



BioNet Systems enhancements

Release notes

August 2017 (Release 3.0)

December 2017 (Release 3.1)

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1. Background

BioNet is the repository of biodiversity data maintained by the Office of Environment and Heritage (OEH) and contains species sightings and systematic survey, vegetation classification and threatened biodiversity data used by a wide range of organisations. BioNet data are held across three separate website applications;

1. [BioNet Atlas](#)
2. [BioNet Vegetation Classification](#)
3. [BioNet Threatened Biodiversity](#)

To support changes proposed under the [biodiversity legislation reforms](#), two phases of system enhancements were carried out for the commencement of the [Biodiversity Conservation Act](#) and [Local Land Services \(Amendment\) Act](#). The first phase was in [November 2016](#). The second phase (this document) covers enhancements made in August 2017 (Release 3.0) and December 2017 (Release 3.1).

In total, 29 different groups of changes were implemented for this release, ranging from bug fixes and minor enhancements to new features. Note some changes contain a number of individual change components, so changes have been summarised under each 'item number' in these release notes.

2. Who is affected by the changes?

2.1 BioNet Atlas application

Within the BioNet Atlas application, access to the various modules varies based on User Role. These controls are in place to prevent inadvertent edits to data and protect details of sensitive information.

Ten changes have been made to the BioNet Atlas application; two relate to new functionality, the remaining eight are enhancements. Table 1 provides a summary of all modules and user roles that each of these changes applies to. Each change is identified by a unique number that correspond with sections in this report.

Table 1 Overview of enhancements for each of the modules in the BioNet Atlas application by user role access level*

	User role							
	Public	Registered	Sensitive Species Licence	Sensitive Species Licence + survey data entry rights	OEH staff (Edit role)	OEH staff (TB Profile Edit)	OEH (Classification Edit user)	OEH staff (Admin)
Search	6b, 7b	6b, 7b	6b, 7b	6b, 7b	6b, 7b	6b, 7b	6b, 7b	6b, 7b
Flora surveys	-						1, 9	9
Import spreadsheet	-	6c	6c	6c	6c	6c	6c	6c, 8
Codes	-	-	-	-	-	-	-	-
Species	-	-	-	-	-	-	-	-
Fauna surveys	-	-	-	-	-	-	-	-
Species sightings	-	-	-	-	7c	7c	7c	7c
Threatened Biodiversity	-	2, 6a, 7a, 10	2, 6a, 7a, 10	2, 6a, 7a, 10	2, 6a, 7a, 10, 11	2, 6a, 7a, 10, 11	2, 6a, 7a, 10, 11	2, 6a, 7a, 10, 11, 12
Admin	-	-	-	-	-	-	-	-
Other – applies across multiple modules	5	5	5	5	5	5	5	5

*number refers to item number of enhancement in this document.

2.2 BioNet Threatened Biodiversity app

The BioNet Threatened Biodiversity app is a publicly available web application, with no access restrictions. Two enhancements were made to the BioNet Threatened Biodiversity app to reflect changes made to the underlying database, the BioNet Atlas application. See item numbers 13 and 14 for details.

2.3 BioNet Vegetation Classification application

Within the BioNet Vegetation Classification application, access varies based on User Role. These controls are in place to prevent inadvertent edits to data and protect details of sensitive information.

Table 2, provides a summary of changes made in this Release, based on user role. Of the 17 changes to the BioNet Vegetation Classification application, two relate to new functionality, the remaining 15 relate to enhancements. Each of the numbers in the table refers to the unique item number given to each change. Refer to the 'New features' and 'Enhancement' sections for specific details of each change.

Table 2 Overview of enhancements to the BioNet Vegetation Classification applications by User Role access level*

User role					
Public application	Edit application – Read-only	Edit application - TEC Relationship Edit	Edit application – Statutory Data Edit	Edit application – Classification Edit	Edit application – Admin
3, 4, 15, 16, 17, 18, 19, 27, 28, 29	4, 15, 16, 17, 18, 19, 23, 27, 28, 29	4, 15, 16, 17, 18, 19, 23, 27, 28, 29	4, 15, 16, 17, 18, 19, 21, 22, 23, 27, 28, 29	4, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29	4, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

*number refers to item number of enhancement in this document.

3. New functionality

3.1 BioNet Atlas

The following new features have been applied within the BioNet Atlas application.

3.1.1 Flora surveys

1. Flora Surveys integration with BioNet Vegetation Classification

Applies to: Users with Classification Role assigned and Administrators.

The management of Plant Community Type (PCT) identities is now managed in the BioNet Atlas system, and supports the association of BioNet Atlas Flora Survey plots with plant community types. This change will be used to define quantitative PCTs in future. Based on this new association, approved content maintainers will export the following attributes from the BioNet Atlas for upload into BioNet Vegetation Classification.

- Plant Community Type (PCT) ID
- PCT Name
- Vegetation Class (Keith Class)
- Authority
- Growth form
- VIS Flora Survey replicates associated with a PCT

Note additional attributes are planned to be added in a future release.

3.1.2 Threatened biodiversity

2. New assessment fields to support the Biodiversity Assessment Method.

Applies to: all users with a secure login, though edit access is restricted to data maintainers within OEH.

In 2016, the *Biodiversity Conservation Act 2016* was introduced. The legislation provided for a single assessment method to assess changes in biodiversity values from clearing or management – the Biodiversity Assessment Method (BAM). The Threatened Biodiversity Profiles module was revised to remove data that supported past assessment methods and to accommodate new data required to operationalise the BAM. As a result, a new 'Assessment' tab has been added to the 'Ecological data' section, made up of the following fields and associated help text.

