BYRON BAY PLANNING & PROPERTY CONSULTANTS

Manentia
Ubicumque

Chris Lonergan – Town Planner, Design, BASIX, Landscaping, Ecology, Bushfire Assessment.
Email – chris@byronbayplanning.com.au

5/130 Jonson St. Byron Bay P.O. Box 2585 Byron Bay NSW 2481 Australia
www.byronbayplanning.com.au *Ph. (02)66 809 255*

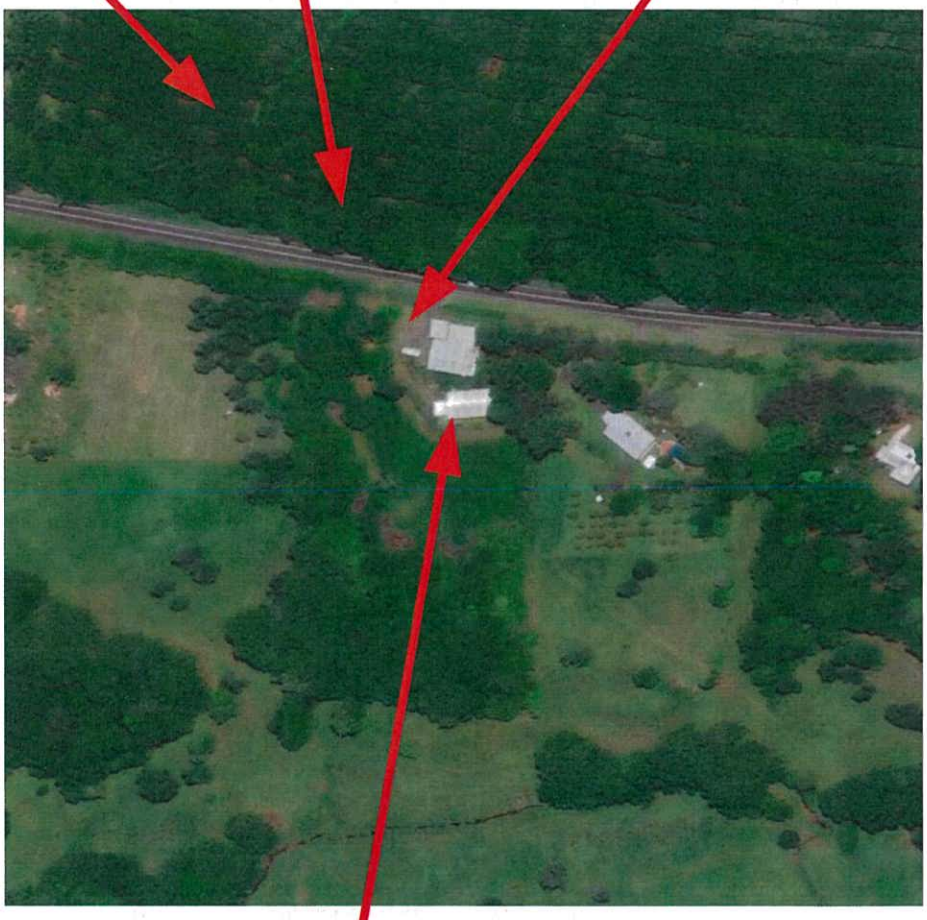
Land Use Conflict Risk Assessment
To accompany a Planning Proposal to Amend LEP 2012 Minimum Lot Size Map as it relates to Lot 1 DP 832781 No 1443 Bangalow Road Clunes

The Dwelling site sits within the 150m Intensive Plant Agriculture - Horticulture Buffer, as it is located only 78m south of the existing Macadamia Nut Orchard on the property on the other side of the ridge (Lismore Road) to the north.

Macadamia Nuts 78m to the North.

Existing 10m wide Buffer Plantings

Proposed "Spray Drift Buffer" 20m x 90m



Potential Dwelling Site

Lismore DCP Clause 11.3 – Conflicts in Landuses

In certain circumstances variations from the recommended standard buffer distances may be justified. Council has the discretion to approve a reduced buffer or require an increase in the buffer distance or to require the implementation of any reasonable conflict avoidance measures. Development applications incorporating a reduced buffer distance should incorporate a land use conflict risk assessment (LUCRA). Supporting technical reports such as noise or odour assessments and the like may be required to support the variation.

The surrounding landuses also include intensive plant agriculture (macadamia plantation) and rural / residential uses.

