



NSW Native vegetation area clearing estimate mapping method

Department of Planning and Environment



© 2023 State of NSW and Department of Planning and Environment

With the exception of photographs, the State of NSW and Department of Planning and Environment are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required for the reproduction of photographs.

The Department of Planning and Environment (DPE) has compiled this report in good faith, exercising all due care and attention. No representation is made about the accuracy, completeness or suitability of the information in this publication for any particular purpose. DPE shall not be liable for any damage which may occur to any person or organisation taking action or not on the basis of this publication. Readers should seek appropriate advice when applying the information to their specific needs.

All content in this publication is owned by DPE and is protected by Crown Copyright, unless credited otherwise. It is licensed under the [Creative Commons Attribution 4.0 International \(CC BY 4.0\)](#), subject to the exemptions contained in the licence. The legal code for the licence is available at [Creative Commons](#).

DPE asserts the right to be attributed as author of the original material in the following manner: © State of New South Wales and Department of Planning and Environment 2023.

Cover photo: Hunter Valley near Scone. Jaime Plaza Van Roon/DPE

Published by:

Environment and Heritage Group
Department of Planning and Environment
Locked Bag 5022, Parramatta NSW 2124
Phone: +61 2 9995 5000 (switchboard)
Phone: 1300 361 967 (Environment and heritage enquiries)
TTY users: phone 133 677, then ask for 1300 361 967
Speak and listen users: phone 1300 555 727, then ask for 1300 361 967
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 1300 361 967 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

ISBN 978-1-923018-60-0
EHG 2023/0183
May 2023

Find out more about your environment at:

www.environment.nsw.gov.au

Contents

| | |
|--|----|
| Summary | 1 |
| Purpose of this report | 1 |
| Overview of methodology | 1 |
| Limitations | 3 |
| 1. Introduction | 4 |
| 2. Mapping process | 5 |
| Preparation | 5 |
| Stage 1: Creating a Native Vegetation Indicator Layer | 7 |
| Stage 2: Refining the Native Vegetation Indicator | 8 |
| Stage 3: Creating the Native Vegetation Area Clearing Estimate layer | 10 |
| Evaluate with local government area vegetation maps | 11 |
| 3. Future opportunities | 12 |
| 4. Source datasets | 13 |
| NSW Native Vegetation Extent Raster | 13 |
| NSW Landuse 2017 | 13 |
| NSW State Vegetation Type Map Grassland Community Types | 13 |
| State forest plantations | 14 |
| NSW Hydro Area | 14 |
| Non-Woody Landcover Disturbance (2017 to 2020) | 14 |
| Statewide Landcover and Tree Study woody vegetation clearing data (2011 to 2020) | 14 |
| Geoscape Australia datasets | 14 |
| Native Vegetation Regulatory Map draft Category 1 land | 15 |
| Appendix A – Native Vegetation Extent Raster v1.4 attributes | 16 |
| Appendix B – NSW Landuse 2017 v1.4 attributes | 17 |
| Appendix C – NSW State Vegetation Type Map Grassland Community Types | 18 |
| References | 19 |
| More information | 19 |
| Available datasets | 19 |
| Legislation | 19 |
| Glossary | 20 |

List of tables

| | | |
|---------|--|----|
| Table 1 | The native and non-native types in the NVE Raster v1.4 | 16 |
|---------|--|----|

List of figures

| | | |
|----------|--|----|
| Figure 1 | NSW Native Vegetation Area Clearing Estimate | 2 |
| Figure 2 | Overview of the workflows used to develop the NVACE layer showing various stages of processing | 6 |
| Figure 3 | NVI Stage 1 output | 8 |
| Figure 4 | Removing known clearing events and applying Geoscape Surface Cover components to NVI Stage 1 output. | 9 |
| Figure 5 | Transitional NVR Map Draft Category 1 lands are removed in Stage 3 | 10 |
| Figure 6 | NVACE Stage 3 output | 11 |

Summary

Purpose of this report

This report outlines the method used to develop the NSW Native Vegetation Area Clearing Estimate (NVACE) for the Biodiversity Values Map and Threshold tool. The NVACE is a binary map layer depicting the presence of native vegetation. It provides guidance to councils and proponents in determining whether a local development exceeds the Biodiversity Offsets Scheme, native vegetation area clearing threshold.

The Biodiversity Values Map and Threshold tool is used to report on whether a local development activates the Biodiversity Offsets Scheme by impacting land mapped on the Biodiversity Values Map or exceeding the native vegetation area clearing thresholds.

The NVACE layer is designed to provide guidance for landholders about the extent of native vegetation at a property scale. If more accurate data or alternative property-scale maps of native vegetation are available, they can be used in accordance with the Guide for Reviewing Biodiversity Values Map Tool.

Overview of methodology

The NVACE is generated from the NSW Native Vegetation Extent 5 m Raster (NVE Raster). Assessment of the NVE Raster versions 1.2 (DPE 2019) and 1.4 (unpublished) found they were unsuitable for the purposes of the Biodiversity Offsets Scheme due to dated source imagery and low-resolution mapping in urban areas. The NVACE addresses these issues by sourcing the most recent and high-resolution data available to maximise the dataset currency and accuracy in areas where development is most likely to occur.

The detailed method for developing NVACE is described in Section 2 Mapping process, and contributing datasets are each listed and described in Section 4 Source datasets. The Available datasets section provides links to all publicly available datasets and tools referred to in this report.

All source datasets and mapping processes were completed in an Esri ArcGIS environment. Due to the dataset's size and complexity, a tiled approach is used to improve processing times and facilitate quality control and user acceptance testing. The state of New South Wales was divided geographically into tiles, defined by the NSW 1:100,000 topographic map sheet boundaries. All input datasets are clipped to these boundaries. The NVACE uses MGA Cartesian coordinate system, with input data being reprojected as necessary.