Table 3 New fields available via the Assessment tab

Box	Field	Description
Filters	Biodiversity Credit Class	Applies to all species, endangered populations and threatened ecological communities. Determines the assessment process and offsetting requirements.
	Patch size	Applies to all fauna species. Minimum area of intact native vegetation necessary to support occasional or continual use. Species will be filtered in or out depending on their patch size requirements.
	Percent native vegetation cover	Applies to all fauna species. Refers to the percentage of native vegetation cover within a 1500 metre buffer around (and including) the site, necessary to support occasional or continual use. Species will be filtered in or out depending on their percent native vegetation cover requirements.
	Are paddock trees important habitat?	Applies to all species. Select 'yes' if paddock trees provide breeding habitat/essential refuge/stepping stones for a species. A paddock could be a threatened species.
	Comments	If 'yes' is selected, provide any additional information on paddock tree use e.g. 'only within x metres of intact vegetation'.
	Habitat Constraint	Applies to all species but optional. Habitat features required for a species to be present/use a site. Multiple constraints can be selected. Comments can be included to further describe the constraint. Species will be filtered in or out depending on the presence of habitat constraints at a site.
	Habitat Constraint Breeding	Applies to fauna species credits (for dual credit species i.e. species/ecosystem credit) but optional. Habitat features required for breeding on site or identified as an important area. Multiple constraints can be selected. Comments can be included to further describe the constraint. Species credits will be filtered in or out depending on the presence of habitat constraints at a site.
	Habitat Constraint Foraging	Applies to fauna ecosystem credits (for dual credit species i.e. species/ecosystem credit) but optional. Habitat features required for a species to be present/use a site. Multiple constraints can be selected. Comments can be included to further describe the constraint. Species will be filtered in or out depending on the presence of habitat constraints at a site.
Survey	General Notes	Applies to all species, endangered populations and threatened ecological communities. Use this field to include information such as references or general notes about the species.
	Months of Survey Breeding	Applies to all species where biodiversity credit class is 'species' or 'species/ecosystem'. Restrict selection to those months that maximise the likelihood of detecting a species or estimating the area that a species occupies. Shoulder months are not included.
	Unit of measure	Applies to all species. For Fauna species, the unit of measure will be Area. For Flora species, the unit of measure can be Area or counts of individuals.

Box	Field	Description
Level of Biodiversity Concern	Sensitivity to Loss*	Applies to all species, endangered populations and threatened ecological communities. Considers the impact that potential clearing will have on species persistence/extinction risk.
	Justification	The reason why a species or threatened ecological community is allocated to a particular sensitivity to loss category. This is auto-populated.
Serious and Irreversible Impacts	Sensitivity to Potential Gain	Applies to all species (that are not dual credit species). Considers the ability of a species to respond to management actions implemented at a biodiversity stewardship site.
	Sensitivity to Potential Gain Breeding	Applies to the ecosystem credit component of fauna species/ecosystem credit species (i.e. dual credit species). Considers the ability of a species to respond to management actions implemented at a biodiversity stewardship site.
	Justification	The reason why a species is allocated to a particular sensitivity to gain breeding category. This is auto-populated.
	Sensitivity to Potential Gain Foraging	Applies to the ecosystem credit component of fauna species/ecosystem credit species (i.e. dual credit species). Considers the ability of a species to respond to management actions implemented at a biodiversity stewardship site.
Level of Biodiversity Concern	Justification	The reason why a species is allocated to a particular sensitivity to gain foraging category. This is auto-populated.
	Level of Biodiversity Concern	Applies to all species (that are not dual credit species). This is auto-populated based on sensitivity to loss and sensitivity to gain outcomes.
	Level of Biodiversity Concern Breeding	Applies to the species credit component of fauna species/ecosystem credit species (i.e. dual credit species). This is auto-populated based on sensitivity to loss and sensitivity to gain outcomes.
	Biodiversity Risk Weighting	Applies to species credit species and ecosystem credit species. This is auto-populated based on the level of biodiversity concern.
	Biodiversity Risk Weighting Breeding	Applies to the species credit component of fauna species/ecosystem credit species (i.e. dual credit species). This is auto-populated based on the level of biodiversity concern.
	SAll	Applies to all species credit species and could potentially also apply to ecosystem credit but not species/ecosystem credit species, as these are captured in the 'SAll Breeding' field. This is auto-populated based on the level of biodiversity concern. Impacts that are likely to contribute significantly to the risk of extinction of a threatened entity.
Level of Biodiversity Concern	SAll Breeding	Applies to the species credit component of fauna species/ecosystem credit species (i.e. dual credit species) that have a very high level of biodiversity concern, not all fauna species credit species. This is auto-populated based on the level of biodiversity concern. Impacts that are likely to contribute significantly to the risk of extinction of a threatened entity.

Box	Field	Description
	Threshold	Impact threshold defined for the species, impacts below this threshold are unlikely to be considered a SAll. A species may have 0 indicating any impact will potentially trigger a SAll or may require consideration of mapped areas of important habitat.
	Threshold Type	Applies to species. Unit of measure for threshold. Only populate where 'SAll' is 'yes'. Select from the drop-down menu to describe the threshold.
	Threshold Condition	This applies to threatened ecological communities. Threshold relates to a vegetation integrity score.

