NSW GOVERNMENT
Office of Environment & Heritage

Native Vegetation Information Strategy 2014–2018

Published by:
Office of Environment and Heritage
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Phone: 1300 361 967 (national parks, general environmental enquiries, and publications requests)
Fax: (02) 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

ISBN 978 1 74359 718 7
OEH 2014/0560
July 2014

Contents

Acronyms

Summary

What is native vegetation information? 1

Linkages with other strategic documents 2

Implementation and guiding principles 4

Strategic objectives for native vegetation information 7

Objective 1: Update and implement rigorous standards for describing, recording and mapping of vegetation at all scales and in all regions across the state 7

Objective 2: Provide data, tools and state-wide reference layers for use in a variety of vegetation classification or mapping tasks 9

Objective 3: Refine and assemble a complete and internally consistent Plant Community Type classification for NSW that is quantitatively defined. 10

Objective 4: Deliver improved baseline maps of extent, type and condition of native vegetation for all of NSW 13

Objective 5: Produce fine scale localised maps on a prioritised basis that conform to agreed standards and progressively improve and refine the state-wide map. 16

Objective 6: Support external mapping and classification projects to conform to OEH standards and encourage contribution to NSW VIS. 18

Objective 7: Provide a customer focused environment for discovering, using and contributing to native vegetation information 20

Objective 8: Improve utility of native vegetation information for environmental assessment; strategic land-use planning and land management decisions; compliance activities; priority setting and investment. 22

Appendix A: Commitments to Open Government 24

Appendix B: Native Vegetation Information Governance Model 25

Appendix C: NVI Accountability Matrix 26

Appendix D: Native Vegetation Interim Type Standard (2009) 29

References 30

Acronyms

CMAs	Catchment management authorities
NSW VIS	NSW Vegetation Information System
NSW	New South Wales
NVI strategy	Native Vegetation Information Strategy
OEH	Office of Environment and Heritage
PCT CCP	Plant Community Type Change Control Panel
PCTs	Plant Community Types
TECs	Threatened ecological communities
VIMESAC	Vegetation Information and Mapping External Scientific Advisory Committee

Summary

This strategy defines the strategic intent and overall accountability for the creation and delivery of native vegetation information, systems and products for the Office of Environment and Heritage (OEH).

Vision for NSW

Conservation, planning and regulation are enabled through easy access to consistent, relevant and scientifically robust native vegetation information.

Strategic **o**bjectives and **k**ey **d**eliverables

This strategy identifies eight strategic objectives for the production, maintenance and delivery of native vegetation information for NSW. They have no specific order of priority and are cross-linked.

1. **Update and implement rigorous standards for describing, recording and mapping of vegetation at all scales and in all regions across the state.**

Key deliverables

Information Standards including:

- classifying and mapping the current extent of vegetation types
- ecological status of vegetation (condition)

Procedural guidelines for undertaking vegetation mapping, survey and classification activities recommended for consistency with the OEH standard.

2. **Provide data, tools and state-wide reference layers for use in a variety of vegetation classification or mapping tasks.**

Key deliverables

A suite of mapped and modelled reference layers and associated analysis tools to assist map producers to create map products that are consistent with OEH standards.

3. **Refine and assemble a complete and internally consistent Plant Community Type classification for NSW that is quantitatively defined.**

Key deliverables

All Plant Community Types (PCTs) listed and used for regulation purposes over the eastern part of NSW (Coast, Escarpment and Tablelands bioregions) meet a defined standard of certainty.

PCTs for the remainder of NSW have significantly improved levels of robustness and stability through additional flora survey and review via mapping activities.

4. **Deliver improved baseline maps of extent, type and condition of native vegetation for all of NSW**

Key deliverables

A new state-wide Vegetation Type Map showing PCTs at a level of detail and accuracy suitable for planning and priority setting.

The State Vegetation Type Map will be available online in various formats from the *NSW Vegetation Information System*.

5. **Produce fine scale localised maps on a prioritised basis that conform to agreed standards and progressively improve and refine state-wide maps.**

   Key deliverables

   - Fine scale vegetation Type mapping for selected parts of NSW.
   - Fine scale mapping incorporating attribution of threatened ecological communities (TECs) for selected parts of the state and priority communities.

6. **Support and encourage external mapping and classification projects to conform to OEH standards and contribute data to NSW VIS.**

   Key deliverables

   - Map Product Specifications with mandatory and optional attribute fields to enable OEH to apply a certification processes to document conformance with OEH standards
   - *Online eLearning modules* for OEH standard practices for systematic vegetation survey, species observations, analysing and refining PCTs and mapping.
   - *Self-service* data upload and curation facilities for contributors.

7. **Provide a customer-focussed environment for discovering, using and contributing to native vegetation information.**

   Key deliverables

   - *Upgraded NSW Vegetation Information System* to improve performance and provide new, more customer centric access to information.
   - Improved survey data entry and analysis tools.
   - *Online and mobile viewer* to present site records, surveys and mapped vegetation information *(replaces LPI SIX Portal)*
   - Capability for users to *notify OEH about possible errors or omissions* with OEH mapped or site information.

8. **Improve utility of native vegetation and associated biodiversity information for environmental assessment; strategic land use planning and land management decisions; compliance activities; priority setting and investment.**

   Key deliverables

   - *Enhanced Annual Vegetation Change Reports* detailing changes native vegetation type across NSW, including increase, decrease or other forms of modification.
   - Options for *aligning definitions* for some existing TECs with the more robust PCT definitions.
   - *Conservation significance* status for NSW PCTs is calculated systematically and updated regularly in response to persistent changes in vegetation including regrowth.
   - Information on the *distribution of threatened species and populations* is based on the best available information, managed in the Bionet system, and able to support multiple business programs.

What is native vegetation information?

For the purposes of this strategy, native vegetation information encompasses all data and information that describes or illustrates the nature, intrinsic qualities, distribution and various characteristics of native vegetation. This includes conservation value, condition and habitat value for threatened species. It can include descriptive and measured elements that can be site specific or spatially extensive (mapped and modelled) data. It includes monitoring change over time and assignation of the relative value of different parts of the native vegetation fabric for human and ecological purposes.

The previous strategic document for guiding the collection of native vegetation information is the DECC Native Vegetation Type Mapping Strategy (DECC 2009). This document has reached the end of the scheduled timeframe.

A combination of the 2011 Native Vegetation Information Review, the 2013 Mapping User Needs Review, and consultation with OEH staff and external experts has identified some important issues for developing a new strategy. These include:

- improving the robustness and useability of the Vegetation Classification System and especially the lowest level of Plant Community Types (PCTs)
- providing tools and using clearer definitions for vegetation communities for consistent and reliable identification in the field
- making it easier to find and use information, especially for mobile devices
- improving the consistency of maps and clearly describing any limits to their application
- reducing the ambiguity in the definitions for threatened ecological communities (TECs) and aligning them more specifically with PCTs
- providing more certainty about the likely location of TECs through investment in more detailed and accurate maps
- allowing users to comment on inaccuracies of mapped information to improve their overall quality and reliability

Value of native vegetation information for local communities

Having more complete and current knowledge about native vegetation in NSW will enable Local Land Services, local government and the local community to understand the value and relative significance of the vegetation in their area. Land use planning and on-ground actions are matched to the characteristics of the vegetation being managed. It will be easier to identify the best mix of species for use in restoration of disturbed areas.

Maps, photographs, profile descriptions, sophisticated identification tools/applications and improved educational material will enable people to better recognise the different types of native vegetation in their area and make informed management decisions.

This strategy complements and supports the delivery of a range of strategic documents used by OEH.

