AGRICULTURAL ASSESSMENT

ELAMBRA WEST URBAN RELEASE AREA

Lot 2 DP 1168922
Lot 11 DP 1045242
Gerringong

Prepared for

Pearse & Campbell

Waterford Farms Pty Ltd

May 2020

COWMAN STODDART PTY LTD

Agricultural Assessment

Project	Elambra West Urban Release Area
Address	Lot 2 DP 1168922 and Lot 11 DP 1045242 Gerringong
Our ref:	19/70
Prepared by	Peter Cowman
Draft Final	31 January 2020 8 May 2020

Town Planning, Agricultural & Environmental Consultants

Stephen Richardson, M.App.Sc., BTP, Grad. Dip. Env. Mgt, RPIA
Stuart Dixon, B. Urb. & Reg. Plan., RPIA

Associates: Peter Cowman, B.Sc.Agr., MAIA
Angela Jones, BA Hons, MSc, MSSA
Toni Wearne, BA (Hist.), Grad. Dip. Urb. & Reg. Plan.

PIA Registered Planner — Planning Institute Australia

Nowra: 31 Kinghorne Street, Nowra NSW 2541 (02) 4423 6198
PO Box 738, Nowra NSW 2541
Wollongong: 166 Keira Street, Wollongong NSW 2500 (02) 4208 2205
Fax: (02) 4423 1569
Email: info@cowmanstoddart.com.au
www.cowmanstoddart.com.au

Cowman Stoddart Pty Ltd

COWMAN STODDART PTY LTD

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1.0 INTRODUCTION

This report is an agricultural assessment of a planning proposal to rezone an area of 27 hectares (approx.) of rural land to allow residential development. The site is immediately south and west of Gerringong township and comprises two parcels of land (see **Photo No. 1**) being:

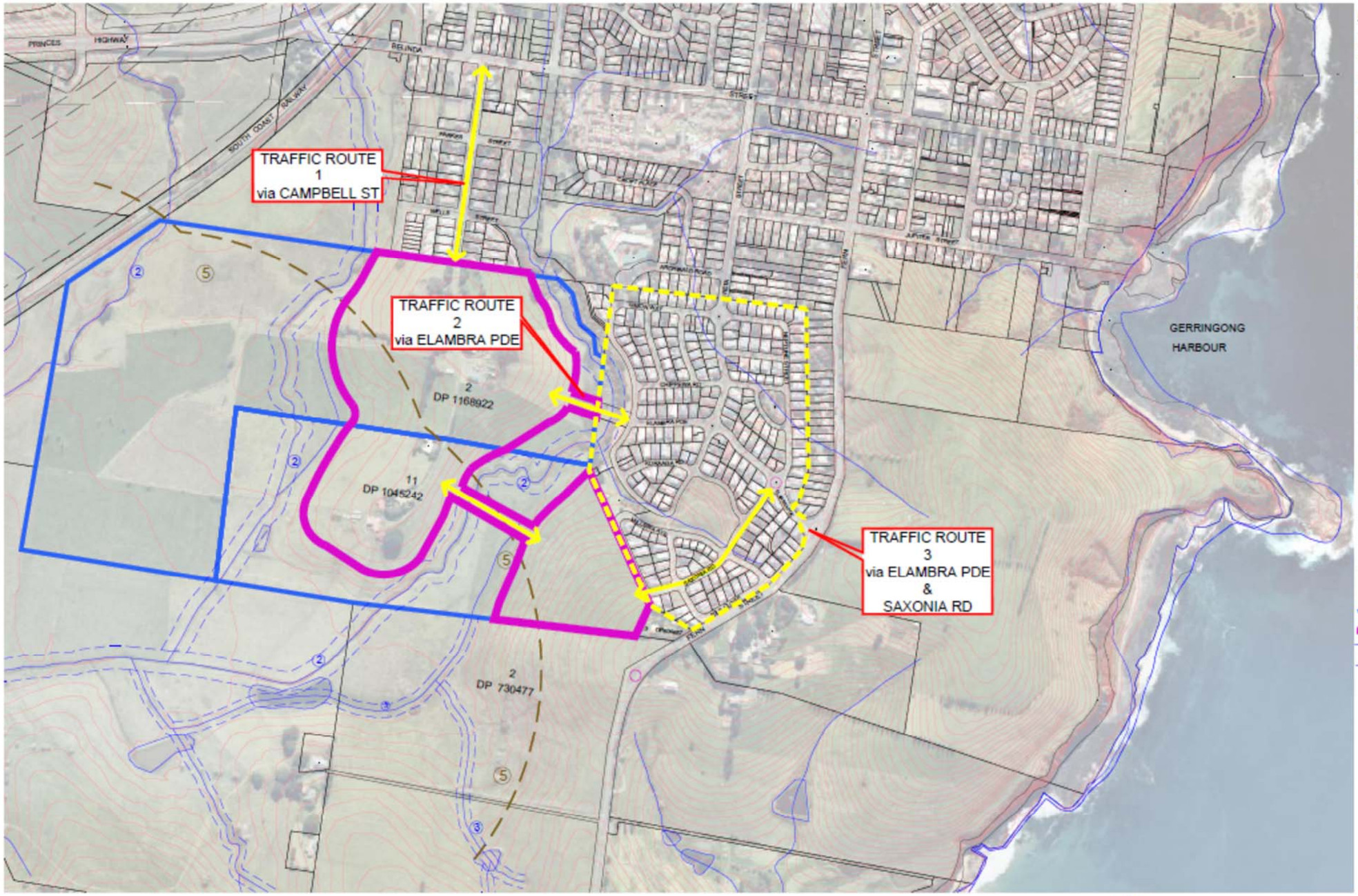
Lot 2 DP 1168922	13.833 ha
Lot 11 DP 1045242	12.608 ha
Total area	**26.441 ha**

