Agricultural
Risk
Consulting
Group

Report - Agricultural Impact -Tweed Valley Hospital

On Instructions from TSA Management

16 October 2018

CONTENTS – MAIN HEADINGS

TABLES, IMAGES, PHOTOGRAPHS

1. INTRODUCTION

Qualifications and Experience

1.1 I, Tony Hartley, am a Director of ARC Group. I am a qualified agronomist and hold a Bachelor of Applied Science (Agriculture) and an Assc Dip Appl Sc (Agricultural Protection).

1.2 I have worked in agriculture in Australia since 1980. I have experience in and knowledge of livestock and crop production businesses and systems across Australia. I have extensive experience in agricultural business operations and have undertaken many reviews of agricultural business operating requirements and operating costs.

Instructions

1.3 This report has been requested by TSA Management on behalf of Health Infrastructure NSW.

1.4 I have been asked to provide a report in consideration of Point 6 of SEARS for Tweed Valley Hospital. A copy of the relevant section of the SEARS is attached as ***Appendix A***.

Declarations

1.5 I have made all enquiries I believe are desirable and appropriate. Where I have made assumptions, I have detailed them in my report.

2. EXECUTIVE SUMMARY

2.1 This report has been completed following an inspection conducted by me on 15 June 2018 and a review of relevant materials provided to me by TSA management.

2.2 In terms of the property in question, the area is very small relative to the identified farm area with the Cudgen Plateau State Significant Farmland (Cudgen Plateau SSF). The small size of the property and its possible productivity means that it is unlikely that any impact would be able to be measured.

2.3 In terms of possible impact on other Cudgen Plateau SSF within the region. I have not been able to identify any reason why there would be an impact. There is only approximately 2.0 hectares of cultivation in immediate proximity to the site. The frontage of this land running along Cudgen Rd is approximately 350 metres. This land is located immediately to the south of the property, south of Cudgen Road, the approximate 2.0 hectare area does not include all cultivation, only the area in immediate proximity to Cudgen Road and the property in question. Irrespective of the location of these properties to the proposed site, I do not consider the management of those properties would have to change at all. The properties farming operations would still have to adhere to regulations and requirements as per any farming operation, in terms of off-site spray drift etc. These requirements would simply not change.

2.4 The proposal and the removal of the property as farmland does not cause any significant fragmentation of, or have any impact on other Cudgen Plateau SSF.

2.5 In consideration of land values and agricultural investment I am not qualified to provide an opinion on the impact of the change in use of the site. However, in terms of the value and investment in agricultural productivity of neighbouring farming land, I cannot identify any reason why this may change from the current values in terms of productivity.

2.6 Many of the areas within Point 6 Agricultural Impact, have been addressed in the Draft LUCRA produced by Mr Tim Fitzroy. For the relevant points, I have referred to the draft LUCRA.

3. POINT 6 SEARS AGRICULTURAL IMPACT

3.1 I have divided the balance of this report as per the relevant sections of Point 6.

Provide details of the impact of the proposal on mapped State Significant Farmland SSF) in terms of:

1. ***agricultural resources and industries***
2. ***agricultural supplies in the North Coast region due to loss of SSF***
3. ***fragmentation of existing SSF in the area***
4. ***impact on other farmland including SSF in the region***

