

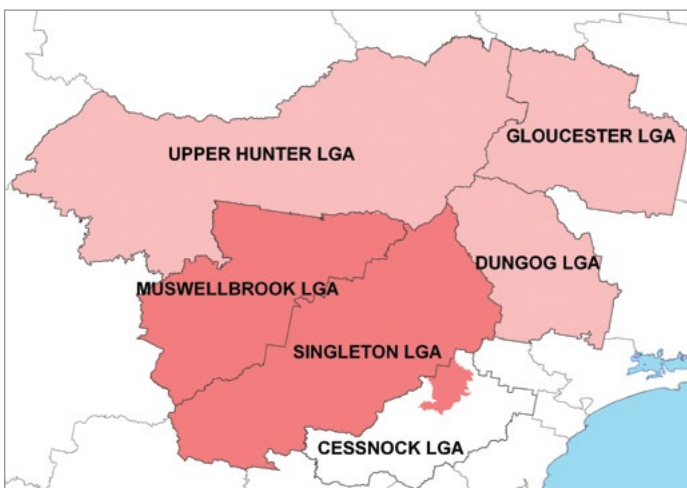
# Upper Hunter Region Agricultural Profile

FACTSHEET NO.1

June 2013

*This profile identifies important agricultural resources, critical features of the regions leading agricultural industries, their potential development and related land use planning issues across the Upper Hunter region as shown in Figure 1*

Figure 1 – Upper Hunter region and study area (in orange) covered by this profile



## Introduction

The Department of Primary Industries (DPI) is developing a consistent method for mapping important agricultural lands to support strategic planning by local governments and industry.

Maps of Important Agricultural Land highlight areas that are well suited to selected agricultural industries at a local and regional scale.

The maps complement the state significant agricultural lands mapping developed for Strategic Regional Land Use Plans (led by the Department of Planning & Infrastructure).

A case study approach was adopted to identify important agricultural lands for a range of agricultural industries within six local government areas (LGAs) including Orange, Cabonne, Blayney and Forbes in the

central west; and Singleton and Muswellbrook in the Upper Hunter study area. Those areas were chosen to cover a variety of agricultural landscapes and industries.

Figure 6 identifies the important agricultural industry lands in the study area incorporating Singleton and Muswellbrook LGAs. This profile also identifies the critical industry features and land use planning issues that are shared by each LGA in the broader Upper Hunter region that additionally includes Gloucester, Dungog and Upper Hunter LGAs.

## Biophysical features

Temperature and rainfall patterns across the Upper Hunter region are strongly influenced by the topography and by coastal (maritime) influences.

The more coastal and lower parts of the Upper Hunter region experience a mild subtropical climate with 700mm to 950mm of rainfall on average.

The Hunter River valley extends further inland than any other coastal catchment. The inland parts of the Upper Hunter region consequently experience a drier, hotter climate with a greater risk of frost.

However, temperatures and humidity in the main Hunter valley are moderated by the influence of maritime airflows. This is particularly significant for the nationally recognised viticultural and equine industries.

The risk of frost also increases with elevation, as does average rainfall. Snow can fall on the Barrington Tops ranges that form the boundary of the Gloucester and Upper Hunter LGAs and Singleton and Dungog LGAs and the annual average rainfall exceeds 1,200mm/yr.

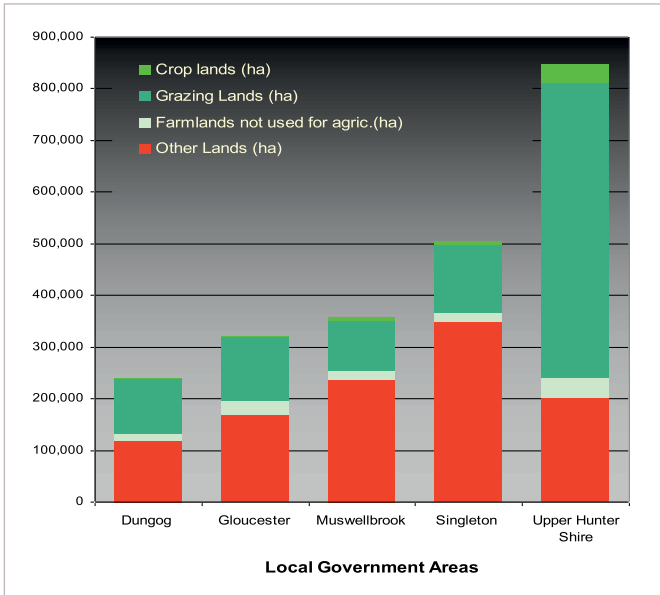
The rivers flowing from the Barrington Tops ranges and numerous regulated water storages, including Glenbawn, Glennies Ck, Barnard, Lostock and Chichester, provide the most reliable source of water in NSW.

## Agricultural highlights

The Upper Hunter region is mostly located within 3 to 5 hours drive north of Sydney (a 150 to 250 km radius). With a long history of settlement, the region features a large number of towns and villages connected by an extensive road network.

