



Land Use Conflict Risk Assessment

Request for Planning Proposal
1055 Bruxner Highway, Goonellabah

Prepared for: Private Invest

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Author	TD
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SYDNEY
P (02) 9659 0005
E sydney@brs.com.au

CENTRAL COAST
P (02) 4325 5255
E coast@brs.com.au

HUNTER
P (02) 4966 8388
E hunter@brs.com.au

COFFS HARBOUR
P (02) 5642 4222
E coffs@brs.com.au

NORTHERN RIVERS
P (02) 6681 6696
E northernrivers@brs.com.au

SOUTH EAST QUEENSLAND
P (07) 5582 6555
E seqld@brs.com.au

www.brs.com.au

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SYDNEY

P (02) 9659 0005

E sydney@brs.com.au

CENTRAL COAST

P (02) 4325 5255

E coast@brs.com.au

HUNTER

P (02) 4966 8388

E hunter@brs.com.au

COFFS HARBOUR

P (02) 5642 4222

E coffs@brs.com.au

NORTHERN RIVERS

P (02) 6681 6696

E northernrivers@brs.com.au

SOUTH EAST QUEENSLAND

P (07) 5582 6555

E seqld@brs.com.au

1 Introduction

1.1 Background

This Land Use Conflict Risk Assessment report has been prepared by Barker Ryan Stewart to accompany a Request for Planning Proposal (Planning Proposal) to amend the Lismore Local Environmental Plan 2012 (LLEP) to enable mixed use development of land referred to as 1055 Bruxner Highway, Goonellabah (the site) comprising residential, employment and public open space lands.

Research supports the view that land use conflicts generally most often occur between residential development and agricultural land uses. The *Land Use Conflict Risk Assessment (LUCRA) Guide* suggests that this occurs when one land user is perceived to have infringed upon the rights, values, or amenity of another.

Issues involving amenity are the most common, including impacts to:

- air quality through odour, pesticides, dust, smoke and particulates,
- use and enjoyment of neighbouring land through noise issues, and
- visual amenity.

Environmental impact issues may also arise through:

- soil erosion causing land and water pollution,
- clearing of native vegetation, and
- stock access to waterways.

Direct impacts to farming operations by neighbouring land uses can also cause conflict. These include:

- harassment of livestock from straying domestic animals,
- trespass,
- changes to storm water flows or water availability, and
- poor management of both weed and animal pests.

The aims of this LUCRA are to:

- identify land uses in lands adjacent to the area proposed for rezoning,
- identify potential conflicts between the proposed rezoning area and adjoining land uses,
- provide mitigation measures to address risks and hazards associated with any conflicts of land use.

It must be noted that this LUCRA has been prepared to accompany a planning proposal for rezoning of the subject site. Further land use conflict risk assessments are likely to be required where development applications are required as part of the approvals process post rezoning.

1.2 LUCRA Planning Context

Lismore City Council has adopted the Lismore Development Control Plan 2012. Chapter 11 of the DCP provides information on minimising land use conflicts between potentially incompatible land uses through the establishment of buffers.

The predominant landuse adjacent to the subject site resulting in a potential landuse conflict is macadamia cropping and processing. Chapter 11 of the DCP provides information on recommendations for buffer widths between Intensive Plant Agriculture – Horticulture operations and residential and other forms of development.

2 Subject Site Details and Proposed Development

2.1 Property Description and Site Characteristics

The site at 1055 Bruxner Highway has an area of approximately 76ha and is located adjoining existing urban development on the eastern fringe of Goonellabah. The site comprises two allotments being Lot 42 DP868366 and Lot 1 DP957677 and benefits from frontages to the Bruxner Highway to the north and Oliver Avenue to the west. The site is zoned RU1 Primary Production and has been used for many years for grazing purposes and is largely cleared of vegetation except for remnant trees dispersed across the site. The property is bisected by Tucki Tucki creek with several minor watercourses feeding into it. The site is free from flooding.

A summary of the property description is provided below in Table 1.