Linkages with other strategic documents

OEH Corporate Plan

High quality and up-to-date information about the status of the native vegetation assets of NSW is critical to the ongoing protection of the biodiversity and natural values of the state. Three of the seven OEH corporate plan goals will be reliant in some part on access to native vegetation information.

Goal 1: Ensure vibrant natural assets for the health and prosperity of NSW

Goal 3: Support economic development without devaluing the environment

Goal 5: Encourage communities to enjoy their national parks and value their local environment

OEH's Knowledge Strategy

This Native Vegetation Information Strategy (NVI strategy) primarily addresses the objective of the Biodiversity theme of OEH's Knowledge Strategy – *Manage native vegetation more effectively*:

- OEH's Vegetation Information System is a comprehensive resource that helps landholders, planning authorities and regulators manage native vegetation. OEH is improving and promoting the system with better tools and knowledge.
- OEH supports decision-making for vegetation management at a landscape scale, by continuing to map NSW vegetation communities, and by analysing their resilience and patch connectivity.
- OEH scientists analyse satellite imagery to track annual changes in native vegetation cover and regrowth. This information supports strategic planning.

This NVI strategy is also facilitating partnerships and collaboration to contribute to the biodiversity priority knowledge need of: *Understand the abundance and distribution of biodiversity,* which includes the *mapping of threatened ecological communities at a fine-scale in priority areas, such as coastal Local Government Areas and areas undergoing rapid land-use change, to inform management decisions*.

This knowledge theme also seeks to *understand the effectiveness of existing processes and tools to conserve biodiversity.* This NVI strategy aims to improve the current processes used to define conservation significance so they become more rigorous, transparent and defensible.

NSW 2021: A plan to make NSW number one

This NVI strategy assists in delivering two key goals of NSW 2021:

GOAL 22: Protect our natural environment

Target: Protect and restore priority land, vegetation and water habitats

Protect and conserve land, biodiversity and native vegetation

- Identify and seek to acquire land of high conservation and strategic conservation value, for permanent conservation measures

Priority Action: Work with catchment management authorities (CMAs) and local community groups to protect and improve habitats on private lands and other actions to conserve biodiversity and native vegetation.

GOAL 23: Increase opportunities for people to look after their own neighbourhoods and environments

Target: Increase the devolution of decision making, funding and control to groups and individuals for local environmental and community activities, including:

- Catchment Management
- Landcare

Priority Action: Local communities are best placed to make decisions about the protection of their local environments.

Implementation and guiding principles

The eight strategic objectives identified by this strategy will be achieved progressively over the next 5 years. A detailed implementation plan for each year of the plan will be prepared to outline the various resources, tasks and interdependencies required to deliver the planned outputs and achieve expected outcomes.

Governance for the Strategy

Native Vegetation Information Science Branch, within OEH's Science Division is responsible for implementing the Strategy. Accountabilities are outlined in more detail in Appendix B and C.

The **Native Vegetation Information Steering Committee** will oversee the strategic directions and priorities on behalf of the OEH Executive. This committee would provide progress reports about the implementation of the NVI strategy to the OEH Executive twice a year.

Changes to the list of approved NSW PCTs are overseen by the NSW **Plant Community Type Change Control Panel** (PCT CCP). This panel gains input from regional experts from both within OEH, and externally to ensure that appropriate analysis, evidence and knowledge has been undertaken before making changes.

Vegetation related scientific and technical standards as well as best-practice methods used by OEH is overseen by the **Vegetation Information and Mapping External Scientific Advisory Committee** (VIMESAC). Opinions and experience from a range of researchers and practitioners are canvassed when developing and testing new techniques.

The Native Vegetation Information Science Branch will strengthen collaborative partnerships with other OEH groups and individual specialists to harness skills and localised knowledge in order to achieve all of the strategic outcomes.

OEH principles or procedures for native vegetation information

To achieve the highest levels of consistency, accuracy and quality of native vegetation information, this strategy establishes a set of common principles or procedures adopted by all OEH divisions and groups when undertaking vegetation information related activities.

Third parties engaged by OEH will be required to apply these principles or procedures to ensure that the data and information provided is suitable for state government purposes.

Flora Survey and Classification

- OEH investment in vegetation survey, classification and mapping is coordinated through NVIS Branch.
- Stratification for systematic full-floristic surveys will address known gaps or under-sampled types in preference to well-sampled types or bioregions.
- All systematic survey data is entered into the NSW VIS Flora Survey Database using tools provided or an agreed import procedure.
- Projects to update or replace an approved NSW PCT will require prior approval of the NSW PCT Change Control Panel.

- Any new or modified PCTs are defined from the analysis of a representative set of systematic site survey data. Some existing types developed from local expert knowledge may persist on the 'approved list' until suitable evidence from site data becomes available, but may be limited in their application for regulation or mapping.

Mapping

- OEH Investment in vegetation mapping is coordinated through NVIS Branch and products are to be consistent with the appropriate OEH standard.
- All maps or site assessment referring to vegetation types must use the appropriate hierarchical Vegetation Classification level, predominantly the NSW Plant Community Types.
- At coarse scales, some individual PCTs may not appear on extent maps, when the map feature size is inconsistent with its definition.
- State-wide maps may include mosaics of PCTs where they are difficult to spatially differentiate until detailed mapping and field verification is available.
- The justification and relative areal proportions for each of the component PCTs of mosaic units must be included in the map metadata for all mosaic units.
- The relationship to higher classification levels of Class and Formation is consistent for all PCTs enabling presentation of maps or calculation of extent with any of the classification levels.
- All new projects to capture fine scale maps of vegetation types will use the standard state-wide vegetation type map layer (if available) as the outer limit of their mapping area (as this facilitates seamless insertion).
- Map feature attribution schema must include all the mandatory fields in accordance with OEH standards. Optional fields can be included with the concurrence of the manager of the OEH Biodiversity Information Systems.
- Mapping accuracy will be determined using the OEH standard validation technique (approved by VIMESAC). Where possible, attribution confidence is expressed at a feature and vegetation type level to recognise intrinsic variability in the definitions of the types being mapped. i.e. some types are more easily identified than others.

Assigning conservation significance

- Values for pre-clearing extent, current extent, and area in reservation are estimated systematically by comparing current mapped and modelled extents to modelled pre-clearing extents.
- The NSW Scientific Committee will be encouraged to circumscribe all future nominations for listing under the *Threatened Species Conservation Act 1997*, by reference to relevant Plant Community Types (ideally only those quantitatively defined and approved by the PCT Change Control Panel).
- Revisions and improvements to PCT classification will be used to identify and nominate future improvements to the circumscription of TECs that are currently gazetted under the *Threatened Species Conservation Act 1997*.
- Note: Modification of any principles regarding the description and nomination of TECs is subject to agreement of the NSW Scientific Committee.

Information management

- Biodiversity information systems and related tools are managed under single governance and will be fully integrated to eliminate data duplication, redundancy or inconsistency.
- Updates to vegetation maps compliant with the OEH standard are controlled and full version history is maintained in the NSW Vegetation Information System (NSW VIS).
- Nomination of error corrections for mapping will require appropriate evidence such as site photographs and full floristic plot data.
- Incremental changes to approved PCTs are reviewed by a panel appropriately qualified and experienced ecologists.
- All vegetation data supplied to NSW VIS complies with ANZLIC/ANDS Metadata standards.

Standards

- All methods and technical standards are documented and endorsed by the NSW VIMESAC
- Revisions to standards will seek input from practitioners from across OEH, other government agencies and private companies.
- NSW VIS data model and topology checks are applied to all products before publishing

Commitment to scientific rigour

The OEH Scientific Rigour Position Statement is published on the OEH website at: www.environment.nsw.gov.au/resources/research/OEHSciRigPosnStmtJul13.pdf

The development of standards and operating procedures for native vegetation information, as well as the delivery of flora survey, classification and mapping will apply the principles contained in the position statement.