***Sensitivity to Loss – Calculate pop-up** available after clicking on the ‘View’ button to the right of this field.

Table 4 New fields available via the ‘Sensitivity to Loss – Calculate’ pop-up box

Field	Description
Listing Status under NSW Biodiversity Conservation Act	Applies to all species and threatened ecological communities. Based on schedules under this legislation.
Listing Status under Environmental Protection and Biodiversity Conservation Act	Applies to all species. Based on schedules under this legislation.
Geographic Distribution	Applies to all species and TECs. Generally, only populated if the category selected will generate a higher 'sensitivity to loss' score than the listing status. This must be evidence-based.
Total Population Size	Applies to all species and TECs. Generally, only populated if the category selected will generate a higher 'sensitivity to loss' score than the listing status. This must be evidence-based.
Rate of Decline	Applies to all species and TECs. Generally, only populated if the category selected will generate a higher 'sensitivity to loss' score than the listing status. This must be evidence-based.

Note: Calculate button allows users within the Ecosystems Assessment Team, OEH to save edits.

Note: available fields vary based on whether the species is a single (full) or dual credit species.

Table 5 New fields available via the 'Sensitivity to Potential Gain (Fauna) – Calculate' pop-up box

Field	Description
Ecology or response to management is poorly known	Applies to all species. Where life history and/or ecology is very poorly known making it difficult to determine effective management actions and the expected response to management.
Species dependent on habitat attribute Foraging	Applies to fauna ecosystem credits (for dual credit species i.e. species/ecosystem credits). Select category based on the habitat attributes the species is dependent on, to complete its life cycle.
Comments	Describe attributes used to make selection.
Species dependent on habitat attributes Breeding	Applies to fauna species credits (for dual credit species i.e. species/ecosystem credits). Select category based on the habitat attributes the species is dependent on, to complete its life cycle.
Comments	Describe attributes used to make selection.
Effectiveness of Management in controlling threats	Applies to all species. Defines the ability to control key threats at a biodiversity stewardship site.
Comments	Describe the key threat used to make selection. Must be completed where 'threats beyond control' or 'limited ability to control threats' are selected.
Ability to colonise improved habitat	Applies to all species. Most common distance a species will disperse given average conditions across suitable habitat.
Fecundity – most frequent age at which females first produce	Applies to fauna species. The most frequent age at which females will first produce.
Fecundity – average number of offspring produced per female per year	Applies to fauna species. The average number of offspring per annum (offspring born or laid rather than reared).
High order predator	Applies to fauna species. A species for which, majority of their diet is vertebrate prey.

Table 6 New fields available via the 'Sensitivity to Potential Gain (Flora) – Calculate' pop-up box

Field	Description
Ecology or response to management is poorly known	Applies to all flora species. Where life history and/or ecology is very poorly known making it difficult to determine effective management actions and the expected response to management.
Effectiveness of Management in controlling threats	Applies to all flora species. Defines the ability to control key threats at a biodiversity stewardship site.
Comments	Describe the attributes used to make selection.
Species dependent on non-responding attributes	Applies to all flora species. A non-responding attribute is a habitat attribute that is critical to the existence of a species at a stewardship site and is unlikely to be at/on the stewardship site,

	and cannot be recreated at the stewardship site.
Age at first significant flowering	Applies to all flora species. Average age of first significant flowering (sufficient to enable recruitment to occur under suitable conditions).
Quantity class of viable seeds produced	Applies to all flora species. Estimated average quantity of seed produced per year by mature individuals.
Reproductive strategy	Applies to all flora species. Recruitment strategy most commonly used by a species.
Ability to colonise improved habitat	Applies to all species. Most common distance a species will disperse given average conditions across suitable habitat.
Seedbank Persistence	Applies to all flora species. Ability of a species to withstand temporary poor conditions, predicted by the length of time that the seedbank will persist in the soil or canopy.
Lifespan	Applies to all flora species. Ability of a species to withstand temporary poor conditions, predicted by the average lifespan of individuals.

3.2 BioNet Vegetation Classification

The following new features have been applied within the BioNet Vegetation Classification application.

3. Registration self-management functionality

Applies to: Public application (all users).

Read-only users accessing the public Vegetation Classification application can now manage their own registration information, including their password and contact details.

4. Introduction of 'Tool Ready' indicator

Applies to: all users.

In addition to modification of PCT Status (see item 18), a new 'Tool Ready' indicator has also been created. When all other statuses are 'Approved' and the 'PCT Threatened Ecological Communities Association Status' date is populated, 'Tool Ready' changes from 'No' to 'Yes'. At this point the data are ready for uplift into the BAM and other biodiversity assessment calculators.

4. Enhancements

4.1 BioNet Atlas

The following enhancements have been applied within the BioNet Atlas application.

4.1.1 Multiple modules

5. Updated product names

Applies to: all users.

In order to improve the discoverability of biodiversity information, updated product names were applied to various modules within the application in line with the [BioNet naming protocol](#). These edits to product names include the public search page, secure login page, secure homepage and within each of the modules i.e. Search, Species Sightings, Threatened Biodiversity, etc.

6. Updated spatial map viewer

Applies to: see individual items below.

The spatial map viewer was redeveloped (replacing the previous Flash-based application with a HTML5 implementation based on ArcGIS) primarily to support users of Apple products and mobile devices, with some additional enhancements. These involved updates in the following three modules.

- a. **Threatened Biodiversity** spatial distribution was enhanced so that distributions are now based automatically on records. The Accountable Officer can still manually add Interim Biogeographic Regionalisation of Australia (IBRA) subregions to the distribution, however the presence or absence of records within the IBRA subregion will influence whether the distribution is flagged as 'known' or 'predicted' (applies to all users with a secure login).
- b. **Search** map viewer was replaced without any functional change (applies to all users).
- c. **Spreadsheet upload** map viewer was enhanced by grouping species records where location details are the same, as well as changing from querying of a flat file to querying the database. Both changes made this mapper faster and less prone to timing out (applies to all users with a secure login).

