ENVIRONMENTAL CONSULTING Pty Ltd

LAND USE CONFLICT RISK ASSESSMENT

PROPOSED BOUNDARY REALIGNMENT

August 2024

Prepared For: John Tilton

Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859,
Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886
133-193 Dulguigan Road
Dulguigan NSW

HMC2024.810

RE: Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859, Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886, 133-193 Dulguigan Road, Dulguigan NSW.

HMC Environmental Consulting Pty Ltd is pleased to present our report for a Land Use Conflict Risk Assessment for the abovementioned site.

We trust this report meets with your requirements. If you require further information, please contact HMC Environmental Consulting directly on the numbers provided.

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Enquiries should be addressed to HMC Environmental Consulting Pty Ltd.

EXECUTIVE SUMMARY

BACKGROUND

HMC Environmental Consulting Pty Ltd has been commissioned to prepare a Land Use Conflict Risk Assessment (LUCRA) for a proposed boundary adjustment at Lot 8 DP 755685, Lot 1 DP 376131, Lot 1 DP 410859, Lot 1 DP 328107, Lot A DP 174886, & Lot 1 DP 364474, 133-193 Dulguigan Road, Dulguigan, in a rural area within the Tweed Shire Council area. The proposed boundary adjustment will result in relocated boundaries and reconfiguration of the existing 6 lots, ranging in size from 1.65 hectares (Ha) to 53.5 Ha.

The proposed land use would be generally rural living with the larger lots with continuing agricultural use including sugar cane cropping and livestock grazing. The land is generally north of Dulguigan Road, however, two of the proposed lots (1, 2) have areas extending south of Dulguigan Road to the North Arm Tweed River.

The assessment addresses potential conflict prior to the proposed change in land use in accordance with the *Living and Working in Rural Areas Handbook* (Department of Primary Industries et.al, 2007).

A LUCRA, including a desktop assessment of available information, a detailed site inspection, and consultation with the landowner and owners of neighbouring properties, was undertaken to identify land use compatibility, and strategies to minimise land use conflicts. The key constraint identified for the proposed development is the existing agricultural land use (livestock grazing) surrounding the site.

This LUCRA report presents a consolidation of the best strategies to minimise conflicts that may arise in relation to the proposed land use change in order to assist the Tweed Shire Council in assessing potential land use conflicts between the proposed development and neighbouring land uses.

OBJECTIVES

The objectives of the LUCRA are to:

- Accurately identify and address potential land use conflict issues and risk of occurrence before the development proceeds or a dispute arises;
- Assess the effect of the existing operation on neighbouring land uses;
- Increase the understanding of potential land use conflict to inform and complement development control and buffer requirements; and
- Highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, proposal, implementation, and evaluation of separation strategies.

SCOPE OF WORKS

In order to achieve the objectives of this LUCRA, the work undertaken during the investigation included the following:

- Collection of site-specific information including the nature of the current and proposed land use, land uses of adjacent properties, site conditions (topography, climate, and natural features), site history, site inspection and consultation with relevant owners/operators of project site and adjacent properties. Consideration of the proposed and surrounding land uses for incompatibility and conflict issues;
- Evaluation of each recorded land use and identify the level of risk of a land use conflict arising;
- Identification of risk management strategies that may help lower the risk of the issue resulting in a dispute and conflict; and
- Summarising the key issues, their risk level, and recommended management strategies.

CONCLUSIONS/RECOMMENDATIONS

The Land Use Conflict Risk Assessment conclusions are based on the information described in this report and appendices and should be read in conjunction with the complete report, including Section 6 Limitations.

A Land Use Conflict Risk Assessment (LUCRA), including a review of aerial photography, surrounding land uses, a site inspection, and extensive consultation with surrounding neighbours has identified and addressed potential sources of conflict between the subject site and surrounding land uses. The primary areas of potential conflict were identified as the cattle grazing on the property to the west, located at 1283 Urliup Road, and the sugarcane cropping occurring on the subject site, which will be encompassed within proposed Lot 1 and adjacent to proposed lot 6. The proposed realignment and future residential developments on the proposed lots are deemed to be of low risk of conflict with the adjoining residential properties.

The livestock operations on the adjoining property are relatively low scale, given the size of the land, the yards being located a significant distance from the subject site (>720m west). The main impacts from the cattle operations include potential noise, odour, and dust nuisance. There is an existing scatted vegetated buffer along the eastern and northern boundaries adjoining the grazing land and the existing retreat. The *Living and Working in Rural Areas* handbook recommends a minimum separation buffer of 50m between residential and grazing of stock, or a vegetated buffer of 5-10m. There is a scattered vegetation buffer along the boundary of 5-10m, as well as a setback of approximately >40m between any of the proposed future dwelling sites and the grazing land. Given the topography of the land, the size of the grazing property, and the existing setbacks, including the cattle yards located greater than 720m west of the site, the buffer appears to be sufficient to reduce the likelihood of any conflicts arising from the cattle operations. An improved vegetation buffer, particularly on the western boundary of proposed Lot 5, could further reduce the likelihood of any conflicts arising from the cattle operations.

The sugarcane cropping is located within the subject site and therefore land use conflicts are considered to be negligible. However, with the future residential development of proposed lot 6 to be located adjacent to the cropping activities, the potential impacts of the cropping activities would include noise, dust and chemical use/spray drift. There is a >80m setback between the cropping and proposed future dwelling sites, as well as a difference in elevation of 20m. The establishment of a vegetated buffer between the site would future reduce the risk of any future conflict between the land uses, as well as adhere to the recommended buffers outlined within the Tweed Development Control Plan (2008) Section A5 – Appendix E.

When considering potential conflict between any future residential developments and agricultural land uses, it is important to recognise that all agricultural activities should be following effective and practical measures to protect the surrounding environment in accordance with the Protection of the Environment Operations Act 1997 (POEO) and industry specific guidelines. Legislative guidelines also cover the use and handling of agricultural chemicals, and work, health and safety.

The LUCRA has concluded that the subject site located at Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859, Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886, 133-193 Dulguigan Road, Dulguigan NSW, as shown in Appendix 1 of this report, is considered suitable for the proposed boundary realignment for future residential development of the site, subject to the following recommendations:

1. The existing vegetated buffer along the boundaries of the property, particularly the western boundary adjoining the neighbouring properties, particularly the grazing land, is to be retained and maintained. The vegetated buffer to be a minimum width of 5m, with foliage from the base to the crown to ensure the vegetation is sufficient in trapping and minimising any dust from the farming operation entering the subject site and reducing any noise or odour impacts. Expanding the buffer, particular in open gaps along the boundary is also recommended in reducing any risk of conflict.

2. A vegetated buffer (minimum 10m) between the proposed future dwelling sites and existing sugarcane cropping would be effective in minimising any potential future conflict relating to noise, dust and chemical use/agricultural spray drift.

3. If the intensity of livestock operations is increased on neighbouring properties, a 10m vegetated buffer is recommended between the operations and the subject site to minimise risk of conflict.

4. Effective communication between neighbours and agricultural land users, and any future owners of the proposed realigned lots is to be encouraged to ensure that residents are aware of the practices occurring on surrounding agricultural land, particularly the cattle operations and sugarcane cropping, to minimise the risk of conflict.

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ABBREVIATIONS/ ACRONYMS

AS	Australian Standard
Client	Gunnebah Properties Pty Ltd
EPA	Environment Protection Authority
HMC	HMC Environmental Consulting
LEP	Local Environment Plan
LUCRA	Land Use Conflict Risk Assessment
OSSM	On-site Sewage Management
POEO	NSW EPA Protection of the Environment Operations Act 1997
Site	Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859, Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886, 133-193 Dulguigan Road, Dulguigan NSW.

