

15 Agriculture

This chapter identifies the extent and various types of agricultural practices within the study area and the potential impacts of the Proposal on those practices. The potential impacts have been considered in a specialist Agricultural assessment report (working paper 5, Appendix F).

15.1 Existing situation

15.1.1 Agricultural context

Within the Coffs Harbour local government area, agriculture (not including forestry) comprised 1.2 per cent of the total Coffs Harbour industry output in 2001, and 2.3 per cent of the 2001 Coffs Harbour gross regional product.

The two main crops within the study area are bananas and blueberries. However, other crops including avocados and tomatoes are grown in the area. Within Woolgoolga, it is estimated that over 16 per cent of the workforce is employed in jobs related to agriculture (Coffs Harbour City Council 2004a).

Following the increase in competition from Queensland banana production, there has been a move to other more profitable produce. Along the Mid North Coast, this has been typified by the diversification into blueberries that can be sold in overseas and Australian markets.

There is a growing commercial demand for organic produce and in the Coffs Harbour area this includes organically certified farms and farms that are being managed on organic principles.

15.1.2 Current pressures on agricultural land

Lifestyle blocks

The agricultural industry in the region has for some years been coping with an increasing demand for residential blocks or "lifestyle blocks", both along the coastal fringe and in the hinterland valleys. Much of the banana growing land occupies sea facing slopes to take advantage of the warmer aspect. There is now strong demand for this land as real estate. Given the combination of demand for lifestyle blocks, higher property values and a generally static or declining income from banana growing, the move away from farming into realisation of profits from land sales (subject to council approval) is likely to continue.

Future of the banana industry

Bananas have been grown in the Coffs Harbour area since the early 1900s and by the 1960s, Coffs Harbour was producing 80 per cent of Australia's bananas. However, this trend has changed with Queensland producing over 93 per cent of Australia's bananas in 2005 while NSW produced only three per cent in the same year. In the greater Coffs Harbour region, the Banana Industry Council estimates that the area under banana production is about 500 hectares near Coffs Harbour and about 450 hectares north of Bucca Road, with the latter corresponding to the study area for the Proposal.

Agriculture in the Coffs Harbour and Woolgoolga areas has undergone substantial changes even within the period during which this Proposal has been under investigation. Blueberries are now the fastest expanding crop on the North Coast, and they are often being planted as an alternative crop to bananas, particularly along the lower valley bottoms where there is access to water for irrigation, and the cooler temperatures are less suitable for bananas. There is currently a strong export market for blueberries.

The Australian banana industry as a whole is expected to increase production to meet population expansion, with virtually no opportunity for export. Production will therefore favour areas with the highest per hectare productivity, and the NSW industry will continue to be disadvantaged in this regard because most banana holdings are less than three hectares and have a cycle time for banana growth of 12 to 18 months, compared with nine to 12 months in the tropics. Since 1993, NSW banana production has fallen from 58,067 tonnes to 7858 tonnes (2005), while the production in Queensland has increased from 159,039 tonnes to 253,048 tonnes (2005).

Bananas are not currently imported into Australia for fresh consumption. Possible expansion of the market to imported bananas, an option that is currently being considered and could result in further decline in banana production within Australia.

Alternatively, a repeat of severe cyclones in North Queensland could cause a greater degree of uncertainty in production, and provide a favourable turn for the NSW and local industry as occurred in 2006.

15.1.3 Identification of agricultural properties

Properties identified by the agricultural assessment were selected based on a process of assessing information gathered from aerial photography and field surveys. All properties exceeding two hectares were included in the initial scan of properties. It was then determined whether the properties were involved in commercial agriculture (this determination was based on layout of crop rows, paddock development, water resources, sheds and facilities) or lifestyle blocks. Lifestyle blocks were not included within the assessment (see Appendix A1 of working paper 5).

The agricultural products / activities of the commercial agricultural properties were then identified as:

- Bananas.
- Blueberries.
- Forestry.
- Fallow / grass.
- Hydroponics.
- Nursery.

Some identified properties undertake activities that are a combination of two or more of the above categories. Fallow / grass properties are properties with either fallow ground (grassed but not used for grazing) or that are grassed and used for grazing. Forestry properties are those which contain remnant native forest and are private property (state forest land was not included in the assessment).

