Land Use Conflict Risk Assessment

Planning Proposal
to rezone Tuckombil Quarry 540 Gap Road
Alstonville to an Innovation Precinct

HEALTH SCIENCE ENVIROMENTAL EDUCATION
ENVIRONMENTAL AUDITOR

Land Use Conflict Risk Assessment

Planning Proposal
to rezone Tuckombil Quarry 540 Gap Road Alstonville to an Innovation Precinct

Prepared for: Ballina Shire Council
Version: FINAL
Date: 20 June 2023
Job No. 58/2022_lucra
Tim Fitzroy & Associates
ABN: 94120188829
ACN: 120188829

environmental

Tim Fitzroy

Environmental Health Scientist
Environmental Educator
Environmental Auditor

61 Pine Avenue
East Ballina NSW 2478
T | 02 6686 5183
M | 0448 483 837
tim@timfitzroy.com.au
www.timfitzroy.com.au

TABLE OF CONTENTS

Section ***Page***

Illustrations

Tables

Appendices

1. Introduction

Tim Fitzroy & Associates (TFA) has been engaged by Ballina Shire Council (the client) to undertake a Land Use Conflict Risk Assessment (LUCRA) for land described in real property terms as Lot 22 DP 1243105 Alstonville (see Site Locality Plan **Illustration 1.1**).

This LUCRA has been prepared to support Planning Proposal to rezone the site to facilitate its use for a combination of high technology industrial uses, such as film studios and community recreation. Details of the proposed future use are not fully developed. Council is currently in discussions with Byron Studios Pty Ltd regarding their proposal to undertake a staged development that would establish film production facilities at the site.

LUCRA's were initially conceived in the *Living and Working in Rural Areas Handbook* (Department of Primary Industries et.al 2007) by the Centre for Coastal Agricultural Landscapes in partnership with the Northern Rivers Catchment Management Authority as a tool to better manage potential land use conflicts between residential development and rural activities and environmental attributes/assets on the NSW North Coast. .

TFA have been requested by the applicant to adapt the LUCRA tool to identify potential land use conflicts risks associated with the commercial planning proposal and existing agricultural land uses in the locale and where necessary propose mitigation options to address any unacceptable risks. It is important to note that the LUCRA Guidelines (DPI et.al 2007) and Council's DCP 2012 do not recommend buffers between agricultural and commercial uses.

A review of background information, discussion with Council staff, a site inspection coupled with an evaluation of aerial photography has confirmed:

The site:

- is zoned DM (Deferred Matter) in the Ballina Local Environmental Plan (BLEP) 2012, therefore BLEP 1987 continues to apply. It is zoned 1(e) Rural (Extractive and Mineral Resources) under the Ballina 1987 LEP.
- has an area of 23 ha and was operated as a full-time hard rock quarry until 2016. All quarrying activities ceased at the site in mid-2020. Two tenants occupy the area surrounding the central quarry void. Bitupave Limited (Boral) occupies a leasehold lot in the south with frontage to Gap Road (Lot 21 DP 1243105) and Ron Southon Pty Ltd in the northwest (Lot 3 DP 1130300).
- comprises a central quarry void, various structures including buildings, offices and sheds, hardstand areas, internal access roads and vegetation interspersed throughout.
- is surrounded by large lot rural residential properties to the north, south and west, and the Gap Road Sports Field adjoining the property to the east. The village area of Alstonville is approximately 220 m to the west and 300 m to the south.
- currently, the only access to the site and the two subsidiary lots is via Gap Road, approximately 240 m east of the intersection with Teven Road.

The following guidelines have been considered in the assessment of potential land use conflicts:

1. Noise Policy for Industry (NSW EPA 2017);
2. National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013;
3. Living and Working in Rural Areas Handbook (2007*)*; and
4. Section 3.1 Chapter 2 Land Use Conflict (Ballina Development Control Plan (BDCP) 2012).

In addition, a review of the following supporting documents for the proposed development has been undertaken:

1. Item 9.8 Tuckombil Quarry Site-Byron Studios, Ordinary Meeting Ballina Shire Council, 22 July 2021;
2. Item 5.2 Tuckombil Quarry Site-Future Options, Finances and Facilities Committee Meeting, Ballina Shire Council, 19 May 2022;
3. Risk Assessment for Ballina Shire Council on the impact of Current and Future Explosives Operations at the Alstonville Site (Tuckombil) including the Impact on the Proposed Film Studios (Noel Erichsen, 5 March 2023);
4. Tuckombil Quarry Rezoning Traffic Impact Assessment (GeoLINK 23 February 2023);
5. Biodiversity Assessment Report (GeoLINK, 2 March 2023); and
6. Report on Preliminary Site Investigation for Contamination Proposed Rezoning Commercial Development Tuckombil Quarry Alstonville (Douglas Partners, October 2022).

In addition, TFA have had meetings and discussions with Leanne Harding and Rob van Iersel (Ballina Shire Council) Geoff Chilcott (Ron Southon Explosives), Paul Anderson (Byron Studios) and neighbours Mark Ellis (Growing Grounds Nursery) and Julie Schmidt.

Any potential land use conflicts between the proposed Innovation Precinct and existing land uses in the locale will be considered against a risk assessment matrix 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 & amenity hazard identification and risk control are performed in three stages.

1. Environmental/public health & amenity hazard identification;
2. Risk assessment and ranking; and
3. Risk control development.

The proposed *Innovation Precinct* should be designed to minimise instances of incompatibility such that normal agricultural practices are not inhibited. Where such instances do arise, measures to ameliorate potential conflicts should be revised wherever possible. This LUCRA has been prepared to assist Council in assessing potential land use conflicts between the proposed development at the subject site and the neighbouring agricultural uses.

Illustration 1.1 Site Locality Plan

Source: Near Maps 2023

1.1 Scope of Works

This assessment has been undertaken to determine the potential land use conflicts between the Innovation Precinct and existing agricultural and horticultural activities in the locale.

It is noted that details of the proposed future use are not fully developed and therefore the LUCRA is of a preliminary nature.

Potential sources of conflicts between the proposed development and existing retail nursey, macadamia plantation, cattle grazing and horse breeding enterprise include:

- Noise, traffic, access.

The tasks involved in undertaking this assessment were to:

Step 1: Gather information

- Determine the nature of the land use change and development proposed.
- Assess the nature of the precinct where the land use change and development is proposed.
- Appraise the topography, climate and natural features of the site and broader locality
- Conduct a site inspection
- Describe and record the main activities of the surrounding agricultural land use and their regularity, including periodic and seasonal activities that have the potential to be a source of complaint or conflict.

Step 2: Evaluate the risk level of each activity

- Record each activity on the risk assessment matrix, and identify the level of risk of a land use conflict arising from the activity.

Step 3: Identify the management strategies and responses that could help lower the risk of the issue resulting in a dispute and conflict

- Identify management strategies for each activity
- Prioritise Strategies
- Provide Performance targets for each activity

Step 4: Record the results of the LUCRA

- Summarise the key issues, their risk level, and the recommended management strategies

2. Gather Information

2.1 Nature of the land use change and development proposed

The area to be rezoned is approximately 23ha and was operated as a full-time hard rock quarry until 2016. All quarrying activities ceased at the site in mid-2020. Two tenants occupy the area surrounding the central quarry void. Bitupave Limited (Boral) occupies a leasehold lot in the south with frontage to Gap Road (Lot 21 DP 1243105) and Ron Southon Pty Ltd in the northwest (Lot 3 DP 1130300). The site comprises a central quarry void, various structures including buildings, offices and sheds, hardstand areas, internal access roads and vegetation interspersed throughout.

Ballina Shire Council (BSC) propose to rezone the site to SP4 Enterprise to facilitate its use for a combination of high technology industrial uses, such as film studios and community recreation. Details of the proposed future use are not fully developed. BSC is currently in discussions with Byron Studios Pty Ltd regarding their proposal to undertake a staged development that would establish film production facilities at the site. The preliminary concept plan provided by Byron Studios Pty Ltd is provided at **Appendix A**.