Table 1.1: Property Description

Table 1: Property Description	
Address	1055 Bruxner Highway Goonellabah
Title	Lot 1 DP 957677 and Lot 42 DP 868366
Area	76.07 hectares (Lot 1 47.43 ha and Lot 43 28.54 ha)
Local Government Area	Lismore
Current Zoning	RU1 Primary Production
Topography	Steeply sloping to gently undulating land sloping down to Tucki Tucki Creek. Elevations range from 176m AHD to 140m AHD. The dominant topographical feature of Lot 42 is a central north-south ridgeline. Lot 1 is more gently undulating in the east rising to the western side with dominant ridgelines running east-west.
Drainage	The site drains via overland flow and small unnamed drainage lines into Tucki Tucki Creek which flows westward through the central portion of the site.
Soils	Reddish Brown clay loams of the Wollongbar Soil Landscape. Well drained krasnozems on ridges and slopes to poorly drained krasnozems toward drainage lines.
Geology	Lamington volcanics: Lismore basalts - Tertiary basalts.
Vegetation	The site consists of cleared land (pasture) with scattered trees. Scattered trees are a mix of remnant native species and exotic camphor laurel. There is a line of remnant vegetation along the boundary between the subject site and Oliver Avenue in the north-west. A full description of the vegetation on the site is included within the ecological assessment completed for the proposal (Bower Ecology 2022).

The subject site currently has two dwellings and four sheds and is used for cattle grazing.

2.2 Site Location and Adjoining Land Uses

The subject site is located on the southern side of the Bruxner Highway at the eastern end of the Goonellabah residential area in the Lismore Local Government Area.

Figure 1: Subject site location – 1055 Bruxner Highway Goonellabah



Table 1.2: Adjoining Land uses

Table 2: Adjoining Land Uses

North	Adjoins the Bruxner Highway. Mixed residential land, pasture and macadamia crops to the north of this. Also a small macadamia de-husking plant.
North-east	Macadamia crops and grazing lands.
East	Macadamia crops.
South-east	Macadamia crops
South-west	Mixed residential, pasture and remnant vegetation.
North-west	Oliver Avenue (future road) and residential land within Regatta Estate

2.3 Development Proposal

The Planning Proposal seeks to amend the LLEP as follows:

- Rezone the site from RU1 Primary Production to the following mix of land use zones:
 - R1 General Residential.
 - B4 Mixed Use.
 - RE1 Public Recreation.
 - IN1 General Industrial.
- Amend the Lot Size Map (Sheet LSZ_005 and Sheet LSZ_006) to remove the current minimum lot size requirement of 40ha and 20ha and impose the following minimum lot sizes:
 - R1 zoned land: a minimum lot size of 300m²
 - B4 zoned land to the north of Tucki Tucki creek: a minimum lot size of 300m²
 - B4 zoned land to the south of Tucki Tucki creek: a minimum lot size of 1,500m²
 - IN1 zoned land: a minimum lot size of 1,500m²
- Amend the LLEP 2012 Height of Building Map (Sheet HOB_005 and Sheet HOB_006) to impose the following maximum height of building control (excluding the RE1 and IN1 zoned land):
 - B4 zoned land to the north of Tucki Tucki creek: maximum building height of 13.5m
 - R1 zoned land: maximum building height of 8.5m

Changes to the planning controls facilitate the potential development of the site to accommodate a diversity of new housing, employment, and public open space opportunities in an environmentally and socially sustainable environment.

An Indicative Layout Plan (ILP), informed by detailed technical investigations into the characteristics of the site and adjoining land along with available servicing and community infrastructure, confirms the capacity to accommodate urban development comprising the following:

- Approximately 346 residential and mixed use zoned allotments capable of accommodating a variety of housing forms and densities with an estimated population of over 855 residents.
- Approximately 105 allotments zoned industrial and mixed use capable of supporting a variety of employment generating and service activities with an associated potential 2,614 direct jobs.
- Provision of over 14ha of the site to open space comprising land zoned and utilised for public recreation along with riparian corridors and landscape buffers.

3 Land Use Conflict Risk Assessment

3.1 Introduction

This section provides an evaluation of the risk level of potential conflicts using a Risk Ranking Matrix (**Table 3.1**). This matrix is used to rank the identified potential land use conflicts, and assess the environmental, public health and amenity impacts according to the:

- probability of occurrence (**Table 3.1 and 3.2**), and
- consequence of the impact (**Table 3.3**)

3.2 Initial Risk Identification and Risk Ranking

The Risk Ranking Matrix provides a risk ranking from 25 to 1. It covers each combination of five (5) levels of 'probability' (letters A to E) and 5 levels of 'consequence', (numbers 1 to 5) as shown in **Table 3.1** to identify the risk ranking of each impact. For example, an activity with a 'probability' of D and a 'consequence' of 3 yields a risk rank of 9.

