DEPARTMENT OF PLANNING, INDUSTRY & ENVIRONMENT

BOS Support for Assessors & Local Government

NSW State Vegetation Type Map - methods

**Thursday 28th October 2021, 1:30 PM – 2:30 PM**

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Methods discussed today

- Classified and organised data

- Building the vegetation map

- Aerial Photographic Interpretation of landscape

- Modelling plant community types

- Aerial photographic checking

- Creating map Products

- Foundation products

- Map accuracy

- Digital access

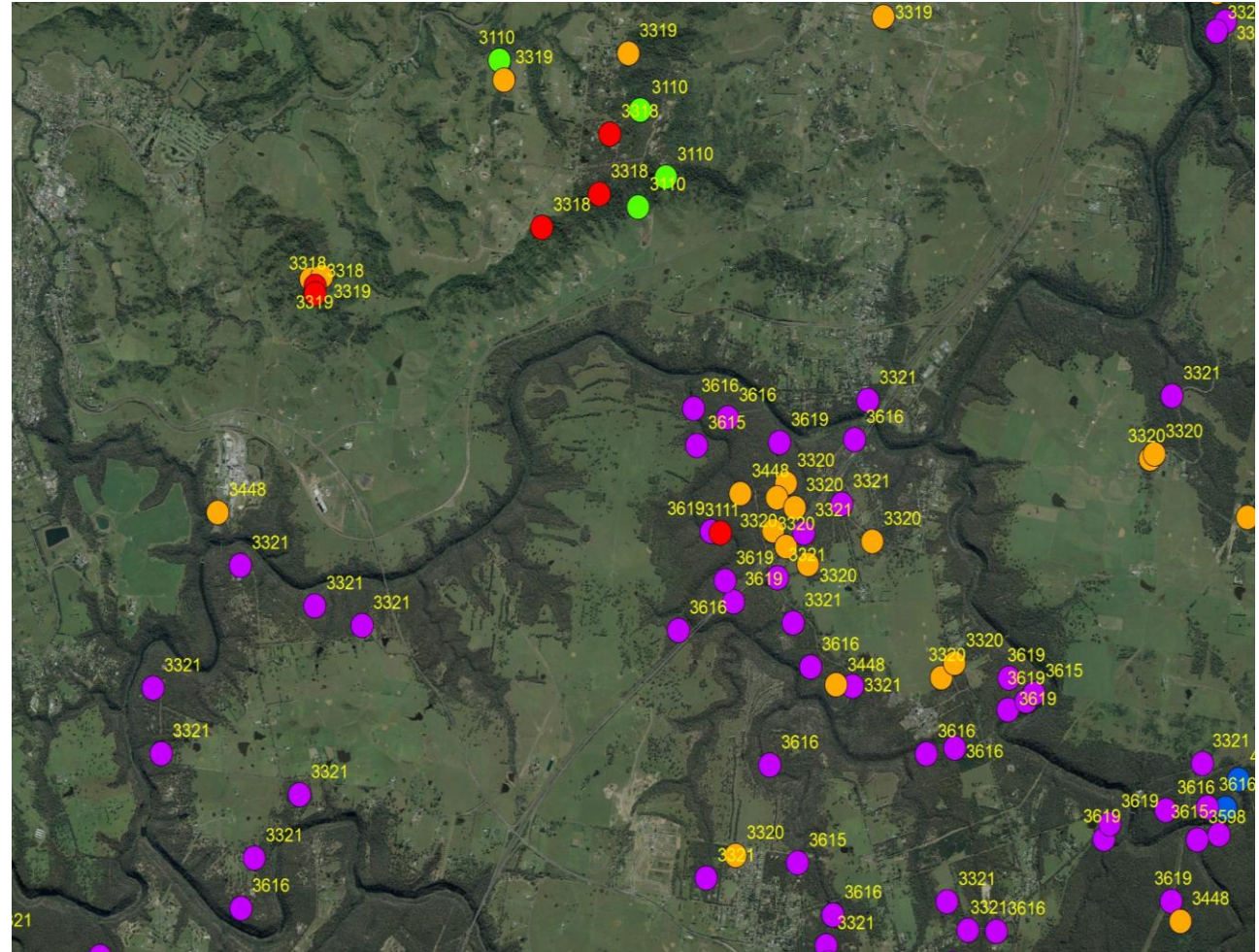**State Vegetation Type Map: Plant Communities**
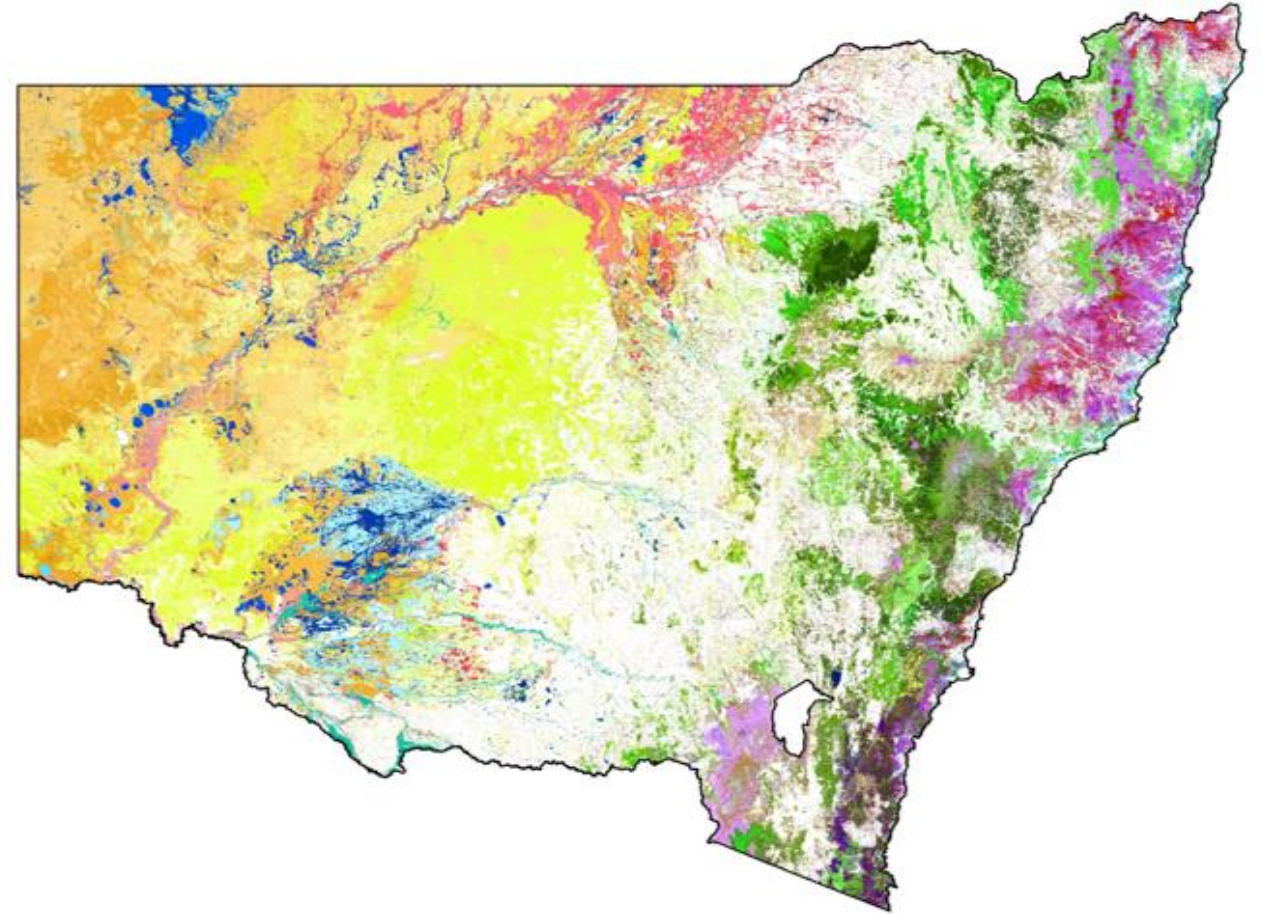
Classified and Organised data

Survey sites

- NSW comprises both quantitative and qualitative classified survey date survey

- Over 40,000 survey sites were used for ENSW

- There are around 2500 plant community types across NSW

Satellite Imagery

- Over 350 high resolution images cover NSW

- Images are 'segmented' to create mapping polygons using Feature Recognition software