1 INTRODUCTION

1.1 BACKGROUND

HMC Environmental Consulting Pty Ltd has been commissioned to prepare a Land Use Conflict Risk Assessment (LUCRA) for a proposed boundary adjustment at Lot 8 DP 755685, Lot 1 DP 376131, Lot 1 DP 410859, Lot 1 DP 328107, Lot A DP 174886, & Lot 1 DP 364474, 133-193 Dulguigan Road, Dulguigan (the site), in a rural area within the Tweed Shire Council area. The proposed boundary adjustment will result in relocated boundaries and reconfiguration of the existing 6 lots, ranging in size from 1.65 hectares (Ha) to 53.5 Ha.

The proposed land use would be generally rural living within the smaller lots and the larger lots continuing with agricultural use including sugar cane cropping and livestock grazing. The subject site is generally north of Dulguigan Road, with two of the proposed lots (1, 2) extending south of Dulguigan Road to the North Arm Tweed River.

This assessment addresses potential conflict prior to the proposed change in land use in accordance with the *Living and Working in Rural Areas Handbook* (Department of Primary Industries et.al, 2007).

A desktop assessment of available information, a detailed site inspection, and consultation with the landowner and owners of neighbouring properties, was undertaken to identify land use compatibility, and strategies to minimise land use conflicts. The key constraint identified for the proposed development is the existing agricultural land use (livestock grazing) surrounding the site.

This LUCRA report presents a consolidation of the best strategies to minimise conflicts that may arise in relation to the proposed land use change in order to assist the Tweed Shire Council in assessing potential land use conflicts between the proposed development and neighbouring land uses.

1.2 PROJECT DESCRIPTION

The existing six lots would be re-configured to rationalise the existing ad hoc layout to provide five new dwelling sites, (proposed Lot 2 has an existing dwelling). The site is located in a generally agricultural area with both sugar cane production and livestock grazing occurring on the site and in the surrounding area.

Access would be off Dulguigan Road using the two existing access locations. The development proposal would rationalise and reorganise the lot layout to provide flood free dwelling sites on the elevated parts of the site. The proposed Lots would comprise:

Proposed Lot	Area (Hectares)
1	53.5
2	19.19
3	2.0
4	1.65
5	1.72
6	22.36

1.3 OBJECTIVE OF THE INVESTIGATION

The objectives of the LUCRA are to:

- Accurately identify and address potential land use conflict issues and risk of occurrence before the development proceeds or a dispute arises;
- Assess the effect of the existing operation on neighbouring land uses;
- Increase the understanding of potential land use conflict to inform and complement development control and buffer requirements; and
- Highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, proposal, implementation, and evaluation of separation strategies.

1.4 SCOPE OF WORKS

In order to achieve the objectives of this LUCRA, the work undertaken during the investigation included the following:

- Collection of site-specific information including the nature of the current and proposed land use, land uses of adjacent properties, site conditions (topography, climate, and natural features), site history, site inspection and consultation with relevant owners/operators of project site and adjacent properties. Consideration of the proposed and surrounding land uses for incompatibility and conflict issues;
- Evaluation of each recorded land use and identify the level of risk of a land use conflict arising;
- Identification of risk management strategies that may help lower the risk of the issue resulting in a dispute and conflict; and
- Summarising the key issues, their risk level, and recommended management strategies.

2 SITE INFORMATION

2.1 SITE IDENTIFICATION

Table 1 - Site Identification Summary

Street Address		133-193 Dulguigan Road, Dulguigan NSW
Allotment Description		Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859, Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886
Allotment size		105 Hectares
Local Government		Tweed Shire
Parish		Berwick
County		Rous
Geographical Coordinates (MGA Zone 56)		Easting: -28.287296m E Northing: 153.400974 m S (Approximate centre of site).
Zoning		RU1 - Primary Production, RU2 - Rural Landscape
Land use - Existing		Agriculture, Farming
Land use - Proposed		Rural residential
Site Services		Mains Power, Tank, On-site sewage management
Surround Land Uses	North	Rural, Uncleared bushland
	East	Rural Agriculture, Rural farming
	South	Rural Residential, Rural , Rural farming
	West	Rural Residential
Closest Sensitive Environment		The Rous River is located adjacent south to the subject site. Surface runoff would flow into the various farm drains and intermittent water courses before discharging into the Rous River.

Table 2 – Site Characteristics

Topography	Generally undulating cattle grazing land with elevated areas to the north and central parts of the site grading towards the lower floodplain eastern and southern parts of the site. The Rous River forms the southern boundary, and the site is bisected by Dulguigan Road. All proposed dwelling sites located north of Dulguigan Road. Landform: Ridge, Slope Upper, Slope Middle Aspect: East Slope: Divergent, Waxing Gradient: <3% Elevation: Approximately 1m - 39m AHD across the property. Proposed dwelling sites 21-26m AHD
Regional Geology	Quaternary Alluvial Deposits Current and recent mud, silt, sand, and gravel deposited by river (alluvial) systems.
Soil Landscape	Elevated undulating area (proposed dwelling sites) Billinudgel (bi) landscape: Rolling hills on metamorphics of the Neranleigh-Fernvale Group. Soils: Deep, moderately well-drained Red Podzolic Soils on crests; moderately deep, moderately well-drained Yellow Podzolic Soils on slopes. Geology: Palaeozoic Neranleigh-Fernvale Group. Thinly bedded fissile shales, siltstones and sandstones with occasional more massive greywackes, volcanic tuffs, agglomerates, sandstones, and massive cobble conglomerates. Lower floodplain Tweed (tw) landscape: Extensive marine plain of lower Tweed catchment consisting of deep Quaternary alluvium and estuarine sediments. Soils: Deep, poorly drained Brown Alluvial Clays on levees; deep, poorly drained Humic Gleys, on backplain. Geology: Deep Quaternary alluvium and estuarine sediments. Marine clays are predominant
Australian Soil Classification	Hydrosols (HY) Soils that are saturated in a major part of the soil profile for at least 2-3 months in most years (i.e. includes tidal waters). Kurosols (KU) Soils with strong texture contrast between A horizons and strongly acidic B horizons. Many of these soils have some unusual subsoil chemical features (high magnesium, sodium, and aluminium).
Regional Hydrogeology	Groundwater vulnerability is mapped as moderate – moderately high over the elevated portion of the property and proposed dwelling locations. The flats are mapped as high groundwater vulnerability. Shallow groundwater (<5m depth) is not expected to be encountered on the elevated areas where future residential development is proposed.

Groundwater Database Search	The online NSW Office of Water groundwater mapping (http://allwaterdata.water.nsw.gov.au/water.stm) shows the nearest mapped registered groundwater bores is GW049343 & GW300324 located within 100m of the site. GW049343 bore use is unknown and GW300324 is registered for domestic use.

3 GATHER INFORMATION

3.1 NATURE OF THE LAND USE CHANGE AND DEVELOPMENT

A proposed boundary realignment of existing lots to allow for future residential development.

3.2 SURROUNDING LAND USE

Location	Site Description	Zone Tweed LEP 2014	Land Use
North-east/ East	Lot 6 DP 738364 279 Dulguigan Road	RU1 – Primary Production	Residential and sugar cane cropping
South	Lot 1 DP 660569 143 Dulguigan Road	RU2 – Rural Landscape	Residential.
South-west/ West	Lot 15 DP 1050396 96 Dulguigan Road	RU2 – Rural Landscape	Residential
West	Lot 5 DP 844759 59 Colefax Court Lot 4 DP 844759 60 Colefax Court Lot 9 DP 609221 111 Dulguigan Road	RU2 – Rural Landscape	Residential
West/ North-west	Lot 29 DP 1035676 1283 Urliup Road	RU2 – Rural Landscape	Residential and livestock grazing.

3.3 TOPOGRAPHY, CLIMATE & NATURAL FEATURES

The subject site includes both low-lying floodplain on the eastern portion of the property, and the portions located south of Dulguigan Road, and elevated lower hills to the west, varying between 1m and 39m AHD across the property. The proposed future dwelling locations are all located on the elevated western areas of the property, north of Dulguigan Road, ranging from 21m to 26m AHD. The site aspect is generally to the east.