Table 3.1 Risk Ranking Matrix (Source: NSW Department of Primary Industries 2011)

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

A rank of 25 is the highest magnitude of risk, i.e. a highly likely and very serious event. A rank of 1 represents the lowest magnitude of risk, i.e. an almost impossible and very low consequence event. Priority is given to those activities listed as high risk. This will help rank multiple effects and provide a priority list when developing management strategies.

Table 3.2 Probability Table (Source: NSW Department of Primary Industries 2011)

Level	Descriptor	Description
A	Almost Certain	Common or repeating occurrence
B	Likely	Known to occur, or has happened
C	Possible	Could occur, or may have occurred previously
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 3.3 Measure of Consequence (Source: NSW Department of Primary Industries 2011)

Level	Measurement of Consequence
Level: 1	Descriptor: Severe
Description	<ul style="list-style-type: none"> Severe and/or permanent irreversible damage to the environment Severe impact on the community Neighbours are in prolonged dispute and legal action involved
Example/ Implication	<ul style="list-style-type: none"> 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 (POEO Act) 1997 and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act 1997
Level: 2	Descriptor: Major
Description	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Water, soil or air known to be affected, probably in the long term Harm to animals, fish or birds or plants Public complaints. Neighbour disputes occur. Impacts pass quickly Contravenes conditions of Council's licences, permits, POEO Act 1997 Likely prosecution
Level: 3	Descriptor: Moderate
Description	<ul style="list-style-type: none"> Moderate or medium-term impact to the environment and community Some ongoing management implications Neighbour disputes occur
Example/ Implication	<ul style="list-style-type: none"> 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 1997 Unlikely to result in prosecution
Level: 4	Descriptor: Minor
Description	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Very minor impact to the environment and community Can be effectively managed as part of normal operations Neighbour disputes unlikely
Example/ Implication	<ul style="list-style-type: none"> No measurable or identifiable impact on the environment Nor measurable impact on the community or impact is generally acceptable

An initial evaluation of the identified potential conflicts and their potential consequences is presented in **Table 3.3**, below.

3.3 Potential Land Use Conflicts

There are a number of land uses on adjoining land and proposed within the subject site that may result in potential conflict. These conflicts are associated with intensive horticulture (macadamias) on lands to the north-west, west, south-west and south of the subject site.

3.3.1 Noise Associated with Macadamia Production

The following may result in generating noise that may impact proposed residential areas within the subject site:

- Plant and equipment associated with
 - harvesting of nuts
 - maintenance (pruning) of trees and ground layer (mowing)
 - applying chemicals (spraying)
 - applying fertilisers (spreader)
 - mulching
 - truck movements
- Plant and equipment associated with
 - De-husking activities

Mitigation strategies and controls include buffers, restriction of operations during weather events, noise baffling equipment, restriction of operating hours.

3.3.2 Use of Chemicals and Fertilisers

Macadamia production on adjacent lands is likely to use a number of chemicals and fertilisers to aid in production and crop yields. These chemicals (herbicides and pesticides) and fertilisers may include:

- Bulldock, Lepidex, Ratsak (pesticides)
- Copper hydroxide, Copper hydrochloride (fungicide)
- Compost/Manure, Boron (Fertiliser)

Applications times are typically seasonal or 2-3 times per year.

Where machine spray application is utilised, overspray poses a risk to adjoining areas.

Mitigation strategies and controls include buffers, correct application techniques, equipment safeguards, material safety data sheets, restriction of operations during weather events, fit for purpose equipment, training, correct storage.

3.1.3 Pests

Macadamia crops typically attract pests, most notably rodents. The presence of rodents may impact upon neighbouring properties.

Mitigations measures and controls include buffers, pesticides and monitoring.

3.1.4 Odour

During application of fertilisers, particularly composts and manures odour may drift from plantation areas to neighbouring lands.

Mitigation strategies and controls include buffers, correct application techniques, restriction of operations during certain weather events (i.e. high winds), training.

These potential conflicts/risks and their controls are addressed in Section 3.3.