The mapping process is split into 2 stages:

Stage 1 – Creating a Native Vegetation Indicator Layer

The NVE Raster is spatially combined with NSW Landuse 2017 v1.3 (subsequently published as version 1.4, referred to in this report as Landuse) and the State Vegetation Type Grassland Plant Community Types to create an interim native vegetation layer. Where the layers intersect with conflicting native/non-native attributes, the Landuse attribute is retained due to its currency and resolution.

The interim native vegetation layer is refined to remove known non-native vegetation using the Geoscape Australia's Buildings layer (used to identify building developments), a State Forest Plantation layer used to remove non-native forest and a NSW Hydro Area layer which removes known non-native water infrastructure.

This creates the Native Vegetation Indicator layer (Stage 1).

Stage 2 – Refining the Native Vegetation Indicator Layer

The Native Vegetation Indicator (NVI) Stage 1 is refined using a combination of datasets used to remove known areas of clearing, for example, Statewide Landcover and Tree Survey (SLATS) data for woody vegetation and non woody vegetation change clearing events from Non-Woody Landcover Disturbance Program.

The Geoscape Surface Cover raster is used to refine native vegetation in urban areas. Components are used to remove roads and swimming pools and add increased resolution tree canopies.

Small polygons resulting from editing the NVI are removed as artefacts.

Stage 3 – Creating the NVACE

Lands mapped in the Transitional Native Vegetation Regulatory Map as draft Category 1 – exempt land (NVR Map Draft Category 1) are excluded from the Biodiversity Offsets Scheme and are removed from the final NVACE layer.

The individual mapping tiles are merged into a single binary statewide geodatabase file.

The NVACE layer is a binary layer depicting the presence of native vegetation. If NVACE polygons are present in an area, it is highly likely native vegetation is present.

The resolution of NVACE is inherited from the datasets used to build the layer. Although the minimum resolution of the input datasets is 2×2 m (Geoscape Surface Cover raster), it is only applied to urban and peri-urban area within Geoscape data coverage. The majority of the NVACE has a resolution of 5×5 m.

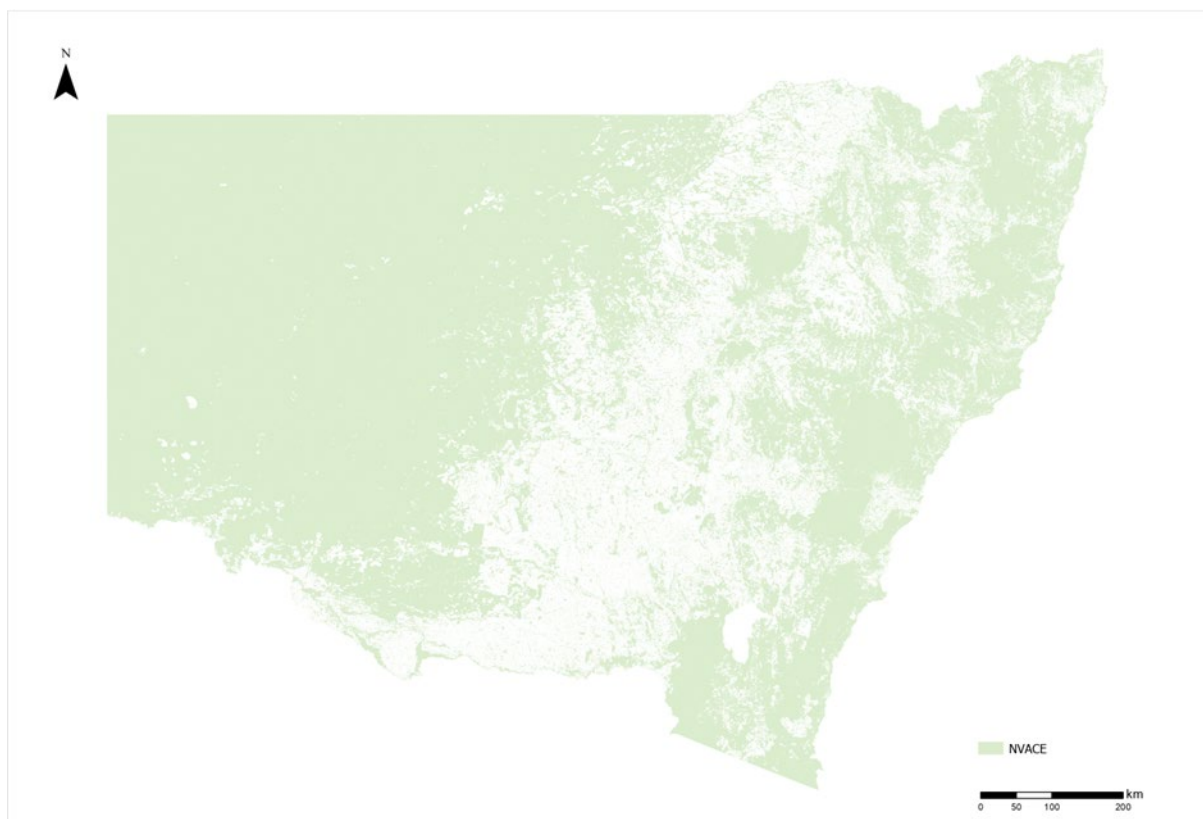


Figure 1 NSW Native Vegetation Area Clearing Estimate

Limitations

The best available map data across New South Wales, as of August 2022, is used to build the NVACE. The accuracy and currency of the input datasets are highly variable, limitations are documented in Section 4 Source datasets.