There is scattered vegetation across the site, particularly on the northwestern portion of the property, and along the Dulguigan Road frontages, however the property has been generally cleared for cattle grazing or sugarcane cropping. The site is bounded by the Rous River to the south. A number of intermittent watercourses exist across the undulating elevated land to the west, as well as a network of agricultural drains within the cropping land to the east.

The soils within the subject site are generally deep, quaternary alluvium soils.

The subject site is located in the sub-tropical climatic zone of northern NSW with the climate being described as humid-subtropical. Rainfall is seasonal, mainly concentrated in the summer months. The provided climate

averages for Murwillumbah (Bray Park) weather station gives a good indication of the general climatic conditions experienced in the Murwillumbah locality, however, is not indicative of the exact onsite weather conditions of the subject site. The wind rose (see appendix 6) shows the dominant wind at 9am is from the south-westerly (40.7%), while the dominant wind at 3pm is a mix of north-easterly (18.6%), easterly (21.1%) and south-easterly (21%).

3.4 SITE INSPECTION

A site inspection was undertaken by Helen Tunks, Mark Tunks, and Taylah Richards of HMC on 6 December 2023, and again by Mark Tunks and Maria Puerta of HMC on 24 May 2024. There are two separate informal access tracks from Dulguigan Road to the proposed dwelling sites. Dulguigan Road bisects the property and unformed vehicle tracks access the proposed house sites for proposed lots 3, 4 and 5. There are no proposed dwelling sites on the southern side of Dulguigan Road and the Rous River bounds the property to the south.

The low-lying level floodplain on the eastern portion of the property is cropped with sugarcane, along with the adjoining properties further south. The elevated western portion of the property is generally cleared pastureland with cattle grazing and patches of mature vegetation.

Two large farm structures are located on the southern part of Proposed Lot 1 north of Dulguigan Road. An existing dwelling and shed are located on the northern part of Proposed Lot 2, near the western boundary of the property. The remainder of the property is clear of any structures.

The proposed dwelling sites for Proposed Lots 1 and 6 are located on the elevated lower hills adjacent to Dulguigan Road to the southeast. The sites are undulating cattle grazing land with both pasture groundcover and also some bare soil/gravel groundcover near the existing cattle yards. There are no mature trees located on the proposed dwelling sites.

Proposed lot 1 dwelling site would be located on a pasture grass area, immediately adjacent to a bare soil/gravel area immediately north-west, towards the proposed lot 2 dwelling site.

There are temporary metal cattle yards on Proposed lot 6 dwelling site with some loose debris/disused material, and a small stockpile of soil and assorted debris.

The proposed dwelling sites for Proposed Lots 3, 4 and 5 are located on undulating cattle grazing land on the central, western part of the property. The sloping sites are clear of mature vegetation, with predominantly pasture grass cover.

3.5 CONSULTATION

From the 24th May to 25th July, consultation was undertaken by HMC with all of the neighbouring properties to determine the nature of land use on their properties and the extent and practices of any agricultural operations. Door knocking and a letterbox drop was conducted on 6 properties with a request to make contact with HMC regarding the development. Three neighbours responded, and a summary of the consultation undertaken, and the relevant comments to potential land use conflicts, are provided in Table 3.

Table 3 – Consultation with Neighbouring Residents

Neighbouring Resident Details	Comments
Greg and Patsy Walsh Owners 143 Dulguigan Road	Phone conversation on 26/06/2024 with Helen Tunks of HMC: Discussed the proposal. Forwarded subdivision plan with proposed dwelling sites for clarification and requested comment or concern. No further response received.
Bruce Blong Owner 59 Colefax Court	Phone conversation on 26/06/2024 with Helen Tunks of HMC: Discussed the proposal. Forwarded subdivision plan with proposed dwelling sites for clarification and requested comment or concern.

	No further response received.
Amanda and Trevor Bartyn Owners 96 Dulguigan Road	Phone conversation on 23/07/2024 with Helen Tunks of HMC: Discussed the proposal with Trevor by SMS. Forwarded subdivision plan with proposed dwelling sites for clarification and requested comment or concern. No further response received.

3.6 POTENTIAL LAND USE CONFLICTS

The potential land use conflicts below have been identified following a review of the desktop assessment including aerial photography and mapping, a detailed inspection, and interviews with stakeholders.

3.6.1 Noise

Noise can easily cause conflict between adjoining properties, particularly in rural areas. Noise is to be expected in rural areas, particularly where agricultural industries are operating. Ensuring physical buffers (distance from source to sensitive receiver) is the best passive noise control. Best practice for preventing noise from causing conflict between landowners would include communication, advising neighbours when activities necessary for farm production that might cause noise nuisance, may occur.

Potential sources include:

- farming machinery,
- motor bikes,
- livestock, and
- ancillary machinery for on-site processing.

Noise nuisance can be reduced by maintaining equipment, operating within normal working hours, and being aware of potential noise nuisance when background noise is reduced (generally outside working hours - at night or early morning, Sundays).

Cattle grazing is occurring on the adjoining property to the west/north-west of the site (1283 Urliup Road), however the property is large (31.68 ha), with the cattle yards located on the western boundary of the property, greater than 720m from the subject site. Given the distance to the yards, the scattered vegetation along the boundary, and the topography of the land adjacent to the subject site, the risk of noise impacting the future proposed dwellings are unlikely. Vineyards are also existing on the adjoining site; however, they are located greater than 350m from any proposed dwelling site, and therefore any associated activities would be unlikely to cause significant noise impacts.

Largescale sugarcane cropping is currently being undertaken on the subject site and will be within close proximity to two of the proposed dwelling sites (Proposed Lots 1 & 6). Proposed Lot 1 would include the sugar cane cropping, while the proposed future dwelling site for Lot 6 is approximately 80m from the cropping activities. It was confirmed with the client that there are usually 5 harvests a year between late June to early December, lasting approximately 2-3 days each, with associated vehicle and machinery movements generating noise. Crops are fertilised 3 times a year, and crops are pesticide sprayed 2 times a year, via tractor and boom spray. Other general farming practices can be a source of noise including slashing and drain upkeep.

3.6.2 Odour

There are many odours associated with agricultural practices which can have significant impacts on residential amenity with potential to affect resident's health and amenity. These can include odours associated with chemical sprays, fertilisers, cattle, and composting. An individual's capacity to detect the odours varies greatly.

Large numbers of cattle inhabiting a small area of land (holding yards/feed lots) can result in a significant build-up of odours, particularly associated with the decomposition of animal waste. The cattle yards for the adjacent grazing land are located on the western boundary of the property, with a greater than 720m buffer between

the yards and the development site, therefore the odour impacts of the yards would be negligible. The cattle have access to the land adjacent to the boundary.

The odour from chemical spray drift may be a source of alarm for residents adjoining sugar cane, and can raise fears, resulting in potential to cause conflict between landowners. The odours are related to particular identifiable 'markers' in the agricultural chemicals, and the strength of the odour is not necessarily indicative of the level of exposure, and the concentration of chemicals present. An individual's capacity to detect the odours varies greatly.

Communication between land users is critical in managing the risk of conflict arising due to the odour of chemical spray drift. If neighbours are notified when spraying will occur, and the type of chemicals being used, it can help to alleviate the fear associated with any odour emissions.

Vegetated buffer zones can also be an effective measure in trapping the bulk of the drift before it reaches neighbouring properties and, therefore, reduce odour impacts.

3.6.3 Dust

Dust generation from agricultural properties and operations is common particularly in dry seasons, due to:

- cultivation,
- fallow or bare ground,
- vehicle movements,
- livestock movements and yards, and
- spreading fertiliser.

The main sources from a cattle production would likely be:

- vehicle movements,
- bare grounds from overgrazing, and
- livestock yards.

