

State Significant Agricultural Land Mapping Data Summary Statement



The NSW Department of Primary Industries is undertaking a mapping program across NSW to assist state and local government, other organisations and industries to recognise and value State Significant Agricultural Land (SSAL). This document outlines a summary of the draft SSAL map and its development.

What is SSAL?

The draft SSAL map is derived from existing statewide information where the most relevant characteristics related to the best agricultural lands are used.

The biophysical attributes of SSAL represent the most capable, fertile and productive agricultural lands in the state, and support a variety of successful agricultural industries.

These lands provide for an adaptive range of agribusinesses that can respond to changing climate, market forces and socio-economic conditions into the future.



Why do we need SSAL?

Loss of access to agricultural resources and increased incidents of agricultural land use conflict in the rural landscape have the potential to create inefficient land use shifts.

This can result in a net loss of value to the State through:

- direct and indirect economic loss of produce and markets
- loss of primary industries, associated businesses and services and related employment
- social decline and loss of community connectivity.

Knowing where SSAL is situated and understanding its location, value and contribution will assist in making decisions about current and future allocation of land.

How was the SSAL map developed?

Mapping was undertaken following the methodology to map biophysical SSAL in the Guideline to identify SSAL in NSW. It should be noted that the guideline allows for other criteria to also be considered in determining SSAL.

The draft map has been produced using only biophysical criteria to identify a static resource which will not change based on socio-economic or other changeable datasets.

This section outlines the steps taken, data used and criteria for the map's development. An audit was undertaken of all relevant datasets available on a statewide basis. The best available datasets determined through this process were:



Rainfall

Rainfall can have an impact on the production of agriculture through its impact on water availability and critical water requirements which vary dramatically. To depict the distribution and spatial changes of the rainfall across the state, data from ANUClimate was used. The annual mean rainfall from 1987-2016 was calculated from daily rainfall data that was totalled and then divided by the time period of 30 years. This data is at a spatial resolution of 0.01° (approx. 1km). The Bureau of Meteorology (BOM) data sets are at a coarser scale of approximately 5km.



Inherent soil fertility

This map provides an estimation of the inherent fertility of soils in NSW. The mapping describes soil fertility in NSW according to a five class system (low, moderately low, moderate, moderately high and high). It was derived from a system linking a fertility class to a particular soil type (Great Soil Group), which was then attributed for each soil map unit.



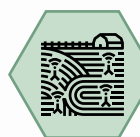
Land and soil capability (LSC)

This dataset uses the best available soils and natural resource mapping across NSW. It provides a broad-scale, regional view as to the dominant LSC class present 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 one and eight. Class one represents land capable of sustaining most land uses including those that have a high impact on the soil (e.g. regular cultivation), whilst class eight represents land that can only sustain very low impact land uses (e.g. nature conservation).



Soil pH

The former Office of Environment and Heritage has prepared digital soil maps for a range of key soil properties over NSW. These are maps derived through quantitative modelling techniques that are based on relationships between soil attributes and the environment. Soil pH (CaCl₂) at two depths (0-5cm and 5-15cm) were used as a defining parameter in the SSAL map development.



Biophysical strategic agricultural land (BSAL)

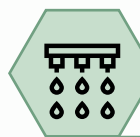
The map also includes areas that are identified as BSAL. This dataset identifies the inherent land and water resources that are important on a national and state level for agriculture – particularly, but not exclusively broad acre cropping across NSW. These lands intrinsically have the best quality soil and water resources, topography, are naturally capable of sustaining high levels of agricultural productivity and require minimal management practices to maintain this.



Land zones

Land mapped as SSAL was identified in the following land use zones, based on DPIE - Planning data from June 2020. Land within other zones was excluded from the SSAL map.

- RU1 Primary Production
- RU2 Rural Landscape
- RU4 Primary Production Small Lots
- RU6 Transition Zone
- E3 Environmental Management
- E4 Environmental Living.