The land will be an extension of the township with an approximate yield of 326 residential lots plus residue parcels. See **Figures 1** and **2**.

This agricultural report is an annexure to the Planning Proposal Report which has been prepared by Allen, Price & Scarratts Pty Ltd – Land and Development Consultants.

Photo No. 1
General view of site. The land is undulating with permanent pasture and is used for beef cattle grazing.

Figure 1: Aerial photo with outline of subject land.



NOTE:

This plan was prepared for the client as an indicative subdivision design to accompany a planning application to Kiama Municipal Council.

The information shown on this plan is not suitable for any other purpose.

The property dimensions, contours and other physical features have been compiled from existing information and have not been verified by field survey.

The dimensions, areas etc shown on this plan are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation.

In particular, no reliance should be placed on the information on this plan for detailed subdivision design or for any financial dealings involving the land.

Allen Price & Scarratts Pty Ltd therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying an application to council for planning purposes and which may be subject to alteration for reasons beyond the control of Allen Price & Scarratts Pty Ltd.

Unless stamped by Council, this plan is not a plan of an approved subdivision.

This note is an integral part of this plan.

PROPOSED DEVELOPMENT AREA

LOT 2	DP 1168922	13.833ha
LOT 11	DP 1045242	12.609ha
TOTAL AREA		26.441ha

APPROX. YIELD @12 DWELLINGS/ha - 317 DWELLINGS

ELAMBRA ESTATE

APPROX. YIELD 13 DWELLINGS/ha - 254 DWELLINGS

SUBJECT LOTS
INDICATIVE DEVELOPMENT AREA
WATERCOURSE DERIVED FROM DCDB
RIPARIAN OFFSET - APPROX 5m CHANNEL +20m EACH SIDE (CAT 2) +10m EACH SIDE (CAT 3)

KIAMA LEP MAPPING

(2) WATERCOURSE CATEGORY
(5) ACID SULFATE SOILS

SUBJECT LOTS ARE NOT MAPPED FOR:-

LAND APPLICATION
HERITAGE
TERRESTRIAL BIODIVERSITY
FLOOR SPACE RATIO
FORESHORE BUILDING LINE
HEIGHT OF BUILDINGS
LAND RESERVATION ACQUISITION
ADDITIONAL PERMITTED USES
BUSHFIRE

NOTE:
CADASTRAL INFORMATION HAS BEEN OBTAINED FROM NSW LAND & PROPERTY INFORMATION (LPI) DIGITAL CADASTRAL DATA BASE (DCDB) AND IS SUBJECT TO SURVEY. IT SHOULD BE VIEWED AS APPROXIMATE ONLY.