- All land is covered with polygons so that both vegetated and non vegetated land can be mapped.
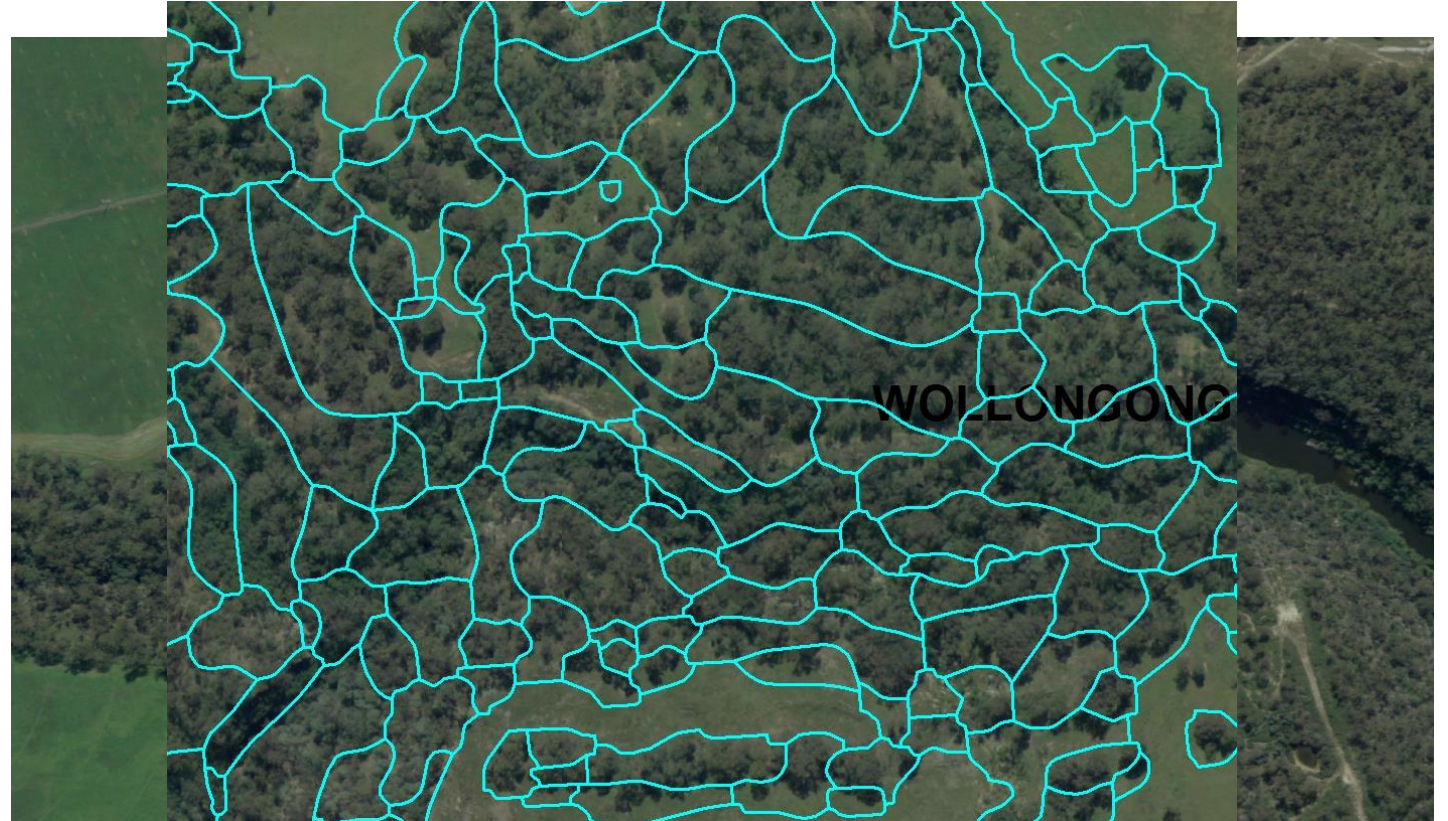
Uplift Existing Mapping

- Contemporary mapping is converted to plant community types

- They may be corrected if they conflict with site survey data

- There is a huge archive of former mapping across NSW that may be synthesised into the SVTM- over time.
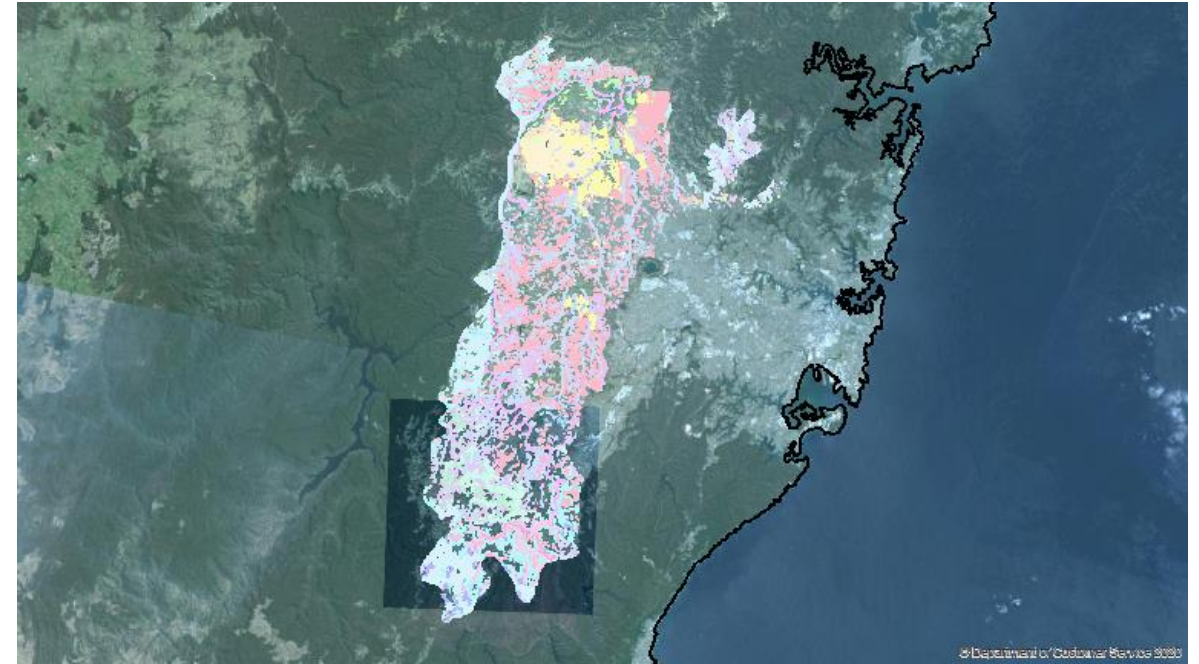
VIS183 - Vegetation of the Cessnock-Kurri Region – Extant 2007	
EFS_Name	PCT Primary No.
Aberdare Upland Box Forest (Grey Box variant)	R1.75
Aberdare Upland Box Forest (Ironbark variant)	R1.75
Bow Wow Subtropical Rainforest	R5.18
Cabbage Gum Floodplain Woodland	R9.107
Central Hunter Grey Box Forest	R6.35
Central Hunter Swamp Oak Forest (River Oak variant)	R1.4
Central Hunter Swamp Oak Forest (Swamp Oak variant)	R1.4
Coastal Foothills Spotted Gum - Ironbark Forest (E. punctata variant)	R9.112
Coastal Foothills Spotted gum - Ironbark Forest (main variant)	R9.112
Coastal Foothills Spotted Gum - Ironbark Forest (Mt View variant)	R9.112
Coastal Foothills Spotted Gum - Ironbark Forest (riparian variant)	R9.112
Coastal Foothills Transition Forest (E. beyeriana variant)	R1.53
Coastal Foothills Transition Forest (E. fergusonii variant)	R1.53
Coastal Foothills Transition Forest (stringybark variant)	R1.53
Ellalong Grey Gum - Stringybark - Apple Forest (stringybark variant)	R1.50
Ellalong Grey Gum - Stringybark - Apple Forest (type variant)	R1.50

Environmental layers

- The project collated and made available hundreds of environmental layers covering NSW

- These layer underpin our ability to model plant communities across the landscape

- Most layers are at 100m rasters but come are as fine as 30m.
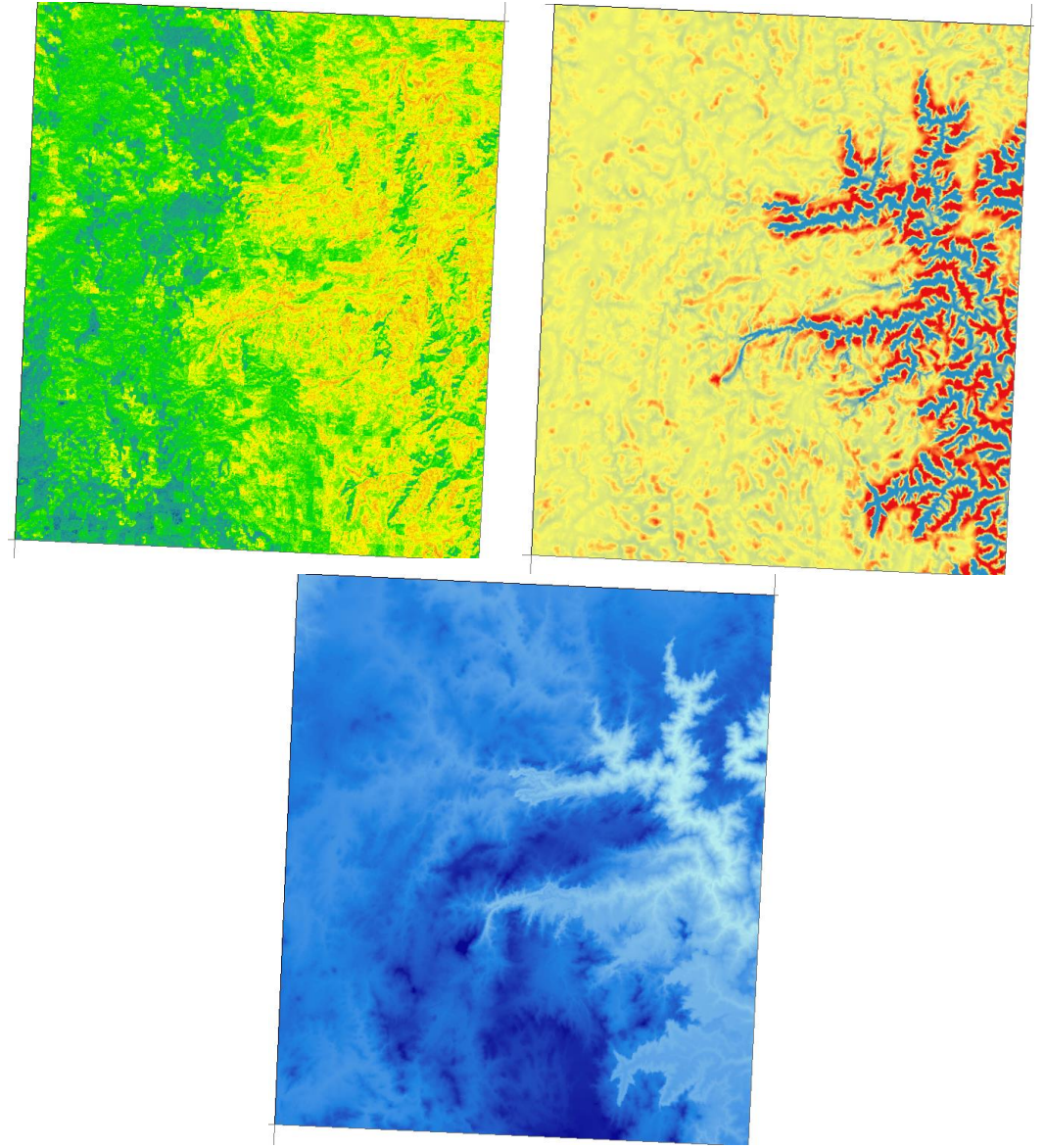
Building the vegetation map
Aerial Photographic Interpretation (API) of the landscape

Identify vegetation photo patterns – using API

- PCTs are pre- classified into ~20 vegetation photo patterns (VPP)

- VPPs are mapped by interpreting:

- PCT descriptions

- Survey sites

- Geology

- Altitude

- Aspect

- Drainage

- Geomorphology

- Texture and Colour

- VVPs include the whole landscape and become the "shell" into which individual PCTs are modelled.