All properties identified as agricultural properties directly affected by the Proposal have been included in this agricultural assessment irrespective of current ownership or function. One of the identified properties was a former nursery that has since closed and been purchased by the NSW Roads and Traffic Authority (RTA) in response to a request from the owner under the hardship provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

In 2001 there were 378 agricultural properties within the Coffs Harbour local government area (Coffs Harbour City Council 2004b). The agricultural assessment has determined that 40 agricultural properties would be affected by the Proposal. Table 15.1 describes the primary, secondary and tertiary activities (by land use) of the 40 affected properties.

TABLE 15.1 ACTIVITIES UNDERTAKEN BY AFFECTED AGRICULTURAL PROPERTIES

PRIMARY ACTIVITY	SECONDARY ACTIVITY	TERTIARY ACTIVITY	NUMBER OF PROPERTIES
bananas			9
bananas	blueberries		3
bananas	fallow/grass		1
blueberries			1
fallow/grass			1
fallow/grass	blueberries		1
forestry			2
forestry	bananas		3
forestry	bananas	fallow/grass	3
forestry	fallow/grass		13
forestry	fallow/grass	blueberries	1
forestry	fallow/grass	hydroponics	1
nursery			1
Total			40

15.2 Potential impact of the Proposal

15.2.1 Definition of impact

The agricultural assessment (working paper 5, Appendix F) has considered the potential impact of the Proposal on properties using a number of pre-determined indices. These indices consider the potential impacts on the viability, production and management of agribusiness due to fragmentation, loss of land and potential edge effects. The indices are:

- *Current (farm) activity interference index*
Where the impacts on current farm activity are assessed by estimating the area involved for each current land use and the degree to which the Proposal physically impacts on each activity.
- *Current farm management interference index*
Where the degree to which overall current farm management is impaired is assessed (this depends both on the impacts on individual crop areas and also on the interference experienced with on-farm access).
- *Property fragmentation index*
Measures the extent to which the Proposal impacts each land use class on a farm, and it is designed to illustrate the long term effect on property use.
- *Farm potential land use interference index.*
Expresses the degree to which the overall farm operation and property is affected and it is calculated as the product of the current farm management interference index and the property fragmentation index.

Assessments using the indices listed above are provided in Chapter 3 of working paper 5 (refer Appendix F). The index identified to best assess the overall impact on a property is the "farm potential land use interference index". This index provides for a complete consideration of the potential impacts of the Proposal. Results of the assessment using this index are provided below.

The farm potential land use interference index is derived from a combination of the "current farm management interference index" and the "property fragmentation index". The former identifies the degree to which overall current farm management is impaired, focussing on impacts on individual crop areas and also on the interference experienced with on-farm access. The latter measures the extent to which the Proposal affects each land use class on a farm and it is designed to illustrate the long term effect on property use.

The farm potential land use interference index defines the degree of impact on a property as follows:

- A minor impact has a farm potential land use interference index of 0.
- A moderate impact has a farm potential land use interference index of 0.1 to 3.
- A serious impact has a farm potential land use interference index of 3.1 to 5.
- A critical impact has a farm potential land use interference index of greater than 5.

The agricultural assessment allocated a numeric identifier to each of the 40 agricultural properties. Figures 15.1a to 15.1d show the agricultural properties affected by the Proposal and the assessed level of impact on each of these properties according to the farm potential land use interference index. Based on the index, the Proposal would have:

- A minor impact on 13 properties.
- A moderate impact on 8 properties.
- A serious or critical impact on 19 properties.

15.2.2 Overall impact on agricultural properties

The combined area of all agricultural properties directly affected by the Proposal is approximately 440 hectares, noting that this is the total area of the properties, not the area that would be occupied by the Proposal. The majority of this land (313 hectares) is primarily forest or fallow / grassland. Of the remaining 127 hectares of the affected properties, some 97 hectares is used for banana production and 18 hectares used for growing blueberries.

Potential impacts on agricultural activity as a result of the Proposal include direct impacts on properties, necessitating acquisitions, and indirect impacts on agricultural activities by way of affecting access to and within properties as well as impacts on existing irrigation and/ or pest control regimes. Another indirect impact would be the potential for contamination of the water supply used for irrigation by agricultural properties arising from stormwater flows during construction and operation.