2.2 Nature of the precinct where the land use change and development is proposed

The site:

- is zoned DM (Deferred Matter) in the Ballina Local Environmental Plan (BLEP) 2012, therefore BLEP 1987 continues to apply. It is zoned 1(e) Rural (Extractive and Mineral Resources) under the Ballina 1987 LEP.
- currently, the only access to the site and the two subsidiary lots is via Gap Road, approximately 240 m east of the intersection with Teven Road.
- is surrounded by large lot rural residential properties to the north, south and west, and the Gap Road Sports Field adjoining the property to the east. The village area of Alstonville is approximately 220 m to the west and 300 m to the south (see **Illustration 2.1** Subject Site and Surrounding Land uses).

Illustration 2.1

Subject site and Surrounding Land Uses Land Use Conflict Risk Assessment

Planning Proposal to Rezone Tuckombil Quarry to an Innovation Precinct / 540 Gap Road, Alstonville

PREPARED BY:
tim fitzroy & associates

2.3 Topography, Climate and Natural Features

The site is located on gently sloping land surrounded by undulating terrain. Reference to the Contour Plan provided in the BSC interactive mapping website indicates that the site undulates with an approximate elevation of between relative level (RL) 120 m and 150 m relative to Australian Height Datum (AHD). The site generally slopes from each boundary into the centre of the site.

Vegetation on site comprises predominantly degraded land comprising exotic grasses and herbs. Planted ornamental trees and forested areas with a high abundance of exotic species also occur throughout the site.

Three surface water bodies are located within the site boundaries, namely, the quarry void, which is located in the centre of the site, Branch Creek, which flows south to north through the site, and an area of ponded water in the western part of the site. A search of the publicly available registered groundwater bore database indicated that there are 14 registered groundwater bores within a 500 m radius of the site.

The soils within the subject site are generally red basaltic – landscape variant. They are generally deep well drained alluvial kransozerm, described as the Wollongbar soil landscape group by Morand (1992).

Due to its latitude and proximity to the coast, Ballina Shire has a coastal sub-tropical climate. As a result, daily temperatures are in the warm to very warm range during summer months (19.5 - 27.5°C) and are milder during winter months (11.7 - 20.3°C). Rainfall is mainly distributed throughout December to June with 1260 mm (72%) of the mean annual rainfall of 1747 mm falling during this period. The highest monthly rainfall occurs in February/March while the months July-September are much drier, generally receiving less than 100 mm 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 (see **Table 2.1**).

2..1 Wind Regime

The wind regime for the site is based on annual wind roses for Ballina Airport AWS.

Annual wind roses for the times of 9am and 3pm are shown in **Illustration 2.1**. The wind roses are based on records from 1992 to 2010. 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 winds from the west and south-west and to a lesser extent from the north;
- winds in the afternoon are typically more moderate winds from the south, north-east, south-east and east; and
- Calm conditions are experienced 8% of the time in the morning and only 1% of the time in the afternoons.

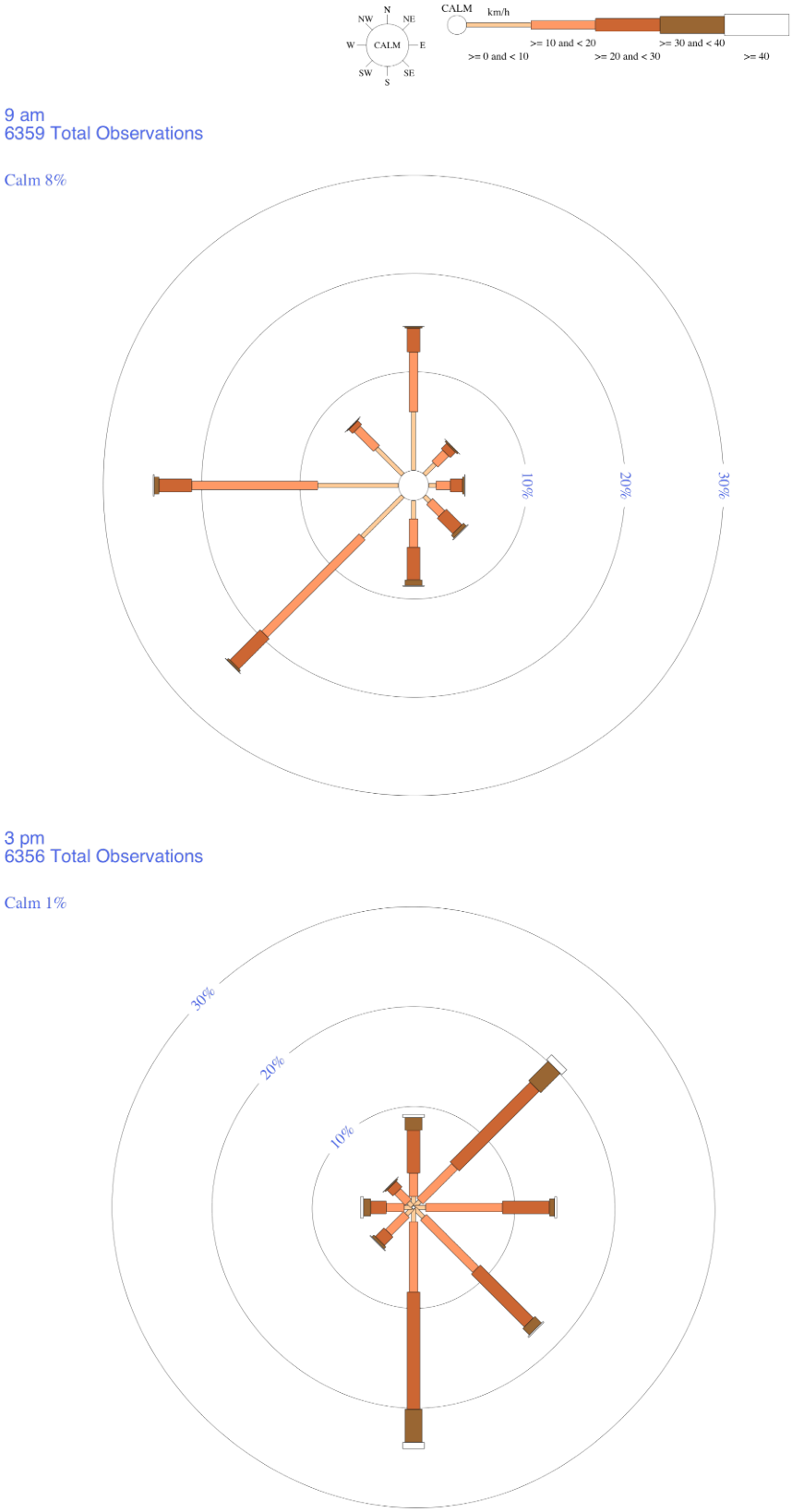
The wind frequency towards any of the sensitive receptors is less than 35% if three quadrants are added together (e.g., south east + south-east + south).

