BioNet Vegetation Classification Web Service data standard

BioNet Web Services version 2.4

Department of Planning and Environment

NSW GOVERNMENT

Acknowledgement of Country

The Department of Planning and Environment acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.

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Introduction

The BioNet Vegetation Classification Web Service provides an open application programming interface (API) to enable IT application developers to integrate data held in the BioNet Vegetation Classification database with software applications. The scope of its application as an open data initiative spans the full breadth of potential uses, from mobile apps to organisational decision-management business systems.

The web service does not replace the existing BioNet Vegetation Classification User Interface, as the web service is intended for use by software applications, not as a user interface. Therefore, not all data held in the BioNet Vegetation Classification User Interface are made available via the web service. Legacy data, such as Biodiversity Vegetation Type data, will not be carried via the web service, but will remain available via the existing web-based user interface (see BioNet Vegetation Classification web app).

This document provides detailed information on the data available via the BioNet Vegetation Classification Web Service. It will enable potential users of the web service to evaluate whether the web service will meet their data needs.

To ensure this version of the data standard applies to the web service, please check the online metadata and confirm that the version of this document (2.4) aligns with the value in '*bioNet:dataStandardVersion*' for '*EntitySet Name=VegetationClassification_PCTDefinition*' (see Figure 1).

```
− <EntitySet Name="VegetationClassification_PCTDefinition"
  EntityType="BioSvcApp.Models.vwCUBE_VegClassificationPCTDefinition"
  bioNet:bioNetOpenAPIVersion="3.1.0.0" bioNet:dataStandardVersion="2.1"
  bioNet:dateLastBulkUpdate="12/12/2017">
    <NavigationPropertyBinding Path="VegetationClassification_PCTBenchmarks"
    Target="VegetationClassification_PCTBenchmarks"/>
  </EntitySet>
```

Figure 1 Example of metadata output

Overview of the web service and standard

The BioNet Vegetation Classification Web Service is based on OASIS Open Data (OData) v4.0. OData provides a standardised RESTful (Representational State Transfer) protocol for querying and retrieving data and is already in use for the BioNet Species Sightings Web Service. The following links will give you more background about the OData protocol:

- *Unlock your data with OData* – a short, high-level explanatory video
- *What is the OData protocol?* – a short, more technical explanation of the protocol
- *OASIS Open Data Protocol (OData) TC* – the OASIS standard specification details
- *OData – the best way to REST* – the OData community website.

OData makes data available via entity sets. These can be thought of as tables of data – like a sheet within a spreadsheet. For the Vegetation Classification Web Service, 4 entity sets linked by Plant Community Type Identification (PCT ID) (Figure 2) are available:

- **VegetationClassification_PCTDefinition:** The intention of this entity set is to provide data that would be used to help people identify PCTs in the field or office (Figure 3). The authority field in this entity set enables further detailed floristic data to be retrieved for identification. Where the PCT has not yet been reclassified using the new quantitative methodology, legacy floristic data are available in the VegetationClassification_PCTStratumData entity set. Where the PCT has been reclassified, floristic data by growth form is available in the VegetationClassification_PCTGrowthForm entity set.
- **VegetationClassification_PCTBenchmarks:** The intention of this entity set is to provide the data that business applications would use to evaluate the value of the PCT once it has been identified. It has a clear focus on vegetation extent, condition and associated threatened entities (Figure 4).
- **VegetationClassification_PCTStratumData:** This entity set provides legacy floristic data defining the PCT organised by stratum. As a PCT is reclassified, the floristic data are removed from this entity set and the new growth form data are made available in the VegetationClassification_PCTGrowthForm entity set. Once all PCTs have been reclassified, this entity set will be decommissioned (Figure 5).
- **VegetationClassification_PCTGrowthForm:** This entity set provides detailed floristic data by growth form group for PCTs that have been quantitatively defined. If a PCT is not quantitatively defined, then floristic data are available in the VegetationClassification_PCTStratumData entity set (Figure 6).

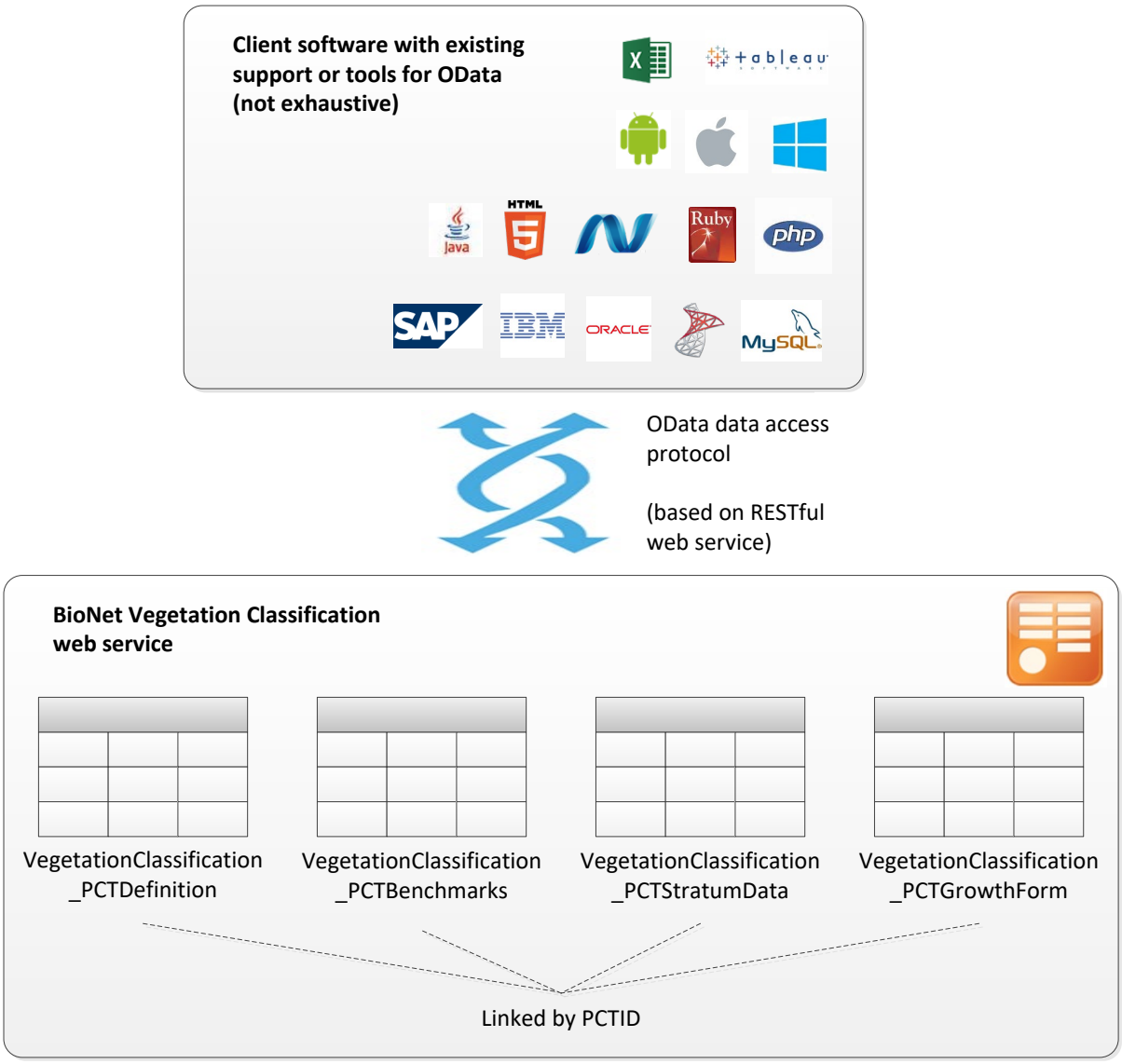

Figure 2 **Conceptual overview of data exposure via the OData-based BioNet Vegetation Classification Web Service**