In some cases, the RTA may totally acquire a property for the Proposal. If the total area of the property is not required for the subsequent construction or operation of the Proposal, an opportunity exists for the residual or excess land to be sold to neighbouring agricultural properties. Therefore, although 19 properties have been identified as being severely or critically affected, there may be the opportunity for some properties to acquire surplus RTA land adjacent to their property. This could result in an overall reduction in the extent of impact on some agricultural properties.

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Refer Figures 15.1a to 15.1d

15.2.3 Bananas

In 2004-2005, the total area bearing bananas in NSW fell five per cent from the previous year to 10,400 hectares. The properties which would be seriously or critically affected by the Proposal comprise 0.3 per cent of the total area of banana production in NSW. In the Coffs Harbour Woolgoolga region, there are estimated to be 950 hectares of land under banana production. Within the study area, the seriously to critically affected banana farms make up approximately 3.7 per cent of that total area.

Of the 97 hectares of bananas on properties directly affected by the Proposal, eight farms with a total of 35 hectares of bananas would be affected such that the impact has been rated as either serious or critical, noting that the potential impact would not necessarily represent a total loss of the property.

Pest and disease control in bananas is directed mainly at the detection and eradication of panama disease and banana bunchy top virus. Abandoned and neglected plantations are prone to pests and disease and are a potential source of infection for commercial plantations. Outbreaks of panama disease in banana crops continue in the Woolgoolga and Safety Beach areas, underlining the need for particular vigilance in moving spoil and controlling sediment from former banana plantations. The disease may penetrate topsoils up to three metres below ground level and is transmitted through soil transportation and by water. Disease in bananas can be controlled using summer cover sprays that are usually applied by helicopter.

A helicopter can typically spray within about 150 metres of houses or closer depending on wind direction. However, helicopters will not operate within 300 metres of a highway as there is a possibility that the misting oil will smear windscreens and cause a traffic safety risk. The bypass section of the Proposal would affect helicopter spraying activities on some banana farms that are currently well outside any such 300 metre buffer zone. Based on a worst case scenario of a 300 metre buffer, a total of 13 banana growing properties (accounting for an additional 27 hectares) could be affected in this regard.

15.2.4 Blueberries

Blueberries are most easily planted on flat to gently sloping lands, but are being grown on available land within properties which are only marginally profitable for bananas. The lower slopes are favoured since blueberries can tolerate cooler conditions than bananas and require a cold winter for flower initiation.

Blueberries are a capital and labour intensive crop, prone to a number of pests and diseases. The beds are laid out to be accessible by ground spraying. The potential for spray drift from blueberry farms to affect motorists on the highway would be an issue for blueberry farms with planting beds immediately adjacent to the highway. To manage this minor edge effect, consultation will be undertaken with individual blueberry farmers regarding provision of a suitable vegetation buffer to manage pesticide spray drift from farms onto the highway. The vegetation buffer will be developed for all blueberry farms adjacent to the highway alignment and, subject to agreement by the property owner, will be located within the farm properties.

Of the six identified blueberry farms that would be directly affected by the Proposal, three farms would be seriously or critically affected and the other farms would experience a minor impact. There would be no substantial indirect impacts on any blueberry farms. As with bananas, it is noted that the potential impact would not necessarily represent a total loss of the property, depending on the outcome of property acquisition process.

15.2.5 Organic farms

Properties that have become certified organic producers, and those which are contemplating or have started a certification process with one of the several organic grower peak bodies, are smaller than the conventional farms discussed to date. There were six properties identified as certified organic producers in the vicinity of the Proposal and one property in the process of being certified. None of these properties would be directly affected by the Proposal.

The potential indirect impacts on organic farms are the same as for non-organic farms and include potential water source contamination during construction and from ongoing stormwater runoff.

15.2.6 Water supply

Dams used to irrigate agricultural properties could potentially be impacted by the Proposal and there is also the potential for springs and spring fed dams to be impacted by construction, such as from localised lowering of the water table. Further investigations during the detailed design phase would be required to assess this issue more closely to ensure the integrity of dams and springs. In cases where dams would still be required after construction of the Proposal, either the design would be progressed so the dam would be retained, or an alternative water source would be found for affected properties.

