lakes Estate' project (Bonhomme Craib and Associates 2011) to the south of the Study area in the North Boambee Valley. This study identified a number of stone artefact scatters within the surrounding areas (see Table 1) including site #22-1-0377. A total of 410 artefacts were recovered from 58.5m<sup>2</sup> of test-pit excavations (total 39 test pits). This study of #22-1-0377 concluded;



The landform types investigated during the sub-surface testing were the ridgecrest and upper slope. The stone artefacts were either coarse or fine grained siliceous material referred to locally as 'greywacke'. Stone artefact types were limited and consisted of cores (5), tools (1) with the remainder being debitage (98%) consisting of complete flakes, broken flakes, flaked pieces. One complete flake had evidence of retouch and is consisted a tool...

The density of artefacts across the south hill slope indicates that Aboriginal activity resulting in physical evidence (i.e. the presence of stone tools, hearths or other features or items) was low. The area may have been accessed regularly to procure resources but there is only a low level physical expression of these activities. The artefact clusters suggest that while artefacts were found there are two locations with material that suggests intense knapping was occurring (Bonhomme Craib & Associates 2001:24).

The relevance of this study to the Study Area primarily relates to the site being located within a land system of low rolling hills adjacent to a small coastal estuary (Newports Creek). The location of the site within land which has seen only low intensity agriculture is also directly relevant to the Study Area as typically such large sites are not expected to have survived in areas with more complicated land-use histories.

### 5.3.5 *North Coffs Harbour Release Area*

The North Coffs Harbour Release Area was subject to a similar archaeological assessment and is located immediately to the south of the current study (Hudson 2009). The study includes the area north of the North Coast Railway Line, east of the Pacific Highway and south of the proposed Coffs Harbour bypass. The effectiveness of the survey was significantly constrained due to vegetation growth, however no Aboriginal sites were recorded. Several trees with indicative marks from historic logging ('board notched stumps') were recorded as evidence of historic European occupation- however these were not identified as being significant.

### 5.3.6 *Godwin (1990) regional synthesis of ethno-historical information*

The most comprehensive 'regional' model for the area is provided by Godwin (1990) in a major review of the earlier archaeological research of Isabelle McBryde. Godwin's model specifically investigates



patterns of movement between the coastal, sub-coastal and tablelands (escarpment) areas. However the applicability of this model to the Coffs Harbour area is problematic as the tablelands/escarpment intrudes so much in to the coastal zone. For the purposes of understanding the archaeological record the study area is considered to fall into the 'coastal' area.

Amongst coastal groups proper there was no movement from the coast back into the sub-coastal river valleys and foothills. These people were semi-sedentary and lived close to the coast the whole year round. Movement associated with the subsistence round involved travelling only short distances away from the littoral. There were instances of long distance travel associated with ceremonial gatherings. However, such movement was generally parallel to the coast (i.e. north-south along the coast rather than east-west from coast to hinterland). (Godwin 1990:122,123)

From the review of previous archaeological and cultural heritage assessments in Coffs Harbour and the broader regional locality noted specific environment contexts including floodplains, lowland hills, estuarine creek banks and coastal dunes, are likely to contain evidence of Aboriginal occupation.

### 5.3.7 *Woolgoolga to Ballina Pacific Highway Upgrade*

The recent archaeological assessment works for the Woolgoolga to Ballina Pacific Highway upgrade project provide the most significant 'recent' regional assessment of the archaeological of the North Coast subcoastal region. This study is included as an Appendix (12) to the Environmental Impact Assessment and was derived from the SKM (2012) study and is available at the following website address (<http://www.rms.nsw.gov.au/documents/projects/northern-nsw/woolgoolga-to-ballina/w2b-eis-chapter-12.pdf>).

The project developed a number of models based broadly on land system, landscape and landform (Table 2). For the Coastal Range Land System between Woolgoolga and Wells Crossing (immediately north of the Study Area) the predictive model indicates a moderate to high 'sensitivity rating' for sites such as isolated artefact scatters, stone artefact scatters and bora/ ceremonial rings.



**Table 2: Woolgoolga to Ballina archaeological predictive model (from RMS 2012)**

Project section	Land system	Specific landscape characteristics	Location within / near the project corridor	Landforms with high probability of Aboriginal sites	Sensitivity rating	Likely site types	Factors influencing occurrence
1	Coastal plain	Relatively flat plain behind dune barrier on coast, with depressions comprising brackish lagoons, swamps and marshes.	Arrawarra and south of Corindi, Wells Crossing, Halfway Creek, ending around Dirty Creek.	Any raised areas.	Moderate	Isolated stone artefacts and small stone artefact scatters, shell middens.	Infilling from aeolian dune mobility, aggrading alluvium, and colluviums may have concealed sites and even sensitive landforms.
1, 2, 3	Coastal range	Ridgelines dissected by ephemeral and permanent waterways and small river valleys. Overlooking coastal plain and swamps.	Wells Crossing, Halfway Creek, ending around Dirty Creek. Includes Dirty Creek Range (also known as Coast Range).	Close to freshwater sources on locally elevated well-drained land. Would have formed walking paths between coastal and inland resources.	Moderate	Isolated stone artefacts and small stone artefact scatters.	Relatively shallow soils have limited potential for stratified and in-situ deposits due to post-contact land use.
1,2		Foot slopes and spurs of range adjacent valley flats. Gradients are generally gentle and elevation less than 40 m above sea level.	Dirty Creek, Corindi and Arrawarra.	Flat, low spur crests near substantial creeks and resource-rich swamps.	High	Small and more substantial stone artefact scatters, bora/ceremonial rings.	Relatively shallow soils have limited potential for stratified and in-situ deposits due to post-contact land use.
1		Broad alluvial valley flats.	Corindi River, Dirty Creek.	Flat alluvial terraces near substantial creeks, rivers and resource-rich swamps. Burials may occur in deep alluvial deposits.	Moderate-High	Small and more substantial stone artefact scatters, burials, bora/ceremonial rings.	Aboriginal sites may be concealed by aggrading alluvium.

## 5.4 Potential Site Types

The desktop review has identified a potential for archaeological materials to be within the Study Area prior to European settlement. The following types of archaeological sites are expected to occur within the Study Area.

### 5.4.1 Isolated Artefacts

These will consist of single stone artefacts, which may have been randomly discarded or lost. They may occur in almost any environmental context exploited by Aboriginal people. They are commonly stone axes, single cores, hammer stones, pebbles, flakes and grinding stones and/or grooves. Their presence may indicate that more extensive scatters of stone artefacts exist or existed nearby, perhaps obscured by vegetation or dispersed by mechanical means.



#### 5.4.2 *Open Campsites/Artefact Scatters*

Open campsites/artefact scatters generally consist of scatters of stone artefacts and possibly bone and hearth features. Their exposure to the elements means that evidence of food resources used on the site (with the exception of shellfish) is usually lacking. An open campsite containing a large component of shell refuse may be described as a midden. They invariably consist of low or high density scatters of primary and secondary flakes in addition to the types of artefacts found as isolated finds. Open campsites may also contain burials when located on sand strata. Few open campsites are found on kraznozem and podzolic soils, possibly due to the destructive impacts of land clearing and the heavy vegetation cover. Detection is usually unlikely unless high degrees of surface visibility are present.

#### 5.4.3 *Quarry Sites*

A stone quarry may occur where a source of opaline silica exists or other siliceous types of stone occur (e.g. chert, chalcedony and silcrete). The area can be identified by a number of different types of stone tools in various stages of production as well as refuse flakes. There is a moderate potential for quarry sites to be located in the Study Area.

#### 5.4.4 *Scarred Trees*

Scarred trees result from the removal of bark for use as covering, shields, containers or canoes. No doubt, as an outcome of widespread intensive land clearing and natural causes very few have survived. There is a moderate potential for locate scarred trees in older and mature forests.

#### 5.4.5 *Burials*

Human burials are typically individual or small group internments which can be found in sandy soil substrates, such as creek lines or within small rock crevices. Most of the known burials have been located by accidental means through mechanical disturbance or natural erosion. Given the underlying soils is not sandy, there is a low potential to locate Burials within the Project Area.

#### 5.4.6 *Ceremonial Sites*

Ceremonial grounds are typically places identified by Aboriginal groups as places of importance which were visited by groups to mark or commemorate rites or other occasions. One such example is Bora





grounds, earthen mounds crafted in a circular formation which were used for the purposes of ceremonial practices. The potential for these types of sites to occur in the Study Area is considered to be low.

## 6. FIELD SURVEY: ABORIGINAL CULTURAL HERITAGE

### 6.1 Survey Methods

Given the scale of the study area and the methodological constraints identified by similar studies (i.e. Hudson 2009) the study methodology aimed to broadly understand the landscape in the context of the Due Diligence Code of Practice, and particularly Question 2b “Is the activity in an area where landscape features indicate the presence of Aboriginal cultural heritage?” The study included a vehicle-based visual inspection of the Study Area to document the characteristics of slope; aspect; disturbance and proximity to mapped creeks.

The second part of the methodology was to use digital models to define areas which met the criteria under the Due Diligence Code of Practice which would require additional investigation. These areas were mapped and compared to the areas identified as being available for access for fieldwork through land-owner support/ approval.

A third stage involved visual inspection of some properties within the Study area- however it should be noted that the efficiency of this survey stage was limited by access restrictions on private lands.

### 6.2 Constraints to Site Detection and Survey Coverage

An assessment of the constraints to site detection is made to assist in formulating a view as to the effectiveness of the field inspection to find Aboriginal sites and cultural materials. It also assists in the forming of a view of the likelihood of concealed sites, keeping in mind a site specific knowledge of the impacts that European land uses and natural processes may have had on the ‘survivability’ of Aboriginal sites in a Project area. The constraints to site detection are almost always most influenced by post European settlement land uses and seldom by natural erosion processes. The area of surface exposure and the degree of surface visibility within exposed surfaces are usually the product of ‘recent’ land uses



e.g. ploughing, road construction, natural erosion and accelerated (manmade) erosion (McDonald et al. 1990:92). In the context of the current study constraints have been documented in terms of general land-use across the study area.

### 6.3 Survey results and discussion

#### 6.3.1 Initial landscape assessment.

An initial landscape assessment was undertaken which aimed to identify the broad landform characteristics of the Project Area. This stage utilised existing public access roads as a means to understand the nature of terrain and disturbance to assess the potential archaeological sensitivity of the Study Area.

<i>Road</i>	<i>Landscape characteristics</i>	<i>Land-use / disturbance</i>	<i>Sensitivity</i>
<b><i>Maccues</i></b>	Follows a moderately steep and narrow east-west ridgeline. Becomes progressively more steep to the west. Some lower slope ridges and areas of swamp/ wetland are present to the north and south.	Some areas of intensive horticulture however mainly existing rural residential and regrowth forests.	Moderate.
<b><i>Wakelands</i></b>	Follows a relatively low and broad ridgeline with numerous open paddocks and regrowth forest.	Agriculture/ horticulture and rural residential development	High
<b><i>Fairview</i></b>	Follows low ridges with moderate slopes with mostly open paddocks and regrowth forests.	Agriculture/ horticulture and rural residential development	High
<b><i>Sugarmill</i></b>	Moderately steep slopes and ridges (undulating) with increased slope profiles to the west.	Agriculture/ horticulture and rural residential development	Moderate



<b><i>Gaudrons</i></b>	Moderately steep to very steep slopes with increased slop profiles to the west associated with	Intensive horticulture (bananas) on steeper slopes.	Low-moderate
<b><i>Old Coast</i></b>	Moderate slopes in the east with increasingly steep slopes in the western sections and in parts crossing east-west ridgelines.	Agriculture/ horticulture and residential. Some regrowth forest throughout.	Moderate.
<b><i>Korora Basin</i></b>	Moderate slopes with some lower broad ridges and alluvial areas associated to Pine Brush Creek. Very steep slopes associated to the Korora Basin.	Agriculture/ horticulture and residential. Some regrowth forest throughout.	Moderate-High
<b><i>Finlays</i></b>	Low to moderate slopes and smaller broad ridges. Small creeks and alluvial areas in parts associated to Pine Brush Creek.	Predominately rural residential with some horticulture	Moderate-High
<b><i>Bruxner Park</i></b>	Moderate to very steep slopes and ridges associated to the Korora Basin. Very few low or broad ridges.	Predominately horticulture (Bananas and Avocados).	Low-Moderate
<b><i>West Korora</i></b>	Moderate to steep slopes with some lower ridges and alluvial areas in the east associated to a Jordans Creek.	Horticulture/ agriculture; some regrowth forest and residential.	Moderate.
<b><i>Tiki</i></b>	Flat open alluvial- possible swamp.	Rural residential and low intensity agriculture.	High.



Figure 4: Example of a small mid ridgeline/ PAD area on Maccues Road- showing disturbance from road and horticulture (far left)



Figure 5: Example of steeper slopes and ridges and horticulture in the upper slopes of Maccues Road



**Figure 6: Example of moderately broad ridge and rural residential landscaping at Wakelands Road**



**Figure 7: Broad low ridges within the eastern section of Wakelands Road**



**Figure 8: Low flat areas of potential paperbark swamp in the eastern section of Wakelands Road.**



**Figure 9: Example of hoop- houses and regrowth forest on broad flat ridgelines on Sugarmill Road**



**Figure 10: Example of moderate to steep slopes towards the west of Sugarmill Road.**



**Figure 11: Example of low and broad ridges with very steep slopes in to the west (Gaudrons Road)**



**Figure 12: Example of very steep disturbed slopes on Gaudrons Road**



**Figure 13: Example of moderately steep ridgeline with mix of agricultural clearing and dense regrowth forest (Gaudrons Road)**





**Figure 14: Banana plantations on lower slopes (Old Coast Road)**



**Figure 15: Example of steeper slopes and ridges (Old Cost Road)**



**Figure 16: Example of intensive horticulture on moderate slopes (Old Coast Road)**



**Figure 17: Example of low broad ridgeline with residential development (Old Cost Road)**



**Figure 18: Example of small creek flat (Korora Basin Road)**



**Figure 19: Example of moderately step slopes and ridges (Korora Basin Road)**



**Figure 20: Moderately steep slope and narrow ridgelines (Rowsells Road)**



**Figure 21: Example of lower broad ridges (Finlays Road)**



**Figure 22: Example of alluvial creek flat (Finlays Road)**



**Figure 23: Example of broad lower slopes cleared for horticulture (Bruxner Park Road)**



**Figure 24: Very steep slopes in the upper catchment of Korora Basin (Bruxner Park Road)**



**Figure 25: Example of a narrow ridgeline in the middle Korora Basin (Bruxner Park Road)**



**Figure 26: View of Korora Basin lower slopes and ridgelines (Bruxner Park Road)**



**Figure 27: Small alluvial creek- bank (West Korora Drive)**



**Figure 28: Example of moderate slopes used for horticulture (West Korora Drive)**



**Figure 29: Mix of horticulture and regrowth forest (West Korora Drive)**





**Figure 30: Example of low flat cleared land at Tiki Road**



**Figure 31: Example of partially cleared paperbark and regrowth forest at Tiki Road**



### 6.3.2 *Identification of PADs using slope*

A GIS mapping process was undertaken to identify PADs using slope and terrain mapping. This process was informed by the initial landscape inspection and aimed to map and define areas of ridgecrest which were both relatively flat and broad. These areas were mapped as individual polygons and labelled numerically.

The criteria for identification of PADs have been informed by the Due Diligence Code and include areas within 200m of a water body and ridgecrests. Based on the soils mapping no sand bodies were expected in the Project Area.

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**Figure 32: Initial mapping of Potential Archaeological Deposits**



### 6.3.3 *Property inspections*

Consent for access to private properties was provided and arranged at the following addresses;

- 153 Maccues Road Moonee;
- 45 Old Bucca Road Moonee;
- 75 Maccues Road Moonee and
- 264 The Mountains Way Sapphire Beach.

The property inspections were undertaken on the morning of 9 September 2015 by Senior Archaeologist Tim Hill. The property inspections aimed to identify Aboriginal sites and PADs and to generally validate the findings of the initial inspection with regard to verifying the nature of slope and disturbance and the effect of these on the archaeological record. Survey information from property inspections was undertaken with a field notebook and digital camera. Mapping information was accessed in the field from Google Maps and Google Earth accessed from a smart- phone. Property owners were available at 153 Maccues Road, 45 Old Bucca Road and 264 The Mountains Way to identify each property boundaries.

Access to several additional properties was possible- however it was determined that those additional properties either did not provide access to a significant size area for survey or were in areas which had been either heavily disturbed or on very steep slopes. There was a bias in property access towards the Sapphire and Moonee areas however this was not regarded as a significant constraint given that these areas were identified as priorities from the initial scoping study.

The following table summarises survey and environmental conditions for properties which were accessed by the Study (Table 3 see also Figure 33, Figure 34, Figure 35, Figure 36, Figure 37, Figure 38, Figure 39 and Figure 40);



**Table 3: Summary of field survey locations**

<i>Address</i>	<i>Environment</i>	<i>Slope and Aspect</i>	<i>Disturbance history</i>
<b>153 Maccues Road</b>	Predominately quite wet regrowth forest.	Moderately steep slopes with a south-easterly aspect.	Much of the forest is typically regrowth Eucalypt with a wet understorey. A large area is revegetating bananas.
<b>45 Old Bucca Road</b>	Open grassland	Low and broad north-west facing ridgecrest	The paddock appears to have been open grazing- there is no evidence of bananas. One large old board-notched- stump was identified indicating clearing pre-1950's.
<b>75 Maccues Road</b>	Mixed regrowth forest and revegetating banana.	Very steep- steep with south-easterly aspect	Much of the property appears to have been cultivated for bananas. The regrowth forest is restricted to the upper south facing slopes.
<b>264 The Mountain Way</b>	Mixed cleared paddock and regrowth forest.	Moderate south-easterly slope.	The north-western cleared paddock appears to have been cleared for grazing whilst the lower sections around the residence appear to be partial regrowth forest. The lower section has a lot of introduced plant species.



**Figure 33: Looking south across old banana fields 75 Maccues Road**



**Figure 34: Looking east across old banana field 75 Maccues Road**



**Figure 35: Looking south across broad ridge crest 45 Old Bucca Road**



**Figure 36: Looking north along broad ridge crest 45 Old Bucca Road**



**Figure 37: Looking west across revegetating forest 153 Maccues Road**



**Figure 38: Looking south at revegetating banana field 153 Maccues Road**





**Figure 39: Looking south across cleared horse paddock 264 The Mountain Way**



**Figure 40: Looking east across regrowth forest 264 The Mountains Way**



## 7. RESULTS AND DISCUSSION

### 7.1 Results.

Based on the investigations undertaken as part of the Study it is possible to identify the following results:

#### 7.1.1 *Aboriginal Places*

There are no gazetted Aboriginal Places or Listed Historic Heritage items within the Project Area.

#### 7.1.2 *Historic heritage items*

There are no declared historic heritage items

#### 7.1.3 *Potential Archaeological Deposits*

A total of 38 PADs were mapped within the Study Area. This process allowed the identification of several 'trends' of relevance to the project, being;

- A high correlation between known sites and PAD areas;
- A trend towards great frequency of PAD areas to the east of the Project Area;
- A trend towards larger PAD areas to the north of the Project Area;
- An overall trend of roads and existing dwellings being located on PAD areas leading to significant disturbance;
- A relatively low number of PADs which are considered 'undisturbed'

#### 7.1.4 *Property inspections*

No archaeological sites were identified during the property inspections. Generally speaking only one of the properties (45 Old Bucca Road) provided access to what could be considered a PAD with a high potential to contain Aboriginal sites. In this property grass cover was such that visibility was significantly restricted.



## 7.2 Discussion

The results of the study identify several broad patterns which are interrelated. The Korora Basin is a significant topographic feature within the Project Area and is defined by very steep slopes and narrow ridgelines and a network of moderately steep to gentle slopes and ridges dissecting small alluvial areas associated with Pine Brush Creek. The steepness of the terrain and proximity to Coffs Harbour CBD has resulted in the Korora Basin having a relatively greater level of historical disturbance when compared to areas to the north of the Project Area.

The number of recorded Aboriginal sites is likely the result both of increased survey effort associated with developments requiring consent on the lower slopes as well as the greater likelihood that the lower slopes and wetlands were used in preference to the steeper slopes of the Coast Range for occupation by Gumbayngirr people. The eastern areas of the Project Area would have offered greater access to resources and landforms more conducive to seasonal camps when compared to the steeper slopes which would have been dominated by rainforest and tall wet forests. It should be noted that none of the previously recorded sites constitute what could be considered 'large site complexes' which characterise the coastal strip north of Coffs Harbour. None of the known sites had greater than 4 artefacts and most were Isolated Artefacts indicating an overall pattern of relatively low population densities across the Project Area. An alternative explanation is that the Project Area was utilised for targeted resource collection area by groups with more permanent camps on the coastal strip. With regard to the management of known Aboriginal sites none are considered to be of greater than 'local' significance and as such additional protection under the Coffs Harbour Local Environment Plan or Commonwealth heritage legislation is not considered necessary.

The Moonee Creek estuary and coastal system of headlands and rock outcrops are known to be a focus of Aboriginal occupation in the historic period and the upper estuary system- which forms the northern section of the Project Area- has numerous attributes which would have supported relatively high numbers of Aboriginal people. The lower broad ridgelines and low swamp-like alluvial areas of this northern section would likely have provided a diverse range of resources and access over the Coast Range into the Bucca and Orara Valleys. There is also the potential that the lower swamps and alluvial areas of the Moonee Creek estuary formed much larger archaic lakes and wetlands during the mid-



Holocene (approx. 5000BP) period. As such there is a greater potential for sites in this area to date to the mid-Holocene period when compared to the southern section of the Project Area (Korora Basin).

The impact of development across the entire Project Area is significant. The impacts of the horticulture (bananas, avocados and recently blueberries) would have significantly changed soil profiles and disturbed Aboriginal sites if present. However the documentation of sites within disturbed landscapes in the Project Area is significant as it indicates that Objects are retained within soil structures and may represent small parts of what may have been very much larger archaeological sites.

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## 8. CONCLUSIONS AND RECOMMENDATIONS

The investigation of potential constraints for the release of additional rural residential blocks in the Project Area has identified no significant constraints with respect to Aboriginal and European Heritage. No Aboriginal Places or Items listed under the Heritage Act are recorded within the Project Area. With respect to known Aboriginal sites and PADs the Due Diligence Code of Practice provides an adequate system for the identification and management of the types of sites likely to occur within the Project Area. There is the potential for some areas of the Project Area- particularly around Moonee Creek- to contain regionally significant archaeological sites. The study identified a general trend towards larger potential archaeological deposits in the northern and eastern sections of the Project Area.

The Due Diligence Code of Practice is considered to provide an adequate system for the protection of Aboriginal sites that are known within the Project Area. It is recommended that the Due Diligence Code of Practice is used as a framework for assessment of potential impacts to Aboriginal heritage during all future rezoning or development applications within the Project Area. It is recommended that Coffs Harbour City Council formally consults with the OEH with regard to the practical application of the Code of Practice for future rezoning and development applications- particularly with respect to individual residential dwellings and agricultural infrastructure.