This position statement ensures that all science activities undertaken or commissioned by OEH meets globally accepted standards of scientific rigour from start to finish. It also ensures OEH has robust scientific evidence on which to base decisions. It also prevents wasting resources on scientific work that does not meet standards of scientific rigour, and so will not deliver defensible and/or meaningful results.

Strategic objectives for native vegetation information

Objective 1: Update and implement rigorous standards for describing, recording and mapping of vegetation at all scales and in all regions across the state.

Rationale

OEH has been operating with an interim and incomplete standard for native vegetation information since 2009 (Sivertsen 2009). (Refer Appendix D).

Standards are published documents that establish specifications and procedures designed to ensure the reliability of the materials, products, methods, and/or services that people need. Standards address a range of issues, including but not limited to, protocols that help ensure product functionality and compatibility, facilitate interoperability and integration.

Standards form the fundamental building blocks for product development by establishing consistent protocols that are universally understood and adopted. Standards also allow users to understand and compare different products.

The interim type standard requires a detailed review and redesign to meet the current needs.

Deliverables

1. Review and design format for the updated standards (2014)

2. Set of Vegetation Information Standards documents

Standard 1: Native Vegetation Type and Extent (2014)

The standard will be in two parts:

Part A: Classification

This part will define how types of native vegetation are to be differentiated using a hierarchical vegetation classification system based on the structural and floristic characteristics of native plants that commonly occur together. The base unit will be the NSW Plant Community Type (PCT).

Standard PCTs are predominantly defined from the analysis of a representative number of site observations and systematic flora survey data.

Part B: Spatial Distribution

Part B will define how the spatial configuration of native vegetation is to be described and undertaken. This includes a set of map product specifications for capturing the current extent of woody vegetation, vegetation types and related vegetation characteristics. Includes the requirements for spatial and attribution accuracy.

Standard 2: Ecological Status of Native Vegetation (2016)

This standard defines how to describe the relative condition or ecological status of native vegetation. Generally this is based on the level of modification from a pre-defined state in structural and compositional terms. The standard will be in two parts.

Part A: Definition of Native Vegetation

This part will describe the combined definition that encompasses the requisite legal definition for native vegetation in NSW (essentially for site-based determinations) as well as definitions for mapping and reporting purposes.

Part B: Ecological Status (Condition)

This part will define various measures of progressive change from or towards a natural state that are consistent with the established site based assessment methodologies and tools. This may include vegetative structure, species composition, fragmentation and connectivity, impacts from weeds or invasive species. It will include mechanisms to describe ecological status both spatially and temporally.

Standard Operating Procedures

Standard operating procedures (SOPs) document the current best practice methods for gathering, storing and analysing data about native vegetation that will deliver data and products consistent with the OEH standards. SOPs are dynamic and will be regularly reviewed and updated to incorporate changing technology, new data sources and scientific discoveries.

SOP 1: Vegetation Mapping (2014)

SOP 1 describes the various methodologies OEH will routinely to capture vegetation objects from the analysis and interpretation of remote sensed imagery (satellite and aerial).

SOP 2: Flora Survey (2015)

SOP 2 describes principles for effective survey design, field data techniques and tools as well as the requisite data elements for site records to be stored, analysed and maintained in the NSW VIS Flora Survey Database.

SOP 3: Floristic classification and group allocation (2015)

SOP 3 describes the process of reviewing and updating the NSW vegetation classification from the analysis of site data. It includes the procedural and minimum data requirements for nominating changes to the approved list of NSW Plant Community Types. Changes to the approved PCT list are managed by the NSW PCT Change Control Panel.

SOP 4: Information Management (2014)

SOP 4 includes data management processes required to incorporate data into the NSW VIS, provide and review user feedback and curate regular updates to the information products.

Note: Each SOP will be complemented with educational material such as online tutorials and video-based instructional learning to assist external and internal practitioners and facilitate with the adoption of the OEH standards.

Expected outcomes

- OEH standards and procedures are routinely adopted by practitioners and contribute to ongoing improvements.
- NSW hierarchical vegetation classification is better understood, more practical to use and based on rigorous scientific principles.
- Different types of native vegetation are consistently identified and described at all levels of government and industry.
- Vegetation mapping products captured or delivered by OEH are trusted by users and meet the majority of their needs.
- Increased collaboration between vegetation map producers and vegetation classification specialists.
- Maps or other vegetation information products are more consistent and easily aggregated.
- Industry best practice techniques are recognised and used to create and maintain NSW vegetation data.

Objective 2: Provide data, tools and state-wide reference layers for use in a variety of vegetation classification or mapping tasks.

Rationale

The 2012–13 Mapping User Needs Review recognised the significant ongoing investment in mapping of vegetation at many levels of government as well as in private industry. Individual projects often repeat processes and recreate similar precursor products rather than reuse available data.

OEH holds and continues to develop a wide range of data, particularly spatial layers developed during the mapping process. This information could save time and resources for both OEH and external partners undertaking vegetation mapping.

Sharing and contributing to common foundation data also promotes wider understanding, easier integration and greater consistency between products.

Deliverables

1. State-wide reference layers:

- Standard high-resolution satellite imagery (annually updated)
- Enhanced high-resolution satellite imagery (OEH algorithm)
- 5m woody canopy (Edition 1 2014 updated biennially)
- Candidate Native Grassland (2014)
- Unattributed image objects (pattern extraction) from enhanced satellite imagery base (2015)
- Biophysical and climatic surfaces aligned to satellite image base (2015)
- Annual vegetation cover change (aligned to image base)

2. Localised reference layers

- Enhanced digital aerial imagery (progressively in line with mapping schedule and to full extent of available digital aerial imagery {ADS40 – 50cm GSD})
- High resolution digital elevation and surface models (2015)
- Unattributed image objects (pattern extraction) from digital aerial imagery (progressively in line with enhanced mapping schedule)

3. Plant Species Distribution layers

- Improved plant species distribution maps (especially those identified as Threatened or Endangered)

Expected outcomes

- Mapping efficiency improved through reuse of existing spatial data.
- Consistency between different map producers is increased
- Producers more willing to collaborate and contribute data derived from use of government data.
- Vegetation changes (loss or regrowth) detected by the OEH Land Cover Change Monitoring program are easily incorporated into derivative products

Objective 3: Refine and assemble a complete and internally consistent Plant Community Type classification for NSW that is quantitatively defined.

Rationale

The Native Vegetation Type Interim Standard described a hierarchical system of vegetation classification for NSW.

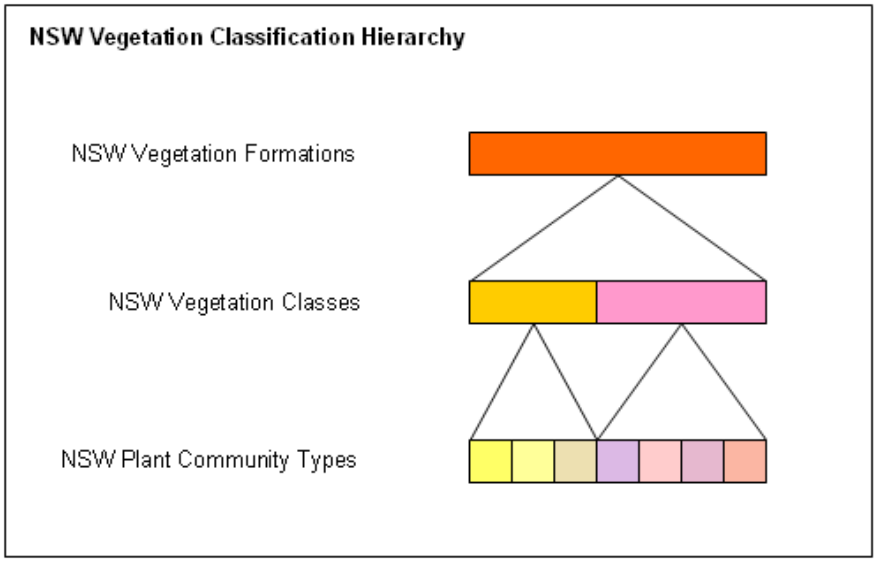


Figure 1: NSW Vegetation Classification Hierarchy

The top two levels, developed by Dr David Keith (2004), are well established and essentially stable but the lowest level. PCTs are defined from a combination of existing types that originated from research efforts, expert panel opinion and involved variable degrees of site data analysis. The definition described in the interim type standard reflected these mixed origins. The revised Native Vegetation Type and Extent Standard (see Objective 1) will clarify the definition of the PCT level of the hierarchy.