There is also potential for contamination of farm water supply arising from stormwater flows during construction and operation of the Proposal. Comprehensive management measures would be required to ameliorate water quality impacts during construction and operation of the Proposal, and ensure there is no contamination of water supplies used for farm irrigation.

Highway drainage design and erosion and sedimentation control basins and detention basins are key features that would be constructed as a priority in the early phase of construction. Drainage design would seek to divert road runoff away from farm dams and thereby minimise potential impacts. In other situations, basins would collect and treat stormwater runoff and with application of best practice methods, it is anticipated that these measures would manage water quality impacts on farming properties. Water quality management measures proposed by the RTA are identified in Chapter 18 and in the draft Statement of Commitments at Appendix A.

15.2.7 Effects of major road cuttings

There was concern raised by the community about potential damage to crops should protected valleys be exposed to westerly winds at locations where the Proposal cuts through the spurs of hills or ridgelines that form part of the Great Dividing Range. This concern is generally limited to the bypass section. The concern is that winds could be channelled through cuttings, bringing cooler temperatures that could damage crops, particularly bananas which require a frost-free environment.

The bypass section of the Proposal extends from south Woolgoolga in a general north-west direction as far as Newmans Road and then northwards to the state forest. With this alignment through agricultural lands, the bypass traverses the lower spurs and footslopes of the main range that forms the southern and western edge of the study area. As such, the route effectively skirts around and at much lower elevation than the high terrain that separates the air shed of rural south-west Woolgoolga from the next main valley to the south (i.e. south of Morgans Road).

The concept design includes cuttings varying from about 80 to 120 metres wide and up to 22 metres deep, below the existing ground surface. Figures 7.4a to 7.4h in Chapter 7 show typical cross-sections along the Proposal length. There are approximately 11 banana properties either side of proposed cuttings, eight of which are identified as being either critically or seriously affected by the Proposal.

Wind data collected at the Coffs Harbour weather station indicates that there is variability in wind direction from the south-west to the north-east. Within the study area, there is an absence of strong, cold westerly winds during the winter period. The study area is also identified as part of a region that is not affected by hot north-westerly winds during late spring and summer, which can be drying and debilitating for crops.