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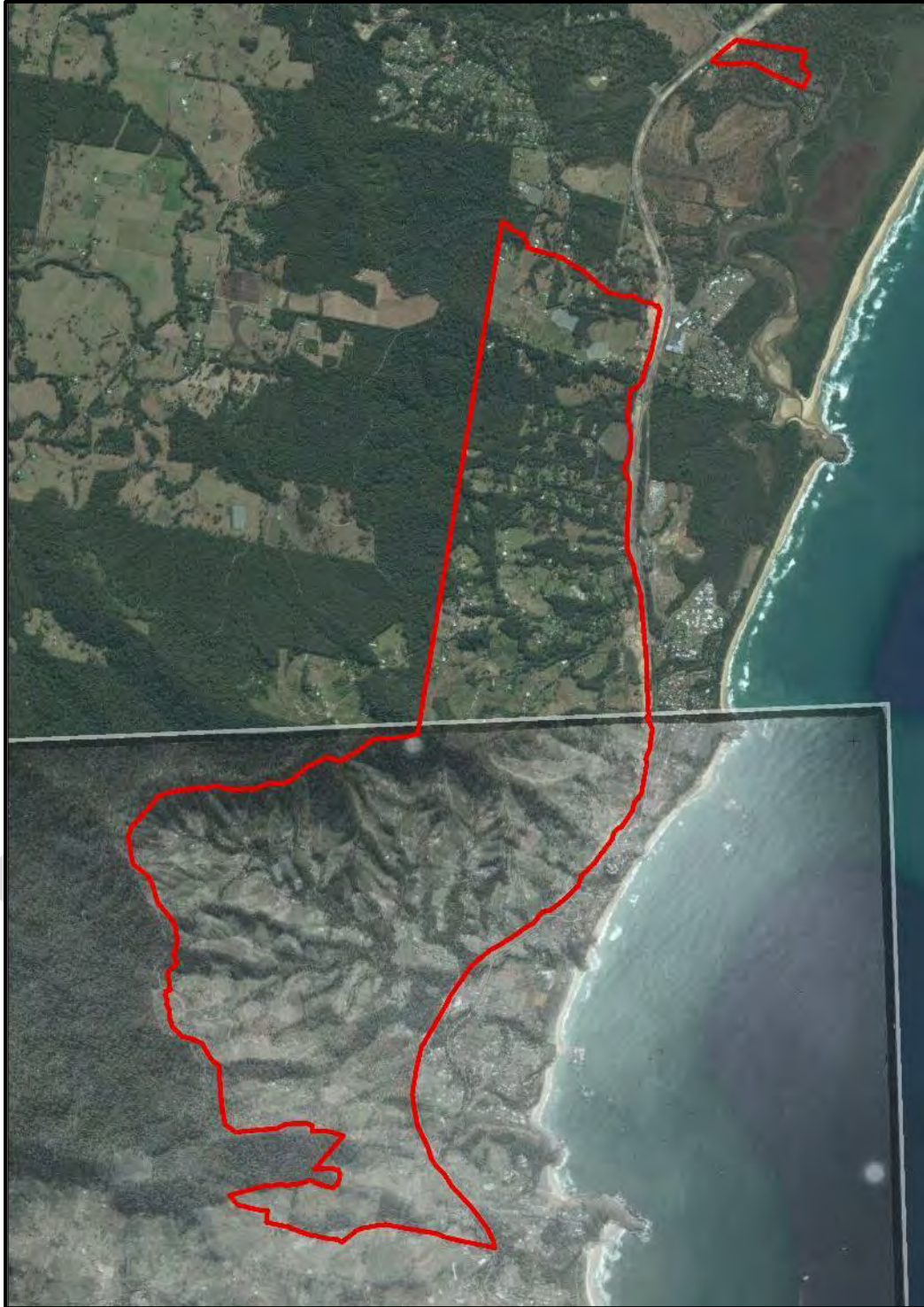
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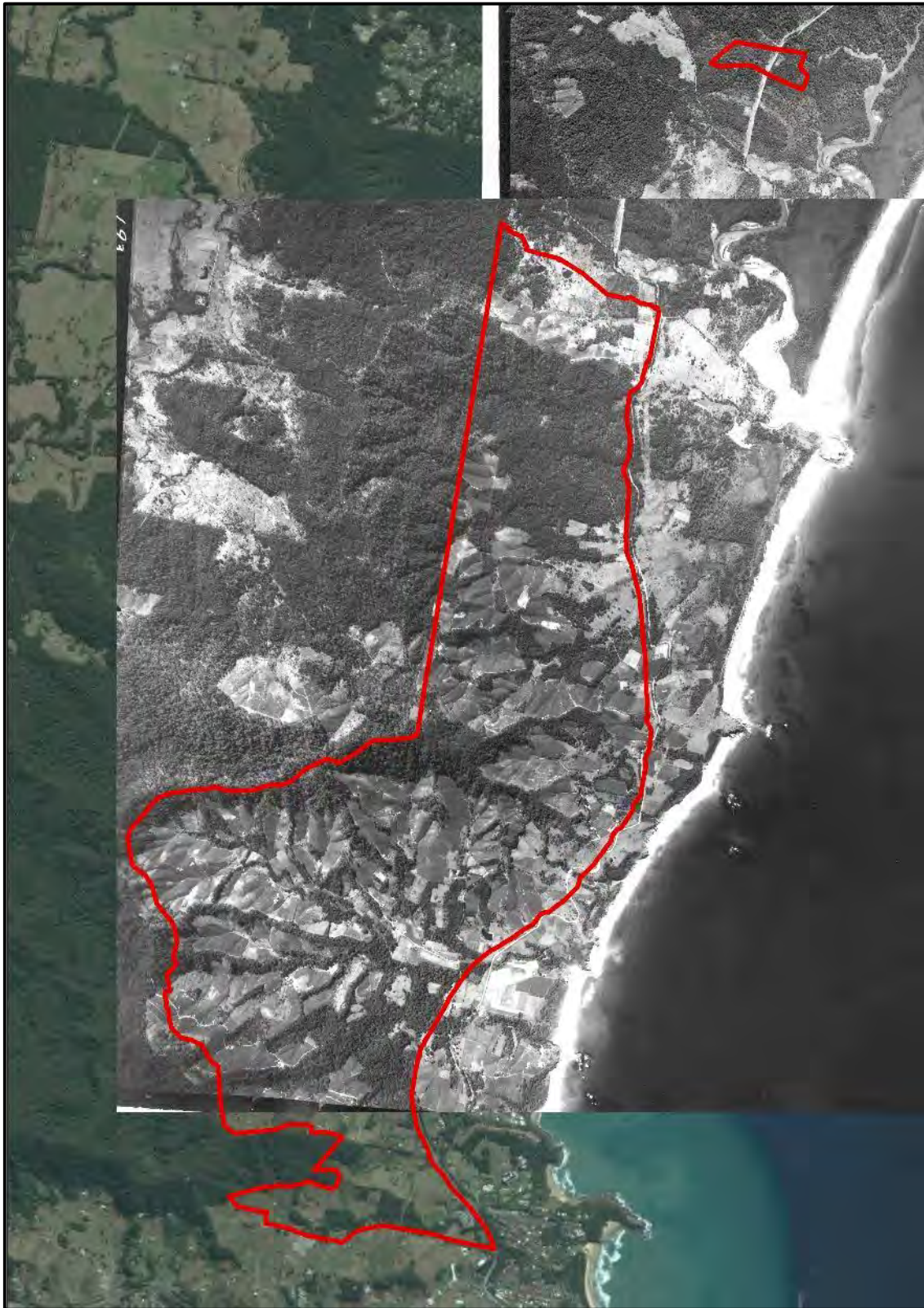
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## 10. APPENDIX 1- HISTORIC AERIAL PHOTOS



**Figure 41: Historic aerial photo 1954 (southern section of Study Area)**



**Figure 42: Historic aerial photo 1956 (northern section of Study Area)**





**Figure 43: Historic aerial photo 1969**



**Figure 44: Historic aerial photo 1979**



**Figure 45: Historic aerial photo 1989**



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# Environmental Site Assessment - 28, 35 & 89 Sugarmill Road, Sapphire Beach



5 November 2021

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For: Mr Keiran Grimley, Dr Ian Martyn & Dr Chandran Arianayagam



Authored by: Strider Duerinckx			Distribution
2021-165-03	A	5/11/21	Clients, Planner

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28, 35 & 89 Sugarmill Road, Sapphire Beach

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## Appendices

Appendix A	Historical Aerial Photographs
Appendix B	Previous Ownerships
Appendix C	Laboratory Report

## 1 Introduction

Earth Water Consulting Pty Limited (EWC) was engaged by parties Mr Keiran Grimley, Dr Ian Martyn & Dr Chandran Arianayagam (the “Client”) to undertake an Environmental Site Assessment (ESA) for 28, 35 & 89 Sugarmill Road, Sapphire Beach) (the “Site”) (Figure 1).

### 1.1 Objectives

The objectives of the ESA are to:

- Investigate the Site history and identify potentially contaminating activities that are currently being performed on the Site or that may have been performed on the Site in the past;
- Make a preliminary assessment of potential contamination issues for rural residential development based on the Site history review; and
- If the potential for contamination exists that would preclude the proposed development, detailed sampling to identify concentrations in the soil in the proposed building envelopes.

### 1.2 Suitability to Undertake Works

Strider Duerinckx has project managed and signs off on this investigation. Strider is an environmental geologist with 25 years experience in contaminated sites investigations including numerous banana plantation assessments. Strider is a CEnvP (Site Contamination Specialist) accredited.

## 2 Proposed Development

Based on plans of the proposed subdivision layout by Mid North Coast Surveys, it is understood that it is proposed to subdivide the subject properties as follows in **Table 1** and shown in Figure 2.

**Table 1: Property Details**

Existing Property	Lot & DP	Existing Size (m <sup>2</sup> )	Proposed No. of Lots	Proposed Lot Sizes (m <sup>2</sup> )
No. 28	L12, DP243972	20,336	2	6,636-13,700
No. 35	L91, DP786155	23,660	2	11,500-12,100
No. 89	L17, DP249273	20,325	2	11,290-8,977

## 3 Scope of Work

This ESA has been undertaken in reference to the relevant sections in the *Consultants Reporting on Contaminated Land* (NSW EPA 2020), and Department of Urban Affairs and Planning *Managing Land Contamination – Planning Guidelines SEPP55 – Remediation of Land* (DUAP & EPA 1998).

The assessment included:

- A desktop review of historical conditions and activities on the Site including:



- Historical aerial photographs review (to map change in use over time);
  - NSW EPA contaminated land and POEO notices and records (onsite or offsite contamination presence or significant activities),
  - Historical ownership records;
  - Review of banana cultivation and cattle tick dip sites registers;
  - Review of geology and hydrogeology including groundwater bores (risk of contamination migration); and
  - Review of environmental constraints such as groundwater dependent ecosystems (sensitive receptors).
- A site walkover of the Site to assess current layouts, surface conditions, presence hazardous building materials that may result subsurface contamination, and the presence of any obvious previous contaminating activities (such as current or historical fuel storage);
  - Preparation of a Conceptual Site Model (CSM);
  - A sampling and analytical plan to details soil sampling required to address the identified potential contamination risk;
  - Soil sampling and analysis in the proposed building envelopes;
  - Presentation of this ESA report, including conclusions and recommendations on the contamination status of the Site and suitability of the rezoning application and future subdivision.

## 4 Site Description

### 4.1 Site Identification

The Site details are provided in **Table 1** and shown in Figures 1, and 3-5. The Site properties are zoned RU2, rural landscape.

### 4.2 Location and Features

The Site is located either side of Sugarmill Road, with n No.28 on the northern side, and 35 and 89 on the southern side. No.28 and 35 are located towards the eastern extent of the road, and No.89 about 1km further west.

Rural-residential lots all of ~2ha are present on Sugarmill Road. These lots are located on undulating low hills separated by forested drainage lines, and are mostly to partially cleared.

### 4.3 Surrounding Land Use

The surrounding land use includes developed rural residential land to the north, south, east and west.

## 5 Site Inspection

A site inspection was undertaken on 11 September by Strider Duerinckx. During the inspections it was noted that:

- The majority of the Site is partially cleared with a mixed grass lawn and relic forest;

## Appendix 13 - Land Contamination Assessment

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- No.28 Sugarmill Road slopes down to the north to an intermittent forested gully. The property has a single dwelling and gravel driveway, and a small ornamental dam positioned near the western perimeter in the cleared area;
- No.35 has a single dwelling, shed, swimming pool etc locate din the upper southern portion of the property, surrounded by lawn. An open eucalypt forest is locate din the lower northwestern corner;
- No.89 slopes moderately to the north and west off a dominant spur. A gully drains though the northwestern corner of the property, with a single dwelling on the elevated southern portion;
- No significant cutting or filling was observed on any of the properties, no imported fill or stockpiles were observed;
- No other signs of disturbance were noted, and no chemical storage areas or rubbish stockpiles were visible on the Site.

Typical Site details are shown in **Photograph 1** through **Photograph 10**.



**Photograph 1.** View of 28 Sugarmill Rd, looking east past the dwelling.



**Photograph 2.** View of 28 Sugarmill Rd, facing north with a gazebo in the foreground and a swimming pool in the background.



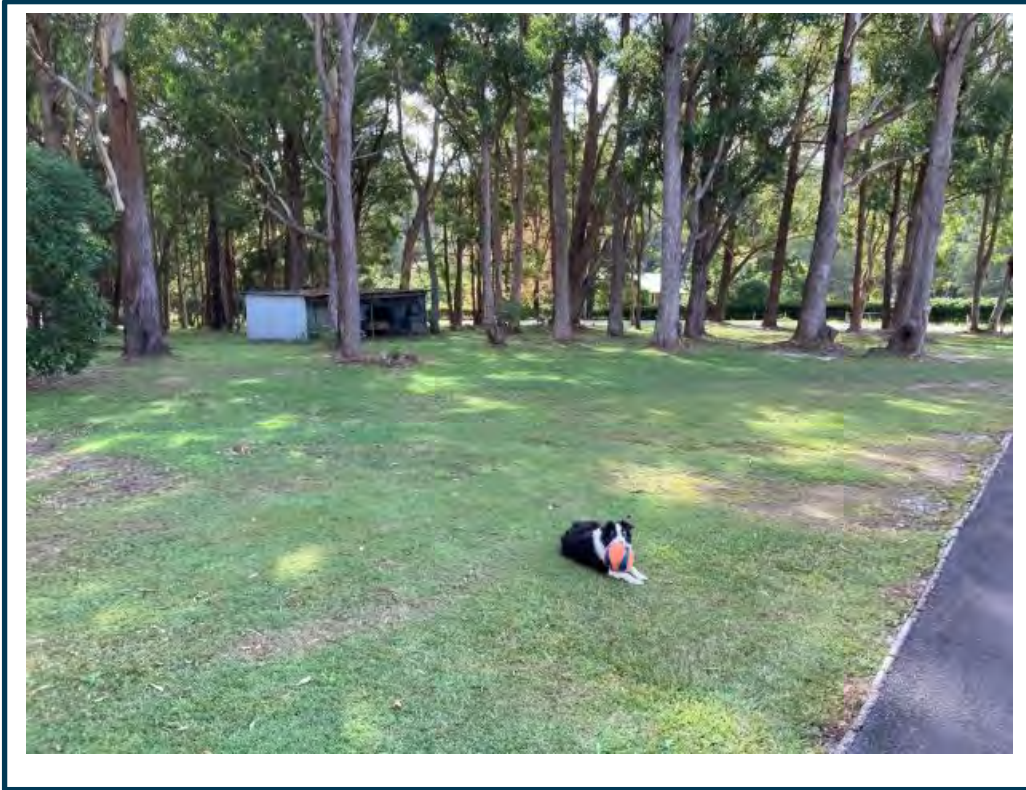
**Photograph 3.** View of 28 Sugarmill Rd from the southwestern corner of the property, with the existing dwelling on the right of the image, and the small dam on the left.



**Photograph 4.** View of the mapped intermittent drainage line in the northwestern corner of 28 Sugarmill Rd.



**Photograph 5.** View of 35 Sugarmill Rd, looking east at the carport in the foreground, with the existing dwelling in the background.



**Photograph 6.** View of 35 Sugarmill Rd, looking northwest from in front of the carport at the relic native forest in the northwestern portion of the property.



**Photograph 7.** View of the cleared northeastern corner of 35 Sugarmill Rd.



**Photograph 8.** View of 35 Sugarmill Rd, looking south with tennis court in the background. The proposed building area is on the right hand side of the phtooograph.



**Photograph 9.** View of 89 Sugarmill Road, looking south at the existing dwelling.



**Photograph 10.**  
View of 89 Sugarmill Rd, looking west at the drainage line in the northwestern corner of the property.

## 6 Geology, Hydrogeology and Topography

### 6.1 Topography

The Site is located on undulating land, generally sloping down to the north, with drainage alignments generally travelling north. The drainage lines are tributaries of Sugar Mill Creek, which subsequently drains east into Moonee Creek near the estuary mouth.

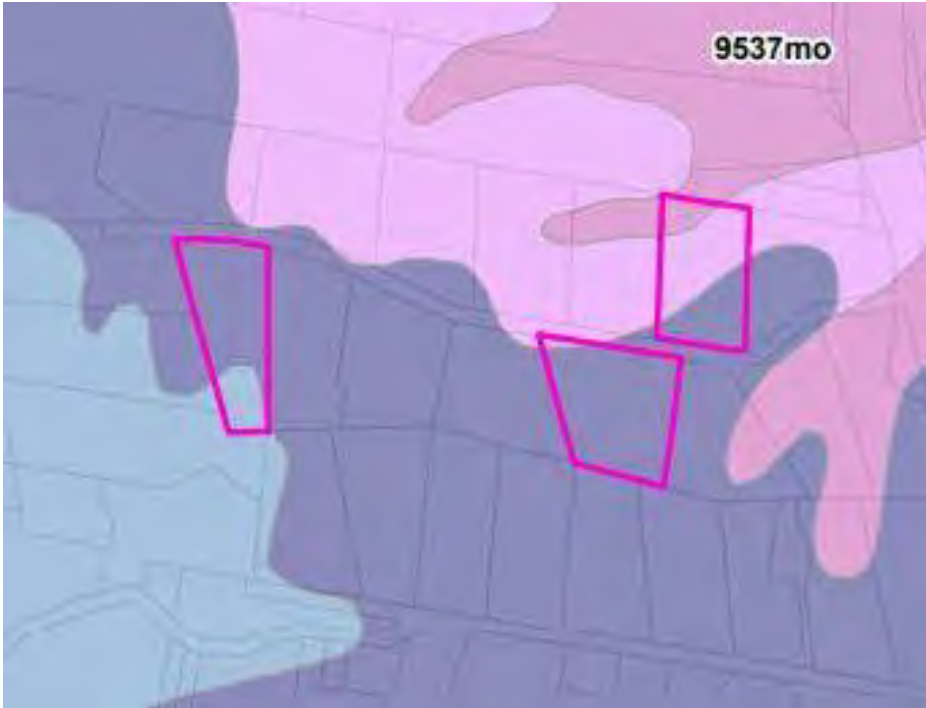
Surface heights are between about 10-20mAHD.

### 6.2 Geology

The Site is underlain by the Coramba beds. These are comprised of lithofeldspathic wacke, minor siltstone, mudstone, metabasalt, jasper and rare calcareous siltstone.

### 6.3 Soils

The Site is underlain by a combination of soils, which include the Ulong, Suicide, Moonee and Megan soil landscapes. (**Photograph 11**). These soil landscapes are erosional or residual clays, with red or brown earths common. Suicide Soil Landscape soils are often gravelly. Alluvial gleys can be present in the Moonee Soil Landscape.

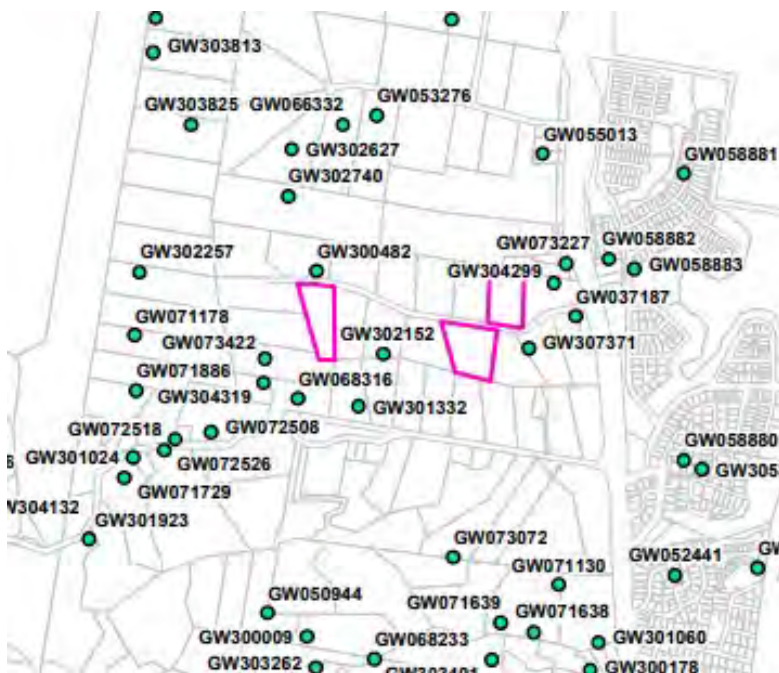


**Photograph 11.** Mapped soil landscape

## 6.4 Hydrogeology

The mapped regional aquifer is located within fractured bedrock and is an aquifer of low to moderate productivity.

No licensed groundwater bores are located on the Site. There are 13 registered groundwater bores within 500m of the Site. These are registered for mainly household use, drilled to between 29-79m depth.



**Photograph 12.** Registered groundwater bores



## 7 Site History

In order to provide a detailed desktop review, a search was undertaken of the Lotsearch environmental database. Aerial photo excerpts from this report are included in Appendix A.

### 7.1 Mapped BP Land

A review of the Coffs Harbour City Council LEP mapping indicates that parts of the Site and surrounds are mapped as having been under banana cultivation between 1943 and 1994 (**Photograph 13**). The majority of No.89 Sugarmill Road is mapped as having been under banana cultivation, with only the northwestern segment outside this area. A section on the western side of No.35 is mapped as having been under banana cultivation. No.28 is not within the mapped area of historical banana cultivation.



**Photograph 13.**  
Mapped historical BP land.

### 7.2 CHCC LEP Contamination Mapping

A review of CHCC LEP mapping of potential general contamination indicates that No.28 is not mapped as potentially contaminated. No.35 and 89 are mapped as BCL1, “mapped, not yet sampled, considered potentially contaminated”.



Photograph 14. Mapped potentially contaminated land.

### 7.3 Previous Environmental Investigations

No previous environmental investigations are known to have been undertaken on the Site.

### 7.4 Aerial Photographs

A review of aerial photographs from 1954-2020 was undertaken and summarised in Table 2. The aerials are included in Appendix A.

Table 2 - Aerial Photograph Review

Year	Site	Surrounding Land
1943	<p>No.28 is fully cleared. No.35 is largely cleared, with only a small section of remaining native forest within the northern part.</p> <p>No.89 is fully forested except for a small cleared segment in the southern portion with banana plantation.</p> <p>Sugarmill Road is not present, a single farm track passes diagonally through No.35.</p>	<p>Surrounding land on Sugarmill Road and surrounds is mostly cleared around the two eastern lots. Most of this area appears to be cleared but not cultivated, as remnant vegetation and dead trees appear to remain.</p> <p>No.89 has two cleared areas to the south and west which appear to be banana plantation. The rest of the area surrounding this lot is fully forested.</p>

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Year	Site	Surrounding Land
1956	<p>Sugarmill Road has been created as a rough dirt track</p> <p>No. change to No.28 or No.35. Some regrowth of forest is occurring in the southeast corner of No.35.</p> <p>No.89 is almost entirely cleared and under banana plantation. There is now a shed on the northern perimeter adjacent to Sugarmill Road.</p>	<p>A shed or house is located on the southwestern perimeter of No.35.</p> <p>A house/shed is now seen also located along the western boundary of No. 89.</p>
1964	<p>No.28 no change. Some forest regrowth.</p> <p>No.35 now has a portion of banana plantation on its western portion. The older farm track still crosses diagonally through the property.</p> <p>No.89 is as per 1956, under banana cultivation.</p>	<p>Banana agriculture continues and expands slightly in the surrounding area around No.35 and 89.</p>
1974	<p>No.28 and 89 are as per 1964.</p> <p>At No.35 the house has been constructed. All banana plantation activities have ceased in that area.</p>	<p>Sugarmill Road proper has been constructed and rural residential subdivision has occurred with new dwellings being constructed.</p> <p>More forest regrowth around No.28 and 35.</p> <p>No banana plantation to the west of No.35, but continues around No.89.</p> <p>The former shed/dwelling offsite to the west of No.35 has been demolished.</p>
1984	<p>A small dam is present in No.28.</p> <p>No.35 has a tennis court in the southwestern corner, plus orchard trees along the western portion.</p> <p>Banana agriculture appears to have ceased on No.89, the house constructed and the long driveway.</p>	<p>Bananas are still being cultivated west of No.89, though sections of previously cultivated land appear to have been discontinued.</p> <p>The shed to the west of No.89 has been demolished.</p>
1994	<p>No.28, 35 and 89 are as per 1984.</p>	<p>All banana farming directly surrounding the three lots has ceased. Several new dwellings have been constructed in the surrounds.</p>

Year	Site	Surrounding Land
2004	Dwelling, swimming pool, shed, driveway and gazebo now evident on No.28. Some of the orchard trees have been removed at No.35. No.89 as per 1994.	As per 1994, except a new dwelling has been constructed directly east of No.35.
2010	As per 2004.	As per 1994. Pacific Highway upgrade works present.
2016	As per 2010.	The Pacific Highway upgrade has been completed and is in operation to the east. A series of new greenhouses has been constructed to the west of No.35 on the adjacent property.
2021	As per 2016.	As per 2016.

### 7.5 NSW EPA Records

A search of the NSW EPA's contaminated land record revealed no investigation or remediation notices have been issued on the Site or adjacent properties for contamination or 'significant risk of harm' under Section 58 of the Contaminated Land Management Act 1997.

A search of the public register under Section 308 of the Protection of the Environment Operations Act indicated that no current and recently surrendered licenses have been held for potentially contaminating activities on the Site or adjacent properties.