RESTful = Representational State Transfer

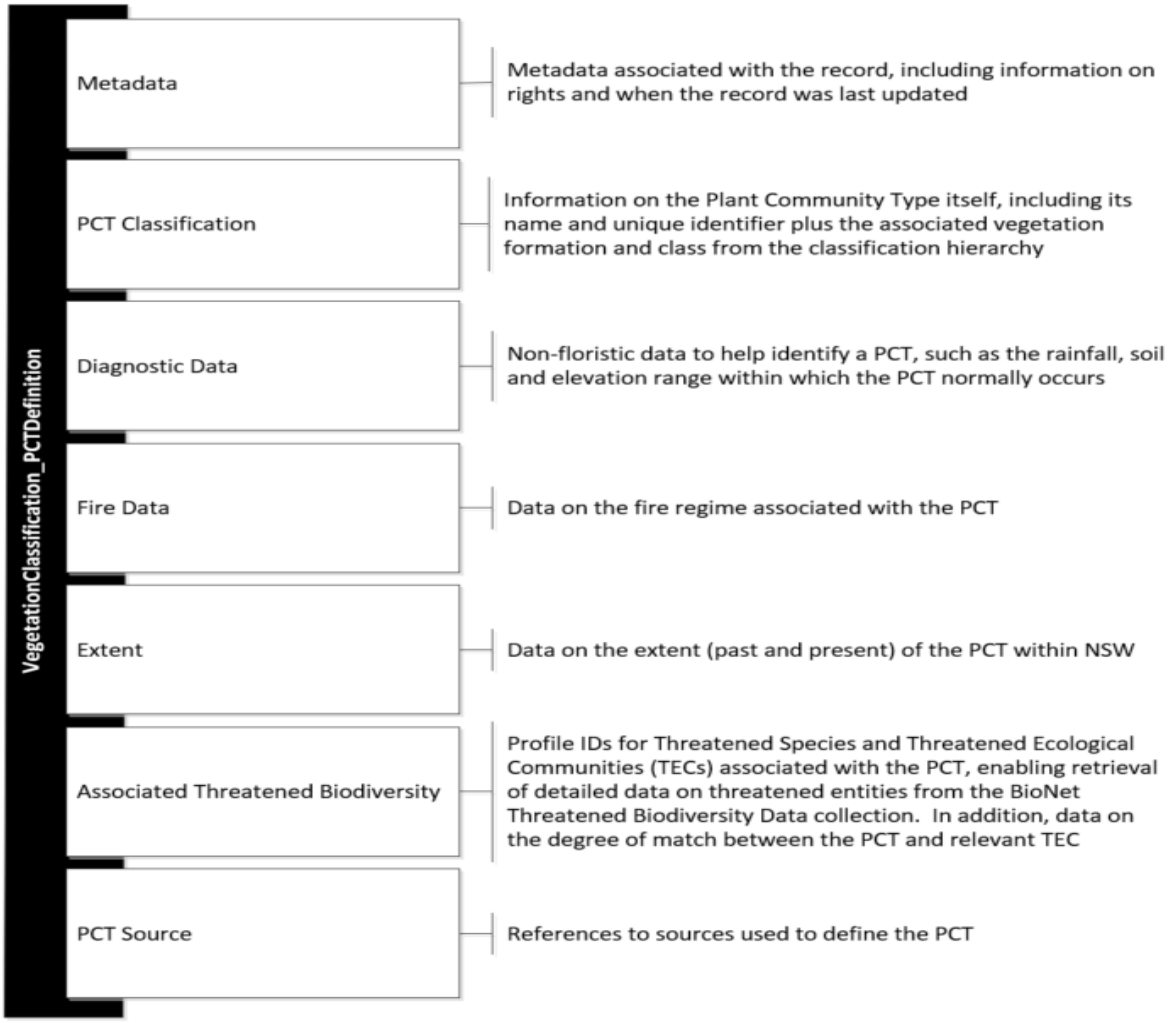

Figure 3 Overview of the categories of data shared via the VegetationClassification_PCTDefinition entity set

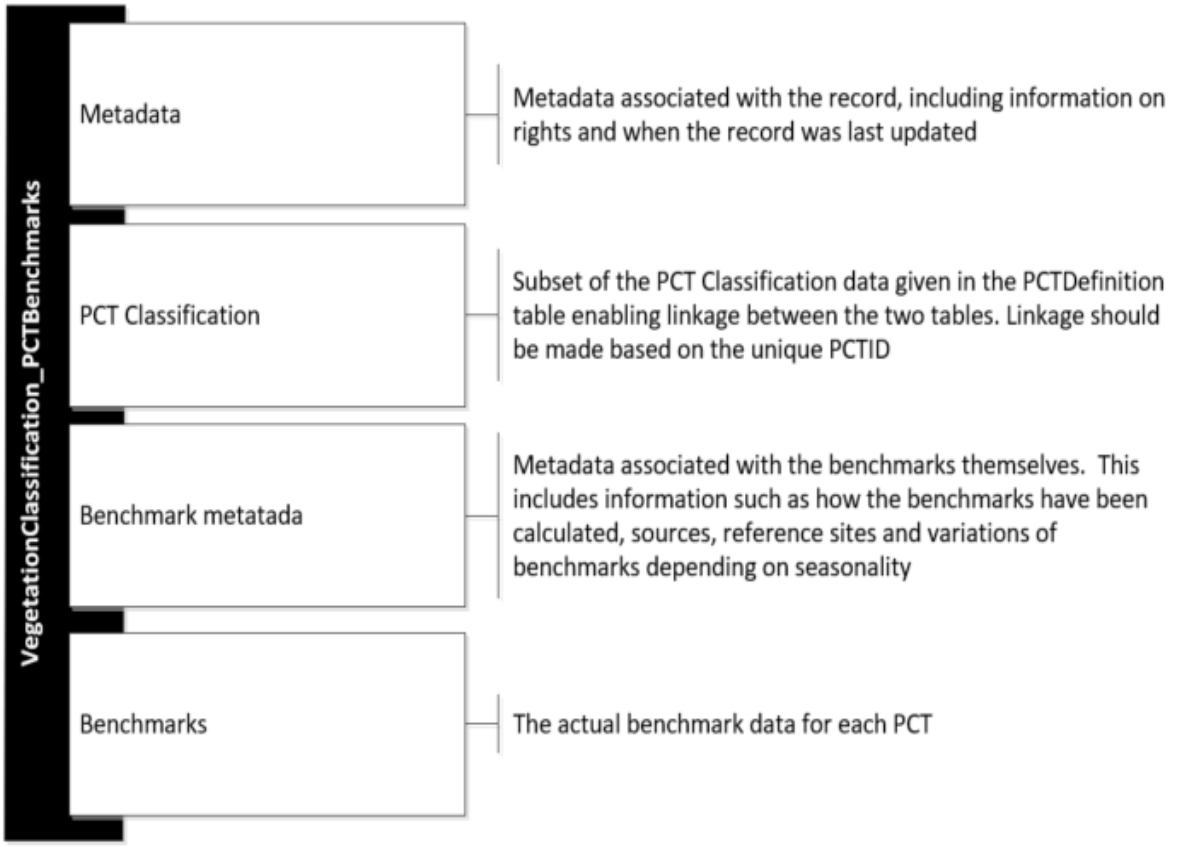

Figure 4 **Overview of the categories of data shared via the VegetationClassification_PCTBenchmarks entity set**

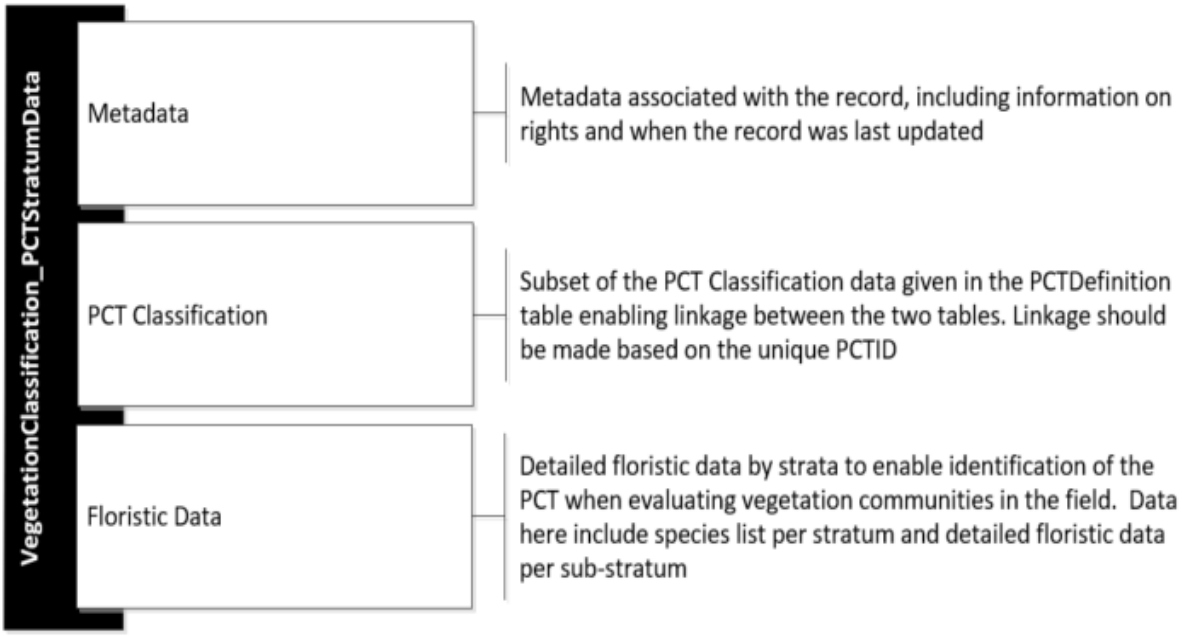

Figure 5 **Overview of the categories of data shared via the VegetationClassification_PCTStratumData entity set**

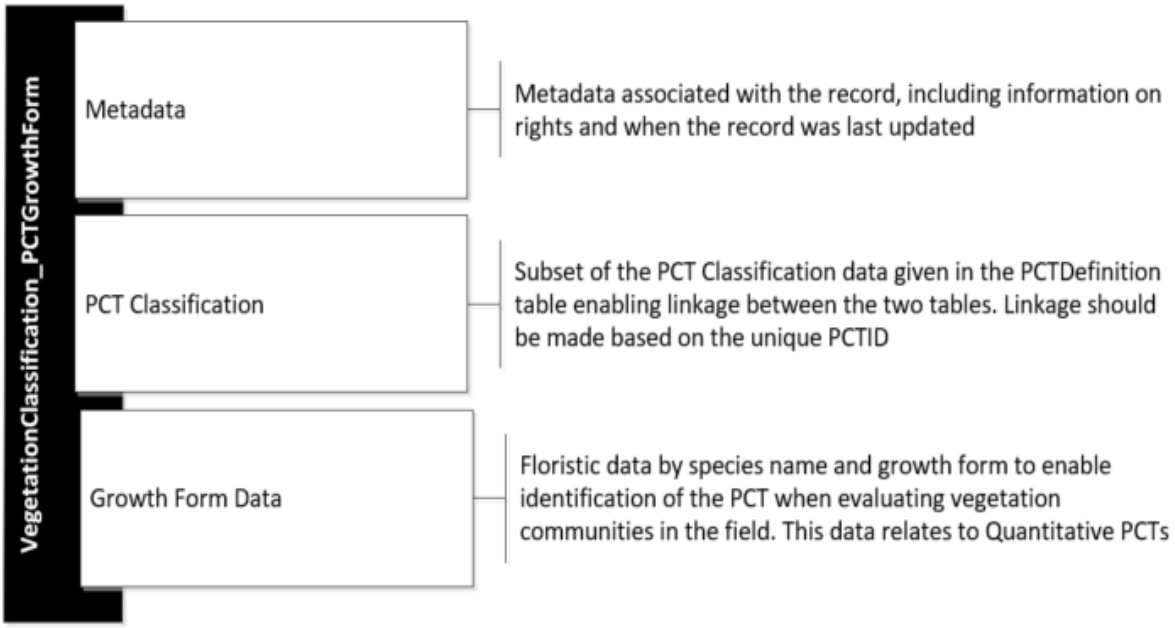

Figure 6 Overview of the categories of data shared via the VegetationClassification_PCTGrowthForm entity set

Detailed descriptions of the data fields available within each category are given in the tables that follow.