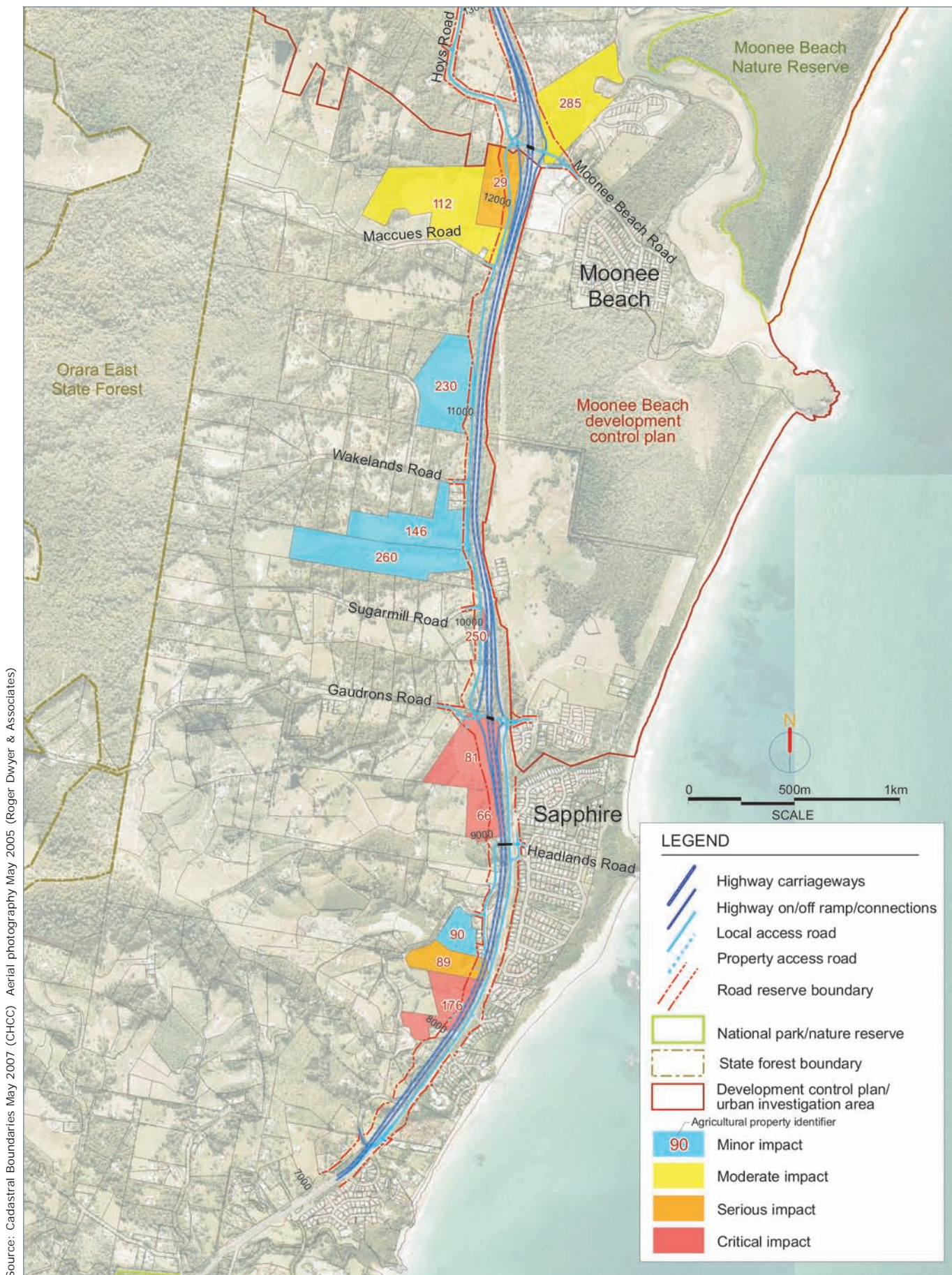
Although the Proposal does not penetrate through any of the high ridges south and west of the bypass, it is possible that localised winds within the south-west Woolgoolga rural valley area could be channelled along the cuttings, to then disperse laterally at the end of the cutting. However, while there is anecdotal information about micro climatic variation within this rural area (associated with localised aspect, elevation etc.), there is nothing to indicate significant temperature differences either side of the localised spurs / ridges. Consequently, when coupled with the direct impacts on banana properties the additional for adverse effects on banana production due to cold air channelling from cuttings is concluded to be a low risk.

15.3 Proposed management measures

Proposed management measures that would be adopted to mitigate agricultural impacts are discussed below and included in the draft Statement of Commitments at Appendix A:

- (i) Negotiations for agricultural property acquisition will include consultation on property adjustments where required to limit impact on farm management practices.
- (ii) At the request of agricultural landowners whose properties are severely or critically affected (as defined in Section 15.2 of the environmental assessment) by the Proposal, specialist consultants will be engaged to provide assistance to owners in assessing opportunities for agricultural diversification.
- (iii) At the request of agricultural landowners whose properties are severely or critically affected (as defined in Section 15.2 of the environmental assessment) by the Proposal, specialist consultants will be engaged to provide assistance to the owners in deciding whether to seek a purchase of available residual agricultural land.
- (iv) Panama disease and banana bunchy top virus will be identified and appropriately managed in consultation with the NSW Department of Primary Industries (Agriculture) on all ex-banana farms acquired as part of the Proposal.
- (v) Consultation will be undertaken with individual blueberry farmers regarding provision of a suitable vegetation buffer to manage pesticide spray drift from farms onto the highway. The vegetation buffer will be developed for all blueberry farms adjacent to the highway alignment and, subject to agreement by the property owner, will be located within the farm properties.
- (vi) The integrity of water flows from permanent springs in the foothill region will be preserved.

The statement of commitments (Appendix A) also identifies management measures for property related impacts that are applicable to management of some identified agricultural impacts. It should also be noted that commitment P6 in Appendix A is also relevant to item (vi) above.