The main service centres are; Merriwa, Scone, Muswellbrook, Singleton, Dungog and Gloucester. The town of Cessnock is just outside the area reported in this profile.

Figure 2 - Land used for agriculture (ABS, 2006)



The combined area of the five Local Governments is just over 2 million hectares, but just over half is used for; conservation or forestry reserves, mining, rural lifestyle and urban areas (identified as 'Other Lands' in Figure 2).

Farm holdings also contain lands that are not suited for agriculture (eg steep, rocky or timbered areas). The area available for agriculture and the extent of cropping and grazing lands varies greatly between each LGA (see Figure 2 and Table 1).

Table 1- Agricultural Land Use (ABS 2006)\*

Local Gov't Area	Est. value of Agric. products (excluding horses) (\$ mill)	No. of farms	Area farmed (ha) ^	Ave farm size (ha)
Dungog	\$91m	480	106,391	255
Gloucester	\$52m	376	124,993	405
Muswellbrook	\$74m	314	103,599	388
Singleton	\$81m	551	139,561	284
Upper Hunter Shire	\$156m	717	607,297	902
Upper Hunter region	\$461m	2,438	1,081,841	492
NSW	\$19,677m	48,838	58,642,382	1,272
UH region as % of NSW	2%	5%	2%	38%

\* changes may have occurred since this data was collected  
^ lands used for grazing, crops, fallow & horticulture

ABS data estimates the wholesale value of unprocessed agricultural products. These figures do not capture the flow on contribution of agriculture to other businesses in NSW. An estimate of the overall contribution of agriculture to the NSW economy, as presented in table 1, is

Farm holdings comprise 80% of the Upper Hunter Shire, 75% of the farm holdings are grazed and 5% is used for crops or horticulture (ABS, 2006). In contrast, farm holdings comprise just 52% of Gloucester LGA and 82% of those holdings are grazed, with less than 1% used for crops or horticulture (ABS 2006).

These differences reflect the diverse landscapes and soils of the region. Gloucester and Dungog LGAs are more rugged and have extensive forested areas. Singleton, Muswellbrook and the Upper Hunter LGAs feature broad valley floor areas and alluvial soils with a long history of cropping and grazing. The Upper Hunter LGA also includes the extensive volcanic soils of the Merriwa plateau.

Figure 3 - Undulating beef cattle grazing lands near Gloucester (Photo: Scott Richards)



Farm sizes also vary greatly across the valley. The central valley areas within 100 kms of Newcastle are highly fragmented and are the focus of rapidly expanding urban and industrial developments. More inland, upland or flood prone areas remain largely rural. Table 1 shows the average farm size for each LGA in 2006.

obtained by multiplying the wholesale value of agriculture by the standard ABS multiplier for agriculture production which is 2.178. (I&I NSW, 2011)

An indication of the overall contribution of agricultural jobs to NSW employment was similarly obtained by multiplying employment in a particular industry sector by the standard ABS multiplier for agricultural employment of 1.828 (I&I NSW 2011).

## Agricultural land use

The variety of landscapes and climates in the region supports a diverse range of agricultural industries. All of which place a high value on the region's reliable water supplies.

Beef cattle grazing occurs throughout the Upper Hunter region and is the most frequent agricultural land use. Dairying and equine grazing enterprises are concentrated in areas that feature alluvial soils suitable for highly productive pastures and reliable access to water.

Other grazing enterprises include; sheep for wool and prime lambs predominantly in the drier, more inland areas and smaller scale domestic goats (for meat or wool) or alpacas.

Larger properties with drier climates and volcanic soils of the Upper Hunter LGA also favour mixed farming enterprises. These combine broad acre crops such as: wheat, barley, sorghum and canola with beef cattle or sheep grazing. Some farms also feature feedlots where stock is fattened for specialist markets.

Figure 4 - Sorghum crop and improved pastures, Merriwa area. (Photo: Glenda Briggs)



Irrigated cropping, particularly for lucerne hay is an important development in the drier Upper Hunter, Muswellbrook and also Singleton LGAs.

Intensive agricultural enterprises including viticulture and poultry are of particular significance in more closely settled areas with milder climates such as in Muswellbrook, Singleton, Dungog and Gloucester LGAs.

Other specialist agribusinesses in the region include mushrooms, nurseries, turf production, stud cattle, land-based aquaculture, goats and essential oils (Buchan 2011).

Key additional drivers for both viticultural and equine developments are locations with an established reputation that also have ready access to population centers, ports and markets.

## Economic contribution

The Upper Hunter region comprises just 2 per cent of the NSW lands used for grazing and cropping, but provides a proportionally far greater economic contribution across a wide range of agricultural commodities.

Available statistics (ABS 2006a, Buchanan 2011, HVTB 2011 and Blackmore, 2011) identified that the Upper Hunter region produced by volume: 67% of all exported stud horses, 15% of all milk, 6% of all beef cattle for slaughter, 90% of the state's industrial hemp, 8% of herbs and garlic, 6% of all olives and 3% of all the pastures cut for hay in NSW.