Overview

3.2 At an inspection of 771 Cudgen Road Cudgen (the property) on 15 June 2018 I noted the following:

> From a Google Earth review and subsequent inspection of 771 Cudgen Rd, that I conducted on 15 June 2018, I noted the following:
>
> a) There is approximately 11.24 ha of cultivated area.
> b) There is an additional 0.58ha of Custard apple trees, these trees appeared to have been abandoned. There were several dead trees and there was no indication that the trees had been tended to, most probably for several years. In their current condition they could not produce a commercial crop and it is unlikely that they could be salvaged sufficiently enough to produce a commercial crop in the future.
> c) There is an additional 0.19ha paddock located immediately to the north of the Custard Apples, there was no indication that this area was in use for any farming activity.
> d) Of the 11.24 ha of cultivation;
> i. There are 5 paddocks on the western border that total 3.37 ha and 4 paddocks with a total of 3.65 ha that are bordered by the timbered area to the immediate north of all cultivation paddocks. The total area of all 9 paddocks is 7.02ha. The slope on these paddocks range from 6% to 17%.
> ii. There are 4 paddocks that are on the southern boundary (Cudgen Rd side) that total 4.22 ha, these paddocks are relatively flat.
> iii. In relation to all cultivation, there was existing or old drip irrigation tube present. This indicates that the paddocks had been irrigated using drip irrigation. The type of drip irrigation that appears to have been used is thin walled product that is typically used for a single season after which it is removed and disposed of.
> iv. For paddocks with a slope of greater than 5% it is difficult to get even irrigation distribution, this is irrespective of whether drip irrigation or overhead irrigation is used.
> v. For paddocks with a slope of greater than 10%, the management of the paddocks including operations such as tractor work and harvesting is significantly more difficult than on flat ground.
> vi. Production from paddocks with significant slopes such as the 9 paddocks with a total of 7.02ha, can be expected to be lower than on paddocks with little or no slope.

3.3 Attached as ***Appendix B*** are two Google Earth images that I have marked up with the total area of the property and the areas of each paddock.

3.4 I have been provided with two images of the area that have the Cudgen Plateau (State Significant Farmland (Cudgen Plateau SSF)) identified. The images are attached as ***Appendix C***. One of the images has the farming areas classified into different farming and use categories. From Appendix C I have reproduced the categories and areas:

Landuse Within Cudgan Plateau State Significant Farmland

Classification (Secondary)	Sum Aea Ha
3.2.0 Grazing modified pastures	88.569
3.3.0 Cropping	0.306
3.4.0 Perennial horticulture	43.099
3.5.0 Seasonal horticulture	320.278
4.4.0 Irrigated perennial horticulture	4.179
5.1.0 Intensive horticulture	17.623
5.2.0 Intensive animal husbandry	2.097
TOTAL	476.153
1.3.0 Other minimal use	0.736
2.1.0 Grazing native vegetation	8.205
3.1.0 Plantation forestry	8.106
3.6.0 Land in transition	31.585
5.4.0 Residential and farm infrastructure	35.402
5.5.0 Services	1.280
5.7.0 Transport and communication	7.338
6.2.0 Reservoir/dam	1.994
6.5.0 Marsh/wetland	9.415
6.6.0 Estuary/coastal waters	0.091
TOTAL	104.153

3.5 I understand the images and the above table were produced on behalf of Health Infrastructure in relation to the Tweed Valley Hospital. I understand the areas are based on 2013 mapping data provided by Department of Agriculture and Water Resources

3.6 In considering the areas in the above I have assumed they are correct. I make the following points:

a) The total area of farming land in the Cudgen Plateau SSF is 476.15 ha and the total area within the Cudgen Plateau SSF is 580.3 ha.

b) The total arable area at the property is 11.24 ha. This area is approximately 2.4% of all farming land in the Cudgen Plateau SSF and 1.9% of the total area with the Cudgen Plateau SSF.

c) There is only 4.22ha that is relatively flat, this area is approximately 0.9% of the total farming land in the Cudgen Plateau SSF. The remainder of the cultivated area slopes from 6 to 17%. All the paddocks on the property have rock throughout them and have relatively shallow soils with rocky subsoils. I do not consider this farming land to be of high quality due to the presence of rock and the significant portion of the property that has sloping ground.

d) From Appendix C there is 103.12 ha that is stated to be "*Potentially under-utilised State Significant Farmland*". From my inspection these *Potentially under-utilised State Significant Farmland* areas appear to be areas that are not utilised, from the locations that I could see at my inspection, there did not appear to be any evidence of them being maintained for farming of any description. The image used to come to this conclusion is based on a Google Earth image captured in July 2017 and a review completed on 3 May 2018.

3.7 In considering the four points that I am addressing, my opinion is as follows:

1. ***agricultural resources and industries***

3.8 The arable area of the property is only 2.4% of the identified farming area (476.15 ha) in the Cudgen Plateau SSF.

- The flattest paddocks, and hence the best farming land is only 4.22ha or less than 0.9% of the total Cudgen Plateau SSF.
- The property was used to grow sweet potatoes. Sweet potatoes are usually only grown on land once every three years due to the need to manage disease. Based on growing sweet potatoes only, the average annual area that could be used for production on the property in question is 3.75 ha or approximately 0.8% of the total Cudgen Plateau SSF farming area.
- Further, the fact that there appears to be 103.15ha of SSF that is potentially under-utilised means that the loss of the area in question could be effectively offset by other areas being brought into production.
- From a review of Google Earth images and my inspection, it is clear that many of the areas that have been identified as "*Potentially under-utilised"* are definitely under utilised or not utilised at all (refer paragraph 3.6 d of this report).