Irrigation lands

Irrigation lands across the state are also identified within the draft SSAL map. These lands were recognised using the datasets from the Australian Collaborative Land Use and Management (ACLUM) program over three collection years (2007, 2013 and 2017). This dataset includes agricultural land uses where water is applied to promote additional growth over normally dry periods, depending on the season, water availability and commodity prices. This includes land uses that receive only one or two irrigations per year, through to those uses that rely on irrigation for much of the growing season.



North Coast farmland mapping

The map includes areas that are identified by the former Mid and Far North Coast Farmland Mapping projects. These lands have been identified since 2008 and 2005 respectively. The same climatic factors which make the north coast so valuable to agriculture also make it a prime lifestyle destination, with a rapidly growing population. The farmland across the north coast was mapped with an emphasis on keeping the regions options for future food and fibre production open rather than looking at the viability of particular industries.

Developing the map

The map was developed by combining three data models using different criteria to capture SSAL across the state. The below table outlines the criteria used for each model. For example model three identifies land that has moderately low soil fertility but is of high importance due to the higher and reliable rainfall.

Areas that were excluded from the mapping include:

- National parks
- State forests
- RAMSAR and NSW wetlands
- World heritage areas
- Built up areas
- NVRM vulnerable regulated land.

About the State Significant Agricultural Land map

The below map shows the location of SSAL.

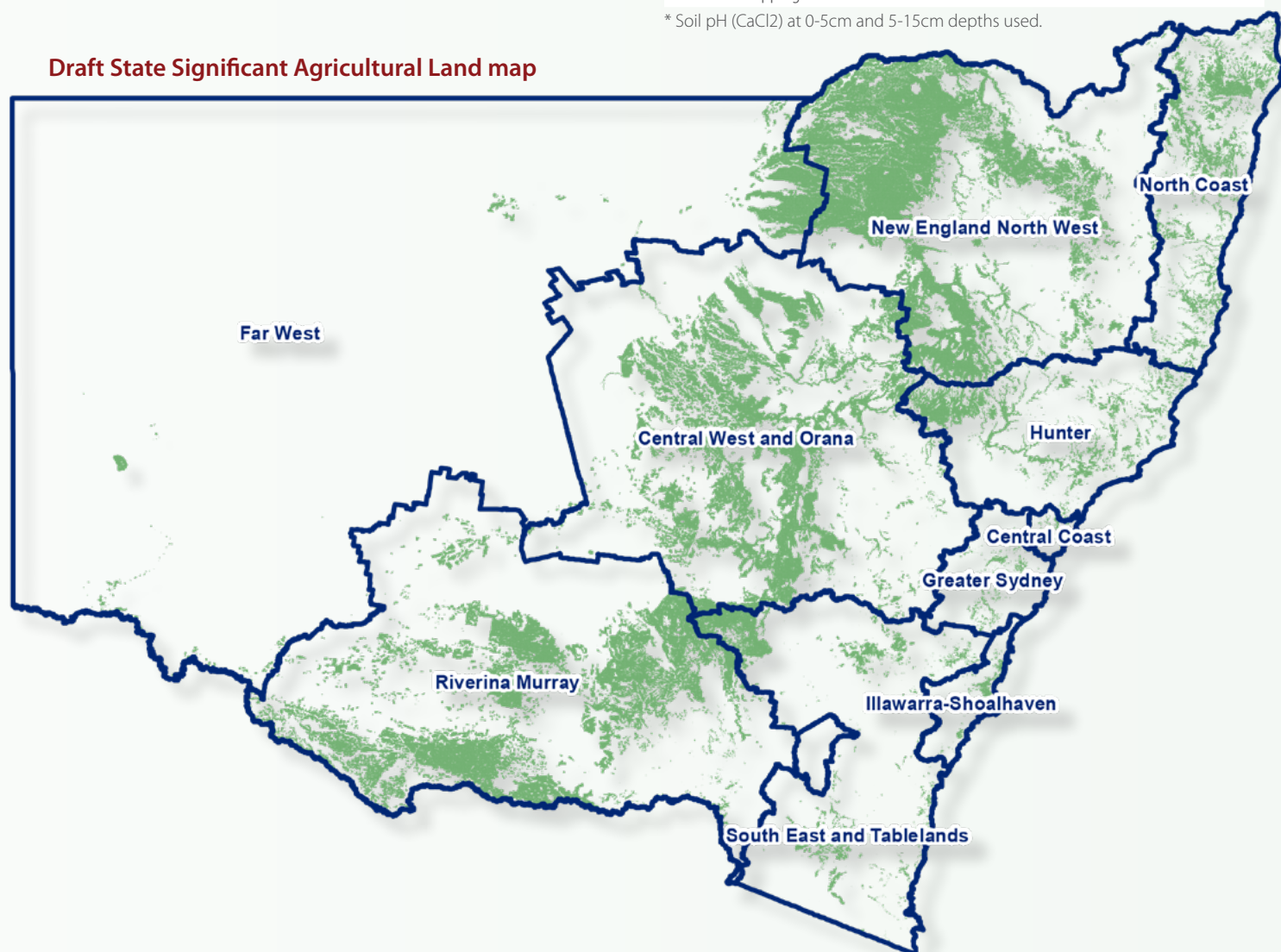
It covers approximately 15% of the state with a large portion over broadacre cropping lands of the New England North West, Central West and Orana and the Riverina Murray.