7. Updated spatial layers

Applies to: see individual items below.

To support the changes to the Biodiversity Conservation Act, the following spatial layers have been updated.

- Updated layer 7 from a hybrid layer of Interim Biogeographic Regionalisation of Australia (IBRA) subregions cut by Catchment Management Authorities (CMAs), to a new layer based on IBRA version 7 subregions on land and Integrated Marine and Coastal Regionalisation of Australia (IMCRA) in the ocean.
- Updated layer 8 from IBRA version 6.1 to IBRA version 7.
- Added Local Land Services (LLS) boundaries as layer 12.

These updates affect the following three modules.

- a. **Threatened Biodiversity** spatial distribution is now based on IBRA subregions, instead of CMAs (applies to OEH staff with Threatened Biodiversity Edit access and Administrators).
- b. **Searchability** to select either IBRA version 7 (upgraded from version 6.1) or IBRA subregion (upgraded from CMA subregions), or Local Land Services (LLS) from the 'Geographic' area drop-down list. Note the CMA layer remains in the Geographic area selection list (applies to all users).
- c. **Species sightings** – the IBRA subregion, Bioregion and LLS layers have been added to the Calculated Area (s) box on the Location tab (applies to OEH users).

4.1.2 Imports

8. Creation of new observers

Applies to: Administrators.

On the Submit sightings page of the Import spreadsheet module, there was a bug preventing a new observer from being created which has now been fixed.

4.1.3 Flora surveys

9. Allocation of a default growth form to a flora species.

Applies to: Users of a secure login with Classification Role assigned.

Growth forms allocation to individual flora species determines which benchmarks the plant should be assessed via the regulatory tools.

4.1.4 Threatened biodiversity

10. Addition of PCT to profiles tab

Applies to: all users with a secure login.

On the main Profiles page, the tab 'Add veg type to profiles' has been updated to 'Add PCT to profiles'.

11. Security enhancement

Applies to: all OEH staff.

A 'Profile Assessment Role' has been added to BioNet Atlas User Profiles, restricting edit access of the following fields/sections of the Assessment tab within the Ecological community section of the Threatened Biodiversity module:

- 'Biodiversity Credit Class'
- 'Level of Biodiversity Concern'
- 'Serious and Irreversible Impacts'.

This change restricts edit access to small number of content maintainers to ensure greater data quality change control.

4.1.5 Admin

12. Ability to allocate Users to a new Classification Role.

Applies to: Administrators.

This allows Administrators to associate Flora Survey replicate data to PCTs.

4.2 BioNet Threatened Biodiversity profile app

The following enhancements have been applied within the BioNet Threatened Biodiversity app.

13. Product name and layer changes

Applies to: all users.

As with the BioNet Atlas application, updated product names were applied to various pages within the app in line with the BioNet naming protocol. This includes updates of 'threatened species' to 'threatened biodiversity' and 'Atlas of NSW Wildlife' to 'BioNet Atlas'. Additionally, references to the CMA search layer have been updated by IBRA bioregions.

14. Updated spatial layers

Applies to: all users.

To support the changes to the Biodiversity Conservation Act, spatial distribution is now based on IBRA subregions, instead of CMA subregions.

4.3 BioNet Vegetation Classification

The following enhancements have been applied within the BioNet Vegetation Classification application.

15. Application rename and logo addition

Applies to: all users.

As per the BioNet naming protocol, the 'Vegetation Information System – Classification' (VIS- C) application was renamed as 'BioNet Vegetation Classification'. The BioNet logo was added and the name change was applied to all components of the Edit and Public applications.

16. Menu changes and text updates

Applies to: all users.

Several changes were made to simplify the appearance, structure, ease-of-navigation and basic functionality within both the Public and Edit applications of BioNet Vegetation Classification, including:

- a. Wording on the Vegetation Classification application homepages was largely removed and links were provided or updated to the BioNet Guides and Manuals and BioNet support mailbox, allowing removal of the 'Help' menu item.
- b. The 'Communities' menu was relabelled 'PCT Data'.
- c. Wording under the PCT Data > Search and Display PCT menu item was partially updated.

- d. 'View' buttons were enabled for relevant fields in the following sections to provide all users (without edit rights) with visibility over data in second-layer data entry screens:
 - 'Species by Stratum'
 - 'Community Structure'
 - 'Environmental Regions'
 - 'Administrative Areas'
 - 'Climate, Landform and Substrate'
 - 'Threatened Ecological Communities (TEC) Listings'
 - 'Mapping'.

Note, in the Edit application, the 'Edit' buttons have been enabled as read-only for non-edit users for the three species by stratum fields to provide the same visibility.

- e. A new 'Print PCT' button has been added to the PCT User Interface screen in both applications to allow all users to print information for the report being viewed in the 'Community profile report' format.

17. Refinement of PCT and other field names, includes deletion, addition and renaming of various fields

Applies to: all users.

A two-fold refinement of PCT fields was undertaken to:

- a. incorporate BAM changes, such as the removal of all CMA and BioMetric vegetation types (BVT) data
- b. remove fields from the PCT User Interface (UI) that cannot be maintained into the future for all PCTs from existing data or spatial sources.

For many of the latter, the existing data was incomplete and static, having not been updated for several years, hence was misleading to users. Fields that were removed are listed in Table 6.