The Upper Hunter, Muswellbrook and Singleton LGAs plus adjoining Cessnock vineyard areas additionally support a cluster of internationally renowned viticultural and equine breeding industries and their closely associated support industries (DP&I 2012).

The Upper Hunter region is an internationally acclaimed and mature thoroughbred breeding area ranked second in the world to the Kentucky Region in the U.S. (Buchan 2011). It is also the leading area for Australian Stock horses, thoroughbred bloodstock and breeding.

Viticultural and equine production in the region is targeted at quality (rather than bulk volume), hence although ABS data identifies that the region produces only 5% of wine grapes in NSW by volume and 28% of stud horses (ABS 2006a), the industry has a far greater proportional economic contribution. The timing of the ABS census also misses peak viticultural and equine production and employment periods.

Figure 5 – Vineyard on the foot slopes in the Upper Hunter region



Current industry data identifies that;

- As a recognised wine making hub, the Hunter crushes twice the volume of grapes produced locally. Regional vineyards and wine tourism additionally inject \$1.8 billion annually into the NSW economy (HVRF 2005).
- regional horse studs produce 80% of the total value of stud horses exported by Australia (HVTB 2011).

ABS agricultural surveys identified that agricultural production in the study area contributed \$462 million to the NSW economy in 2005-06 (ABS 2006a). However, this excludes the value of stud horses and also grossly undervalues the contribution of viticulture.

Published industry figures list the value of thoroughbred bloodstock in the Hunter area in 2010 as \$2.5 billion, the majority of which are located on Upper Hunter region horse studs. The Upper Hunter region also hosts key equine infrastructure such as the specialist veterinary facilities and equine training facilities. It is also important for breeding and training many other horse breeds including Australian Stock Horses and polo horses.

ABS data lists the wholesale value of wine grapes from the Upper Hunter region as \$11million in 2006, the most current industry data identifies that wine sales in the region contributed \$442 million to the NSW economy in 2004 (HVRF 2005) with the standard agricultural multiplier. Viticultural employment was similarly identified as contributing an additional \$131 million to the state economy.

Available data shows that agricultural production in the Upper Hunter region resulted in 6,310 jobs in NSW as shown in Table 2. This equates to 5% of total beef industry employment in NSW (ABS 2010).

Available published industry intelligence, however, suggests the ABS survey figures are grossly under representative. HVRF 2005 reported that viticulture and wine making employed 7,000 people in 2005.

## Industry challenges

Key constraints to agricultural development within the Upper Hunter region are the uncertainty about retaining access to reliable water supplies, both in terms of quality and quantity. The increasing use of water for mining, lifestyle farming, urban development and climate change impacts.

Challenges to agricultural enterprises in the Hunter region arise from incompatible development on surrounding lands with similar and often competing resource and infrastructure requirements.

Potential conflicts include; dust generated by cultivation; spraying for disease or pest control; 24 hour, 7 days a week operations; and slow moving farm vehicles on local roads.

Investment in infrastructure to develop agricultural enterprises is less likely where there is a lack of surety over land use. Infrastructure is both non transferable and costly and includes for example; irrigation systems, dairies, yards, fencing, building soil health and improving pastures.

Table 2 Upper Hunter agricultural sectors (ABS 2006)\*

Agricultural Industry	Est. Value of Agric. Prod'n (\$mill)	Prod'n of Agric Industry as % of NSW total	No. of Farms*	Employment#
Stud Horses	-	28%	245	1,124
Wine Grapes*	\$24	5%	215	481
Beef	\$212	6%	2,158	2,420
Milk	\$117	13%	202	751
Poultry				
Meat & Eggs	\$38	3%	37	112
Hay	\$25	3%	490	88
Wool & sheep	\$21	0.8%	247	373
Broadacre crops	\$8	0.2%	100	44
Vegetables & Mushrooms	\$6	0.7%	22	119
Nurseries, flowers & turf	\$4	0.5%	17	46
Fruit & Nuts				
(excl. grapes)	\$4	0.3%	66	31
Other Ag.	\$4	-	-	111
UH region TOTAL	\$462	2%	2,438	6,310
NSW Total	\$1,9677	100%	48,838	124,845

\* more than one commodity may be produced per farm. Significant changes may also have occurred since this data was collected.

ABS data estimates the wholesale value of unprocessed agricultural products. These figures do not capture the flow on contribution of agriculture to other businesses in NSW. An estimate of the overall contribution of agriculture to the NSW economy, as presented in table 1, is obtained by multiplying the wholesale value of agriculture by the standard ABS multiplier for agriculture production which is 2.178.(I&I NSW, 2011)

# ABS data identifies direct employment. It also combines employment in beef cattle and mixed farming (sheep / cattle grazing and crops), for the purpose of this report mixed farming was included under the predominant enterprise on such farms in the region - beef cattle.

An indication of the overall contribution of agricultural jobs to NSW employment was similarly obtained by multiplying employment in a particular industry sector by the standard ABS multiplier for agricultural employment of 1.828 (I&I NSW 2011).

As well there is a critical mass of agricultural industries and minimum production levels needed to retain critical support services such as milk pick ups, specialist equine and viticultural consultants or hemp processing plants. In tough market conditions less efficient farming enterprises, smaller, isolated developments can find it difficult to attract those services.