3.9 In terms of any direct impact from the proposal and also due to the removal of the SSF land in question from primary production, I do not consider that there would be any significant impact within the Cudgen Plateau SSF.

3.10 In terms of possible impact on other Cudgen Plateau SSF within the region. I have not been able to identify any reason why there would be an impact. There is only approximately 2.0 hectares of cultivation in immediate proximity to the site. The frontage of this land running along Cudgen Rd is approximately 350 metres. This land is located immediately to the south of the property, south of Cudgen Road, the approximate 2.0 hectare area does not include all cultivation, only the area in immediate proximity to Cudgen Road and the property in question. Irrespective of the location of these properties to the proposed site, I do not consider the management of those properties would have to change at all. The properties farming operations would still have to adhere to regulations and requirements as per any farming operation, in terms of off-site spray drift etc. These requirements would simply not change.

2. ***agricultural supplies in the North Coast region due to loss of SSF***

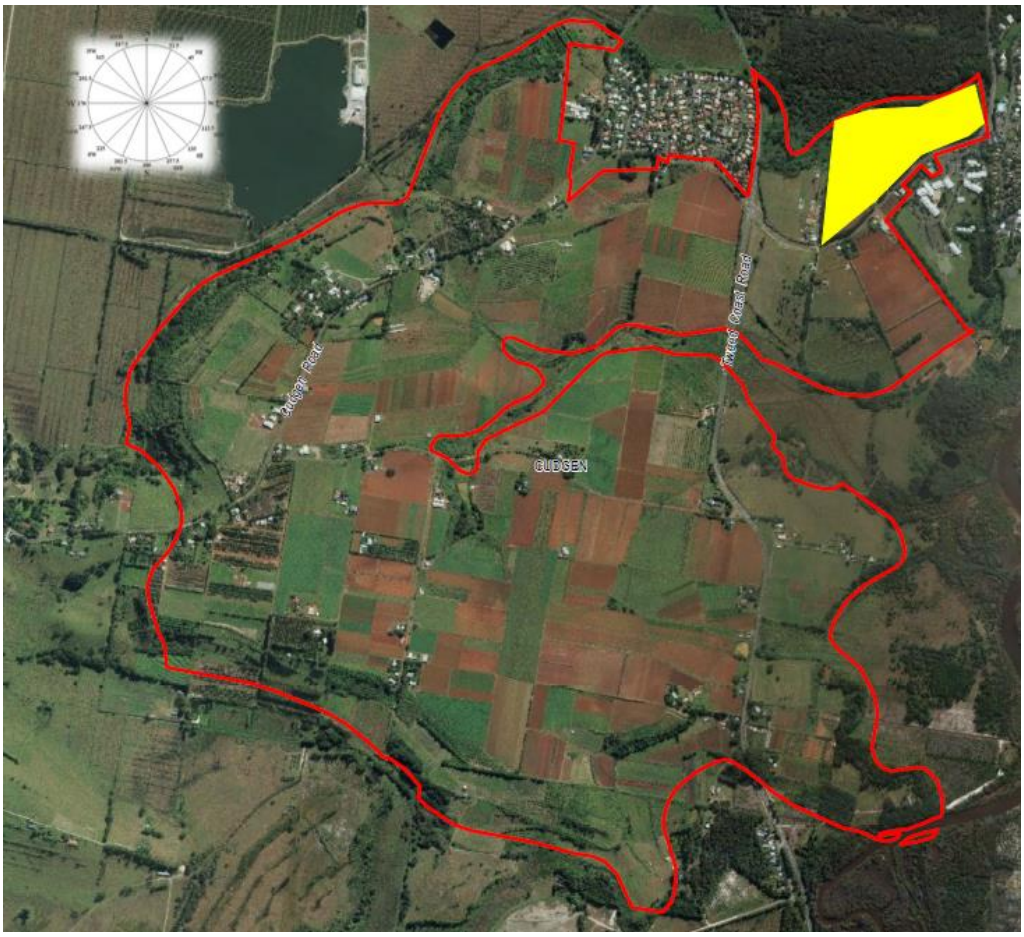
3.11 By agricultural supplies I understand this may include produce and the supply of inputs for the production of that produce. If my understanding is correct my comments re Point 1 also apply to Point 2.