The main sources from sugarcane cropping would likely be:

- vehicle movements,
- cultivation prior to crop production,
- harvesting of crops
- use of dust fertilisers

The extent of the dust nuisance and perceived impacts arising from these operations are reliant on the climatic conditions (wind strength and direction, rainfall, humidity, and temperature), the soil type, and the vegetation cover. The vegetated buffers between the properties would help reduce dust drift onto the subject site and associated risk of conflict.

3.6.4 Pests

Pest species are a significant problem for North Coast NSW, and can have a significant impact on agricultural communities, threatened species and ecological communities. Pests, particularly rodents and flies, may also increase the risk of disease. It is therefore vital that communities work together and share the responsibility to manage pests in their local area. The NSW Government's *North Coast Regional Strategic Pest Animal Management Plan 2018-2023* outlines strategies to control and eradicate pest species in the area that should be adopted by all landowners and residents.

The use of pesticides as a control measure is standard practice by farmers, and it is a requirement by law that they strictly follow correct procedures and the manufacturer's directions. Chemicals must be stored safely, recording use. Farm practices that minimise pest breeding on rural land must also be adopted for the benefit of the entire community.

3.6.5 Operating Times

The standard farm operation time is during daylight hours for both practical and safety reasons. Irrigation is often undertaken during twilight and night times to take advantage of reduced evaporation and wind speed. Pumping needs to be monitored to ensure noise nuisance is not a problem to sensitive receivers, especially during times when background noise is low. It was confirmed with the client that existing sugar cane crop harvesting occurs during the standard operating times of 6am to 5pm.

3.6.6 Chemical Use and Agricultural Spray Drift

Spray drift is when herbicide/pesticide chemicals used on agricultural properties become airborne and move onto a non-target area. These chemicals have the potential to injure or damage people, plants, animals, properties, or the environment. There is a substantial risk of conflict arising due to agricultural spray drift particularly with the fear associated with the exposure of chemicals and the affects it can have on the health of the neighbours of the agricultural properties. There are many factors which contribute to the likelihood of spray drift, including the types of chemicals used, the method of application and the weather conditions. Droplet size of the chemical spray is also a significant factor contributing to the risk of spray drift - the smaller the droplet size, the higher the risk of spray drift. It is the most important factor in managing the risk of spray drift, and is determined by the applicator and nozzles used, as well as the height in which the spray is released.

A discussion with the client and sugarcane cropping owner on the subject site, revealed that currently herbicides and pesticides (primarily round-up, Amicide and Gramoxone) are used as required under suitable weather conditions and restricted to the target trees as per the manufacturer's directions. Mr Tilton stated that agricultural spraying occurs 2 times a year. The inter-row spraying occurs via tractor and boom spray. No aerial spraying via aircraft occurs on the site. Given that the regulations required for chemical spray are being followed, and the low height at which the spray is released, there is a reduced risk of spray drift.

Buffer zones help to minimise drift into non-target areas including neighbouring properties. The Tweed Development Control Plan (2008) Section A5 – Appendix E, recommends a minimum of 150m buffer, including a 30m vegetated buffer between intensive cropping and residential uses. It further states, that where spray application is not applied by aircraft, the setback can be reduced to 80m, including a vegetated buffer. The planning guidelines for setback distances based on available research recommends a minimum of 300 m where open ground conditions apply, or 40m where a vegetated buffer can be implemented. The distance between the proposed dwelling sites on Lots 1 and 6, and the adjoining sugarcane cropping operations is >80m. The establishment of a vegetated buffer between the sites would further reduce the risk of spray drift into the residential areas. Additionally, there is a 20m difference in elevation between the cropping activities and the elevated proposed future dwellings sites, which would minimise any risk of spray drift onto the dwelling sites.

3.6.7 Increased Traffic

Traffic impacts would be assessed during the preparation of any future development applications. The proposed realignment of lots is not expected to generate traffic along main road frontages, with the minimal number of proposed future dwelling sites not expected to cause a significant increase in traffic to the area.

4 LAND USE CONFLICT RISK ASSESSMENT

4.1 INTRODUCTION

This report utilises a risk assessment matrix to identify and rank the potential land use conflicts resulting from the realignment of existing lots (Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859, Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886) at 133-193 Dulguigan Road, Dulguigan NSW. It assesses the environmental and public health impacts as well as any impacts on general amenity of the area in accordance with the probability of occurrence, and the severity of the impact. Risk management strategies are then identified in

order to mitigate any potential impacts and reduce potential land use conflicts between the subject site landowners and surrounding neighbouring landowners.

4.2 RISK ASSESSMENT AND RISK RANKING

The risk ratings have been assessed through the consequences of the risks, and the likelihood of the risks occurring. The risk is defined by the measure of consequence if it were to occur, based on 5 levels of consequence (**Table 4**). It is then scored on the likelihood of the consequence occurring and given a probability level of A – D (**Table 5)**.

Table 4 – Measure of Consequence

Level: 1	Descriptor: Severe
Description	● Severe and/or permanent damage to the environment ● Irreversible ● Severe impact on the community ● Neighbours are in prolonged dispute and legal action involved
Example/ Implication	● Harm or death to animals, fish, birds, or plants ● Long term damage to soil or water ● Odours so offensive some people are evacuated or leave voluntarily ● Many public complaints and serious damage to Council's reputation ● Contravenes Protection of the Environment & Operations Act 1997 and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act
Level: 2	**Descriptor: Major**
Description	● Serious and/or long-term impact to the environment ● Long-term management implications ● Serious impact on the community ● Neighbours are in serious dispute
Example/ Implication	● Water, soil or air impacted, possibly in the long term ● Harm to animals, fish, birds, or plants ● Public complaints. Neighbour disputes occur. Impacts pass quickly ● Contravenes the conditions of Council's licences, permits and the POEO Act ● Likely prosecution
Level: 3	**Descriptor: Moderate**
Description	● Moderate and/or medium-term impact to the environment and community ● Some ongoing management implications ● Neighbour disputes occur
Example/ Implication	● Water, soil or air known to be affected, probably in the short term ● No serious harm to animals, fish, birds, or plants ● Public largely unaware and few complaints to Council ● May contravene the conditions of Council's Licences and the POEO Act ● Unlikely to result in prosecution
Level: 4	**Descriptor: Minor**
Description	● Minor and/or short-term impact to the environment and community ● Can be effectively managed as part of normal operations ● Infrequent disputes between neighbours
Example/ Implication	● Theoretically could affect the environment or people but no impacts noticed ● No complaints to Council ● Does not affect the legal compliance status of Council
Level: 5	**Descriptor: Negligible**
Description	● Very minor impact to the environment and community ● Can be effectively managed as part of normal operations ● Neighbour disputes unlikely
Example/ Implication	● No measurable or identifiable impact on the environment ● No measurable impact on the community or impact is generally acceptable.

Table 5 – 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

A Risk Ranking Matrix is used to rank the identified potential land use conflicts by assessing the environmental, public health and amenity impacts based on the probability of occurrence and the consequence of that impact. The risk ranking matrix yields a ranking from 11 to 25 to identify the risk of each impact (**Table 6**).

- 25 - highest magnitude of risk; a highly likely, very serious event.
- 11 – 25 is considered to be an unacceptable risk, and;
- 1 to 10 is considered to be acceptable.

Priority is given to those activities listed as the highest risk.

Table 6 – Risk Ranking Matrix

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

4.3 RISK MITIGATION MANAGEMENT STRATEGIES

When the risk receives a ranking of greater than 10, appropriate management strategies need to be identified that either affect the probability of the event occurring or reduces the consequence that the event has if it occurs. The risk level is then reassessed on the basis that these controls be implemented which lowers the risk ranking score to 10 or below. These strategies should then be monitored to ensure they are meeting the performance targets and effectiveness.