Other challenges common to most agricultural industries in the study area include:

- the shortage of available skilled farm workers due to alternative employment opportunities.
- fragmentation of farmland for lifestyle farmers that is reducing land availability for viable agriculture production, causing inflated rural land prices and reducing the ability of farmers to purchase additional land.

## Climate Change

Regional impacts of climate change and variability on agricultural production within the study area include: increased risk of summer storms, less reliable water supplies, higher humidity and a more variable temperature range.

Those climatic changes are predicted to cause increased heat stress in beef cattle, an increase in disease and pest outbreaks in hay and grape production and a downgrading of hay and grape quality.

However, a warming climate may also increase fodder production in the region, particularly in the higher rainfall areas important for the agricultural industries that involve grazing and hay production.

Hunter producers are, however, experienced at adapting to the already variable climate of the region and generally regard climate change as an extension of such conditions.

A key advantage of the region is the investment in irrigation which can provide an important buffer capacity against unseasonal conditions that is particularly important for the wine industry. As well, many farms have invested in on farm water storages to capture peak flows and have selected drought tolerant crops such as lucerne hay that can tolerate drier conditions.

With production covering a range of micro climates, access to quality focussed markets and farm management adaptations, such as efficient water management and new crop varieties, the region is well positioned to adapt to changing climatic conditions.

## Infrastructure requirements

Agricultural industries rely on good transport systems to access sale yards, abattoirs, supplementary grain supplies, processing facilities, specialist support services, milk delivery and to move produce to domestic and export markets. Access to domestic and international airports, for instance is critical to transport investors; shuttle stallions and export yearling horses. The Hunter currently has excellent access to transport routes and markets to service the variety of agricultural industries.

There is also significant capital investment in the region to support and service the diversity of agricultural industries in the study area. Critical

infrastructure includes irrigation systems for a reliable water supply to support higher and faster growth rates, such as the privately owned irrigation districts, a reliable electricity supply for irrigation and wine making, storage facilities for wine and hay and specialised equine, dairy, cropping and viticulture infrastructure such as milking sheds, fencing, training facilities, wine processing facilities and accommodation for labour.

## Development prospects

The milder temperatures and year round rainfall, providing reliable pasture production, combined with low transport distances, ready access to grain and the major markets means that the Hunter region has a significant competitive advantage.

The region is also investing in new ideas, opportunities and infrastructure to maintain its competitive advantage. The dairy and viticulture industries, for instance, are investing in innovation, brand support and industry development. The region also has excellent training facilities, particularly for the dairy, equine and viticulture sectors to assist farmers to remain efficient and adapt to future market and climate variations.

The Hunter region also has a reputation for quality wines and horses in particular, as well as an established mix of domestic and export markets and a diversity of agriculture integrated with tourism that will boost the longer term development prospects for the region.

A critical impediment to the further growth of agricultural industries in the study area, however, is the growth of competing land uses and high prices demanded for land. As a consequence that could potentially contribute to a gradual loss of critical industry mass of industries and support services.

However, strong prices, an expanding Asian market, direct marketing and the region's significant competitive advantages provide the basis for continued agricultural industry growth in both value and scale.

## Important agricultural lands

The temperate climate, reliable water resources and extensive fertile soils of the region are well suited to diverse agricultural enterprises including; extensive and intensive agriculture, grazing and cropping.

Significant agricultural advantages also result from the combination of the region's natural resources, its established infrastructure and strong marketing advantages including the accessibility to urban centres and markets.

Other features include the region's 'clean green' branding, its agricultural heritage and established connections with regional tourism, agricultural processing and service industries such as poultry processing, specialist veterinary services and mechanical and electrical engineering.

Lands that are highly suitable for grazing (including dairying, beef cattle and horses) typically feature a mix of alluvial lands and adjoining lower slopes. These areas are also suitable for viticulture and orchard developments and farm forestry.

The most productive and highest value cropping lands in the region are the alluvial floodplains along the major rivers and the black soil plains of the Upper Hunter LGA.

The naturally fertile alluvial soils along the major river systems also provide access to reliable high quality water sources. Consequently they are highly suited to regular cropping as well as the production of highly improved pastures for livestock.

The Hunter River alluvial lands are important for each of the top five agricultural sectors in the region. Their inherent productive capacity and diverse production options makes them critically important for future food security and climate change adaptation as well as current food and fibre production.

The attached map (Figure 6) identifies land that is well suited to one or more of the five leading agricultural enterprises in the Singleton, Muswellbrook and part of the Cessnock LGA (the study area).

It includes land well suited for Equine, Viticulture, Beef Cattle, Dairying and Hay / Hemp growing. Specific details are provided by individual industry profiles.

## Land use planning implications

Land use Planning can retain sustainable agricultural developments and promote improved resource management via strategic studies and planning instruments that:

- identify lands that are highly suitable for established agricultural industries (see Figure 2) and zoning these as either RU1 or RU4;
- adopting relevant minimum lot sizes; and
- ensuring compatible development in important hay and hemp growing areas.