A general lack of adequate site data has resulted in numerous PCTs having insufficient detail and reference sites and do not consistently align with the required hierarchical level.

Ecological experts, consultants, and departmental officers frequently have difficulty in differentiating some types.

Ambiguity in the NSW PCT vegetation classification level remains a significant policy risk for OEH and the NSW Government and remains an urgent priority for supporting the current site-based assessment regime.

Under the Native Vegetation Interim Type Standard (Siverset 2009), the design of the NSW hierarchy deliberately departed from terms used by Beadle & Costin (1952) and the National Vegetation Information System (NVIS) (ESCAVI 2003) such as Association and Alliance. The technical meanings of such terms were considered ‘clouded’ at that time.

Currently for national reporting, existing PCTs span NVIS Level 5 (Associations) and Level 6 (Sub-associations) and in some case Level 3 but ideally following refinement, NSW PCTs will largely align with NVIS level 5.

The eastern part of NSW is the highest priority for improving the classification as it is subject to the highest pressures from development and land-use change. It also has the most comprehensive set of site survey data. Although considerable effort has already been invested in updating the eastern PCTs through quantitative means, this has occurred in a series of separate regionalised processes over an extended period.

All types listed for the coast, escarpment and tablelands bioregions (when used for regulation purposes) should meet a defined standard of reliability. The criteria will be that they are:

i) quantitatively-defined from the analysis of a representative number and distribution of site survey data;

ii) readily distinguishable from other types using diagnostic characteristics such as species lists and habitat descriptors.

Under rare circumstances, locally known types with highly restricted or difficult to sample distributions may persist as expert opinion based definitions of PCTs. All attempts to achieve representative site data should be undertaken before being applied to regulatory purposes.

Achieving the same consistent standard of reliability for PCTs in the western Region is highly desirable but this will require significant increase in full floristic site data to achieve the same level of reliability as the eastern group.

Existing PCTs in the western region will be progressively refined, mainly through the additional survey and analysis associated with the state-wide mapping program, but achieving a complete set of PCTs across the state without significant additional investment in flora survey, will extend beyond the term of this strategy.

Implementing any changes to NSW PCT definitions is tightly controlled through the PCT Change Control Panel (PCTCCP) (see Appendix B – Governance). This process includes opportunities for regional OEH staff and experts to participate in the change process.

Deliverables

1. **Robust and explicit definition (quantitative standards) for the PCT level of the NSW Vegetation Classification Hierarchy (part of the new Vegetation Type and Extent Standard) (2014).**

2. **Combined list of Quantitative PCTs for eastern NSW (coasts, escarpments and tablelands bioregions) (2016–18).**

    I. Merger of 4 coastal regional classification groups (2014).

    II. Data upload/entry for north coast provisional PCTs into Classification Database within *NSW Vegetation Information System* (*NSWVIS*) (2014-15).

    III. Data upload/entry for south coast/Sydney basin provisional PCTs into Classification Database (2015).

    IV. Cross-regional gap analysis and redundancy checks (2015).

    V. Additional vegetation survey sites added to *NSWVIS* to required standard (ongoing).

    VI. List of PCTs for eastern NSW approved by PCT Change Control Panel (PCTCCP) (2016).

    VII. Extant and predicted prior extent for eastern PCTs and other metrics calculated from mapping (2017).

VIII. Final PCT list for eastern NSW approved by PCTCCP (2017).

IX. PCT List for eastern NSW available in decision support tools and biodiversity related online applications (progressively up to 2018).

3. Improved Western NSW PCTs (Western PCTs).

All western PCTs have significantly improved levels of robustness and stability through additional flora survey and mapping activities.

I. 10% increase in vegetation survey sites for western bioregions each year and all data added to NSW VIS to required standard.

II. Identification and removal of duplicate listings of PCTs in western bioregions (progressive in combination with mapping program up to 2015).

III. Extant and predicted prior extent for western PCTs and other metrics calculated and improved (2016).

IV. Refined PCT list available for decision support tools and biodiversity related online applications (ongoing).

4. Flora Survey Plan for NSW (2014)

I. Prioritised list of under sampled PCTs for NSW.

II. Prioritised list of geographic survey gaps for NSW.

III. Target of up to 100 new full floristic survey sites completed each year.

Expected outcomes

- Ambiguity about definitions of PCTs is reduced.
- Eastern NSW has the most robust and stable list of vegetation types possible
- Identification of listed types, whether by mapping or on ground, is more consistent.
- Input to planning and assessment decisions are more consistent.
- Clear information is available to differentiate vegetation types across NSW.
- State and Local government better understands the ecological context and importance of vegetation types beyond their particular areas of responsibility.
- NSW has a much more extensive and representative coverage of floristic plot sites.
- Data used in decision support tools is more easily maintained and the vegetation descriptions referenced by them more reliably represent the types encountered on the ground.

Leave blank

Objective 4: Deliver improved baseline maps of extent, type and condition of native vegetation for all of NSW.

Rationale

Consistency and completeness

Vegetation mapping is a complex, time and resource consuming process. Over the last two decades, there have been numerous attempts to complete the map of vegetation types for NSW. However, other pressing needs and ad hoc funding opportunities have resulted in partial solutions with many parts of the state still lacking useful vegetation maps. These localised efforts have tended to apply different objectives and product specifications that limit integration to fill gaps in the overall fabric.

Establishing the relative significance of different types of vegetation

When defining conservation priorities for native vegetation, it is preferable to draw from a complete state-wide overview rather than use a limited localised context.

Currently, conservation significance of vegetation relies heavily on expert opinion and limited data. Analysis is also applied to changeable administrative boundaries such as former CMA regions. Consequently, the full understanding of vegetation distributions may not be identified and so there can be an over or under-estimate of their significance. The Biometric site assessment tools that rely on figures such as percent remaining (for a CMA region) may become out of date and may be hard to maintain without a complete mapping foundation.

Completing a state-wide map of the extant native vegetation at an ecologically relevant level of detail, such as PCTs, will facilitate systematic priority setting and provides the opportunity for OEH to adopt a robust and defensible approach.

As the PCT is the lowest level of the classification hierarchy, their mapping will also provide new and more consistent representations of the higher levels of Vegetation Class and Formation that up to now, are amalgamations of data from many different sources and time periods.

Maintaining the baseline state-wide layer through an annual program of change detection as well as incorporating refinements from more detailed mapping, will deliver a dynamic, up-to-date foundation layer about native vegetation for NSW

Providing wider access to information about vegetation

OEH has to support the wider community who are often seeking better or more up-to-date information than they have now about the different sorts of vegetation in their local environment. Some parts of the state are very rich in information, often mapped many times over. Other parts have little or no vegetation mapping or it is of limited detail or simply out of date.