3. ***and 4. fragmentation of existing SSF in the area and impact on other farmland including SSF in the region***

3.12 The removal of the property as farmland does not cause any fragmentation of, or have any impact on SSF for the following reasons:

i. The property is located on the extreme north eastern boundary of the Cudgen Plateau SSF. ***Image 3.1*** is a Google Earth image with the boundary of the Cudgen Plateau SSF area marked on it. The properties location means that Cudgen Plateau SSF is not fragmented or impacted on.

Image 3.1 – Location of Property Relative to Cudgen Plateau SSF Area



The area outlined in red is what I understand is the boundary of the Cudgen Plateau SSF. The property coloured yellow is the property in question.

ii. The property is neighboured on the eastern and southern sides by residential areas and on the north by timbered country.

iii. Cudgen Rd and Turnock St also borders the property on the southern and eastern sides.

iv. At paragraph 3.10 I have discussed the neighbouring cultivation area to the south of the property and those comments apply here. There is only one other farm area on the western boundary that the property immediately neighbours and from my inspection there was no cultivation on this property, it appeared to be unimproved pasture.

v. My comments at Point 1 also apply to Points 3 and 4.

the impact assessment should consider agricultural productivity, land values, agricultural investment, impacts to key support infrastructure/services including transport routes, adjoining land users (including a detailed Land Use Conflict Risk Assessment), impacts to water use from agriculture, regional communities and the environment.

3.13 At Table 3.5 of a draft LUCRA produced by Mr Tim Fitzroy and dated 6 September 2018 a *"Hazard Identification and Risk Control Assessment"* has been completed. I consider the draft LUCRA addresses the following:

Infrastructure/services Including Transport Routes,
Adjoining Land Users (including a detailed Land Use Conflict Risk Assessment),

Impact on the Environment

Identify options to minimise and mitigate adverse impacts on agricultural resources, including agricultural lands, enterprises and infrastructure at the local and regional level.

3.14 A copy of the draft LUCRA is attached to the EIS.

3.15 In consideration of the LUCRA and the remaining points relevant to this section of this report I will address the following:

Agricultural Productivity

Land Values and Agricultural Investment

Impact on Water Use from Agriculture, Regional Communities, Environment

Agricultural Productivity,

3.16 As previously discussed the cultivated area of the property is small relative to the total farming area on the Cudgen Plateau SSF. Its removal is unlikely to have an impact given the small land size and the productivity of the property due to rocky soil and sloping land.

a) The sloping area on the property and the rocky sub soil would most likely result in yields of sweet potatoes being lower than average. It would also make harvesting of the sweet potatoes less efficient than non-rocky soil.

b) Most sweet potato farming operations require the use of a break crop such as a forage crop to assist with disease control. The use of a break crop adds cost to the farming operation and reduces the gross margin.

c) At my inspection 3 paddocks had not been farmed for a considerable period of time, they had significant weed growth on them and no evidence of cropping.

3.17 I have not been provided with or been able to source information relative to the Cudgen Plateau SSF total agricultural revenue. However, given the small area of the property relative to the Cudgen Plateau SSF and the fact that there appear to be significant areas of the region that are not being farmed despite them most likely being able to be farmed, I do not consider the change in use of the property would have an impact on the agricultural productivity of the region.

3.18 I have been unable to identify any reason why the proposal and the removal of the property in question from primary production would have any significant impact to agricultural productivity

of the Cudgen Plateau SSF. Its location is away from the majority of farming land, the area in question is small compared to the remainder of all farming land.

Land Values and Agricultural Investment

3.19 I am not qualified to provide an opinion on the impact of the change in use of the site on values or investment opportunities. However, in terms of the value and investment in agricultural productivity of neighbouring farming land, I cannot identify any reason why this may change from the current values in terms of productivity.