Planning for sustainable agriculture requires a consideration of measures that allow existing agricultural industries to continue and to improve or adapt or expand their current operations, as well as provide for new enterprises.

Meeting and maintaining those requirements requires planning to ensure that;

- farms are of sufficient scale to support efficient sustainable and profitable operations, to provide for essential on farm infrastructure and to manage environmental impacts (including effluent and run off management, set backs for streams, native vegetation and adjoining houses).
- the risks of land use conflicts between farming activities and neighbours are managed by avoiding urban or rural residential style development in the vicinity of:
  - » established intensive agricultural industries, taking into account their need for future expansion;
  - » key infrastructure for agricultural industries such as saleyards, abattoirs, feed mills and major transport routes to markets; and

- » important natural resources used by a range of industries particularly those identified as Strategic Agricultural Lands in the Upper Hunter Regional Strategic Land Use Plan (DP&I 2012).

Residential, rural lifestyle and mining developments should be strategically planned for in locations other than the highly productive lands that important agricultural industries depend on.

Land use conflicts can also be minimised by good industry practice and by developing relevant Development Control Plan guidelines for Primary Production areas in consultation with farmers that may include; adequate set backs and landscaping requirements for new houses.

## Acknowledgements

Information for this profile was sourced from available statistical and spatial data. This is supported by industry intelligence from DPI regional extension staff and workshops held in June, July and December 2011. Local farmers and industry consultants helped to pilot test important agricultural mapping outcomes and clarify industry development issues and opportunities.

Compiled by Glenda Briggs and reviewed by Andrew Docking, Wendy Goodburn, Melissa Kahler and Jennifer Warner (NSW DPI Resources Planning and Development team).

Special acknowledgement to the NSW DPI resource mapping team for providing and reviewing spatial data.

## References

ABS (Australian Bureau of Statistics) 2006a, Catalogue 7125.0 - Agricultural Commodities: Small Area Data, Australia 2005-06 accessed from <http://www.abs.gov.au/ausstats/abs@.nsf/Products/7125.0~2005-06+%28Reissue%29~Main+Features~New+South+Wales?OpenDocument>

ABS (Australian Bureau of Statistics) 2010, Catalogue 3235.0 Population by Age and Sex, Regions of Australia, 2010, accessed from <http://www.abs.gov.au/ausstats/abs@.nsf/Products/3235.0~2010~Main+Features~New+South+Wales?OpenDocument>

ABS (Australian Bureau of Statistics) 2006b, NSW population census.

Blackmore, Philip pers comm. 2011

Department of Primary Industries - value of hemp industry in NSW

Buchanan Consulting, 2011 Upper Hunter Economic Diversification Project, Final Report 1: Upper Hunter Regional Economy and Industry Report <http://www.muswellbrook.nsw.gov.au/About-council/Reports/Upper%20Hunter%20Economic%20Diversification%20Report/Upper%20Hunter%20Economic%20Diversification%20Report%201%20-%20Regional%20Economy.pdf>

Bureau of Meteorology (BOM) 2012, Climate Data online <http://www.bom.gov.au/climate/data/>

DP&I (Department of Planning and Infrastructure) 2012, Strategic Regional Land Use Plan, Upper Hunter accessed at <http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=-kV1107NkDY%3d&tabid=495&language=en-US>

DPI (Department of Primary Industries), 2011. Analysis of ABS 2006 Census data for agriculture, accessed from <http://www.dpi.nsw.gov.au/environment/landuse-planning/agriculture/analysis-census-data>

[www.dpi.nsw.gov.au/environment/landuse-planning/agriculture/analysis-census-data](http://www.dpi.nsw.gov.au/environment/landuse-planning/agriculture/analysis-census-data)

HVRF (Hunter Valley Research Foundation) 2005 The Hunter Region Wine Industry 2003-04, Estimates of Grape and Wine production and the Value of the Industry to the Regional Economy, accessed at [http://hvrf.com.au/images/HVRF\\_Publications/Newcastle\\_\\_Hunter\\_Region/agriculture\\_and\\_fishingv2.pdf](http://hvrf.com.au/images/HVRF_Publications/Newcastle__Hunter_Region/agriculture_and_fishingv2.pdf)

HVTB (Hunter Valley Thoroughbred Breeders Association), 2010, 10 Point Plan of Action. <http://www.htba.com.au/uploading/10%20point%20plan.pdf>

I&I NSW (Industry & Investment NSW) 2011, Contribution of Primary Industries to NSW Economy, DPI 2011 – agricultural contribution and standard agricultural multipliers, accessed from <http://intranet.dpi.nsw.gov.au/library/statistics/industry/all-industries/key-data-2011.pdf>

## Additional reading

Agricultural Land use planning guidelines, <http://www.dpi.nsw.gov.au/agriculture/resources/lup>

Policy for sustainable agriculture in NSW, DPI, 1998. <http://www.dpi.nsw.gov.au/environment/landuse-planning/>

Land Use Conflict Risk Assessment (LUCRA) Guide, DPI 2011 <http://www.dpi.nsw.gov.au/environment/landuse-planning/agriculture/lucra>

Policy O-104 Maintaining land for agricultural industries, DPI 2011, [http://www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0008/396458/Policy-0-104-maintaining-land-agricultural-industries.pdf](http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/396458/Policy-0-104-maintaining-land-agricultural-industries.pdf)

Glossary of Agricultural terms, DPI, 2012 <http://www.dpi.nsw.gov.au/agriculture/info/ag-glossary>

Strategic Regional Land Use Policy <http://www.nsw.gov.au/strategicregionallanduse>

© State of New South Wales through Department of Trade and Investment, Regional Infrastructure and Services, 2013. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute the Department of Primary Industries as the owner.