Limitations from the combination of datasets used are outlined below:

1. In combining datasets, errors of commission were preferred over omission errors when making decisions influencing the inclusion or exclusion of possible native vegetation. This reflects a precautionary approach to defining the extent of native vegetation that can be refined at a property scale as required.
2. Woody vegetation extent products (NVE Raster and Geoscape Surface Cover: Trees) include native and non-native tree canopies. Where possible, non-native trees are identified and removed using ancillary datasets.
3. An onscreen quality assurance was undertaken by Department of Planning and Environment on all map tiles using 2022 imagery in a desktop assessment. Where available, the NVACE is compared visually with fine-scale vegetation maps from local councils. On-ground field verification has not been undertaken beyond that included in development of the source datasets.
4. Some clearing activities evident in recent imagery, are not captured due to the spatial or temporal scale of the source datasets.

1. Introduction

The Biodiversity Offsets Scheme is the framework for offsetting unavoidable impacts on biodiversity from development with biodiversity gains through landholder stewardship agreements. The Biodiversity Offsets Scheme was established under the *Biodiversity Conservation Act 2016*. The Biodiversity Conservation Regulation 2017 sets out threshold levels for development when the scheme will be activated. The scheme is activated when either:

- the amount of native vegetation being cleared exceeds an area threshold
- the impacts occur on an area mapped on the Biodiversity Values Map.

The department has developed the web-based Biodiversity Values Map and Threshold tool to assist councils and proponents to determine if they exceed the Biodiversity Offsets Scheme thresholds. The Native Vegetation Area Clearing Estimate used to assess the area threshold provides guidance only, the determining authority will form the conclusion the area of impact has been accurately assessed against the area threshold.

The Biodiversity Values Map was first published in 2017 and is periodically updated to include new data layers or refinements to existing layers. To guide the assessment of the native vegetation clearing threshold, the department has developed the Native Vegetation Area Clearing Estimate (the NVACE) described in this report.

2. Mapping process

Preparation

All mapping analyses and processes are carried out in the Esri ArcGIS suite. The datasets used are a mix of raster and vector file formats stored in file geodatabases. All datasets are converted to vector polygons. The NVACE is set in the MGA Cartesian coordinate system to align with the Biodiversity Values Map and Threshold tool, with input data being reprojected as necessary.

The state of New South Wales was geographically divided into 344 tiles, defined by the NSW 1:100,000 topographic map sheet boundaries. All the input data was clipped to these tile boundaries. Processing the data in tiles significantly reduces the running time, required computing memory and simplifies manual processing.

The NVACE is developed in 3 stages, as shown in Figure 2 and described below.

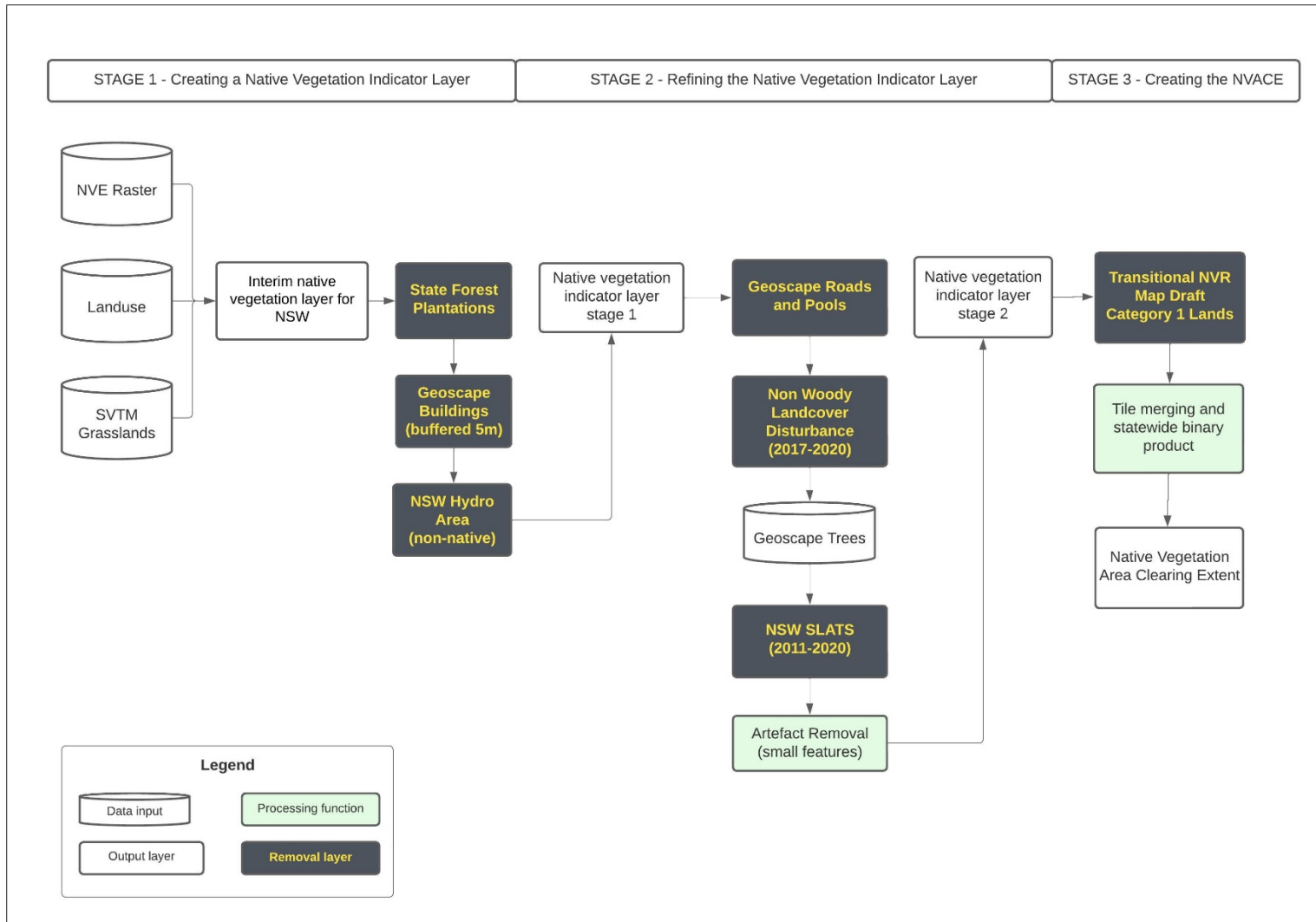


Figure 2 Overview of the workflows used to develop the NVACE layer showing various stages of processing