3.4 Land Use Conflict Risk Assessment

The following table (Table 3.4) provides an outline of all identified hazards, the risk they pose and the risk score prior to implementation of mitigation and control measures. Once controls are implemented a residual risk score can be calculated. The following residual risk scores for each of the identified hazards are:

- Noise generation – D4 Unlikely/Minor
- Chemical/fertiliser use - D4 Unlikely/Minor
- Pests - D4 Unlikely/Minor
- Odour – D5 Unlikely/Negligible

Table 3.4 Land Use Conflict Risk Assessment Proposed Rezoning – Bruxner Highway Goonellabah

HAZARD	RISKS	RISK SCORE	MITIGATION STRATEGIES
Use of noise generating equipment for macadamia production	<ul style="list-style-type: none"> The adjacent macadamia production activities may result in local noise increases. Noise may be generated by plant and equipment including tractors, harvesters, pruning, spraying, truck and vehicle movements. A de-husking facility near the northern boundary may result in local noise. 	B4	<ul style="list-style-type: none"> The proposal includes buffers to adjacent plantations. The layout proposed 80 m buffer between the macadamia plantation and the development. This is in accordance with the Lismore DCP 2012 Chapter 11. The layout proposes 30-40m buffer between the development and industrial lots. These buffers will be planted. This is in accordance with the Lismore DCP 2012 Chapter 11. No development is proposed within 80m of the plantation to the north-west as per DCP 2012 Chapter 11. Activities within standard operating procedures. Use of appropriate equipment with noise reduction measures.
Use of chemicals and fertilisers from macadamia production	<ul style="list-style-type: none"> Use of chemicals (herbicides, pesticides) and fertilisers may impact on surrounding properties (overspray). Chemicals and fertilisers may have potential impact health of adjoining residents with short or long term exposure. Chemical spills. 	C2	<ul style="list-style-type: none"> The proposal includes buffers to adjacent plantations. Buffers, particularly vegetation, will be planted to reduce the risk of chemical drift. The layout proposes 80m buffer between the macadamia plantation and the development. This is in accordance with the Lismore DCP 2012 Chapter 11. The layout proposes 30-40m buffer between the development and industrial. These buffers will be planted. This is in accordance with the Lismore DCP 2012 Chapter 11. No spraying during windy conditions. Suitable storage of all chemicals and fertilisers. Training in use of chemicals and safety procedures. Legislation – <i>Pesticides Act 1999</i>.
Pests	<ul style="list-style-type: none"> Rodents associated with macadamia plantations may impact adjacent areas. 	C4	<ul style="list-style-type: none"> Use of pesticides. Establishment of buffers.

HAZARD	RISKS	RISK SCORE	MITIGATION STRATEGY	RESIDUAL RISK SCORE
Odour	<ul style="list-style-type: none"> Application of composts and manures as fertilisers may impact adjoining areas. 	B4	<ul style="list-style-type: none"> The proposal includes buffers to any land adjoining macadamia plantations. Buffers, particularly vegetated buffers, will separate development areas from the risk. The layout proposes 80m buffer including a vegetated 30 m buffer between the macadamia crop and residential lots in the north-east of the development. This is in accordance with the Lismore DCP 2012 Chapter 11. The layout proposes 30-40m buffers between macadamia crops and industrial. These buffers will be mounded and densely planted. This is in accordance with the Lismore DCP 2012 Chapter 11. No spreading of fertilisers during windy conditions. Training in application of fertilisers. 	D5

4 Summary

This Land Use Conflict Risk Assessment for a proposed rezoning of lands at Lot 1 DP 957677 and Lot 42 DP 868366 1055 Bruxner Highway Goonellabah has been completed to accompany a planning proposal for the rezoning of that land. This risk assessment has identified a number sources of potential land use conflict based on the proximity of intensive horticultural lands adjacent to lands proposed for rezoning as residential and, to a lesser extent, industrial use.

The design of the proposed rezoning area has been informed via the recommended buffers with Lismore City Council's Development Control Plan 2012 Chapter 11 buffers. The design includes buffers to areas adjacent to macadamia crops including 80 metres to residential lots, including a 30 metre vegetated buffer and 30 to 40 metres to proposed industrial lots. This also includes a mounded and vegetated buffer. These buffers are in accordance with those recommended by the DCP.

Other mitigation strategies, standard within macadamia industry, have resulted in the minimisation of conflict and risks to acceptable levels, as identified in Section 3 and Table 3.4.

This LUCRA has been prepared as part of a planning proposal for rezoning. Further refinement of the details provided within this LUCRA may be required at later stages of the development application and approval process.

5 References

Bower Ecology (2022) 1055 Bruxner Highway Goonellabah Ecological Assessment Report to Support Planning Proposal (Draft)

State of New South Wales (Department of Primary Industries) 2011, Fact Sheet: Land Use Conflict Risk Assessment Guide.

State of New South Wales (Department of Primary Industries) 2007, Living and Working in Rural Areas.

State of New South Wales (Department of Primary Industries), 2006 Information on Pesticide Issues - Spray Sense No 1.