Table 2.1 Monthly Climate Statistics –BALLINA AIRPORT AWS)

Statistics	*Month*												*Annual*
	J	*F*	*M*	*A*	*M*	*J*	*J*	*A*	*S*	*O*	*N*	*D*	
Mean Max. Temp. (°C)	27.8	27.5	26.4	23.9	21.2	19.3	18.6	20	22	23.6	25.1	26.4	23.5
Mean Min. Temp. (°C)	21.1	21	19.9	17.6	14.9	13.1	12	13.1	15.2	16.9	18.6	19.8	16.9
Mean Rain (mm)	164.4	166.6	127.7	183.5	99.4	164.9	96.3	75.4	47	95.8	93.4	139.3	1509.2
Mean no. rain days	10.8	12	11.6	12.6	10.3	11.5	9.2	5.5	5.5	8.3	8.3	10.6	116.2
9 am conditions													
Mean Temp. (°C)	24.5	23.9	22.5	21.1	18.1	15.5	15.0	16.5	19.7	21.5	22.3	23.9	20.4
Mean Rel. Humid. (%)	74	78	80	75	75	75	72	66	63	66	72	70	72
Mean Wind Spd. (km/h)	13.3	12.8	12.5	13.2	13.5	12.7	13.3	13.3	14.5	15.7	14.2	14.2	13.6
Dominant Direction[1]	SW	SW	SW	SW	W	W	W	W	N & SW	N	N	N	W
3 pm conditions													
Mean Temp. (°C)	26.7	26.5	25.4	23.4	21.0	19.0	18.7	19.8	21.6	22.8	24.4	25.9	22.9
Mean Rel. Humid. (%)	67	68	67	65	64	62	59	55	59	62	65	64	63
Mean Wind Spd. (km/h)	24.4	23.0	21.5	18.9	16.8	15.9	18.1	19.9	23.7	24.8	24.8	24.7	21.4
Dominant Direction[1]	NE	NE	SE	S	S	S	S	S	NE	NE	NE	NE	S

Table 2.2 Annual Wind Directions and Strength

Direction	*9am*	*9am Wind Speed*	*3pm*	*3pm Wind Speed*
N	15%	light	9%	moderate
NE	3%	light	21%	moderate
E	3%	light-moderate	14%	light-moderate
SE	5%	light-moderate	18%	light-moderate
S	9%	light-moderate	24%	light-moderate
SW	24%	light	5%	light
W	25%	light	5%	light-moderate
NW	8%	light	3%	light
Calm	8%	-	1%	-



Source: Bureau of Meteorology

Figure 2.1 Annual Wind Roses (9am and 3pm) for Ballina Airport

2.4 Site Inspection

Tim Fitzroy conducted a site inspection on 25 October 2022 with Council's Property Co-ordinator Leanne Harding. Most of the site was covered with thick grass, bush (Lantana) and tree vegetation. Access to most of the site was inaccessible due to terrain and vegetation. Several gravel tracks were present with large gravel construction pads observed in the north-eastern, south-eastern and south-western parts of the site. The site undulated with areas of excavated flat gravel and rock pads, deep cuts of up to 5 m with exposed rock walls, steep slopes and overgrown soil and gravel stockpiles. The southern and northern parts of the site were covered with a gravel road base material. Areas of protruding rocks and exposed rock walls were exposed around the quarry void. Areas of deep cuts were observed around the dam with areas of landslips observed along the excavations.

Photographs of the site subject and surrounds were taken (see **Appendix B**). Vegetation on site comprises predominantly degraded land comprising exotic grasses and herbs. Planted ornamental trees and forested areas with a high abundance of exotic species also occur throughout the site. Branch Creek dissects the site and generally flows in a south to north direction.

Two tenants occupy the area surrounding the central quarry void. Bitupave Limited (Boral) occupies a leasehold lot in the south with frontage to Gap Road (Lot 21 DP 1243105) and Ron Southon Pty Ltd in the northwest (Lot 3 DP 1130300). The site comprises a central quarry void, various structures including buildings, offices and sheds, hardstand areas, internal access roads and vegetation interspersed throughout.

Meetings were held with Geoff Chilcott (Ron Southon Explosives), Paul Anderson (Byron Studios) and neighbours Mark Ellis (Growing Grounds Nursery) and Julie Schmidt.

2..2 Mr Geoff Chilcott (Ron Southon Explosives)

Tim Fitzroy held a meeting with Mr Geoff Chilcott (Ron Southon Explosives) and Council's Rob Van Isrsel on 6 December 2022.

Mr Chilcott advised that:

a. he has owned the Ron Southon Blasting business for approximately 19 years;
b. Ron Southon Blasting has Development Consent from Ballina Shire Council to operate the business on the subject site;
c. The business is licenced to store explosives with Safe Work NSW (former NSW Workcover Authority);
d. The business stores boosters, detonators, ammonium nitrate and a Water Gel product.
    i. The boosters consist of explosives stored in 150 gram batches within a hard cylindrical case
    ii. 1 shed is used to store ammonium nitrate;
    iii. 2 small sheds are used to store boosters;
    iv. 2 small sheds are used to store detonators;
    v. Water Gel is stored in 2 above ground steel tanks
e. The volume of explosives stored onsite is commercial in confidence. According to Mr Chilcott this information was previously supplied to Council in the Development Application for Ron Southon Blasting

f. The business is in full compliance the Safe Work NSW licence conditions and AS2187.1 and AS2187.2;
g. Safe work NSW as part of their regular assessment and licencing require strict adherence to safety requirements;
h. The distances to residences from the depot are part of Safework NSW consideration for licencing. Safework NSW has considered the proximity of existing residences within closer proximity to the depot than the proposed development.
i. Safework NSW are satisfied with the existing arrangements at the Ron Southon Depot

As a result of the proposed rezoning, it was noted that there will be a significant increase in people working in relatively close proximity to the explosives storage facility. To better inform the LUCRA and Council with regard to the potential conflicts between the existing and the proposed Film Studios it was agreed that Council would engage a suitably qualified person/s to undertake a multi-level risk assessment.

2..3 Paul Anderson (Byron Film Studios)

Tim Fitzroy met and held discussions with Paul Anderson (Byron Film Studios) on 26 October 2022.

Mr Anderson advised that:

- Byron Studios current licence agreement at Alstonville Cultural Centre ceases in December 2022.
- As a preliminary first step, Byron Studios are seeking support from Council to access the front part of the Tuckombil Quarry site (not currently leased by Boral) to park vehicles.

The proposed stages in the Byron Studios attachment, have been developed in recognition of the need to progress with securing productions (subject to rezoning and planning approval processes being completed) following cessation of the licence agreement at Alstonville Cultural Centre. Mr Anderson emphasised that *at this stage we are purely focussed on stage 1 and building the 2 Sound Stages with Production Offices / Sheds attached to this facility. The remainder of the Stages are very early concepts.*

The five stages proposed are:

Stage	Description
Stage 1	Construction of buildings, shed and carpark area • Studio space equivalent to Alstonville Cultural Centre. • 1,000 m2 shed • Establishment of onsite parking
Stage 1A	Use of Quarry pit for filming
Stage 2	Construction of offices and temporary accommodation for workers.
Stage 3	Construction of larger size studio space (to support expansion requirements)

Stage	Description
Stage 4	Construction of creative precinct / education art space
Stage 4A	Establishment of Theatre
Stage 5	Future Planning Expansion

The preliminary concept plan provided by Byron Studios Pty Ltd is provided at **Appendix A**

2..4 Mark Ellis (Growing Grounds Nursery Lot 4 DP1062900 No 6 Leadbeatters Lane)

Tim Fitzroy met and held discussions with Mark Ellis and undertook a tour of Growing Grounds Nursery on 25 October 2022.

The closest points of Lot 4 DP1062900 to the future stages of the Innovation Precinct are approximated below:

- 450m south west to Stage 1;
- 5m south west to Stage 2;
- 130m south to Stage 2A
- 20m south to Stage 3;
- 408m south to Stage 4;
- 390 m south west to Stage 4A; and
- 180 west south west to Stage 5.

Lot 4 DP1062900 covers an area of 22.69ha and contains two dwellings, a Retail Nursery inclusive of Shades house, Igloos and Open growing. Growing Grounds employs 18 staff.

Typical operating hours are 6:30am to 5:00pm, Monday to Friday. Atypical hours relate to nighttime deliveries and export of finished plants. Vehicles range from semitrailers, rigid vehicles to vans. 60% of nursery production occurs in 3 months of the year (spring)

Insecticides are primarily organics (*Companion, movento, nepm) which are applied by direct spray*.

Herbicides are applied by knapsack and spot spray.

Fertilizers are controlled release in granular form

There is no boom or aerial spraying at the nursery

Mr. Ellis raised the following concerns with respect to the proposed rezoning

1. He wants to retain *right to farm*
2. The existing noise berm (5m high by 3 to 4m wide) located along his southern boundary with council is not maintained and is weed invested.

Note: This noise berm provides a significant vegetated buffer for spray drift and noise between the sites.