CONTOURS ARE AT 2m INTERVALS AND HAVE ALSO BEEN DERIVED FROM DCDB MAPPING.

Liability limited by a scheme approved under Professional Standards Legislation

Figure 2: Cadastral overlay of subject land with contours.

RATIO:	DATUM:	SURVEY	DCDB	REV	DESCRIPTION	BY	DATE
1:4000 (AT A1 ORIGINAL)	AUSTRALIAN HEIGHT DATUM	DESIGN		P1	MINOR AMENDMENTS	DS	02.09.2019
	ORIGIN: DCDB	DRAWN	DS	P2	TRAFFIC ROUTE 3 REVISED. LOT 2 DP 730477 REMOVED FROM DEV. AREA	DS	17.03.2020
		CHECKD	MJP				
	DATE OF PLAN: 20.08.2019						

allen price & scarratts pty ltd
land and development consultants
Nowra Office: 75 Plunkett Street, Nowra NSW 2541
Kiama Office: 1/28 Bong Bong Street, Kiama NSW 2533
phone (02) 4421 6644
consultants@allenprice.com.au www.allenprice.com.au

EXISTING ELAMBRA ESTATE LOT YIELD
OVER LOTS 2 DP 1168922 & LOT 11 DP1045242
ELAMBRA WEST URA
CAMPBELL ST GERRINGONG
FOR CAMPBELL & WATERFORD FARMS P/L

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: K128069-02 | SHEET 1 OF 1 | REVISION P2

2.0 TOPOGRAPHY, VEGETATION AND AGRICULTURE

2.1 TOPOGRAPHY

Lot 2 DP 1168922

The western part is alluvial flood liable creek flats which will be retained for agriculture (see **Photo No. 2**).

The eastern part is a low hill with slopes in the range 10 – 15%. Maximum elevation 30 metres a.s.l. (see **Photo No. 3**).

The site drains to two intermittent watercourses which are tributaries of Crooked River.

Photo No. 2
Alluvial creek flats will continue to be used for agriculture.

Photo No.3
Hillside with development above the vehicle. Tree line is crest in the distance.

Lot 11 DP 1045242

The hill crest and side-slopes from Lot 2 extend into Lot 11. Smaller areas of creek flats (see **Photo No. 4**).

Photo No. 4
Intermittent watercourse (Union Creek) in the foreground with development site on the hillside as an extension of the township.

2.2 VEGETATION

Permanent kikuyu pasture on the hillside over sown with ryegrass/clover. Occasional cropping on the creek flats in rotation with ryegrass/clover pasture.

2.3 AGRICULTURE

Both properties are used for beef cattle grazing by the different landowners. See Section 5.0.

3.0 GEOLOGY SOIL LANDSCAPES & SOILS

The document "Soil Landscapes of the Kiama 1:100,000 Sheet" (Hazelton 1992) and accompanying map shows the development site as comprising two soil landscapes determined by topography. See **Figure 3**.

3.1 ELEVATED LAND – KIAMA SOIL LANDSCAPE (ka)

Geology is Blow Hole Latite with soils being krasnozems on crests and upper slopes. Prairie soils on lower slopes.

Notes:

Fertility

General fertility is moderate to low. The topsoil is friable. The subsoils are deep, well structured, freely drained on crests and upper slopes. They are strongly acid with low to moderate CEC.

Erodibility

The topsoil has moderate erodibility. The subsoils have high erodibility.

Erosion Hazard

Erosion hazard for non-concentrated flows is extreme. The calculated soil loss for the first 12 months of urban development ranges up to 1300t/ha for topsoils and 900t/ha for exposed subsoils. The erosion hazard for concentrated flows is moderate.