### 7.6 Other Contaminating Sites

The Site and surrounding area are not listed as an area of concern for James Hardie asbestos manufacturing and waste disposal sites, radiological investigation sites in Hunters Hill, or Pasmenco lead abatement strategy area. The Site is not listed as nor are any Defence sites, former gasworks, PFAS contaminated, loose fill asbestos insulation, cattle tick dip, dry cleaners, fire rescue, gas terminals, liquid fuel depots, active mines or quarries, derelict mines, petrol stations, power stations, electrical substations, telephone exchanges, active or historical waste management facilities (landfills) or wastewater treatment facilities located in the vicinity of the Site.

### 7.7 Adjacent Business Operations

A search of published business directories indicates no registered and advertising businesses operated from the Site or immediate surrounds in the 1950-1991.

## 7.8 Historical ownership

A search of historical owners of the Site was undertaken and summarised in Table 3 through Table 5. The results are included in Appendix B.

Table 3: 28 Sugarmill Road Historical Ownership

Date	Detail
	<b>(Lot 12 DP 243972)</b>
2009 – to date	Kieran Grimley
2007 – 2009	Deborah Jane Grimley Kieran Grimley
2002 – 2007	Kathryn Ann Lucock
1978 – 2002	Wolodomyr Ben (Station Master) Marie Elizabeth Be (Married Woman)
1973 – 1978	Dudley Lancelot Best (Dry Cleaner) Margaret Best (Married Woman)
1971-1973	John Spence Blackburn (Chartered Accountant)
1966-1971	Estella Olive Myrtle Milne (Married Woman)
1934-1966	Lilly May Carolan (Married Woman)
1910-1934	Sarah Jane Wake (Married Woman)
1908-1910	William George Camps (Tanner)
1907-1908	John Poor (Farmer)
1907-1907	Elizabeth Sophia Iliffe (Married Woman)
1907-1907	Absolom Spicer

Table 4: 35 Sugarmill Road Historical Ownership

Date	Detail
	<b>(Lot 91 DP 786155)</b>
2019 – to date	Ian Stewart Martyn Stephanie Maree Martyn
2000 – 2019	Ian S Martyn Pty Ltd
1996 – 2000	Dougal Bruce Malcolm Laura Leslie Ann Malcolm
1990 – 1996	Rosemary Eileen De Martin

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Date	Detail
1988 – 1990	Fleuron Pty Ltd
1988 – 1988	Joburn Pty Ltd
1970 – 1988	John Spence Blackburn (Chartered Accountant)
<1971	As per No.28

For the period 1966 to 1990 a small section in the northeast corner of the Lot was under separate title. In 1990 this section was merged into the Lot.

Table 5: 89 Sugarmill Road Historical Ownership

Date	Detail
	<b>(Lot 6 DP 253836)</b>
2000 – to date	Oakhunt Pty Ltd
1995 – 2000	Chandrarajan Arianayagam Sobhana Arianayagam
1986 – 1995	Dinah Nutchey
1977 – 1986	Ronald James Lisle (Teacher) Jennifer Lee Lisle (Married Woman)
1977 – 1977	Joburn Pty Ltd
1971 – 1977	John Spence Blackburn (Chartered Accountant)
<1971	As per No.28

### 7.9 Summary of Site History

The historical review confirmed that up until between 1984-1994 banana agriculture dominated the area around No.89 Sugarmill Road, and was as far east as the western portion of No.35.

Rural-residential subdivision occurred in 1973, with a boundary realignment occurring for No.35 in 1988. Rural-residential subdivision occurred in 1975 for No.89 Sugarmill Road.

House construction proceeded soon after, being completed in stages. No significant commercial activities have occurred since residential development.

## 8 Potential Areas and Contaminants of Concern

Based on the site history and a walkover, Areas of Environmental Concern (AECs) and associated Contaminants of Concern (CoC) were identified for the Site for future residential landuse. These are presented in **Table 6**.

**Table 6: Potential AEC and CoC**

AEC	Potential Contaminating Activity	CoC	Likelihood of Contamination	Comment
<b>1</b>	Broadscale shallow contamination from banana cultivation on the proposed building envelopes of No.35 and 89.	OCP (Aldrin, dieldrin and DDT), heavy metals (Arsenic and Lead)	Moderate for OCP (dieldrin) and metals (Arsenic)	In 1994, the NSW EPA, Department of Agriculture and Coffs Harbour City Council studied banana plantations in the Coffs Harbour area, and developed a specific set of guidelines to assess these former agricultural properties. Several typical CoC were identified and contaminant distribution models developed.
<b>Notes</b>				
OCP = Organochlorine Pesticides				

The existing dwellings will remain with no change in landuse.

As a precaution, check sampling was undertaken on No.28 for common contaminants associated with market gardening and banana plantation activities, including heavy metals (arsenic, cadmium, chromium, copper,, lead, mercury, nickel and zinc) and Organochlorine Pesticides (OCP).

## 8.1 Conceptual Site Model

The Conceptual Site Model (CSM) for the proposed development area is presented in Table 7.

**Table 7: Conceptual Site Model Pathways**

Element	Sub-Element	Comment
Mechanism of Contamination		Near surface inorganic and organic contaminants may be present from former farming practices located in the proposed development area. With rainfall, surface runoff could occur downslope.
Potentially Affected Media	Soil	Yes, if present and disturbed.
	Sediment	The proposed development would not disturb sediment and no large waterways are present.
	Groundwater	Groundwater is not expected until >10m depth.
	Surface Water	A waterway passes through the Site but will not be developed.
	Indoor	Volatile contamination is generally not expected at the Site.
	Ambient Air	Significant volatile contamination is generally not expected at the Site.

Element	Sub-Element	Comment
Receptors	Human	The primary human receptors are long term residents with soil contact and ingestion.
	Ecological	Minimal future ecological exposure pathways are expected with small lot residential development.
Exposure Pathways	Potential	Given proposed residential usage, future exposure routes are possible.
	Complete	Complete human or environmental exposure routes have not been identified at this time.

## 9 Investigation Criteria

The soil investigation levels for banana plantation contamination (OCP, Arsenic and Lead) were adopted from the NSW EPA (1997) Guidelines. These are comparable to health-based investigation levels for residential sites with access to soil for home grown vegetables at less than the 10% of the daily intake, which are provided in NEPM (NEPC 2013) Guidelines.

The National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999, was amended in 2013 (NEPC 2013) and has been accepted for use in NSW by the NSW EPA.

NEPM 2013 presents Health based Investigation levels (HIL) for different land uses (e.g. industrial/commercial, residential, recreational open space etc.) as well as provisional Ecological Investigation Levels (EIL), Ecological Screening Levels (ESL), Health Screening Levels (HSL) and Management Limits (ML).

The HILs were developed from significant review of toxicological data and risk assessment modelling undertaken and originally published by the National Environmental Protection Council (NEPC) in the NEPM 1999 document.

*"The HILs are scientifically based, generic assessment criteria to be used in the first stage (Tier 1) of an assessment of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on a reasonable worst-case scenario".*

*"HILs are investigation or screening levels, and are not clean-up or response levels, nor are they desirable soil quality criteria. They are intended to be used to trigger consideration of an appropriate site-specific risk-based approach or appropriate risk-based management options when they are exceeded".* (NEPC 2013 Schedule B1 p4).

The NEPM 2013 provides EILs for common heavy metals including arsenic, chromium III, copper, lead, nickel, mercury and zinc in different landuse settings. The approach for deriving EILs for heavy metals is to combine background concentrations (i.e. naturally occurring) with an added contaminant limit (ACL), that is  $EIL = background + ACL$ . As background sampling was not undertaken, the adopted EILs



for the Site included assumed background concentrations based on previous experience in the area. EILs for residential use were calculated and adopted.

The investigation criteria for the Site are included in the attached summary Table LR1.

## 10 Sampling Program

The current CHCC policy is that for properties >1,500m<sup>2</sup> in area, a building envelope of 1,500m<sup>2</sup> is to be sampled in accordance with NSW EPA (1997) Guidelines.

The proposed building envelopes at No.35 and 89 are 800m<sup>2</sup>, but a larger footprint of 1,500m<sup>2</sup> was required to be assessed. Samples were to be collected from 0-75mm depth for former broadacre cultivation.

As no AEC was identified for No.28, the sampling plan was to collect two check samples in the vicinity of the proposed building envelope. Samples to be collected from 0-150mm depth and tested for general grazing use contaminants (heavy metals and OCP).

A sampling event was undertaken at the Site on the 19 October which included the collection of:

- two check samples from No. 28 (CS-1 and CS-2) from 0-150mm depth for analysis of heavy metals and OCP pesticides.
- sixteen samples (32 in total) per building envelope from No. 35 and No. 89, with discrete samples composited into four composites, and analysis of arsenic, lead, and OCP pesticides.

All samples were forwarded under chain of custody conditions to Eurofins environmental laboratory.

### 10.1 Field Quality Control

Environmental sampling activities were based on industry accepted standard practices.

The sampling equipment was decontaminated between sampling locations by washing with detergent and rinsing with clean water. A new pair of disposable gloves was used when handling each soil sample. Samples were collected in laboratory supplied jars and shipped chilled in an esky to the laboratory.

### 10.2 Laboratory Quality Control

Primary samples were submitted to Eurofins, which is a national laboratory that undertakes analyses to NATA accredited analytical methodologies, and participates in NATA endorsed laboratory round robin analyses. Laboratory Quality Control included testing and reporting of reagent blanks, laboratory control samples (LCS), matrix spikes and surrogates spikes, and laboratory duplicates to assess laboratory quality control.

The laboratory quality assurance results are included within the laboratory reports attached in Appendix C. No exceptions to the laboratory quality control reportable limits were noted.

# 11 Results

## 11.1 Sample Descriptions

The sampling locations are presented in Figures 3-5, with sample details provided in **Table 8**. Discrete samples collected at No. 35 (S-17 to S-32) and No. 89 (S-17B to S-32B) were composited for analysis and referred to in **Table 8**.

**Table 8: Sample Descriptions**

Sample ID	Date	Depth	Description
<b>No. 28</b>			
<b>CS-1</b>	19.10.21	0-150mm	Topsoil, dark brown loam to clay loam
<b>CS-2</b>	19.10.21	0-150mm	Topsoil, dark brown loam to clay loam
<b>No. 35</b>			
<b>C-1</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>C-2</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>C-3</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>C-4</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>No. 89</b>			
<b>C-5</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>C-6</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>C-7</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam
<b>C-8</b>	19.10.21	0-75mm	Topsoil, dark brown loam to clay loam

# 12 Analytical Results

The laboratory report is included in Appendix C and the soil analytical results are summarised in the attached Table LR1.

Comparison of sample results to the investigation criteria indicated that:

- Concentrations of OCP were reported below the laboratory Limit of Reporting (LOR) for all samples analysed; and
- Concentrations of heavy metals were reported either below the LOR or well below the investigation criteria for all samples analysed.

As all results are below the investigation criteria calculation of the 95% UCL is not required.

### 13 Conclusions and Recommendations

The ESA has identified that the subject properties were only developed in the late 1970's, with prior usage as grazing or banana plantations. Broadacre banana cultivation on No.35 and 89 was assessed as contributing to a risk of surface contamination in soils on those properties. The analytical results of detailed sampling across the proposed building envelopes of No.35 and 89, and check sampling on No.28 confirm that concentrations of the heavy metals and OCP analysed were below the investigation criteria.

As such no further investigations or remediation of soils is required for the proposed rural-residential use of the Site.

### 14 References

Coffs Harbour City Council. 2017. Contaminated Land Management Policy

Coffs Harbour City Council. 2018. Contaminated Land Management Procedure

Coffs Harbour City Council Local Environmental Plan 2013.

NEPC. 2013. National Environment Protection (Assessment of Site Contamination) Measure. Schedule B1-Schedule B1 Guideline on Investigation Levels For Soil and Groundwater. National Environment Protection Council.

NSW EPA (1997) Guidelines for Assessing Banana Plantation Sites.

# TABLES

---

## Appendix 13 - Land Contamination Assessment

**Table LR1: Summary of Soil Analytical Results**

Sample ID	Units	LOR	Investigation Criteria			C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	Cs-1	CS-2
Date Collected		Eurofins	NSW EPA	NEPM		19/10/2021								19/10/2021	
Depth Collected			BP	HIL (A)	EIL	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 150	0 - 150
<b>% Moisture</b>	%	1	-	-	-	23	23	20	20	22	18	20	20	28	29
<b>Heavy Metals</b>															
Arsenic	mg/kg	2	100	100	100	31	38	33	29	38	37	41	44	3.4	2.5
Lead	mg/kg	5	300	300	1100	12	15	9.6	8.1	13	9	11	17	13	12
Cadmium	mg/kg	0.4	-	20	-	-	-	-	-	-	-	-	-	< 0.4	< 0.4
Chromium	mg/kg	5	-	100	480	-	-	-	-	-	-	-	-	11	9.1
Copper	mg/kg	5	-	6000	140	-	-	-	-	-	-	-	-	5.2	< 5
Mercury	mg/kg	0.1	-	40	-	-	-	-	-	-	-	-	-	< 0.1	< 0.1
Nickel	mg/kg	5	-	400	55	-	-	-	-	-	-	-	-	< 5	< 5
Zinc	mg/kg	5	-	7400	210	-	-	-	-	-	-	-	-	16	17
<b>Organochlorine Pesticides</b>															
4,4'-DDD	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	mg/kg	0.05	50	-	180	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin and Dieldrin (Total)*	mg/kg	0.05	10	6	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlordanes - Total	mg/kg	0.1	-	50	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	mg/kg	0.05	-	240	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	mg/kg	0.05	-	270	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	mg/kg	0.05	-	10	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	mg/kg	0.05	-	6	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	mg/kg	0.05	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	-	10	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	mg/kg	0.05	-	300	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	mg/kg	0.1	-	20	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

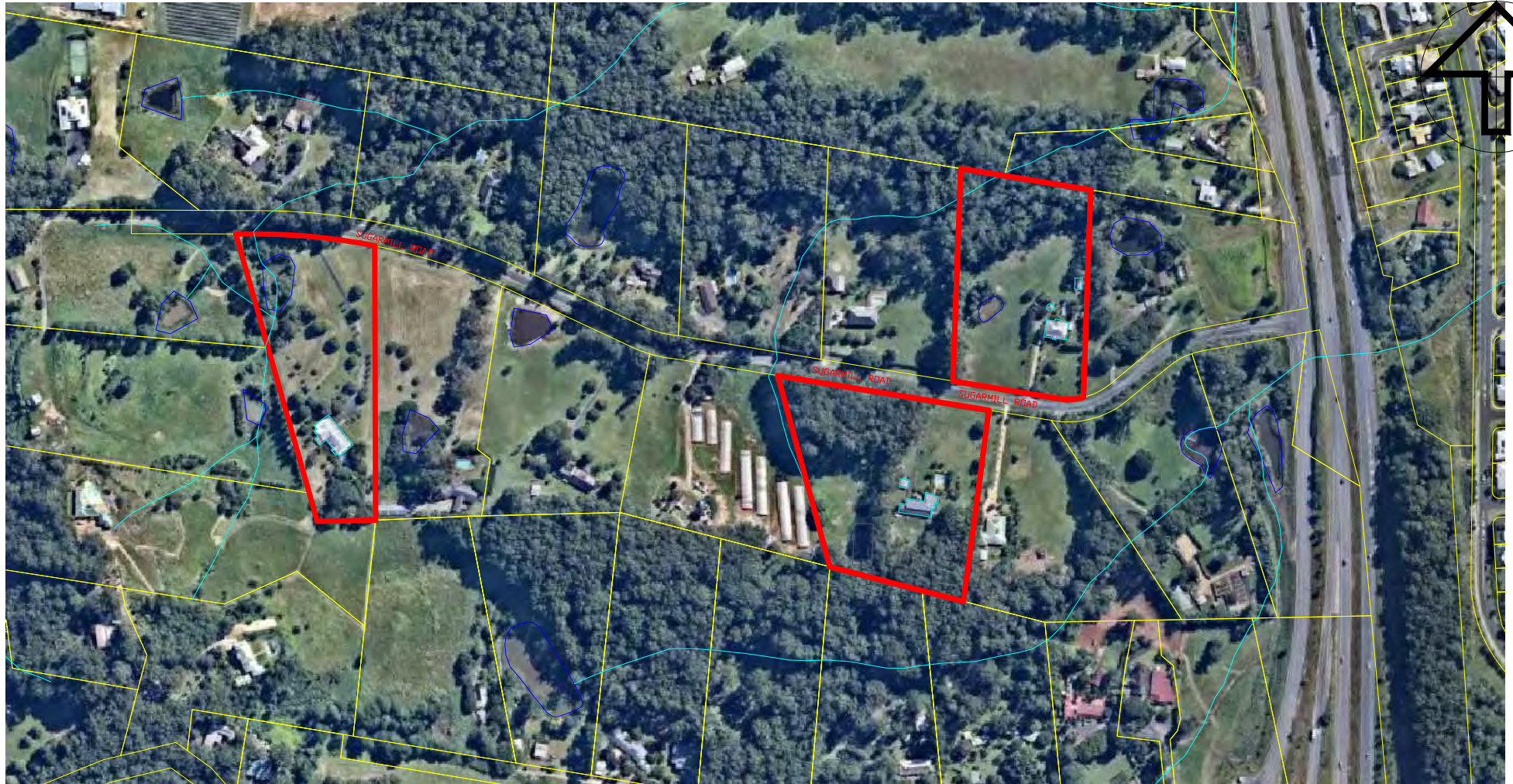
**Notes**

- Indicates sample concentration exceeds investigation criteria
- Indicates sample concentration exceeds investigation criteria value by >250%

# FIGURES

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# Appendix 13 - Land Contamination Assessment



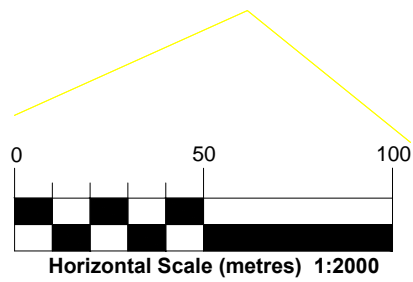
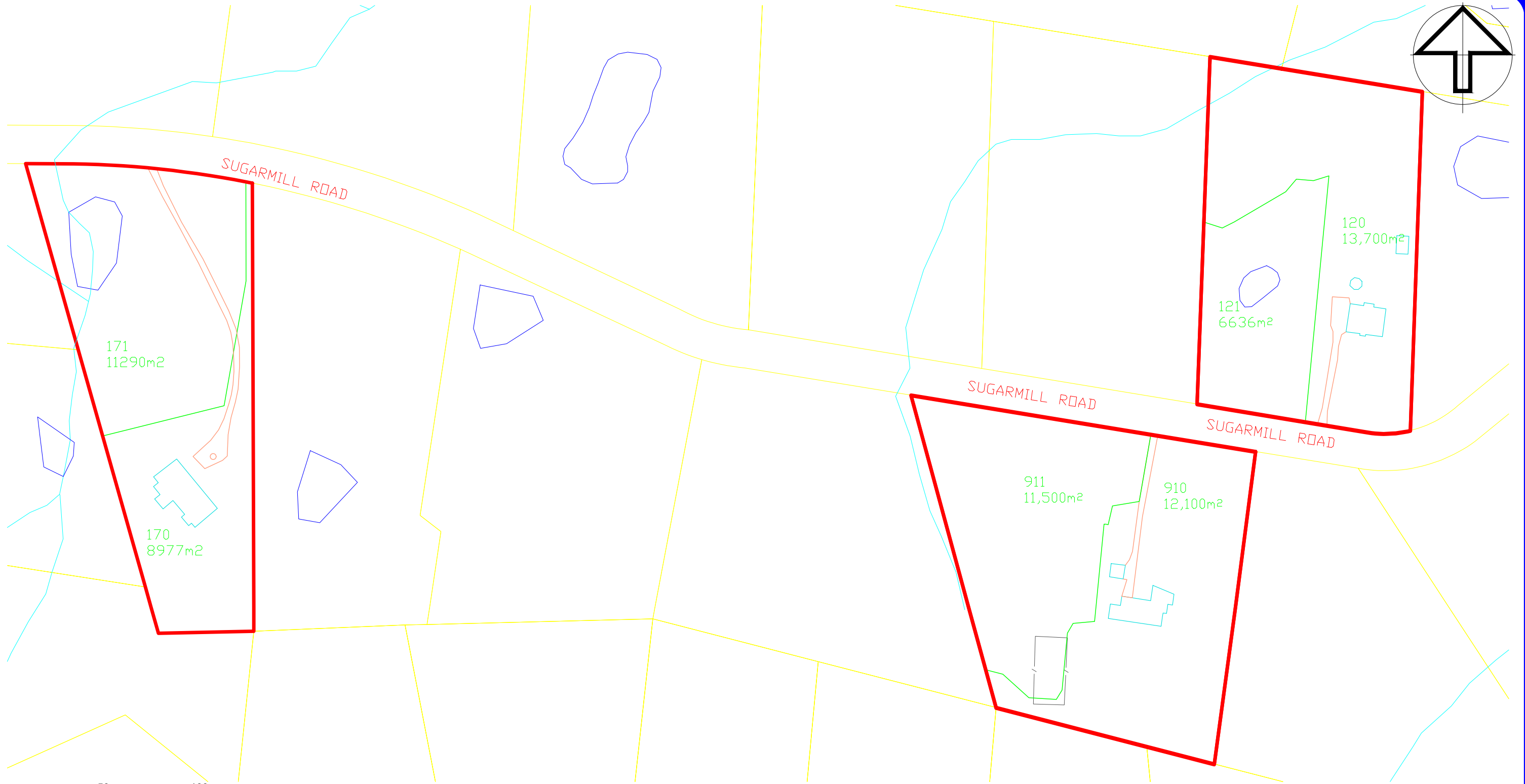
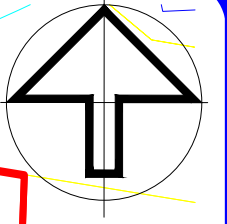
Horizontal Scale (metres) 1:5000



### LEGEND

- Property Boundaries
- Adjacent Lots
- Intermittent waterways
- Dams

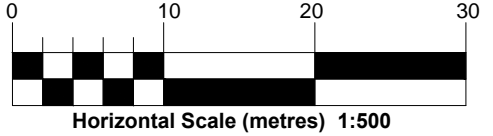
TITLE Site Location		PROJECT ESA for 28, 35 and 89 Sugarmill Road, Sapphire Beach		CLIENT Grimley, Martyn and Arianayagam	
FIGURE Figure 1					
SHEET 1 OF 1	ISSUE B	AUTHOR SD	DATE 3/11/21	SCALE 1:5000	PROJECT 2021-165



- LEGEND**
- Property Boundaries
  - Adjacent Lots
  - Intermittent waterways
  - Dams
  - Subdivision Boundary