2..5 Julie Schmidt Lot 3 DP 588893 No 1353 Teven Road

The closest points of the residence at Lot 4 DP1062900 to the future stages of the Innovation Precinct are approximated below:

- 165m south to Stage 1;
- 237m west to Stage 2;
- 305m west to Stage 2A
- 377m west to Stage 3;
- 249m south east to Stage 4;
- 158 m south east to Stage 4A; and
- 70m south east to Stage 5.

Ms. Schmidt advised that:

1 Her property covers 2.1ha and is used for residential purposes;
2 Her dwelling has been in her family for 3 generations;
3 Impacts from the former quarry, current bitupave and Ron Southon explosives are acceptable;
4 She will make comments if appropriate on the Planning Proposal when opportunity becomes available

2.5 Surrounding Landuses

2.51 No 1261 Teven Road Alstonville Lot 2DP815562 (**NORTH**)

- Area: 12.98ha
- Grows macadamias in open and in shade
- Closest point of shade house to the Innovation Precinct is 200m
- Closest point of macadamia plantation to the Innovation Precinct is 235m

2.52 1329 Teven Road Alstonville Lot 1 DP749583 (NORTH WEST)

- Area: 2 ha
- Dwelling: + horse paddock
- Closest point of dwelling house to the Innovation Precinct is about 145m

2.53 484 Gap Road Alstonville NSW Lot 7 DP611903 (WEST)

- Area: 11.34 ha
- Dwelling+ horses (equestrian + macadamia)
- Closest point of the Innovation Precinct to the:
    - Equestrian is 40m
    - Macadamia Plantation is 220m

2.54 464 Gap Road Alstonville NSW Lot 5 DP634428 (EAST) (Dwelling + macadamia)

- Closest point of the Innovation Precinct to the:
    - Dwelling house to quarry site is about 450m
    - Macadamia is 450m

2.55 486 Gap Road Alstonville NSW Lot 4 DP1130300 (EAST) (Council Playing Ground (Hockey Field)

- Area: 12.8ha
- Closest point is adjacent of the Innovation Precinct to the Hockey Field is 35m

2.56 Lot 218 DP837177 Gap Road Alstonville (to the south)

- Area: 22.3ha
- Closest point of the Innovation Precinct to Grazing is 45m

2.57 Residential area to the south

- Closest point of the Innovation Precinct is 350m

2.58 10 Greenie Drive Alstonville Lot 2 DP800081 (to the south west)

- Area: 5.65Ha
- Open field
- Closest point of the Innovation Precinct to dwelling is285m

Photographs of the site subject and surrounds were taken (see **Appendix B**).

3 Potential Land use Conflicts

3.1 Ron Southon Explosives

Mr. Noel Erichsen was engaged by BSC to consider the current risk from explosives activities on the Tuckombil site and the future explosives risk to a proposed film studio and staged development on the existing quarry site. According to Erichson (March 2023) the current risk is regarded as acceptable to the regulator, however the future risk, even with a reduction in some of the explosives held on site, would result in the proposed film/studio development being exposed to a high level of risk. The two activities are incompatible based on the amount of explosives and precursors required for a minimum viable explosive's operation and the proposed location of film studio development.

TFA understand that should the Planning Proposal for the Innovation Precinct commence BSC will not continue their lease of land to Ron Southon Explosives. As a consequence of this advice TFA will no longer consider this potential land use conflict in this LUCRA report.

3.2 Biosecurity

Staff, visitors, vehicles and machinery can be unintentional carriers of diseases, pests and weeds that could be detrimental to livestock. The proximity of the proposed development to adjoining agricultural and horticultural does have the potential for future Innovation Precinct workers or visitors to either inadvertently or deliberately enter adjoining land/s.

It is important to recognise that the Innovation Precinct will be operated in a controlled manner, all visitors will access the site via vehicles along Gap Road. The site is fenced to restrict access to adjoining lands and the nature of activities are heavily regulated. Given the nature of the precinct safe work procedures, training and oversight will be optimal.

At Development Application stage and thereafter consideration should be given to these simple and effective measures to avoid potential risks associated with participants or spectators entering adjoining or nearby farm land:

1. In consultation with neighbouring farmers display clear, simple and highly visible signs to support adjoining farm's biosecurity messages; and
2. Provide education material to Innovation Precinct to advise them of the biosecurity risks and measures to minimise any impacts should they inadvertently enter adjoining farmland.

3.3 Noise

A Noise Impact Assessment of the Planning Proposal has been undertaken by Tim Fitzroy & Associates which forms part of the PP supporting documentation. The noise assessment process included the following components:

- Discussions with Council staff;
- Measurement and determination of the existing background and ambient noise levels;
- A description and the results of a computer model prepared to predict the impact of the expansion of operations on the environment. The computer models were constructed in Soundplan noise modelling and prediction software. The results of the modelling are used to assess the noise impact of operations on existing neighbouring residences; and
- Consideration of what feasible and reasonable noise mitigation measures ought to be considered where the project-specific noise levels are exceeded.

The NIA concluded that:

- A noise model has been constructed to predict the propagation of anticipated noise sources from the proposed development. The model includes shielding effects from existing structures, proposed structures, and topography. Topographic information included in the model was sourced from Geoscience Australia.
- Given the assumptions presented in the noise modelling, cumulative noise levels from anticipated activities at the proposed development are predicted to be within the Project Noise Trigger Level during the day (7am to 6pm) and evening (6pm to 10pm) periods at all sensitive receptors.
- An exceedance of 2 dB(A) is predicted at Receptor 1 during the night period (10pm to 7am). This exceedance is based on a scenario that may overstate the activities that will occur at night, and therefore the exceedance is not considered to be significant.

3.4 Soil and Sediment Runoff

3..1 Site Contamination

Douglas Partners were engaged by BSC to undertake a Preliminary Site Contamination Investigation of the former Tuckombil Quarry. The objectives of this PSI were to identify:

- Potential sources of contamination and evaluate the associated contaminants of potential concern(CoPC);
- Areas of potential contamination;
- Potential human and ecological receptors; and
- Potentially affected media (such as soil and groundwater).

The investigation comprised a desktop review of the site history, a visual site walkover inspection, soil sampling from 23 boreholes, surface water sampling from seven locations and laboratory analysis of selected soil and surface

water samples. In addition to the proposed works, the collection and laboratory analysis of surface water samples from a further two onsite dams was conducted at the request of Stockland Land Lease Management Pty Limited.

Stockpiled soil at the site and the Boral Asphalt lease and Ron Southon lease areas were not investigated as part of this investigation.

Douglas Partners concluded as follows

- The site originally appeared to be developed for agricultural use until it was redeveloped as a hard rock quarry;
- The intrusive soil investigation indicated that broadscale contamination has not been detected at concentrations that are considered to present a risk of harm to potential human and ecological receptors;
- No obvious potential asbestos containing material was encountered during the site walkover or intrusive works;
- Exceedances were detected above the adopted SAC for metals and nutrients in the surface water samples. pH, EC, turbidity and dissolved oxygen values in the surface water samples were also above/below the adopted SAC. Therefore, if discharge of the quarry water to a watercourse is proposed, then treatment would be required due to those results. Onsite use of the dam water as a dust suppressant is considered to be acceptable, however, any excess runoff water cannot directly drain or flow into a stormwater system;
- Potential for offsite contamination is present at the site from the fuel storage of both the Boral Asphalt Plant lease area and the Ron Southon lease area;
- A preliminary waste classification of the soils investigated at the site places the soil as general solid waste (non-putrescible). If soil is to be disposed offsite then a waste classification assessment would be required prior to disposal; and
- Based on the results of the sampling and analysis conducted, the site is considered suitable for the proposed rezoning for high technology industrial use.

3..1 Stormwater Management

Given the staged and limited nature of the planning proposal, the deep well drained alluvial kransozerm, undulating landscape and significant lot size of 23ha there is sufficient suitable land available to assimilate future stormwater impacts via a contemporary stormwater drainage network, with comprising effective sediment and erosion control. For any future Development Application soil and water management measures will be provided in accordance with the “Blue Book” (Managing Urban Stormwater – Soils and Construction) and BSC’s on-site stormwater detention and Stormwater quality strategy.