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- Natural Native Grasslands
- Dry Sclerophyll Forests
- Wet Sclerophyll Forests
- Native Pine Communities
- Inland Floodplain Forests
- Non woody wetlands
- Grassy Open Woodlands
- Chenopods
- Wet and Dry Rainforest
- Riparian Forest
- Tall Shrublands
- Mallee
- Casuarina Forests
- Saltmarsh/Mangrove
- Wet Heath <2m
- Dry Heath <2m
- Grassy Headlands
- Coastal Floodplain Forest
- Foredune
- Non-vegetated.

Woodlands

Dry sclerophyll forest

Wet sclerophyll forest

Rainforest

Riparian Forests
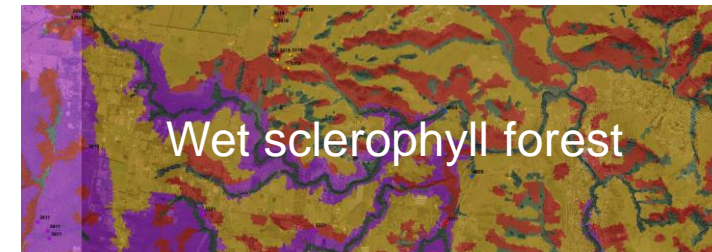
Vegetation photographic pattern – historic records

- On the northern side of the river, especially on the interior of some of the tidal islands, the vegetation was quite different. In June 1801 Grant recorded that several miles **up from the mouth of the river he was able to cut cedar "which was growing in abundance on the banks of that river,** of a large size, and excellent quality …" (Grant [1803] 1973:152-3). Grant also gives an account of the vegetation on an island in the harbour and he payed particular attention to a tree "the quality of whose timber resembles that of the ash" (Grant [1803] 1973:154). Ash Island, as the island was named, had examples of "many large timber trees", including reference to a 'Nettle Tree' or Giant Stinging Tree. At six miles from the entrance Grant "found the woods here to abound with trees affording a light timber, and great quantities of the cabbage tree (palm) some of which last I felled to try the eatable quantity of it" (Grant [1803] 1973:160

- **Near the town of Maitland, where the vegetation remained uncleared, thick vine scrubs (rainforest) could be found.** Breton, in his 'Excursions in New South Wales and Van Dieman's Land, 1830-1833' recorded that behind the town of Maitland:

… **there is one of the thickest vine brushes in New South Wales,** so that it is difficult to penetrate even a few yards. Here I saw a most enormous tree
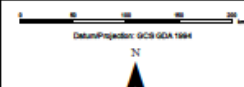
Vegetation Photo Patterns

- VPPS are manually checked editing for:

  ◦ Historical interpretation

  ◦ Gross errors

  ◦ Edge errors

  ◦ Attribution errors

  ◦ Coding mistakes

- A seamless vector shape file is created
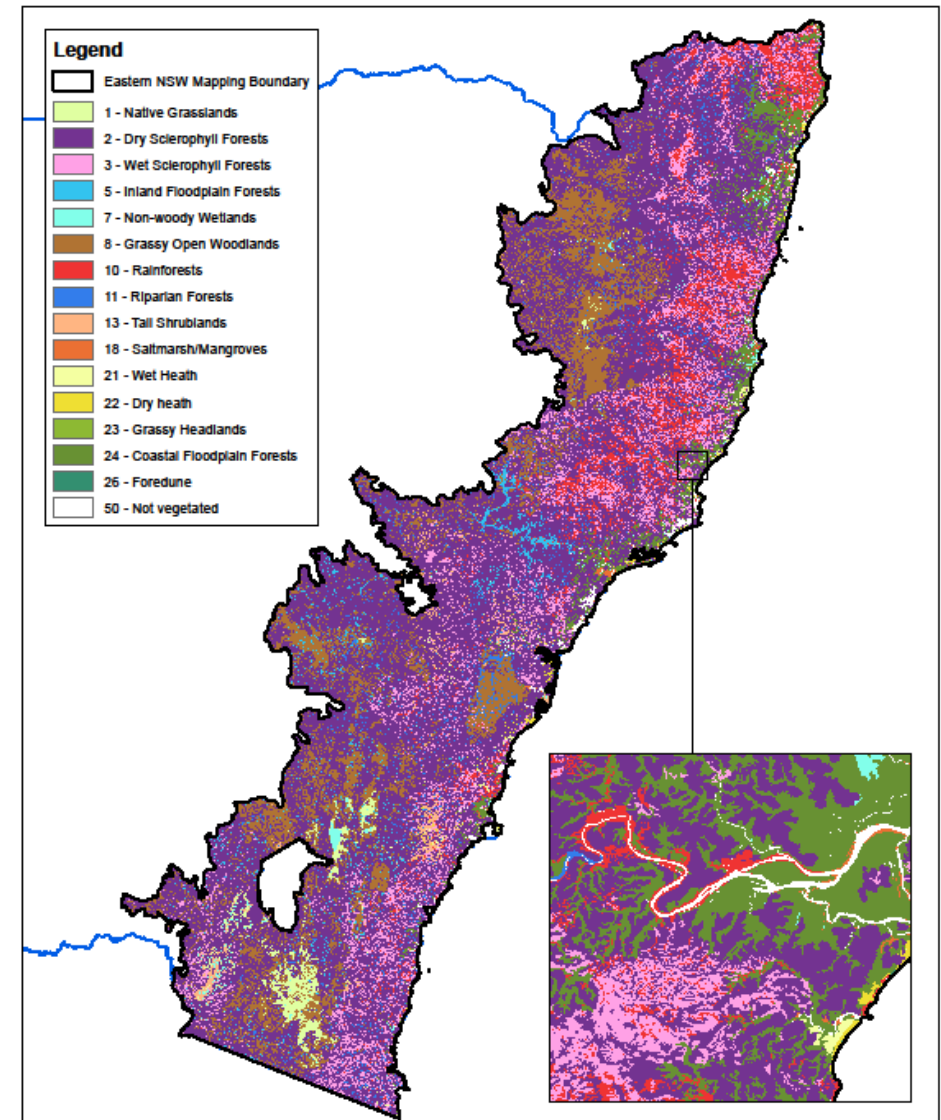
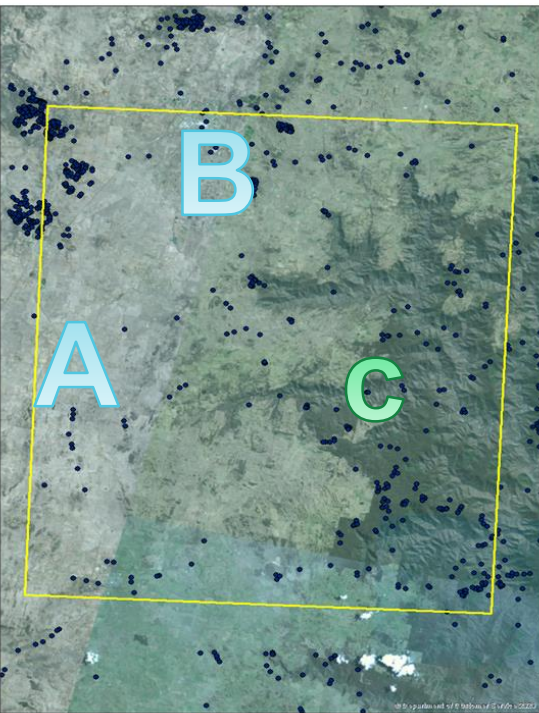# Building the vegetation map
Modelling plant community types

Why use ecological modelling?