Stage 1: Creating a Native Vegetation Indicator Layer

The NVACE is built from 3 foundational datasets:

- NSW Native Vegetation Extent v1.4 (NVE Raster)
- Landuse 2017 v1.4 (Landuse)
- NSW State Vegetation Type Map Grassland Community Types (SVTM Grasslands)

The native vegetation components from these 3 datasets are extracted and combined to create an interim native vegetation layer for refinement. Where the datasets native/non-native attribution are in conflict, the Landuse attribution is used as it represents the most current data. Appendix A and B delineate the individual classes in each of the layers that were categorised as native/non-native, and the woody or non woody components that were included.

Where non woody vegetation is identified as non-native (cropping or irrigated cropping land) by Landuse, any existing woody native vegetation within the NVE Raster, such as remnant trees, is retained.

Additional datasets used to refine the vegetation extent are:

- State Forest Plantations data is used to remove woody vegetation that is non-native.
- Geoscape Buildings is buffered to 5 m and is used to remove known building locations.
- NSW Hydro Area removes artificial and non-native water sources, for example, farm dams or wastewater treatment, any native woody vegetation within these polygons is retained.

The NVI Stage 1 output comprises 344 tiles each as a polygon feature class stored in a single file geodatabase, with a lineage field. The field allows for the source of each polygon within the feature class to be identified. The attributes in the lineage field include the following native vegetation components:

- Tree cover matrix – tree matrix from NVE Raster
- Native woody – trees and tree cover from NVE Raster
- Grasslands – grasslands from NVE Raster
- Native non woody – non woody (e.g., wetland, shrubs) from NVE Raster
- Landuse native – see Appendix B from Landuse dataset
- Water – native water features from NVE Raster
- SVTM grasslands – non woody from SVTM grasslands



Figure 3 NVI Stage 1 output

Stage 2: Refining the Native Vegetation Indicator

In Stage 2, a combination of datasets is used to further refine the NVI layer, including:

- removing known areas of clearing
- applying the Geoscape Surface Cover raster to add additional tree canopies and remove roads and swimming pools.

Removing known clearing events

To apply known clearing events the NVI Stage 1 is split into woody and non woody native vegetation.

Woody vegetation clearing is captured annually through the Statewide Landcover and Tree Study (SLATS) from 1990 (further information available in the Section 4 Source datasets).

Annual clearing events identified as landcover changes to agriculture and infrastructure from 2011–20 are used to remove woody native vegetation from the Stage 1 NVI Layer.

Non-woody vegetation clearing has been captured since 2018 through the department’s Non-Woody Landcover Disturbance Program, further information available in the Section 4 Source datasets). Clearing events from 2018–20 is applied to the NVI Stage 1.

Using the same example area in Holmesville, Newcastle, as above, Figure 4 shows the areas where clearing events from NSW SLATS (in orange colour) and Non-Woody Landcover Disturbance Program (in teal colour) have been applied.

Geoscape Surface Cover raster

Geoscape Surface Cover raster consists of a digital pixel representation of the different types of ground cover of Australia. The raster dataset covers the urban and peri-urban area and remote communities (Further information available in Section 4). Key components of this dataset have been used to refine the NVI Stage 1.

The roads and swimming pools components remove native vegetation where these built landscape features now exist.

The trees component is a high-resolution (2×2 m) layer and is merged with native woody classes in the urban and peri-urban areas. The NVE Raster is of a lower resolution to the Geoscape trees, so additional canopies are added in the urban area where development is likely to occur.

Prior to applying the Geoscape trees, any identified SLATS clearing is removed from the trees raster.