Specifications for the VegetationClassification_PCTDefinition entity set

Tables 1–7 provide the exact specifications of the data fields available in each category of VegetationClassification_PCTDefinition via the Vegetation Classification Web Service.

Table 1 Metadata data fields

Field name	Occurrence	Definition	Format	Example	Data type
institutionCode	1	The name (or acronym) in use by the institution that has custody of the object(s) or information referred to in the record	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (50)
collectionCode	1	The name, acronym, coden, or initialism identifying the collection or dataset from which the record was derived	Always 'BioNet Vegetation Classification'	'BioNet Vegetation Classification'	VARCHAR (50)
datasetName	1	The name identifying the dataset from which the record was derived	Always 'PCT Classification'	'PCT Classification'	VARCHAR (50)
dcterms_rightsHolder	1	The person or organisation owning or managing rights over the resource	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (50)
dcterms_rights	1	Information about rights held in and over the resource. Typically, rights information includes a statement about various property rights	Always 'CC-BY 4.0'	'CC-BY 4.0'	VARCHAR (50)

Field name	Occurrence	Definition	Format	Example	Data type
		associated with the resource, including intellectual property rights			
dcterms_language	1	The language of the resource	RFC 4646 [RFC4646]	‘en’ for English	VARCHAR (50)
dcterms_type	1	The nature or genre of the resource	Always ‘dataset’	‘dataset’	VARCHAR (50)
dcterms_bibliographic Citation	1	A bibliographic reference for the resource, as a statement indicating how the record should be cited (attributed) when used	‘BioNet Vegetation Classification <current date> <HH:MM> <AM/PM> +<HH:MM offset from UTC>’ Note: The date and time are Australian Eastern Standard Time adjusted for daylight saving and reflect the date and time when the web service data were last refreshed from the source data (BioNet Vegetation Classification).	‘BioNet Vegetation Classification 15/04/2020 4:41 AM +10:00’	VARCHAR (100)
dcterms_modified	1	The most recent date and time when the resource was changed	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC Note: The date modified relates to any change made in the source system (BioNet Vegetation Classification). It is thus possible that the date modified is updated but no actual changes are carried	‘9/03/2019 3:32:25 PM +11:00’	DATETIME

Field name	Occurrence	Definition	Format	Example	Data type
			through into the data fields presented via the web service.		
dcterms_available	1	Date (often a range) that the resource became or will become available	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC	'31/12/2005 0:00:00 AM +11:00'	DATETIME

Table 2 PCT classification data fields

Field name	Occurrence	Definition	Format	Example	Data type
PCTID	1	The unique identifier for the PCT	Integer	'2'	INT NOT NULL
PCTName	1	A colloquial plant community description that can be understood by non-botanists. It may include common names of dominant plant species, or names of a geographical region, a substrate, a soil type or a climatic zone	Text	'River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW'	VARCHAR (MAX)
PCTScientificName	1	The scientific name for the PCT	Text	'River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW'	VARCHAR (MAX)
status	1	The PCT definition status of the PCT, as determined by the Executive Director Science (the department)	One of the following controlled vocabulary: • Approved • Decommissioned	'Approved'	VARCHAR (MAX)
classificationType	1	Indicates if the PCT has been determined using a quantitative or qualitative-based method	Either 'Quantitative' or 'Qualitative'	'Qualitative'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
		Note: If the classification type equals 'Quantitative' then detailed floristic data for the PCT should be retrieved from the VegetationClassification_PCTGrowthForm entity set. If the classification type equals 'Qualitative', then detailed floristic data should be retrieved from the VegetationClassification_PCTStratumData entity set.			
classificationConfidenceLevel	1	Descending scale of a qualitative measure of confidence. These confidence ratings relate to the completeness of the data on the listed community	One of the following controlled vocabulary (see Appendix A.1): • Very High • High • Medium • Low • Very Low	'Medium'	VARCHAR (MAX)
vegetationClass	1	Equivalence of a community to one of the vegetation classes in the Keith (2004) statewide vegetation map	Controlled vocabulary as per the vegetation classes defined in Keith (2004)	'Inland Riverine Forests'	VARCHAR (MAX)
vegetationClassID	1	The unique ID associated with the vegetationClass	Whole number	'1309'	VARCHAR (MAX)
vegetationFormation	1	Equivalence of a community to one of the vegetation formations in the Keith (2004) statewide vegetation map	Controlled vocabulary as per the vegetation formations defined in Keith (2004)	'Forested Wetlands'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
vegetationFormationID	1	The unique ID associated with the vegetationFormation	Whole number	'1893'	VARCHAR (MAX)
IBRA	1–n	The name of the IBRA7 region. Refer to Australia's bioregions (IBRA) for more information on the IBRA framework	Controlled vocabulary using IBRA Version 7 region names. Where there is more than one region they will be separated by semicolons	'NSW South Western Slopes;Riverina;Cobar Peneplain;Murray Darling Depression'	VARCHAR (MAX)
IBRAID	1–n	The unique ID associated with the IBRA region	Alphabetic code. Where there is more than one region ID they will be separated by semicolons and the order will correspond to the associated IBRA name given in the IBRA field	'NSS;RIV;COP;MDD'	VARCHAR (MAX)
IBRASubregion	1–n	The name of the IBRA7 region. Refer to Australia's bioregions (IBRA) for more information on the IBRA framework	Controlled vocabulary using IBRA Version 7 subregion names. Where there is more than one subregion they will be separated by semicolons	'Murray Fans;Murray Scroll Belt;Lachlan Plains;Inland Slopes;Robinvale Plains;Lower Slopes;Murrumbidgee;South Olary Plain;Lachlan'	VARCHAR (MAX)
IBRASubregionID	1–n	The unique ID associated with the IBRA subregion	Alphanumeric code. Where there is more than one subregion ID they will be separated by semi-colons and the order will correspond to the associated subregion name	'RIV03;RIV06;COP05;NSS01;RIV05;NSS02;RIV02;MDD01;RIV01'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			given in the IBRASubregion field		
county	1–n	The full, unabbreviated name of the next smaller administrative region than stateProvince (county, shire, department, etc.) in which the location occurs. In the context of NSW, the local government area (LGA)	Text. Where the PCT occurs in more than one LGA the names will be separated by semicolons	'CLARENCE VALLEY; COFFS HARBOUR;'	VARCHAR (MAX)
landscapeName	1–n	The name of the NSW Landscape (Mitchell)	Text. Where the PCT occurs in more than one NSW Landscape (Mitchell) the names will be separated by semicolons	'Sturt Dunes;Mallee Cliffs Salt Lakes and Playas'	VARCHAR (MAX)
isADerivedPlantCommunityType	0–1	Used to indicate whether the PCT is never derived, partially derived, or always derived	One of the following controlled vocabulary: • No – never occurs as a derived community • Yes – is fully derived • Partial – occurs as both derived and original	'No – never occurs as a derived community'	VARCHAR (50)
originalCommunityThisPCT DerivedFrom	0–n	Where the community is a derived community, the community type(s) from which this community has been derived	Text. Where there is more than one original community type they will be separated by semicolons Note: The name given here corresponds directly to the name given in the PCTName field of the original PCT from which this	'Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion;'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			community is derived. If the community is not derived or there is no data, 'null' is given.		
derivedFromCommunityType Comment	0–1	Comments pertaining to the PCT if derived type	Free text Note: If there are no comments or the community is not derived, 'null' is given.	'Occurred extensively as an original community. Can occur as a derived community – predominantly from open Boree/Myall woodland (VCAID 26). Individual sites can be derived from other intergraded woodland communities.'	VARCHAR (MAX)
totalNumberOfReplicates	0–1	The total number of primary and secondary replicates associated with a PCT	Integer	'3'	INT
numberOfPrimaryReplicates	0–1	The number of replicates assigned to the PCT with a 'primary' assignment. Primary replicates are within the calculated statistical floristic threshold of the PCT. Primary replicates are used in floristic profiling of the PCT, as well as spatial and environmental profiling. Assignments of replicates to PCTs are undertaken and	Integer	'2'	INT

Field name	Occurrence	Definition	Format	Example	Data type
		maintained by the department's Science Division			
numberOfSecondaryReplicates	0–1	The number of replicates assigned to the PCT with a 'secondary' assignment. Secondary replicates are not within the calculated statistical floristic threshold of the PCT. The assignment of secondary replicates to PCTs has been made on the basis of environmental and other auxiliary information. Secondary replicates may be disturbed, have incomplete species lists, or have not been collected using standard survey techniques. Secondary replicates are not used in the floristic profiling of the PCT, but are used in spatial and environmental profiling. Assignments of replicates to PCTs are undertaken and maintained by the department's Science Division	Integer	'1'	INT
medianNativeSpeciesRichness	0–1	The median number of native species recorded in a 400 m^2 replicate, calculated from the primary replicate assignments to the PCT	Text	'54'	VARCHAR (300)

Table 3 Diagnostic data fields

Field name	Occurrence	Definition	Format	Example	Data type
minimumElevationInMeters	0–1	The minimum elevation in metres above sea level of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with elevation data	Number to one decimal place	'203.3'	DECIMAL (6, 1)
medianElevationInMeters	0–1	The median elevation in metres above sea level of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with elevation data	Number to one decimal place	'376.1'	DECIMAL (6, 1)
maximumElevationInMeters	0–1	The maximum elevation in metres above sea level of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with elevation data	Number to one decimal place	'765.2'	DECIMAL (6, 1)
minimumAnnualRainfallInMillimeters	0–1	The minimum annual rainfall in millimetres of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with rainfall data	Integer	'902'	INT
medianAnnualRainfallInMillimeters	0–1	The median annual rainfall in millimetres of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with rainfall data	Integer	'1299'	INT