Table 6 Fields removed from the BioNet Vegetation Classification application

Field Name	Tab Name	Section Name	Comment
BVTID	Home page	My Work Tab	BAM change
BVTID(s)	Vegetation community details	Community Name and Classification Level	BAM change
NSW level of classification	Vegetation community details	Community Name and Classification Level	
NVIS level of classification	Vegetation community details	Community Name and Classification Level	
Beadle Formation Group (1981)	Vegetation community details	Vegetation Formation & Class	
Alternate Vegetation Formation	Vegetation community details	Vegetation Formation & Class	
Alternate Vegetation Class	Vegetation community details	Vegetation Formation & Class	
NVIS major sub-groups	Vegetation community details	NVIS Major Sub-groups	Section removed
all fields	Vegetation community details	Forest Type (RN 17)	Section removed

Field Name	Tab Name	Section Name	Comment
Species by sub-stratum – Add to main associated species?	Scientific description	Species by Stratum	
Species by sub-stratum – Non-Group frequency	Scientific description	Species by Stratum	
Species by sub-stratum – Non-Group score	Scientific description	Species by Stratum	
Species by sub-stratum – Fidelity class	Scientific description	Species by Stratum	
Species stratum comments (U, M & G)	Scientific description	Species by Stratum	
Species listing method	Scientific description	Species by Stratum	
Scientific Name (Taxon)	Scientific description	Scientific Name (Taxon)	Section and Compile scientific name functionality removed
Sub-stratum cover data – Median	Scientific description	Community Structure	
Sub-stratum cover data – Cover source comments	Scientific description	Community Structure	
Sub-stratum growth forms list – Frequency	Scientific description	Community Structure	
Sub-stratum growth forms list – Frequency source	Scientific description	Community Structure	
Sub-stratum growth forms list – Always present	Scientific description	Community Structure	
Sub-stratum height data – Median	Scientific description	Community Structure	
Sub-stratum height data – Mode	Scientific description	Community Structure	
Sub-stratum height data – Height classes (Walker & Hopkins, 1990)	Scientific description	Community Structure	
Sub-stratum height data – Height source comments	Scientific description	Community Structure	
Structures – all fields	Scientific description	Community Structure	Sub-section removed
all fields	Scientific description	Rainforest Structure (Webb)	Section removed
Main associated species	Scientific description	Descriptive Attributes	

Field Name	Tab Name	Section Name	Comment
Mean native species richness	Scientific description	Descriptive Attributes	
Mean native species richness source	Scientific description	Descriptive Attributes	
Interstate equivalent(s)	Scientific description	Descriptive Attributes	
Adjoining communities	Scientific description	Descriptive Attributes	
Adjoining communities' comments	Scientific description	Descriptive Attributes	
Climate zone	Distribution information	Environmental Regions	
Botanical division	Distribution information	Environmental Regions	
IBRA bioregions – Percentage of current extent	Distribution information	Administrative Areas	Reorder dominance functionality removed
IBRA subregions – Percentage of current extent	Distribution information	Administrative Areas	Reorder dominance functionality removed
Local government area(s) – Percentage of current extent	Distribution information	Administrative Areas	Reorder dominance functionality removed
Catchment Management Authority	Distribution information	Administrative Areas	BAM change. Field, % of current extent, New assignment. Remove assignment, Re-assignment and map all removed
MD Basin	Distribution information	Administrative Areas	
NPWS Regions	Distribution information	Administrative Areas	
NPWS Area	Distribution information	Administrative Areas	
Substrate mass	Distribution information	Landform and Substrate	
Great soil group	Distribution information	Landform and Substrate	
Soil texture	Distribution information	Landform and Substrate	
Land use	Extent	Extent	
PCT Percent remaining	Extent	Extent	
% accuracy (of pre-European extent remaining)	Extent	Extent	

Field Name	Tab Name	Section Name	Comment
PCT Percent cleared in CMA	Extent	Extent	BAM change
all fields	Conservation reserves		Tab removed
all fields	Secure property agreements		Tab removed
all fields	Protected area summary		Tab removed
Threat criteria	Threats, TECs & Benchmarks	Threats	
Threat categories	Threats, TECs & Benchmarks	Threats	
Degree of fragmentation	Threats, TECs & Benchmarks	Threats	
Threatening processes	Threats, TECs & Benchmarks	Threats	
Threat process lookup	Threats, TECs & Benchmarks	Threats	
Threat/protected area code	Threats, TECs & Benchmarks	Threats	
Impacts of European settlement	Threats, TECs & Benchmarks	Threats	
Weediness	Threats, TECs & Benchmarks	Threats	
Weed species	Threats, TECs & Benchmarks	Threats	
Vegetation Formation (Keith 2004)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Vegetation Type (= PCT Common name)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Vegetation type ID (BVTID)	Threats, TECs & Benchmarks	Community Condition Benchmarks	BAM change
Native plant species richness (min benchmark)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native over-storey cover (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native over-storey cover (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native mid-storey cover (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native mid-storey cover (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	

Field Name	Tab Name	Section Name	Comment
Native ground stratum cover grass (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native ground stratum cover grass (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native ground stratum cover shrub (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native ground stratum cover shrub (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native ground stratum cover other (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Native ground stratum cover other (min and max benchmarks)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Number of trees with hollows (min benchmark)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Total length of fallen logs (min benchmark)	Threats, TECs & Benchmarks	Community Condition Benchmarks	
all fields	Threats, TECs & Benchmarks	Recovery planning	Section removed
Mapping description	Spatial information	Mapping	
Number of Plots	Spatial information	Plot data	(replaced by Number of Replicates)
Plot data details – Site ID	Spatial information	Plot data	(replaced by Site No.)
Plot data details – Plot type ID	Spatial information	Plot data	
Plot data details – Survey ID	Spatial information	Plot data	(replaced by Survey Name)
Plot data details – Map unit ID	Spatial information	Plot data	
Previous lineage – all fields	Status and lineage	Lineage	Sub-section removed
Single transformation – all fields	Status and lineage	Lineage	Functionality to create new lineage transformations removed (move to Admin menu)
Plant Community Type IDs already related – Status affected	Status and lineage	Lineage	