- NSW is approximately 800,640 squared kilometres

- 4 x the size of the UK
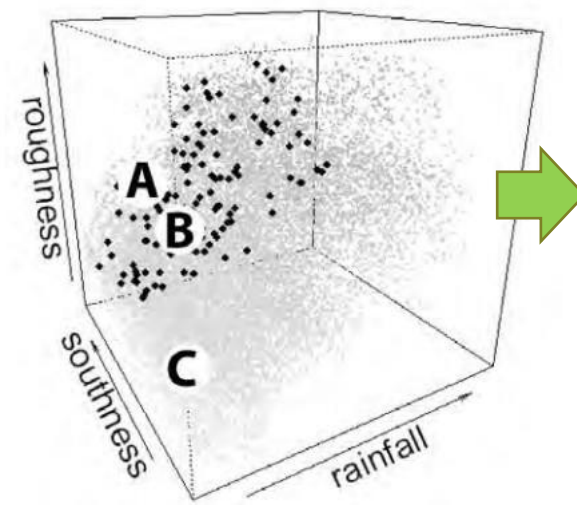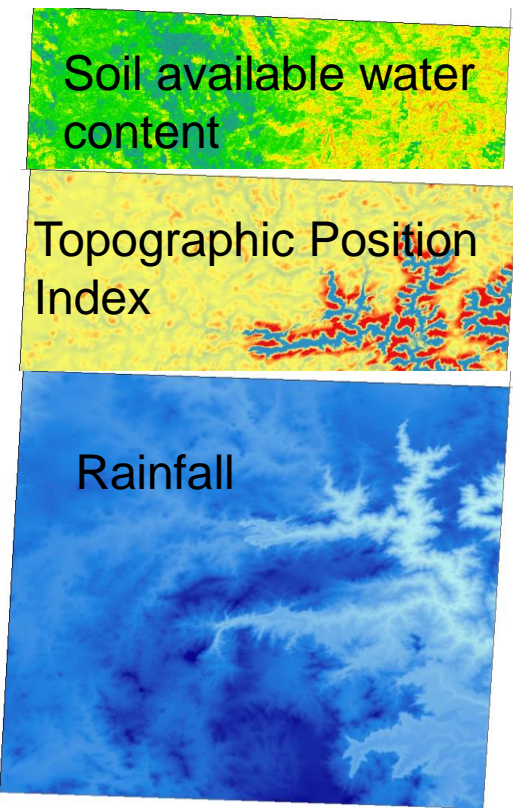
- 2.25 x the size of Germany
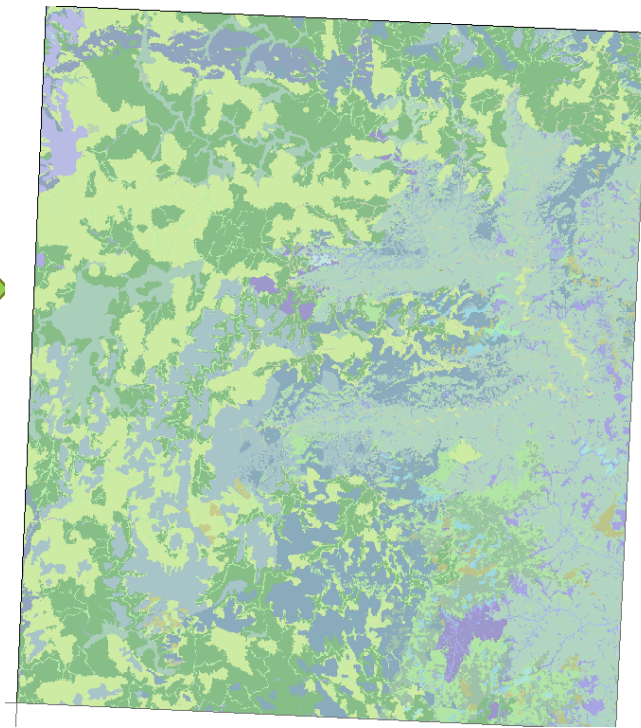
- Larger than Texas, USA

Modelling method

Vegetation data

Geographic space

Environmental predictors

Soil available water content

Topographic Position Index

Rainfall

Elith & Leathwick 2009
AnnuRevEcolEvolSyst

Environmental space
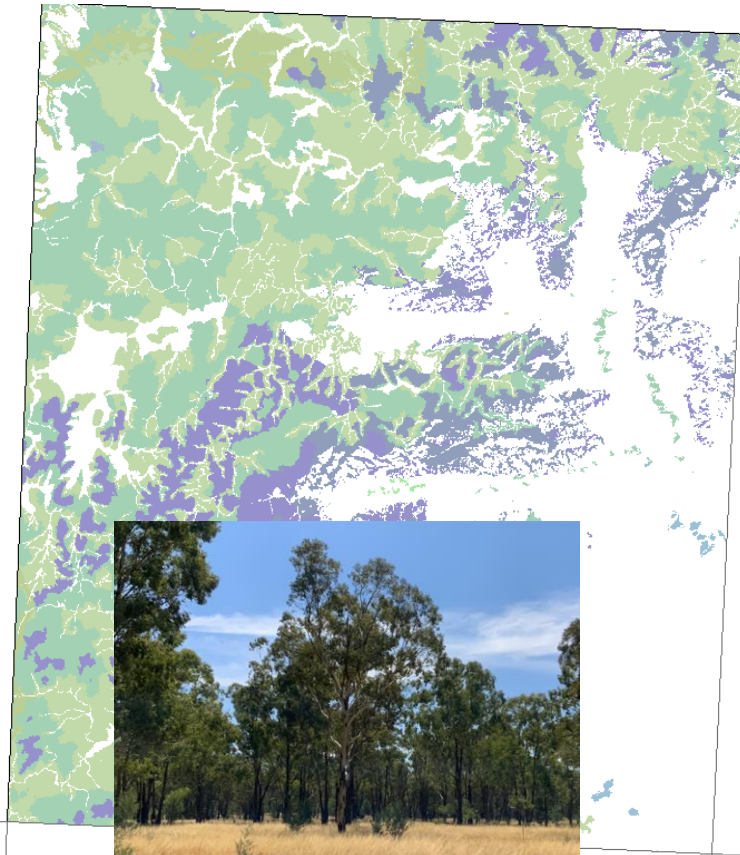
Predicted vegetation class

Geographic space
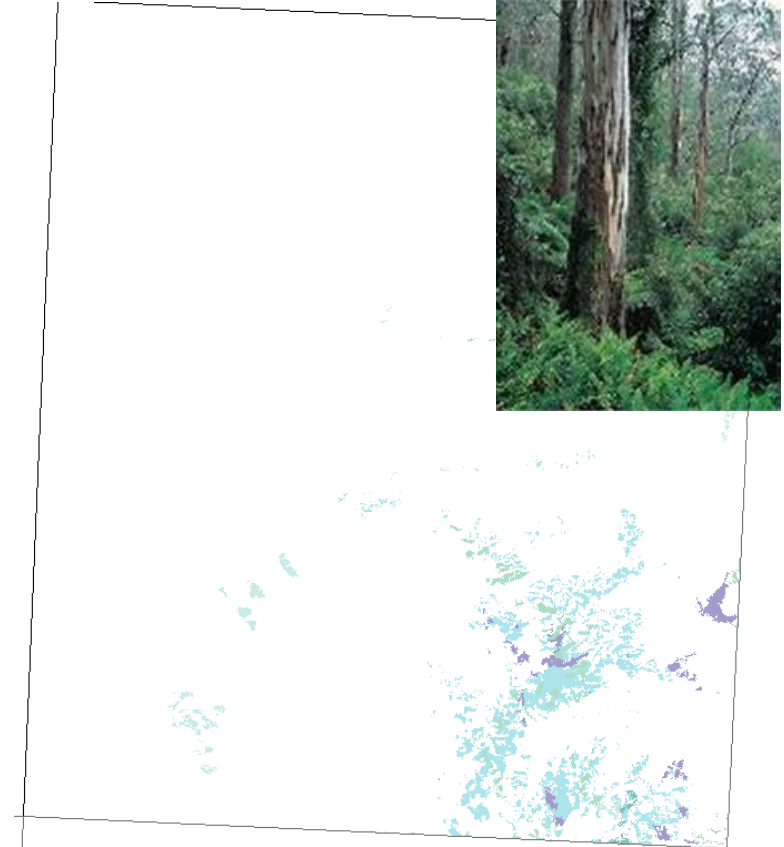
PCTs are predicted and uplifted into VPPS