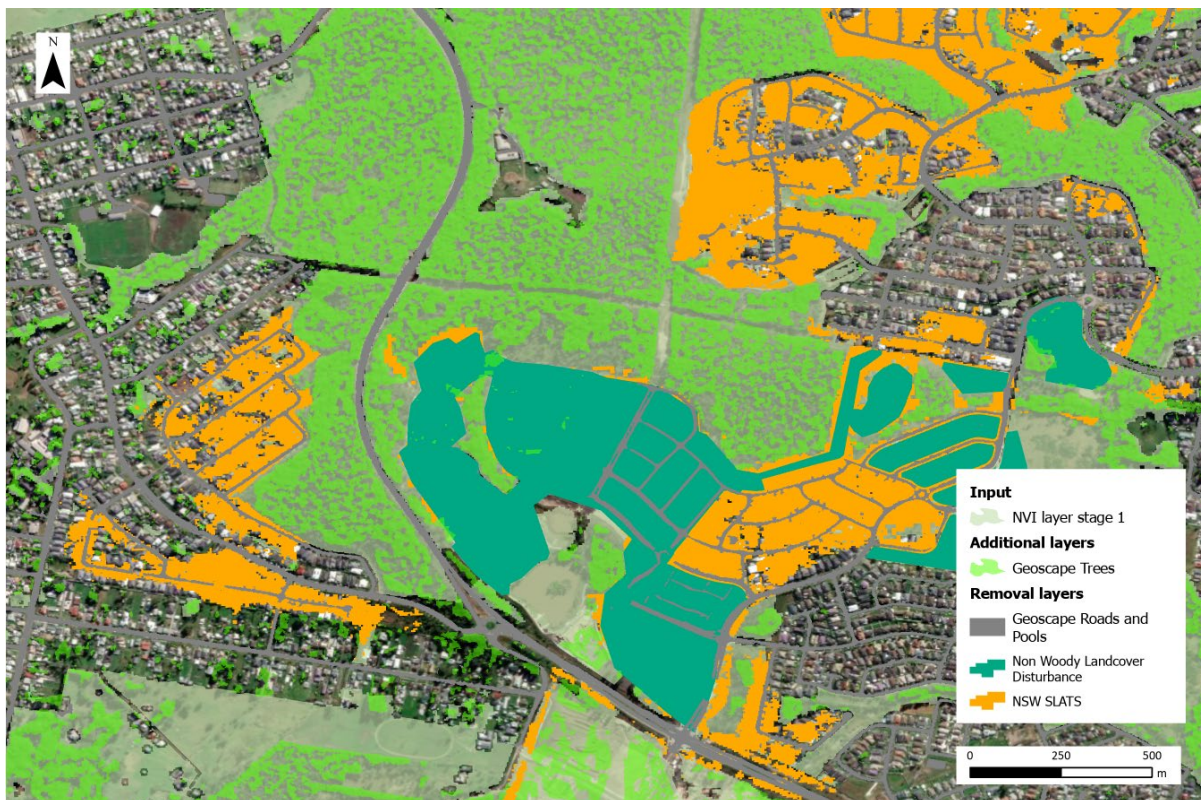


Figure 4 Removing known clearing events and applying Geoscape Surface Cover components to NVI Stage 1 output.

Remove artefacts

Very small polygons generated from removing features are considered as artefacts. Artefacts are reviewed and removed in the following stages:

Standalone polygons with an area less than 50 m² are identified after removing known clearing events and polygons less than 8 m² are removed after intersecting the Geoscape Surface Cover components.

Stage 3: Creating the Native Vegetation Area Clearing Estimate layer

Remove Transitional NVR Map Draft Category 1 lands

Land identified on the Transitional NVR Map as Category 1 exempt (Draft) is removed from the NVI Stage 2 as required under the Biodiversity Conservation Act.

Figure 5 shows Transitional NVR Map Draft Category 1 land as blue in the south-west corner.



Figure 5 Transitional NVR Map Draft Category 1 lands are removed in Stage 3

Creating the NVACE

To create the NVACE the 344 mapping tiles generated in Stage 2 are merged into a binary layer.

The NVACE is a spatial layer depicting the presence of native vegetation. If NVACE polygons are present in an area, it is highly likely native vegetation is present.

Figure 6 shows the final Native Vegetation Area Clearing Estimate, for the example area of Holmesville, Newcastle.



Figure 6 NVACE Stage 3 output

Evaluate with local government area vegetation maps

The NVACE has been evaluated with the following recently updated local government area (LGA) vegetation maps:

- Byron Local Government Area Vegetation 2021
- Fine-scale Vegetation Mapping of the Coffs Harbour Local Government Area 2012
- Cessnock Local Government Area Vegetation Mapping Mosaic 2021 (unpublished 2021).

The comparison results show high correlation among the NVACE and the LGA vegetation maps. As the LGA maps are only tree-based and focus on functional vegetation communities, the additional Landuse native class and some remnant trees present in NVACE are not captured. As the LGA maps are completed in high-resolution with local knowledge, expert input and field checks, the native vegetation boundary is more accurate and reliable. The exotic features identified by LGA maps could be used to refine the NVACE in future versions.

3. Future opportunities

Periodical updates of the base layers for the NVACE can be incorporated as datasets when they become available. The NSW Landuse 2017 layer is subject to ongoing improvements from applying the Transitional NVR Map method during landholder-initiated map reviews or from on-site visits from Local Land Services and Department of Planning and Environment staff. The erase layers, such as SLATS and Non-Woody Landcover Disturbance, are updated annually.

The capacity to spatially capture feedback on data errors and suggested improvements is being developed in Sharing and Enabling Environmental Data (SEED). In future, this could be incorporated into NVACE updates.

A number of the input woody vegetation and tree canopy datasets do not systematically differentiate between native and non-native vegetation. It is accepted that high-resolution vegetation mapping data held by local government and other organisations could help to identify and exclude exotic trees in these landscapes, where they occur.

Systematic field verification of native vegetation could be incorporated into the NVACE and used for accuracy assessment.

4. Source datasets

NSW Native Vegetation Extent Raster

The NSW Native Vegetation Extent Raster (NVE Raster) was developed under the State Vegetation Type Map (SVTM) program and presents a single surface raster combining the best available information on native vegetation extent for New South Wales. The surface differentiates tree cover from candidate native grasslands, water, forestry plantations and a woodland matrix from non-native areas.

The NVE Raster v1.2 is published on NSW Government Sharing and Enabling Environmental Data portal (SEED) (see link in Available datasets section below).

The latest NVE Raster v1.4 (unpublished), which forms the base of the NVACE, has included the Eastern SVTM Plant Community Type data of 2020 and Coastal Lidar Woody to improve the accuracy of the native vegetation mapping. The attribution of NVE Raster v1.4 and how its included in the NVACE is shown in Appendix A.

NSW Landuse 2017

NSW Landuse 2017 is vector data, capturing how the landscape in New South Wales is being used for food production, forestry, nature conservation, infrastructure and urban development. The Landuse layer is based on aerial imagery and satellite imagery available for New South Wales. Landuse is captured on screen using ArcGIS software at a scale of 1:8,000 scale (or better), and features are mapped down to 2 ha in size.

The NSW Landuse 2017 mapping is dated September 2017, and v1.2 was first published in June 2020. The version used in mapping the NVACE is v1.4 (published). NSW Landuse 2017 is occasionally updated via landholder-initiated map reviews and other regular improvement to correct errors or provide additional refinements to the mapping.