Source: Cadastral Boundaries May 2007 (CHCC) Aerial photography May 2005 (Roger Dwyer & Associates)

FIGURE 15.1a AFFECTED AGRICULTURAL PROPERTIES (FARM POTENTIAL LAND USE INTERFERENCE INDEX)

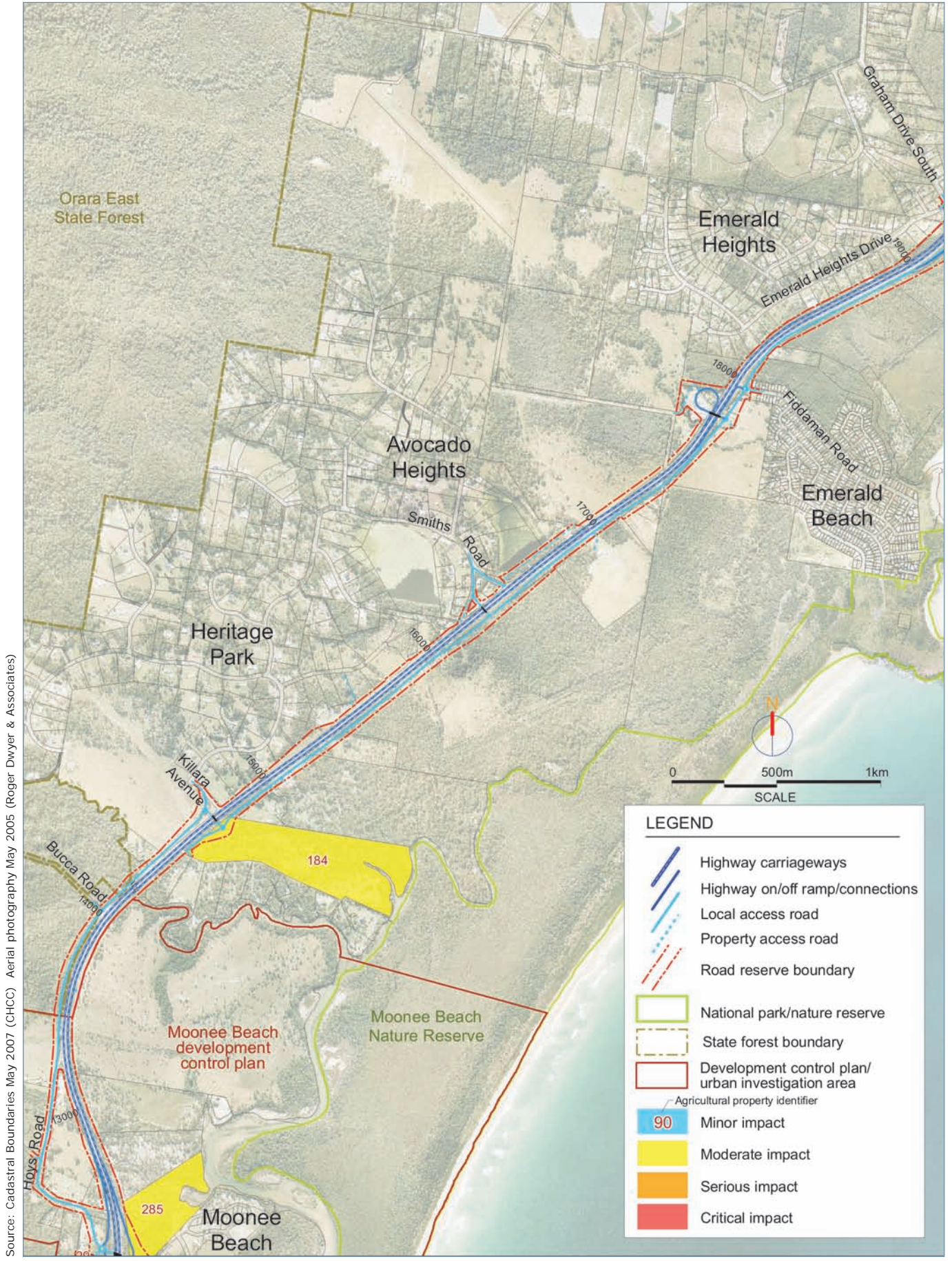


FIGURE 15.1b AFFECTED AGRICULTURAL PROPERTIES (FARM POTENTIAL LAND USE INTERFERENCE INDEX)