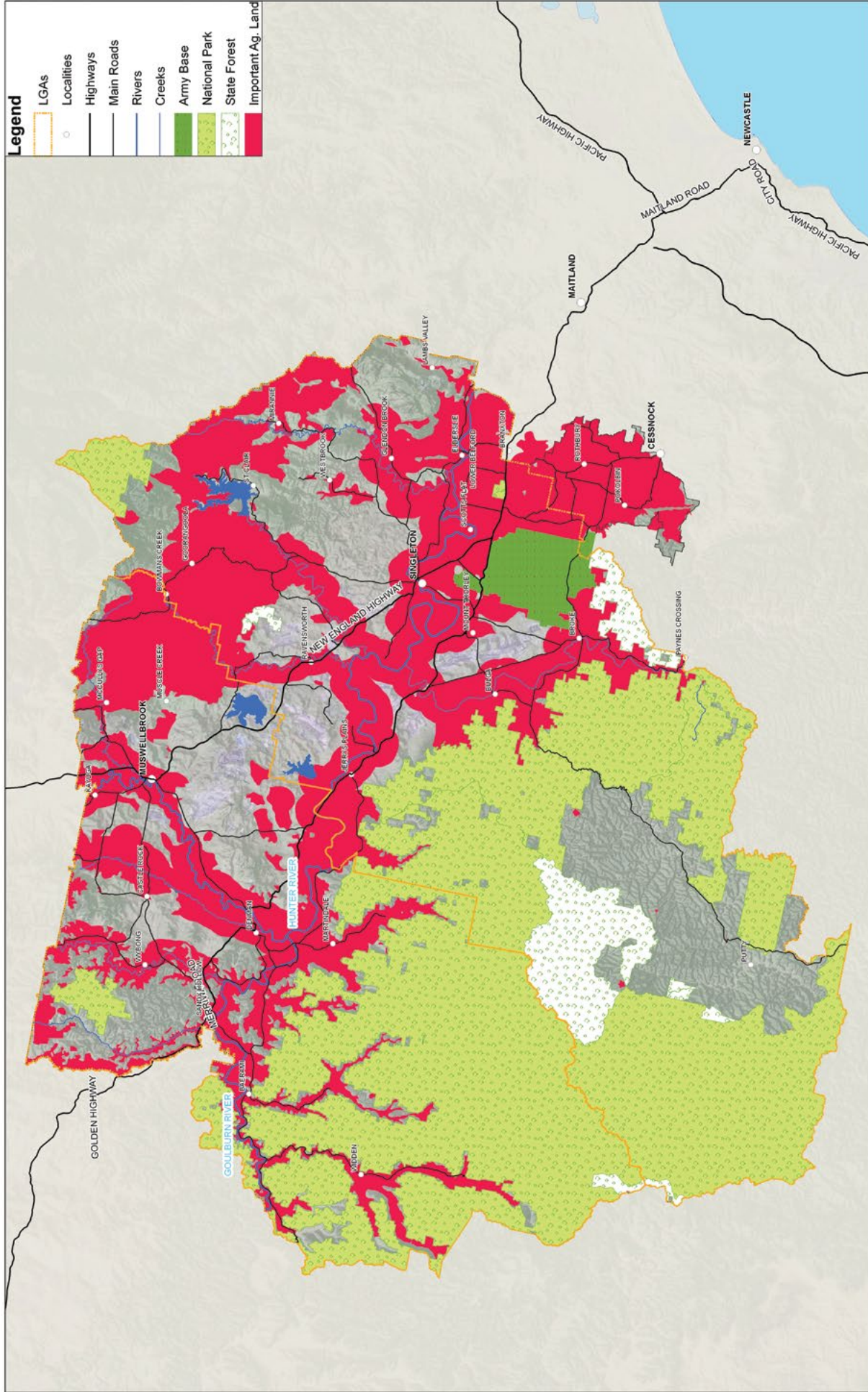
Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (June 2013). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser.

Published by the Department of Primary Industries, a part of the Department of Trade and Investment, Regional Infrastructure and Services.

ISSN 1832-6668

PUB12/73 Jobtrack 11970

Figure 6 - Map of Important Agricultural Lands for the 5 Leading Agricultural commodities combined



## Singleton - Muswellbrook Pilot Area Important Agricultural Land 5 Main Commodities



Department of Primary Industries



Produced by Resource Information Unit  
Date: 15/05/2012

This map incorporates data which is: © Commonwealth of Australia (Geoscience Australia) 2006, Office of Environment and Heritage, www.environment.nsw.gov.au and NSW Land and Property Management Authority, Bathurst, Australia. Crown Copyright ©. All rights reserved. www.lands.nsw.gov.au.