Impact on water use from agriculture

3.20 I do not consider the proposal would have any impact on water use from agriculture. While hospitals are large water users, the water used will be from urban supply and not irrigation water. Further and as discussed, the average annual area that would be cropped to sweet potatoes at the property in question each year is approximately 3.75 ha. A sweet potato crop uses approximately 4 to 5 megalitres of water per hectare which is equivalent to 15 to 18.75 megalitres per annum. This is the approximate volume of irrigation water that will not be used due to the proposal.

Impact on Regional Communities

3.21 The impact on regional communities has been assessed as part of the economic impact assessment attached to the EIS and addresses the benefits of the new hospital to the regional community.

3.22 Given the limited size of the SSF being removed, any impact on regional communities from an agricultural perspective, would be small.

ARC GROUP

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Appendix A

- Include a preliminary design strategy to demonstrate a high level of internal amenity for the patients and workers including:
  - access to natural daylight and ventilation
  - acoustic separation and solar shading provisions
  - additional spaces for patients and visitors to gather
  - visual and physical access to outdoor landscape from inpatient rooms and waiting and circulation areas
  - interior design strategies to promote patient recovery.

→ Relevant Policies and Guidelines:

- "Tweed Scenic Landscape Evaluation Volumes 1 and 2 1995"
- "Visual Management System Tweed Pilot 2004" Coastal Comprehensive Assessment prepared by the Department of Planning.

5. Staging

- Provide details regarding the staging of the proposed development.

6. Agricultural Impact

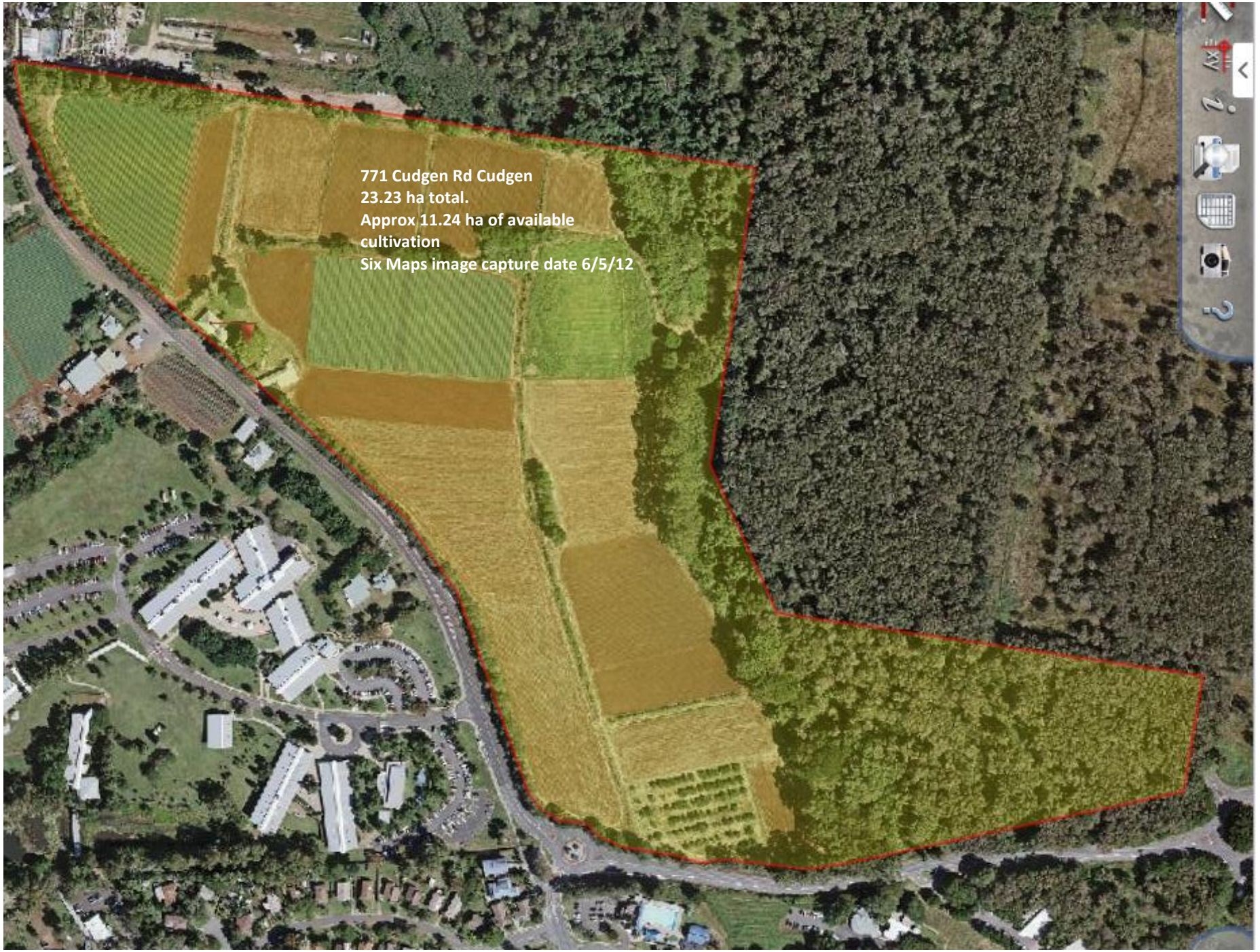
- Provide details of the impact of the proposal on mapped State Significant Farmland SSF) in terms of:
  - agricultural resources and industries
  - agricultural supplies in the North Coast region due to loss of SSF
  - fragmentation of existing SSF in the area
  - impact on other farmland including SSF in the region
- the impact assessment should consider agricultural productivity, land values, agricultural investment, impacts to key support infrastructure/services including transport routes, adjoining land users (including a detailed Land Use Conflict Risk Assessment), impacts to water use from agriculture, regional communities and the environment.
- Identify options to minimise and mitigate adverse impacts on agricultural resources, including agricultural lands, enterprises and infrastructure at the local and regional level.