Mapping will also assist OEH to explain the current conservation policy in NSW. It provides a visual tool to present vegetation types and conservation priorities to decision makers, the regulated community and the broader community.

To be suitable for demonstrating and setting conservation priorities, any mapping product also requires a well-defined and transparent explanation about its reliability for its intended purposes.

This statement of reliability needs to be readily available and understood by users so that inappropriate application of the mapped data is avoided. For the case of the state-wide type map product, its use for property scale applications or substitution for on-ground site assessment is not appropriate.

Efficient management of statutory decision support tools

Mapping will improve and streamline the management of critical databases underpinning the decision support tools by allowing repeatable calculation of certain critical fields such as current and predicted pre-clearing extents of different vegetation types.

The mapping and field validation process also informs the delineation of PCTs across the state.

Deliverables

The proposed completion schedule of the state-wide vegetation type map product is a shown in Figure 2 below.

This continuing program from the previous strategy has been supported by a five–year grant (commenced 2011–12) from the NSW Environmental Trust in order to accelerate delivery timeframes.

Map of PCTs of NSW (progressively delivered with full state coverage available by end of 2016).

Note: This product is not just describing the distribution of PCTs but also includes attribution of the higher vegetation classification levels (Vegetation Class and Formation). This is done through feature aggregation based on their pre-defined hierarchical relationships rather than separate attribution.

1. **High-resolution Woody Canopy Extent Layer for NSW (edition 2014 and repeated 2016 and 2018).**

2. **Map of Relative Ecological Status of Native Vegetation for NSW (2015 and updated biennially).**

3. **Map of Woody Vegetation Change for NSW, including changes from both removal and regrowth (woody removal is reported annually but woody regrowth takes longer to establish patterns so is reported every 5 years).**

4. **Additional vegetation change metrics such as PCT extent, level of fragmentation and potential revegetation can be reported (progressively to 2017).**

Expected outcomes

- Mapped information about native vegetation type, extent and condition is available for any part of NSW.
- Intended purposes/limitations of state-wide mapping and expression of attribute certainty is more transparent, explicit and understood by users.
- The community has access to more and better quality information about the native vegetation in their local area.
- Greater collaboration between OEH, other state agencies and local government.

- Systematic state-wide vegetation conservation priority setting is possible based on comprehensive, consistent and reliable information about PCT distribution, past and present extent, condition and change across the state.
- Locating potential sites for development offset/BioBanking is more efficient and reliable.
- Better identification and prioritisation of potential additions to the national park estate.

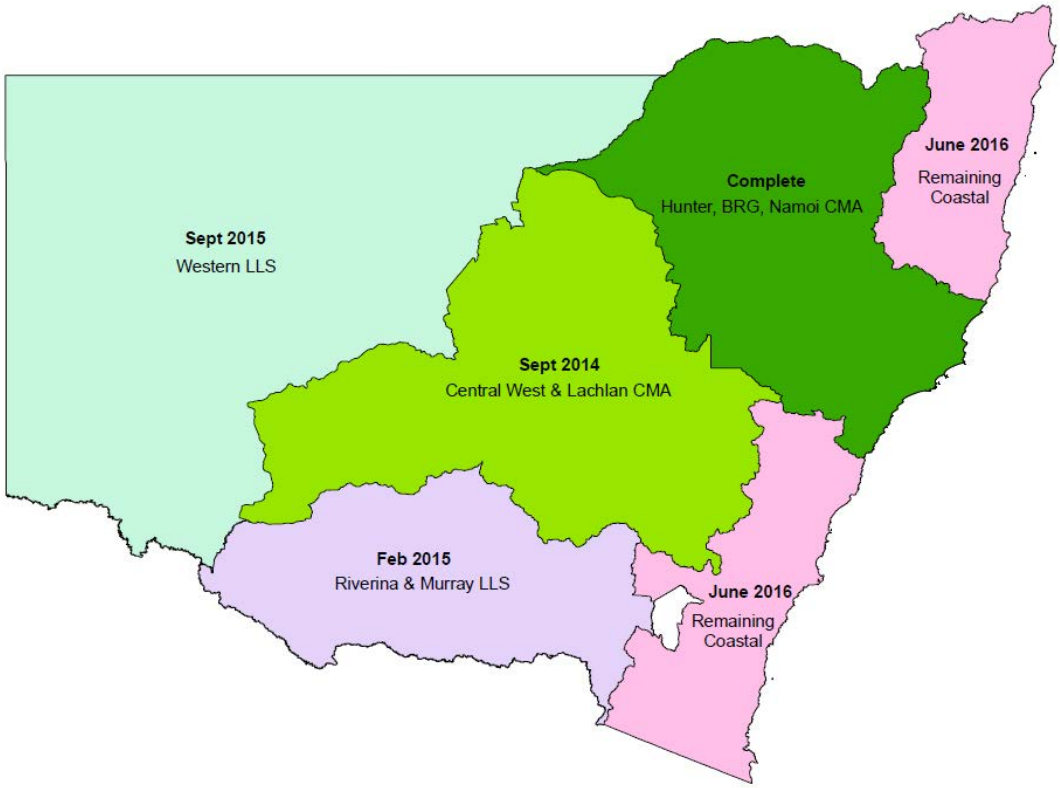


Figure 2 Regional rollout of State Wide Vegetation Community Mapping Program

Note: Areas shown on Figure 2, as complete are available from OEH on request, but as each new mapping region is progressed, the adjoining mapping areas are merged; edge matched and may be refined in light of new information from the new mapped area.

An early version of the mapping for the former Murray CMA region is also available but not of equivalent standard to later mapping, so will be updated in 2015 as part of the Riverina area.

Objective 5: Produce fine scale localised maps on a prioritised basis that conform to agreed standards and progressively improve and refine the state-wide map.

Rationale

Addressing localised requirements for higher accuracy

In addition to state-wide strategic purposes, OEH and other users may need more detailed and accurate localised maps of native vegetation to address particular needs. Applications for fine scale maps include national park estate management, fire planning and management, development compliance and assessment and regional and local planning.

Principles for determining the sequence and locations for additional fine scale mapping may include relative threat from loss or modification; local or state government commitments; environmental significance or uniqueness; expert opinion or funding priorities.

The 2013 Mapping User Needs Review also highlighted the need by many users for vegetation maps with higher accuracy and attribution detail than is currently provided by a state-wide mapping product.

Continuous improvements to the state-wide layer

Localised fine-scale mapping of vegetation types will also improve the state-wide map product through more precise boundaries and increased reliability of attribution for type. The new Native Vegetation Type and Extent Standard (Objective 1) will include mandatory specifications for both the state-wide vegetation type map product as well as complementary fine-scale versions.

Additional characteristics relevant only at property scales

Fine-scale mapping involves increased visual interpretation of imagery and more opportunities for field validation. This allows capture of additional characteristics such as weediness, eucalypt growth stages, and stratified dominant species that are not always relevant at a state level.

Standardised mapping of TECs

Mapping of TECs is difficult under current legislation due to the complexity of the determination process that does not necessarily rely on quantitatively based vegetation type classification. Until this is changed, site assessment will always be required to apply legal procedures.

Interpretation of TEC determinations in the form of maps from remote sensed imagery (aerial and satellite) cannot confirm all required elements for all mapped units without detailed ground validation effort.

Past examples for TEC mapping have been highly variable and difficult to integrate and apply beyond the specific situations (e.g. for development consents). Until legislative changes occur and there is better alignment between definitions of PCTs and TECs, mapping of TECs by OEH will continue to be limited and undertaken with external funding opportunities.

Deliverables

1. **Fine-scale, localised maps of PCTs for priority areas of NSW (progressively delivered for the duration of the strategy).**

   Priority areas for mapping will include urban growth areas, selected parks and reserves (subject to available funding). Priorities for enhanced PCT mapping will be reviewed annually by the NVI Steering Committee.