Table 7 – LUCRA Site Assessment

Potential Conflict Issue	Risk Ranking	Management Strategy	Controlled Ranking
Noise	C4 = 8 Acceptable	Noise associated with agricultural practices are a common occurrence in rural areas, most commonly associated with vehicle movements. Noise associated with the cattle grazing, and use of cattle yards on neighbouring properties, also have a risk of noise conflict. Given the existing physical buffers, significant setback to the yards to the north-east, along with the daytime operating times, the noise impacts are deemed to be minor and, it is unlikely to result in any frequent conflict. The existing sugarcane operations on the subject site have not previously resulted in any conflict with surrounding properties, and given the intermittent use of farming vehicles, and the daytime operating times,	D4 = 5 Acceptable

		the noise impacts are deemed to be negligible and unlikely to result in any conflict.	
Odour	C4 = 8 Acceptable	The existing vegetated buffer between the properties should be effective in reducing any animal manure odour, along with the infrequent use of the yards and land for grazing nearby the development site. Expanding the existing vegetated buffer along western boundaries, adjacent to the grazing land, would also be effective in reducing the likelihood of conflict due to odour. Establishing a vegetated buffer between the proposed future dwelling sites and existing sugarcane cropping would also minimise the risk of odour conflict resulting from the use of chemicals on the crops.	D4 = 5 Acceptable
Dust	C3 = 13 Unacceptable	The existing separation and vegetated buffer zones, and the usual sub-tropical climatic conditions of the area, should be effective in reducing any off-site dust from impacting the site. Establishing vegetated buffers between the proposed future dwelling sites and cropping land would be effective in minimising dust movement from the agricultural land, particularly during harvesting and cultivation. Given the significant difference in elevation, dust is unlikely to impact the adjacent dwelling sites.	D4 = 5 Acceptable
Pests	B5 = 17 Unacceptable	Strategies and effective management by all landowners can significantly decrease the presence and impact of pest species in the community. Practices to minimise breeding, the correct use of pesticides and maintaining buffer areas between properties in an effective manner will result in a decrease in pest species and, in turn, reduced conflict between neighbours.	D4 = 5 Acceptable
Operating Times	D4 = 5 Acceptable	The operating hours of the surrounding farms would generally be restricted to daylight hours only, therefore unlikely to result in conflict. No processing occurs on the farms. Effective communication between the farms and the operators of the eco cabins would help alleviate concerns relating to potential noise nuisance. In the unlikely event of noise nuisance from impacts on the existing retreat site from off-site noise, any breach is able to be controlled via POEO (Noise Control) Regulation 2017	D4 = 5 Acceptable
Chemical Use/ Agricultural Spray Drift	C3 = 13 Unacceptable	Buffer zones help to minimise chemical spray drift into sensitive areas and should be sufficiently in depth to trap the bulk of any drift. The setback from the proposed future dwelling sites and the sugarcane cropping is >80m, with a 20m difference in elevation. No spraying from aircraft occurs. It is recommended to establish a vegetated buffer between the sites to future decrease any risk of spray drift onto residential areas. Communication between future residents and the sugarcane cropping is also recommended.	D4 = 5 Acceptable
Increased Traffic	D4 = 5 Acceptable	There is no change is traffic expected from the proposed lot realignment, with the minimal number of	D4 = 5 Acceptable

		future dwelling sites unlikely to cause a significant increase in traffic to the area. Future development applications would also ensure all relevant traffic impacts have been identified, assessed, and mitigated.	

4.4 SITE PHOTOGRAPHS

See Appendix 5

5 CONCLUSIONS AND RECOMMENDATIONS

The Land Use Conflict Risk Assessment conclusions are based on the information described in this report and appendices and should be read in conjunction with the complete report, including Section 6 Limitations.

A Land Use Conflict Risk Assessment (LUCRA), including a review of aerial photography, surrounding land uses, a site inspection, and extensive consultation with surrounding neighbours has identified and addressed potential sources of conflict between the subject site and surrounding land uses. The primary areas of potential conflict were identified as the cattle grazing on the property to the west, located at 1283 Urliup Road, and the sugarcane cropping occurring on the subject site, which will be encompassed within proposed Lot 1 and adjacent to proposed lot 6. The proposed realignment and future residential developments on the proposed lots are deemed to be of low risk of conflict with the adjoining residential properties.

The offsite livestock operations on the adjoining property are relatively low scale, given the size of the land, the yards being located a significant distance from the subject site (>720m west). The main impacts from the cattle operations include potential noise, odour, and dust nuisance. There is an existing scatted vegetated buffer along the eastern and northern boundaries adjoining the grazing land and the existing retreat. The *Living and Working in Rural Areas* handbook recommends a minimum separation buffer of 50m between residential and grazing of stock, or a vegetated buffer of 5-10m. There is a scattered vegetation buffer along the boundary of 5-10m, as well as a setback of approximately >40m between any of the proposed future dwelling sites and the grazing land. Given the topography of the land, the size of the grazing property, and the existing setbacks, including the cattle yards located greater than 720m west of the site, the buffer appears to be sufficient to reduce the likelihood of any conflicts arising from the cattle operations. An improved vegetation buffer, particularly on the western boundary of proposed Lot 5, could further reduce the likelihood of any conflicts arising from the cattle operations.

Sugarcane cropping is located within the subject site and therefore land use conflicts are considered to be negligible. However, with the future residential development of proposed lot 6 to be located adjacent to the cropping activities, the potential impacts of the cropping activities would include noise, dust and chemical use/spray drift. There is a >80m setback between the cropping and proposed future dwelling sites, as well as a difference in elevation of 20m. The establishment of a vegetated buffer between the site would further reduce the risk of any future conflict between the land uses, as well as adhere to the recommended buffers outlined within the Tweed Development Control Plan (2008) Section A5 – Appendix E.

When considering potential conflict between any future residential developments and agricultural land uses, it is important to recognise that all agricultural activities should follow effective and practical measures to protect the surrounding environment in accordance with the Protection of the Environment Operations Act 1997 (POEO) and industry specific guidelines. Legislative guidelines also cover the use and handling of agricultural chemicals, and work, health and safety.

This LUCRA has concluded that the subject site located at Lot 8 DP 755685, Lot 1 DP 364474, Lot 1 DP 410859, Lot 1 DP 376131, Lot 1 DP 328107 & Lot A DP 174886, 133-193 Dulguigan Road, Dulguigan NSW, as shown in Appendix 1 of this report, is considered suitable for the proposed boundary realignment for future residential development of the site, subject to the following recommendations:

1. The existing vegetated buffer along the boundaries of the property, particularly the western boundary adjoining the neighbouring properties, particularly the grazing land, is to be retained and maintained. The vegetated buffer is to be a minimum width of 5m, with foliage from the base to the crown to ensure the vegetation is sufficient in trapping and minimising any dust from the farming operation entering the subject site and reducing any noise or odour impacts. Expanding the buffer, particularly in open gaps along the boundary is also recommended in reducing any risk of conflict.

2. A vegetated buffer (minimum 10m) between the proposed future dwelling sites and existing sugarcane cropping would be effective in minimising any potential future conflict relating to noise, dust and chemical use/agricultural spray drift.

3. If the intensity of livestock operations is increased on neighbouring properties, a 10m vegetated buffer is recommended between the operations and the subject site to minimise risk of conflict.

4. Effective communication between neighbours and agricultural land users, and any future owners of the proposed realigned lots is to be encouraged to ensure that residents are aware of the practices occurring on surrounding agricultural land, particularly the cattle operations and sugarcane cropping, to minimise the risk of conflict.

6 LIMITATIONS

Any conclusions presented in this report are relevant to the site condition at the time of inspection and legislation enacted as at date of this report. Actions or changes to the site after time of inspection or in the future will void this report as will changes in relevant legislation.

The findings of this report are based on the objectives and scope of work outlined in Section 1. HMC Environmental has performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees expressed or implied, are given. This report does not comment on any regulatory issues arising from the findings, for which a legal opinion should be sought. This report relates only to the objectives and scope of work stated and does not relate to any other works undertaken for the client. The report and conclusions are based on the information obtained at the time of the assessment.