3..2 Access, Transport and Traffic

GeoLINK has been engaged by Ballina Shire Council (Council) to prepare a Traffic Impact Assessment (TIA) to inform a rezoning planning proposal. Currently, the only access to the site and the two subsidiary lots is via Gap Road, approximately 240 m east of the intersection with Teven Road. The most direct access to the site is via Teven Road, which connects to Ballina Road in Alstonville less than 200 m from the Bruxner Highway interchange.

According to GeoLINK the development will increase the volume of traffic on Gap Road and Teven Road. Volumes will also be increased beyond the intersections of Teven/Ballina Road and Teven/Tuckombil Road, however, existing volumes are higher here and impacts are expected to be imperceptible. The impacted roads are generally in suitable condition and geometry to accept the additional traffic and have the capacity to do so. The proposal is not expected to noticeably reduce the efficiency within the existing road network.

It is likely that 100% of the generated traffic will travel through the Teven / Gap Road intersection. Assessment of this intersection against the Austroads Guideline using predicted future traffic volumes reveals that some upgrades are warranted to improve safety and maintain efficiency. Construction associated with a new use of the site will likely take 6-12 months. Construction traffic will have a negative impact on the amenity of the locality and may impact on traffic safety and efficiency on Teven Road.

3.5 Biodiversity

According to GeoLINK (March 2023) the rezoning proposal (and future development) of the site may result in the following potential biodiversity impacts:

- Loss of native vegetation associated with future development – no clearing is proposed at this stage.
- Minor short-term disturbance (noise, human activity, machine operations) to locally occurring fauna species during development, construction and operation.
- Minor potential for reduced water quality and altered hydrology due to works.
- Minor increased risk of roadkill from increased vehicular movements on surrounding roads.
- Potential for weeds to be imported to the site and surrounding environments during the construction stage of the proposal.

3.6 Horticultural Chemical Spray Drift

3.6.1 Growing Grounds Nursery Lot 4 DP1062900 No 6 Leadbeatters Lane

The only existing intensive agricultural or horticultural activity within close proximity of the proposed Innovation Precinct is the Growing Grounds Nursery. Stage 2 and 3 of the Film studios will be located within 20m of the Growing Grounds Nursery

Lot 4 DP1062900 covers an area of 22.69ha and contains two dwellings, a Retail Nursery inclusive of Shades house, Igloos and Open growing.

Insecticides are primarily organics (*Companion, movento, nepm) which are applied by direct spray*.

Herbicides are applied by knapsack and spot spray.

Fertilizers are controlled release in granular form.

There is no boom or aerial spraying at the nursery.

3.6.2 No 1261 Teven Road Alstonville Lot 2 DP815562 (**NORTH**)
Area: 12.98ha
Grows macadamias is open and in shade
Closest point of shade house to northern boundary of quarry site is about 200m

Whilst no consultation has occurred with the owners/operators of the Macadamia Plantation Lot 2 DP815562 No 1261 Teven Road Alstonville, the bulk of macadamia are grown in a shade house in the northern portion of the site while a smaller portion are grown in the open in the north west portion of the site about 235m from the northern boundary of the Tuckombil quarry site.

Conventionally on commercial macadamia plantations a variety of agricultural sprays are used as required and under stable weather conditions to help manage insects and fungi. In addition, fertilisers are applied to assist the growth of trees.

On commercial macadamia plantations a variety of insecticides, rodenticides, fungicides and fertilisers are used each year (see **Table 3.1** below). In addition, **Table 3.1** includes the average frequency and method of application for chemicals utilised on macadamia plantation is provided.

Table 3.1 Chemicals (pesticides, herbicides and fertilisers) used on Commercial Macadamia Plantations

Chemicals	**Type**	Frequency Average	Application	Timing
Insecticides	Bulldock (beta-cyfluthrin) Carbaryl Endocarp Diaxion	3 times a year Aug, Oct, Dec	Air Blast Sprayer	Night/Day
Rodenticides	Tomcat Razo com	As required	Bait Stations	Day
Fungicides	Carbendazim Howsat Carbrio Coppox (Copper Oxychloride)	3 times a year Aug, Oct, Dec	Air Blast Sprayer	Night/Day
Fertilisers	Organic Matter Chicken Manure Blended Mix	August	Spreader	Day
	Maca Husks	August	Spreader	Day
Herbicides	Basta Spray Seed 250	As required	Hand gun/Wand	Day

The greatest risk of drift potential relates to the use of the Air Blast Sprayer. It is important that all protocols are maintained to minimise drift.

3..3 Odour

Odour from cropping and horticulture can arise from use of chemical sprays, fertilisers (inorganic and organic), effluent disposal and composting. Such detrimental odours can impact on residential amenity and have the potential to affect public health.

Odour is often a major factor in many complaints about off-site chemical spray drift where there is sometimes no objective evidence of toxic exposure. Some agricultural chemicals contain 'markers' (strong odours) to allow easy identification and these markers or mixing agents are sometimes detected at a distance from the target area and cause concern even though in some circumstances extremely low levels of the active ingredients may be present.

Residents' association of the odour with the chemical is sufficient to raise fears of exposure. In addition, perceptions of an odour's acceptability and individual capacity to detect particular odours can vary greatly.

Factors affecting complaints from odour are influenced by the frequency, intensity, duration and offensiveness of the odour. An objectionable odour may be tolerated if it occurs infrequently at a high intensity, however a similar odour may not be tolerated at lower levels if it persists for a longer duration.

3..4 Noise

There are four types of noise associated with agricultural activity which may lead to land use conflict. These are the noises associated with intensive livestock facilities, aircraft activities, constant or long-term noise, (e.g., pumps or refrigeration plants), and intermittent noise from tractors and other machinery.

The most likely types of noise associated with agricultural activity which may lead to land use conflict in the locality would be noise from air blasting and tractor operation.

3..4.1 Growing Grounds Nursery Lot 4 DP1062900

Noise generating activities are limited to the movements of tractors and small all-terrain vehicles and sprinkler irrigation within shade sheds during the day periods. Given the intermittent and limited duration of the aforementioned activities coupled with the existing noise berm along the northern boundary noise attenuation and the design of the Film Studios the noise impact on future occupants of the proposed Innovation Precinct from Growing Grounds activities is predicted to be negligible.

2.4.3.2 Macadamia Plantation Lot 2 DP815562

Intermittent noise from tractors and all-terrain vehicle movements, pruning and spraying activities during day period are common in macadamia production.

Tractor noise varies depends on a number of factors (listed below) however noise levels can range from 80 decibels (dB) to 92dB at source. Noise decay over distance can be predicted on the basis of noise attenuation rates of 6 dB(A) for each doubling of distance from the noise source. This attenuation rate assumes open ground conditions. The existence of natural barriers, broken topography or other features would increase attenuation and affect the resultant noise level at the receiver.

Factors affecting noise from agricultural activities include:

- type of engine (diesel or petrol; 2- or 4-stroke);
- number of cylinders;

- cooling system (air or liquid);
- load;
- timing, frequency and duration of operations;
- geographical conditions and barriers e.g., topography and inversions;
- weather conditions e.g., wind speed and direction; and
- typical industry machinery and practices.

Given the nature of 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.

A number of routine macadamia farm operations generate noise. These noises are common to macadamia plantations.

The activities are summarised below:

- Mowing (all year round)

Mowing around the farm throughout the year. Mowing machinery generally includes either small tyro mowers or tractor with slasher.

  - Spraying of Insecticides/fungicides (can occur several times a year during the flowering, harvest and post-harvest)

An Air Blast sprayer may be utilised to apply insecticides to trees. The initial application each year usually occurs at daytime at pre flowering stage to ensure that non-target species (i.e., bees) are not impacted.

  - Spraying of Herbicides (can occur several times a year)

A hand wand (low to ground) or wand is used to apply herbicides.