Riparian
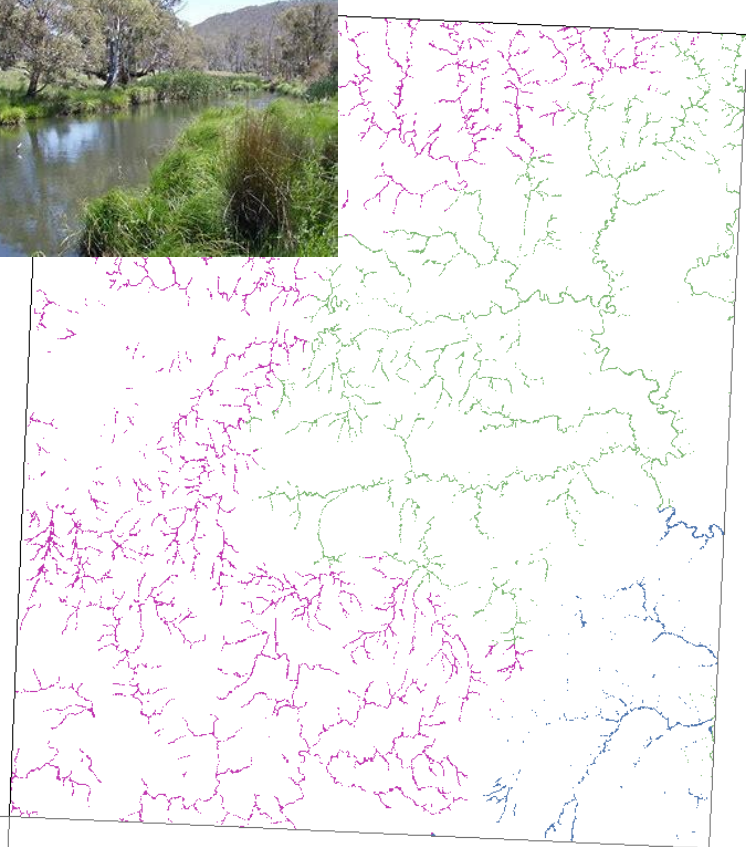
Grassy open woodland

Wet sclerophyll forest

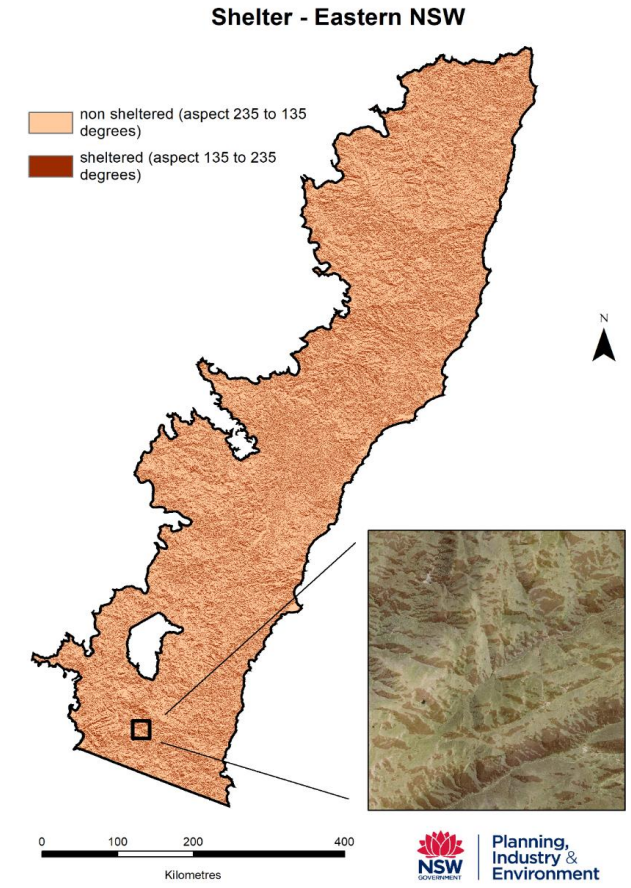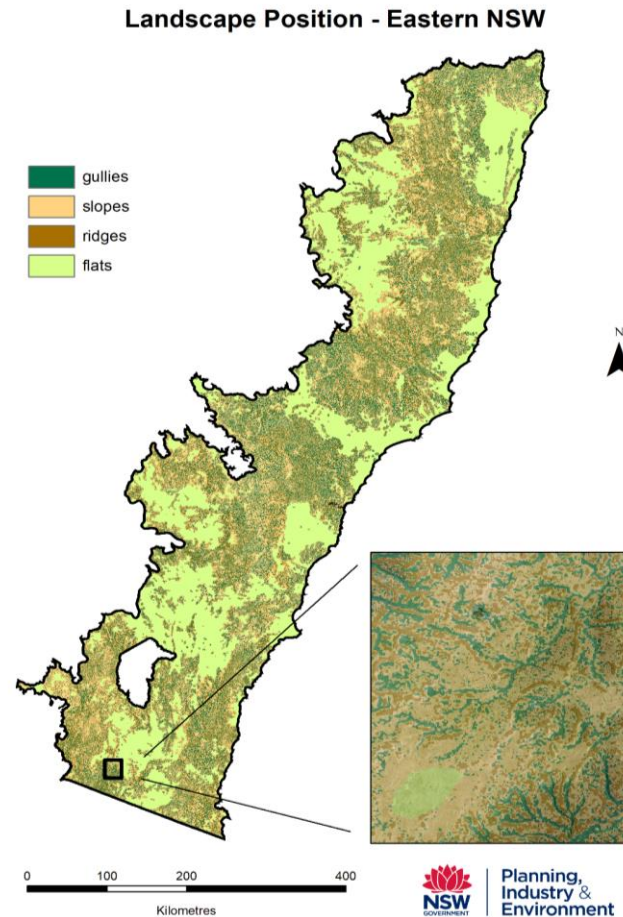# Special uplift rules for Dry Sclerophyll Forests

There are hundreds of DSF types

We assign DSF types to selected topographical constraints: landscape position and shelter

Some DSF types have no particular assignment

Only DSF modelled types are permitted to be uplifted into:

• DSF VPPs
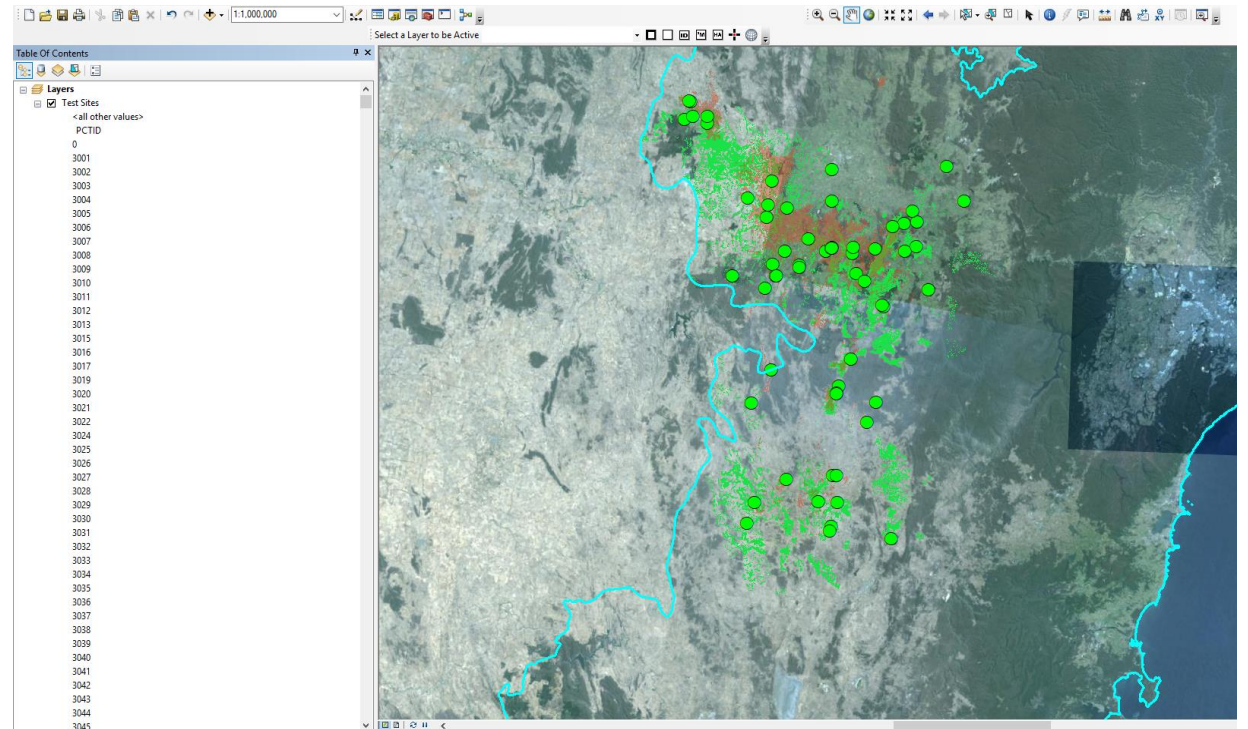
• Topographical constraints.

PCT mapping API Editing

A Draft pre-clearing (1750) vector file is created

Draft PCTs are manually checked editing for:

- Gross errors

- Edge errors

- Attribution errors

- Coding mistakes

- Ecological distributions

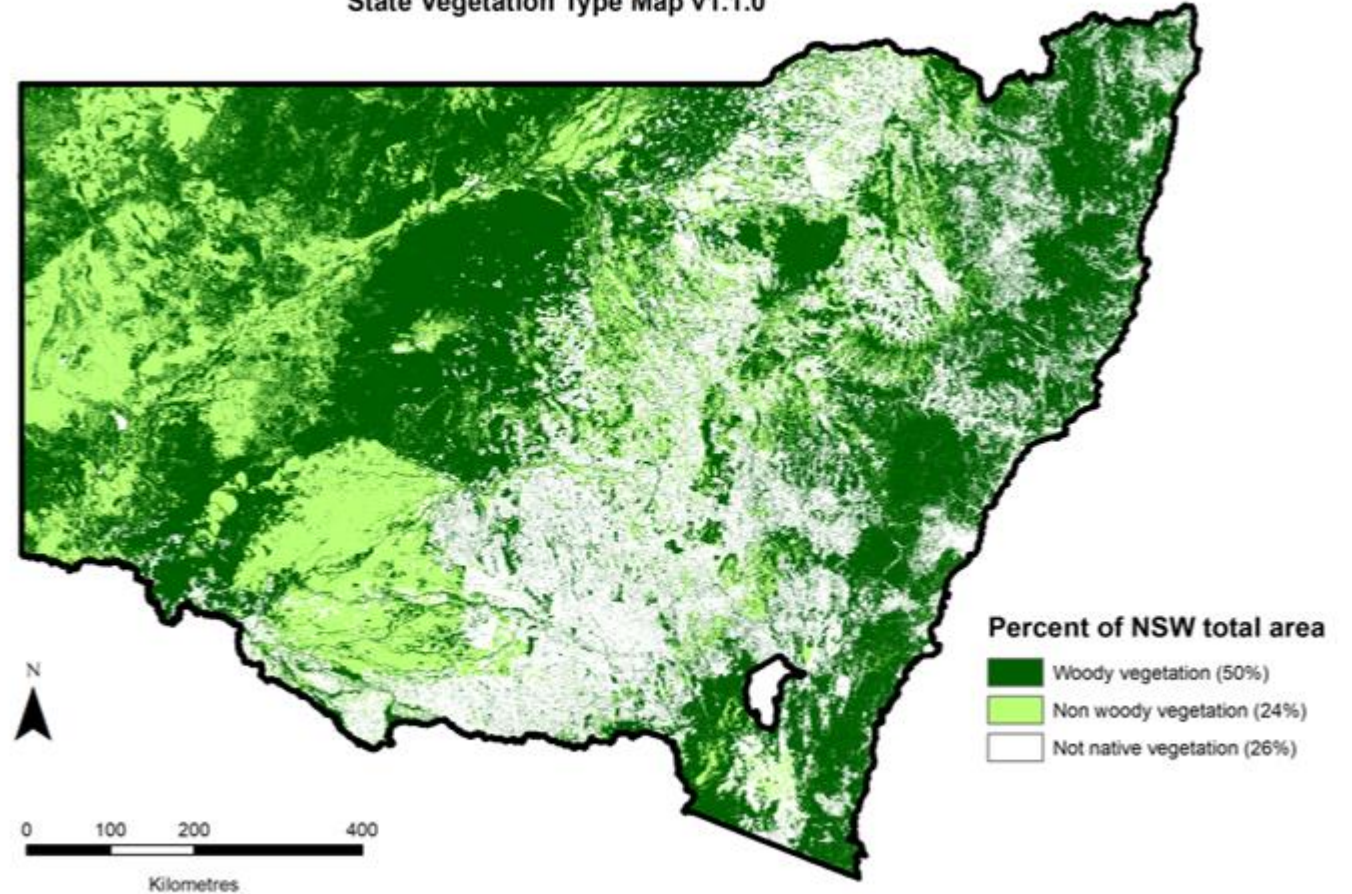A final pre-clearing (1750) vector file is created