   All fine-scale PCT mapping and suitable existing products undertaken by internal or external parties will be maintained as a separate map layer, but data will also be integrated into the over-arching state-wide type layer and will involve minor generalisation of feature boundaries, primarily to improve the certainty of the allocated vegetation type.

2. **Additional product specification for fine scale vegetation type maps to accommodate an optional assignment of TECs and include explicit confidence levels (e.g. *confirmed* by site survey or *likely* by association from mapped PCTs or *predicted* by modelling).**

3. **Strategic mapping of TECs for selected parts of the state or high priority TECs.**

   (Note: Due to current legislative constraints, this product will be an interpretation of definitions described in final determinations extrapolated from mapping of refined PCTs and is not intended to form definitive feature boundaries unless they have been confirmed from a site survey).

Expected outcomes

- Parts of the state will have the highest levels of detail and certainty for vegetation type mapping, prioritised on the basis of needs.
- All OEH fine-scale mapping products conform to agreed standards and product specifications.
- State-wide map of PCTs (and therefore the current areal extent and distribution) will be progressively improved and locally be more precise and reliable.
- Maps of TECs are more consistent and integrate more closely with maps of PCTs

Effort required to locate TECs will be reduced through access to improved mapping.

Objective 6: Support external mapping and classification projects to conform to OEH standards and encourage contribution to NSW VIS.

Rationale

OEH recognises the significant level of investment in mapping and classification undertaken by external parties. By applying the OEH standards, and especially using the more robust definition for NSW PCT as the common descriptor for vegetation type, all localised mapping can inform and directly improve the coverage, quality and availability of the over-arching state-wide vegetation information.

In 2010, the Chief Executive Officers of the then Natural, Resource and Environment cluster agencies endorsed the requirement for 'all NSW government funded vegetation type mapping is consistent with the Native Vegetation Type and Mapping Interim standard'. State government agencies have generally applied this principle but it is not universal and consultants for non-government bodies are not bound by this agreement.

As with internal fine-scale mapping and classification efforts, contributed data from external parties also becomes more relevant. The application of decision support or regulatory tools such as BioBanking, biocertification and strategic assessments relies upon such efforts.

It should be noted that, fine-scale mapping undertaken in partnership with external clients will be only undertaken where the partners agree to conform to OEH standards and are willing to contribute all data to the state-wide knowledge base. Such partnerships with external clients will only be undertaken where it meets specified OEH priorities or is fully funded according to OEH cost recovery policy.

Deliverables

1. **Operational guidelines (procedures) for creation of map products to OEH specifications (part of the Vegetation Type and Extent Standard in Objective 1) and includes product specifications and geodatabase schemas for various map designs (2014).**

2. **Map certification process to assess level of conformance with mandatory requirements of OEH product standards (2015).**

3. **Technical workshops for practitioners (minimum 4 per year).**

4. **Online eLearning modules for OEH standard practices for systematic vegetation survey, species observations, analysing and refining PCTs and mapping (progressively to 2016).**

5. **Data maintenance agreements and self-service data upload and curation facilities for contributors of certified data products (2016).**

   Note: The NSW Vegetation Information System will host legacy non-standard vegetation map and data products but any new data will need to meet standards for it to be curated and maintained.

Expected outcomes

- OEH partnerships for mapping and classification refinement, especially with local councils, will produce vegetation data that contribute more effectively to state-wide strategic objectives.
- Public funds are invested more effectively and unnecessary repeat mapping is reduced.
- Independent mapping and classification providers adopt OEH standards and supply their data into NSW VIS.

Objective 7: Provide a customer focused environment for discovering, using and contributing to native vegetation information.

Rationale

The NSW Government, through the NSW 2021 initiative has placed a strong emphasis on empowering the local community to make decisions about their local environment. Providing up-to-date and comprehensive information in a variety of forms and utilising different pathways will enable the community and land owners to make rational decisions about native vegetation and biodiversity that are also consistent with wider objectives for the state of NSW.

There are opportunities to leverage existing efforts or regulatory processes to improve and locally validate mapped or predicted information.

For example, existing instruments such as Property Vegetation Plans or BioBanking maps provide ways to confirm the mapping of PCTs at a cadastral accuracy level. Like other fine-scale mapping products, property or cadastral scale information also contributes to and improves the over-arching state-wide type map.

The principles of Open Government also seek to simplify access to government-held data and provide greater transparency about regulatory processes and other decisions made by government agencies. Landowners or members of the public, who are not typically highly trained ecologists, would benefit from more simplified tools and products to enable them to understand and appreciate the natural environment in their area.

Deliverables

1. **NSW *Vegetation Information System (NSW VIS)* is upgraded to provide new, more customer centric access to information in line with Open Government directions (2014–2015).**

2. **New Open Data and Web Map services (OData Services by 2014).**

3. **Improved survey data upload and analysis tools (2014–15).**

4. **Improved online spatial data viewer to replace LPI SiX portal (2015).**

5. **New process to streamline and maintain vegetation information across the various decision support and site identification tools (2015).**

6. **New streamlined data access and licensing processes for all biodiversity data (2015).**

7. **Digital Object Identifier capability for NSW Bionet Systems (including direct link to survey datasets) to facilitate audit of submitted survey data against contract or scientific licencing obligations (2015).**

8. **Various mobile and online tools for the identification, analysis and spatial display of vegetation information.**
    - Plant and ecological community identification tools for novice and expert users (2016)
    - Mobile field data collection tools for OEH Standard flora survey (2015)
    - Tools to notate map features for errors or confirmation and submit evidential data to support changes (2016)

Expected outcomes

- Information users have the ability to recognise different types of native vegetation from maps as well as comment on the content and accuracy of information and provide additional supporting information directly to OEH.
- Information gathered about the NSW native plants and vegetation communities is easily accessed, well understood and trusted by the people of NSW.
- Land owners can better identify the different plant species and relevant types of vegetation (e.g. PCTs and TECs) on their land through access to educational resources and simple to use tools.
- Land owners and developers are able to make better land management decisions.
- Land owners contribute to improving the amount and quality of vegetation information held by government.
- Critical environmental assets are identified and protected by land owners.

Objective 8: Improve utility of native vegetation information for environmental assessment; strategic land-use planning and land management decisions; compliance activities; priority setting and investment.

Rationale

Simplify how different aggregations of native plants are defined for regulatory purposes

Currently, NSW has two primary pieces of legislation that define and therefore regulate activities that occur on or affect collective groups of native plants.

The *Native Vegetation Act 2005* which uses PCTs, referred to as '*Biometric Vegetation Types'* when applied to the preparation of a Property Vegetation Plans (PVPs). Ecological significance and therefore limitations to clearing is determined largely on remaining extent within a regional area (currently CMA region).

The *Threatened Species Conservation Act 1997* uses 'ecological communities' that are defined as an 'assemblage of species occupying a particular area'. Descriptions are specified either in law or through a nomination and review process through a statutory committee. The Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* is also relevant to NSW and adds additional complexity to defining regulatory units for native vegetation.

Ideally, there should be only one type of collective unit used for differentiating native vegetation for the purposes of regulation. The PCT has the potential to be the single fundamental unit of vegetation for NSW, provided they can be precisely described, and easily identified on the ground. The PCT level of the NSW classification hierarchy is intended to differentiate vegetation in a way that is ecologically meaningful and ensure that diversity is appropriately recognised and protected.

In 2013, the NSW Government indicated a desire to review the existing legislative instruments governing biodiversity protection and threatened species conservation. This presents an opportunity within the timeframe of the strategy to rationalise and strengthen the process for assigning regulatory units for native vegetation. Achievement of Objective 3 of this strategy will be crucial to this opportunity.