Surface Movement Potential

These moderate to deep clay soils are slightly reactive. The subsoil is moderately reactive.

Landscape Limitations

Steep slopes (localised)

Run-on

Water erosion hazard (localised)

Urban Capability

Generally low limitations for urban development. Moderate limitations on steeper slopes.

Rural Capability

Generally high to severe limitations for regular cultivation. Low to moderate limitations for grazing.

3.2 FLAT LAND – SHOALHAVEN SOIL LANDSCAPE (sf)

Geology is alluvium with alluvial soils on the floodplain.

Notes:

Fertility

General fertility is moderate to low.

Erodibility

Erodibility of the topsoil is low. The erodibility of the subsoils is high.

Erosion Hazard

Erosion hazard for non-concentrated flows is slight. The erosion hazard for concentrated flows is low.

Surface Movement Potential

Moderately reactive topsoil. Non-reactive subsoils.

Landscape Limitations

Flood hazard

Permanent waterlogging (localised)

Permanently high watertable

Seasonal waterlogging

Urban Capability

*Generally high to severe limitations for urban development. (**Note: There is no urban development proposed on this soil landscape.**)*

Rural Capability

Generally low to moderate limitations for regular cultivation and grazing.

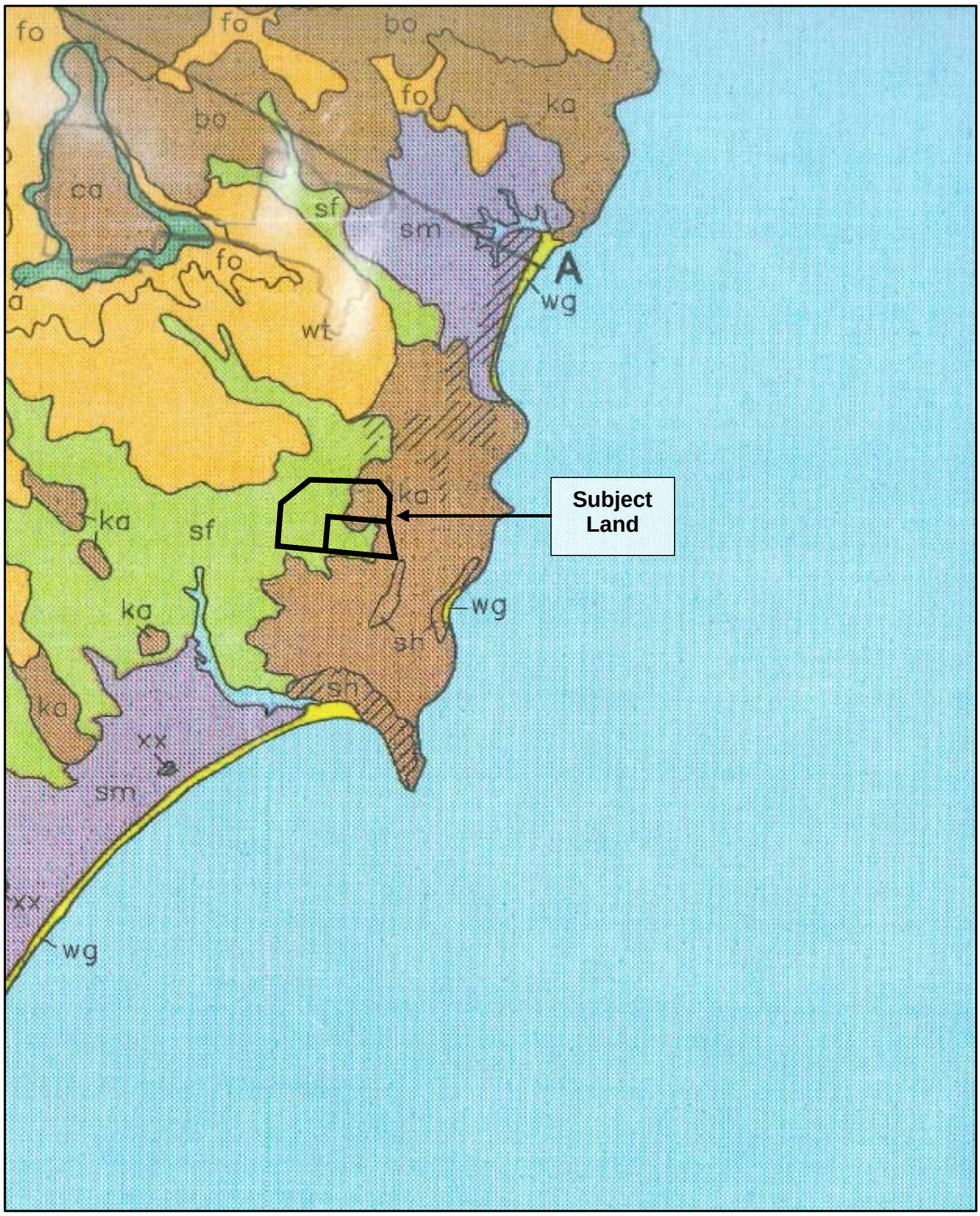


Figure 3: Soil landscape mapping (Soil Conservation Service)
Scale: 1:70,000 (approx.)

4.0 AGRICULTURAL SUITABILITY

The Department of Agriculture uses a 5 class system to map rural land on the basis of its suitability for agriculture. It is a hierarchical system such that Class 1 is the best agricultural land and Class 5 has virtually no value for agriculture. Classes 1, 2 and 3 are grouped as prime crop and pasture land.