Table 3 – Land Use by Area for Agriculture

Land use by Area *	Dungog LGA	Gloucester LGA	Muswellbrook LGA ^	Singleton LGA	Upper Hunter LGA	Upper Hunter region	New South Wales
<b>Total LGA Area (ha)</b>	224,617	294,683	340,200	488,425	808,491	2,156,416	80,142,595
Total area of farm holdings (ha)	122,564	152,346	121,872	156,484	646,774	1,200,040	62,119,245
No of Farms	480	376	314	551	717	2,438	48,838
Farm holdings as % of LGA total area	55%	52%	36%	32%	80%	56%	78%
Grazed / crop land as % of LGA total area	47%	42%	30%	29%	75%	50%	73%
<b>Combined crop &amp; grazing area (ha)</b>	106,391	124,993	103,599	139,561	607,297	1,081,841	58,642,382
Grazing Lands (ha)	104,536	124,191	95,446	132,631	572,198	1,029,002	49,993,368
Crop lands (ha) (includes horticulture)	1,855	802	8,153	6,930	35,099	52,839	8,649,014
<b>Farmlands not used for agric.(ha)</b>	16,173	27,353	18,273	16,923	39,477	118,199	3,476,863
<b>Other Lands (eg Nat Pk, SF, mined) (ha)</b>	118,226	169,690	236,601	348,864	201,194	1,074,575	21,500,213
<b>Other lands as % of LGA total areas</b>	53%	58%	70%	71%	25%	50%	27%
% of farm holdings not used for ag.	13%	18%	15%	11%	6%	10%	6%
% of farm holding used for crops	2%	0.5%	7%	4%	5%	4%	14%
% of farm holdings used for grazing	85%	81.5%	78%	85%	88%	86%	80%

\* farm areas and numbers may have changed since 2006

^ Muswellbrook LGA figure from Council strategy 2012

Figure 7 – Agricultural products from the Upper Hunter Region by volume

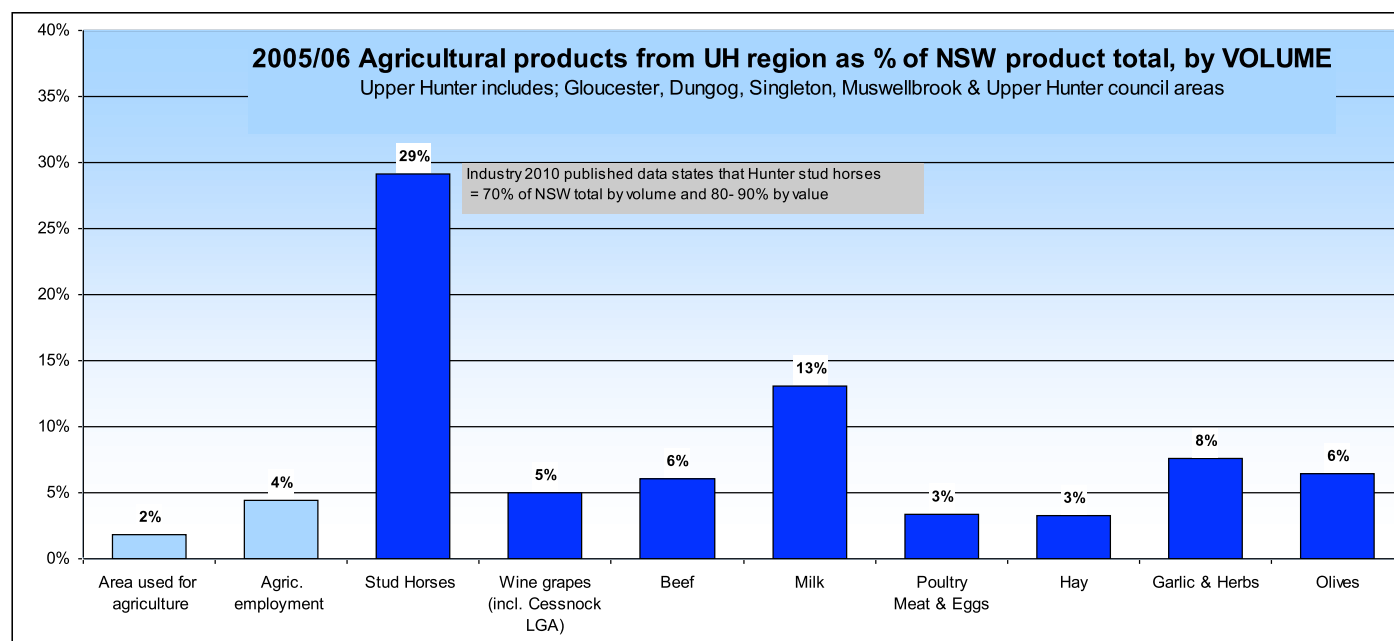


Table 4 - Agricultural Employment (ABS 2006)– by usual place of residence and industry sector with 1.828 multiplier to represent contribution to NSW employment