The site history and associated uses, areas of use, and potential contaminants were determined based on the activities described in the scope of work. Additional site information held by the client, regulatory authorities or in the public domain, which was not provided to HMC Environmental or was not sourced by HMC Environmental under the scope of work, may identify additional uses, areas of use and/or potential contaminants. The information sources referenced have been used to determine the site history.

Whilst HMC Environmental has used reasonable care to avoid reliance on data and information that is inaccurate and unsuitable, HMC Environmental is not able to verify the accuracy or completeness of all information and data made available. Further chemicals or categories of chemicals may exist at the sites, which were not identified in the site history, and which may not be expected at the site. The absence of any identified hazardous or toxic materials on the subject land should not be interpreted as a warranty or guarantee that such materials do not exist on the site. If additional certainty is required, additional site history or desktop studies, or environmental sampling and analysis should be commissioned.

The results of this assessment are based upon site inspections and fieldwork conducted by HMC Environmental personnel and information provided by the client. All conclusions regarding the property area are the professional opinions of the HMC Environmental personnel involved with the project, subject to the qualifications made above. HMC Environmental assume no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HMC Environmental, or developments resulting from situations outside the scope of this project.

7 SIGNATURE

This report has been prepared by Helen Tunks of HMC Environmental Consulting, a suitably qualified environmental consultant, with reference to *DPI, 2007, Living and working in Rural Areas – a handbook for managing land use conflicts on the NSW North Coast. Department of Primary Industries et al, NSW.*
Note that HMC Environmental Consulting holds current Professional Indemnity Insurance to 4th August 2024.

.....

August 2024
Completion Date

Helen Tunks
Director

8 REFERENCES

Tweed Shire Council, 2008, Tweed Shire Development Control Plan 2008, Section A5 – Appendix E Recommended Buffers, NSW.

DPI, 2007, Living and working in Rural Areas – a handbook for managing land use conflicts on the NSW North Coast. Department of Primary Industries et al, NSW.

Planning Guidelines Separating Agricultural and Residential Uses, Queensland, Department of Natural Resources, 1997.

9 APPENDICES

See following pages

APPENDIX 1 - LOCATION MAPS

Figure 1 - Surrounding Area (Source: Nearmap, 2024)

Figure 2 – Subject Site (Source: Nearmap, 2023)

APPENDIX 2 - SITE PLAN PROPOSED DEVELOPMENT

PRELIMINARY
ONLY
29/8/2023

M.G.A.

PRELIMINARY
ONLY
29/8/2023

Revision | Chk

Client:

MR JOHN TILTON

IMPORTANT NOTES :

THE PROPOSED BOUNDARIES AS SHOWN HEREON ARE PRELIMINARY ONLY AND ARE SUBJECT TO FINAL DESIGN, LOCAL AUTHORITY APPROVAL AND REGISTRATION WITH NSW LAND REGISTRY SERVICES.

DIMENSIONS & AREAS SHOWN HEREON ARE SUBJECT TO FIELD SURVEY AND LOCAL AUTHORITY APPROVAL.

CONTOUR INTERVAL - 1m

CONTOURS HAVE BEEN DERIVED FROM NSW SPATIAL SERVICES 1m LIDAR DATA GATHERED APRIL 14.

PROPOSED SUBDIVISION PLAN

LOT 8 IN DP755685,
LOT 1 IN DP364474,
LOT 1 IN DP410859,
LOT 1 IN DP328107,
LOT 1 IN DP376131
& LOT A IN DP174886

DULGUIGAN ROAD
DULGUIGAN

Parish of BERWICK — County of Rous

B & P SURVEYS
CONSULTING SURVEYORS
ACN 010117236
142 Murwillumbah Street
MURWILLUMBAH
NSW 2484 Australia
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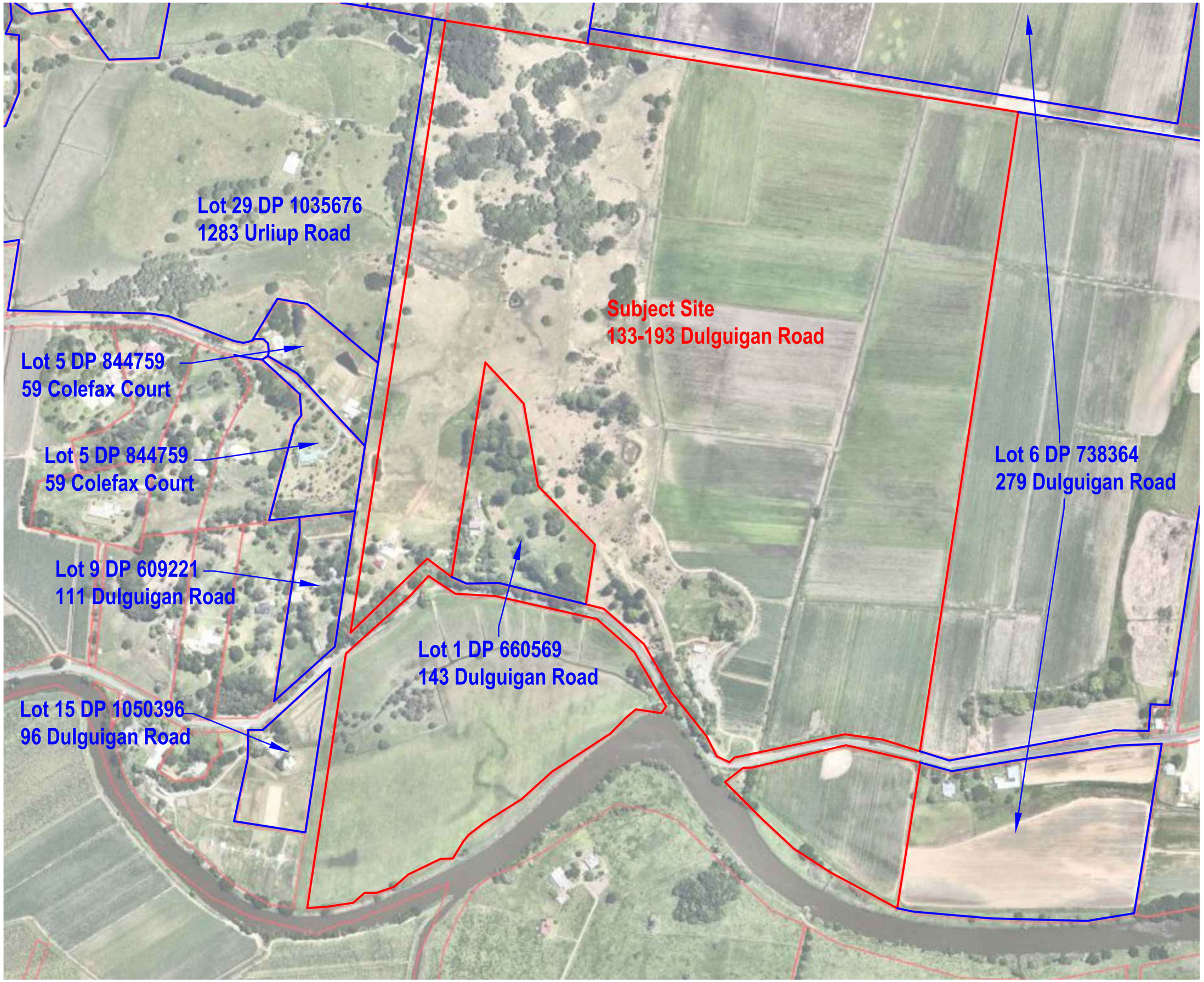
Facsimile: (02)66722618
Email:mbah@bpsurveys.com.au
Offices Also At :
Nerang Ph.(07)55960370
Homepage:
www.bpsurveys.com.au
Tweed Heads Ph.(07)55363611
A QUALITY ASSURED COMPANY