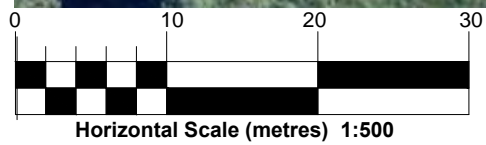
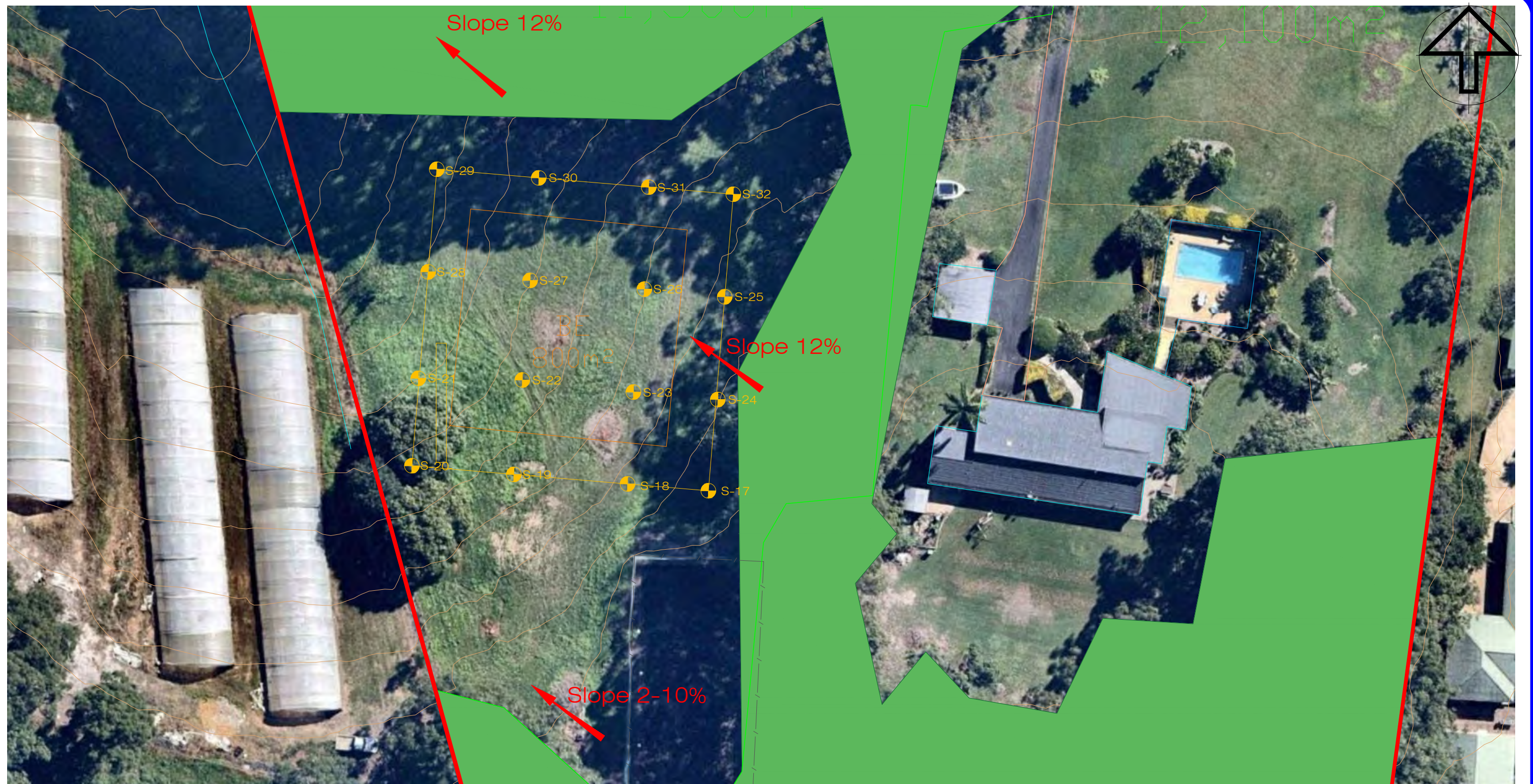
TITLE Proposed Subdivision Layout		FIGURE Figure 2	
PROJECT ESA for 28, 35 and 89 Sugarmill Road Road, Sapphire Beach		SHEET 1 OF 1	ISSUE A
AUTHOR SD	DATE 3/11/21	SCALE 1:2,000	PROJECT 2021-165
CLIENT Grimley, Arianayagam & Martyn			





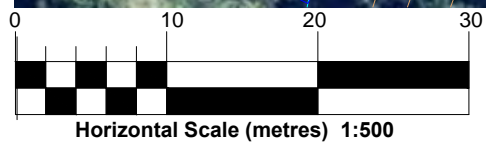
LEGEND	
	Property Boundary
	Drainage Alignment
	Dam
	Contour Line (1m)
	Existing Building
	Existing Driveway
	Subdivision Boundary
	Slope Direction and Extent
	Proposed Building Envelope
	Approximate Sample Location

TITLE 28 Site Layout and Sample Locations		FIGURE Figure 3	
PROJECT ESA for 28, 35 and 89 Sugarmill Road Road, Sapphire Beach		SHEET 1 OF 1	ISSUE A
CLIENT Grimley, Arianayagam & Martyn		PROJECT 2021-165	
AUTHOR SD	DATE 3/11/21	SCALE 1:500	



- LEGEND**
- Property Boundary
  - Drainage Alignment
  - Dam
  - Contour Line (1m)
  - Existing Building
  - Existing Driveway
  - Subdivision Boundary
  - ↘ Slope % Slope Direction and Extent
  - Proposed Building Envelope
  - ⊕ Approximate Sample Location

<p><b>TITLE</b> 35 Site Layout and Sample Locations</p>			<p><b>FIGURE</b> Figure 4</p>	
<p><b>PROJECT</b> ESA for 28, 35 and 89 Sugarmill Road Road, Sapphire Beach</p>			<p><b>SHEET</b> 1 OF 1 <b>ISSUE</b> A</p>	
<p><b>AUTHOR</b> SD</p>			<p><b>CLIENT</b> Grimley, Arianayagam &amp; Martyn</p>	
<p><b>DATE</b> 3/11/21</p>		<p><b>SCALE</b> 1:500</p>		<p><b>PROJECT</b> 2021-165</p>



LEGEND	
	Property Boundary
	Drainage Alignment
	Dam
	Contour Line (1m)
	Existing Building
	Existing Driveway
	Subdivision Boundary
	Slope Direction and Extent
	Proposed Building Envelope
	Approximate Sample Location

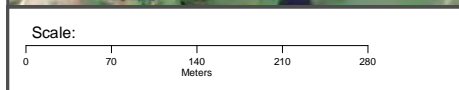
TITLE 89 Site Layout and Sample Locations			FIGURE Figure 5	
PROJECT ESA for 28, 35 and 89 Sugarmill Road Road, Sapphire Beach			SHEET 1 OF 1	
			ISSUE A	
CLIENT Grimley, Arianayagam & Martyn				
AUTHOR SD	DATE 3/11/21	SCALE 1:500	PROJECT 2021-165	

# APPENDIX A

---

## Aerial Imagery 2021

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



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Coordinate System:  
GDA 1994 MGA Zone 56



Date: 21 May 2021

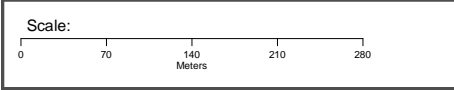
Aerial Imagery 2016

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



**Legend**

-  Site Boundary
-  Buffer 150m



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Coordinate System:  
GDA 1994 MGA Zone 56

Date: 21 May 2021

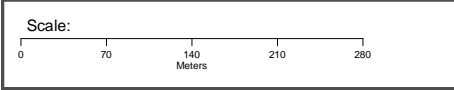
## Aerial Imagery 2010

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



**Legend**

- Site Boundary
- Buffer 150m



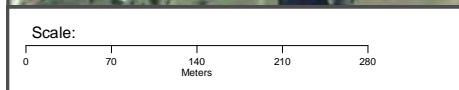
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Coordinate System:  
GDA 1994 MGA Zone 56

Date: 21 May 2021

## Aerial Imagery 2004

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



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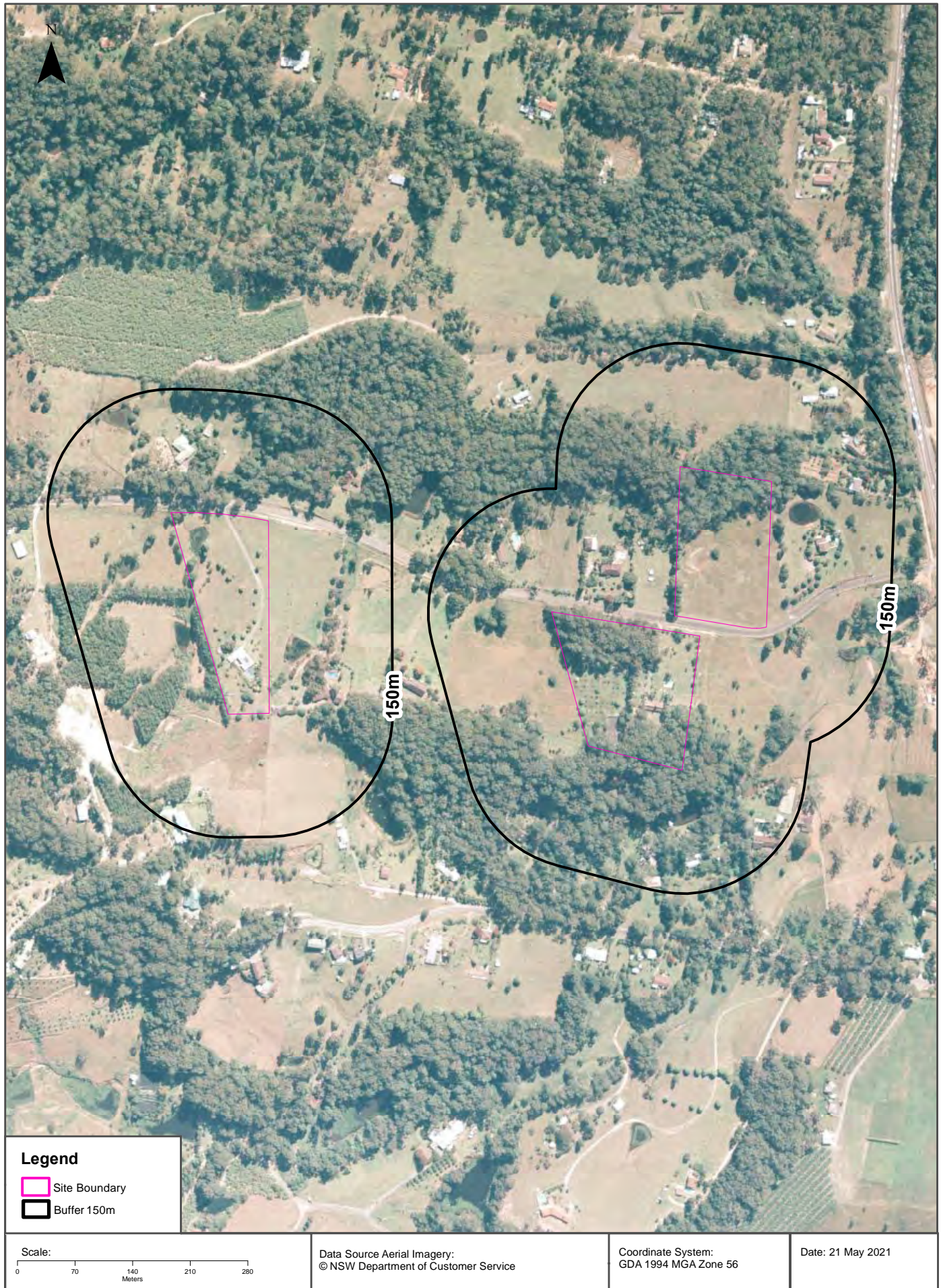
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GDA 1994 MGA Zone 56

Date: 21 May 2021



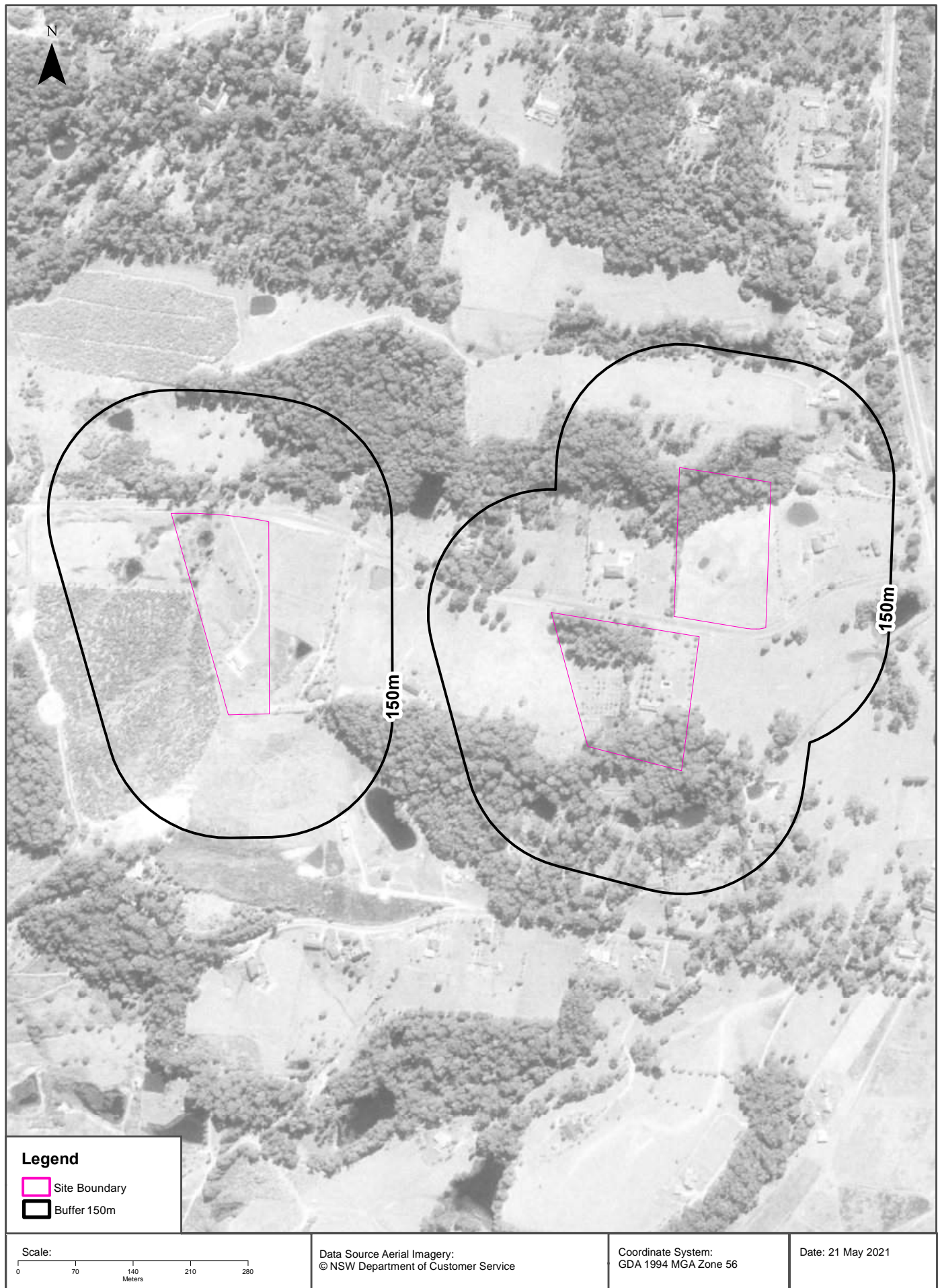
## Aerial Imagery 1994

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



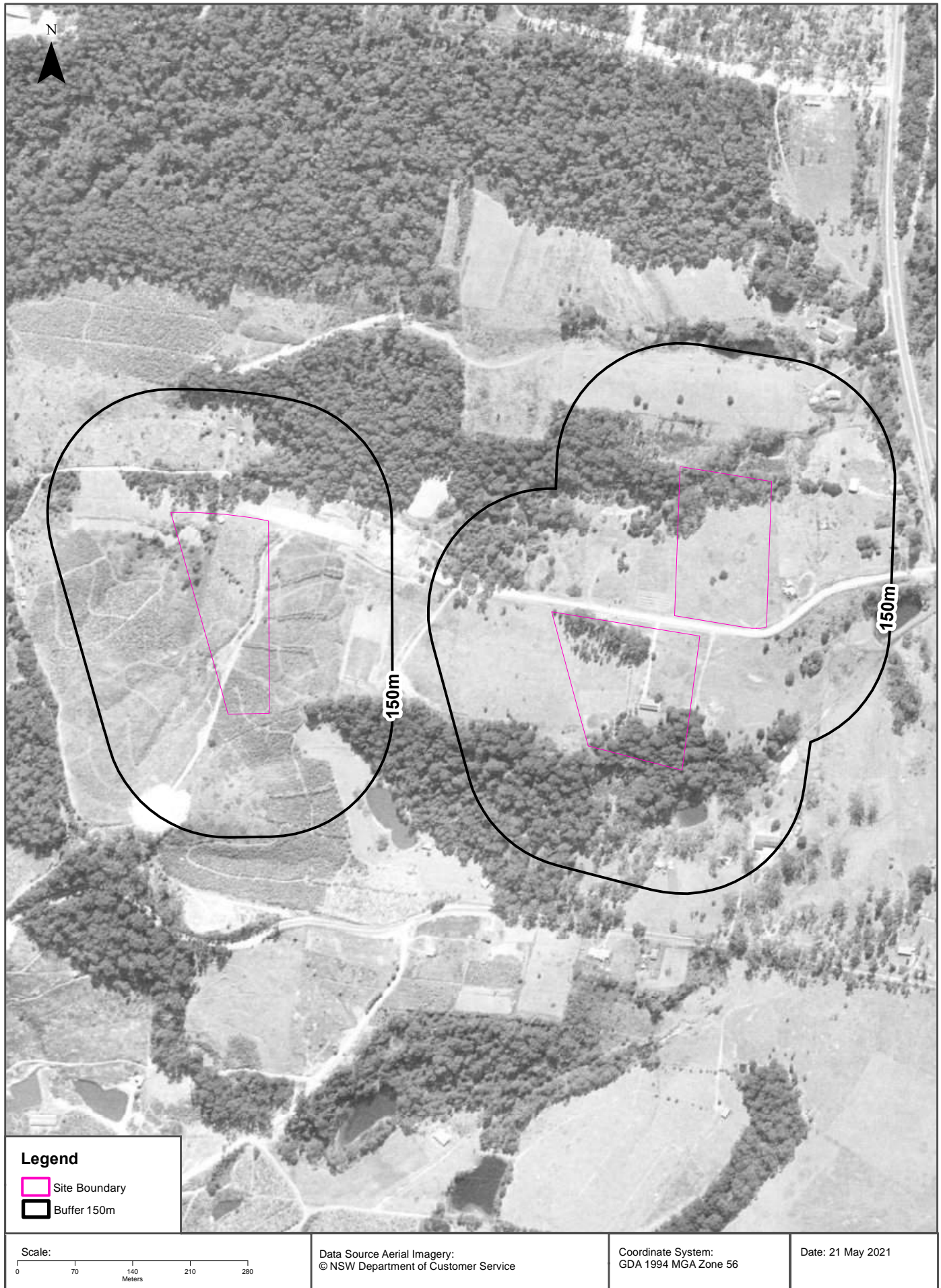
## Aerial Imagery 1984

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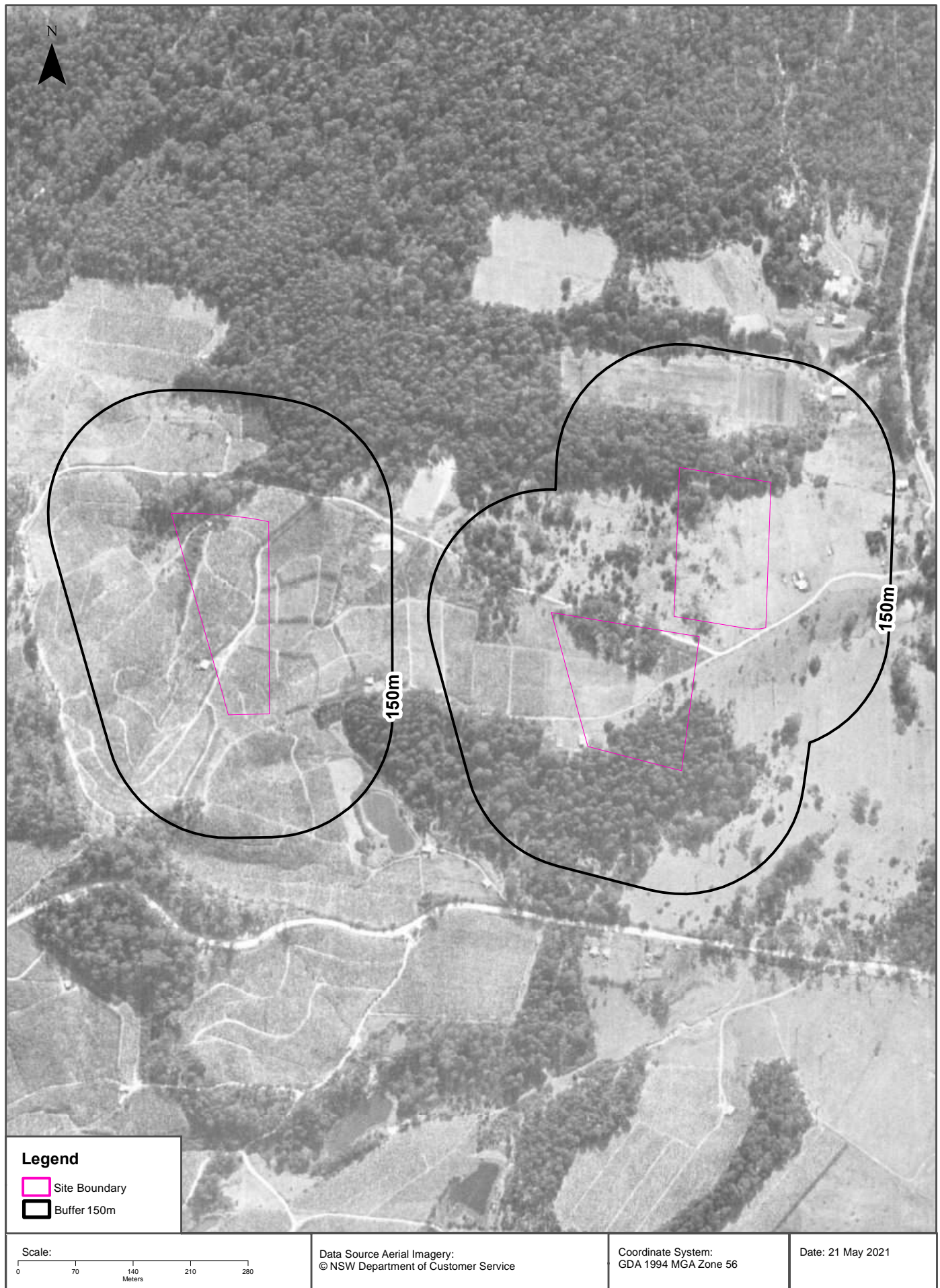
## Aerial Imagery 1974

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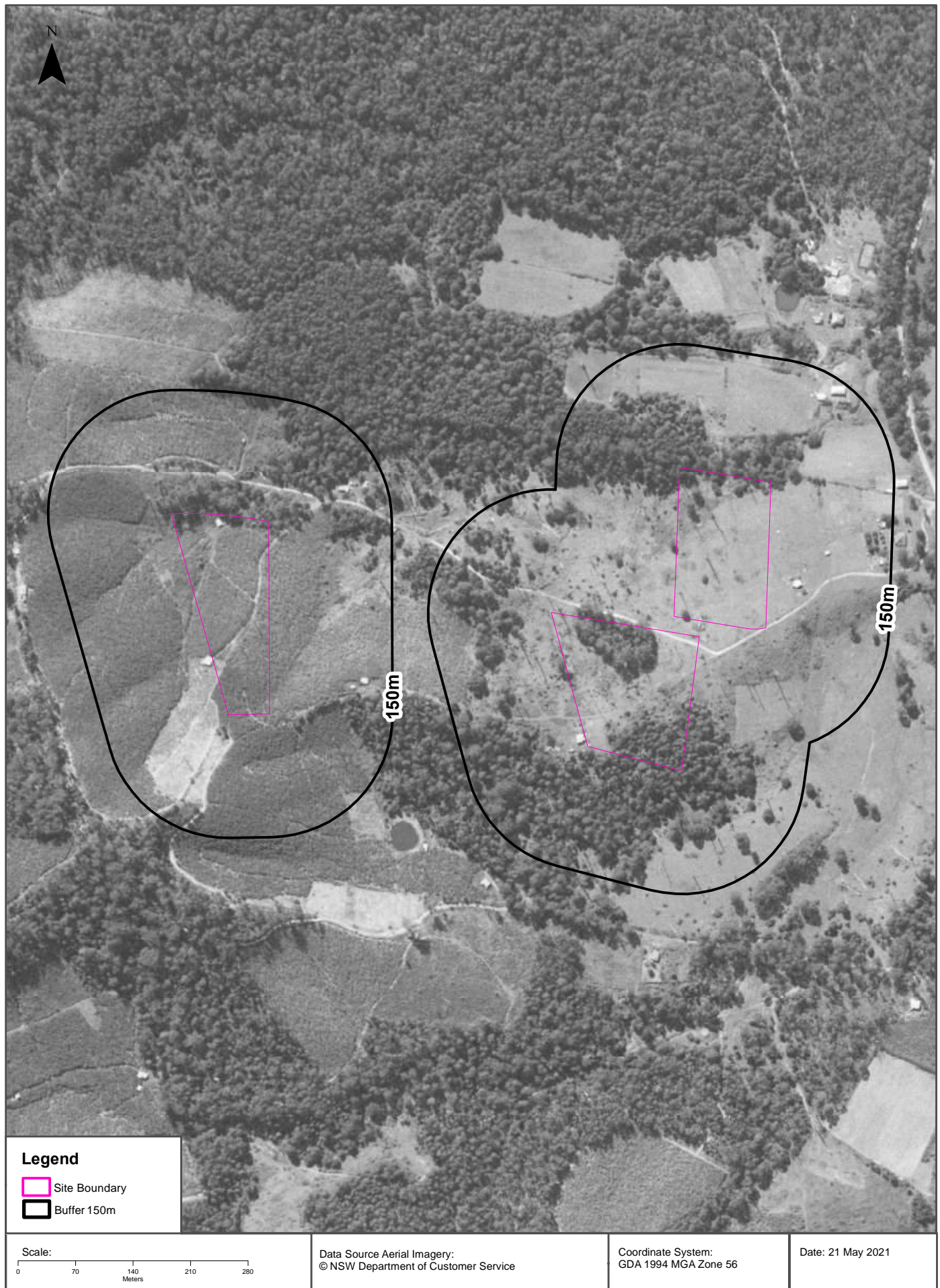
## Aerial Imagery 1964