The Mapping User Needs Review (Spatial Vision 2013) also highlighted the importance of having consistent vegetation information for delivering planning and regulatory objectives. Users also expressed frustration about inconsistency in definitions between biometric vegetation types and ecological communities and the duplication of effort to address both objects.

If significant changes to NSW biodiversity legislation eventuate, this strategy will require a mid-term review to reaffirm the strategic objectives for native vegetation information.

Deliverables

1. **Vegetation Type and Extent standard improved to aid in the delineation or identification of PCTs on the ground (see Objective 1).**

2. **PCTs for at least Eastern NSW refined and standardised to a high level of confidence (see Objective 3).**

3. **Investigate options for alternative regulatory units for native vegetation for future alternative legislative instruments. Specifically to ascertain whether, PCTs or aggregations of PCTS into landscape or bioregional units, could be more effective in achieving biodiversity outcomes (2015).**

4. **All vegetation specific ecological communities previously determined by the NSW Scientific Committee to be *critically endangered* or *endangered* (as per the *Threatened Species Conservation Act 1997*) are reviewed for possible alignment with refined PCTs (as and when they become suitably and quantitatively defined and updated extent mapping is available). (Ongoing from 2014 and subject to agreement by the NSW Scientific Committee.)**

5. **Enhanced annual vegetation change reports with additional metrics for PCTs such as current mapped extent, natural (pre-clearing) extant, ecological condition and/or risk (progressively in line with mapping program by 2017).**

6. **Conservation significance status for NSW PCTs is calculated systematically and updated regularly in response to significant and persistent change in vegetation.**

Expected outcomes

- Ambiguity about definitions for vegetation dominated TECs is reduced or eliminated.
- Ongoing changes in conservation status are recognised and reflected in information sources and decision support tools.
- Suitable areas for environmental impact offsets are more readily identified and assessed.
- Local government are able to adopt a more sustainable risk-based approach to local planning decisions.
- NSW Planning reforms utilise native vegetation information to protect and improve environmental assets across NSW.
- More effective and practical environmental legislation.
- People of NSW better understand and acknowledge the importance of different types of native vegetation.
- More effective investment in conservation and restoration of native vegetation and improved biodiversity outcomes.

Appendix A: Commitments to NSW Open Government

Transparency and open access

GOAL 1 – Increased transparency and access to information, services and people

NVI commitments:

- OEH standards and methods will be more visible and accessible.
- Clear connection between information and decision making.
- High levels of scientific rigour are applied to information products.
- Native vegetation information is more accessible and useable.

Open information and communication

GOAL 2 – Delivering content that people want, to where they are, in the way they need.

NVI commitments:

- Native vegetation information is more accessible and useable.
- Development of customer oriented tools and implementing multiple conduits for information delivery.
- Mapping is continuously and progressively improved to build trust in how policy or regulatory decisions are made.

Open collaboration and participation

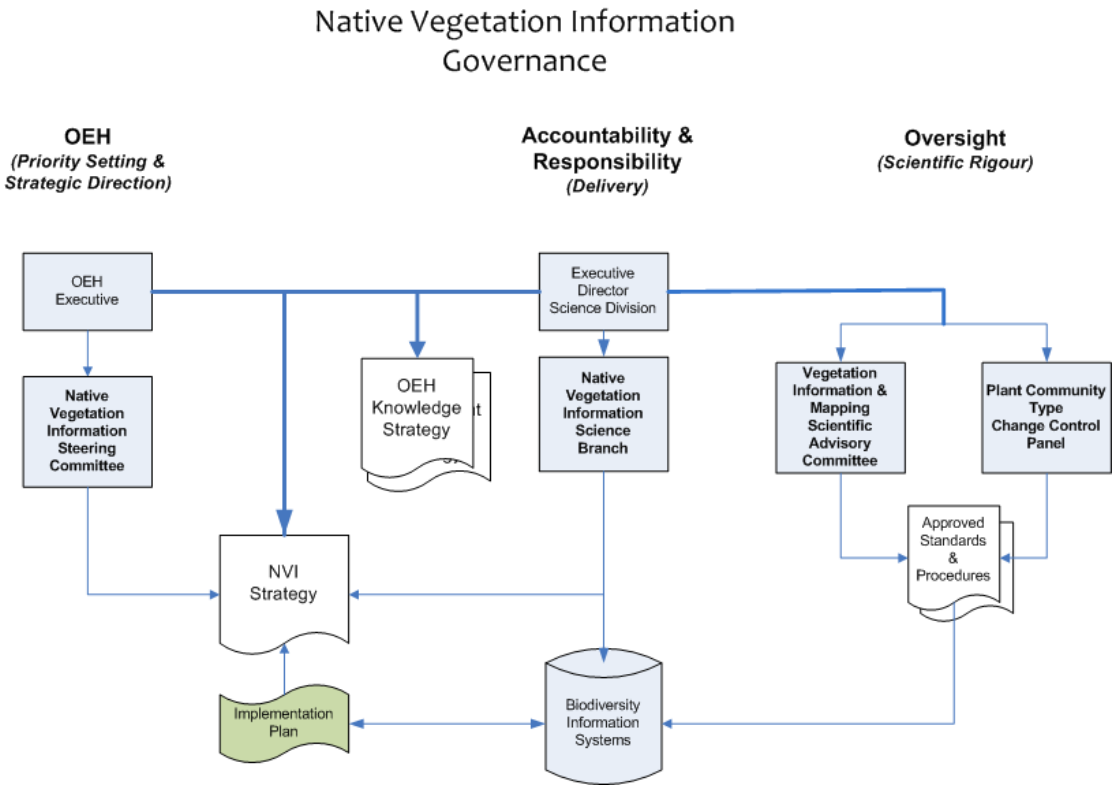
GOAL 3 – Engaging greater collaboration, participation and conversation

NVI commitments:

- Increased transparency about how vegetation is categorised and prioritised for legislative controls.
- Customer/user feedback about the quality of information is encouraged and informs refinements or improvements.
- External parties can contribute to the state's vegetation information warehouse using agreed standards.

Leave blank

Appendix B: Native Vegetation Information Governance Model



Appendix C: NVI Accountability Matrix

This accountability assignment matrix is using a version of the RASCI[1] format.

Matrix Roles are defined as:

R

Responsible

Those who do the work to achieve the task. There is typically one role with a participation type of responsible, although others can be delegated to assist in the work required.

A

***Accountable* (also *approver* or final *approving authority*)**

The one person ultimately answerable for the correct and thorough completion of the deliverable or task, and who delegates the work to those responsible. There should be only one accountable specified for each task or deliverable.

S

Support

Resources allocated to responsible. Unlike consulted, who may provide input to the task, support will assist in completing the task.

C

Consulted

Those whose opinions are sought, typically subject matter experts; and with whom there is two-way communication.

I

Informed

Those who are kept up-to-date on progress, often only on completion of the task or deliverable; and with whom there is just one-way communication.

Additional note:

Very often the role that is accountable for a task or deliverable may also be responsible for completing it (indicated on the matrix by the task or deliverable having a role accountable for it, but no role responsible for its completion, i.e. it is implied). Outside of this exception, it is generally recommended that each role in the project or process for each task receive, at most, just one of the participation types. Where more than one participation type is shown, this generally implies that participation has not yet been fully resolved, which can impede the value of this technique in clarifying the participation of each role on each task.