Lismore DCP Clause 11.4 – Buffers - Intensive Plant Agriculture - Horticulture

While buffers of 150 metres are often recommended between residential and agricultural areas, "biological buffers" offer an alternative to conventional setback requirements in that they assist in the capture of airborne pesticide droplets through the creation of a vegetation filter.
Research into the behaviour of pesticide spray drift has shown that vegetation screens can prove effective barriers to spray drift where they meet the following criteria:
(a) are of a minimum width of 30 metres;
(b) contain random plantings of a variety of tree and shrub species of differing growth habits, as spacings of 4 to 5 metres;
(c) include species which have long, thin and rough foliage which facilitate the more efficient capture of spray droplets (see Appendix A for suitable species).
(d) provide a permeable barrier which allows air to pass through the buffer (at least 50% of the screen should be open space).
Biological buffers have additional advantages in that they:
1. create corridors and habitat areas for wildlife; 2. increase the biological diversity of the area, thus assisting with pest control; 3. favourably influence the micro-climate; 4. are aesthetically pleasing; and 5. provide opportunities for recreational use such as cycleways/walkways.

Recommended Buffer – Intensive Plant Agriculture - Horticulture

While buffers of 150 metres are often recommended between residential and agricultural areas, "biological buffers" offer an alternative to conventional setback requirements in that they assist in the capture of airborne pesticide droplets through the creation of a vegetation filter. Research into the behaviour of pesticide spray drift has shown that vegetation screens can prove effective barriers to spray drift where they meet the following criteria:

Recommended Buffer

(a) 150 metre dwelling setback where there is no planted buffer; or
(b) 80 metre dwelling setback, including a "biological buffer" of minimum width of 30 metres established prior to development along the boundaries adjoining horticultural land use, and established in accordance with the criteria contained in Appendix A and the figure below.

The proposed layout of the site to potentially permit the adaptive reuse of the existing southern structure as a Dwelling, once the Minimum Allotment Size Map applicable to this site is amended, will ensure that the proposed dwelling is suitably buffered from the potentially adverse impacts of intensive plant agriculture, both spatially and by Planted Vegetation Buffers.

These buffers will effect visual separation and spray drift barriers between the proposed future Dwelling and the adjacent Macadamia Nut plantings, which are located on the property on the northern side of Lismore Road, and on the other

side of the intervening ridge to the north, This ridge is characterised by a dense row of trees approx 10m wide on the southern boundary of the Macadamia Nut Farm.

This approx 10m wide row of vegetation north of Lismore Road, before the Macadamia Nut Plantings begin, combined with the 20m wide proposed Planted Buffer within Lot 1 DP 832781 No 1443 Bangalow Road Clunes, effects the 30m of plantings recommended by DCP 2012. Further to this, the 78m spatial separation achieved between the Macadamia Nut Plantings and the potential Dwelling Site, closely approximates the 80m spacial separation recommended by DCP 2012 between Dwellings and Macadamia Nut Plantings.

On this basis the proposed LEP Amendment can be effected knowing that the risk assessment undertaken, shows that DCP Buffer Objectives are met.

View along Lismore Road Looking West opposite No 1443 Bangalow Road Clunes. The photo shows approx 10m wide row of vegetation north of Lismore Road, acting as a Vegetative Buffer, before the Macadamia Nut Plantings begin.

Research supports the view that in this region, land use conflicts 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.

The site relief slopes from approximately 105m AHD in the north to 70m AHD in the south of the site.

The proposed Dwelling site sits at an elevation of approx 95m AHD.

The ridge to the north of the proposed dwelling, separating it from the Macadamia Nut Plantings on the other side of Lismore Road to the north is approximately 108m AHD, before falling to the north to 95m AHD where the Macadamia Nut Plantings commence. These plantings then continue to slope down and away from the proposed dwelling in a northerly direction.

The proposed Dwelling is to be located over 78m from the nearest rows of trees in the orchard on the adjacent property, which is located on the other side of Lismore Road, and on the other side of the ridge to the north of the site.

It is proposed that a 20m wide x 90m long spray drift and tractor headlight intrusion "Planter Buffer" be planted along the northern boundary, 15m north of the proposed future Dwelling site. This will minimises the potential for conflict with adjacent agricultural activities.
Given the 78m setback achieved, within which a 20m wide by 90m long planted buffer of rainforest species is to be planted, combined with the existing 10m wide buffer vegetation on the northern side of Lismore road before the Macadamia Nut Plantings Commence, then this easily achieves the objectives of the provisions contained within DCP 2012.
This separation and plantings also meets the requirements determined by the Guidelines for Separating Agricultural and Residential Land Uses, Department of Natural Resources and Department of Local Government and Planning Queensland.
On this basis there is to be a manageable separation between the Dwelling and the off site Horticultural activities.