Field name	Occurrence	Definition	Format	Example	Data type
maximumAnnualRainfallInMillimeters	0–1	The maximum annual rainfall in millimetres of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with rainfall data	Integer	‘1554’	INT
minimumAnnualMeanTemperatureInCelsius	0–1	The minimum annual mean temperature in degrees Celsius or a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with temperature data	Number to 2 decimal places	’12.64’	DECIMAL (6, 2)
medianAnnualMeanTemperatureInCelsius	0–1	The median annual mean temperature in degrees Celsius of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with temperature data	Number to 2 decimal places	’14.62’	DECIMAL (6, 2)
maximumAnnualMeanTemperatureInCelsius	0–1	The maximum annual mean temperature in degrees Celsius of a replicate assigned to the PCT. Calculated by intersecting replicates that define the PCT with temperature data	Number to 2 decimal places	’15.96’	DECIMAL (6, 2)
vegetationDescription	1	Summary description of the plant community	Free text	‘Very tall open forest dominated by River Red Gum (Eucalyptus camaldulensis	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
				subsp. camaldulensis) that grow to over 30 m high and sometimes exceed 45 m. Shrubs are usually absent. The ground cover may be sparse and covered in litter or mid-dense to dense. Occurs on black to grey silty-loam-clay alluvial (often self-mulching) soils in frequently flooded sites bordering stream channels, ox-bows and in nearby low-lying areas including intermittent lakes. Mainly distributed along the Murray River with smaller areas along the Murrumbidgee and Lachlan Rivers in the Riverina and Murray-Darling Basin	

Field name	Occurrence	Definition	Format	Example	Data type
				Bioregions of New South Wales and Victoria with small areas in the NSW South-western Slopes Bioregion.'	
variationAndNaturalDisturbance	0–1	Description of floristic variation in the community and natural disturbances that affect successional stages and species composition	Free text Note: If no description exists, 'null' is given.	'This community occurs in low lying areas and its species composition is adapted to frequent flooding. The ecology of regeneration of River Red Gum is discussed on pp33-34 in Forestry Commission of NSW (1985) and Stefano (2002).'	VARCHAR (MAX)

Table 4 Fire data fields

Field name	Occurrence	Definition	Format	Example	Data type
fireRegime	0–1	Description of known or postulated fire regimes for the appropriate management of the community, and comments on the impacts of fire on the community	Free text Note: If no description exists, 'null' is given.	'Rarely subject to fire due to flooding and low ground biomass. Crown fires are rare due to the	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
				height of the trees and a lack of shrubs. Intense or even medium-intense fires may kill River Red Gum trees by burning to the tree's cambium at the base of the trees.'	

Table 5 Extent data fields

Field name	Occurrence	Definition	Format	Example	Data type
PCTPercentClearedStatus	1	The percent cleared status of the PCT, as determined by the department's Executive Director Science	One of the following controlled vocabulary: • Draft • Proposed • Approved • Revised • Decommissioned	'Approved'	VARCHAR (100)
PCTPercentCleared	1	Proportion of the PCT cleared within NSW (i.e. area of pre-European extent minus the current extent, divided by the pre-European extent, expressed as a percentage). May be calculated from current and pre-European PCT mapping or based on expert opinion	Percentage represented as a decimal value (e.g. 50% would be given in web services as 0.50)	'0.14'	DECIMAL (18, 2)

Field name	Occurrence	Definition	Format	Example	Data type
PCTPercentClearedAccuracy	1	A percent accuracy rating for the PCT percent cleared value	One of the following controlled vocabulary: • +/–10 • +/–20 • +/–30 • +/–40 • +/–50 • +/–60 • +/–70 • +/–80 • +/–90	'+/–80'	VARCHAR (10)
PCTPercentClearedComments	0–1	Comments pertinent to PCT % cleared provided	Free text	'PCT % Cleared value revised as BAM PCT Data Project (reference: Umwelt (Australia) Pty Limited).'	VARCHAR (1000)
PCTPercentClearedSource	0–1	The source of the value given in the PCTPercentCleared field	One of the following controlled vocabulary: • Calculated from current and Pre-European PCT mapping • Expert Opinion • Unknown	'Expert Opinion'	VARCHAR (500)
preEuropeanExtent	1	The measured or estimated pre-European extent of the plant community within NSW based on the best available information	Hectares	'35000'	INT

Field name	Occurrence	Definition	Format	Example	Data type
		including mapping, modelling or expert advice			
preEuropeanAccuracy	1	A percent accuracy rating for the pre-European extent value	One of the following controlled vocabulary: • 10 • 30 • 50 • 70 • 90 • null	'30'	VARCHAR (MAX)
preEuropeanQualifiers	1	Description for derivation of pre-European extent	One of the following controlled vocabulary: • Estimated from extant vegetation maps: full range • Estimated from extant vegetation maps: part range • Estimated from pre-European map: full range • Estimated from pre-European map: part range • Expert estimate not based on any mapped vegetation • Modelled from sound site or polygon data	'Expert estimate not based on any mapped vegetation'	VARCHAR (MAX)
preEuropeanComments	0–1	Free format comments on the pre-European extent figure describing any qualifications about the figure	Free text	'Extrapolated from current extent mapping on the Murray river with	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
				estimates from other rivers.'	
currentExtent	1	The measured or estimated current extent of the plant community within NSW based on the best available information including mapping, modelling or expert advice	Hectares	'30000'	INT
currentAccuracy	1	A percent accuracy rating for the current extent value	One of the following controlled vocabulary: • 10 • 30 • 50 • >70 • >90 • null	'30'	VARCHAR (MAX)
currentQualifiers	1	Description for derivation of current extent	One of the following controlled vocabulary: • Estimated from broadly classified current extant vegetation map • Estimated from mapped extant vegetation: full range • Estimated from mapped extant vegetation: part range • Estimated from pre-European map: full range	'Estimated from broadly classified current extant vegetation map'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			• Estimated from pre-European map: part range • Expert estimate • Measured from map of extant vegetation • Modelled from sound site data over unclassified map of extant vegetation • null		
currentComments	0–1	Free format comments on the current extent figure describing any qualifications about the figure	Free text	'Estimated that about 20,000 ha occurs along the Murray River in NSW. This has been estimated by attributing 5% of section 1, 5% of section 2, 20% of section 3, 20% of section 4, 5% of section 5 and 5% of section 6 of the structural map unit Red Gum Forest as mapped in Margules & Partners (1990) and by correlating the sampling plot frequency along the	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
				River of floristic communities 1 and 2 described in Smith & Smith (1990).'	

Table 6 Associated threatened biodiversity data fields

Field name	Occurrence	Definition	Format	Example	Data type
TSProfileID	0–n	The unique identifier for the related threatened species profile, as stored in the BioNet Threatened Biodiversity Profiles data collection maintained by the department	Numeric code. Where more than one threatened species is associated with a PCT, the profile IDs are separated by commas Note: If no threatened species profiles are associated with the PCT, 'null' is given.	'10045,10113,10116,10130,10159'	VARCHAR (100)
TECAssessed	1	Indicator of whether the associations between the PCT and TECs have been assessed	One of the following controlled vocabulary: • Has associated TEC • No associated TEC • Not assessed	'No associated TEC'	VARCHAR (100)
stateTECProfileID	0–n	The unique identifier for the related state-listed TEC profile, as stored in the BioNet Threatened Biodiversity Profiles data collection maintained by the department. State-listed TECs are defined in the *Biodiversity Conservation Act 2016* (BC Act)	Numeric code. Where more than one TEC is associated with a PCT, the profile IDs will be separated by commas Note: If no threatened species profiles are associated with the PCT, 'null' is given.	'10065,10973'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
stateTECFitStatus	0–1	Indicator of the relationship between the PCT and the relevant BC Act TEC	One of the following controlled vocabulary: • (Part) • (Equivalent)	'(Part); (Equivalent); (Part);'	VARCHAR (MAX)
stateTECDegreeOfFit	0–1	Description of the degree of match between the PCT and the relevant TEC	One of the following controlled vocabulary: • The PCT is the listed community by definition. • The PCT is represented by the TEC to a large degree. • The PCT is part of the TEC and is defined as a finer scale community. The PCT does not occur other than within the TEC. The TEC may occur in some areas where the community does not represent the PCT. • The PCT completely includes the TEC and is defined as a broader community than the TEC. The TEC never occurs except as part of this community, but the PCT may occur in some areas that do not represent the TEC. • The PCT is, to some greater or lesser degree, a part of	'The PCT to some greater or lesser degree includes the TEC, and is defined as a broader community than the TEC. The PCT and the TEC may occur in some areas independent of each other.'	VARCHAR (500)

Field name	Occurrence	Definition	Format	Example	Data type
			the TEC, and it is defined as a finer scale community. The PCT and the TEC may occur in some areas independently of each other. • The PCT, to some greater or lesser degree, includes the TEC, and it is defined as a broader community than the TEC. The PCT and the TEC may occur in some areas independently of each other. • The PCT and the TEC are likely to be related in some way, but the exact relationship is unknown.		
countryTECProfileID	0–n	The unique identifier for the related Commonwealth-listed TEC profile, as stored in the BioNet Threatened Biodiversity Profiles data collection maintained by the department. Commonwealth-listed TECs are defined in the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)	Numeric code. Where more than one TEC is associated with a PCT, the profile IDs are separated by commas Note: If no threatened species profiles are associated with the PCT, 'null' is given.	'10175,10550,10749,10973'	VARCHAR (MAX)
countryTECFitStatus	0–1	Indicator of the relationship between the PCT and the relevant EPBC Act TEC	One of the following controlled vocabulary: • (Part)	'(Part); (Part);'	

Field name	Occurrence	Definition	Format	Example	Data type
			• (Equivalent) Where more than one TEC is associated with a PCT, the countryECFitStatus will be separated by a semicolon		
countryTECDegreeOfFit	0–1	Description of the degree of match between the PCT and the relevant TEC	One of the following controlled vocabulary: • The PCT is the listed community by definition. • The PCT is represented by the TEC to a large degree. • The PCT is part of the TEC and is defined as a finer scale community. The PCT does not occur other than within the TEC. The TEC may occur in some areas where the community does not represent the PCT. • The PCT completely includes the TEC and is defined as a broader community than the TEC. The TEC never occurs except as part of this community, but the PCT may occur in some areas that do not represent the TEC.	'The PCT is to some greater or lesser degree a part of the TEC, and is defined as a finer scale community. The PCT and the TEC may occur in some areas independent of each other. ;The PCT is to some greater or lesser degree a part of the TEC, and is defined as a finer scale community. The PCT and the TEC may occur in some areas independent of each other. ;'	VARCHAR (500)

Field name	Occurrence	Definition	Format	Example	Data type
			• The PCT is, to some greater or lesser degree, a part of the TEC, and it is defined as a finer scale community. The PCT and the TEC may occur in some areas independently of each other. • The PCT, to some greater or lesser degree, includes the TEC, and it is defined as a broader community than the TEC. The PCT and the TEC may occur in some areas independently of each other. • The PCT and the TEC are likely to be related in some way, but the exact relationship is unknown. Where more than one TEC is associated with a PCT, the countryTECFitStatus will be separated by a semicolon		
TECComments	0–1	Detailed information about the PCT and its associated TEC/s to assist users in correctly determining TEC presence on site	Free text. Sentence format. Where there is more than one TEC association comment, each comment begins as a new sentence	'(Comment TEC1) Relates to the NSW Blue Mountains Swamps TEC. (Comment TEC2) Relates to the Commonwealth	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
				Temperate Highland Peat Swamps on Sandstone TEC where it occurs at elevations above 600 m asl.'	