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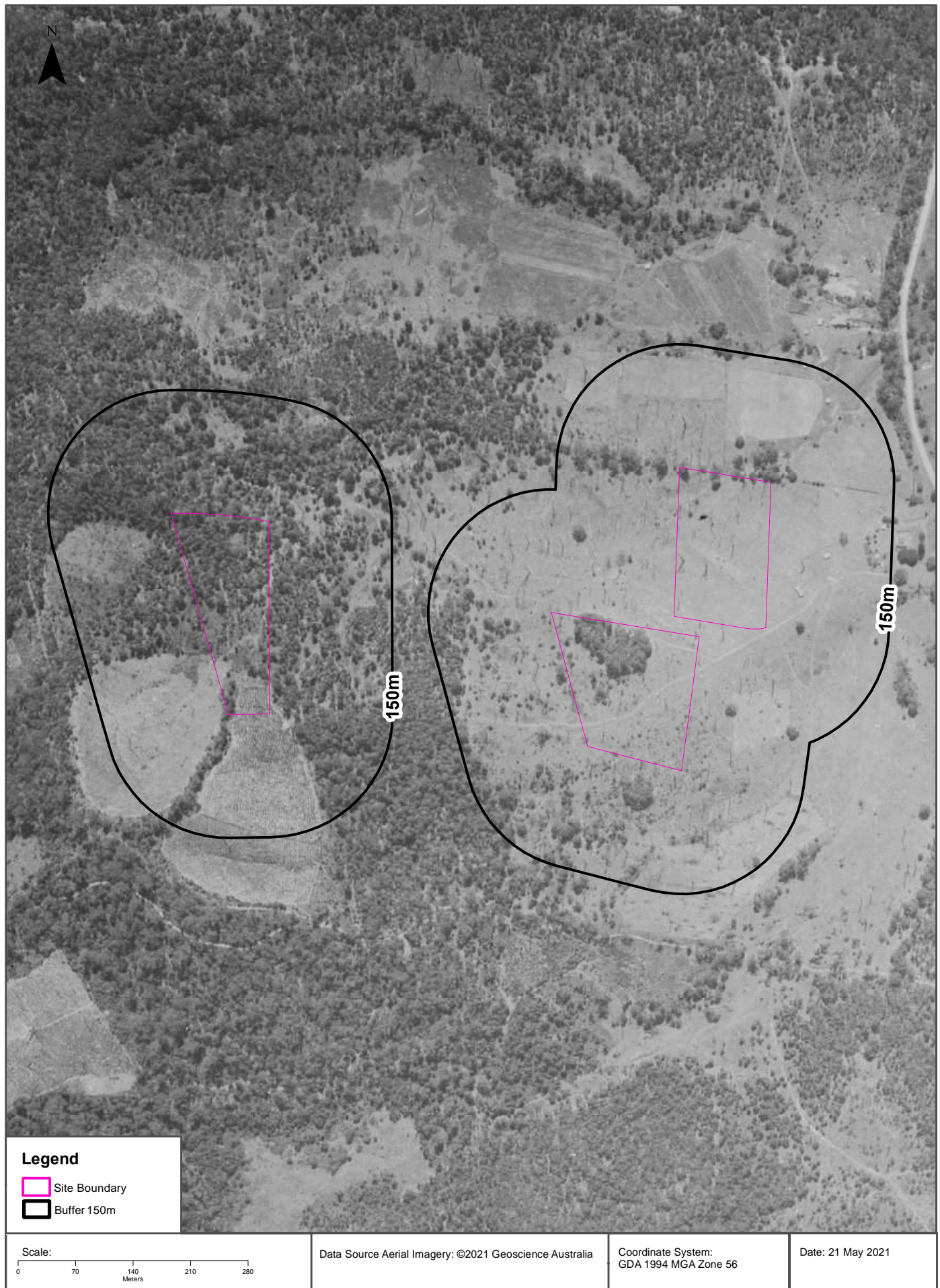
## Aerial Imagery 1956

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



## Aerial Imagery 1943

28, 35 and 89 Sugarmill Road, Sapphire Beach, NSW 2454



# APPENDIX B

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# Appendix 13 - Land Contamination Assessment

11518222

NEW SOUTH WALES

## CERTIFICATE OF TITLE PROPERTY ACT, 1900.



Vol. **11518** Fol. **222**

Crown Grant Vol.1789 Fol.174

Prior Title Vol.4640 Fol.245

Edition issued 12-2-1971

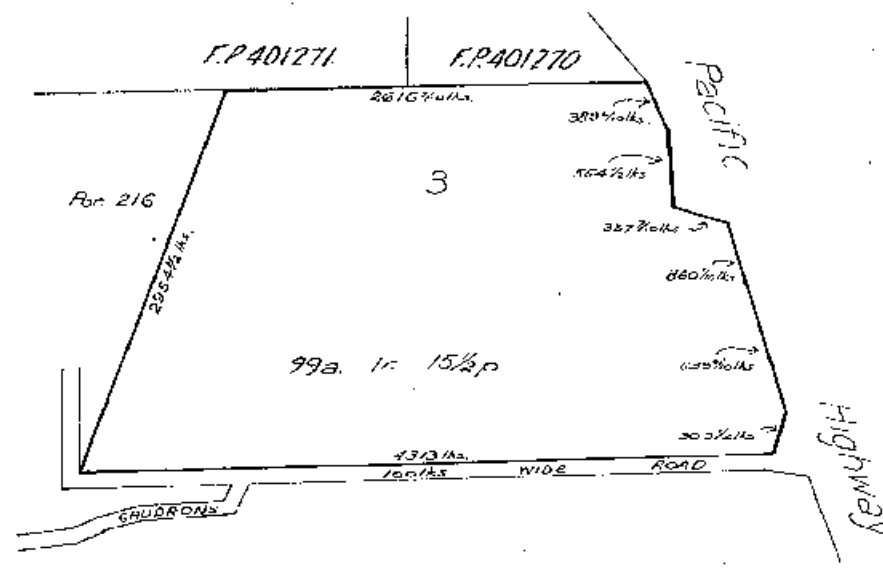


*Jawatson*  
Registrar-General.



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

### PLAN SHOWING LOCATION OF LAND



D.P.237460 *SMW*

Scale: 10 chains to one inch.

#### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 3 in Deposited Plan 237460 at Sapphire North in the Shire of Coffs Harbour Parish of Moonee and County of Fitzroy. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

#### FIRST SCHEDULE

**ESTELLA OLIVE MYRTLE MILNE, wife of Robert Milne of Moonee, near Coffs Harbour, Banana Grower.**

#### SECOND SCHEDULE

- Reservations and conditions, if any, contained in the Crown Grant above referred to.
- ~~Lease No. K423103 of Lot B in F.P. 370692 to Robert Henry Ball of Coffs Harbour Farmer and June Rita Ball, his wife, as Joint Tenants. Entered 26-9-1966. Expired 19-8-1971~~
- Lease No. K838789 of Lot 1 in Deposited Plan 500366 to David John Cormack of Coffs Harbour, Banana Grower. Entered 24-11-1967.
- Covenant created by Transfer No. L992889.

*Jawatson*  
Registrar General

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

11518 Fol. 222

(Page 1) Vol.


# Appendix 13 - Land Contamination Assessment

V. G. DE BLIGHT, GOVERNMENT PAINTER

## FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
<i>John James Blackburn of Limone, Chartered Accountant</i> This Deed is cancelled as to part and New Certificates of Title Vol. 11733 Fols 207 & 209	<i>Transfer</i>	<i>M330420</i>	<i>11-6-1971</i>	<i>1971</i>	<i>Jawataon</i>
issued on <i>15-12-1971</i> for <i>lots 1 to 3</i>	<i>Deposited Plan</i>	<i>550367</i>		<i>10-1-72</i>	<i>Jawataon</i>
This deed is cancelled as to <i>4th residue</i> New Certificates of Title have issued on <i>15-12-1971</i> for lots in <i>Deposited Plan No. 551884</i> as follows:- Lots <i>4 to 7</i> Vol. <i>11733</i> Fols <i>210 to 213</i> respectively.					

Jawataon



REGISTRAR GENERAL

## SECOND SCHEDULE (continued)

NATURE	INSTRUMENT		PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION	
	NUMBER	DATE					
<i>Mortgage</i>	<i>M330421</i>	<i>11-6-1971</i>	<i>to Estelle &amp; Olive Myrtle Milne of Moore, Married Woman</i>	<i>1971</i>	<i>Jawataon</i>		

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Reg: R023153 / Doc: CT 1518-222 CT / Rev: 17-Feb-2011 / NSM IIS / Pgs: ALL / Ptt: 27-May-2021 12:06 / Seq: 2 of 2  
 © Office of the Registrar-General / Src: INFOTRACK / Ref: Sepshire Beach

Vol. 11518 Fol. 222

(Page 2 of 2 pages)

# Appendix 13 - Land Contamination Assessment

11733213

## CERTIFICATE OF TITLE



NEW SOUTH WALES

174

PROPERTY ACT, 1900

Crown Grant Vol. 1789 Fol.

Vol. **11733** Fol. **213**  
Edition issued 15-12-1971

Prior Title Vol. 11518 Fol. 222



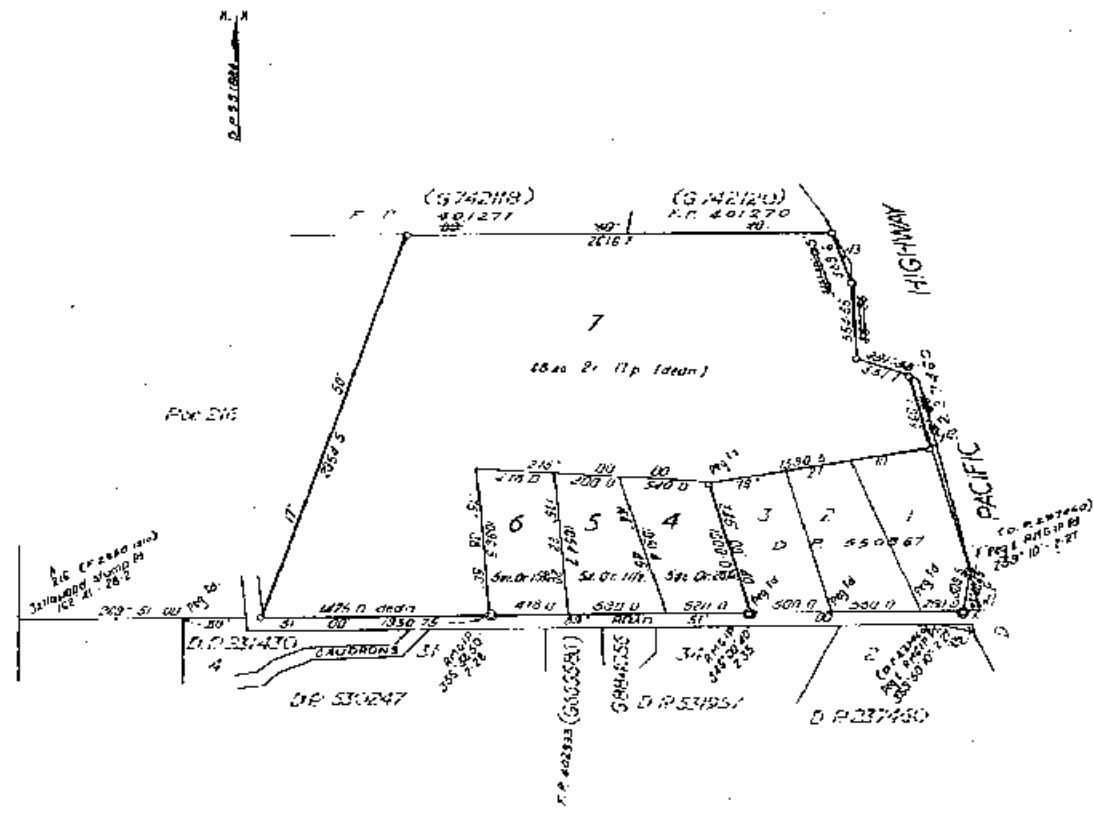
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

### CANCELLED

*Jawatson*  
Registrar General.



### PLAN SHOWING LOCATION OF LAND



#### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 7 in Deposited Plan 551884 at Sapphire North in the Shire of Coffs Harbour Parish of Moonee and County of Fitzroy. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

#### FIRST SCHEDULE

**JOHN SPENCE BLACKBURN** of Lismore, Chartered Accountant.

#### SECOND SCHEDULE

- Reservations and conditions, if any, contained in the Crown Grant above referred to.
- Lease No. K838789 of part to David John Cornack of Coffs Harbour, Banana Grower. Entered 24-11-1967.
- Mortgage created by Transfer No. L992889.
- Mortgage No. M330421 to Estella Olive Myrtle Milne of Moonee, Married Woman. Entered 19-8-1971.

*Jawatson*  
Registrar General

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

11733 213

(Page 1) Vol.



# Appendix 13 - Land Contamination Assessment

## CERTIFICATE OF TITLE



11833173

NEW SOUTH WALES

PROPERTY ACT, 1900

Vol. **11833** Fol. **173**  
Edition issued 18-5-1972

Crown Grant Vol. 1789 Fol. 174  
Prior Title Vol. 11733 Fol. 213



11833 173

(Page 1) Vol.

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

*Janetson*  
Registrar General.



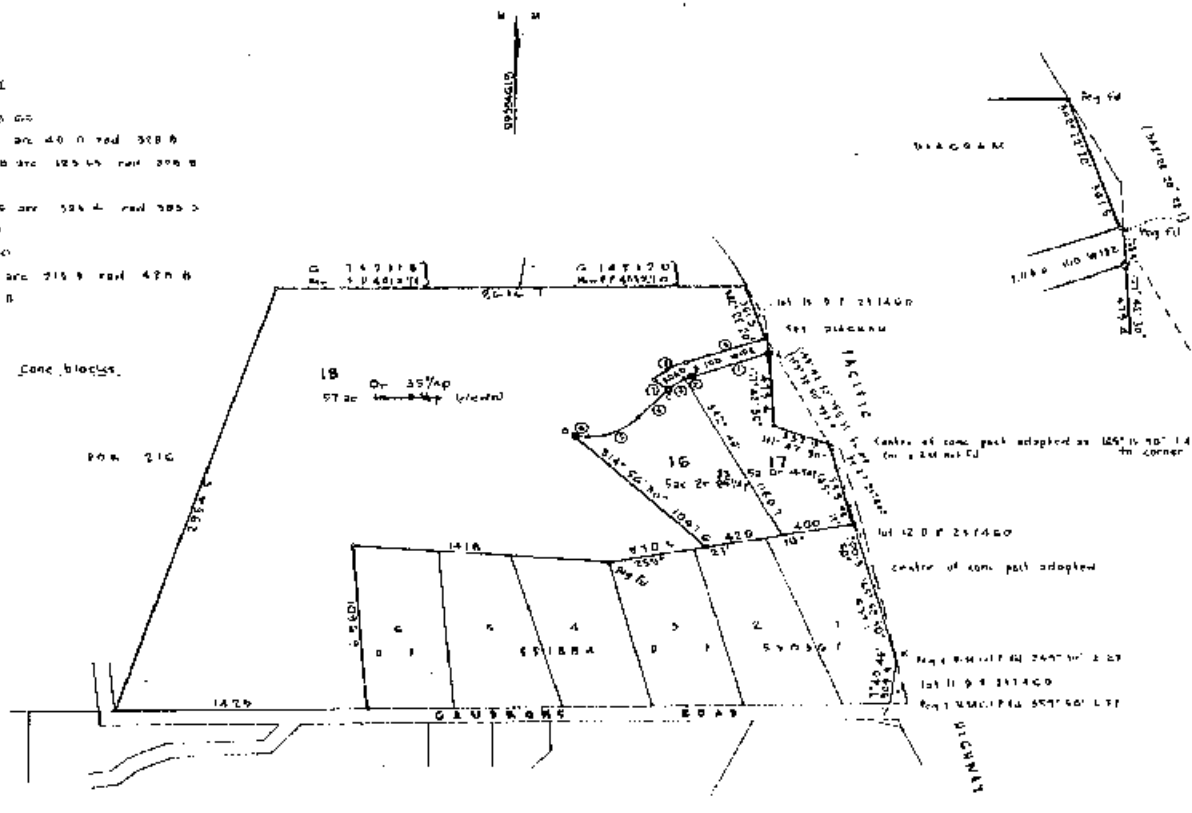
### PLAN SHOWING LOCATION OF LAND

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

- BOUNDARY**
- Ⓐ 10° 30' 448.00
  - Ⓑ 60° 56' 50" 44.0 arc. 40.0 rad. 318.8
  - Ⓒ 52° 50' 10" 182.0 arc. 125.45 rad. 298.8
  - Ⓓ 41° 30' 745.0
  - Ⓔ 24° 20' 40" 315.00 arc. 524.4 rad. 395.0
  - Ⓜ 80° 00' 70.0
  - Ⓝ 317° 50' 100.0
  - Ⓟ 45° 45' 211.1 arc. 215.9 rad. 429.8
  - Ⓠ 30° 00' 412.0

**PERMANENT MARKS**      **Corner blocks**

A	100° 00'	5.0
B	100° 00'	5.0
C	131° 30'	4.0
D	170° 50'	5.0



### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 18 in Deposited Plan 554619 at Sapphire North in the Shire of Coffs Harbour Parish of Moonee and County of Fitzroy. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

### FIRST SCHEDULE

JOHN SPENCE BLACKBURN, of Lismore, Chartered Accountant.

### SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Lease No. K838789 of part to David John Cormack, of Coffs Harbour, Banana Grower. Entered 24-11-1967.
3. Covenant created by Transfer No. L992889.
4. Mortgage No. M330421 to Estelle Olive Myrtle Milne, of Moonee, Married Woman. Entered 19-3-1971. *Dud. reg. 2214132*

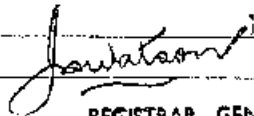
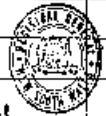
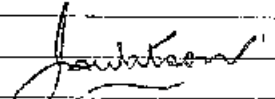

*Janetson*  
Registrar General.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

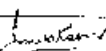
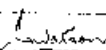
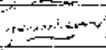


# Appendix 13 - Land Contamination Assessment

## FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar General	
	NATURE	NUMBER	DATE			
<p>This deed is cancelled as to the lots <del>(crossed)</del></p> <p>New Certificates of Title have issued on <u>29-9-73</u></p> <p>for lots in Deposited Plan No. <u>243972</u> as follows:</p> <p>Lots <u>7 to 15</u> Vol. <u>N3218</u> fol. <u>32638</u> respectively.</p>	<p>The residue of land in this folio comprises</p> <p>reced in DP 243972</p> <p>Entered 2nd October 73.</p> <div style="text-align: center;">   <p>REGISTRAR GENERAL</p> </div>					
  <p>REGISTRAR GENERAL</p>						

## SECOND SCHEDULE (continued)

NATURE	INSTRUMENT		PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
	NUMBER	DATE				
			The interest of the Council of the Shire of Carrs Harbour in the new Road shown on D.P. 243972	29.6.1973		
	N337009		Interest created pursuant to Section 88B Conveyancing Act 1917, by the registration of Deposited Plan 243972 to <u>James Management Pty. Ltd.</u>	29.6.1973		
<del>Mortgage</del>	<del>N32156</del>	<del>5.7.73</del>		<del>24.8.73</del>	<del></del>	

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

11833  
 173  
 26/10/73  
 1833-173

# Appendix 13 - Land Contamination Assessment

12221035

## CERTIFICATE OF TITLE PROPERTY ACT, 1900



Vol. **12221** Fol. **35**  
Edition issued 22-9-1973

NEW SOUTH WALES

Crown Grant Vol. 1789 Fol. 174  
Prior Title Vol. 11833 Fol. 173



12221 Fol. 35  
(Page 1) Vol.

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

**CANCELLED**  
*Jawatson*  
Registrar General.

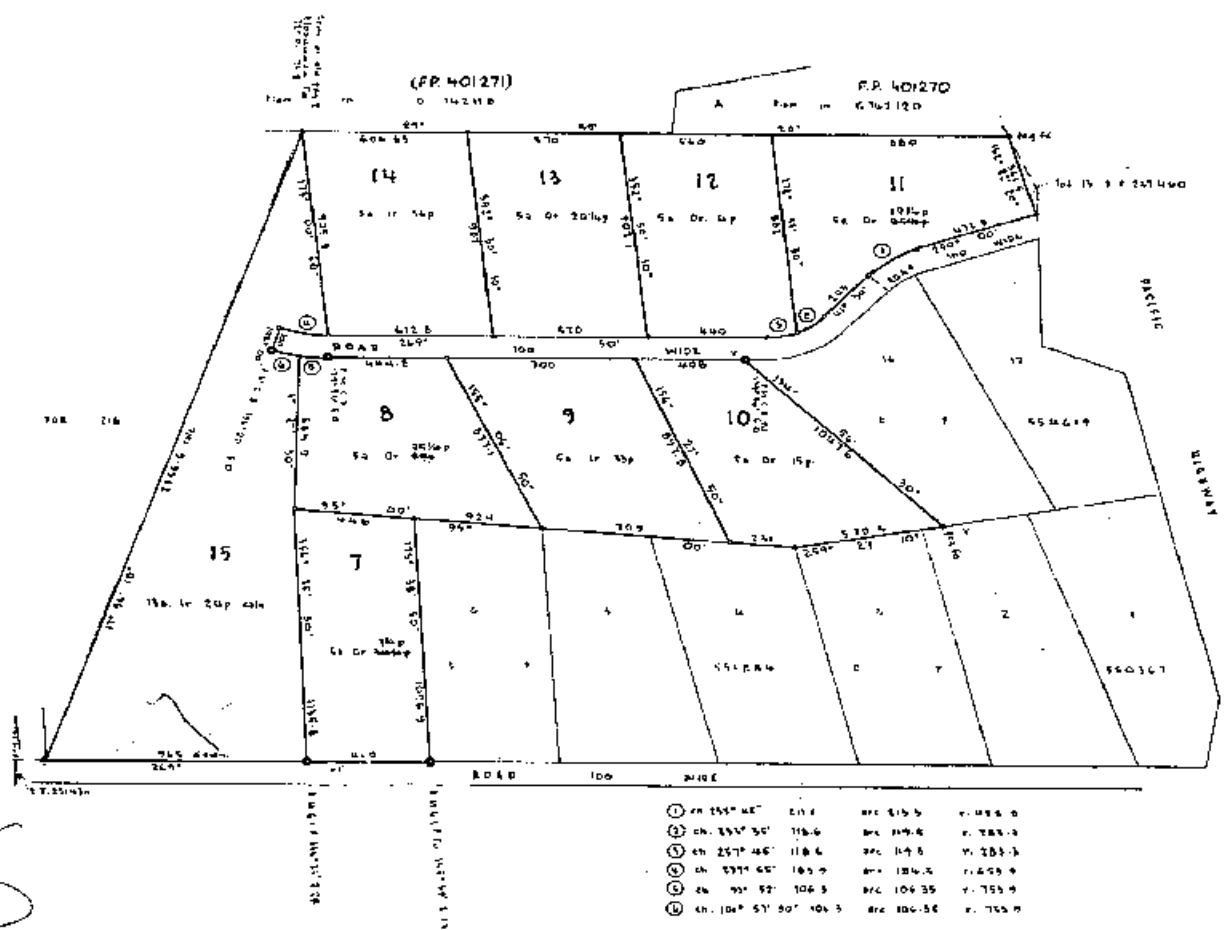


SEE AUTO FOLIO



### PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



#### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 12 in Deposited Plan 243972 at Sapphire North in the Shire of Coffs Harbour, Parish of Moonee and County of Fitzroy. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

#### FIRST SCHEDULE

~~JOHN SPENCE BLACKBURN of [Seal] Lismore, Chartered Accountant.~~

#### SECOND SCHEDULE

- Reservations and conditions, if any, contained in the Crown Grant above referred to.
- Covenant created by Transfer No. 1992889.
- Restriction as to user created by the registration of Deposited Plan 243972 See N337009.
- ~~Mortgage No. N314156 to Lismore Management [Seal] Limited. Entered 24-8-1973. Discharged N322466~~

*Jawatson*  
Registrar General.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TILES OFFICE.





NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

27/5/2021 10:52AM

FOLIO: 12/243972

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 12221 FOL 35

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/12/1987		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
10/5/2002	8583038	TRANSFER	EDITION 1
11/4/2003	9527621	MORTGAGE	
11/4/2003	9527622	MORTGAGE	EDITION 2
1/9/2005	AB737452	DISCHARGE OF MORTGAGE	
1/9/2005	AB737453	MORTGAGE	EDITION 3
14/3/2007	AC992348	DISCHARGE OF MORTGAGE	
14/3/2007	AC992349	TRANSFER	
14/3/2007	AC992350	MORTGAGE	EDITION 4
30/1/2009	AE469199	DISCHARGE OF MORTGAGE	
30/1/2009	AE469200	TRANSFER	
30/1/2009	AE469201	MORTGAGE	EDITION 5
7/7/2011	AG354433	DISCHARGE OF MORTGAGE	
7/7/2011	AG354434	MORTGAGE	EDITION 6
8/9/2018	AN695391	DEPARTMENTAL DEALING	EDITION 7 CORD ISSUED

\*\*\* END OF SEARCH \*\*\*

Form: 011  
Licence: 104/0096/96  
Edition: - 0011

# Appendix 13 Land Contamination Assessment

New South Wales  
Real Property Act 1900



8583038Q

PRIVACY NOTE: this information is legally required and will be made available to the public.

### STAMP DUTY

Office of State Revenue use only	CLIENT No. 4207049	STAMP No. 748
	STAMP DUTY \$2.00	SIGNATURE <i>[Signature]</i>
	TRANSACTION No. 021801	DATE 3-5-02
ASSESSMENT DETAILS:		

### (A) TORRENS TITLE

If appropriate, specify the part transferred

FOLIO IDENTIFIER 12/243972

### (B) LODGED BY

Delivery Box <i>1011N</i>	Name, Address or DX and Telephone <i>HL</i> Reference (optional):	R. D. & S. J. WILLIAMSON LEGAL & STRATA SEARCHERS G.P.O. BOX 2747 SYDNEY 1043 DX 439 SYDNEY Tel: 9544 1520 Fax: 9523 3732	CODES <b>T</b> <b>TW</b> (Sheriff)
------------------------------	---	---	---

### (C) TRANSFEROR

WOLODYMIR BEN AND MARIE ELIZABETH BEN

### (D) CONSIDERATION

The transferor acknowledges receipt of the consideration of \$ 185,000.00 and as regards

### (E) ESTATE

the land specified above transfers to the transferee an estate in fee simple.

### (F) SHARE TRANSFERRED

.....

### (G)

Encumbrances (if applicable): 1. .... 2. .... 3. ....

### (H) TRANSFEREE

KATHRYN ANN LUCOCK

TENANCY: NIL

### DATE

*3* / *5* / *2002*  
dd mm yyyy

(J) I certify that the transferor, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

Signature of witness:

*[Signature]*

Name of witness:

PETER TRAGARDY

Address of witness:

11 DALVEY ST  
HEIDELBERG 3084  
VIC.

I certify that the transferee, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

Signature of witness:

Name of witness:

Address of witness:

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of transferor:

*[Signature]*  
Marie E. Ben

Certified correct for the purposes of the Real Property Act 1900 by the transferee.

Signature of transferee:

's Solicitor

LINDY THISTLETON, Solicitor, Coffs Harbour  
If signed on the transferee's behalf by a solicitor or licensed conveyancer, insert the signatory's full name and capacity below:

All handwriting must be in block capitals.  
(2221-35) CT SIGHTED  
TO 1011N CANG. & RET.

Form: 01T  
Licence: 05-11-638  
Licensee: Softdocs  
Fishburn Watson O'Brien

**TRANSFER**  
New South Wales  
Real Property Act 1900



**AC992349Q**

**PRIVACY NOTE:** Section 31B of the Real Property Act 1900 (RP Act) authorises the use of this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

**STAMP DUTY**

Office of State Revenue use only	Office of State Revenue NSW Treasury Client No: 1719069 Duty: <u>2.00</u> Trans No: <u>4027524</u> Asst details: <u>WJ</u>	144
----------------------------------	--	-----

(A) **TORRENS TITLE** 12/243972

(B) <b>LODGED BY</b>	Document Collection Box <b>49R</b>	Name, Address or DX, Telephone and LLPN if any <b>LLPN: 126043B</b> <b>ANZ BANK</b> <b>C/- ESPREON</b> DX 885 SYDNEY 02 9210 0953 Reference (optional):	<b>CODE</b> <b>T</b> <b>TW</b> (Sheriff)
----------------------	------------------------------------	---	---

(C) **TRANSFEROR** KATHRYN ANN LUCOCK

(D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of \$ 655,000.00 and as regards

(E) **ESTATE** the land specified above transfers to the transferee an estate in fee simple.

(F) **SHARE TRANSFERRED**

(G) Encumbrances (if applicable):

(H) **TRANSFEEE** DEBORAH JANE GRIMLEY AND KIERAN GRIMLEY

(I) **TENANCY:** Joint Tenants

**DATE** .....

(J) I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of witness:

Name of witness:

Address of witness:

LINDY THISTLETON - SOLICITOR  
1/40 Little Street  
Coffs Harbour NSW 2450

Signature of transferor:

Certified correct for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature:

Signatory's name: JAY CLOWES  
Signatory's capacity: Solicitor for the transferee



FOLIO: 12/243972

SEARCH DATE	TIME	EDITION NO	DATE
27/5/2021	10:51 AM	7	8/9/2018

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO. CONTROL OF THE RIGHT TO DEAL IS HELD BY WESTPAC BANKING CORPORATION.

LAND

LOT 12 IN DEPOSITED PLAN 243972
AT SAPPHIRE NORTH
LOCAL GOVERNMENT AREA COFFS HARBOUR
PARISH OF MOONEE COUNTY OF FITZROY
TITLE DIAGRAM DP243972

FIRST SCHEDULE

KIERAN GRIMLEY (T AE469200)

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 L992889 COVENANT
3 DP243972 RESTRICTION(S) ON THE USE OF LAND
4 AG354434 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

# Appendix 13 - Land Contamination Assessment

## CERTIFICATE OF TITLE PROPERTY ACT, 1900



12221032

NEW SOUTH WALES

Vol. **12221** Fol. **32**

Crown Grant Vol. 1789 Fol. 174

Prior Title Vol. 11633 Fol. 173



Edition issued 22-9-1973

12221 32  
(Page 1) Vol. Fol.

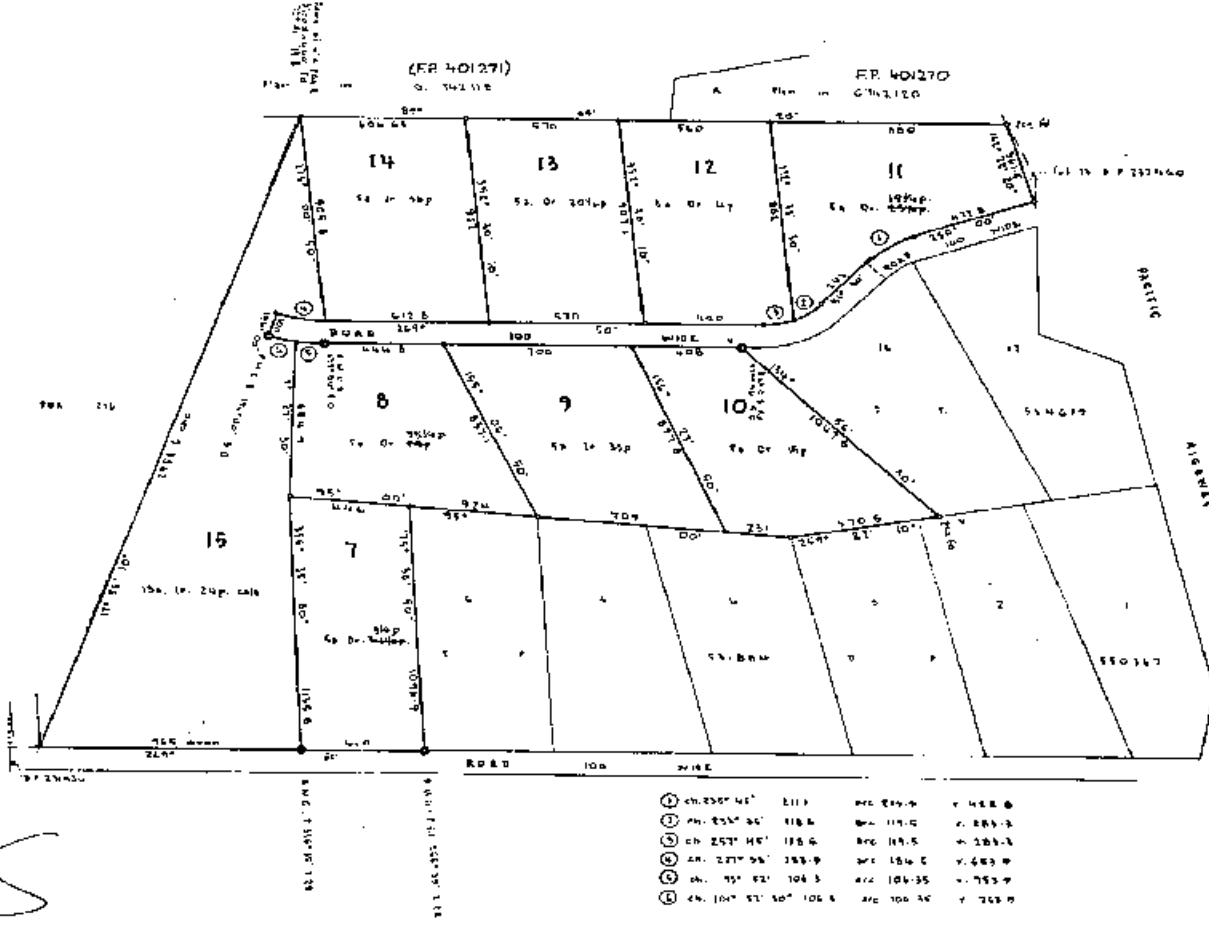
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

**CANCELLED**  
*Jawatson*  
Registrar General.  
**SEE AUTO FOLIO**



### PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



#### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 9 in Deposited Plan 243972 at Sapphire North in the Shire of Coffs Harbour, Parish of Moonee and County of Fitzroy. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

#### FIRST SCHEDULE

**JOHN SPENCE BLACKBURN of Lismore, Chartered Accountant.**

#### SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Covenant created by Transfer No. L992089.
3. Restriction as to user created by the registration of Deposited Plan 243972 see N337009.
4. Mortgage No. N314156 to Lismore Investment Pty. Limited. Entered 24 8 1973. Discharged N763152.

*Jawatson*  
Registrar General.

N632M7500  
Reg. Gen.  
21-10-1975

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.







NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

27/5/2021 10:54AM

FOLIO: 9/243972

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 12221 FOL 32

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/12/1987		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
25/3/1988	X454072	DISCHARGE OF MORTGAGE	
25/3/1988	X454073	TRANSFER	
25/3/1988	X454074	TRANSFER	EDITION 1
13/12/1988	DP786155	DEPOSITED PLAN	FOLIO CANCELLED

\*\*\* END OF SEARCH \*\*\*

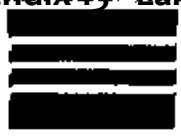
Appendix 13 Land Contamination Assessment

RP 13



STAMP DUTY

\$1-00



X454073

**TRANSFER**  
 REAL PROPERTY ACT, 1900

T

2	2 of 3	X
\$	257	

2/3

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
VOLUME 12221 FOLIO 32 NOW BEING <u>whole</u> OF LAND COMPRISED IN FOLIO/CT. <u>9/243972</u>	WHOLE	SAPPHIRE NORTH
TRANSFEROR Note (b) <u>JOHN SPENCE BLACKBURN</u>		

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

ESTATE Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 1.00 and Deed of Appointment of New Trustee and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d)

<u>JOBURN PTY. LIMITED</u> of 8A Carrington Street, Lismore	OFFICE USE ONLY  HIST
---	-----------------------------

TENANCY Note (e)

~~as joint tenants/tenants in common~~

PRIOR ENCUMBRANCES Note (f)

subject to the following PRIOR ENCUMBRANCES 1. Covenant created by Transfer No. L992889  
 2. Restriction as to User N331009 3. Mortgage No. N763153 - Surplus

DATE 23-3-1987

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g)

Signed in my presence by the transferor who is personally known to me

Signature of Witness  
E. J. STONE  
 Name of Witness (BLOCK LETTERS)  
SOLICITOR  
 Address and occupation of Witness  
LISMORE

Signature of Transferor

Signed in my presence by the transferee who is personally known to me

Note (g)

Signature of Witness  
 Name of Witness (BLOCK LETTERS)  
 Address and occupation of Witness

Signature of Transferee (E. J. Stone)  
 Solicitor for the Transferee

TO BE COMPLETED BY LODGING PARTY

MORRIS HAYES & EDGAR  
 OFFICE USE ONLY  
 DX 420 SYDNEY PH: 232-2411

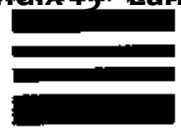
LODGED BY		LOCATION OF DOCUMENTS	
Morris, Hayes & Edgar LAW STATIONERS 99 ELIZABETH STREET SYDNEY DX 420 PG0265 232-2411 35 D		CT	OTHER
		<input checked="" type="checkbox"/>	Herewith <input checked="" type="checkbox"/>
			In L.T.O. with
Checked	Passed	Produced by	
<input checked="" type="checkbox"/>		REGISTERED	-19
Signed	Extra Fee	Secondary Directions	
		Delivery Directions	
		25 MAR 1987	

A29740

Appendix 13 - Land Contamination Assessment

RP 13

STAMP DUTY



X454074

\$1-00

**TRANSFER**  
 REAL PROPERTY ACT, 1900

T

3	3 <sup>01</sup> 3	Y
\$	300	

R 3/3

DESCRIPTION OF LAND Note (a)	Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
	VOLUME 12221 FOLIO 32  NOW BEING <u>whole</u> OF LAND COMPRISED IN FOLIO/CT. <u>9/243972</u>	WHOLE	SAPPHIRE NORTH
TRANSFEROR Note (b)	JOBURN PTY. LIMITED		

ESTATE Note (c) (the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 1.00 and Deed of Appointment of New Trustee and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d)	FLEURON PTY. LIMITED of 8A Carrington Street, Lismore	OFFICE USE ONLY  S
TENANCY Note (e)	as joint tenants/tenants in common	

PRIOR ENCUMBRANCES Note (f) subject to the following PRIOR ENCUMBRANCES 1. Covenant created by Transfer No. L992889  
 2. Restriction as to User No. N331009 3. Mortgage No. N763153 *Surplus*

DATE 23 - 3 - 1987

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g) Signed in my presence by the transferor who is personally known to me  
 THE COMMON SEAL of JOBURN PTY. LIMITED )  
 was hereunto affixed in accordance )  
 with the Articles of Association of )  
 the Corporation in the presence of: )



Name of Witness (BLOCK LETTERS)  
 Address and occupation of Witness  
 Secretary

Signature of Transferor  
 Director

Note (q) Signed in my presence by the transferee who is personally known to me  
 Signature of Witness  
 Name of Witness (BLOCK LETTERS)  
 Address and occupation of Witness

Signature of Transferee  
 (E.J. Stone)  
 Solicitor for the Transferee

TO BE COMPLETED BY LODGING PARTY  
 Notes (h) and (i)  
 MORRIS HAYES & EDGAR  
 DX 420 SYDNEY PH: 232-2411

LODGED BY MORRIS, HAYES & EDGAR LAW STATIONERS 99 ELIZABETH STREET SYDNEY DX 420 A60265 232-2411 31 D	LOCATION OF DOCUMENTS	
	CT	OTHER
Delivery Box Number	Checked	Passed
	<i>Colace</i>	
	Signed	Extra Fee
REGISTERED	-19	
	25 MAR 1988	
Secondary Directions		
Delivery Directions	CT	LP

A09740

# Appendix 13 - Land Contamination Assessment

12221033

## CERTIFICATE OF TITLE PROPERTY ACT, 1900



NEW SOUTH WALES

Vol. **12221** Fol. **33**

Crown Grant Vol. 1789 Fol. 174

Prior Title Vol. 11833 Fol. 173

Edition issued 22-9-1973



12221 33

(Page 1) Vol.

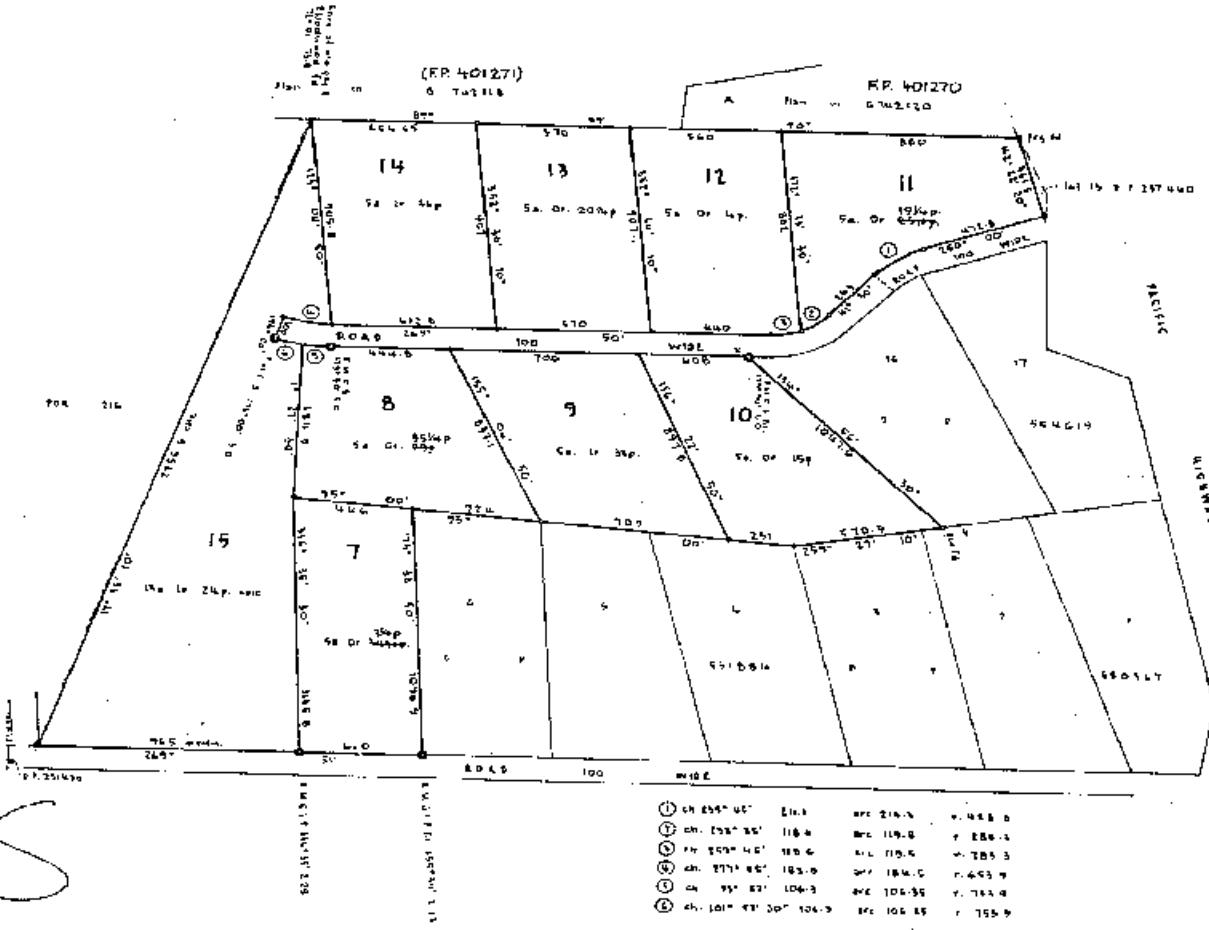
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

**CANCELLED**  
*Jawataon*  
Registrar General.  
**SEE AUTO FOLIO**



### PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



①	On 255° 45'	118.4	Bc 218.4	7 448.0
②	On 155° 35'	118.4	Bc 118.4	7 288.0
③	On 255° 45'	118.4	Bc 118.4	7 288.0
④	On 277° 45'	104.9	Bc 104.9	7 448.0
⑤	On 101° 45' 30"	104.9	Bc 104.9	7 288.0

### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 10 in Deposited Plan 243972 at Sapphire North in the Shire of Coffs Harbour, Parish of Moonee and County of Pittaroy. EXCEPTING THEREBOUT the minerals reserved by the Crown Grant.

### FIRST SCHEDULE

~~JOHN SPENCE BLACKBURN, Lismore, Chartered Accountant.~~

### SECOND SCHEDULE

- Reservations and conditions, if any, contained in the Crown Grant above referred to.
- Covenant created by Transfer No. L992889.
- Restrictions as to user created by the registration of Deposited Plan 243972 (See N331009).
- Mortgage No. N114156 to Lismore Kana... Pty. Limited. Entered 24-8-1973. Discharged N834087.

*Jawataon*  
Registrar General.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TILES OFFICE.





NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

27/5/2021 10:53AM

FOLIO: 10/243972

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 12221 FOL 33

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/12/1987		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
7/11/1988	X963600	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 1
8/12/1988	Y36033	TRANSFER	
8/12/1988	Y36034	TRANSFER	EDITION 2
13/12/1988	DP786155	DEPOSITED PLAN	FOLIO CANCELLED

\*\*\* END OF SEARCH \*\*\*



Y036033



STAMP DUTY

\$1-00

**TRANSFER**  
REAL PROPERTY ACT, 1900

CB	1 of 2	X
\$	42	

R1/2

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
VOLUME 12221 FOLIO 33 New Energy 17 10/24372	WHOLE	SAPPHIRE NORTH

TRANSFEROR  
Note (b)

JOHN SPENCE BLACKBURN

ESTATE  
Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 1.00 and Deed of Appointment of New Trustee and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE  
Note (d)

JOBURN PTY. LIMITED of 8A Carrington Street, Lismore

OFFICE USE ONLY

HIST

TENANCY  
Note (e)

as joint tenants/tenants in common

PRIOR ENCUMBRANCES  
Note (f)

subject to the following PRIOR ENCUMBRANCES 1. Covenant created by Transfer No. L992889  
2. Restriction as to User N331009

DATE 23-3-1987

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION  
Note (g)

Signed in my presence by the transferor who is personally known to me

*[Signature]*  
Signature of Witness

E. J. STONE  
Name of Witness (BLOCK LETTERS)

SOLICITOR  
Address and occupation of Witness

LISMORE  
Address and occupation of Witness

*[Signature]*  
Signature of Transferor

Signed in my presence by the transferee who is personally known to me

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address and occupation of Witness

226

*[Signature]* (E.J. Stone)  
Solicitor for the Transferee

TO BE COMPLETED BY LODGING PARTY  
MORRIS HAYES & EDGAR  
DX 420 SYDNEY PH: 231-231  
FFEE USE ONLY

LODGED BY		Morris, Hayes & Edgar LAW STATIONERS 99 ELIZABETH STREET - SYDNEY DX 420 AHSBET 232-2411 3SD		LOCATION OF DOCUMENTS	
CT	OTHER	Checked	Passed	Herewith	Produced by
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Delivery Box Number	REGISTERED	Secondary Directions			
Checked E.C.T.	Passed	Delivery Directions			
Signed	Extra Fee				

- 8 DEC 1988

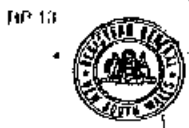
ADA740



Appendix 43 Land Contamination Assessment



Y036034



STAMP DUTY  
 [Redacted Stamp]

DEED OF APPOINTMENT  
 \$1-00

**TRANSFER**  
 REAL PROPERTY ACT, 1900

3 202 X  
 \$ 42

22/2

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
VOLUME 12221 FOLIO 33 Now being F.F. 10/242972.	WHOLE	SAPPHIRE NORTH

TRANSFEROR Note (b)  
**JOBURN PTY. LIMITED**

ESTATE Note (c)  
 (the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$1.00 and Deed of Appointment of New Trustee and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEE Note (d)  
**FLEURON PTY. LIMITED of 8A Carrington Street, Lismore**

TENANCY Note (e)  
 as joint-tenants/tenants-in-common

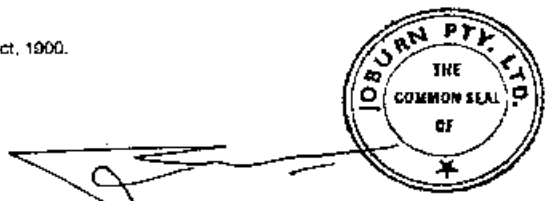
OFFICE USE ONLY  
 S

PRIOR ENCUMBRANCES Note (f)  
 subject to the following PRIOR ENCUMBRANCES 1. Covenant created by Transfer No. L992889  
 2. Restriction as to User N331009

DATE **23-3-1987**

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g)  
 Signed in my presence by the transferor who is personally known to me  
**THE COMMON SEAL of JOBURN PTY. LIMITED**  
 was hereunto affixed in accordance with the Articles of Association of the Corporation in the presence of:  
 Secretary



Director

Note (g)  
 Signed in my presence by the transferee who is personally known to me  
 Signature of Witness  
 Name of Witness (BLOCK LETTERS)  
 Address and occupation of Witness

(E.J. Stone)  
 Solicitor for the Transferee

TO BE COMPLETED BY LODGING PARTY  
 Notes (h)  
**MORRIS HAYES & EDGAR**  
 99 ELIZABETH STREET  
 SYDNEY NSW 2000  
 PH: 232-2411

LODGED BY		LOCATION OF DOCUMENTS	
CT	OTHER	CT	OTHER
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Morris, Hayes &amp; Edgar</b> LAW STATIONERS 99 ELIZABETH STREET SYDNEY DX 420 SYDNEY 232-2411 Delivery Box Number 35 D		Herewith	In L.T.O. with
Checked CC	Passed	Produced by	
Signed	Extra Fee	Secondary Directions	
		Delivery Directions	CT 35D
			REGISTERED -19
			- 8 DEC 1980

A09740



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

27/5/2021 10:51AM

FOLIO: 91/786155

First Title(s): VOL 1789 FOL 174

Prior Title(s): 9-10/243972

Recorded	Number	Type of Instrument	C.T. Issue
-----	-----	-----	-----
14/12/1988	DP786155	DEPOSITED PLAN	FOLIO CREATED EDITION 1
9/3/1990	DP643044	DEPOSITED PLAN	EDITION 2
8/5/1990	Y977625	TRANSFER	EDITION 3
15/6/1990	Z58028	MORTGAGE	EDITION 4
11/10/1991	Z978976	DISCHARGE OF MORTGAGE	
11/10/1991	Z978977	MORTGAGE	EDITION 5
24/5/1996	2181344	DISCHARGE OF MORTGAGE	
24/5/1996	2181345	TRANSFER	EDITION 6
31/5/2000	6826949	TRANSFER	
31/5/2000	6826950	MORTGAGE	EDITION 7
9/9/2018	AN695392	DEPARTMENTAL DEALING	EDITION 8 CORD ISSUED
7/1/2019	AN981019	DISCHARGE OF MORTGAGE	
7/1/2019	AN981020	TRANSFER	
7/1/2019	AN981021	MORTGAGE	EDITION 9 CORD ISSUED

\*\*\* END OF SEARCH \*\*\*

Appendix 13 Land Contamination Assessment

RP 13 STAMP DUTY



Y977625



\$1/

**TRANSFER**  
REAL PROPERTY ACT, 1900

CB	1 of 1	X	R1
\$ 44			1

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
CERTIFICATE OF TITLE FOLIO IDENTIFIER 91/786155	WHOLE	MOONBEE
TRANSFEROR Note (b) FLEURON PTY. LIMITED 8A Carrington Street, Lismore		

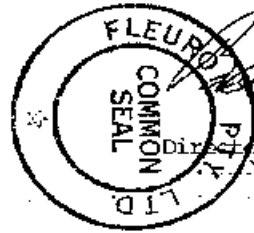
ESTATE Note (c) (The abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 354,000.00 and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d) ROSEMARY EILEEN DE MARTIN	OFFICE USE ONLY S
TENANCY Note (e) as joint tenants in common	

PRIOR ENCUMBRANCES Note (f) subject to the following PRIOR ENCUMBRANCES 1. DATE 2ND APRIL, 1990.

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g) Signed in my presence by the transferor who is personally known to me THE COMMON SEAL of FLEURON PTY. LIMITED was hereunto affixed by Order of the Board in the presence of:



Director  
*[Signature]*  
Secretary  
*[Signature]*

Name of Witness (BLOCK LETTERS) Secretary  
Address and occupation of Witness

Signed in my presence by the transferee who is personally known to me

Signature of Witness  
Name of Witness (BLOCK LETTERS)  
Address and occupation of Witness

SOLICITOR FOR  
*[Signature]*  
Neil Tucker

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

LODGED BY <b>Morris, Hayes &amp; Edgar</b> LAW STATIONERS 99 ELIZABETH STREET SYDNEY AM1190 DX 420 232-2411 Ref: 35 D	LOCATION OF DOCUMENTS	
	CT	OTHER
Checked EB21	Passed	Herewith.
Signed	Extra Fee	In L.T.O. with
REGISTERED	191089 0125 04 200006113/03	Produced by
Secondary Directions		
Delivery Directions	\$1.00	CT 35D

OFFICE USE ONLY  
\$528  
A  
407

97-01T



12

1

# TRANSFER

Real Property Act, 1900



2181345 W

Office of State Revenue use only

\$2.00

N.S.W. STAMP DUTY  
180496 9029 04 20110022703

**(A) LAND TRANSFERRED**

Show no more than 20 References to Title.  
If appropriate, specify the share transferred.

**POLIO IDENTIFIER 91/786155**

**(B) LODGED BY**

L.T.O. Box  <b>38W</b>	Name, Address or DX and Telephone <b>V. J. RALPH &amp; CO LEVEL 19, M.L.G. CENTRE MARTIN PLACE, SYDNEY DX 347 SYDNEY FAX: 233 8645 PH: 233 8088</b>  REFERENCE (max. 15 characters): <b>38W CMC K</b>
------------------------------	---

**(C) TRANSFEROR**

**ROSEMARY EILEEN DE MARTIN**

**(D) acknowledges receipt of the consideration of \$315,00.00**

and as regards the land specified above transfers to the Transferee an estate in fee simple

**(E) subject to the following ENCUMBRANCES** 1. .... 2. .... 3. ....

**(F) TRANSFEREE**

<b>T</b> <b>TS</b> (s713 LGA) <b>TW</b> (Sheriff)	<b>DOUGAL BRUCE MALCOLM and LAURA LESLEY ANN MALCOLM</b>  <b>TENANCY: Joint</b>
---	---

**(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. DATED .....**

Signed in my presence by the Transferor who is personally known to me.

*mully*  
Signature of Witness

*Michelle Whearty*  
Name of Witness (BLOCK LETTERS)

*1137 Little Street Coffs Harbour*  
Address of Witness

*Rosemary De Martin*  
Signature of Transferor

Signed in my presence by the Transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

*Brian Finlayson*  
Signature of Transferor

**Brian Finlayson**  
Solicitor for

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)

6

Form: 97-011  
Licence: HERR/0798/97

# TRANSFER

New South Wales  
Real Property Act 1900



Office of State Revenue (N.S.W. TREASURY)  
1719069 144  
ALTERATION NOTED

Office of State Revenue (N.S.W. TREASURY)  
CLIENT No. 1719069  
STAMP DUTY \$2.00  
TRANSACTION No. 001901  
ASSESSMENT DETAILS:  
STAMP No. 144  
SIGNATURE [Signature]  
DATE 3 April 2000

(A) **LAND TRANSFERRED**  
If appropriate, specify the share or part transferred

FOLIO IDENTIFIER 91/786155

(B) **LODGED BY**

L.T.O. Box  45A	Name, Address or DX and Telephone <b>NATIONAL AUSTRALIA BANK</b> Princes Highway in NSW Reference (15 characters maximum):  00780704
-----------------------	--

(C) **TRANSFEROR DOUGAL BRUCE MALCOLM AND LAURA LESLEY ANN MALCOLM**

(D) acknowledges receipt of the consideration of \$306,000.00  
and as regards the land specified above transfers to the transferee an estate in fee simple

(E) Encumbrances (if applicable) 1..... 2..... 3.....

(F) **TRANSFEEEE**

<b>T TS (s713LGA) TW (Sheriff)</b>	<b>IAN S MARTYN PTY LIMITED ACN 006 416 897</b>  <b>TENANCY:</b>
--	--

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. DATE ~~3 April 2000~~

Signed in my presence by the transferor who is personally known to me.

[Signature]  
Signature of Witness  
**LEANNE FRANCES ALLSOP**  
Name of Witness (BLOCK LETTERS)  
37 Little Street, Coffs Harbour  
Address of Witness

[Signature]  
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

.....  
Signature of Witness  
.....  
Name of Witness (BLOCK LETTERS)  
.....  
Address of Witness

[Signature]  
Signature of Transferee's Solicitor  
CHRISTOPHER MARTIN O'BRIEN  
If signed on the transferee's behalf by a solicitor or licensed conveyancer, show the signatory's full name in block letters.



FOLIO: 91/786155

SEARCH DATE	TIME	EDITION NO	DATE
27/5/2021	10:51 AM	9	7/1/2019

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO. CONTROL OF THE RIGHT TO DEAL IS HELD BY NATIONAL AUSTRALIA BANK LIMITED.

LAND

LOT 91 IN DEPOSITED PLAN 786155 AT KORORO LOCAL GOVERNMENT AREA COFFS HARBOUR PARISH OF MOONEE COUNTY OF FITZROY TITLE DIAGRAM DP786155

FIRST SCHEDULE

IAN STEWART MARTYN STEPHANIE MAREE MARTYN AS JOINT TENANTS

(T AN981020)

SECOND SCHEDULE (5 NOTIFICATIONS)

- 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
- 2 L992889 COVENANT
- 3 DP243972 RESTRICTION(S) ON THE USE OF LAND
- 4 DP643044 EASEMENT FOR WATER SUPPLY 1 WIDE AND 2 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED
- 5 AN981021 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

\* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.



Appendix 13 - Land Contamination Assessment



09-10-11

G. 2

NEW SOUTH WALES

CERTIFICATE OF TITLE

DEEDS ACT, 1900, as amended.

(For title prior to 1st edition see Volume 6711 Folio 96 For Grant see description.)

Vol. 9403 Fol. 113

1st Edition issued 28.3.1963

1272857

CANCELLED



CANCELLED

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

*[Signature]*

*[Signature]*

Registrar-General.



ESTATE AND LAND REFERRED TO

1) Estate in Fee Simple in that piece of land in the Shire of Dorrigo Parish of Moonee and County of Murray being Portion 216 granted on 16th July 1940 by Crown Grant Volume 5155 Folio 119 Excepting thereout the road 100 links wide shown in the plan hereon and the minerals reserved by the Crown Grant.

*[Signature]*  
Registrar General

FIRST SCHEDULE (Continued overleaf)

~~ESTELLA OLIVE LYRELL MILNE, wife of Robert Milne of Goresba, Mill Head.~~

*[Signature]*  
Registrar General

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Restrictions on Transfer for Use Section 272-272 Crown Lands Consolidation Act ~~Cancelled N30671~~
3. Lease No. G175022 to Carlo Baldi of Coffs Harbour, Banana Grower of part of the land above described (together with Right of Way) Entered 28.3.1955. *Expired*
4. Lease No. G175023 to Carlo Baldi of Coffs Harbour, Banana Grower of part of land above described (together with Right of Way) Entered 28.12.1955. *Expired*
5. Lease No. G911354 to Hector Casar Baldi of Coffs Harbour, Banana Grower of part of the land above described. Entered 23.9.1958. *Expired 18.4.1967.*
6. Lease No. H216382 to John Henry Shipway of Coffs Harbour, Banana Grower of part of the land above described. Entered 1.6.1959. *Expired 19-7-1971*
7. Lease No. H161627 to Francis Bernard Hunter of Moonee, Banana Grower of part of the land above described. Entered 21.4.1961. *Expired 19-8-1971*
8. Lease No. H321778 to ~~John~~ Noel Mackay of Coffs Harbour, Banana Grower of part of the land above described. Entered 21.4.1961. *Expired Surrendered K759137.*
9. Lease No. H564482 to Kaye Barton Hill of Coffs Harbour Jetty, Banana Grower and John Edward Orman of Coffs Harbour Jetty, Banana Grower of part of the land above described. Entered 21.4.1961. *Expired*
10. Lease No. H847749 to John Michael Sackett Enevoldson of Coffs Harbour, Banana Grower of the land comprised in Lease Registered No. H330793 (together with Right) Entered 2.7.1962. *Expired*
11. Lease No. H881160 to Ruby Dorothy May Jackson of Moonee, Married Woman of Lot 5 in Deposited Plan 204703 (together with Right) Entered 2.7.1962. *Expired*
12. Lease No. J59188 to Francis James Benfield of Coffs Harbour, Banana Grower and Lois June Benfield, his wife of the land comprised in Lease Registered No. G693293. Entered 28.9.1962. *Expired*
13. Lease No. J172592 to William Herbert Cormack of Coffs Harbour, Banana Grower of Lot 2 in Deposited Plan 500365. Entered 21.12.1962. *Surrendered K 200567*
14. Lease No. J269401 to Percival Charles Sippel of Korora, Banana Grower of part of the land above described. Entered 21.2.1963. *Expired*

*[Signature]*  
Registrar General

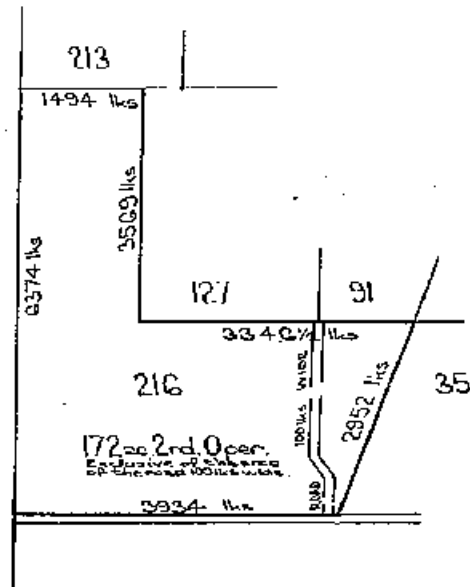
NOTE: ENTRIES THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE



PLAN SHOWING LOCATION OF LAND.



Scale: 20 Chains to one inch.

J272857  
JR

# Appendix 13 - Land Contamination Assessment

FIRST SCHEDULE (continued)					
REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
<p><i>John Spence Blackburn of Ligonue, Chartered Accountant</i></p> <p>This deed is cancelled as to <del>the whole of road</del> <sup>PART</sup> <del>of road</del> <sup>21-10-1965 Reg. Gen.</sup></p> <p>New Certificates of Title have issued on 16.04.1965 for lots in Deposited Plan No 249273 as follows:</p> <p>lots 15, 22, 23 Vol. 12764 5130, 5037, 5038, 5039</p> <p style="text-align: right;"><i>J. Jackson</i> REGISTRAR GENERAL</p>	Transfer	M330420	14.7.1971	19-8-1971	<i>J. Jackson</i>
<p>The residue of land in this folio comprise road and lot 23.</p> <p style="text-align: center;"><i>J. Jackson</i> REGISTRAR GENERAL</p>					
<p><i>N/a's missing on 00200274. (No Segs) to be registered with this reference.</i></p>					

SECOND SCHEDULE (continued)							
NATURE	INSTRUMENT NUMBER	DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION	
Lease	K37464	26-5-1965	to Gary Hayward of Coffe Harbour Bannana grower of the land comprised in lease registered No 1156482 together with rights	12-7-1965	<i>J. Jackson</i>	Expired	19-8-1971
Lease	K200560	21-11-1965	of lot 2 to David John Comack of Coffe Harbour Bannana grower of lot 2 in Deposited Plan No 500365	11-2-1966	<i>J. Jackson</i>	SURRENDERED	K833788
Lease	K293647	22-3-1966	to Percival Charles Lippel of Koro-naru Coffe Harbour, Bannana grower of the land comprised in lease registered No. 1369001	13-4-1966	<i>J. Jackson</i>	Expired	19-8-1971
Lease	K423103	29-7-1966	to Robert Henry Ball of Coffe Harbour, Farmer and Jane Alice Ball his wife as joint tenants of land comprised in lease registered Nos. 1330793 and 1330792 together with certain rights	26-9-1966	<i>J. Jackson</i>	Expired	19-8-1971
Lease	K423104	29-7-1966	to Ruby Dorothy Mary Jackson of Koro-naru Bannana grower of lot 6 in Deposited Plan No 204703 together with certain rights	26-9-1966	<i>J. Jackson</i>	Expired	19-8-1971
Lease	K423105	29-7-1966	to Helen Jim Franklin of Koro-naru Bannana grower and her Margaret and John his wife as joint tenants of land comprised in lease registered No 175022 together with right of way	26-9-1966	<i>J. Jackson</i>	Expired	19-8-1971


**NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED**

Reg: R022214 / Doc: CT 09403-113 CT / Rev: 11-Jan-2011 / NSM IRS / Pgs: All / Exp: 27-May-2021 10:56 / Seq: 3 of 6  
 Office of the Registrar General / Sig: INFOTRACK / Ref: Sapphire Beach  
 K37464  
 K200560  
 K293647  
 K423103  
 K423104  
 K423105  
 N747872  
 Vol. 9403 Fol. 113

Appendix 13 - Land Contamination Assessment

Vol. 9403 Fol. 113

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
<p>This deed is cancelled as to <u>the residue or part</u>                      New Certificates of Title have issued on <u>21-10-1975</u>                      for lots in Deposited Plan No. <u>249274</u> as follows:-                      Lots <u>5 to 25</u> Vol. <u>12904</u> Nos <u>70 to 90</u> respectively.</p> <p><i>Jackson</i>                      REGISTRAR GENERAL</p> 					

SECOND SCHEDULE (continued)

NATURE	INSTRUMENT		PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION	
	NUMBER	DATE					
Lease	K459136	14-1-1967	of the land comprised in lease Registered No. 7343821 (together with right of way) to <u>Neil M. Kinnon M.P.</u> of <u>South, Banana Grower</u>	19-9-1967	<i>Jackson</i>	Expired	N631333
Lease	K459137	25-1-1967	of the land comprised in lease Registered No. 6911354 to <u>Neil M. Kinnon M.P.</u> of <u>South, Banana Grower</u>	19-9-1967	<i>Jackson</i>	Expired	N631331
Lease	K459138	14-1-1967	of the land comprised in lease Registered No. 4321772 to <u>Laurence James Reid</u> of <u>Leffs Harbour, Banana Grower and his wife</u>	19-9-1967	<i>Jackson</i>	Expired	N631332
Lease	K438789	27-9-1967	to <u>David John Bennett</u> of <u>Leffs Harbour, Banana Grower</u> of <u>lots in Deposited Plan No. 500305</u>	2-8-1972	<i>Jackson</i>	Expired	N747870
Mortgage	N330421	11-6-1971	to <u>Estelle Olive Myrtle Wilson</u> of <u>Moorea, Mor. Isd. Woman</u>	19-7-1971	<i>Jackson</i>	Discharged	N314155
Request	M840727		<u>Right of way or easement</u> in the land above described created by the registration of deposited Plan No. 5554910	2-8-1972	<i>Jackson</i>	X	
Mortgage	N314156	5-7-1971	<u>to Kinross Management Pty. Limited</u>	2-7-1973	<i>Jackson</i>		

(Page 4 of 4 pages)

Reg: R022214 / Doc: CT 09403-113 CT / Rev: 11-Jan-2011 / NSM IRS / Pgs: All / Prt: 27-May-2021 10:56 / Sgd: 4 of 6  
 Office of the Registrar-General / SIG: INFOTRACK / Ref: SAPHIRE Beach





Appendix 13 - Land Contamination Assessment

12324/195

NEW SOUTH WALES  
Stamp Duty  
Fine  
Cents  
STAMP DUTY  
SYDNEY, N.S.W.

New South Wales



Vol. 12324 Fol. 195  
Registered 4-2-1974  
CANCELLED Registrar General

No. 1973/3801

GRANT UPON PURCHASE OF UNNECESSARY ROAD  
(UNDER THE PUBLIC ROADS ACT, 1902)

BY WARRANT the SECOND, by the Grace of God Queen of Australia and Her other Heirs and Territories, Head of the Commonwealth:-  
Do All to whom these Presents shall come, Greetings:-

Whereas JOHN SPENCE BLACKBURN of Lismore in Our State of New South Wales

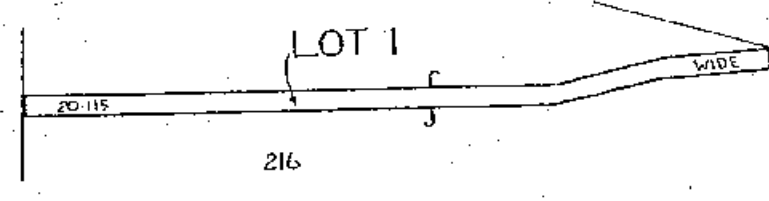
(hereinafter called the GRANTEE) being the owner of land adjoining the land hereinafter described and intended to be hereby granted limited to the surface thereof and to a depth of twenty metres below such surface (formerly road which was duly closed in accordance with the provisions of the Public Roads Act, 1902) agreed to have such land granted to him upon payment of the sum of two thousand one hundred and fourteen dollars sixty three cents being the value thereof agreed upon between Our Minister for Lands and the GRANTEE AND WHEREAS the said sum has been duly paid and all things required by law to be done to entitle the GRANTEE to a Grant of the fee simple of the said land Subject to the Reservations Exceptions and Conditions hereinafter contained have been done and performed NOW THESE PRESENTS WITNESS That in consideration of the premises WE DO HEREBY GRANT unto the GRANTEE Subject to the Reservations Exceptions and Conditions hereinafter contained ALL THAT parcel of land containing by admeasurement one point one four one hectares being the same more or less situated in the County of Fitzroy Parish of Moonee being the clogged road reserved through portion 216 and being Lot 1 in Deposited Plan No. 246364

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

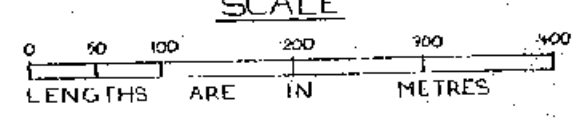
12324 Vol. 195 (Page 1) Vol.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

NORTH



AREA: 1.41 ha



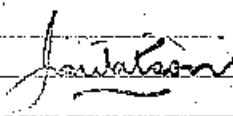

As per Plan hereon SAVING AND EXCEPTING unto Us Our Heirs and Successors all that part of the said land which lies at a depth greater than twenty metres below the surface thereof To Hold unto the GRANTEE in fee simple. Provided Nevertheless AND WE DO ALSO HEREBY RESERVE AND EXCEPT unto Us Our Heirs and Successors all minerals which the land hereby granted contains with full power and authority for Us Our Heirs and Successors and such person or persons as shall from time to time be authorised by Us or Them to enter upon the land hereby granted and to search for mine dig and remove the said minerals And also all such parts and so much of the land hereby granted as may hereafter be required for public ways in over and through the same to be set out by Our Governor for the time being of Our said State or some person by him authorised in that respect with full power for Us Our Heirs and Successors and for Our Governor as aforesaid by such person or persons as shall be by Us Them or him authorised in that behalf to make and conduct all such public ways And the right of full and free ingress egress and regress into out of and upon the land hereby granted for the several purposes aforesaid or any of them Provided Further AND IT IS EXPRESSLY DECLARED that mining and operations may have been and may be carried on upon and in the land below the land hereby granted and the lands adjoining the land hereby granted and the land below the same and metals and minerals may have been and may be removed therefrom and that these presents are made upon and subject to the condition that neither the GRANTEE nor his assigns in title shall be entitled to make or prosecute any claim for damages or to take any proceedings either by way of injunction or otherwise against Us Our Heirs or Successors or the Government of Our said State or any lessee or lessees under any Mining Act or Acts of Our said State or his or their executors administrators or assigns for or in respect of any damage or loss occasioned by the letting down subsidence or lateral movement of the land hereby granted or otherwise howsoever by reason of the following acts and matters that is to say by reason of Us Our Heirs or Successors or the Government of Our said State or any person or persons on Our Their or its behalf or any lessee or lessees as aforesaid or his or their executors administrators or assigns having worked or now or hereafter working any mines or having carried on or now or hereafter carrying on mining operations or having searched for worked or removed or now or hereafter searching for working winning or removing any metals or minerals under in or from the land below the land hereby granted or on in under or from any other lands situated laterally to the land hereby granted and the land below the same and whether on or below the surface of such other lands Provided Lastly AND WE DO HEREBY EXPRESSLY RESERVE unto Us Our Heirs and Successors the liberty and authority by reason of the acts and matters aforesaid or in the course thereof for Us Our Heirs and Successors and the Government of Our said State and any person on Our Their or its behalf and any lessee or lessees as aforesaid and his or their executors administrators and assigns to from time to time let down without payment of any compensation whatsoever any part of the land hereby granted and/or of the surface thereof in Testimony Whereof We have caused this Our Grant to be Sealed with the Seal of Our said State