P:\31700-\31754\projects\25464B.pro

SCALE AT A1	Level DATUM	Drawn	Chk'd	F.Bk	L.Bk
1 : 3000	-	JPA		LS	-

REF. No.	DATE	DRAWING No./Size	Sheet	Of	Rev.
M31754	29/3/2023	25464 B	1	2	-

APPENDIX 3 - AERIAL PHOTOGRAPH SHOWING NEIGHBOURING PROPERTIEIS



LAND USE CONFLICT RISK ASSESSMENT

NEIGHBOURING PROPERTIES

Subject Property

Neighbouring Properties

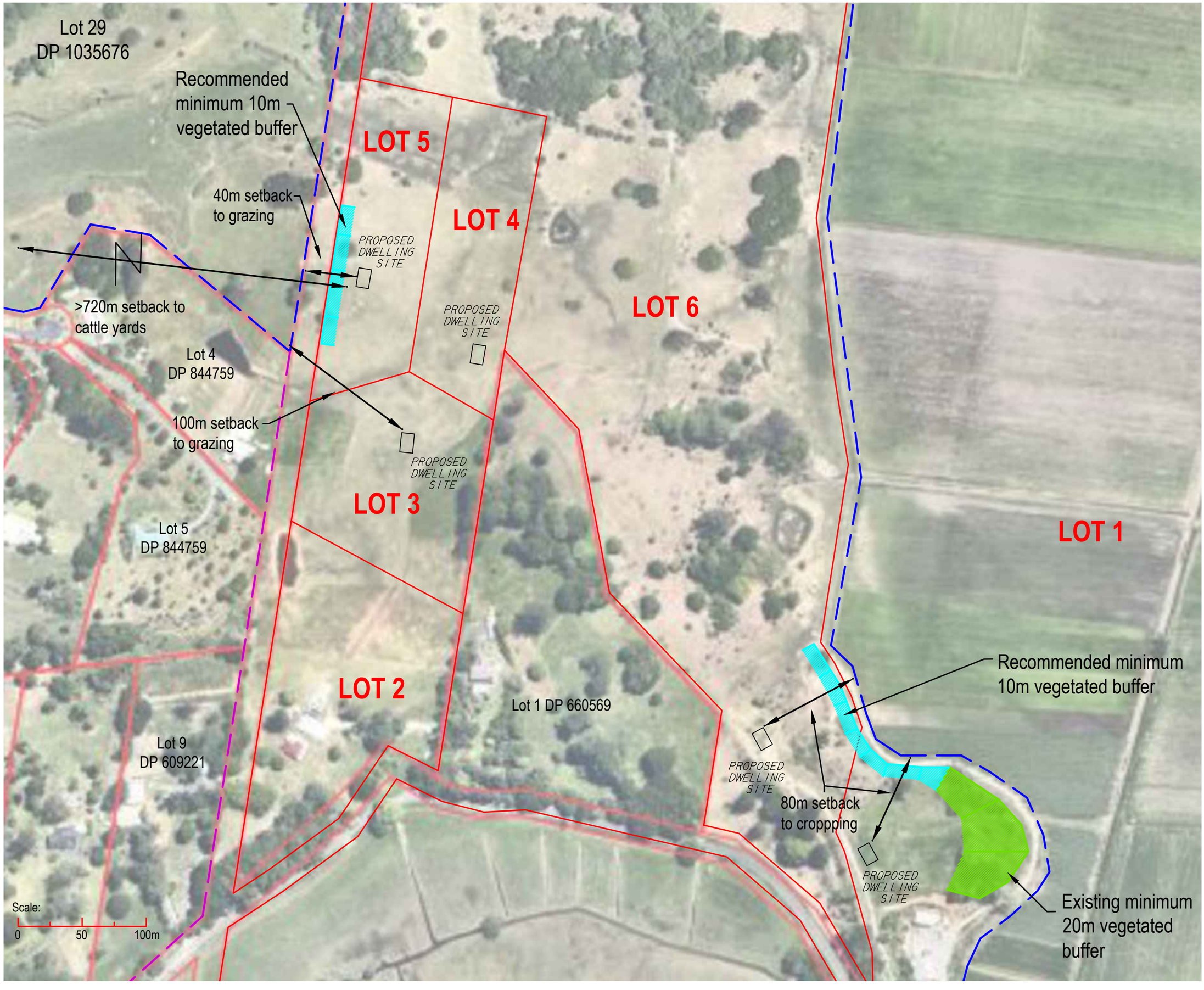
N

133-193 Dulguigan Road
Dulguigan NSW

HMC2024.810
Date: July 2024
VERSION: 25/07/2024
DRAWN: MF
BASE: Nearmap 2023

HMC
ENVIRONMENTAL CONSULTING Pty Ltd
HMC Environmental Consulting Pty Ltd
Tweed Heads NSW
0755368863
www.hmcenvironment.com.au
admin@hmcenvironment.com.au

APPENDIX 4 - AERIAL PHOTOGRAPH SHOWING EXISITNG BUFFERS



LAND USE CONFLICT RISK ASSESSMENT

SETBACKS

- Subject Property
- Residential Property
- Agricultural Activites
- Existing Buffer Zones
- Recommended Buffer Zones

N

133-193 Dulguigan Road
Dulguigan NSW

HMC2024.810
Date: July 2024
VERSION: 25/07/2024
DRAWN: MF
BASE: Nearmap 2023

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0755368863
www.hmcenvironment.com.au
admin@hmcenvironment.com.au

APPENDIX 5 - PHOTOGRAPHIC LOG

Photo No. 1	Date 05.03.2024

Description:
View east overlooking elevated dwelling site on proposed Lot 1 and towards sugar cane plantation on lower land.

Photo No. 2	Date 05.03.2024

Description:
View south overlooking existing dwelling and sheds on proposed Lot 2.

Photo No. 3	Date 05.03.2024

Description:
View west and downslope overlooking elevated dwelling site on proposed Lot 3 and towards neighbouring rural residential land.

Photo No. 4	Date 05.03.2024

Description:
View north and downslope overlooking elevated dwelling site on proposed Lot 4 and towards rural land used for cattle grazing.

Photo No. 5	Date 05.03.2024

Description:
View west and across slope overlooking elevated dwelling site on proposed Lot 5.

Photo No. 6	Date 05.03.2024

Description:
View south-east and across slope along elevated level pad on proposed Lot 6 (dwelling site), showing stock yards.

Photo No. 7	Date 05.03.2024

Description:
View north and across slope along elevated level pad on proposed Lot 6 (dwelling site), showing stock yards.

APPENDIX 6 - WIND ROSE - BUREAU OF METEOROLOGY

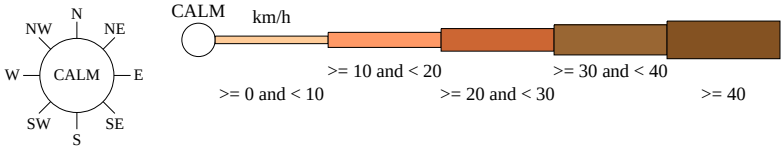
Rose of Wind direction versus Wind speed in km/h (16 Oct 1972 to 10 Aug 2023)

Custom times selected, refer to attached note for details

MURWILLUMBAH (BRAY PARK)

Site No: 058158 • Opened Jan 1972 • Still Open • Latitude: -28.3395° • Longitude: 153.3809° • Elevation 8m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