Class 1

Arable alluvial land with deep, fertile soils having a very good capability for agriculture. These lands have only minor or no constraints to sustained high to very high levels of production.

Class 2

Arable lands having a very good capability for agriculture. Minor to moderate constraints to sustained high levels of production are present.

Class 3

Grazing land or land well suited to pasture improvement. It may be cultivated or cropped in rotation with sown pasture. The overall production level is moderate because of edaphic factors or environmental constraints. Erosion hazard, soil structural breakdown or other factors including climate may limit the capacity for cultivation, and soil conservation or drainage works may be required.

Class 4

Land suitable for grazing but not for cultivation. Agriculture is based on native pastures or improved pastures established using minimum tillage techniques. Production may be seasonally high, but the overall production level is low as a result of major environmental constraints.

Class 5

Land unsuitable for agriculture or at best suited only to light grazing. Agricultural production is very low or zero as a result of severe constraints, including economic factors which preclude land improvement.

The subject land appears on the "Kiama" Agricultural Land Classification Map prepared as part of the Illawarra Region Maps (1986) at a scale of 1:50,000. **Figure 4** is an extract and shows that the creek flats are mapped as Class 2 land and the sloping land is Class 3 land.

The Class 2 land is flood liable and is not proposed to be developed. The Class 3 land, above the 1 in 100 year flood line, is the grazing land proposed for residential development.