Creating Map products
The Pre-clearing Map and the Extant Map

Extracting cleared areas

- The NSW native vegetation layer is a high resolution product created by remote sensing and API

- Using the NSW native vegetation extent layer, areas that are not native are deleted from the pre-clearing (1750) layer to create the Extant Map
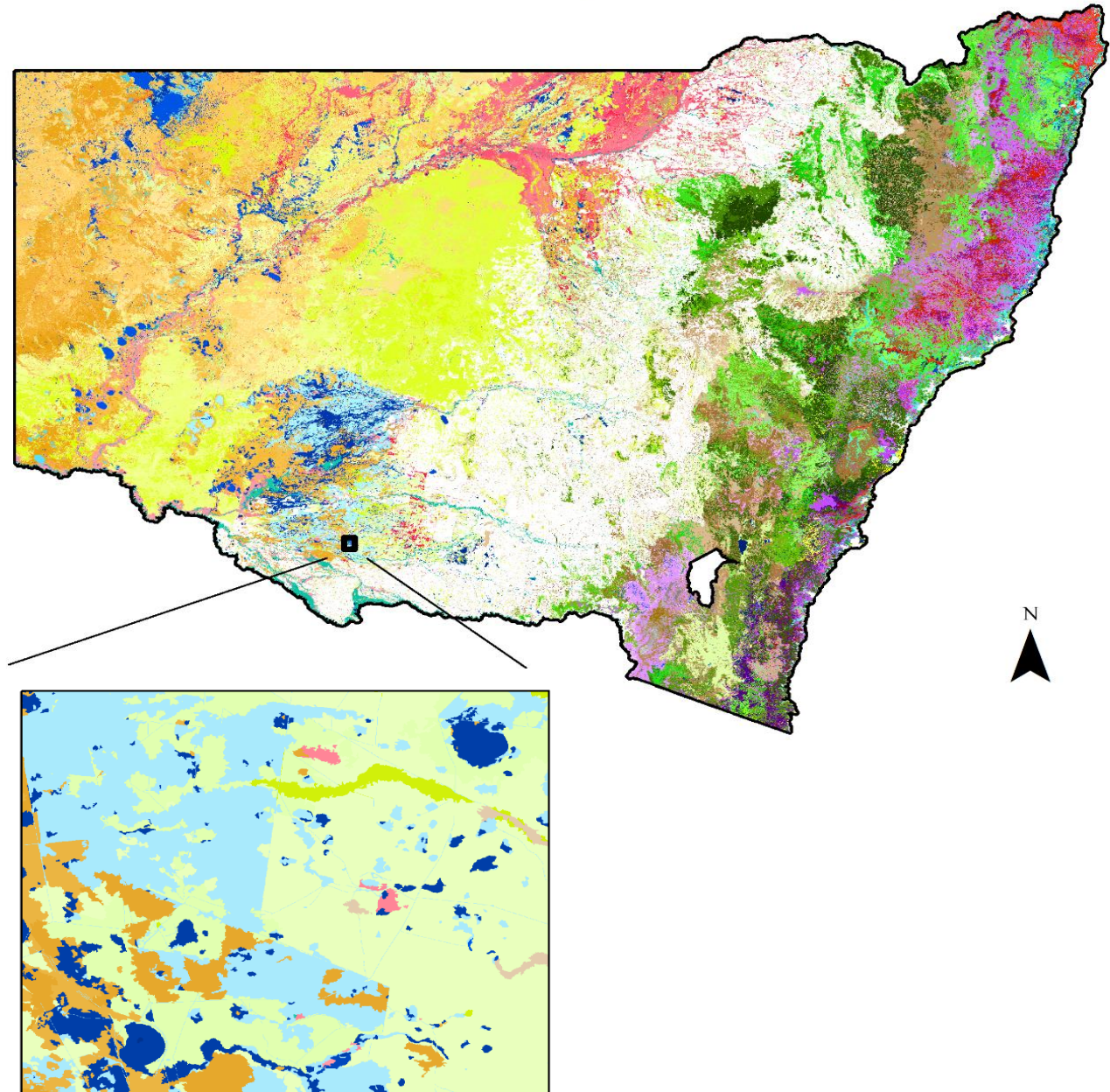

NSW Native Vegetation
State Vegetation Type Map v1.1.0

Percent of NSW total area

- Woody vegetation (50%)
- Non woody vegetation (24%)
- Not native vegetation (26%)

N

0   100   200   400
Kilometres

Native Vegetation
# Pre-clearing map (1750 map)

- This is a key DPIE 'foundation product'

- The pre-clearing map will be maintained and updated annually

- The pre-clearing map will include new information was it becomes available

- **Does not currently cover Central NSW (planned for 2023)**

N

Native Vegetation Extent

- This is a key DPIE 'foundation product'

- The Extant map will be maintained and updated annually

- The Extant map will include new information was it becomes available

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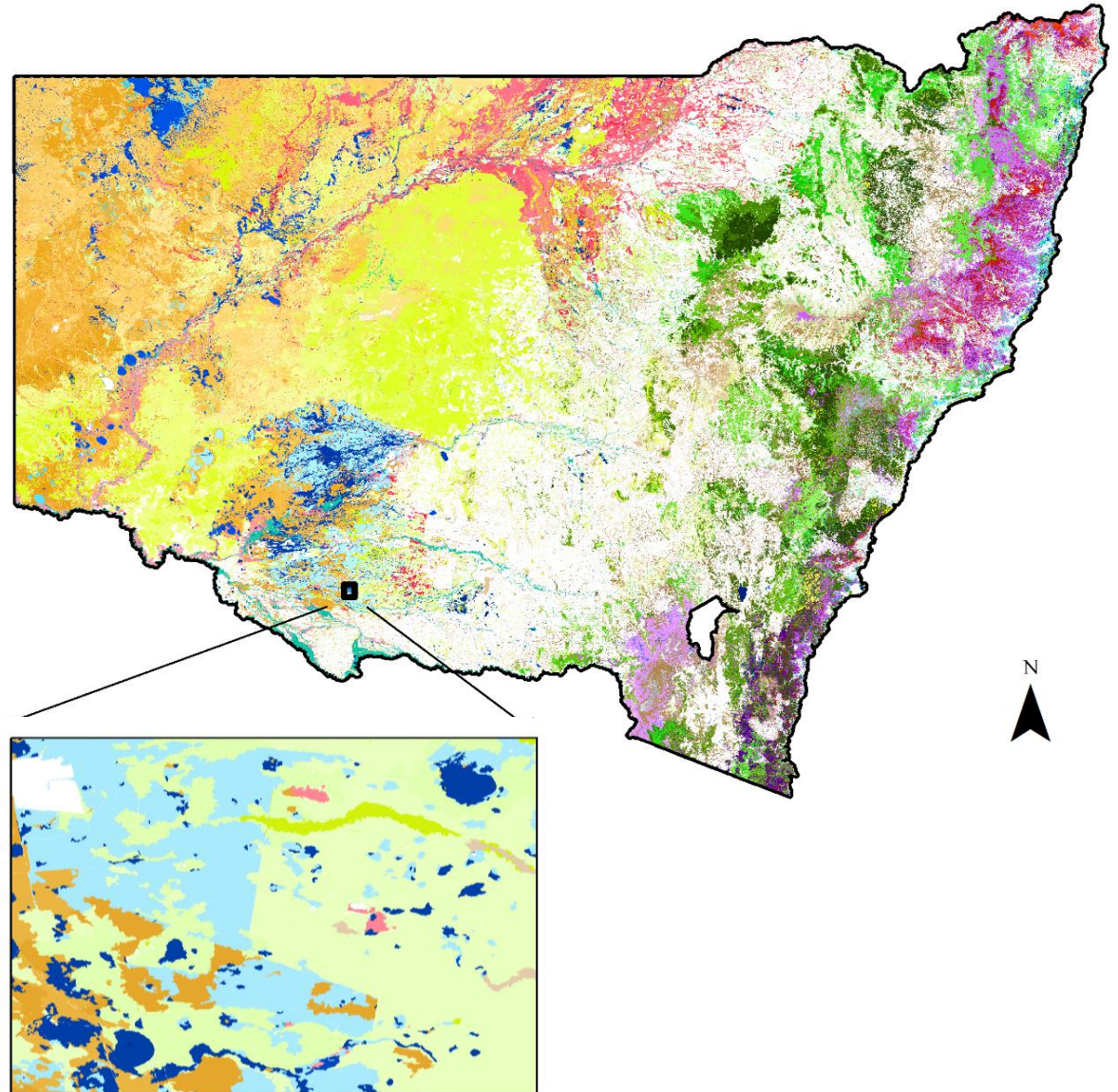
Creating Map Products
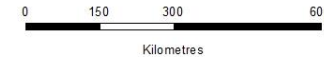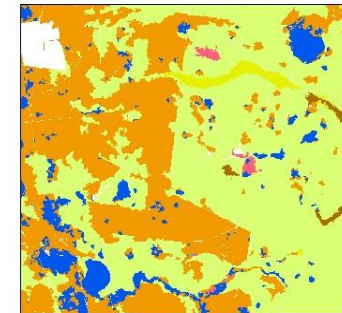# Formation and Class Maps
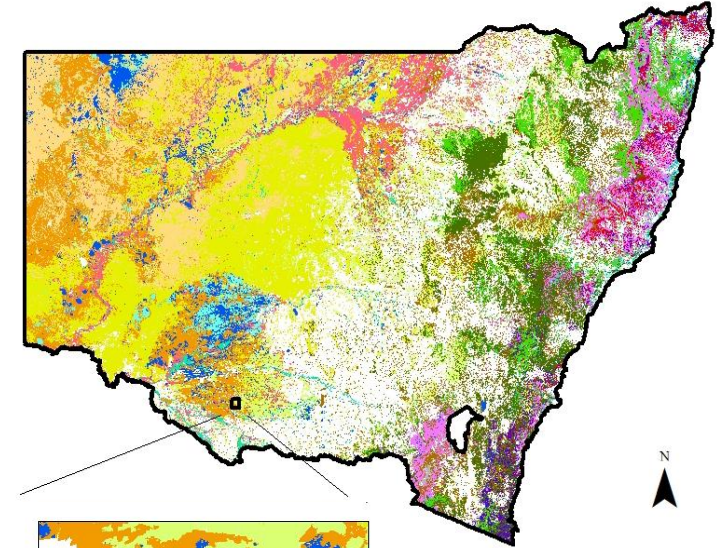
NSW Formation and Class maps

- Formation and Class are created by pre-assigning PCTs to those classifications

- Formation and Class are foundation products

- They are automatically updated when the PCT map is reviewed.