7. Transport and Accessibility

Include a transport and accessibility impact assessment, which details, but is not limited to the following:

- details of the current daily and peak hour vehicle, existing and future public transport networks and pedestrian and cycle movement provided on the road network located adjacent to the proposed development
- details of estimated total daily and peak hour (AM, PM and weekend) trips generated by the proposal (volume and distribution), including vehicle, public transport, pedestrian and bicycle trips
- details of the projected growth rate of the local daily peak hour traffic (AM, PM and weekend) in the locality
- the impact of the proposed development on the existing and future local road network (considering a 10-year horizon)
- the adequacy of existing public transport or any future public transport infrastructure within the vicinity of the site, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development
- measures to integrate the development with the existing/future public transport network
- the impact of trips generated by the development on nearby intersections particularly, Tweed Road / Cudgen Road and Chinderah Road interchange with Pacific Highway
- consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required (Traffic

Appendix B

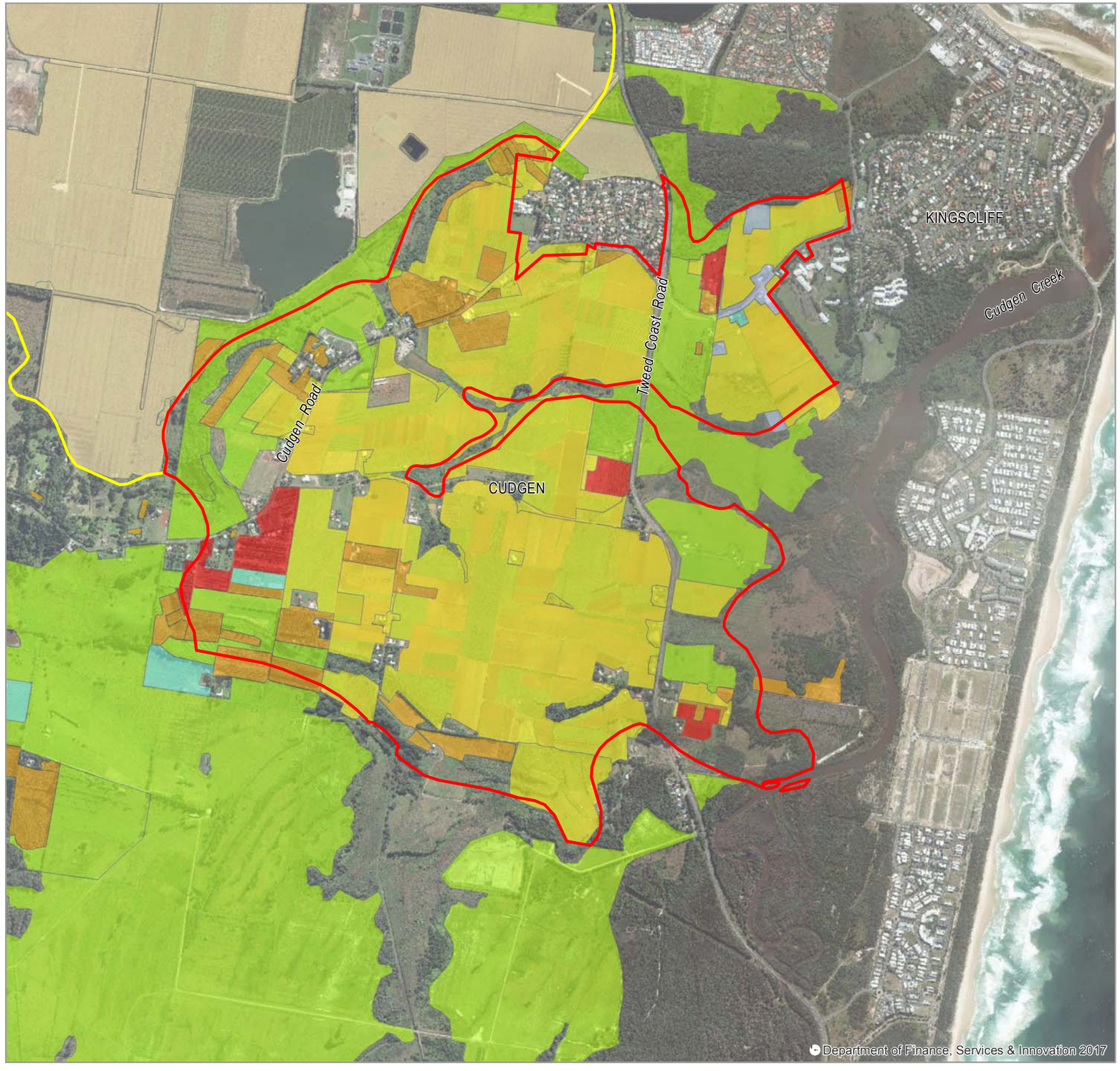

771 Cudgen Rd Cudgen
23.23 ha total.
Approx 11.24 ha of available cultivation
Six Maps image capture date 6/5/12


1.44 ha
0.52 ha
0.63 ha
0.57 ha
0.21 ha
0.94 ha
1.55 ha
1.01 ha
1.88 ha
1.28 ha
0.21 ha
0.42 ha
0.58 ha
0.19 ha
Trees
0.58 ha
771 Cudgen Rd Cudgen
Google Earth image capture date 18/7/17. Trees and 0.19 ha block not cultivated. Total available cultivation = 11.24ha
Cudgen Rd
Turnock St
Image © 2018 DigitalGlobe
2003
Imagery Date: 7/18/2017

Appendix C

Information shown is for illustrative purposes only

Drawn by: RE Checked by: AB Reviewed by: SJW Date: 03/05/2018
Source of base data: SIX Maps and Department of Agriculture and Water Resources



LEGEND

- Cudgan Plateau - State significant farmland
- Regionaly significant farmland

NSW Landuse 2013

- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 3.5.0 Seasonal horticulture
- 4.4.0 Irrigated perennial horticulture
- 4.5.0 Irrigated seasonal horticulture
- 5.1.0 Intensive horticulture
- 5.2.0 Intensive animal husbandry