- Pruning

Trees (depending on their age) are generally pruned on an occasional basis (not regularly).

- Mulching (Once a year (September))

- Truck and Vehicle Movements

Harvested and macadamia berries will be collected for offsite distribution. TFA do not have details on the number of truck movements from the subject macadamia farms.

Given the intermittent and limited duration of the aforementioned activities coupled with distance attenuation (between 200 and 235m), the existing noise berm along the northern boundary noise attenuation and the design of the Film Studios the noise impact on future occupants of the proposed Innovation Precinct from macadamia farming activities is predicted to be negligible.

3..5 Dust

The main sources of dust from cropping include cultivation prior to planting, tractor and transport movements. Contemporary farming practices incorporate measures to minimise loss of soil, but at times it is necessary to leave land unplanted for extended periods, which can lead to the movement of dust. Local conditions, including wind strength and direction, rainfall, humidity and ambient temperatures, soil type, vegetative cover and type of onsite activity determine the extent of the nuisance.

3..6 Pests

Pests primarily include flies and rodents. Practices that minimise breeding on-farm are necessary since pest's impact directly on community amenity and increase the risk of disease transfer. All pest control materials need to be used in strict adherence with labelling directions. They must be correctly stored away from children and domestic animals. Records of pesticide use should also be maintained.

3..7 Operating Times

Farm and nursery operations (macadamia and nursery) are generally during daylight hours. The macadamia harvest period generally runs from the end of March to the end of August however the duration is subject to changeable weather conditions.

3..8 Chemical Use

Volatile components of chemicals sprayed may affect neighbours if not used in accordance with manufacturer and workplace health and safety requirements. Spraying should also be avoided during adverse weather conditions that may impact on neighbours.

4 Land use Conflict Risk Assessment

4.1 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 & amenity hazard identification and risk control are performed in three stages.

1. Environmental/public health & 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.

4.2 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 4.1** defines the hazard risks used in this report.

The Risk Ratings (severity of the risks) have been established by assessing the consequences of the risks and the likelihood of the risks occurring.

Table 4.1 Measure of Consequence

Level	Descriptor	Description	Examples/Implications
1	Severe	▪ Severe and/or permanent damage to the environment ▪ Irreversible with management	▪ Damage 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 and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act
2	Major	▪ Serious and/or long-term impact to the environment ▪ Long-term management implications	▪ Water, soil or air impacted badly, possibly in the long term. ▪ Limited damage to animals, fish or birds or plants ▪ Some public complaints Impacts pass quickly ▪ Contravenes the conditions of Council's licences, permits and the POEO Act ▪ Likely prosecution
3	Moderate	▪ Moderate and/or medium-term impact to the environment ▪ Some ongoing management implications	▪ Water, soil or air known to be affected, probably in the short term ▪ No damage to plants or animals ▪ Public unaware and no complaints to Council ▪ May contravene the conditions of Council's Licences and the POEO Act ▪ Unlikely to result in prosecution
4	Minor	▪ Minor and/or short-term impact to the environment ▪ Can be effectively managed as part of normal operations	▪ 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	Descriptor	Description	Examples/Implications
5	Negligible	▪ Very minor impact to the environment ▪ Can be effectively managed as part of normal operations	▪ No measurable or identifiable impact on the environment

This report utilises an enhanced measure of likelihood of risk approach which provides for 5 levels of probability (A-E). The 5 levels of probability are set out below in **Table 4.2.**

Table 4.2 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

4.3 Risk Ranking Method

For each event, the appropriate 'probability' (i.e., a letter A to E) and 'consequence' (i.e., 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 (e.g., 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 4.3 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

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.

4.4 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 e.g., staff supply with a mechanism to change impacts or better communications established. Such matters can sometimes lead to the lowering of the consequences.

Table 4.4 LUCRA Site Assessment

Site Feature	Condition/Comments	Potential Conflict
Biosecurity	Staff, visitors, vehicles and machinery can be unintentional carriers of diseases, pests and weeds that could be detrimental to livestock. The proximity of the proposed development to adjoining agricultural and horticultural does have the potential for future Innovation Precinct workers or visitors to either inadvertently or deliberately enter adjoining land/s. It is important to recognise that the Innovation Precinct will be operated in a controlled manner, all visitors will access the site via vehicles along Gap Road. The site is fenced to restrict access to adjoining lands and the nature of activities are heavily regulated. Given the nature of the precinct safe work procedures, training and oversight will be optimal. At Development Application stage and thereafter consideration should be given to these simple and effective measures to avoid potential risks associated with participants or spectators entering adjoining or nearby farm land: 1 In consultation with neighbouring farmers display clear, simple and highly visible signs to support adjoining farm's biosecurity messages; and 2 Provide education material to Innovation Precinct to advise them of the biosecurity risks and measures to minimise any impacts should they inadvertently enter adjoining farmland.	Min or

Noise		
Proposed Innovation Precinct	A Noise Impact Assessment of the Planning Proposal has been undertaken by Tim Fitzroy & Associates which forms part of the PP supporting documentation. The NIA concluded that: • A noise model has been constructed to predict the propagation of anticipated noise sources from the proposed development. The model includes shielding effects from existing structures, proposed structures, and topography. Topographic information included in the model was sourced from Geoscience Australia. • Given the assumptions presented in the noise modelling, cumulative noise levels from anticipated activities at the proposed development are predicted to be within the Project Noise Trigger Level during the day (7am to 6pm) and evening (6pm to 10pm) periods at all sensitive receptors. • An exceedance of 2 dB(A) is predicted at Receptor 1 during the night (10pm to 7am) period. This exceedance is based on a scenario that may overstate the activities that will occur at night, and therefore the exceedance is not considered to be significant.	Minor
Growing Grounds Nursery (Lot 4 DP1062900)	Noise generating activities are limited to the movements of tractors and small all-terrain vehicles and sprinkler irrigation within shade sheds during the day periods. Given the intermittent and limited duration of the aforementioned activities coupled with existing noise berm along the northern boundary and the noise attenuation design of the Film Studios the noise impact on future occupants of the proposed Innovation Precinct from Growing Grounds activities is predicted to be negligible.	Negligible
Macadamia Plantation Lot 2 DP815562	Intermittent noise from tractors and all-terrain vehicle movements, pruning and spraying activities during day period are common in macadamia production. Given the intermittent and limited duration of the aforementioned activities coupled with distance attenuation (between 200m and 235m), the existing noise berm along the northern boundary noise attenuation and the design of the Film Studios the noise impact on future occupants of the proposed Innovation Precinct from macadamia farming activities is predicted to be negligible.	Negligible

Horticultural Spray Drift		
Growing Grounds Nursery (Lot 4 DP1062900)	The only existing intensive agricultural or horticultural activity within close proximity of the proposed Innovation Precinct is the Growing Grounds Nursery. Stage 2 and 3 of the Film studios will be located within 20m of the Growing Grounds Nursery Lot 4 DP1062900 covers an area of 22.69ha and contains two dwellings, a Retail Nursery inclusive of Shades house, Igloos and Open growing. Insecticides are primarily organics (*Companion, movento, nepm) which are applied by direct spray*. Herbicides are applied by knapsack and spot spray. Fertilizers are controlled release in granular form There is no boom or aerial spraying at the nursery	Minor
Macadamia Plantation Lot 2 DP815562	Whilst no consultation has occurred with the owners/operators of the Macadamia Plantation Lot 2 DP815562 No 1261 Teven Road Alstonville, the bulk of macadamia are grown in a shade house in the northern portion of the site while a smaller portion are grown in the open in the north west portion of the site about 200m from the northern boundary of the Tuckombil quarry site. Conventionally on commercial macadamia plantations a variety of agricultural sprays are used as required and under stable weather conditions to help manage insects and fungi. In addition, fertilisers are applied to assist the growth of trees. Given the distance attenuation (between 200m and 235m), spray drift on future workers at the Film Studios is predicted to be negligible.	Negligible
Dust	The main sources of dust from a macadamia cropping include cultivation prior to planting, tractor and transport movements. Smother grass is grown between the rows of macadamia trees significantly reducing the area of exposed soil and potential for dust generation. Dust liberation during typical retail nursery production are deemed to be negligible at the proposed Innovation Precinct	Negligible
Pests	Retail Nursery has limited pests. The exception are thrips which can occur within the shed houses where humidity is high. Pests on macadamia plantations include rodents. Practices that minimise breeding on farm are necessary since pests	Negligible