[1] http://en.wikipedia.org/wiki/Responsibility_assignment_matrix#cite_note-formal-3

Activity	*Element*	*Description*	*OEH Exec*	*Exec Director Science Division*	*Director NVISB*	*VIMES AC*	*PCT Change Control Panel*	*Regional Operations Group*	*NPWS*	*OEH Policy Group*	*RBG*	*NSW Scientific Committee*
Standards	Classification of Vegetation Type	Systematic classification hierarchy to differentiate types of native vegetation for NSW planning and regulatory needs.	I	A	R	C	C	C	C	C	C	C
	Flora survey	Best practice techniques to design, locate, undertake & record floristic surveys	I	A	R	C	C	C	C	I	C	I
	Floristic Data Analysis	Best practice techniques to assemble and analyse floristic data to define classification types.	I	A	R	C	C	I	I	I	C	C
	Vegetation Mapping	Best practice techniques to identify, describe (attribute) and capture spatial boundaries of vegetation including accuracy validation.	I	A	R	C	C	I	I	I	C	I
	Enterprise information systems*	IT infrastructure, schemas & metadata required to manage vegetation related data.	I	A	R	I	I	I	I	I	I	I
	Condition & benchmarks	Framework to describe vegetation condition, define benchmarks to vegetation types & environmental value assessment (including biometric tools)	I	A	R	C	I	C	C	C	I	C
Strategic requirements and tactical priorities	Corporate Planning	Define strategic and operational requirements to implement NSW government objectives for managing native vegetation (e.g. NSW 2021)	A	N/A	R	I	I	C	C	C	C	C
	Knowledge Needs	Define the knowledge requirement s and capability gaps that underpin the monitoring, evaluation and reporting of native vegetation and ecosystem management	A	N/A	R	C	I	C	C	C	C	C
	NV Mapping	Define priority locations, content and scale of map products	A	N/A	R	C	I	C	C	C	C	I
	NV Classification	Locate and prioritize areas of the state requiring new or updated PCT classifications including locations for updated or additional floristic reference sites across NSW .	A	N/A	R	C	C	C	C	C	C	C
	Enterprise Information Management Systems*	Define functional requirements of computer database systems to store, analyse and deliver vegetation information, including spatial data.	A	N/A	R	I	C	C	C	C	C	I
	NV Policy & Regulation	Define policy and regulatory requirements of vegetation information and knowledge.	A	N/A	S	I	I	C	C	R	I	C
	Protection status	Define the data and operational requirements for protection of threatened species and ecological communities	I	C	C	I	I	R	C	C	I	A
Project initiation and implementation	New/ Revised Classification	Instigate and/or undertake an analysis to define a new classification or replace and existing classification for an area.	I	A	R	C	C	S	S	I	C	I
	Flora Survey	Instigate and/or undertake a project to collect vegetation site data for an area.	I	A	R	I	C	S	S	I	A/R/S	I
	Mapping	Instigate and/or undertake a project to map the vegetation of an area.	I	A	R	C	I	S	S	I	A/R/S	I
	Monitoring	Undertake a program/project to monitor changes in vegetation	I	A	R	I	I	I	I	C	I	I
	Condition Benchmark	Instigate and/or undertake a project to define condition benchmarks for a classification type	I	A	R	I	C	S	S	I	I	I

* IT hardware and network standards and operational environment will be the responsibility of the yet to be announced governance of OEH Enterprise Architecture as recommended by the Deloitte's Review

Activity	Element	Description	OEH Exec	Exec Director Science Division	Director NVISB	V IM E SAC	PCT Change Control Panel	Regional Operations Group	NPWS	OEH Policy Group	RBG	NSW Scientific Committee
Data management and delivery	Database Admin	Oversee the operation of vegetation information systems	I	A	R	I	I	C	I	C	I	I
	MER	Produce reports for trends/changes in the extent and condition of NV	I	A	R	I	I	I	I	C	I	I
	Decision Support Tools	Define functional requirements of decision support tools to implement OEH regulatory obligations and operational needs.	I	A	C	I	I	R	I	C	I	I
	Data Delivery	Provide access to raw data and value-added NV products to meet client needs.	I	A	R	I	I	C	S	C	I	C
Communication and customer services	Online Content	OEH web site content about native vegetation information & knowledge	I	A	R	I	I	C	C	C	I	C
	Client Relationships	Interface with customers, partners and clients of OEH seeking NV information or products and confirm OEH is meeting customer needs	I	A	R	I	I	S	S	S	I	I
Legislative obligations	Compliance Investigations	Provide information and scientific advice about native vegetation for potential breaches of various environmental protection legislation	I	A	R	I	I	S	S	C	I	I
	Threatened Species and Ecological Communities	Instigate and/or undertake a project to define or update relationships between vegetation communities (e.g. PCTs) and listed threatened species or ecological communities	I	A	R	I	I	S	S	I	I	I
	L&E Court Expert Witness	Provide information and scientific advice about native vegetation to L&E court.	I	A	R	I	I	S	S	C	I	I

Appendix D: Native Vegetation Interim Type Standard

The *Native Vegetation Interim Type Standard* (Sivertsen 2009) was developed by a predecessor organisation, the Department of Environment and Climate Change and Water (DECCW). It is currently available online from:
www.environment.nsw.gov.au/resources/nativeveg/10060nvinttypestand.pdf

This document was built upon efforts of National Vegetation Information System framework developed by the Executive Steering Committee for Australian Vegetation Information (ESCAVI 2003), the US Federal Geographic Data Committee's National Vegetation Classification Standard (FGDC 2008) and input from various scientists from across NSW Government. The interim standard describes the scientific processes involved in the gathering, processing and presentation of a range of native vegetation information products. It outlines the intended outcomes and expected requirements for the following elements:

- Metadata
- Interpretation of Remote Sensed Imagery
- Vegetation survey design
- Floristic plot size
- Field sampling regime
- Floristic data analysis
- Classification hierarchy
- Spatial interpolation of data
- Accuracy assessments

The Interim Standard was designed to comply with the then 'NSW Government Standard for Quality Natural Resource Management' (NRC 2005) and was to be one of a series of proposed documents addressing: Native Vegetation Type; Extent and Condition.

Release of this interim type standard, while not universally adopted, has resulted in significant improvements in mapping and survey efforts. It has provided a valuable reference set of techniques that can be used to create map products but did not include any specific guidance about applying the techniques nor detailed map product specifications that brings these techniques together to deliver consistent outputs.

A series of map product classes were developed for the standard but these were primarily designed to categorise the multitude of existing mapping products rather than define what new vegetation map products should include.

The content and critical elements of the standard need to be updated to incorporate new scientific thinking, new imagery sources and recent technological advances and undergo independent peer review.

References

Beadle, N C W & Costin, A B 1952, Ecological classification and nomenclature, *Proceedings of the Linnaean Society of New South Wales*, 77, 61-82.

DECC 2009, DECC Native Vegetation Type Mapping Strategy (2009-2013), unpublished.

ESCAVI 2003, *National vegetation information system – Australian vegetation attribute manual,* version 6.0, Executive Steering Committee for Australian Vegetation Information, Department of Environment and Heritage, Canberra.

FGDC 2008, *National Vegetation Classification Standard*, US Federal Geographic Data Committee, Virginia.

Keith, D 2004, *Ocean shores to desert dunes: the native vegetation of New South Wales and the ACT*, NSW Dept. of Environment and Conservation (NSW), Sydney.

NRC 2005, *Standard for Quality Natural Resource Management*, Natural Resources Commission, Sydney.

Sivertsen 2009, *Native Vegetation Interim Type Standard*, Department of Environment, Climate Change and Water (NSW), Sydney. www.environment.nsw.gov.au/resources/nativeveg/10060nvinttypestand.pdf

Spatial Vision 2013, *NSW Native Vegetation Map Specifications – User Requirements Specifications*. A report for the Office of Environment and Heritage, NSW, Sydney. www.environment.nsw.gov.au/resources/research/VegMapUserReq.pdf