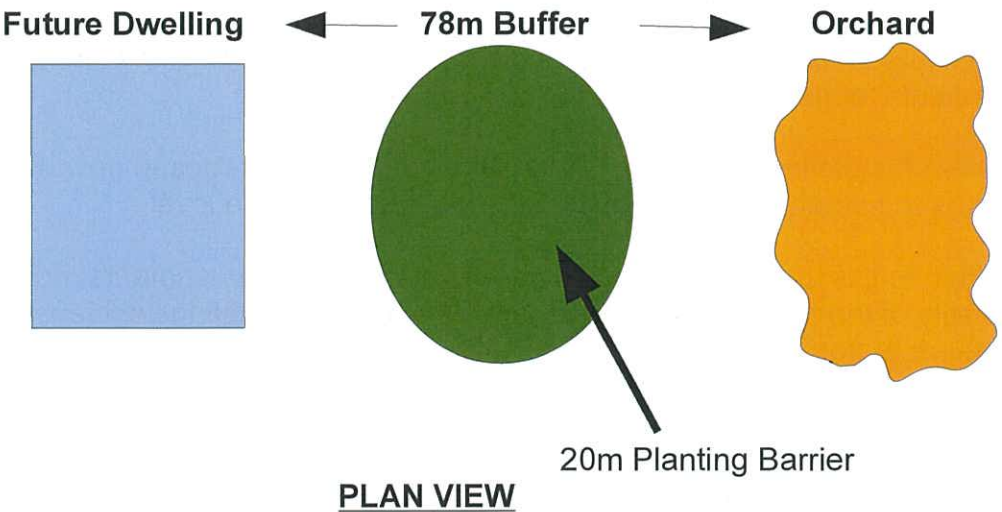
The conclusion is that following a Conflict Risk Assessment (CRA) as per the DCP Criteria, there is not a potential for significant impact due to the proposed 20m wide by 90m long barrier to be planted with rainforest species, along the northern boundary, combined with the existing 10m wide Vegetation Screen on the northern side of Lismore Road. This will minimises the potential for conflict with adjacent agricultural activities.

The spray drift barrier is to be planted in the following configuration in order to effect maximum spray droplet interception and wind swirl characteristics.

Trees will be planted on a 5 metre grid within the 20 metre buffer adjacent to the eastern boundary of the property, with shrubs planted in an alternate 5 meter grid between the tree spacings.
This configuration provides upper and lower level spray drift protection, throughout the 20 metre buffer, such that a permeable barrier is created which effectively traps droplets as air passes through.
It is for this reason that most of the plants selected have long and in some cases serrated leafs to increase the surface area of vegetation within the biological buffer.
(This follows the biological buffer design specifications set in Guidelines for Separating Agricultural and Residential Land Uses, Department of Natural Resources and Department of Local Government and Planning Queensland).

LIST OF SPECIES CHOSEN FOR SPRAY BUFFER PLANTINGS

Scientific Name	Common Name	Height in metres	Buffer Position
Acmena smithii	**Lilly Pilly**	**15**	**(inner rows)**
Araucaria cunninghamii	**Hoop Pine**	**25-35**	**(inner or outer)**
Callitris columellaris	**White Cypress**	**10-20**	**(outer rows)**
Casuarina cunninghamiana	**River Oak**	**10-20**	**(outer rows)**
Grevillea baileyana	**Findlays silky oak**	**10**	**(inner or outer)**
Melaleuca linarifolia	**Fine-leaved paperbark**	**8**	**(inner or outer)**
Melaleuca leucadendra	**White Paperbark**	**10-20**	**(inner or outer)**
Melaleuca quinquenervia	**Broadleaf Paperbark**	**10-20**	**(inner or outer)**
Waterhousia floribunda	**Weeping satinash**	**8**	**(inner rows)**



PLAN VIEW

This follows the biological buffer design specifications set in Guidelines for Separating Agricultural and Residential Land Uses, Department of Natural Resources and Department of Local Government and Planning Queensland. These findings are based on established agricultural research.