	impact directly on nut production, community amenity and increase the risk of disease transfer. Pest impacts on the Innovation Precinct are deemed to be negligible	
Soil Contamination	Douglas Partners were engaged by BSC to undertake a Preliminary Site Contamination Investigation of the former Tuckombil Quarry. • The intrusive soil investigation indicated that broadscale contamination has not been detected at concentrations that are considered to present a risk of harm to potential human and ecological receptors; • No obvious potential asbestos containing material was encountered during the site walkover or intrusive works; • Potential for offsite contamination is present at the site from the fuel storage of both the Boral Asphalt Plant lease area and the Ron Southon lease area; • A preliminary waste classification of the soils investigated at the site places the soil as general solid waste (non-putrescible). If soil is to be disposed offsite then a waste classification assessment would be required prior to disposal; and • Based on the results of the sampling and analysis conducted, the site is considered suitable for the proposed rezoning for high technology industrial use.	Negligible
Run-on and Upslope Seepage Site Drainage and Water pollution	• *Douglas Partners identified exceedances were detected above the adopted SAC for metals and nutrients in the surface water samples. pH, EC, turbidity and dissolved oxygen values in the surface water samples were also above/below the adopted SAC. Therefore, if discharge of the quarry water to a watercourse is proposed, then treatment would be required due to those results. Onsite use of the dam water as a dust suppressant is considered to be acceptable, however, any excess runoff water cannot directly drain or flow into a stormwater system; • Given the staged and limited nature of the planning proposal, the local krasozern soils, undulating landscape and significant lot size of 23ha there is sufficient suitable land available to assimilate future stormwater impacts via a contemporary stormwater drainage network, with comprising effective sediment and erosion control. For any future Development Application soil and water management measures will be provided in accordance with the “Blue Book” (Managing Urban Stormwater – Soils and Construction) and BSC’s on-site stormwater detention and Stormwater quality strategy.	Negligible to Minor*

Site Location: Vehicular Access	GeoLINK has been engaged by Ballina Shire Council (Council) to prepare a Traffic Impact Assessment (TIA) to inform a rezoning planning proposal. Currently, the only access to the site and the two subsidiary lots is via Gap Road, approximately 240 m east of the intersection with Teven Road. The most direct access to the site is via Teven Road, which connects to Ballina Road in Alstonville less than 200 m from the Bruxner Highway interchange. According to GeoLINK the development will increase the volume of traffic on Gap Road and Teven Road. Volumes will also be increased beyond the intersections of Teven/Ballina Road and Teven/Tuckombil Road, however, existing volumes are higher here and impacts are expected to be imperceptible. The impacted roads are generally in suitable condition and geometry to accept the additional traffic and have the capacity to do so. The proposal is not expected to noticeably reduce the efficiency within the existing road network. It is likely that 100% of the generated traffic will travel through the Teven / Gap Road intersection. Assessment of this intersection against the Austroads Guideline using predicted future traffic volumes reveals that some upgrades are warranted to improve safety and maintain efficiency. Construction associated with a new use of the site will likely take 6-12 months. Construction traffic will have a negative impact on the amenity of the locality and may impact on traffic safety and efficiency on Teven Road.	Minor

The identified risks identified in **Table 4.4** are either negligible or minor and therefore additional risk reduction controls are not required.

5 Conclusions and Recommendations

TFA have been requested by the applicant to adapt the LUCRA tool to identify potential land use conflicts risks associated with the commercial planning proposal and existing agricultural land uses in the locale and where necessary propose mitigation options to address any unacceptable risks. The LUCRA Guidelines (DPI et.al 2007) and Council's DCP 2012 do not recommend buffers between agricultural and commercial uses.

This Land Use Conflict Risk Assessment is based on a review of:

1. Item 9.8 Tuckombil Quarry Site-Byron Studios, Ordinary Meeting Ballina Shire Council, 22 July 2021;
2. Item 5.2 Tuckombil Quarry Site-Future Options, Finances and Facilities Committee Meeting, Ballina Shire Council, 19 May 2022;
3. Risk Assessment for Ballina Shire Council on the impact of Current and Future Explosives Operations at the Alstonville Site (Tuckombil) including the Impact on the Proposed Film Studios (Noel Erichsen, 5 March 2023);
4. Tuckombil Quarry Rezoning Traffic Impact Assessment (GeoLINK 23 February 2023);
3. Biodiversity Assessment Report (GeoLINK, 2 March 2023); and
4. Report on Preliminary Site Investigation for Contamination Proposed Rezoning Commercial Development Tuckombil Quarry Alstonville (October 2022).

In addition, TFA have had meetings and discussions with Council staff, existing and potential future tenants and neighbouring land holders.

A site inspection coupled with a review of aerial photography (see **Illustration 1.2**) has confirmed that the site is:

- located within the Tuckombil Quarry site; and
- surrounded by rural land uses inclusive of retail nursery, macadamia plantation, cattle and horse grazing and rural residential lifestyle allotments.

The Key Outcomes of this LUCRA are as follows:

1 Ron Southon Explosives

Mr. Noel Erichsen was engaged by BSC to consider the current risk from explosives activities on the Tuckombil site and the future explosives risk to a proposed film studio and staged development on the existing quarry site. According to Erichson (March 2023) the current risk is regarded as acceptable to the regulator, however the future risk, even with a reduction in some of the explosives held on site, would result in the proposed film/studio development being exposed to a high level of risk. The two activities are incompatible based on the amount of explosives and precursors required

for a minimum viable explosive's operation and the proposed location of film studio development.

TFA understand that should the Planning Proposal for the Innovation Precinct commence BSC will not continue their lease of land to Ron Southon Explosives. As a consequence of this advice TFA will no longer consider this potential land use conflict in this LUCRA report. **There will be no land use conflict should the Innovation Precinct commence operations as Ron Southon Explosives operations will desist**

2 Biosecurity

Staff, visitors, vehicles and machinery can be unintentional carriers of diseases, pests and weeds that could be detrimental to livestock. The proximity of the proposed development to adjoining agricultural and horticultural does have the potential for future Innovation Precinct workers or visitors to either inadvertently or deliberately enter adjoining land/s.

It is important to recognise that the Innovation Precinct will be operated in a controlled manner, all visitors will access the site via vehicles along Gap Road. The site is fenced to restrict access to adjoining lands and the nature of activities are heavily regulated. Given the nature of the precinct safe work procedures, training and oversight will be optimal.

At Development Application stage and thereafter consideration should be given to these simple and effective measures to avoid potential risks associated with participants or spectators entering adjoining or nearby farm land:

- In consultation with neighbouring farmers display clear, simple and highly visible signs to support adjoining farm's biosecurity messages; and
- Provide education material to Innovation Precinct to advise them of the biosecurity risks and measures to minimise any impacts should they inadvertently enter adjoining farmland.

The potential conflict is deemed to be minor

3 Noise Impacts

a. From proposed Innovation Precinct on offsite receptors

A Noise Impact Assessment of the Planning Proposal has been undertaken by Tim Fitzroy & Associates which forms part of the PP supporting documentation.

The NIA concluded that:

- A noise model has been constructed to predict the propagation of anticipated noise sources from the proposed development. The model includes shielding effects from existing structures, proposed structures, and topography. Topographic information included in the model was sourced from Geoscience Australia.
- Given the assumptions presented in the noise modelling, cumulative noise levels from anticipated activities at the proposed development are predicted to be within the Project Noise Trigger Level during the day (7am to 6pm) and evening (6pm to 10pm) periods at all sensitive receptors.