Witness Our Governor of Our State of New South Wales and its Dependencies in the Commonwealth of Australia, at Sydney in Our said State, this eighteenth day of January in the twenty second year of Our Reign and in the year of Our Lord one Thousand nine hundred and ninety four  
John R. Best  
Governor

# Appendix 13 - Land Contamination Assessment

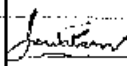
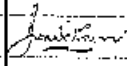
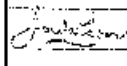
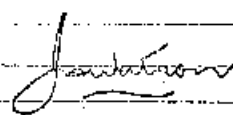

U. C. N. EIGHT, GOVERNMENT PRINTER

## SCHEDULE OF REGISTERED PROPRIETORS

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
<p>This deed is cancelled as to <u>the whole</u> PART.</p> <p>New Certificates of Title have issued on <u>21-10-1975</u></p> <p>for lots in <u>Deposited</u> Plan No. <u>249273</u> as follows:-</p> <p>Lots <u>28 15 20 22</u> Vol. <u>12764</u> Fols <u>30 37</u> respectively.</p> <div style="text-align: right; margin-top: 20px;">     <b>REGISTRAR GENERAL</b> </div>					

DP 249273  
PROCESSED  
WHOLE DEED  
21-10-75

## SCHEDULE OF ENCUMBRANCES ETC.

NATURE	INSTRUMENT		PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION	
	NUMBER	DATE					
			THE INTEREST OF THE COUNCIL OF THE SHIRE OF COFFS HARBOUR IN THE NEW ROAD SHOWN ON D.P. 249273 Interests created pursuant to Section 88B Conveyancing Act, 1914, by the registration of Deposited Plan 249273	1-4-1975			
			Interests created pursuant to Section 88B Conveyancing Act, 1914, by the registration of Deposited Plan 249274	1-4-1975			
88B INST	P. 249958	-	Interests created pursuant to Section 88B Conveyancing Act, 1914, by the registration of Deposited Plan 249274	15-8-1975			
<div style="border: 1px solid black; padding: 10px; margin: 0 auto; width: 80%;"> <p>This deed is cancelled as to <u>the residue</u>.</p> <p>New Certificates of Title have issued on <u>21-10-1975</u></p> <p>for lots in <u>Deposited</u> Plan No. <u>249274</u> as follows:-</p> <p>Lots <u>5 to 25</u> Vol. <u>12904</u> Fols <u>70 to 90</u> respectively.</p> <div style="text-align: right; margin-top: 20px;">     <b>REGISTRAR GENERAL</b> </div> </div>							

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Reg: R022213 / Doc: CT 12324-195 CT / Rev: 10-Jan-2011 / NSW LRS / Pgs: All / Ptt: 27-May-2021 10:56 / Seq: 2 of 2  
Office of the Registrar-General / SIC: INFOTRACK / Ref: Sapphire Beach

Vol. 12324 Fol 195

(Page 2 of 2 pages)

# Appendix 13 - Land Contamination Assessment

12764032

NEW SOUTH WALES

## CERTIFICATE OF TITLE

PROPERTY ACT, 1900



Crown Grants Vol. 5155 Fol.111  
Vol.12324 Fol.195

Vol. 12764 Fol. 32

Prior Titles Vol. 9403 Fol.113  
Vol.12324 Fol.195

Edition issued 16-4-1975



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

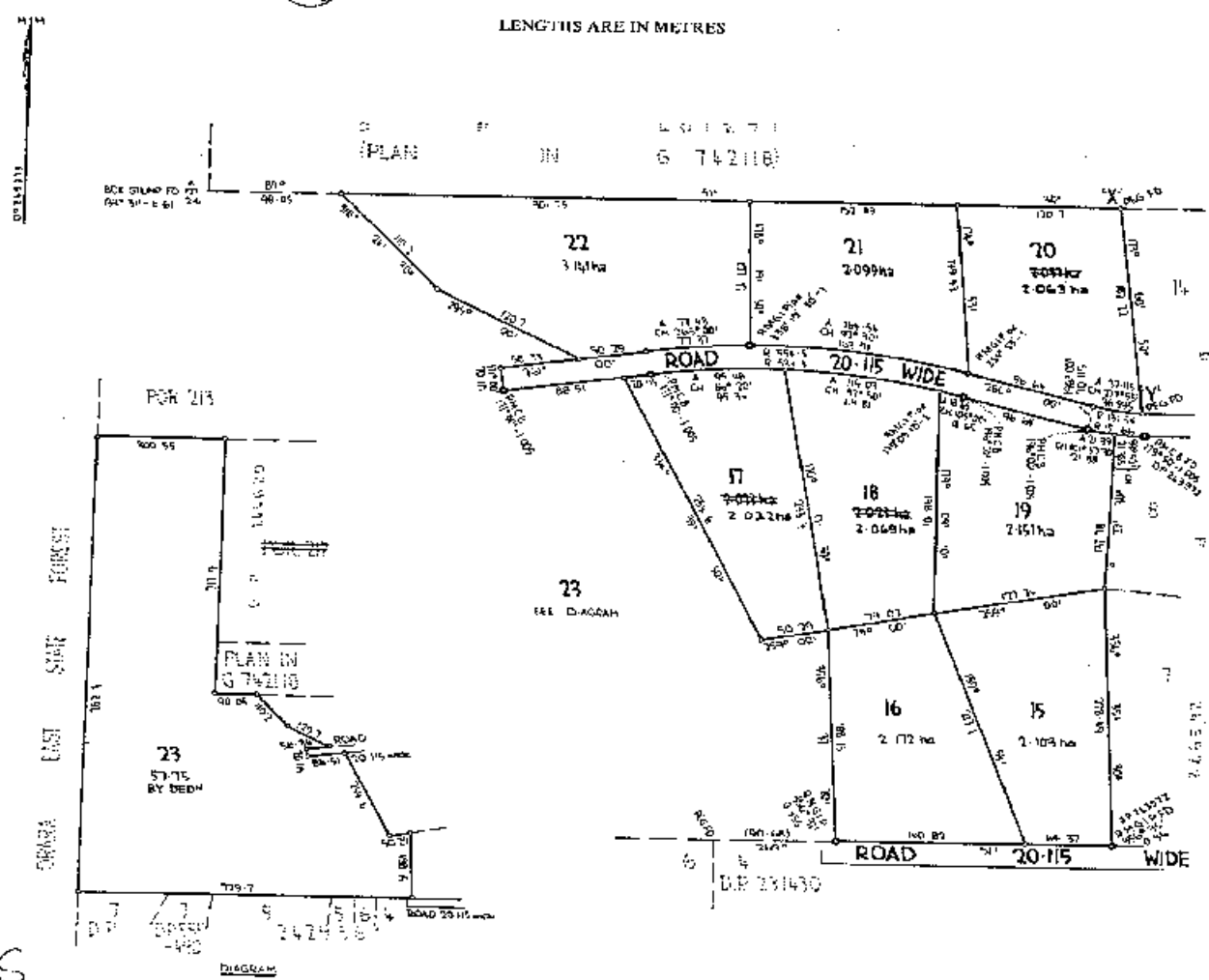
**CANCELLED**  
*Jawakoon*  
Registrar General.



SEE AUTO FOLIO

### PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



#### ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 17 in Deposited Plan 249273 at Sapphire North in the Shire of Cofts Harbour Parish of Moonee and County of Fitzroy. EXCEPTING THEREOUT the land below a depth of 20 metres from the surface in the Crown Grant of 1.141 hectares and the minerals reserved by the Crown Grants.

#### FIRST SCHEDULE

~~JOHN SPENCE BLACKBURN of Lismore, Chartered Accountant.~~

#### SECOND SCHEDULE

- GRM 1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
- ROZ 2. Right of carriageway appurtenant to part of the land above described created by the registration of Deposited Plan 555490. See M840727.
- BA 3. Attention is directed to Section 8 Land Aggregation Tax Management Act, 1971, as regards part. See N3067710.
- 4. Mortgage No. NZ14156 of that part of the land above described formerly comprised in Certificate of Title Volume 9403 Folio 113 to Lismore Management Pty. Limited. Entered 24-8-1973 Discharged Q106141.
- RY 5. Restriction as to user created by the registration of Deposited Plan 249273. See P204735.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

(Page 1) Vol. 12764 Fol. 32







NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

27/5/2021 10:51AM

FOLIO: 17/249273

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 12764 FOL 32

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
17/11/1987		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
2/3/1995	056599	DISCHARGE OF MORTGAGE	
2/3/1995	056600	TRANSFER	
2/3/1995	056601	MORTGAGE	EDITION 1
7/4/1997	2952351	DISCHARGE OF MORTGAGE	
7/4/1997	2952352	MORTGAGE	EDITION 2
1/11/2000	7193722	DISCHARGE OF MORTGAGE	
1/11/2000	7193723	TRANSFER	
1/11/2000	7193724	MORTGAGE	EDITION 3
9/1/2017	AM40421	DISCHARGE OF MORTGAGE	
9/1/2017	AM40422	MORTGAGE	EDITION 4
1/9/2018	AN678863	DEPARTMENTAL DEALING	EDITION 5 CORD ISSUED

\*\*\* END OF SEARCH \*\*\*

97-01T

# TRANSFER

Real Property Act, 1900



0  
056600 H



Office of State Revenue use only

17/02/1995 \$2.00 994000288 3

2473890 17/249273 TFR

D NUTCHEY C & S ARIANAYAGAM

\$300000.00 -50.00 0043079

(A) **LAND TRANSFERRED**  
Show no more than 20 References to Title.  
If appropriate, specify the share transferred.

Volume 12764 Folio 32 now being  
Folio Identifier 17/249273

(B) **LODGED BY**

L.T.O. Box  20 <sup>s</sup>	Name, Address or DX and Telephone  ANZ  REFERENCE (max. 15 characters): Arianayagam / Dinah
-----------------------------------	--

(C) **TRANSFEROR**

DINAH NUTCHEY

(D) acknowledges receipt of the consideration of \$300,000.00  
and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. .... 2. .... 3. ....

(F) **TRANSFEEEE**

<b>T</b> <b>TS</b> (s713 LGA)	CHANDRARAJAN ARIANAYAGAM and SOBHANA ARIANAYAGAM
<b>TW</b> (Sheriff)	<b>TENANCY: JOINT TENANTS</b>

JTA

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. DATED 24.2.95

Signed in my presence by the Transferor who is personally known to me.

.....  
Signature of Witness  
MATTHEW SNELL  
.....  
Name of Witness (BLOCK LETTERS)  
51 ELIZABETH STREET, SAWTELL  
.....  
Address of Witness

*D. Nuthey*  
.....  
Signature of Transferor

Signed in my presence by the Transferee who is personally known to me.

.....  
Signature of Witness  
.....  
Name of Witness (BLOCK LETTERS)  
.....  
Address of Witness

*Michael George Fishburn*  
.....  
Signature of Transferee 's Solicitor  
Michael George Fishburn  
CHECKED BY (office use only) *Reg 20*

INSTRUCTIONS FOR FILING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE



FOLIO: 17/249273

SEARCH DATE	TIME	EDITION NO	DATE
27/5/2021	10:51 AM	5	1/9/2018

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO. CONTROL OF THE RIGHT TO DEAL IS HELD BY AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED.

LAND

LOT 17 IN DEPOSITED PLAN 249273
AT SAPPHIRE NORTH
LOCAL GOVERNMENT AREA COFFS HARBOUR
PARISH OF MOONEE COUNTY OF FITZROY
TITLE DIAGRAM DP249273

FIRST SCHEDULE

OAKHUNT PTY LIMITED (T 7193723)

SECOND SCHEDULE (5 NOTIFICATIONS)

- 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 DP555490 RIGHT OF CARRIAGEWAY APPURTENANT TO THE LAND ABOVE DESCRIBED
3 DP249273 RESTRICTION(S) ON THE USE OF LAND
4 EXCEPTING LAND BELOW A DEPTH FROM THE SURFACE OF 20 METRES FROM THE SURFACE IN CROWN GRANT OF 1.141 HECTARES
5 AM40422 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

# APPENDIX C

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Earth Water Consulting Pty Limited  
2-16 Lourdes Avenue  
Urunga  
NSW 2455



NATA Accredited  
Accreditation Number 1261  
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing  
NATA is a signatory to the ILAC Mutual Recognition  
Arrangement for the mutual recognition of the  
equivalence of testing, medical testing, calibration,  
inspection, proficiency testing scheme providers and  
reference materials producers reports and certificates.

Attention: **Strider Duerinckx**

Report **835763-S**  
Project name  
Project ID **2021-165**  
Received Date **Oct 22, 2021**

Client Sample ID			C-1	C-2	C-3	C-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Oc58825	S21-Oc58830	S21-Oc58835	S21-Oc58840
Date Sampled			Oct 19, 2021	Oct 19, 2021	Oct 19, 2021	Oct 19, 2021
Test/Reference	LOR	Unit				
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchloroendate (surr.)	1	%	122	124	145	133
Tetrachloro-m-xylene (surr.)	1	%	95	94	108	97
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	31	38	33	29
Lead	5	mg/kg	12	15	9.6	8.1
% Moisture	1	%	23	23	20	20

# Appendix 13 - Land Contamination Assessment



## Environment Testing

Client Sample ID			C-5	C-6	C-7	C-8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Oc58845	S21-Oc58850	S21-Oc58855	S21-Oc58860
Date Sampled			Oct 19, 2021	Oct 19, 2021	Oct 19, 2021	Oct 19, 2021
Test/Reference	LOR	Unit				
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchloroendate (surr.)	1	%	133	147	126	141
Tetrachloro-m-xylene (surr.)	1	%	99	106	99	105
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	38	37	41	44
Lead	5	mg/kg	13	9.0	11	17
% Moisture	1	%	22	18	20	20

Client Sample ID			CS-1	CS-2
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Oc58861	S21-Oc58862
Date Sampled			Oct 19, 2021	Oct 19, 2021
Test/Reference	LOR	Unit		
<b>Organochlorine Pesticides</b>				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05

Client Sample ID			CS-1	CS-2
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Oc58861	S21-Oc58862
Date Sampled			Oct 19, 2021	Oct 19, 2021
Test/Reference	LOR	Unit		
<b>Organochlorine Pesticides</b>				
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1
Dibutylchlorodate (surr.)	1	%	132	128
Tetrachloro-m-xylene (surr.)	1	%	105	103
<b>Heavy Metals</b>				
Arsenic	2	mg/kg	3.4	2.5
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	11	9.1
Copper	5	mg/kg	5.2	< 5
Lead	5	mg/kg	13	12
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5
Zinc	5	mg/kg	16	17
% Moisture	1	%	28	29



## Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Oct 31, 2021	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Oct 31, 2021	28 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Oct 31, 2021	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Oct 27, 2021	14 Days

**Company Name:** Earth Water Consulting Pty Limited  
**Address:** 2-16 Lourdes Avenue  
Urunga  
NSW 2455

**Order No.:** 210910EWCN  
**Report #:** 835763  
**Phone:** 0402 6083 96  
**Fax:**

**Received:** Oct 22, 2021 8:15 AM  
**Due:** Oct 29, 2021  
**Priority:** 5 Day  
**Contact Name:** Strider Duerinckx

**Project Name:**  
**Project ID:** 2021-165

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Arsenic	Lead	Organochlorine Pesticides	Metals M8	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254										
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794										
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	C-1	Oct 19, 2021		Soil	S21-Oc58825	X	X	X		X
2	C-2	Oct 19, 2021		Soil	S21-Oc58830	X	X	X		X
3	C-3	Oct 19, 2021		Soil	S21-Oc58835	X	X	X		X
4	C-4	Oct 19, 2021		Soil	S21-Oc58840	X	X	X		X
5	C-5	Oct 19, 2021		Soil	S21-Oc58845	X	X	X		X
6	C-6	Oct 19, 2021		Soil	S21-Oc58850	X	X	X		X
7	C-7	Oct 19, 2021		Soil	S21-Oc58855	X	X	X		X
8	C-8	Oct 19, 2021		Soil	S21-Oc58860	X	X	X		X
9	CS-1	Oct 19, 2021		Soil	S21-Oc58861			X	X	X

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**Company Name:** Earth Water Consulting Pty Limited  
**Address:** 2-16 Lourdes Avenue  
Urunga  
NSW 2455

**Order No.:** 210910EWCN  
**Report #:** 835763  
**Phone:** 0402 6083 96  
**Fax:**

**Received:** Oct 22, 2021 8:15 AM  
**Due:** Oct 29, 2021  
**Priority:** 5 Day  
**Contact Name:** Strider Duerinckx

**Project Name:**  
**Project ID:** 2021-165

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Arsenic	Lead	Organochlorine Pesticides	Metals M8	Moisture Set
<b>Melbourne Laboratory - NATA # 1261 Site # 1254</b>										
<b>Sydney Laboratory - NATA # 1261 Site # 18217</b>						X	X	X	X	X
<b>Brisbane Laboratory - NATA # 1261 Site # 20794</b>										
<b>Mayfield Laboratory - NATA # 1261 Site # 25079</b>										
<b>Perth Laboratory - NATA # 2377 Site # 2370</b>										
<b>External Laboratory</b>										
10	CS-2	Oct 19, 2021		Soil	S21-Oc58862			X	X	X
<b>Test Counts</b>						8	8	10	2	10

### Internal Quality Control Review and Glossary

#### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

#### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

#### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

#### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient
<b>WA DWER</b>	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM where no positive PFAS results have been reported have been reviewed and no data was affected.

#### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
<b>LCS - % Recovery</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	%	90			70-130	Pass	
4.4'-DDD	%	91			70-130	Pass	
4.4'-DDE	%	89			70-130	Pass	
4.4'-DDT	%	126			70-130	Pass	
a-HCH	%	80			70-130	Pass	
Aldrin	%	85			70-130	Pass	
b-HCH	%	80			70-130	Pass	
d-HCH	%	84			70-130	Pass	
Dieldrin	%	87			70-130	Pass	
Endosulfan I	%	89			70-130	Pass	
Endosulfan II	%	85			70-130	Pass	
Endosulfan sulphate	%	78			70-130	Pass	
Endrin	%	119			70-130	Pass	
Endrin aldehyde	%	95			70-130	Pass	
Endrin ketone	%	90			70-130	Pass	
g-HCH (Lindane)	%	83			70-130	Pass	
Heptachlor	%	99			70-130	Pass	

# Appendix 13 - Land Contamination Assessment



## Environment Testing

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide			%	88			70-130	Pass	
Hexachlorobenzene			%	86			70-130	Pass	
Methoxychlor			%	88			70-130	Pass	
<b>LCS - % Recovery</b>									
<b>Heavy Metals</b>									
Arsenic			%	95			80-120	Pass	
Cadmium			%	94			80-120	Pass	
Chromium			%	92			80-120	Pass	
Copper			%	90			80-120	Pass	
Lead			%	91			80-120	Pass	
Mercury			%	107			80-120	Pass	
Nickel			%	90			80-120	Pass	
Zinc			%	91			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>Organochlorine Pesticides</b>				Result 1					
Chlordanes - Total	S21-Oc56755	NCP	%	98			70-130	Pass	
4.4'-DDD	S21-Oc56755	NCP	%	108			70-130	Pass	
4.4'-DDE	S21-Oc56755	NCP	%	97			70-130	Pass	
4.4'-DDT	S21-Oc56755	NCP	%	117			70-130	Pass	
a-HCH	S21-Oc56755	NCP	%	90			70-130	Pass	
Aldrin	S21-Oc56755	NCP	%	93			70-130	Pass	
b-HCH	S21-Oc56755	NCP	%	89			70-130	Pass	
d-HCH	S21-Oc56755	NCP	%	92			70-130	Pass	
Dieldrin	S21-Oc56755	NCP	%	95			70-130	Pass	
Endosulfan I	S21-Oc56755	NCP	%	88			70-130	Pass	
Endosulfan II	S21-Oc56755	NCP	%	93			70-130	Pass	
Endosulfan sulphate	S21-Oc56755	NCP	%	85			70-130	Pass	
Endrin	S21-Oc56755	NCP	%	112			70-130	Pass	
Endrin ketone	S21-Oc56755	NCP	%	104			70-130	Pass	
g-HCH (Lindane)	S21-Oc56755	NCP	%	91			70-130	Pass	
Heptachlor	S21-Oc56755	NCP	%	102			70-130	Pass	
Heptachlor epoxide	S21-Oc56755	NCP	%	96			70-130	Pass	
Hexachlorobenzene	S21-Oc56755	NCP	%	93			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	S21-Oc62590	NCP	%	91			75-125	Pass	
Lead	S21-Oc62590	NCP	%	104			75-125	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Cadmium	S21-Oc62590	NCP	%	94			75-125	Pass	
Chromium	S21-Oc62590	NCP	%	96			75-125	Pass	
Copper	S21-Oc62590	NCP	%	90			75-125	Pass	
Mercury	S21-Oc62590	NCP	%	107			75-125	Pass	
Nickel	S21-Oc62590	NCP	%	88			75-125	Pass	
Zinc	S21-Oc62590	NCP	%	109			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Organochlorine Pesticides</b>				Result 1	Result 2	RPD			
Chlordanes - Total	S21-Oc56754	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

# Appendix 13 - Land Contamination Assessment



Environment Testing

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Organochlorine Pesticides</b>				Result 1	Result 2	RPD			
a-HCH	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S21-Oc56754	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S21-Oc56754	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic	S21-Oc58860	CP	mg/kg	44	47	7.0	30%	Pass	
Cadmium	S21-Oc58860	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Oc58860	CP	mg/kg	12	13	9.0	30%	Pass	
Copper	S21-Oc58860	CP	mg/kg	5.9	7.4	23	30%	Pass	
Lead	S21-Oc58860	CP	mg/kg	17	18	8.0	30%	Pass	
Mercury	S21-Oc58860	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Oc58860	CP	mg/kg	5.2	< 5	8.0	30%	Pass	
Zinc	S21-Oc58860	CP	mg/kg	26	28	7.0	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
% Moisture	S21-Oc58860	CP	%	20	19	5.0	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Cadmium	S21-Oc46412	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Oc46412	NCP	mg/kg	9.9	11	13	30%	Pass	
Copper	S21-Oc46412	NCP	mg/kg	18	17	8.0	30%	Pass	
Mercury	S21-Oc46412	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Oc46412	NCP	mg/kg	12	10	16	30%	Pass	
Zinc	S21-Oc46412	NCP	mg/kg	57	49	14	30%	Pass	

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Authorised by:**

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)



**Glenn Jackson**  
**General Manager**

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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# Appendix 13 - Land Contamination Assessment

<p><b>Sydney Laboratory</b>  <small>Unit 11/15-16 Macquarie Street Sydney NSW 2000          02 9983 8400 Fax 02 9983 9983</small></p>	<p><b>Brisbane Laboratory</b>  <small>Unit 21/21 Brookfield Place Brisbane QLD 4000          07 325 8400 Fax 07 325 8400</small></p>	<p><b>Perth Laboratory</b>  <small>Unit 21/21 Brookfield Place Perth WA 6000          08 9491 9600 Fax 08 9491 9600</small></p>	<p><b> Melbourne Laboratory</b>  <small>21/21 Brookfield Place Melbourne VIC 3000          03 9591 9600 Fax 03 9591 9600</small></p>
<p>Project No: 2021-165</p>		<p>Project Manager: Strider Dvorinecky</p>	
<p>Project Name:</p>		<p>ED10 Form ID: ESdel</p>	
<p>Analyses:</p>		<p>Samples: N.S.</p>	
<p>Matrix:</p>		<p>Handed over by: Strider Dvorinecky</p>	
<p>Composite (D)</p>		<p>ED10 Invoicing: 21/21 Brookfield Place</p>	
<p>Composite (Pb)</p>		<p>Email on Results: strider@envcon.com.au</p>	
<p>As, Pb</p>		<p>Comments:</p>	
<p>OCp</p>		<p>Required Turnaround Time:</p>	
<p>C-1</p>		<p>0 Overnight (depending by Sample)</p>	
<p>C-2</p>		<p>6 Same day</p>	
<p>C-3</p>		<p>2 days</p>	
<p>C-4</p>		<p>5 days (Standard)</p>	
<p>Delivered</p>		<p>Sample Comments / Dangerous Goods Hazard Warning</p>	
<p>Name: NATHANIEL SCHULTER</p>		<p>Signature: <i>Nathan</i></p>	
<p>Date: 20.10.21</p>		<p>Time:</p>	

page 13/13

Nathan 22/10/21 8:15am  
 #835763