This r*esearch into the behaviours of pesticide spray drift has shown that vegetation screens can prove effective barriers to spray drift where they meet the following criteria:-*

a) *are of a minimum width of 20 metres and sit within a 40m wide corridor ;*
b) *contain random plantings of a variety of tree and shrub species of different growth habits, at spacings of 4 to 5 metres;*
c) *include species which have long, thin and rough foliage which facilitates the more effective capture of spray droplets;*
d) *provide a permeable barrier which allows air to pass through the buffer (at least 50% of the screen should be open space.").*

This research indicates that where a Biological Buffer is provided, then the spatial separation between intensive horticulture where sprays are used and proposed dwellings can be reduced to 40 metres where at least 20 metres of planted buffer is provided.

The 40 metres of minimum spatial separation is exceeded by the 78m separation which exists, and the recommended 20 metres of Biological Buffer within the allotment before the dwelling area is achieved, plus 10m on the other side of Lismore Road to the north ensures that adequate spray drift interception is achieved to minimises the potential for conflict with adjacent agricultural activities. The size and shape of the allotment is adequate to ensure that the proposal does not constitute an over development of the site. It also accords with Councils requirements for developments of this type. (See plans)

With these factors implemented, it is considered that the proposed new dwelling, minimises the potential for landuse conflict to an acceptable level.

In addition to this, the native species chosen add to the environmental richness and quality of the area through the extensive additional plantings achieved in this Agricultural Buffer Planting.

LANDSCAPING – DCP 2012

The ecological history of the area indicates that it was once covered in Rainforest, and its current state is the result of its previous development as grazing land.
As required by Lismore DCP 2012, the annexed plans show the Planting Schedule and Planting Methodology for the proposed 20m x 90m addition to the existing northern boundary vegetation, to complete the Spray Drift Barrier.
The proposed screen plantings will add to the sites habitat value within a rural location (See Site Plan). Landscape plantings propose native species with a proven track record, to improve the visual integrity of the site, achieve an Agricultural Buffer, and to achieve a broad habitat base within an urban location.

Landscaping is proposed to thus effect privacy, visual softening, and broaden the habitat base of the area, as per. the attached plan.

The basic aims of these landscape plans are:-
1). The embellishment of the natural eco-base;
2). To create an environment of privacy for the residents;
3). The creation of usable spaces within the design;
4). The enhancement of the visual atmosphere of the site.
5). To provide a landscape design that is easy to maintain and construct.

LANDSCAPE DEVELOPMENT PLAN :

These landscape details have been prepared in conjunction with Mr. D. Sweet Ecologist, to meet the design requirements specified in Guidelines for Separating Agricultural and Residential Land Uses, Department of Natural Resources and Department of Local Government and Planning Queensland, and to this end the following checklist is provided:-

In relation to compliance with Part 11 **of DCP 2012**, the following information is provided.
No species of threatened native flora are to be disturbed on site, and the site is currently devoid of extensive forest areas.
Soil type is "Red Volcanic", and as detailed on the plans, all planting holes will need to be deeply dug to approx. 400mm and soil mixed with a 50/50 mix of compost as part of the landscape design. Also mulch layers are proposed over planted areas to improve soil conditions, maintain soil moisture levels, increase micro-organism levels, and regulate soil temperature.

Landscape Specification details planting structure. "Over excavate each plant hole by at least twice the pot diameter and pot height".

No deep plantings are required other than as specified, due to the nature of the imported soils.
Spot levels are shown on plans, and as can be seen the site is relatively flat.

Drainage achieved by adequate planter hole preparation and the intrinsic nature of the local soils at ground level, and via the soil profile and drainage created within planted areas.
Location of species marked on annexed plans.

PLANTING SCHEDULE

Scientific Name	Common Name	No.	Symbol	Pot Size	Mature Ht.	Spread
TREES						
Acmena smithii	Lilly Pilly	20	1	200mm	15m	4m
Araucaria cunninghamii	Hoop Pine	20	2	200mm	25-35	6m
Callitris columellaris	White Cypress	15	3	200mm	10-20	4m
Casuarina cunninghamiana	River Oak	15	4	200mm	10-20	5m
Grevillea baileyana	Findlays silky oak	20	5	200mm	10m	4m
Melaleuca linarifolia	Fine-leaved paperbark	15	6	200mm	8m	4m
Melaleuca leucadendra	White Paperbark	10	7	200mm	10-20	5m
Melaleuca quinquenervia	Broadleaf Paperbark	15	8	200mm	10-20	5m
Waterhousia floribunda	Weeping satinash	10	9	200mm	8m	4m
SHRUBS						
Acmena smithii (minor)	Creek Lilli Pilli	20	10	200mm	3m.	2.5m.
SHRUBS & UNDERSTOREY						
Lomandra longifolia	Spiny-headed mat-rush	150	11	100mm	0.8m	0.8m

Based on the foregoing assessment, it is requested that the Development Application be approved, as the proposed development will have no adverse impact on the environment of the area, will not compromise Horticultural Activities on adjoining properties, and as minimal site works are involved, the external appearance and design of the building will maintain the visual character of the area.
Finally the proposed development satisfies all of the zone, and control plan objectives for this type of development, and as such the variation of the DCP Development Standard to a buffer of 20m wide, based on the Guidelines for Separating Agricultural and Residential Land Uses, Department of Natural Resources and Department of Local Government and Planning Queensland, can justifiably be varied.