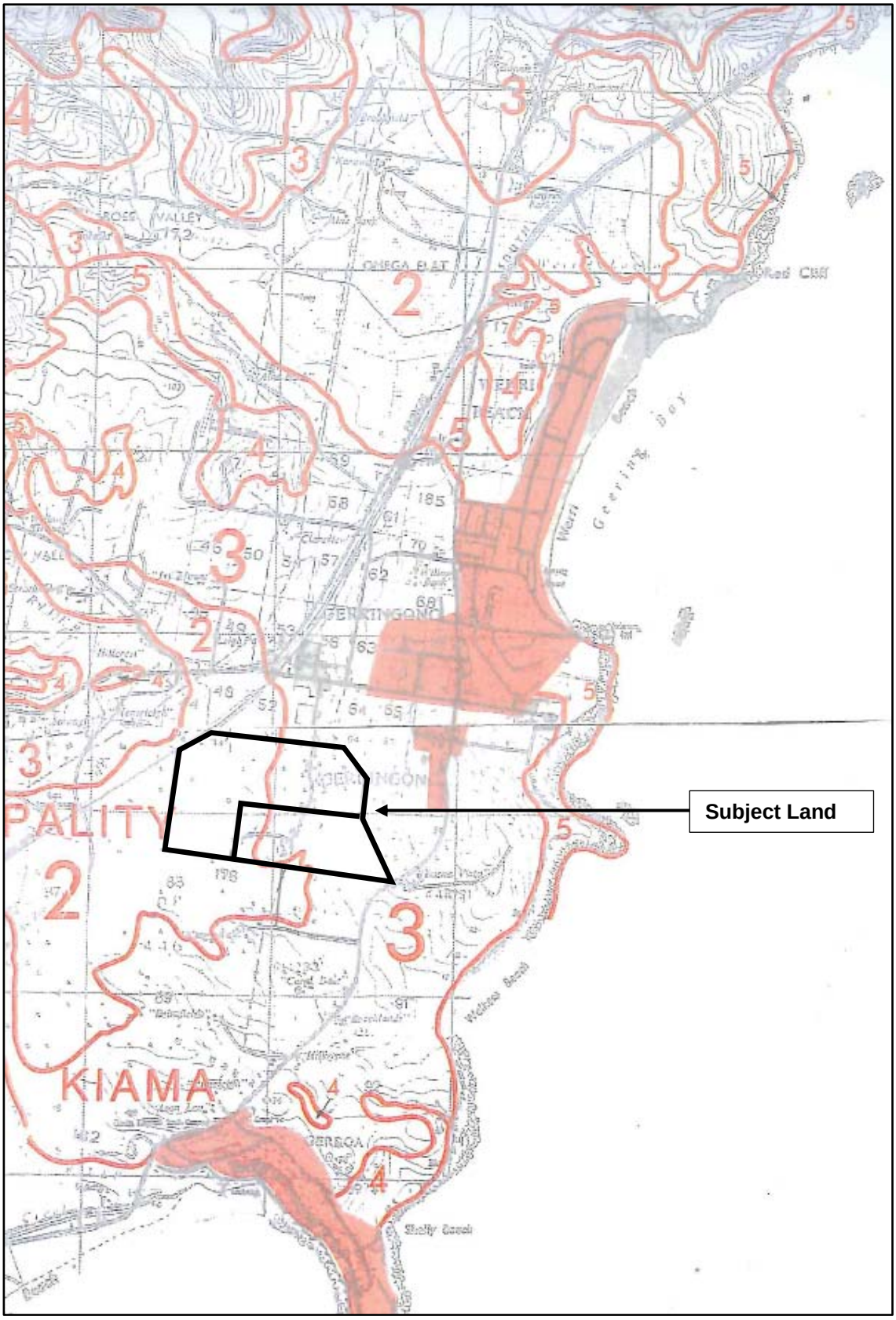


Figure 4: Land suitability mapping (NSW Agriculture)
Scale: 1:35,000 (approx.)

5.0 AGRICULTURAL POTENTIAL

5.1 CARRYING CAPACITY

Livestock carrying capacity is related to land suitability classes such that the better the land suitability, the higher the potential carrying capacity.

Stocking rates generally used for beef cattle on improved pastures in the district are:

Class 2 land	1.5 cow/hectare	(18 d.s.e./hectare)
Class 3 land	1.0 cow/hectare	(12 d.s.e./hectare)
Class 4 land	0.5 cow/hectare	(6 d.s.e./hectare)

5.2 LAND USE

5.2.1 Lot 2 (45.83 ha) – Pearse & Campbell

Lot 2 was used for dairying until 1991 and since then for beef cattle.

In a normal year 50 – 60 breeding cows graze on the property turning off weaners for sale at 8 – 9 months of age.

The property has all necessary improvements for beef cattle including farm shed, stockyards, boundary and internal fencing. Reticulated (town) water is used throughout the property for stock water. Irrigation is not available.

The agricultural potential can thus be calculated as follows:

Table 1

Current Agricultural Potential – Lot 2 (Pearse & Campbell)

Land Class	***Carrying Capacity (cows/ha)***	***Area (ha)***	***Stock (cows)***
2	1.5	27	40
3	1.0	18	18
	Total	**45 ha**	**58 cows**

ie. in a good season, Lot 2 is able to run about 58 beef cows which corresponds with the landowner's records.