Field Name	Tab Name	Section Name	Comment
Plant Community Type IDs already related – Resultant status	Status and lineage	Lineage	
Vegetation Formation (Keith 2004)	Administration Menu	Benchmarks	
Vegetation type ID (BVTID)	Administration Menu	Benchmarks	
Native plant species richness (min benchmark)	Administration Menu	Benchmarks	
Native over-storey cover (min and max benchmarks)	Administration Menu	Benchmarks	
Native mid-storey cover (min and max benchmarks)	Administration Menu	Benchmarks	
Native ground stratum cover grass (min and max benchmarks)	Administration Menu	Benchmarks	
Native ground stratum cover shrub (min and max benchmarks)	Administration Menu	Benchmarks	
Native ground stratum cover other (min and max benchmarks)	Administration Menu	Benchmarks	
Number of trees with hollows (min benchmark)	Administration Menu	Benchmarks	
Total length of fallen logs (min benchmark)	Administration Menu	Benchmarks	
CMA percentage cleared	Administration Menu	Benchmarks	BAM change
all fields	Administration Menu	CMA Clearing	BAM change. Section, fields and functionality all removed
OCL DataSource	Administration Menu	OCL	

Further refinements to PCT fields include the re-labelling of field names for clarification purposes. Fields that were relabelled are listed in Table 7.

Table 7 Relabelled fields in the BioNet Vegetation Classification application

Field Name	Tab Name	Section Name	New Name
Status	PCT top banner	-	PCT Definition Status (see item 19, below)
Classification Project	PCT top banner	-	Authority

Field Name	Tab Name	Section Name	New Name
Classification Project	Vegetation community details	Community Name and Classification Level	Authority
Status	Vegetation community details	Community Name and Classification Level	PCT Definition Status (see item 18, below)
IBRA version comments	Distribution information	Environmental Regions	IBRA version and attribution comments
-	-	Landform and Substrate	Climate, Landform and Substrate
-	Threats, TECs & Benchmarks	-	Threatened Biodiversity, TECs & Benchmarks
-	-	Threats	Threatened Biodiversity
-	Status and lineage	-	Status, Lineage history
Plant Community Type IDs already related – PCTID	Status, Lineage history	Lineage	Parent PCT(s) (see item 20, below)
Plant Community Type IDs already related – Transformed PCT	Status, Lineage history	Lineage	Offspring PCT(s)
Plant Community Type IDs already related – Lineage change comments	Status, Lineage history	Lineage	Transformation details
Status	Status, Lineage history	Status	PCT Definition Status (see item 19, below)
PCT Status Management	Administration Menu	System utilities	PCT Definition Status Management (see item 19, below)
Status	Administration Menu	System utilities > PCT Definition Status Management	PCT Definition Status (see item 19, below)
	Administration Menu	OCL	NSW Landscapes

New fields were also added to the Vegetation Classification application where required. Fields that were added are listed in Table 8.

Table 8 New fields added to the BioNet Vegetation Classification application

Field Name	Tab Name	Section Name	Description
Classification Type	PCT top banner	-	Options: Qualitative; Quantitative
IBRA Region Code	Distribution information	Environmental Regions	
IBRA Subregion Code	Distribution information	Environmental Regions	

Field Name	Tab Name	Section Name	Description
NSW Landscape Code	Distribution information	Environmental Regions	
Rainfall Minimum (mm p.a.)	Distribution information	Climate, Landform and Substrate	
Rainfall Maximum (mm p.a.)	Distribution information	Climate, Landform and Substrate	
Elevation Minimum (m asl)	Distribution information	Climate, Landform and Substrate	
Elevation Maximum (m asl)	Distribution information	Climate, Landform and Substrate	
PCT Percent cleared	Extent	Extent	
Percent Accuracy of PCT Percent Cleared Estimate	Extent	Extent	
Number of replicates	Spatial information	Plot data	(replaced Number of plots)
IBRA	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Benchmark Calculation Level	Threats, TECs & Benchmarks	Community Condition Benchmarks	Options: Class/IBRA; PCT
Tree Richness	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Shrub Richness	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Grass and Grass-Like Richness	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Forb Richness	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Fern Richness	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Other Richness	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Tree Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Shrub Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Grass and Grass-Like Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Forb Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Fern Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Other Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Litter Cover	Threats, TECs & Benchmarks	Community Condition Benchmarks	

Field Name	Tab Name	Section Name	Description
Number of Large Trees	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Large Tree Threshold Size	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Benchmark Confidence	Threats, TECs & Benchmarks	Community Condition Benchmarks	
Survey Name	Spatial information	Plot data	(replaced Survey ID)
Site No.	Spatial information	Plot data	(replaced Site ID)
Replicate No.	Spatial information	Plot data	
all fields	Administration Menu	Plant Community Lineage Management	New section, sub-sections and functionality (see item 20, below)
numerous fields (see the 18 Community Condition Benchmarks rows within this table)	Administration Menu	Benchmarks	BAM changes from BVT % cleared to PCT % cleared data (see item 21, below); also new condition variables, and some new options.
all fields	Administration Menu	PCT Clearing	BAM change. New section, fields and functionality (see item 22, below)

18. Revision and update of 'PCT Search and Display' functionality

Applies to: all users.