LUCRA Assessment

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 following Table outlines the potential conflicts between macadamia nut production and processing, and neighbouring land uses.

Conflict	Explanation
Clearing	* Redundant trees, and * Removal of Native Vegetation
Dust	Generated by farm operations such as spraying, moving and harvesting
Pests	Insects and rodents
Odour	Sprays, fertilisers, burning
Noise	Farm machinery and equipmentProcessing facilities ; de-husking, drying, and Irrigation pumps
Pesticides	Spray Drift andBuildStorage and disposal
Pollution	Water resources contaminated by chemicals, pesticides, nutrients and air borne particulates.
Vehicular Access / Roads	Heavy Machinery using roads between properties andBuildCost and standards of maintenance
Smoke	Burning of crop residues, scrub and pasture
Soil Erosion	Loss of soil and pollution of waterways
Water	Access to supplies Compliance with pumping regulations Management Quality of supplies Runoff, sedimentation from soil erosion.

Adapted from Living and Working in Rural Areas (Source: NSW DPI 2007)

1.1 METHODOLOGY

This section of the report identifies the methodology used in undertaking this assessment.

This LUCRA is to accompany a Planning Proposal to Amend the Minimum Lot Size Map as it relates to Lot 1 DP 832781 No 1443 Bangalow Road Clunes.

To ensure this report captures an accurate assessment of all possible land use conflicts, the following processes were utilised:

Step 1: Gathering information on the following matters

The nature of the proposed land use change and proposed development;
Understanding the major activities associated with the land use change and their frequency, including periodic and seasonal activities that have the potential to be a source of complaint or conflict;

Appraisal of the topography, climate and natural features of the site and broader locality;

Reviewing the site history, including the previous environmental assessments and approvals for the site;
Physical inspection of the site;
Investigating the main activities of the adjacent properties and their frequency, and

Comparing and contrasting the proposed and adjoining/surrounding land uses and activities for incompatibility and conflict issues.

Step 2: Evaluating the risk level of each activity

Ranking all of the identified potential land use conflicts against probability of the conflict occurring and consequence of the impact.

Step 3: Risk Reduction Management strategies

Identifying management strategies that affect the probability of an event occurring, and those that affect consequences, and
Assigning performance targets.

Step 4: Recording LUCRA results

Recording the key issues, their risk level and recommended management strategies, and
Identifying limitations and assumptions.

2. PROPOSED DEVELOPMENT & IMPACTS

This section of the report provides a description of the proposed land use change, identifying the major activities associated with this, including topography, climate and natural features of the site and the broader locality.

2.1 DEVELOPMENT PROPOSED

This risk assessment has been prepared in support of a Planning Proposal to Amend the Minimum Lot Size Map as it relates to Lot 1 DP 832781 No 1443 Bangalow Road Clunes.

The existing use of this property is for minor agriculture (grazing). Other properties in the area, including the adjoining properties to the east, west and south, are utilised for grazing or residential purposes, with only the spatially removed property to the north being used for intensive plant agriculture (macadamias).

It is possible that following the determination of this Planning Proposal Application, the subject site will be utilised for some form of intensive plant agriculture.

The proposed amendment to the Minimum Lot Size Map as it relates to Lot 1 DP 832781 No 1443 Bangalow Road Clunes, will make the approval of a Dwelling on this property possible, shows that such a decision will pose a negligible risk to causing additional conflicts between neighbouring land uses, subject to the recommendations contained herein.

2.2 TOPOGRAPHY, CLIMATE AND NATURAL FEATURES

The site relief slopes from approximately 105m AHD in the north to 70m AHD in the south of the site.

The proposed Dwelling site sits at an elevation of approx 95m AHD.

The ridge to the north of the proposed dwelling, separating it from the Macadamia Nut Plantings on the other side of Lismore Road to the north is approximately 108m AHD, before falling to the north to 95m AHD where the Macadamia Nut Plantings commence, and these then continue to slope down and away from the proposed dwelling in a northerly direction.