Table 7 PCT source data fields

Field name	Occurrence	Definition	Format	Example	Data type
fullReference	0–n	Full details for references for community information	Text.? As would be cited in a scientific journal, e.g. Short, J. Database Referencing. In *Journal of Database Referencing*, Vol. 2, pp.213–234. Database Publishing, Sydney. Where there is more than one reference, the references will be separated by semicolons	'Peake, T.C. (2006) The Vegetation of the Central Hunter Valley, New South Wales. A report on the findings of the Hunter Remnant Vegetation Project. Hunter-Central Rivers Catchment Management Authority, Paterson; Department of Sustainability, Environment, Water, Population and Communities (2011b). Weeping Myall Woodlands in Community and	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
				Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/sprat.; NSW Scientific Committee (2005) Hunter Valley Weeping Myall Woodland of the Sydney Basin Bioregion- endangered ecological community determination - final. DEC (NSW), Sydney.; Sivertsen, D., Roff, A., Somerville, M., Thonell, J. and Denholm, B. 2011. Hunter Native Vegetation Mapping. Geodatabase Guide	

Field name	Occurrence	Definition	Format	Example	Data type
				(Version 4.0), Internal Report for the Office of Environment and Heritage, Department of Premier and Cabinet, Sydney, Australia.; Somerville, M. (2009a) Hunter, Central & Lower North Coast Vegetation Classification & Mapping Project Volume 1: Vegetation Classification Technical Report. Hunter-Central Rivers Catchment Management Authority, Tocal, NSW.;'	
profileSource	0–n	An indication of which vegetation community in each reference source (see fullReference field) is relevant for PCT information	Free text, but each reference should give a code number corresponding to the vegetation community within the reference that is relevant to the PCT. Where there is more than one reference, the	'Benson 113 (Benson et al. 2006); Nandewar Unit 107 (Wall 2004);'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			references are separated by semicolons Note: If no data are present, 'null' is given.		
authority	1	Reference for classification (i.e. the dataset or project from which the PCT was obtained)	Free text	'VCA 1.1 – archive'	VARCHAR (MAX)
associatedReferencePlots	0–n	The list of plotIDs from the BioNet Systematic Flora Survey database associated with this PCT Note: field not populated for version 2.2 of web service.	Numeric code. Where there is more than one plotID they will be separated by semicolons Note: If no plots are currently associated with the PCT, then 'null' is given.	'1'	VARCHAR (MAX)

Specifications for the VegetationClassification_PCTBenchmarks dataset

Tables 8–11 provide the exact specifications of the data fields available in each category of VegetationClassification_PCTBenchmarks via the Vegetation Classification Web Service.

Table 8 Metadata data fields

Field name	Occurrence	Definition	Format	Example	Data type
institutionCode	1	The name (or acronym) in use by the institution that has custody of the object(s) or information referred to in the record	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (200)
collectionCode	1	The name, acronym, coden, or initialism identifying the collection or dataset from which the record was derived	Always 'BioNet Vegetation Classification'	'BioNet Vegetation Classification'	VARCHAR (50)
datasetName	1	The name identifying the dataset from which the record was derived	Always 'PCT Classification'	'PCT Classification'	VARCHAR (50)
dcterms_rightsHolder	1	The person or organisation owning or managing rights over the resource	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (50)
dcterms_rights	1	Information about rights held in and over the resource. Typically, rights information includes a statement about various property rights	Always 'CC-BY 4.0'	'CC-BY 4.0'	VARCHAR (50)

Field name	Occurrence	Definition	Format	Example	Data type
		associated with the resource, including intellectual property rights			
dcterms_language	1	The language of the resource	RFC 4646 [RFC4646]	‘en’ for English	VARCHAR (50)
dcterms_type	1	The nature or genre of the resource	Always ‘dataset’	‘dataset'	VARCHAR (50)
dcterms_bibliographic Citation	1	A bibliographic reference for the resource, as a statement indicating how the record should be cited (attributed) when used	‘BioNet Vegetation Classification <current date> <HH:MM> <AM/PM> + <HH:MM offset from UTC>’ Note: The date and time are Australian Eastern Standard Time adjusted for daylight saving and reflect the date and time when the web service data were last refreshed from the source data (BioNet Vegetation Classification).	‘BioNet Vegetation Classification 16/04/2020 4:39 AM +10:00’	VARCHAR (100)
dcterms_modified	1	The most recent date and time when the resource was changed	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC Note: The date modified relates to any change made in the source system (BioNet Vegetation Classification). It is thus possible that the date modified is updated but no actual changes are carried	‘9/03/2019 3:32:56 PM +11:00’	DATETIME

Field name	Occurrence	Definition	Format	Example	Data type
			through into the data fields presented via the web service.		
dcterms_available	1	Date (often a range) that the resource became or will become available	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC	'19/08/2017 08:25:13 +10:00'	DATETIME

Table 9 PCT classification data fields

Field name	Occurrence	Definition	Format	Example	Data type
PCTID	1	The unique identifier for the PCT	Integer	'2'	INT NOT NULL
PCTName	1	A colloquial plant community description that can be understood by non-botanists. It may include common names of dominant plant species, or names of a geographical region, a substrate, a soil type or a climatic zone	Text	'River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW'	VARCHAR (1000)
status	1	The PCT Definition Status of the PCT, as determined by the department's Executive Director Science	One of the following controlled vocabulary: • Approved • Decommissioned	'Approved'	VARCHAR (20)
vegetationClass	1	Equivalence of a community to one of the vegetation classes in the	Controlled vocabulary as per the vegetation classes defined in Keith (2004)	'Inland Riverine Forests'	VARCHAR (50)

Field name	Occurrence	Definition	Format	Example	Data type
		Keith (2004) statewide vegetation map			
vegetationClassID	1	The unique ID associated with the vegetationClass	Whole number	'1309'	INT NOT NULL
IBRA	1–n	The name of the IBRA7 region. Refer to Australia's bioregions (IBRA) – the National Reserve System (NRS) – for more information on the IBRA framework	Controlled vocabulary using IBRA Version 7 region names. Where there is more than one region they will be separated by semicolons	'Cobar Peneplain'	VARCHAR (200)
IBRAID	1–n	The unique ID associated with the IBRA region	Alphabetic code. Where there is more than one region ID they will be separated by semicolons and the order will correspond to the associated IBRA name given in the IBRA field	'COP'	VARCHAR (10) NOT NULL

Table 10 Benchmark metadata data fields

Field name	Occurrence	Definition	Format	Example	Data type
benchmarkCalculationLevel	1	Indicates whether the benchmarks have been calculated at the vegetation class/IBRA level or at the PCT level. PCTs that do not have PCT level benchmarks will draw on benchmark data from their VegetationClass/IBRA. All PCTs in the same VegetationClass/IBRA will have the same benchmark data	One item from the following controlled vocabulary: • PCT • Class/IBRA	'Class/IBRA'	VARCHAR (20)

Field name	Occurrence	Definition	Format	Example	Data type
benchmarkVariation	1	The time of year or environmental conditions against which the benchmark data applies	One item from the following controlled vocabulary: • monthly average, following AVERAGE RAINFALL year • monthly average, following WET RAINFALL year • monthly average, following DRY RAINFALL year • January, following WET year • January, following AVERAGE RAINFALL year • January, following DRY year • February, following WET year • February, following AVERAGE RAINFALL year • February, following DRY year • March, following WET year • March, following AVERAGE RAINFALL year • March, following DRY year • April, following WET year • April, following AVERAGE RAINFALL year • April, following DRY year • May, following WET year	'monthly average, following AVERAGE RAINFALL year'	VARCHAR (200)

Field name	Occurrence	Definition	Format	Example	Data type
			• May, following AVERAGE RAINFALL year • May, following DRY year • June, following WET year • June, following AVERAGE RAINFALL year • June, following DRY year • July, following WET year • July, following AVERAGE RAINFALL year • July, following DRY year • August, following WET year • August, following AVERAGE RAINFALL year • August, following DRY year • September, following WET year • September, following AVERAGE RAINFALL year • September, following DRY year • October, following WET year • October, following AVERAGE RAINFALL year • October, following DRY year • November, following WET year • November, following AVERAGE RAINFALL year		

Field name	Occurrence	Definition	Format	Example	Data type
			• November, following DRY year • December, following WET year • December, following AVERAGE RAINFALL year • December, following DRY year		
rainfallThreshold	0–1	The rainfall total for 12 months prior to the assessment that guides whether dry benchmarks (below rainfall threshold), average benchmarks (between rainfall thresholds) or wet benchmarks (above rainfall threshold) should be used. For more information refer to the *Guidance for assessors and decision-makers in applying modified benchmarks to assessments of vegetation integrity*	Free text incorporating integer/s and <, - or > symbols	'<638'	VARCHAR (50)
benchmarkDefault	1	Indicates which benchmark data should be used by default for the Biodiversity Assessment Method (BAM)	TRUE or FALSE	'TRUE'	VARCHAR (10)
benchmarkSource	1	How benchmark data were determined	One item from the following controlled vocabulary: • Expert Opinion	'Multiple methods'	VARCHAR (30)