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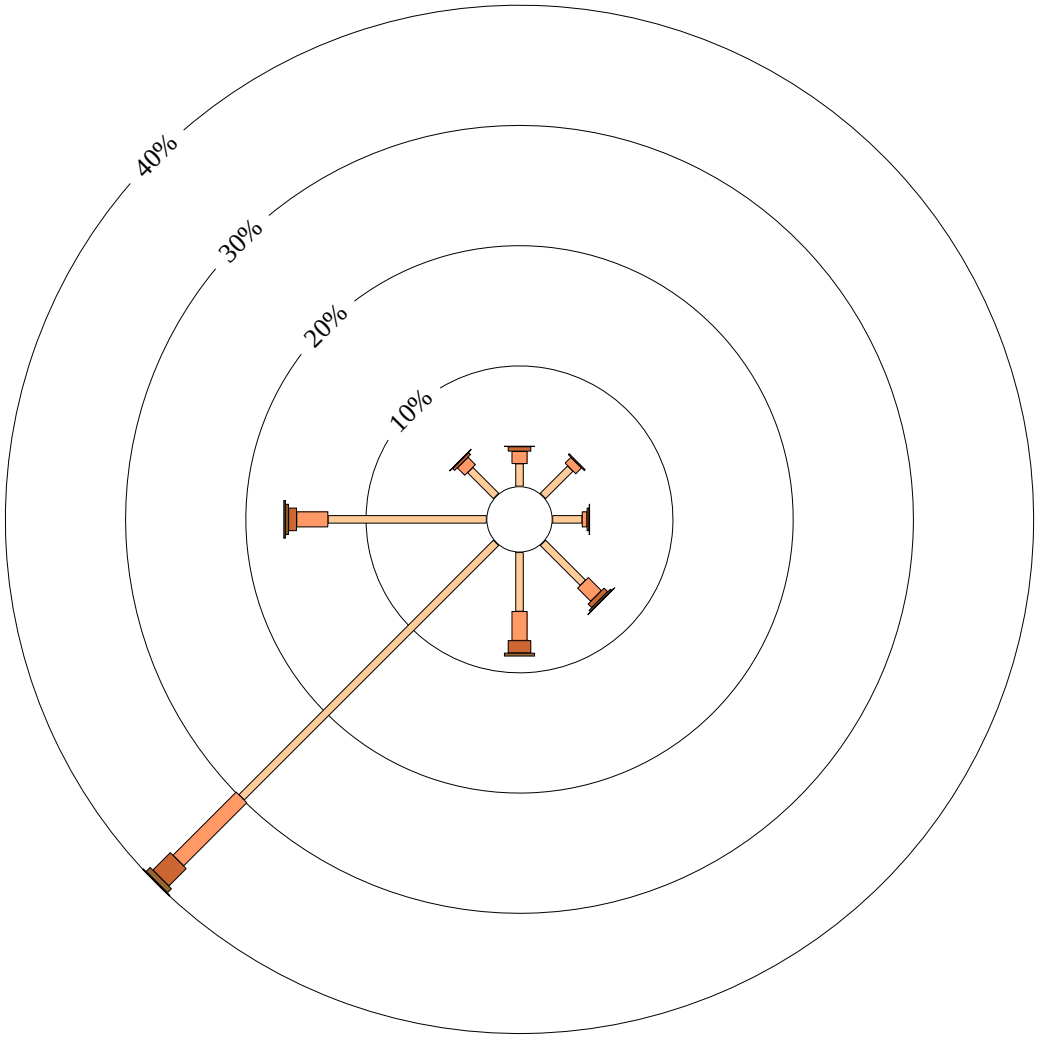
Calm 14%



Australian Government
Bureau of Meteorology

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Prepared by the Bureau of Meteorology.
Contact us by phone on (03) 9669 4082, by fax on (03) 9669 4515, or by email on climatedata@bom.gov.au
We have taken all due care but cannot provide any warranty nor accept any liability for this information.

Rose of Wind direction versus Wind speed in km/h (16 Oct 1972 to 10 Aug 2023)

Custom times selected, refer to attached note for details

MURWILLUMBAH (BRAY PARK)

Site No: 058158 • Opened Jan 1972 • Still Open • Latitude: -28.3395° • Longitude: 153.3809° • Elevation 8m

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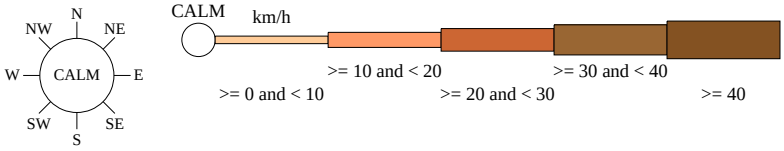

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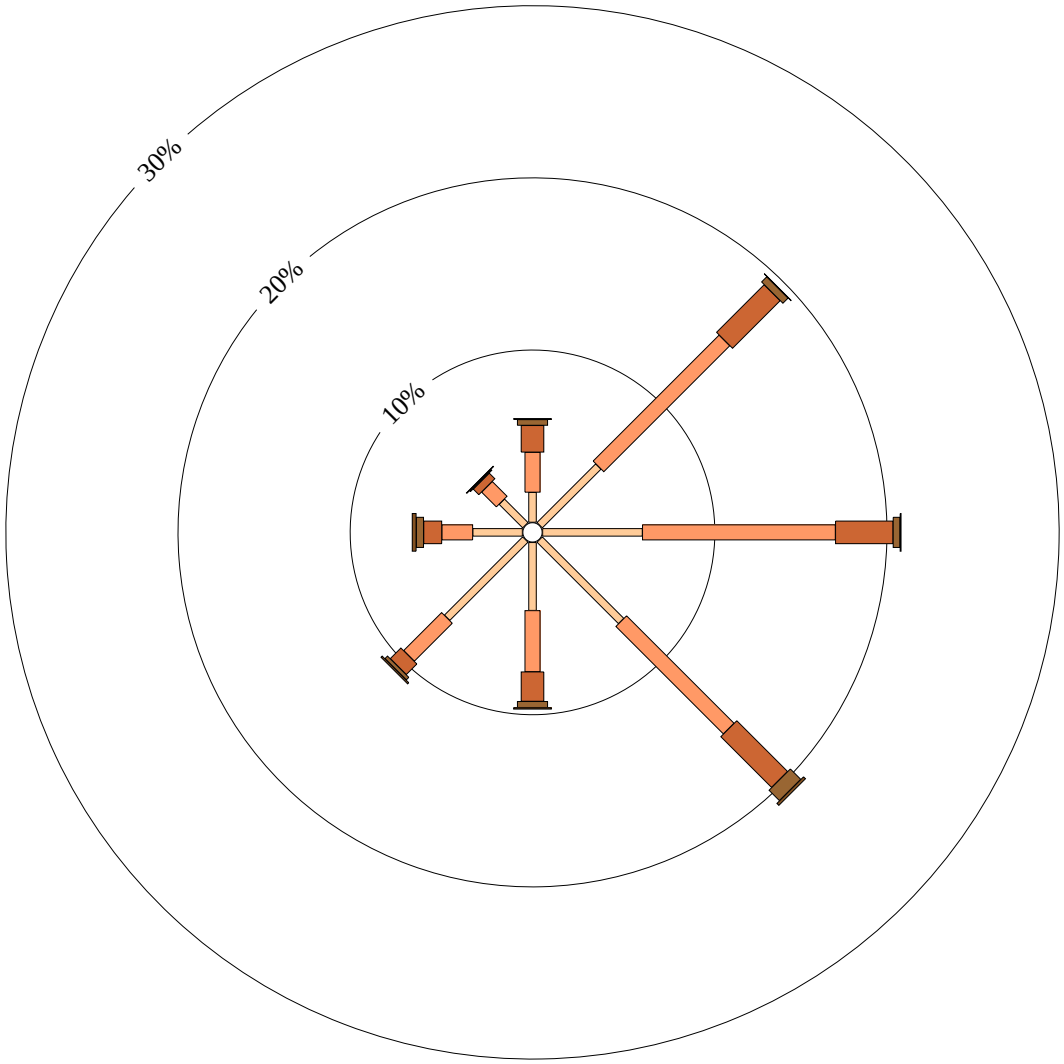
16833 Total Observations

Calm 3%



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