The climate within the area is characterised as humid sub-tropical, meaning hot, humid summers and mild winters. The rainfall is seasonally distributed, with the highest rainfall in the summer months. The microclimate which exists within the plantation is cooler and damper than the surrounding area.

The soil in the area is described as strongly structured deep, well drained red-brown soils of loam to clay loam texture at the surface and at depth becomes more clayey. This type of soil as classified as Krasnozem soils. They are also considered among the most fertile soils of the subtropical areas of Eastern Australia.

2.3 CONSULTATION

Given that the site is currently utilised for minimal agriculture (grazing), and therefore not currently operating an intensive plant agriculture use, consultation with the owner was limited. Accordingly, extensive research relating to intensive plant agriculture and the potential land use conflicts has been undertaken in relation to off site Agriculture. A site visit was conducted on 20 May 2021.

2.4 SITE INSPECTION OUTCOMES

The subject site, as shown in Figure 1.1 and Plan 2.1, is located approximately 1.4km south-west of the village of Clunes, and is accessible via Lismore Road. The site is currently vacant.

2.5 IDENTIFIED POTENTIAL LAND USE CONFLICTS

2.5.1 Vehicular Access

Access to the site is currently gained from the central north off Lismore Road. It is proposed that this existing access point will continue to provide access to the property as sight distances are good.

Given that the site is currently not utilised for agriculture, vehicular movements in the future will likely be limited to that generated by a future single dwelling e.g. 8 vehicle movements per day, and this is unlikely to impact neighbouring lands given the access roads large capacity.

2.5.2 Chemical Use and Storage

The Pesticides Act 1999 No 80 determines where a person may be guilty of the wilful or negligent use of a pesticide which may cause injury to a person or damage to property.

Compulsory training in the use of such chemicals demonstrates the correct conditions for spraying, being calm conditions in order to minimise spray drift from targeted trees. Concern arises from off-target spray drift for closely located residents, with exposure to chemicals and associated odours. This exposure poses a possible public health risk if not managed correctly through the continuation of existing management practices, and existing regulations and protocols.

Given that the subject site could be utilised for small scale agriculture, it is difficult to anticipate what future chemical might be used in any intensive plant agriculture on the site. Despite this, it is envisaged that any future chemicals and applications on the subject site would be used to maintain the productivity of the plantings undertaken.

An example of the chemicals used in macadamia plantations and their application are listed below in Table 2.1.

Chemical Type	Application	Frequency of Use
Glyphosate (Herbicide)	Boom Spray on tractor	Infrequently
Cabrio (Fungicide)	Air Blast Sprayer in Tractor	101 Times per year
Tom Cat (Rodenticide)	Placed within PVC piping around the farm	As required

Any future chemical use on-site would be subject to weather conditions and the existence of insects. Application of chemicals is required to occur throughout daylight operating hours, with spraying only conducted when wind conditions are favourable. Chemicals should be stored within an appropriately bunded area in a shed on the subject site.

2.5.3 Odour

Use of chemical sprays and fertilisers on the site may impact on the surrounding rural / residential properties, and in turn, potentially affect public health. Any future chemical application has the potential to pose a risk to residents if not managed correctly.

Compulsory training demonstrates the correct way to administer pesticides and chemicals in order to minimise spray drift, and associated potential public health risks. In addition to public health risks, it is within the farmer's interest to ensure the chemicals are applied correctly to ensure effective use and minimise waste.

Any future practices undertaken on site to minimise disturbance to neighbouring residences should include restricting spraying to calm conditions, and utilising mature vegetation and distance as a buffer to the proposed dwelling sites.

2.5.4 Noise

Any intensive plant agriculture use to the north is expected to generate noise from operations through tractor use, harvesting, pruning, spraying and fertilising, and other truck and vehicle movements. Examples of these activities and their potential frequency for a macadamia plantation are outlined in Table 2.2, below.

Activity	Frequency	Explanation
Mowing	As required	Tractor
Vehicle Movement	As required	Ute, Tractor
Harvesting	3-4 times per year	Finger Picker on Tractor
Truck & Vehicle Movement	As required	Ute, Trucks

2.5.5 Dust

Dust can be generated through cultivation prior to planting, mowing, harvesting, mulching, fertilising, spraying, and tractor and transport movements. The topography, climate and natural features, including wind, rainfall, soil type and vegetation, all determine the extent of dust creation. Given that each type of intensive plant agriculture is different, there are a range of different measures which can be undertaken to minimise dust. The proposed Spray Drift Buffer will also assist in intercepting Dust particles.