5.2.1.1 Effect of Rezoning

The eastern part of the property (16 ha approx.) will be excised for residential housing and an environmental protection zone on the flood liable land along Union Creek.

This will leave 30 ha (approx.) of the most productive Class 2 land for the beef cattle enterprise to continue.

Table 2

Agricultural Potential after Rezoning – Lot 2

Land Class	*Carrying Capacity (cows/ha)*	*Area (ha)*	*Stock (cows)*
2	1.5	27	40
3	1.0	3	3
	Total	**30 ha**	**43 cows**

ie. there will be a 25% reduction in carrying capacity from 58 cows to 43 cows.

5.2.2 Lot 11 (25.63 ha) – "Elambra"

"Elambra" is one of the properties owned by Waterford Farms and used for beef cattle grazing. The other parcel of land (128 ha) comprises two adjoining properties being:

"Wingeewah" 53.24 ha

"Beirnfels" 75.08 ha

The 128 ha parcel was purchased by Waterford Farms Pty Ltd in 2013 and used for growing out weaners prior to transfer to another Waterford Farms' property at Wellington in central NSW.

The three Waterford Farms' properties are run together and comprise highly productive prime agricultural land mapped as Class 2 and 3 by NSW Agriculture. Total area of properties = 128 + 25.63 = 153 ha (approx.).

5.2.2.1 Effect of Rezoning

The majority of "Elambra" will be excised for residential housing and an environmental protection zone on the flood liable land along Union Creek.

The residue of 5 – 10 hectares includes all the Class 2 land which will continue to be useable for agriculture. However, the area of 5 – 10 ha is too small for a viable enterprise and it should be consolidated with "Wingeewah" to the south.

Table 3

Current Agricultural Potential – Lot 11 (Elambra)

Land Class	*Carrying Capacity (cows/ha)*	*Area (ha)*	*Stock (cows)*
2	1.5	5	7.5
3	1.0	20	20
	Total	**25 ha**	**27.5 cows**

Table 4

Agricultural Potential after Rezoning – Lot 11

Land Class	***Carrying Capacity (cows/ha)***	***Area (ha)***	***Stock (cows)***
2	1.5	5	7.5
3	1.0	3	3
	Total	**8 ha**	**9.5 cows**

ie. there will be a 65% reduction in carrying capacity from 27.5 cows to 9.5 cows.

5.3 FINANCIAL RETURN

The latest farm budget from NSW Department of Primary Industries indicates a gross margin of $35,489.00 from coastal weaners on improved pasture from a 100 cow herd. See **Appendix A**.

Table 5

Effect on Financial Returns

Property	Current Potential		After Rezoning	
	Stock (cows)	Gross Margin	Stock (cows)	Gross Margin
Lot 2 DP 1168922	58	$20,583.00	43	$15,260.00 Reduction in return – 25%
Lot 11 DP 1045242	27.5	$9,759.00	9.5	$3,371.00 Reduction in return – 65%

7.0 CONCLUSION

This report is an agricultural assessment of two rural properties at Gerringong, parts of which are proposed to be rezoned for residential development.

The land is mapped by NSW Agriculture as prime crop and pasture land. It is partly mapped as Class 2 and partly mapped as Class 3. The Class 2 land generally comprises the more fertile alluvial creek flats which are subject to occasional flooding. The Class 3 land comprises the hilly grazing land above the flood line. All the development will be on the Class 3 land and the Class 2 land will continue to be used for agriculture.

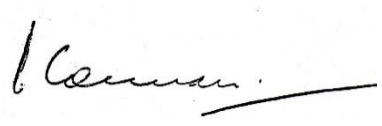
The rezoning will affect two properties to varying degrees, viz:

- Lot 2 DP 1168922. An area of 13.833 ha will be excised from a property of 45.83 ha resulting in a 25% reduction in carrying capacity from 58 to 43 cows. At this level of production it can continue as a viable part-time enterprise.
- Lot 11 DP 1045242. An area of 12.608 ha will be excised from a property of 25.63 ha resulting in a 65% reduction in carrying capacity from 27.5 cows to 9.5 cows. At this level of production it is no longer viable and should be consolidated with the adjoining property (with the same ownership) to the south.