- An exceedance of 2 dB(A) is predicted at Receptor 1 during the night period. This exceedance is based on a scenario that may overstate the activities that will occur at night (10pm to 7am), and therefore the exceedance is not considered to be significant.

The potential conflict is deemed to be minor

b. Noise Impacts from Growing Grounds Nursery on Innovation Precinct

Noise generating activities are limited to the movements of tractors and small all-terrain vehicles and sprinkler irrigation within shade sheds during the day periods.

Given the intermittent and limited duration of the aforementioned activities coupled with the existing noise berm along the northern boundary and the noise attenuation design of the Film Studios the noise impact on future occupants of the proposed Innovation Precinct from Growing Grounds activities is predicted to be negligible.
The potential conflict is deemed to be negligible

c. Noise Impacts from Macadamia Plantation Lot 2 DP815562 on Innovation Precinct

Intermittent noise from tractors and all-terrain vehicle movements, pruning and spraying activities during day period are common in macadamia production.

Given the intermittent and limited duration of the aforementioned activities coupled with distance attenuation (between 200m and 235m), the existing noise berm along the northern boundary and noise attenuation design of the Film Studios the noise impact on future occupants of the proposed Innovation Precinct from macadamia farming activities is predicted to be negligible.
The potential conflict is deemed to be negligible

4 Horticultural Spray Drift

a. From Growing Grounds Nursery on Innovation Precinct

The only existing intensive agricultural or horticultural activity within close proximity of the proposed Innovation Precinct is the Growing Grounds Nursery. Stage 2 and 3 of the Film studios will be located within 20m of the Growing Grounds Nursery

Insecticides are primarily organics (*Companion, movento, nepm) which are applied by direct spray*. Herbicides are applied by knapsack and spot spray. Fertilizers are controlled release in granular form. There is no boom or aerial spraying at the nursery

The potential conflict is deemed to be minor

b. From Macadamia Plantation Lot 2 DP815562 on Innovation Precinct

Whilst no consultation has occurred with the owners/operators of the Macadamia Plantation Lot 2 DP815562 No 1261 Teven Road Alstonville, the bulk of macadamia are grown in a shade house in the northern portion of the site while a smaller portion

are grown in the open in the north west portion of the site about 235m from the northern boundary of the Tuckombil quarry site.

Conventionally on commercial macadamia plantations a variety of agricultural sprays are used as required and under stable weather conditions to help manage insects and fungi. In addition, fertilisers are applied to assist the growth of trees.

Given the distance attenuation (between 200m and 235m), spray drift on future workers at the Film Studios is predicted to be negligible.

The potential conflict is deemed to be negligible

5 Soil Contamination

The intrusive soil investigation indicated that:

- broadscale contamination has not been detected at concentrations that are considered to present a risk of harm to potential human and ecological receptors;
- No obvious potential asbestos containing material was encountered during the site walkover or intrusive works;
- Potential for offsite contamination is present at the site from the fuel storage of both the Boral Asphalt Plant lease area and the Ron Southon lease area;
- A preliminary waste classification of the soils investigated at the site places the soil as general solid waste (non-putrescible). If soil is to be disposed offsite then a waste classification assessment would be required prior to disposal; and

Based on the results of the sampling and analysis conducted, the site is considered suitable for the proposed rezoning for high technology industrial use.
The potential conflict is deemed to be negligible

5. Run-on and Upslope Seepage Site Drainage and Water pollution

Douglas Partners identified exceedances were detected above the adopted SAC for metals and nutrients in the surface water samples. pH, EC, turbidity and dissolved oxygen values in the surface water samples were also above/below the adopted SAC. Therefore, if discharge of the quarry water to a watercourse is proposed, then treatment would be required due to those results.

Given the staged and limited nature of the planning proposal, the local krasozern soils, undulating landscape and significant lot size of 23ha there is sufficient suitable land available to assimilate future stormwater impacts via a contemporary stormwater drainage network, with comprising effective sediment and erosion control. For any future Development Application soil and water management measures will be provided in accordance with the “Blue Book” (Managing Urban Stormwater – Soils and Construction) and BSC’s on-site stormwater detention and Stormwater quality strategy.

Based on the relatively small development footprint and subject to the application of standard sediment and erosion control techniques coupled with contemporary stormwater attenuation techniques it is not anticipated that the proposed works on the subject site will result in surface or sediment runoff negatively impacting on the adjoining land.
Onsite use of the dam water as a dust suppressant is considered to be acceptable, however, any excess runoff water cannot directly drain or flow into a stormwater system

The potential conflict is deemed to be Negligible to Minor

6. Site Location, Vehicular Access and Parking

GeoLINK has been engaged by Ballina Shire Council (Council) to prepare a Traffic Impact Assessment (TIA) to inform a rezoning planning proposal. Currently, the only access to the site and the two subsidiary lots is via Gap Road, approximately 240 m east of the intersection with Teven Road. The most direct access to the site is via Teven Road, which connects to Ballina Road in Alstonville less than 200 m from the Bruxner Highway interchange.

According to GeoLINK the development will increase the volume of traffic on Gap Road and Teven Road. Volumes will also be increased beyond the intersections of Teven/Ballina Road and Teven/Tuckombil Road, however, existing volumes are higher here and impacts are expected to be imperceptible. The impacted roads are generally in suitable condition and geometry to accept the additional traffic and have the capacity to do so. The proposal is not expected to noticeably reduce the efficiency within the existing road network.

It is likely that 100% of the generated traffic will travel through the Teven / Gap Road intersection. Assessment of this intersection against the Austroads Guideline using predicted future traffic volumes reveals that some upgrades are warranted to improve safety and maintain efficiency. Construction associated with a new use of the site will likely take 6-12 months. Construction traffic will have a negative impact on the amenity of the locality and may impact on traffic safety and efficiency on Teven Road.

.

The potential conflict was deemed to be minor.

7. Dust Impacts

The main sources of dust from a macadamia cropping include cultivation prior to planting, tractor and transport movements. Smother grass is grown between the rows of macadamia trees significantly reducing the area of exposed soil and potential for dust generation.

Dust liberation during typical retail nursery production are deemed to be negligible at the proposed Innovation Precinct

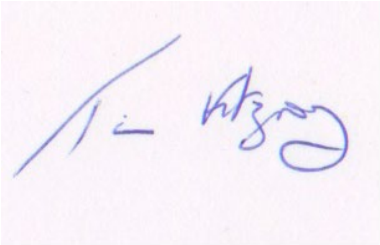
The potential conflict was deemed to be minor.

8. Pests

Retail Nursery has limited pests. The exception are thrips which can occur within the shed houses where humidity is high.
Pests on macadamia plantations include rodents. Practices that minimise breeding on farm are necessary since pests impact directly on nut production, community amenity and increase the risk of disease transfer.

The potential conflict was deemed to be minor.

This report has been prepared by Tim Fitzroy of *Tim Fitzroy & Associates.*



Tim Fitzroy
Environmental Health Scientist
Environmental Auditor

References

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

Ballina Shire Council 2012 Development Control Plan

Ballina Shire Council, 22 July 2021 Item 9.8 Tuckombil Quarry Site-Byron Studios, Ordinary Meeting B

Ballina Shire Council, 19 May 2022, Item 5.2 Tuckombil Quarry Site-Future Options, Finances and Facilities Committee Meeting;

Noel Erichsen, 5 March 2023, Risk Assessment for Ballina Shire Council on the impact of Current and Future Explosives Operations at the Alstonville Site (Tuckombil) including the Impact on the Proposed Film Studios

GeoLINK 23 February 2023, Tuckombil Quarry Rezoning Traffic Impact Assessment;

GeoLINK, 2 March 2023, Tuckombil Quarry Rezoning Biodiversity Assessment Report

Douglas Partners, October 2022; Report on Preliminary Site Investigation for Contamination Proposed Rezoning Commercial Development Tuckombil Quarry Alstonville

Copyright and Usage

A Concept Plans

B Photos

Photo A Proposed Site for Stage 1

Photo B Quarry Void

Photo C Growing Grounds Nursery

Photo D Noise Berm boundary with Growing Grounds Nursery