The following example is from a macadamia plantation, where damp conditions within the plantation aid in reducing the generation and presence of dust. Groundcovers such as sweet smother grass, pinto, clover, lucerne and rye grass are planted between the rows of macadamia trees and can assist with minimising soil erosion and potential nuisance of dust in the plantation. Given the cool, damp microclimate within the plantation, grass is hindered from growing in areas. However, the damp conditions aid in reducing the generation and presence of

dust. Additionally, the mulch coverage from the chipped trees and branches also aids in reducing dust.

2.5.6 Pests

The predominant pests drawn to intensive plant agriculture plantations include mammals, birds, rodents and insects. The existence of these pests can directly impact on the neighbouring residents by way of amenity and spread of disease. In the case of lychee and stone-fruit plantations, netting is used across the site to physically separate mammals and birds from the crop.

Other pest control measures include baiting of rodents and chemical sprays. These must be used according to strict labelling instructions. The storage of such chemicals needs to be away from children and domestic animals, and the use of pesticides needs to be recorded. Any future intensive plant agriculture on the site would need to ensure they adhere to the correct application and storage methods.

2.5.7 Operating Times

Farming operations generally have a schedule similar to the below: 7am – 4pm, Monday to Friday (all year)

These times are subject to weather conditions, as some work may be required to be conducted outside of these hours if delayed by weather.

2.5.8 Water

The subject site is located within the Wilsons River Catchment. There will be some changes to the land surface characteristics and the hydrological balance as a result of the dwelling development of the site, including the implementation of fencing, services, access and biological buffers. Sediment and erosion control measures will be implemented for the duration of any works.

2.5.9 Smoke

Whilst intensive plant agriculture may involve burning of branches or trees, it is an activity which is infrequently undertaken, and as such the nuisance of smoke is only ever a short-term impact.

2.5.10 Tree Removal

Intensive plant agriculture involves the removal of trees, however tree removal is undertaken only rarely in the instance of storm or wind damage to a tree or when trees are no longer productive. Pruning of branches generally takes place once a year, and as such it is expected to have only a short-term impact. Tree removal and pruning is generally undertaken in a commercial capacity with a chainsaw and chipper. The chip can then be spread on the remaining trees as mulch to reduce dust and encourage growth.

3. LAND USE CONFLICT RISK ASSESSMENT

3.1 INTRODUCTION

The gathering of information stage identified activities and their potential conflicts. This section provides an evaluation of the risk level of each activity 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 3.2), 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 DPI 2011)

Level	Descriptor	Description
A	Almost Certain	Common or repeating occurrence
B	Likely	Know 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: Land Use Conflict Risk Assessment Guide NSW DPI 2011)

Level	Measurement of Consequence
Level 1	**Descriptor: Severe**
Description	• 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**	• 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**
	• Serious and/or long-term impact to the environment

	• Long-term management implications • Serious impact on the community • Neighbours are in serious dispute
Example **Implication**	• Water, soil or air 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	• Moderate or medium-term impact to the environment and community • Some ongoing management implications • Neighbour disputes occur
Example **Implication**	• Water, soil or air known to be affected, probably in the short term • No serious harm to animals, fish, birds or plants • Public largely unaware and few complaints to Council • May contravene the conditions of Council's Licences and the POEO Act 1997 • Unlikely to result in prosecution
Level 4	**Descriptor: Minor**
Description	• Minor and/or short-term impact to the environment and community • Can be effectively managed as part of normal operations • Infrequent disputes between neighbours
Example **Implication**	• Could affect the environment or people but no impacts noticed • No complaints to Council

	• Does not affect the legal compliance status of Council
Level 5	**Descriptor: Negligible**
Description	• Very minor impact to the environment and community • Can be effectively managed as part of normal operations • Neighbour disputes unlikely
Example **Implication**	• No measurable or identifiable impact on the environment • 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 3.4, below. Highlighted in red text are those conflicts identified as having a moderate to severe consequence.