Key dairy, horticulture and grazing lands are also identified across the state, in particular along the eastern seaboard.

Input parameters	Criteria models		
	Model 1	Model 2	Model 3
Rainfall	≥500mm	≥500mm	≥950mm
Soil fertility	High – moderate	High – moderately high	High – moderately low
Land and soil capability	1-3	1-4	1-4
Soil pH*	≥5, ≤8	Not used	≥5, ≤8
Slope	Less than or equal to 18 degrees (32%)		
BSAL	Included in all models		
Land zones	RU1, RU2, RU4, RU6, E3, E4 zones included in all models		
Irrigation areas	Included in all models		
North Coast farmland mapping	Included in all models		

* Soil pH (CaCl₂) at 0-5cm and 5-15cm depths used.

Draft State Significant Agricultural Land map



Strengths and weaknesses of the map

The modelled outputs identify the potential of the underlying land and did not consider current land use, with the exception of irrigated 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 some areas of the state, the mapping coverage of the Hunter, Central and Lower North Coast region was identified as having 'good' to 'fair' confidence.

The input data limits the accuracy of this map at a property scale. Care should be taken when applying the results at an individual property level.

A key weakness in the mapping is that industries which are not dependent upon the soils biophysical characteristics are not accounted for. For example, poultry and protected cropping may be carried out on poor lands provided other criteria such as slope and access to infrastructure are met.

The NSW Agriculture Commissioner has proposed to undertake a separate process to identify specific production areas to fill this gap.



Further Information

Further information on state significant agricultural land mapping, sustainable agriculture development, and land use planning is available on the Agricultural Land Use Planning (ALUP) website at www.dpi.nsw.gov.au/agriculture/lup

NSW DPI's Agricultural Land Use Planning team is available at landuse.ag@dpi.nsw.gov.au to answer any enquiries.

Supporting/complementary Information

Nineteen agricultural industry snapshots have also been developed across the 10 Planning Regions in the State. These are summary statements of the main agricultural industries across all regions in NSW and are not specific to agricultural industries reliant on key biophysical assets.

The Snapshots enable an understanding of agricultural industry locations, the reasons they exist in those locations, the opportunities they take advantage of and challenges they face. That information provides evidence for strategic planning to enable agricultural land and agriculturally based economies to be recognised, protected and supported in local planning instruments.

Access to the digital files for LSC, BSAL, soil pH and inherent soil fertility data sets can be found at the SEED (Sharing and Enabling Environmental Data) data portal developed by the NSW Government (<https://www.seed.nsw.gov.au>). Data for the irrigations areas can be found at The Australian Collaborative Land Use and Management Program (ACLUMP) web page (www.agriculture.gov.au/abares/aclump/land-use/land-use-mapping)



**Department of
Primary Industries**