	<i>Cessnock LGA (only grape growing)</i>	<i>Dungog LGA</i>	<i>Gloucester LGA</i>	<i>Muswellbrook LGA</i>	<i>Singleton LGA</i>	<i>Upper Hunter LGA</i>	<i>UH Region (incl Cessnock Vitic)</i>	<i>NSW</i>	<i>UH as % of NSW</i>
Agriculture	234	795	629	1,049	910	2,179	5,563	128,399	4%
Agriculture & Fishing Services		29	7	68	27	97	229	6,403	4%
Agriculture, Forestry & Fishing, nfd		9	0	9	5	5	29	793	4%
Veterinary Services		31	9	58	33	124	256	7,659	3%
<b>Total</b>	<b>234</b>	<b>865</b>	<b>645</b>	<b>1,185</b>	<b>976</b>	<b>2,406</b>	<b>6,310</b>	<b>143,255</b>	<b>4%</b>
Dairy Cattle Farming		216	124	137	201	73	751	5,903	13%
Beef cattle		388	452	329	349	903	2,420	44,077	5%
Sheep		0	5	18	11	338	373	25,574	1%
Broadacre Crops		0	0	0	0	44	44	11,769	0%
Other Crop Growing (Hay)		5	5	16	31	29	88	967	9%
Horse Farming		20	0	378	62	664	1,124	2,855	39%
Pig Farming		0	0	0	0	7	7	1,583	0%
Beekeeping		0	0	7	0	0	7	715	1%
Other Livestock Farming, nec		5	5	0	5	5	22	768	3%
Poultry Farming		75	7	7	9	13	112	4,283	3%
Grape Growing	234	9	5	97	117	18	481	3,351	14%
Fruit & Nut (excl Grapes)		0	5	5	9	11	31	245	13%
Mushroom and Vegetable Growing		15	5	5	77	16	119	6,042	2%
Nursery and Floriculture Production		18	9	5	7	5	46	4,084	1%
Agriculture, nfd		216	124	137	201	73	751	5,903	13%

Table 5 - Estimated Value of Agricultural Products (ABS 2006) with 2.178 multiplier to represent contribution to NSW economy

	<b>Cessnock LGA Grapes only</b>	<b>Dungog LGA</b>	<b>Gloucester LGA</b>	<b>Muswellbrook LGA</b>	<b>Singleton LGA</b>	<b>Upper Hunter LGA</b>	<b>Upper Hunter region</b>	<b>NSW</b>	<b>UH Region as % of NSW</b>
Value of Agriculture (excl equine) - with 2.178 multiplier		\$91	\$52	\$74	\$81	\$156	\$461	\$18,204	2%
Wine grapes**	\$8	\$0.1	\$0.0	\$9	\$4	\$2	\$24	\$467	5%
Beef		\$27	\$29	\$24	\$34	\$99	\$212	\$3,492	6%
Milk		\$29	\$19	\$28	\$25	\$15	\$117	\$895	13%
Poultry		\$32		\$0.1	\$4	\$2	\$38	\$1,137	3%
Hay		\$2	\$2	\$9	\$6	\$7	\$25	\$773	3%
Wool & lamb		\$0.04	\$0.01	\$0.4	\$0.02	\$20	\$21	\$2,543	0.8%
Broadacre crops		\$0	\$0.01	\$0.2	\$0.3	\$8	\$8	\$5,495	0.2%
Vegetables		\$0.1	\$0.1	\$0.2	\$4	\$1.0	\$6	\$782	0.7%
Fruit excl. grapes		\$0	\$0.01	\$2	\$1	\$0.2	\$4	\$1,264	0.3%
Nurseries, flowers & turf		\$1	\$0	\$0	\$2	\$0	\$3.6	\$770	0.5%
Pigs & goats		\$0	\$2	\$0	\$0	\$1.4	\$3.3	\$586	0.6%
Other agriculture		\$0.3	\$0.1	\$2.7	\$5.1	\$1.2	\$9.3	\$2,046	0.5%

\* HTB (2010) claims that the Hunter produces 70% of stud horses in Australia by volume and 80 - 90% of export value

HTB (2010) also states the total value of bloodstock on HV farms as around \$2.5 bill. Using ABS 2006 stud horse numbers the ave value / stud horse = \$234,556

\*\* Wine grapes includes Cessnock (Pokolbin). HVRF (2004) valued wines sales in Hunter as \$203 mill (= \$442 with multiplier)

Table 6 – Equine values in the Upper Hunter (ABS 2006)

	<b>Cessnock LGA Grapes only</b>	<b>Dungog LGA</b>	<b>Gloucester LGA</b>	<b>Muswellbrook LGA</b>	<b>Singleton LGA</b>	<b>Upper Hunter LGA</b>	<b>Upper Hunter region</b>	<b>NSW</b>	<b>UH Region as % of NSW</b>
Stud Horses (number)	510	278	201	2,630	932	6,617	10,658	38,356	28%