Field name	Occurrence	Definition	Format	Example	Data type
			• Observed from raw data distribution • Predicted from raw data modelling • Multiple methods (see comments)		
benchmarkReference Site	1	Any Census key that (at the time the plot was surveyed) was at or near benchmark (vegetation integrity score ≥95/100)	Alphanumeric code	'CPXEI0000001'	VARCHAR (MAX)
benchmarkConfidenc e	0–1	A measure of the confidence in the benchmark data	Free text	'Composition: High | Structure: Moderate | Function: Logs-High; Litter-High; Large Trees-High'	VARCHAR (MAX)
benchmarkComments	0–1	Any further information on the benchmarks. For example, details on use of multiple methods for benchmark source, multiple benchmark calculation levels, or version numbers and dates for composition, structure and function attributes	Free text	'Composition-Structure Benchmark : Class/IBRA | Function: Logs-Class; Litter-Class; Large Trees-Class'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
benchmarkStatus	1	The benchmark status/es for the PCT, as determined by the department's Executive Director Science	One item from the following controlled vocabulary: • Draft • Draft-Default • Proposed • Approved • Decommissioned	'Approved'	VARCHAR (20)

Table 11 Benchmarks data fields

Field name	Occurrence	Definition	Format	Example	Data type
treeRichness	1	The number of native tree[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet on the department's Vegetation Condition Benchmarks webpage). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. [field assessment unit: 0.04 ha (20 m x 20 m plot)]	Whole number	'3'	INT
shrubRichness	1	The number of native shrub[a] species within a 0.04 ha area plot that	Whole number	'3'	INT

Field name	Occurrence	Definition	Format	Example	Data type
		represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM			
grassAndGrassLikeRichness	1	The number of native grass and grass-like[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM	Whole number	'5'	INT
forbRichness	1	The number of native forb[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score	Whole number	'14'	INT

Field name	Occurrence	Definition	Format	Example	Data type
		100/100 for this attribute if assessed using the BAM			
fernRichness	1	The number of native fern[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM	Whole number	'1'	INT
otherRichness	1	The number of native species within the other[a] growth form group within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM	Whole number	'1'	INT
treeCover	1	The total foliage cover of native tree[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to	Percentage expressed as a number to one decimal place	'52.5'	DECIMAL (6, 1)

Field name	Occurrence	Definition	Format	Example	Data type
		the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. Total foliage cover is the sum of all the individual foliage cover estimates of all native tree species recorded within the plot. Foliage cover includes leaves, branches and twigs. Note, can be greater than 100.0% (refer to *Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks*)			
shrubCover	1	The total foliage cover of native shrub[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. Total foliage cover is the sum of all the individual foliage cover estimates of all native shrub species recorded	Percentage expressed as a number to one decimal place	'0.0'	DECIMAL (6, 1)

Field name	Occurrence	Definition	Format	Example	Data type
		within the plot. Foliage cover includes leaves, branches and twigs. Note, can be greater than 100.0% (refer to *Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks*)			
grassAndGrassLikeCover	1	The total foliage cover of native grass and grass-like[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. Total foliage cover is the sum of all the individual foliage cover estimates of all native grass and grass-like species recorded within the plot. Foliage cover includes leaves, branches and twigs. Note, can be greater than 100.0% (refer to *Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks*)	Percentage expressed as a number to one decimal place	'26.2'	DECIMAL (6, 1)

Field name	Occurrence	Definition	Format	Example	Data type
forbCover	1	The total foliage cover of native forb[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. Total foliage cover is the sum of all the individual foliage cover estimates of all native forb species recorded within the plot. Foliage cover includes leaves, branches and twigs. Note, can be greater than 100.0% (refer to *Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks*)	Percentage expressed as a number to one decimal place	'4.3'	DECIMAL (6, 1)
fernCover	1	The total foliage cover of native fern[a] species within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or	Percentage expressed as a number to one decimal place	'0.0'	DECIMAL (6, 1)

Field name	Occurrence	Definition	Format	Example	Data type
		equal to this number would score 100/100 for this attribute if assessed using the BAM. Total foliage cover is the sum of all the individual foliage cover estimates of all native fern species recorded within the plot. Foliage cover includes leaves, branches and twigs. Note, can be greater than 100.0% (refer to *Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks*)			
otherCover	1	The total foliage cover of native species within the other[a] growth form group within a 0.04 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. Total foliage cover is the sum of all the individual foliage cover estimates of all native other species recorded within the plot. Foliage cover includes leaves, branches and	Percentage expressed as a number to one decimal place	'11.5'	DECIMAL (6, 1)

Field name	Occurrence	Definition	Format	Example	Data type
		twigs. Note, can be greater than 100.0% (refer to *Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks*)			
largeTreeThresholdSize	0–1	The tree stem size at and above which a living tree stem qualifies as a large tree. Tree stem size is measured as the stem diameter in centimetres at 1.3 m above ground height and over bark (DBH) Note: The attribute does not apply to PCTs classified under vegetation formations that are freshwater wetlands, saline wetlands, grasslands, alpine complex and arid shrublands. Also, does not apply to heathlands without trees (i.e. Southern Montane Heaths (NSW035), South Coast Heaths (NSW065), Coastal Headland Heaths (NSW070)).	One item from the following controlled vocabulary: • 20 • 30 • 50 • 80	'50'	INT
numberOfLargeTrees	0–1	The number of large trees within a 0.1 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if	Decimal	'4.00'	DECIMAL (18, 2)

Field name	Occurrence	Definition	Format	Example	Data type
		assessed using the BAM. The number of large trees is a count of all living stems within a 0.1 ha area plot with a diameter at 1.3 m above ground height and over bark (DBH) equal to or greater than the large tree threshold DBH size for that PCT or vegetation class. For a multi-stemmed tree, at least one living stem must be equal to or greater than the large tree threshold DBH size to count as a large tree. In a multi-stemmed tree only one stem can contribute to the count of large trees			
totalLengthFallenLogs	0–1	The total length of fallen logs within a 0.1 ha area plot that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. The length of fallen logs is the total length in metres of woody material greater than 10 cm in diameter that is dead and entirely or in part on the ground	Whole number	'78'	INT

Field name	Occurrence	Definition	Format	Example	Data type
		within the plot. Where logs extend outside the plot, the assessor must only record the length of fallen log that is contained within the plot			
litterCover	0–1	The % cover of litter that represents the best-on-offer reference state within the contemporary landscape (refer to the *Native Vegetation Integrity Benchmarks* information sheet). Observed values greater than or equal to this number would score 100/100 for this attribute if assessed using the BAM. The % cover of litter is assessed as the average percentage ground cover of litter recorded from 5 1 m x 1 m plots evenly located along a transect that bisects the 0.1 ha plot. Litter includes all plant material that has detached from a living plant, including leaves, seeds, twigs, branchlets and branches (<10 cm in diameter). Dead material still attached to a living plant (such as a grass) is assessed as litter cover where it is in contact with the ground. Dead material still attached to a living plant that is not in contact with the ground, or litter suspended in the canopies of other	Percentage expressed as a number to 2 decimal places	'27.75'	DECIMAL (18, 2)

Field name	Occurrence	Definition	Format	Example	Data type
		plants is not assessed as litter cover. Litter cover should be considered as the 2-dimensional litter layer and includes litter under the canopies of erect plants			

[a] For the definitions of growth forms (e.g. tree, shrub, grass and grass-like) refer to 'Appendix F: Growth form definitions' of the BAM (DPIE 2020). An up-to-date list of the primary growth form for each species can be obtained via the *BioNet Native Species by Growth Form data Power Query*.

Specifications for the VegetationClassification_PCTStratumData

Note: This entity set is populated only for qualitative PCTs.

Table 12 Metadata data fields

Field name	Occurrence	Definition	Format	Example	Data type
institutionCode	1	The name (or acronym) in use by the institution that has custody of the object(s) or information referred to in the record	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (200)
collectionCode	1	The name, acronym, coden, or initialism identifying the collection or dataset from which the record was derived	Always 'BioNet Vegetation Classification'	'BioNet Vegetation Classification'	VARCHAR (50)
datasetName	1	The name identifying the dataset from which the record was derived	Always 'PCT Classification'	'PCT Classification'	VARCHAR (100)
dcterms_rightsHolder	1	The person or organisation owning or managing rights over the resource	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (150)
dcterms_rights	1	Information about rights held in and over the resource. Typically, rights information includes a statement about various property rights associated with the resource, including intellectual property rights	Always 'CC-BY 4.0'	'CC-BY 4.0'	VARCHAR (300)

Field name	Occurrence	Definition	Format	Example	Data type
dcterms_language	1	The language of the resource	RFC 4646 [RFC4646]	‘en’ for English	VARCHAR (3)
dcterms_type	1	The nature or genre of the resource	Always ‘dataset’	‘dataset’	VARCHAR (50)
dcterms_bibliographic Citation	1	A bibliographic reference for the resource, as a statement indicating how the record should be cited (attributed) when used	‘BioNet Vegetation Classification <current date> <HH:MM> <AM/PM> + <HH:MM offset from UTC>’ Note: The date and time are Australian Eastern Standard Time adjusted for daylight saving and reflect the date and time when the web service data were last refreshed from the source data (BioNet Vegetation Classification).	‘BioNet Vegetation Classification’16/04/ 2020 4:42 AM +10:00’	VARCHAR (50)
dcterms_modified	1	The most recent date and time when the resource was changed	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC Note: The date modified relates to any change made in the source system (BioNet Vegetation Classification). It is thus possible that the date modified is updated but no actual changes are carried through into the data fields presented via the web service.	‘15/03/2017 1:03:31 PM +11:00’	DATETIME

Field name	Occurrence	Definition	Format	Example	Data type
dcterms_available	1	Date (often a range) that the resource became or will become available	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC	'27/06/2011 1:12:32 PM +10:00'	DATETIME

Table 13 PCT classification data fields

Field name	Occurrence	Definition	Format	Example	Data type
PCTID	1	The unique identifier for the PCT	Integer	'1081'	INT
PCTName	1	A colloquial plant community description that can be understood by non-botanists. It may include common names of dominant plant species, or names of a geographical region, a substrate, a soil type or a climatic zone	Text	'Red Bloodwood - Grey Gum woodland on the edges of the Cumberland Plain, Sydney Basin Bioregion'	VARCHAR (MAX)
status	1	The formal listing status of the PCT, as determined by the NSW Plant Community Type Change Control Panel	Controlled vocabulary as follows: • Approved • Decommissioned	'Approved'	VARCHAR (MAX)

Table 14 Floristic data fields

Note that the *Structural Terms* information sheet should be consulted for additional information regarding the definitions of the stratum and sub-stratum.