State Vegetation Type Map - Vegetation Classes
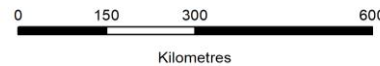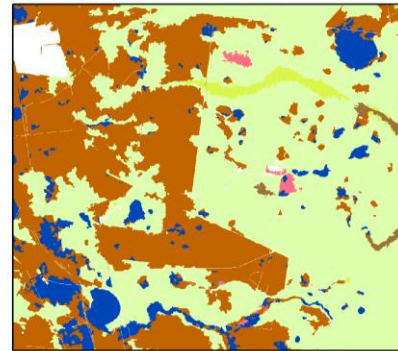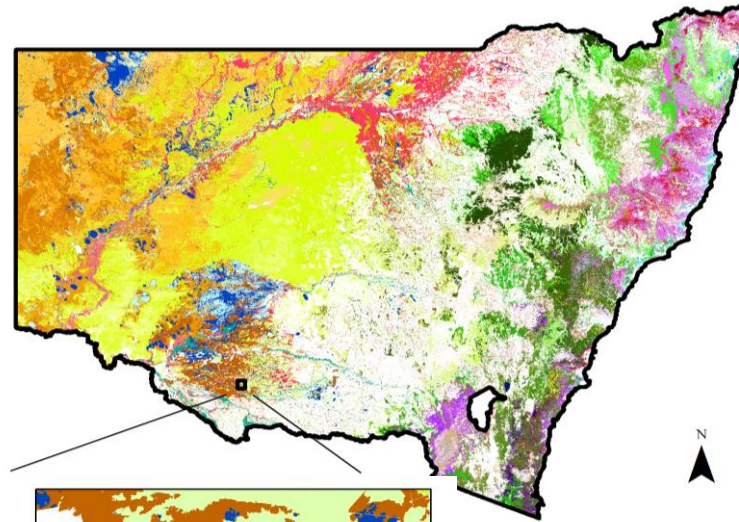
State Vegetation Type Map - Vegetation Formation

Creating Map products
- generating % cleared statistics

NSW %clearing statistics

The pre-clearing map and the Extant map can be used to understand the overall %clearing for:

- PCTs
- Formation
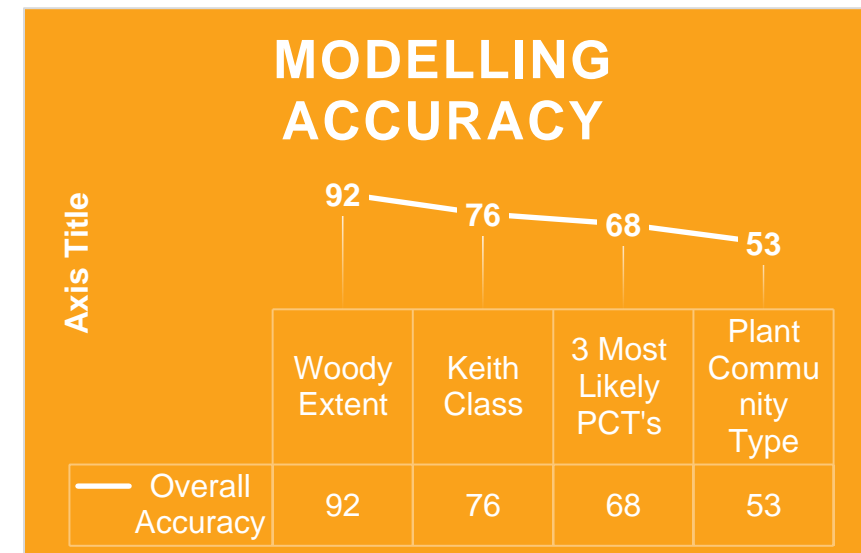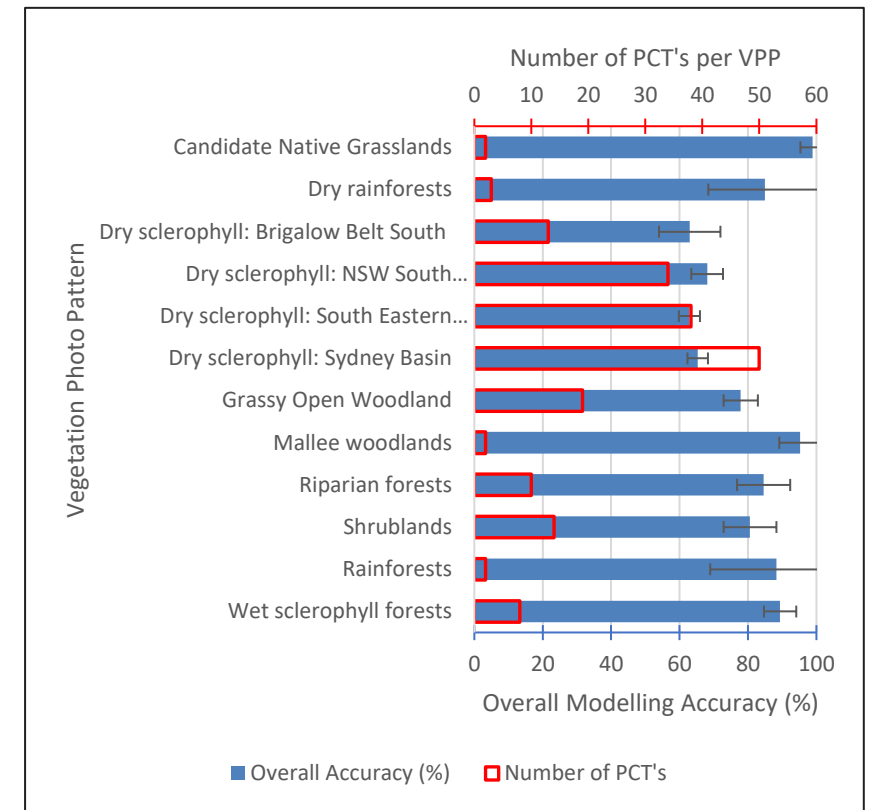- Class
- Administrative boundaries

ENSW Landscapes: relative extent of clearing (ha)
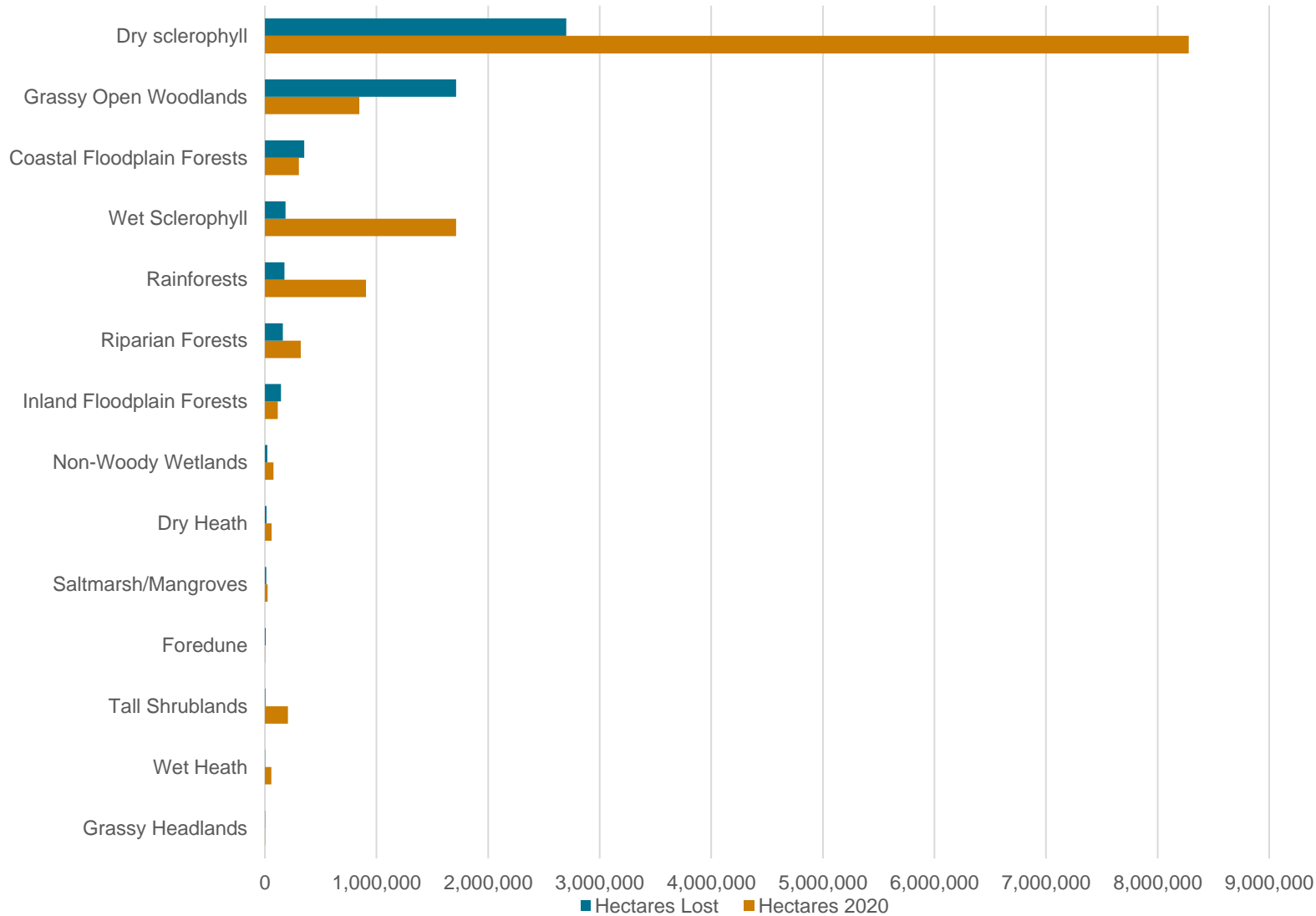
Creating Map products
Map accuracy

Map accuracy

- Basic modelling accuracy is averages about 65%.