Landuse information has been captured in accordance with standards set by the Australian Collaborative Land Use Mapping Program and using the Australian Land Use and Management Classification v8. Based on the landuse types and the likely level of disturbance, the Australian Land Use and Management Classification is split into 3 types for the application in the NVACE (DPE 2022 and Appendix B). These types are:

1. native vegetation – woody and non woody
2. native vegetation – woody only
3. not native – woody and non woody

Where the type is defined as woody or non woody only, these are the structural vegetation components added to the NVACE. For example, water features in the Landuse are woody only, therefore, the tree canopy will be retained as native within that polygon.

NSW State Vegetation Type Map Grassland Community Types

The State Vegetation Type Map Grassland Community Types (SVTM Grasslands) is derived from NSW State Vegetation Type Map, The State Vegetation Type Map is a regional-scale map of NSW Plant Community Types. This map represents the current extent of each Plant Community Type, Vegetation Class and Vegetation Formation, across all tenures in New South Wales. Native grassland plant community types (listed

in Appendix C) have been extracted for inclusion as non woody native vegetation group in the NVI and NVACE.

State forest plantations

The NSW State Forest Plantations dataset identifies the extent of planted forests within State Forests. For applying to the NVI and NVACE, these areas are removed.

NSW Hydro Area

The NSW Hydro Area from department's corporate databases are used to identify the artificial, non-native water features captured within the NVE Raster for removal.

Non-Woody Landcover Disturbance (2017 to 2020)

Non-woody landcover disturbance is an annual program, implemented after the amendment to the Local Land Services Act on 25 August 2017. It reports on non woody landcover change under the Local Land Services Act. Non-woody clearing is detected and mapped in previously undisturbed areas from 1990, and coded based on the likely reason for the change (agriculture, infrastructure and forestry).

Statewide Landcover and Tree Study woody vegetation clearing data (2011 to 2020)

Woody vegetation change data is derived from the Statewide Landcover and Tree Study (SLATS). SLATS data is applied to the NVACE as an erase layer to ensure recently cleared woody vegetation is removed. The NVACE is updated with SLATS data to the end of 2020.

Mapping of woody vegetation change has been carried out annually under the SLATS program since 2008. Clearing is identified by comparing satellite imagery at the same location but captured on 2 different dates, approximately 12 months apart. Analysts determine the likely cause of woody vegetation loss, by using landcover codes identifying the event as either agriculture, infrastructure, forestry, fire or natural processes. Landcover code agriculture and infrastructure are used to remove cleared woody vegetation.

Geoscape Australia datasets

Geoscape Buildings is a vector product from Geoscape Australia, which is updated quarterly (Geoscape 2022). A 5 m buffer is applied around the building footprints to remove the built-up area in the NVE Raster and the NVACE. Building footprints capture development occurring within the landuse polygons at a sub-2 ha scale.

Geoscape Surface Cover raster consists of a digital pixel representation of the different types of ground cover of Australia. The raster dataset covers the urban and peri-urban area and remote communities. The resolution of the Surface Cover raster is 2 × 2 m and is updated quarterly (Geoscape 2021).

Three components of the Geoscape Surface Cover raster are used in the NVACE:

- Road and Path – roads and parking lots covered in a man-made material excluding hard packed dirt trails are removed from NVACE
- Swimming Pool – an area identified as a swimming pool is removed from NVACE
- Trees - used to add additional tree canopies to the urban area of NVACE

The Geoscape datasets used for the NVACE were supplied in March 2022.

Native Vegetation Regulatory Map draft Category 1 land

The Native Vegetation Regulatory (NVR) Map (version 9, 2022) uses the best available science and data to assign land as Category 1 or Category 2 based on evidence of clearing or disturbance, and in accordance with legislated criteria. Category 1 – exempt land – is land where native vegetation clearing is allowed without approval from Local Land Services.

Links to source datasets referred to in Section 4 are shown in Available datasets below.

Appendix A – Native Vegetation Extent Raster v1.4 attributes

Table 1 The native and non-native types in the NVE Raster v1.4

| Value | Lineage |
|-------|--|
| 0 | Not Native: No input coverage |
| 1 | Tree Cover: Tree Cover Layer |
| 2 | Grasslands: SVTM Grassland community and No Tree Cover Layer |
| 3 | Water override: FPC 2011 |
| 4 | Water override: Hydro Area Rivers |
| 5 | Water override: Hydro Area Bodies |
| 7 | Tree Cover Matrix: SVTM woody community and No Tree Cover Layer |
| 9 | Alpine Complex: SVTM Grassland community and No Tree Cover Layer |
| 10 | Shrub: SVTM Shrub community and No Tree Cover Layer |
| 11 | Heathland: SVTM Heath community and No Tree Cover Layer |
| 12 | Saline Wetlands: SVTM Saline Wetland communities and No Tree Cover Layer |
| 13 | Freshwater Wetlands: SVTM Freshwater Wetland communities and No Tree Cover Layer |
| 14 | Geoscape Buildings 5 m Buffer |
| 15 | 310: Plantation forests |
| 16 | 340: Perennial horticulture |
| 17 | 510: Intensive horticulture |
| 19 | 570: Transport < 1 km from Built-up Area |
| 20 | 410: Irrigated plantation forestry |
| 21 | 440: Irrigated perennial horticulture |
| 22 | Classified Roads |
| 23 | Lidar Woody and Woody 2017 Intersect |