The township of Gerringong is surrounded by prime agricultural land. If it expands outwards, there is no poor quality agricultural land which could be utilised. This proposal, fortuitously, is confined to Class 3 land and allows the continued use of the Class 2 land for agriculture.

Two rural properties will be affected but only one will no longer be viable. For that property, consolidation of the residue with the adjoining property (with the same ownership) is the best option.

There will only be a minor loss in agricultural production resulting from the proposed rezoning.



Peter Cowman
AGRICULTURAL CONSULTANT

APPENDIX A

Beef Cattle Gross Margin Budget (April 2019)

Coastal Weaners on Improved Pasture

Lot 2 DP 1168922 and
Lot 11 DP 1045242, Gerringong

NSW GOVERNMENT | Department of Primary Industries

BEEF CATTLE GROSS MARGIN BUDGET

Farm enterprise Budget Series: April 2019

Enterprise: **Coastal weaners improved pasture**

Enterprise Unit: **100 cows**

INCOME:			**Standard Budget**	**Your Budget**
42	steer weaners @	$630.88 /hd	$26,497	
19	heifers weaners @	$424.65 /hd	$8,068	
0.6	CFA Bull @	$1,760.00 /hd	$1,056	
7	CFA cows @	$963.20 /hd	$6,742	
15	Other culls @	$963.20 /hd	$14,448	
	A. Total Income:		**$56,812**	

VARIABLE COSTS:				
Replacements	1 Bull @	$3,500 /hd	$3,500	
Livestock and vet costs: see section titled beef health costs for details.			$2,426	
Fodder crops / hay / grain			$0	
Drought feeding costs.			$0	
Pasture maintenence (173 Ha of improved pastures)			$10,813	
Livestock selling cost (see assumptions on next page)			$4,584	
	B. Total Variable Costs:		**$21,323**	

	GM including pasture cost	GM excluding pasture cost	
GROSS MARGIN (A-B)	**$35,489**	**$46,301**	
GROSS MARGIN/COW	**$354.89**	**$463.01**	
GROSS MARGIN/DSE*	**$25.68**	**$33.50**	
GROSS MARGIN/HA	**$205.14**	**$267.64**	

Change in gross margin ($/cow) for change in price &/or the weight of sale stock

(Note: Table assumes that the price and weight of other stock changes in the same proportion as steers. As an example if steer sale price falls to 242c/kg and steer weight to 230 kg, gross margin would fall to $291 per cow. This assumes that price and weight of all other sale stock falls by the same percentage.

Liveweight (kg's) of Stock sold		**Steer sale price cents/kg live**				
		232	**242**	**252**	**262**	**272**
Steer wt.						
-40 kgs	**210**	229	248	267	285	304
-20 kgs	**230**	270	291	311	331	351
0	**250**	311	333	**355**	377	399
+20 kgs	**270**	352	376	399	422	446
+40 kgs	**290**	393	418	443	468	493

GM $ per Cow

An increase of 5% in weaning percentage increases gross margin per cow by $23.78

NSW GOVERNMENT | Department of Primary Industries

Summary of gross margins for NSW beef enterprises, April 2019

Enterprise	No. of hectares		GM/ha	GM/DSE
	imp	nat		
Inland Weaners		372	129.78	32.45
Coastal weaners- unimproved pasture		254	67.20	16.83
Coastal weaners- improved pasture	173		205.14	25.68
Butcher vealers	209		239.26	29.98
MSA at 20 mths	80	306	194.12	40.24
Feeder steers		424	173.81	43.50
Grow out early weaned calves 160-340kg	80		416.47	52.30
Growing out steers 240-460kg	108		412.04	51.57

Gross Margins quoted include pasture costs.

Individual budgets also report gross margins without pasture costs.