Agricultural Lands Mapping of the Hunter, Central & Lower North Coast region, NSW

1. Spatial Data Collation Process

An audit was undertaken of all relevant Geographic Information System (GIS) datasets maintained by Hunter Council's Environment Division, the Commonwealth Government, NSW Department of Primary Industries and the Bureau of Meteorology. The best available datasets determined through this process were:

- **Land and Soil Capability**: This (LSC) dataset uses the best available soils and natural resource mapping across New South Wales. It provides a broad-scale, regional view as to the dominant LSC class present for over 3,000 individual mapping units through the assessment of eight key soil and landscape limitations (water erosion, wind erosion, salinity, topsoil acidification, shallow soils/ rockiness, soil structure decline, waterlogging and mass movement). The mapping is based on a class system with values ranging between 1 and 8 which represent a decreasing capability of the land to sustain a variety of land use. Class 1 represents land capable of sustaining most land uses including those that have a high impact on the soil (e.g. regular cultivation), whilst class 8 represents land that can only sustain very low impact land uses (e.g. nature conservation). The scale ranges from 1:100,000 to 1:200,000 across the study region. Office of Environment & Heritage, NSW (2012)
- **Mean Annual Rainfall**: Bureau of Meteorology (1961–1990)
- **Inherent Fertility of Soils**: Upper Hunter Strategic Regional Land-use Priority Area. Office of Environment and Heritage (2012)
- **Alluvial Soils**: Derived from Great Soil Group (GSG) Soil Type map of NSW. Office of Environment and Heritage (2012)
- **Slope**: Slope was derived from a Digital Elevation Model of the Hunter Region. This dataset has a resolution of 25 metres. Slope can be a limitation to agricultural practices, due to considerations such as machinery access. Hunter Councils Inc. (2010)

2. Data Processing

- Datasets were clipped to the Hunter, Central and Lower North Coast study area where required
- All datasets were converted to a common spatial-reference: GDA 1994 MGA Zone 56
- Features of each dataset that meet the required criteria were extracted (for criteria see Table 1)
- Geometric intersections of the input criteria features for each model were computed
- Output models were attributed with source features (e.g. fertility category), and compiled within a file geodatabase (ArcGIS v10.1), as well as other formats required by member Councils

The criteria used to drive the analysis are summarised in Table 1. It is expected that the below criteria would support the type of farming practices indicated given moderate/normal land management (i.e. without the need for high levels of inputs and interventions). Water availability was considered though average annual rainfall. As the region has a minimum of 800 mm average annual rainfall, there is sufficient water availability across the region and this data was therefore not required in the modelling.

PRODUCED BY: Hunter & Central Coast Regional Environmental Management Strategy Team

DATE: 2015

PURPOSE: This data depicts the biophysical potential of land and its suitability for different agricultural enterprises across the Hunter, Central and Lower North Coast region of NSW.

TABLE 1. AGRICULTURAL LANDS MODELLING CRITERIA

BIOPHYSICAL PARAMETERS	HIGHLY CAPABLE, INTENSIVE AGRICULTURAL LANDS	PRIME PASTURES AND CROPPING LANDS	GOOD PASTURE AND HORTICULTURAL LANDS ON MODERATE SLOPES	GOOD PASTURE LANDS
Land capability (land capability class should be apparent within the modelled outputs)	Class 1, Class 2, Class 3	Class 1, Class 2, Class 3, Class 4	Class 1, Class 2, Class 3, Class 4	Class 1, Class 2, Class 3, Class 4, Class 5
Soil fertility	High (5), Moderate–High (4)	High (5), Moderate–High (4), Moderate (3)	Moderate–High (4), Moderate (3), Moderate–Low (2)	High (5), Moderate–High (4), Moderate (3), Moderate–Low (2)
Slope	<6 degrees	<6 degrees	≤10 degrees	≤18 degrees

3. Modelled Agricultural Land Types

Data outputs produced through this analysis were:

1. Highly capable, intensive agricultural lands
2. Prime pastures and cropping lands
3. Good pasture and horticultural lands on moderate slopes
4. Good pasture lands

4. Limitations and Considerations

The modelled outputs identify the potential of the underlying land and did not consider current land use (e.g. urban areas, forested areas). The analysis also did not consider parcel size.

Although the overall confidence of the soil mapping informing the Land and Soil Capability mapping, and the Inherent Soil Fertility mapping was identified as 'low' to 'very low' within the NSW State Government metadata statements, the mapping coverage of the Hunter, Central and Lower North Coast region was identified as having 'good' to 'fair' confidence. The scales of both datasets ranges from 1:100,000 to 1:200,000 across the study region.

ILLUSTRATION: CHRISTINE ROCKLEY

5. Metadata Statement

GENERAL PROPERTIES	
File Identifier	1E2A1549-80A3-4CB0-9FB3-092FF2197B67
Hierarchy Level	dataset
Hierarchy Level Name	dataset
Standard Name	ANZLIC Metadata Profile: An Australian/New Zealand Profile of AS/NZS ISO 19115:2005, Geographic information – Metadata
Standard Version	1.1
Date Stamp	2015-05-11
Resource Title	Agricultural Lands Mapping of the Hunter Region, NSW
Other Resource Details	Hunter Councils Environment Division
KEY DATES AND LANGUAGES	
Date of creation	2014-07
Date of publication	2015-05-11
Metadata Language	eng
Metadata Character Set	utf8
Dataset Languages	eng
Dataset Character Set	utf8
Abstract	Biophysical mapping of land that may be suitable for agriculture.
Purpose	
METADATA CONTACT INFORMATION	
Organisation Name	Hunter Councils Inc.
Position Name	GIS Officer
Role	Point Of Contact
Voice	0249784025
Facsimile	0249662188
Email Address	ellens@huntercouncils.com.au
Address	PO Box 3137 Thornton NSW 2322 Australia
Lineage Statement	See above
JURISDICTIONS	
	Australia
	New South Wales
SEARCH WORDS	
	AGRICULTURE
	AGRICULTURE-Crops
	AGRICULTURE-Horticulture
	AGRICULTURE-Irrigation
	AGRICULTURE-Livestock
	BOUNDARIES-Biophysical
	LAND-Topography

5. Metadata Statement continued

THEMES AND CATEGORIES	
Topic Category	Farming
STATUS AND MAINTENANCE	
Status	Completed
Maintenance and Update Frequency	Not Planned
Date of Next Update	
REFERENCE SYSTEM	
Reference System	EPSG::28356 (GDA94 / MGA zone 56)
DATA SCALES/RESOLUTIONS	
Scale	1:100000
SPATIAL REPRESENTATION TYPE	
Spatial Representation Type	vector
ADDITIONAL EXTENTS – GEOGRAPHIC	
Identifier	aus
Identifier	NSW_CESSNOCK__C_
Identifier	NSW_DUNGOG__A_
Identifier	NSW_GLOUCESTER__A_
Identifier	NSW_GOSFORD__C_
Identifier	NSW_GREAT_LAKES__A_
Identifier	NSW_GREATER_TAREE__C_
Identifier	NSW_LAKE_MACQUARIE__C_
Identifier	NSW_MAITLAND__C_
Identifier	NSW_MUSWELLBROOK__A_
Identifier	NSW_NEWCASTLE__C_
Identifier	NSW_PORT_STEPHENS__A_
Identifier	NSW_SINGLETON__A_
Identifier	NSW_SCONE__A_
Identifier	NSW_MERRIWA__A_
Identifier	NSW_MURRURUNDI__A_
Identifier	NSW_WYONG__A_

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