Landuse Within Cudgan Plateau State Significant Farmland

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TOTAL	**104.153**

North

0 400

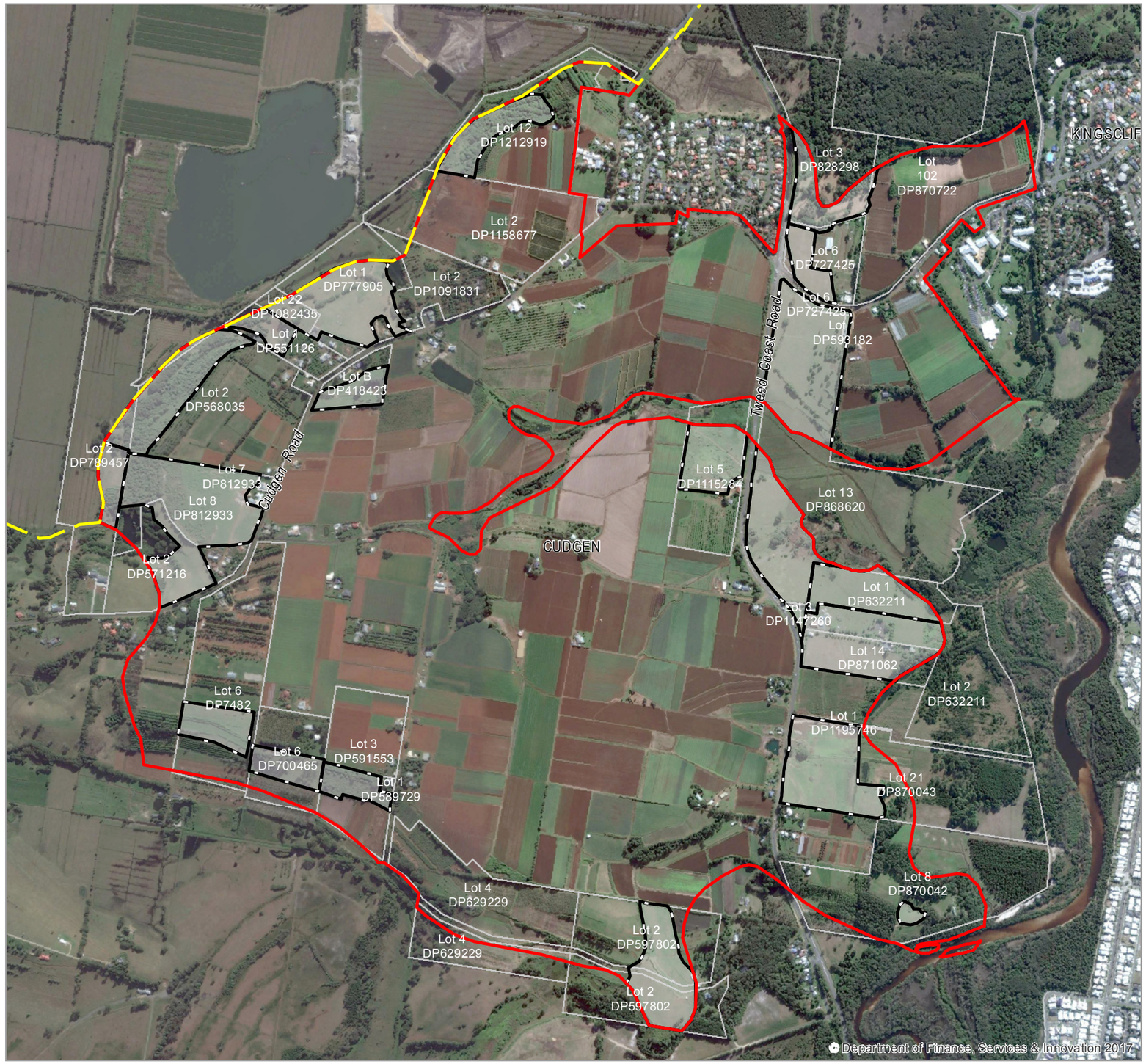
GeoLINK environmental management and design

2862-1009

NSW 2013 Landuse

Information shown is for illustrative purposes only

Drawn by: AB Checked by: JTS Reviewed by: SJW Date: 03/05/2018
Source of base data: Google Earth and Department of Agriculture and Water Resources



LEGEND

- Regionaly significant farmland
- Cudgan Plateau - State significant farmland
- Potentially under-utilised State Significant Farmland (approximatively 103.12 ha)
- Lot boundary

Notes:
- Based on Google Earth imagery July 2017
- Not all identified land was visible from publicly accessible areas or able to be verified, and is based on a review of aerial imagery
- Boundaries are approximate
- May include dwellings and infrastructure
- May include mature trees and/or watercourses
- May be influenced by seasonal variation and/or fallow land

Potential under-utilisation criteria included:
- mown / managed grassland
- grazing / modified pasture
- part vegetated / regrowth / unmanaged land

North

0 300

GeoLINK environmental management and design

2862-1056 - Rev A

Potentially Under-Utilised State Significant Farmland