- Modelling accuracy is highest >80% where there are less PCTs.

- We add to accuracy by extensive API editing.

- Our aim is to ensure that on-ground accuracy for the whole map exceeds 70%

- We are iteratively checking on-ground accuracy by collecting an independent set of data

## MODELLING ACCURACY

Axis Title		Woody Extent	Keith Class	3 Most Likely PCT's	Plant Community Type
	Overall Accuracy	92	76	68	53

Digital Access
Sharing and Enabling Environmental Data (SEED)

SEED
https://www.seed.nsw.gov.au/

- The SEED website will include the State Vegetation Type Map as one layer

- Data can be viewed in SEED

- You can download data packages from SEED

- Old SVTM layers will be maintained for at least 12 months

- **A new function allows you to FEEDBACK any corrections or provide new vegetation information (they come back directly to the map team)**

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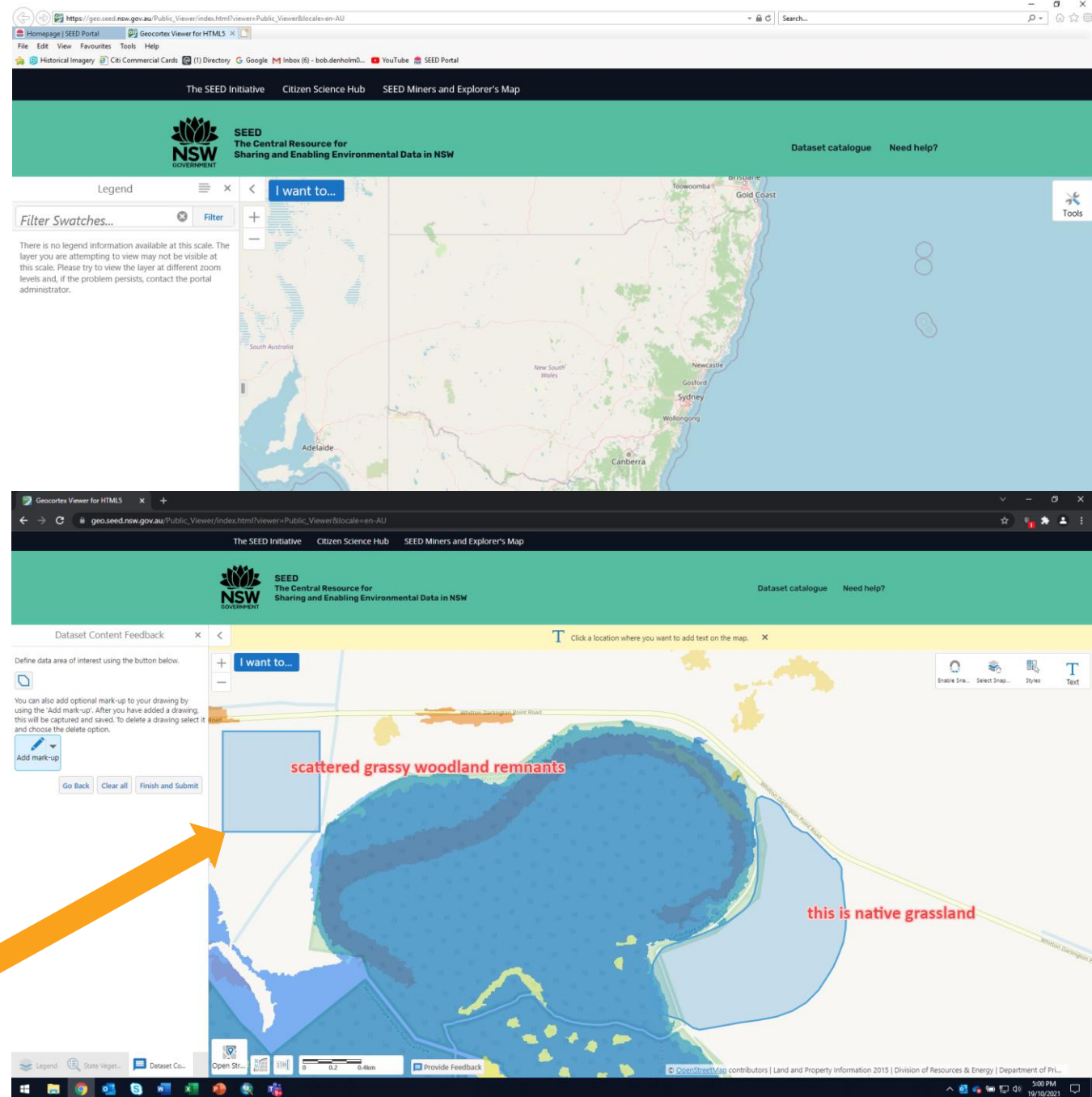
TREES NEAR ME NSW app

- TREES NEAR ME NSW app will be available on Android and Apple mobile devices

- You can navigate to any location in NSW

- It returns the nearest plant community types up to 1km

- You can identify what plant communities used to occur in cleared areas

- You can read the PCT descriptions and see all the plants

- You can search individual plants for a picture or other information

- Coming in the near future
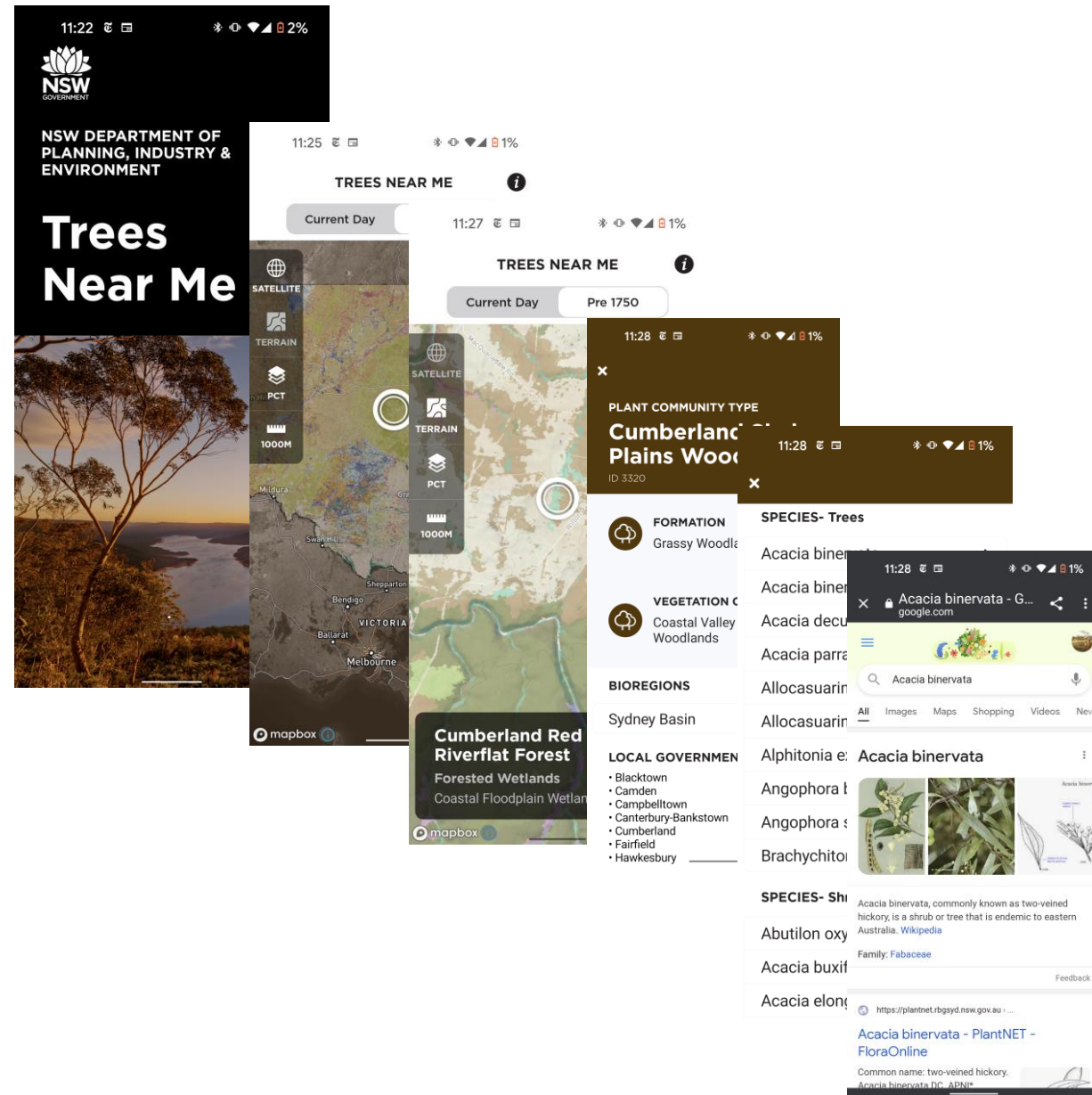
Thankyou

Contact Bob Denholm
bob.denholm@environment.nsw.gov.au

Q&A

This session will not be included in the webinar recording.

Written questions and answers will be attached to the online webinar recording.

Questions asked during these webinars also contribute to the development of the Assessor Q&A page, future webinars and other Biodiversity Offsets Scheme supporting resources.

Thank you for your participation

Webinar recordings will be available to view online on the BOS Vimeo Showcase
at vimeo.com/showcase/6271450 and via the BAM Support Webinar webpage

Contact us at www.environment.nsw.gov.au/biodiversity/bos-help-advice

Simone Cottrell/DPIE