Field name	Occurrence	Definition	Format	Example	Data type
emergentStratumSpeciesList	0–n	The list of species, separated by semicolon(s), present in the emergent stratum	<genus> <specific epithet> <connecting term> <infraspecific epithet>; Where the connecting term can be one of the following: • subsp. = subspecies • var. = variety Note: If this stratum is not present, this is indicated by 'null'.	'null'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
upperStratumSpeciesList	0–n	The list of species, separated by semicolon(s), present in the upper stratum	<genus> <specific epithet> <connecting term> <infraspecific epithet>; Where the connecting term can be one of the following: • subsp. = subspecies • var. = variety Note: If this stratum is not present, this is indicated by 'null'.	'Corymbia gummifera;Eucalyptus punctata;Angophora costata;Syncarpia glomulifera;Eucalyptus piperta;Eucalyptus oblonga;Eucalyptus sclerophylla;'	VARCHAR (MAX)
midStratumSpeciesList	0–n	The list of species, separated by semicolon(s), present in the mid-stratum	<genus> <specific epithet> <connecting term> <infraspecific epithet>; Where the connecting term can be one of the following: • subsp. = subspecies • var. = variety Note: If this stratum is not present, this is indicated by 'null'.	'Phyllanthus hirtellus;Persoonia linearis;Leptospermum trinervium;Acacia ulicifolia;'	VARCHAR (MAX)
groundStratumSpeciesList	0–n	The list of species, separated by semicolon(s), present in the ground stratum	<genus> <specific epithet> <connecting term> <infraspecific epithet>; Where the connecting term can be one of the following: • subsp. = subspecies • var. = variety Note: If this stratum is not present, this is indicated by 'null'.	'Entolasia stricta;Lomandra obliqua;Pomax umbellata;Themeda australis;Lomandra multiflora;Lepidosperma laterale;'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
emergentGroupFrequency	0–n	Data on the frequency at which a species occurs within the emergent stratum (if present)	<species name>,<group frequency>,<group score> See 'B.1 Group frequency' in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by 'null'.	'null'	VARCHAR (MAX)
upper1GroupFrequency	0–n	Data on the frequency with which a species occurs within the first upper sub-stratum (if present)	<species name>,<group frequency>,<group score> See 'B.1 Group frequency' in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by 'null'.	'Corymbia gummifera,null,null;Eucalyptus punctata,null,null;Angophora costata,null,null;Syncarpia glomulifera,null,null;Eucalyptus piperita,null,null;Eucalyptus oblonga,null,null;Eucalyptus sclerophylla,null,null;'	VARCHAR (MAX)
upper2GroupFrequency	0–n	Data on the frequency with which a species occurs within the second upper sub-stratum (if present)	<species name>,<group frequency>,<group score> See 'B.1 Group frequency' in Appendix B for definitions. If	'null'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by 'null'.		
upper3GroupFrequency	0–n	Data on the frequency with which a species occurs within the third upper sub-stratum (if present)	<species name>,<group frequency>,<group score> See 'B.1 Group frequency' in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by 'null'.	'null'	VARCHAR (MAX)
mid1GroupFrequency	0–n	Data on the frequency with which a species occurs within the first mid sub-stratum (if present)	<species name>,<group frequency>,<group score> See 'B.1 Group frequency' in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by 'null'.	'Phyllanthus hirtellus,null,null;Persoonia linearis,null,null;Leptospermum trinervium,null,null;Acacia ulicifolia,null,null;Persoonia levis,null,null;Acacia linifolia,null,null;'	VARCHAR (MAX)
mid2GroupFrequency	0–n	Data on the frequency with which a species occurs within the second mid sub-stratum (if present)	<species name>,<group frequency>,<group score>	'null'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			See ‘B.1 Group frequency’ in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by ‘null’.		
mid3GroupFrequency	0–n	Data on the frequency with which a species occurs within the third mid sub-stratum (if present)	<species name>,<group frequency>,<group score> See ‘B.1 Group frequency’ in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by ‘null’.	‘null’	VARCHAR (MAX)
ground1GroupFrequency	0–n	Data on the frequency with which a species occurs within the first ground sub-stratum (if present)	<species name>,<group frequency>,<group score> See ‘B.1 Group frequency’ in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by ‘null’.	‘Entolasia stricta,null,null;Lomandra obliqua,null,null;Pomax umbellata,null,null;Themeda australis,null,null;Lomandra multiflora,null,null;Lepidosperma laterale,null,null;’	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
ground2GroupFrequency	0–n	Data on the frequency with which a species occurs within the second ground sub-stratum (if present)	<species name>,<group frequency>,<group score> See 'B.1 Group frequency' in Appendix B for definitions. If more than one species is present, then the data blocks are separated by a semicolon Note: If the sub-stratum is not present, this is indicated by 'null'.	'null'	VARCHAR (MAX)
dominantStratum	1	Indication of the dominant stratum (entered at sub-stratum level)	Text	'2nd Upper sub-stratum'	VARCHAR (100)
upper1CoverData	0–1	Data on the combined foliage cover of all species within the first upper sub-stratum (if present) as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See 'B.2 Cover data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'5.3;16.7;11.0;2N;no;'	VARCHAR (MAX)
upper2CoverData	0–1	Data on the combined foliage cover of all species within the second upper sub-stratum (if present), as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See 'B.2 Cover data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'10.9;31.7;21.3;2N;no;'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
upper3CoverData	0–1	Data on the combined foliage cover of all species in the third upper sub-stratum (if present) as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See 'B.2 Cover data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'null'	VARCHAR (MAX)
mid1CoverData	0–1	Data on the combined foliage cover of all species within the first mid-storey sub-stratum (if present), as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See 'B.2 Cover data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'2.7;29.1;15.9;2N;no;'	VARCHAR (MAX)
mid2CoverData	0–1	Data on the combined foliage cover of all species within the second mid-storey sub-stratum (if present), as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See 'B.2 Cover data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'1.8;33.4;17.6;2N;no;'	VARCHAR (MAX)
mid3CoverData	0–1	Data on the combined foliage cover of all species within the third mid-storey sub-stratum (if present), as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived>	'null'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			See ‘B.2 Cover data’ in Appendix B for definitions Note: If there are no species data for the sub-stratum the value ‘null’ is given.		
ground1CoverData	0–1	Data on the combined foliage cover of all species within the first ground sub-stratum (if present), as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See ‘B.2 Cover data’ in Appendix B for definitions Note: If there are no species data for the sub-stratum the value ‘null’ is given.	‘8.5;51.3;29.9;2N;no;’	VARCHAR (MAX)
ground2CoverData	0–1	Data on the combined foliage cover of all species within the second ground sub-stratum (if present), as a percentage of the plot area	<min>;<max>;<mean>;<cover type code>;<cover surrogate derived> See ‘B.2 Cover data’ in Appendix B for definitions Note: If there are no species data for the sub-stratum the value ‘null’ is given.	‘null’	VARCHAR (MAX)
upper1HeightData	0–1	Data on the height of species occurring within the first upper sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See ‘B.3 Height data’ in Appendix B for definitions Note: If there are no species data for the sub-stratum the value ‘null’ is given.	‘20.8;22.2;21.5;no;’	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
upper2HeightData	0–1	Data on the height of species occurring within the second upper sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'13.6;21.8;17.7;no;'	VARCHAR (MAX)
upper3HeightData	0–1	Data on the height of species occurring within the third upper sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'null'	VARCHAR (MAX)
mid1HeightData	0–1	Data on the height of species occurring within the first mid-storey sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'4.4;11.4;7.9;no;'	VARCHAR (MAX)
mid2HeightData	0–1	Data on the height of species occurring within the second mid-storey sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'1.5;2.9;2.2;no;'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
mid3HeightData	0–1	Data on the height of species occurring within the third mid-storey sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'null'	VARCHAR (MAX)
ground1HeightData	0–1	Data on the height of species occurring within the first ground sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'0.6;1.2;0.9;no;'	VARCHAR (MAX)
ground2HeightData	0–1	Data on the height of species occurring within the second ground sub-stratum (if present)	<min>;<max>;<mean>;<height surrogate derived> See 'B.3 Height data' in Appendix B for definitions Note: If there are no species data for the sub-stratum the value 'null' is given.	'null'	VARCHAR (100)
diagnosticSpecies	0–n	The list of species, separated by semicolons, considered to be diagnostic of the community	The format for the species name is as follows: <*genus*> <*specific epithet*> <connecting term> <*infraspecific epithet*> (vernacular name);	'Poa labillardierei (Tussock);'	VARCHAR (MAX)

Field name	Occurrence	Definition	Format	Example	Data type
			Where the *connecting term* can be one of the following: • subsp. = subspecies • var. = variety		
diagnosticSpeciesMethod	1	Method used to identify diagnostic species	Method used to identify diagnostic species, according to the following controlled vocabulary: • Quantitative – e.g. fidelity analyses • Qualitative – expert opinion • Combination of quantitative and qualitative	'Quantitative – e.g. fidelity analysis'	VARCHAR (MAX)

Specifications for the VegetationClassification_PCTGrowthForm

Note: This entity set is populated only for quantitative PCTs.