*Grey = native

Appendix B – NSW Landuse 2017 v1.4 attributes

AUSTRALIAN LAND USE AND MANAGEMENT CLASSIFICATION Version 8 (October 2016) - Native Vegetation Indicator Layer Categorisation applied

| 1 Conservation and Natural Environments | 2 Production from Relatively Natural Environments | 3 Production from Dryland Agriculture and Plantations | 4 Production from Irrigated Agriculture and Plantations | 5 Intensive Uses | 6 Water |
|---|---|---|--|---|---|
| 1.1.0 Nature conservation 1.1.1 Strict nature reserves 1.1.2 Wilderness area 1.1.3 National park 1.1.4 Natural feature protection 1.1.5 Habitat/species management area 1.1.6 Protected landscape 1.1.7 Other conserved area 1.2.0 Managed resource protection 1.2.1 Biodiversity 1.2.2 Surface water supply 1.2.3 Groundwater 1.2.4 Landscape 1.2.5 Traditional Indigenous uses 1.3.0 Other minimal use 1.3.1 Defence land - natural areas 1.3.2 Stock route 1.3.3 Residual native cover 1.3.4 Rehabilitation | 2.1.0 Grazing native vegetation 2.2.0 Production native forests 2.2.1 Wood production forestry 2.2.2 Other forest production | 3.1.0 Plantation forests 3.1.1 Hardwood plantation forestry 3.1.2 Softwood plantation forestry 3.1.3 Other forest plantation 3.1.4 Environmental forest plantation 3.2.0 Grazing modified pastures 3.2.1 Native/exotic pasture mosaic 3.2.2 Woody fodder plants 3.2.3 Pasture legumes 3.2.4 Pasture legume/grass mixtures 3.2.5 Sown grasses 3.3.0 Cropping 3.3.1 Cereals 3.3.2 Beverage and spice crops 3.3.3 Hay and silage 3.3.4 Oilseeds 3.3.5 Sugar 3.3.6 Cotton 3.3.7 Alkaloid poppies 3.3.8 Pulses 3.4.0 Perennial horticulture 3.4.1 Tree fruits 3.4.2 Olives 3.4.3 Tree nuts 3.4.4 Vine fruits 3.4.5 Shrub berries and fruits 3.4.6 Perennial flowers and bulbs 3.4.7 Perennial vegetables and herbs 3.4.8 Citrus 3.4.9 Grapes 3.5.0 Seasonal horticulture 3.5.1 Seasonal fruits 3.5.2 Seasonal flowers and bulbs 3.5.3 Seasonal vegetables and herbs 3.6.0 Land in transition 3.6.1 Degraded land 3.6.2 Abandoned land 3.6.3 Land under rehabilitation 3.6.4 No defined use 3.6.5 Abandoned perennial horticulture | 4.1.0 Irrigated plantation forests 4.1.1 Irrigated hardwood plantation forestry 4.1.2 Irrigated softwood plantation forestry 4.1.3 Irrigated other forest plantation 4.1.4 Irrigated environmental forest plantation 4.2.0 Grazing irrigated modified pastures 4.2.1 Irrigated woody fodder plants 4.2.2 Irrigated pasture legumes 4.2.3 Irrigated legume/grass mixtures 4.2.4 Irrigated sown grasses 4.3.0 Irrigated cropping 4.3.1 Irrigated cereals 4.3.2 Irrigated beverage and spice crops 4.3.3 Irrigated hay and silage 4.3.4 Irrigated oilseeds 4.3.5 Irrigated sugar 4.3.6 Irrigated cotton 4.3.7 Irrigated alkaloid poppies 4.3.8 Irrigated pulses 4.3.9 Irrigated rice 4.4.0 Irrigated perennial horticulture 4.4.1 Irrigated tree fruits 4.4.2 Irrigated olives 4.4.3 Irrigated tree nuts 4.4.4 Irrigated vine fruits 4.4.5 Irrigated shrub berries and fruits 4.4.6 Irrigated perennial flowers and bulbs 4.4.7 Irrigated perennial vegetables and herbs 4.4.8 Irrigated citrus 4.4.9 Irrigated grapes 4.5.0 Irrigated seasonal horticulture 4.5.1 Irrigated seasonal fruits 4.5.2 Irrigated seasonal flowers and bulbs 4.5.3 Irrigated seasonal vegetables and herbs 4.5.4 Irrigated turf farming 4.6.0 Irrigated land in transition 4.6.1 Degraded irrigated land 4.6.2 Abandoned irrigated land 4.6.3 Irrigated land under rehabilitation 4.6.4 No defined use - irrigation 4.6.5 Abandoned irrigated perennial horticulture | 5.1.0 Intensive horticulture 5.1.1 Production nurseries 5.1.2 Shadehouses 5.1.3 Glasshouses 5.1.4 Glasshouses - hydroponic 5.1.5 Abandoned intensive horticulture 5.2.0 Intensive animal production 5.2.1 Dairy sheds and yards 5.2.2 Feedlots 5.2.3 Poultry farms 5.2.4 Pigeries 5.2.5 Aquaculture 5.2.6 Horse studs 5.2.7 Saleyards/stockyards 5.2.8 Abandoned intensive animal production 5.3.0 Manufacturing and industrial 5.3.1 General purpose factory 5.3.2 Food processing factory 5.3.3 Major industrial complex 5.3.4 Bulk grain storage 5.3.5 Abattoirs 5.3.6 Oil refinery 5.3.7 Sawmill 5.3.8 Abandoned manufacturing and industrial 5.4.0 Residential and farm infrastructure 5.4.1 Urban residential 5.4.2 Rural residential with agriculture 5.4.3 Rural residential without agriculture 5.4.4 Remote communities 5.4.5 Farm buildings/infrastructure 5.5.0 Services 5.5.1 Commercial services 5.5.2 Public services 5.5.3 Recreation and culture 5.5.4 Defence facilities - urban 5.5.5 Research facilities 5.6.0 Utilities 5.6.1 Fuel powered electricity generation 5.6.2 Hydro electricity generation 5.6.3 Wind electricity generation 5.6.4 Solar electricity generation 5.6.5 Electricity substations and transmission 5.6.6 Gas treatment, storage and transmission 5.6.7 Water extraction and transmission 5.7.0 Transport and communication 5.7.1 Airports/aerodromes 5.7.2 Roads 5.7.3 Railways 5.7.4 Ports and water transport 5.7.5 Navigation and communication 5.8.0 Mining 5.8.1 Mines 5.8.2 Quarries 5.8.3 Tailings 5.8.4 Extractive Industry not in use 5.9.0 Waste treatment and disposal 5.9.1 Effluent pond 5.9.2 Landfill 5.9.3 Solid garbage 5.9.4 Incinerators 5.9.5 Sewage/sewerage | 6.1.0 Lake 6.1.1 Lake - conservation 6.1.2 Lake - production 6.1.3 Lake - intensive use 6.1.4 Lake - saline 6.2.0 Reservoir/dam 6.2.1 Reservoir 6.2.2 Water storage - intensive use/farm dams 6.2.3 Evaporation basin 6.3.0 River 6.3.1 River - conservation 6.3.2 River - production 6.3.3 River - intensive use 6.4.0 Channel/aqueduct 6.4.1 Supply channel/aqueduct 6.4.2 Drainage channel/aqueduct 6.4.3 Stormwater 6.5.0 Marsh/wetland 6.5.1 Marsh/wetland - conservation 6.5.2 Marsh/wetland - production 6.5.3 Marsh/wetland - intensive use 6.5.4 Marsh/wetland - saline 6.6.0 Estuary/coastal waters 6.6.1 Estuary/coastal waters - conservation 6.6.2 Estuary/coastal waters - production 6.6.3 Estuary/coastal waters - intensive use |
| | 1. Native Vegetation Woody and Non Woody | | | | |
| | 2. Native Vegetation Woody Only | | | | |
| | 3. Not Native Vegetation Woody and Non Woody | | | | |