Table 3.4. Initial Risk Evaluation

Potential Conflicts	Explanation	Consequence
Vehicular Access	Vehicular movements likely to include on-site machinery (tractors, utility vehicles, etc.); Access road capacity is unlikely to be further impacted from the proposed development;	Minor
Operating Times	Operating times for farming operations would be generally consistent with the industry;	Minor
Chemical Storage and Use	Proximity of the nominated building envelopes to the proposed and existing boundaries and the potential conflict from spray drift from any future plantation on the site;	Moderate
Odour	Proximity of the nominated building envelopes to the proposed and existing boundaries	Moderate

	and potential conflict from spray drift from any future plantation on the site;	
Noise	Potential noise generated by on-site machinery during acceptable operating times;	Minor
Dust	Microclimate and damp conditions can reduce dust generation (specifically macadamia plantations); Suitable groundcovers can be utilised to reduce dust generation;	Minor
Pests	Predominant pests include rodents and insects; Pest control measures are required to reduce direct impacts on amenity and the spread of disease to neighbouring properties;	MInor
Water	There will be minor changes to the land surface characteristics and the hydrological balance;	Minor
Smoke	Burning of crop residues, scrub, pasture etc. is an activity infrequently undertaken, and as such is only ever a short-term impact; Only undertaken during permitted periods of the year;	Minor
Tree Removal	• Removal of trees is undertaken very rarely, and as such is only ever a short-term impact;	Minor

3.3 RISK REDUCTION CONTROLS

Outlined in Table 3.5 are the recommended management strategies to minimise the risk of the identified potential conflicts of moderate consequences evaluated in Table 3.4.

Potential Conflict	Risk Ranking	Management Strategy	Performance Target
Chemical Storage & Use	B3 = rank 17	The application of chemicals in accordance with the safety protocols outlined in the NSW Pesticides Act 1999 No 80 will apply to any future intensive plant agriculture use. To minimise possible environmental problems with the storage and use of chemicals the following is advised: • Spray in suitable weather conditions, such as mild temperatures and higher humidity, and consistent light winds; • Inform neighbours when spraying will take place; • Correct storage and handling of chemicals is required to avoid spills that may contaminate ground and surface waters; • Storage of chemicals and fuels need to be in accordance with workplace health and safety codes of practice. This requires locked sheds with impermeable bases and appropriate bunding to avoid water ingress and	C4 = rank 8

		contaminated runoff; • Use of chemicals needs to adhere to specific labelling instructions or according to the NSW Department of Primary Industries specifications; • Implement an emergency response in the case of a spill; • Material Safety Data Sheets should be available for all chemicals; • Appropriate training of all staff in the safe use and handling of chemicals; • Employ licensed spray contractors (dependent on situation); It is also advised that a biological buffer be established around the proposed building envelopes on each lot to mitigate against spray drift impacts on future residents. This type of buffer is recommended over a separation buffer, as it would reduce the area of farm land that would be removed from production, and in turn, limit the impact to the agricultural production.	
Odour	B3 = rank 17	To minimise possible odours the following is advised: • Spray in suitable	C4 = rank 8

		weather conditions, such as mild temperatures and higher humidity, and consistent light winds, and • Notify neighbouring residences. The vegetated buffer recommended previous would also assist in reducing potential impacts of odour on residents.	

3.4 Conflict Risk Assessment (CRA)
Objectives - ensure potential for land use conflict is identified and addressed systematically.
Performance Criteria - identify potential for land use conflicts & means to address those conflicts. **In this case the potential landuse conflict is from Macadamia Nut Plantings 78m to the north of the proposed house site.**

See Previous DCP Chapter 11 details in the introduction of this LUCRA for details of Planted Buffer Mitigation Proposed.

3.4 LIMITATIONS/ASSUMPTIONS

The limitations and assumptions to this risk assessment are that the site inspection, consultation and research correctly portrays the potential effects of any future intensive plant horticulture on the site.

4. CONCLUSIONS AND RECOMMENDATIONS

Byron Bay Planning have determined, through this LUCRA, that the potential conflicts that may arise as a result of the proposed development can be effectively mitigated through the following recommendations:

Chemical Storage and Use: The application of chemicals in accordance with the safety protocols outlined in the Pesticides Act 1999 No 80 will apply to any future intensive plant agriculture. To minimise possible environmental problems with the storage and use of chemicals, the management strategies outlined above should be followed.

Odour: The application of chemicals in accordance with best management practice should be adhered to for any future intensive plant agriculture on the site. To minimise possible odours the strategies provided, including spraying in suitable weather conditions, and notifying neighbouring residences when spraying will be undertaken.

Buffers (Vegetated): In regard to the above mentioned impacts that may provide some land use conflicts with the potential future dwelling, and in the interests of maintaining an optimal degree of horticultural activity within the property, and on adjacent properties, it is necessary to recommend a vegetated buffer be established as per the preceding 20m Planted Buffer methodology.

See Annexed Site and Landscape Plans.

CHRIS LONERGAN. B.A. (Town Planning U.N.E.)
7th. June 2021.