Search field names in the Public and Edit applications were updated to reflect application field name changes as outlined above (deletions, renames and additions). Additional changes were made in both applications to allow searches on Common and Scientific Name fields to include the symbols contained in some PCT names (. / -). Finally, the PCT search functionality was modified to ensure consistent results when using search filter options (and/or).

19. Modification of PCT data statuses

Applies to: all users.

Previously 'PCT Status' (= 'PCT List Status') was defined and configured to reflect the status of the PCT and all accompanying statutory data, including % cleared estimates, benchmarks and threatened biodiversity/TEC associations. This caused confusion and lengthy periods during which PCTs were not available for vegetation mapping projects and other uses that do not require the accompanying statutory data.

To rectify this issue, 'PCT Definition Status' has replaced PCT Status and now reflects completion of the PCT ID, names, descriptive and definition fields only. The PCT Definition Status options have also been simplified compared with those previously available for PCT Status, and two new status options have been added ('Approved – Under Edit' and 'Withdrawn') to better enable Administrators to manage PCTs. The publish routines used to transfer data to the Public application are dependent on PCT Definition Status and were correspondingly updated.

Additional new statuses (PCT % Cleared Status; PCT Threatened Ecological Communities Association Status date) and a revision of the Benchmark Status to PCT Benchmark Status accompany the introduction of PCT Definition Status. These statuses are linked such that when a PCT is Decommissioned, the PCT % Cleared Status and PCT Benchmark Status also change to Decommissioned.

20. Overhaul of PCT lineage data management functionality

Applies to: Classification Edit users and Administrators.

The existing functionality to enter PCT lineage data resided within the PCT UI for each PCT, causing ambiguity for classification edit users entering lineage data and resulting in inconsistently entered and indeed incorrect lineage entries. The lack of functionality to edit lineage data once entered and saved has prevented classification edit users from correcting these data. Lineage data entry functionality has been moved from within the PCT UI and into a new section within the Administration menu. The new version also has less than half of the previous lineage transformation options compared with the previous version, further simplifying these data and the data entry process.

Functionality to upload/import lineage data and additional functionality to edit the lineage data have also been developed. Data uploaded and imported, manually entered and subsequently edited populate into the relevant PCTs from this section.

In conjunction with these changes, the 'Communities' > 'Bulk replace' functionality has been removed. This has essentially been replaced by the 'Complex split to' transformation type, that caters for scenarios where multiple existing PCTs are collectively merged and then split to multiple new PCTs. The important difference is all the new PCTIDs must be specified, thereby providing more complete and useful lineage records for all PCTs.

21. Change to allow management of revised benchmark dataset from CMA level to Class/IBRA

Applies to: Statutory Data Edit users and Administrators.

Removal of CMAs and BVTIDs necessitated a re-calculation of vegetation condition benchmarks. Research was undertaken to investigate whether the existing or a better suite of variables would best distinguish between vegetation in different condition for development impact and offsetting assessment using metric-based methods. Scale of benchmark calculation and seasonal variability was also investigated.

The results of this research and development of accompanying benchmark data management functionality have resulted in the following:

- a. new functionality to upload and import benchmark data
- b. expanded functionality to search and edit default Class/IBRA and individual PCT benchmark data
- c. an overhaul of the benchmark variables and variations
- d. revised benchmark statuses and functionality to update multiple benchmark statuses concurrently.

22. Change to allow management of PCT Percent Cleared data (from BVT)

Applies to: Statutory Data Edit users and Administrators.

Removal of CMAs and BVTIDs resulted in deletion of BVT % cleared estimates and replacement with newly derived PCT % cleared estimates and accuracy estimates. The 'CMA Clearing' section was removed from the Administration menu and replaced by a new 'PCT Clearing' section, which includes data upload/import, search and edit functionality. As

mentioned in item 19, '**Modification of PCT data statuses**', a new PCT % cleared status was also developed, and this too is managed in the new PCT Clearing section. Concurrently, edit functionality for the PCT extent, accuracy and comments field were removed from the PCT UI to ensure all PCT extent and % cleared data are managed via the PCT Clearing section in future.

23. Overhaul of edit user roles and accessibility rights (multiple roles were deleted, some merged, others updated and clarified)

Applies to: all users (Edit application only).

Previously there were 12 different user access roles for the Vegetation Classification Edit application, including Administrator, Public/read-only user, and 10 different edit user roles. The number of edit user roles has been significantly reduced to just three (Classification Edit User, Statutory Data Edit User and TR (= TEC Relationships) Edit User). Further, access rights were reviewed and revised for existing fields, and updated to include new fields and functionality.

24. Update of Look up data (includes removal, creation of new and reorder etc.)

Applies to: Classification Edit users and Administrators.

The deletion and modification of fields within the Vegetation Classification application rendered multiple look up data tables no longer relevant or in need of updating. Correspondingly, a review and revision of the look up tables was undertaken and implemented.

25. Vegetation Classification – Systematic Flora Survey integration

Applies to: Classification Edit users and Administrators.

Currently, PCTs are a mix of qualitative and quantitatively derived. A deliberate change towards a progressively more quantitative PCT classification is underway. Consequently, PCT creation will no longer be possible in the Veg Classification application. Instead, the single point of truth of PCTs (PCT ID and Name) is now the Systematic Surveys (Flora) module of BioNet Atlas.

Consequently, the 'PCT Data' > 'Create new' menu item and functionality has been removed.

Multiple other PCT UI and functionality changes have been developed or are underway to enable the transfer of PCT data from the systematic survey module of BioNet Atlas to BioNet Vegetation Classification. Those which have been completed are detailed below (primarily revised and expanded data upload and import functionality). Note that the remaining integration changes are ongoing and not yet functional.