Source: Cadastral Boundaries May 2007 (CHCC) Aerial photography May 2005 (Roger Dwyer & Associates)

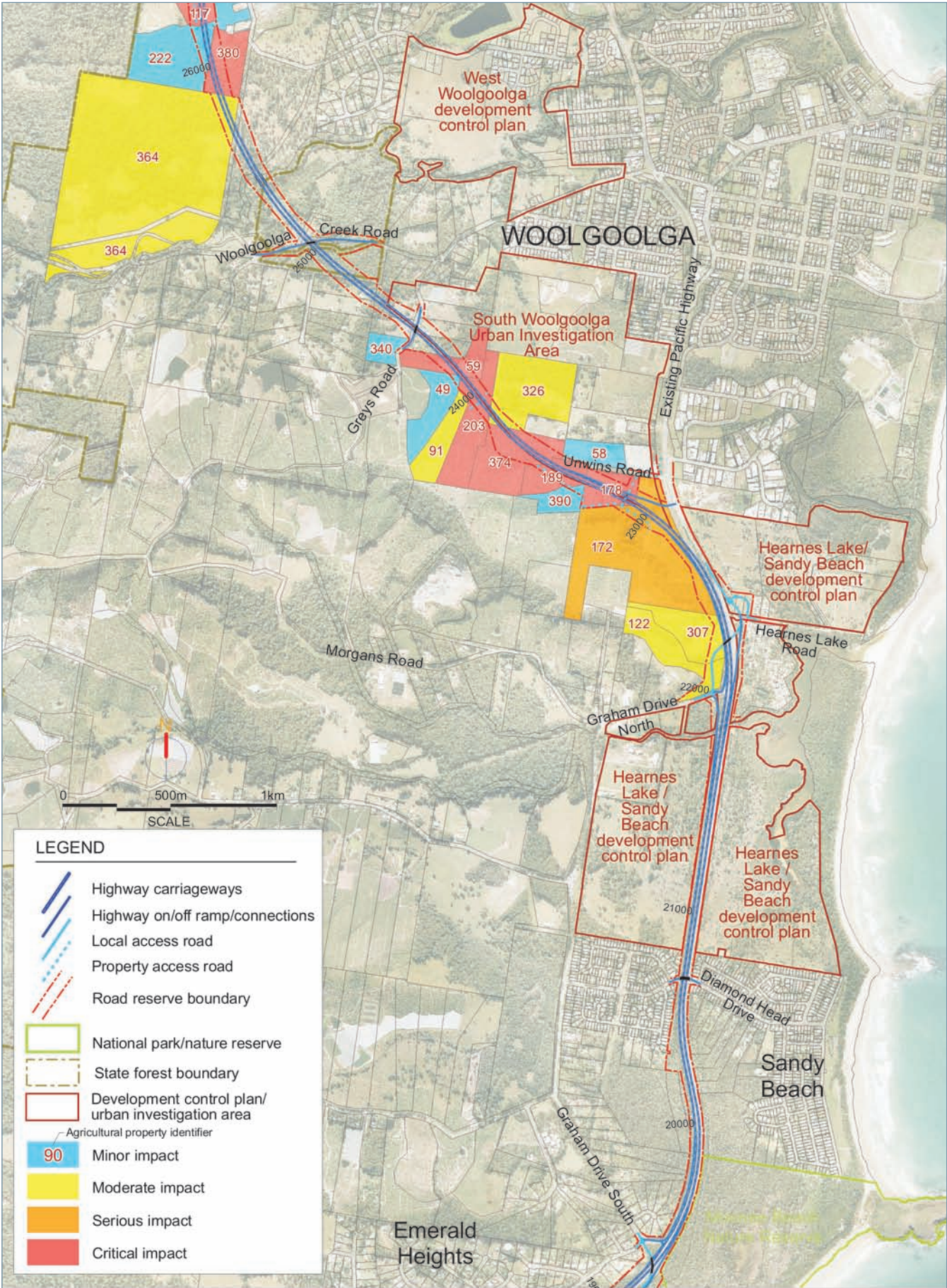
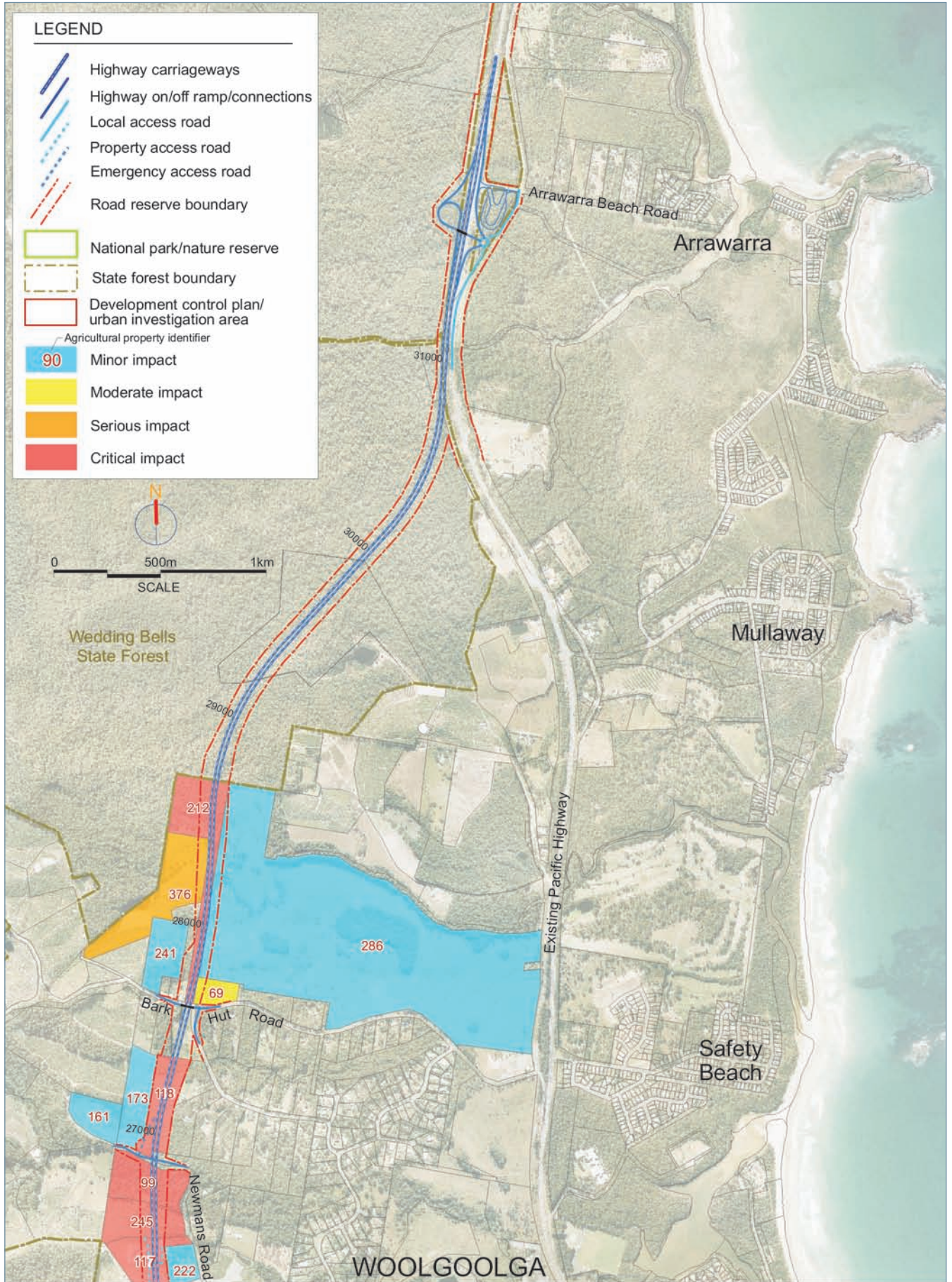


FIGURE 15.1c AFFECTED AGRICULTURAL PROPERTIES (FARM POTENTIAL LAND USE INTERFERENCE INDEX)



Source: Cadastral Boundaries May 2007 (CHCC) Aerial photography May 2005 (Roger Dwyer & Associates)

FIGURE 15.1d AFFECTED AGRICULTURAL PROPERTIES (FARM POTENTIAL LAND USE INTERFERENCE INDEX)