Appendix C – NSW State Vegetation Type Map Grassland Community Types

| | |
|-------|---|
| 3412 | Kosciuszko Limestone Grassland |
| 3414 | Monaro Snowgrass-Kangaroo Grass Grassland |
| 3415 | Southern Tableland Red Grass-Spear Grass Grassland |
| 3723 | Western New England Panic-Wiregrass Grassland |
| 3883 | Alpine Short Herbfield |
| 3884 | Alpine Snowpatch Grassland |
| 3885 | Alpine Snowpatch Herbfield |
| 3886 | Kosciuszko Frost Hollow Grassland |
| 3887 | Kosciuszko High Peaks Alpine Grassland |
| 3889 | Nimmo-Long Plain Frosty Dry Grassland |
| *3413 | Monaro Kangaroo Grass Woodland-Grassland Complex (non woody component only) |

*based on Eastern NSW Plant Community Types 2022

References

DPE (2022) *Native vegetation regulatory map: method statement*, Department of Planning and Environment (DPE), Parramatta.

Geoscape (2022) *Geoscape buildings* [webpage], Geoscape Australia.

Geoscape (2021) *Surface cover product description; version 1.7*, Geoscape Australia.

More information

- [About the Biodiversity Offsets Scheme](#) – DPE webpage
- [Biodiversity Values Map](#) – DPE webpage
- [Biodiversity Values Map and Threshold tool](#) – DPE webpage
- [NSW State Vegetation Type Map](#) – DPE webpage
- [Statewide Landcover and Tree Study \(SLATS\) method](#) – DPE webpage

Available datasets

- [Biodiversity Values Map \(DPE 2018 v15.0\)](#)– SEED data portal
- [Biodiversity Values Map and Threshold Tool, map viewer](#) – NSW Government webpage
- [Byron LGA Vegetation 2021 VIS_ID 5109 \(DPE 2021\)](#) – SEED data portal
- [Cessnock LGA Vegetation Unpublished. \(2021\)](#)
- [Fine-scale Vegetation Mapping of the Coffs Harbour Local Government Area, 2012, VIS_ID 4189 \(DPE 2017\)](#) – SEED data portal
- [NSW Native Vegetation Area Clearing Estimate layer \(DPE 2023\)](#) – SEED data portal
- [NSW Native Vegetation Extent 5m Raster v1.2 \(DPE 2019\)](#)– SEED data portal (availability of NVE v1.4 is pending)
- [NSW Hydro Area \(Department of Customer Service 2018\)](#) – Australian Government webpage (data.gov.au)
- [NSW Landuse 2017 v1.2 \(DPE 2020\)](#) – SEED data portal (availability of NSW Landuse 2017 v1.4 is pending)
- [NSW State Vegetation Type Map \(DPE 2022\)](#) – SEED data portal
- [NSW Landcover disturbance](#)
- [Statewide Landcover and Tree Study \(SLATS\) method](#) – DPE webpage
- [SLATS - Woody Vegetation Change](#) – SEED query page with links to SLATS – Woody Vegetation Change datasets
- [Transitional Native Vegetation Regulatory \(NVR\) Map \(DPE 2022, v4\)](#) – SEED data portal

Legislation

- [Biodiversity Conservation Regulation, Part 7](#): Biodiversity assessment and approvals under Planning Act, including Biodiversity Offsets Scheme thresholds
- [Land Management \(Native Vegetation\) Code 2018](#)
- [Local Land Services Act 2013](#)

Glossary

Woody vegetation: means plants that typically have defined woody stems and are over 2 m tall, such as trees.

Non-woody vegetation: remaining native vegetation, such as grasses, shrubs, small trees or seedlings.

Native vegetation: In 60B *Local Land Service Act 2013*, the meaning of native vegetation is:

- (1) For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales:
 - (a) trees (including any sapling or shrub or any scrub),
 - (b) understorey plants,
 - (c) groundcover (being any type of herbaceous vegetation),
 - (d) plants occurring in a wetland.