26. Update of data upload/import functionality

Applies to: Classification Edit users and Administrators.

PCT data upload / import functionality is accessed via the Administration menu > System utilities > Upload/Import PCT Data Management Routines section.

Previously there was functionality to upload and import PCT data via three templates:

- PCT Core Data template
- Structure_Growthform Data template
- Taxon Data template.

This functionality has been revised and expanded such that data can now be uploaded, then verified/edited, and finally imported via the following five routines:

- Upload/Import PCT Core Data (Use to establish PCT)
- Upload/Import PCT Structure data for PCT project
- Upload/Import PCT Taxonomy data for PCT project
- Upload/Import PCT Replicate data for PCT project
- Upload/Import PCT Domain data for PCT project.

Note also, as mentioned previously under items 21 and 22, data upload/import routines have also been developed for the PCT benchmark data and PCT % cleared data. Functionality for each is accessed via the relevant section within the Administration menu.

27. Community Identification functionality (PCT ID Tool)

Applies to: all users.

Search options in the PCT ID Tool were updated to reflect the field deletions, renames and additions. Further, functionality was developed to open PCTs from the search result table, each in a new window.

28. Overhaul of user and system reports and exports

a. User Reports and Exports

Applies to: all users.

In both the Public and Edit applications user reports and exports were significantly revised to:

- a. Reduce the number of report templates by deleting multiple similar reports.
- b. Make available three reports which were previously System Reports available only via the Administration menu.
- c. Update search criteria and export field names to reflect the application field deletions, renames and additions. Specifically:
 - 'Benchmarks report' – renamed as 'PCT Benchmarks report' and search/export fields updated and functionality improved to allow the export of large datasets.
 - 'Biometric report' – renamed as 'PCT tools report' and search/export fields updated.
 - 'Community profile report' – search/export fields updated.
 - 'Conservation Areas report' – deleted.
 - 'Export all PCTs' – (export option only) – export fields updated and functionality improved to allow the export of large datasets.
 - 'List (VCA format) report' – deleted.
 - 'Long with text ref (VCA format) report' – deleted.
 - 'Long without text ref (VCA format) report' – deleted.
 - 'OCL report' – renamed as 'NSW Landscapes report' and search/export fields updated.
 - 'Quick reference – 7 fields (VCA format) report' – deleted.
 - 'Short – 28 fields (VCA format) report' – deleted.
 - 'TEC report' – search/export fields updated.
 - 'PCT Tool Ready status report' – moved from Systems Reports, renamed, and search/export fields updated.

- 'PCT Lineage report' - moved from Systems Reports and search/export fields updated.
- 'Mapping report' - moved from Systems Reports and search/export fields updated.

Note, the updates to the user reports are still ongoing.

b. System Reports and Exports (Edit application > Administration menu)

Applies to: all Classification Edit Users and Administrators.

These have also been overhauled to

- a. Reduce the number of similar reports.
- b. Create new report options.
- c. Update search criteria and export field names to reflect the application field deletions, renames and additions. Specifically:
 - 'Benchmarks Change report' – search/export fields updated.
 - 'Change control panel report' – search/export fields updated.
 - 'Change control panel summary' – deleted.
 - 'Change history summary table' – merged into 'Change history report' and search/export fields updated.
 - 'CMA Clearing change report' – renamed as 'PCT clearing change report' and search/export fields updated.
 - 'CMA Clearing report (rename as 'PCT clearing report')' – deleted.
 - 'Lineage report' – moved to User Reports.
 - 'Lineage summary report' – deleted.
 - 'Mapping report' – moved to User Reports.
 - 'OCL Change report' – search/export fields updated.
 - 'PCT Listing Status change report' – renamed as 'PCT Definition Status change report' and search/export fields updated.
 - 'PCT Status report' – renamed as 'PCT Tool Ready status report' and moved to User Report.
 - 'PCT Plot Details report' – new template.

Note the update to the Systems Reports is still ongoing.

29. Major data changes

Applies to: all users.

This document focuses on the BioNet systems enhancements. Together with these are the major data updates that have been undertaken to support commencement of the *Biodiversity Conservation Act 2016* and associated Biodiversity Assessment Method (via the BAM Tool). The following datasets reside and will be maintained in the BioNet Vegetation Classification database:

- PCT % cleared data (previous clearing data was for BVTs).
- PCT Benchmark data – default monthly average, following average rainfall year benchmarks for new variables at Class/IBRA level (previous benchmark data was at Class/CMA or BVT level).
- complete IBRA Subregion attribution for all PCTs (previously attribution was incomplete).
- review and revision of PCT-TEC associations – still underway.

5. Documentation

Most of documentation for all BioNet user guides are available via [NSW BioNet quick guides, manuals, and datasheets](#).

Please note that as at June 2018 there are many manuals across both the BioNet Atlas and BioNet Vegetation Classification applications. These are currently being updated to incorporate the above changes and at the same time compiled into two manuals; one for BioNet Atlas and one for BioNet Vegetation Classification.

6. Warnings and known limitations

6.1 Data validation

A number of datasets were uploaded to BioNet Atlas and BioNet Vegetation Classification for these releases. Some of these data uploads still require further validation from the relevant OEH officer. For example, threatened biodiversity data collection and PCT benchmarks data requires further verification. In addition, the Lineage data within the BioNet Vegetation Classification application is undergoing remediation.

The results of a targeted review of the PCT % cleared and PCT-IBRA SR attribution data have yet to be approved and uploaded into the Vegetation Classification application.