Table 15 Metadata data fields

Field name	Occurrence	Definition	Format	Example	Data type
institutionCode	1	The name (or acronym) in use by the institution that has custody of the object(s) or information referred to in the record	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (200)
collectionCode	1	The name, acronym, coden, or initialism identifying the collection or dataset from which the record was derived	Always 'BioNet Vegetation Classification'	'BioNet Vegetation Classification'	VARCHAR (50)
datasetName	1	The name identifying the dataset from which the record was derived	Always 'PCT Classification'	'PCT Classification'	VARCHAR (100)
dcterms_rightsHolder	1	The person or organisation owning or managing rights over the resource	Always 'NSW Dept of Planning, Industry and Environment'	'NSW Dept of Planning, Industry and Environment'	VARCHAR (150)
dcterms_rights	1	Information about rights held in and over the resource. Typically, rights information includes a statement about various property rights associated with the resource, including intellectual property rights	Always 'CC-BY 4.0'	'CC-BY 4.0'	VARCHAR (300)

Field name	Occurrence	Definition	Format	Example	Data type
dcterms_language	1	The language of the resource	RFC 4646 [RFC4646]	‘en’ for English	VARCHAR (3)
dcterms_type	1	The nature or genre of the resource	Always ‘dataset’	‘dataset’	VARCHAR (50)
dcterms_bibliographic Citation	1	A bibliographic reference for the resource, as a statement indicating how the record should be cited (attributed) when used	‘BioNet Vegetation Classification <current date> <HH:MM> <AM/PM> + <HH:MM offset from UTC>’ Note: The date and time are Australian Eastern Standard Time adjusted for daylight saving and reflect the date and time when the web service data were last refreshed from the source data (BioNet Vegetation Classification).	‘BioNet Vegetation Classification 16/04/2020 4:42 AM +10:00’	VARCHAR (50)
dcterms_modified	1	The most recent date and time when the resource was changed	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC Note: The date modified relates to any change made in the source system (BioNet Vegetation Classification). It is thus possible that the date modified is updated but no actual changes are carried through into the data fields presented via the web service.	‘30/03/2020 5:31:00 PM +11:00’	DATETIME

Field name	Occurrence	Definition	Format	Example	Data type
dcterms_available	1	Date (often a range) that the resource became or will become available	ISO 8601:2004(E). DD/MM/YYYY HH:MM:SS AM/PM +HH:MM offset from UTC	'30/03/2020 5:31:00 PM +11:00'	DATETIME

Table 16 PCT classification data fields

Field name	Occurrence	Definition	Format	Example	Data type
PCTID	1	The unique identifier for the PCT	Integer	'3081'	INT
PCTName	1	A colloquial plant community description that can be understood by non-botanists. It may include common names of dominant plant species, or names of a geographical region, a substrate, a soil type or a climatic zone.	Text	'Kowmung Limestone Sheltered Open Woodland'	VARCHAR (MAX)
status	1	The PCT Definition Status of the PCT, as determined by the department's Executive Director Science	Controlled vocabulary as follows: • Approved • Decommissioned	'Approved'	VARCHAR (MAX)

Table 17 Growth form data fields

Field name	Occurrence	Definition	Format	Example	Data type
primaryGrowthFormGroup	1	The primary growth form group of the species	One of the following controlled vocabulary: • Tree (TG) • Shrub (SG) • Grass and Grass-like (GG) • Forb (FG) • Fern (EG) • Other (OG) • Unassigned (UA)	'Tree (TG)'	VARCHAR (25)

Field name	Occurrence	Definition	Format	Example	Data type
scientificName	1	The full scientific name of the species	<genus> <specific epithet> <connecting term> <intraspecific epithet>; Where the connecting term can be one of the following: • subsp. = subspecies • var. = variety	'Brachychiton populneus'	VARCHAR (MAX)
speciesFrequency	1	How often the species has been recorded as occurring within a plot, expressed as a percentage of the total number of plots used to define the PCT. For example, if species x occurred in 4 of the 20 plots used to define this PCT, then the group frequency would be (4/20) x 100 = 20. The intent is to provide a measure of how common the species is within the PCT	Percentage expressed as a decimal (e.g. 0.43 = 43%)	'1.00' where 1.00 = 100%	DECIMAL (18,2)
medianCoverScore	1	The median cover score recorded for the species within sites used to classify the PCT as a result of an analysis. The meaning of the values of the controlled vocabulary is: • 1 (<5% and uncommon) • 2 (<5% and common) • 3 (5–20%) • 4 (>20–50%) • 5 (>50–75%)	One of the following controlled vocabulary: • 1 • 2 • 3 • 4 • 5 • 6	'2'	VARCHAR (255)

Field name	Occurrence	Definition	Format	Example	Data type
		• 6 (>75%)			

References

DPE (Department of Planning and Environment) (2022) *Updating BioNet Plant Community Types: Eastern New South Wales PCT Classification Version 1.1 (2022)*, NSW Department of Planning and Environment, Parramatta.

DPIE (Department of Planning, Industry and Environment) (2020) *Biodiversity Assessment Method*, NSW Department of Planning, Industry and Environment, Parramatta.

Keith D (2004) *Ocean Shores to Desert Dunes: the Native Vegetation of New South Wales and the ACT*, NSW National Parks and Wildlife Service, Sydney.

Sivertsen D (2009) *Native Vegetation Interim Type Standard*, Department of Environment, Climate Change and Water NSW, Sydney.

Walker J and Hopkins MS (1990) 'Vegetation', in RC McDonald, RF Isbell, JG Speight, J Walker and MS Hopkins (eds), *Australian Soil and Land Survey Field Handbook*, Inkata Press, Melbourne.

More information

- Australia's bioregions (IBRA)
- Biodiversity Assessment Method
- BioNet Native Species by Growth Form data Power Query
- BioNet Vegetation Classification web app
- BioNet Vegetation Classification Web Service
- Explanation of Cover Type Codes [18KB]
- Guidance for assessors and decision-makers in applying modified benchmarks to assessments of vegetation integrity
- Native Vegetation Integrity Benchmarks – Technical details supporting Static Benchmarks
- OASIS Open Data Protocol (OData) TC
- OData – the best way to REST
- Online metadata
- Plant Community Types: change control
- Structural Terms [PDF 96KB]
- Unlock your data with OData
- Updated IBRA7 datasets

- Updating BioNet Plant Community Types: Eastern New South Wales PCT Classification Version 1.1 (2022)
- Vegetation Condition Benchmarks
- What is the OData protocol?

Appendix A Controlled vocabularies

A.1 ClassificationConfidenceLevel

- Very High
- High
- Moderate
- Very Low
- Low.

A classification confidence level (CCL) is assigned to each PCT that is approved in the master list of vegetation community types for New South Wales. It describes the strength and robustness of the classification unit and recognises that each PCT differs in its classification confidence level based on the method and information used to describe its floristic and habitat attributes and spatial distribution. The eastern NSW PCT definition applies to new quantitative PCTs developed for eastern New South Wales in 2020 (and expected to be approved for use in the Biodiversity Offsets Scheme in early 2021).

Code	Explanation
Very High	**Eastern NSW PCT CCL definition**: PCT plot membership comprises 15 or more standard samples. PCT records reliability scores that are above the 95th percentile for all PCTs and accuracy scores that are above the 90th percentile. Very high confidence scores imply that the PCT retains internally consistent floristic composition and is unlikely to be confused with other PCTs when assigning new plot samples to the Eastern NSW PCT typology using the online PCT identification tool. **Western NSW PCT CCL definition:** The PCT community type is based on quantitative analysis of verifiable, high quality classification plots that are archived in a publicly accessible database such as the BioNet Flora surveys module. Classification plots meet the minimum requirements set out in the survey design and field sampling sections of the Native Vegetation Interim Type Standard (Sivertsen 2009). Classification plots used in the analysis must sample the full geographic distribution of the type. In addition, plots that form the basis for closely related types must have been compared. For a NSW vegetation class (Keith 2004), the majority of component community types must have a High to Very High level of confidence.
High	**Eastern NSW PCT CCL definition:** This level includes confidence level metrics from both sampling effort classes (>15 standard samples; 5–14 standard samples). PCTs that have 15 or more standard samples, High confidence is defined by PCTs that record reliability and accuracy scores that fall between the 90th and 95th percentile of all PCTs.

Code	Explanation
	PCTs that have a plot membership between 5 and 14 standard samples, High confidence is defined by those that record low floristic overlap with any other PCT in eastern New South Wales. Taken collectively the High CCL implies that the PCT is unlikely to be confused with other PCTs in eastern New South Wales when using standard survey methods and identification tools. However, sampling effort may be lower, or the internal variation of the type may be higher than those PCTs in the Very High category. **Western NSW CCL definition:** The community type is based on quantitative analysis of classification plots but does not sample the full geographic distribution of the type, or is limited in degree of quantitative comparison with closely related types, or plots are not archived in a publicly accessible database such as the BioNet Flora surveys module. Classification plots otherwise meet the requirements for a Very High level of confidence. This includes for example, the classification products of high-quality plot-based mapping or classification projects that have been artificially restricted to a Catchment Management Authority, LGA or regional boundary. This level is deemed equivalent to NSWVCA classification confidence level 1.
Moderate	**Eastern NSW CCL definition:** This level includes confidence level metrics from both sampling effort classes (>15 standard samples; 5–14 standard samples). PCTs that have 15 or more standard samples, Moderate confidence is defined by PCTs that record reliability scores that fall between the 90th and 95th percentile of all PCTs but a lower accuracy score that falls below the 90th percentile. Alternatively, the reliability score is low (<90th percentile but the accuracy score is very high, >95th percentile). PCTs that have a plot membership between 5 and 14 standard samples, Moderate confidence is defined by those that record moderate to high floristic overlap with any other PCT in eastern New South Wales. Taken collectively the Moderate CCL implies that the PCT supports a less internally consistent plant assemblage and performed less strongly in separating from other related PCTs. Users may experience difficulty discriminating a target PCT from related PCTs on the basis of floristic information alone because of the gentle gradation between types, or because factors such as disturbance are inherent in samples that are used to define it. May also be more common in types that are subject to seasonal variation in floristic composition, which results in higher levels of variation in floristic composition among samples. **Western NSW CCL definition:** Type is based on plot data that are incomplete, not accessible to others, or not published; or if so, only in an incomplete summary (floristic) table (such as only reporting dominant or characteristic species of a type). Or the type is highly distinct as judged by expert ecologists but as yet poorly sampled. Type has been consistently mapped and is referred to in several publications. This level is deemed equivalent to NSWVCA classification confidence level 2.
Low	**Eastern NSW CCL definition:** This level includes confidence level metrics from both sampling effort classes (>15 standard samples; 5–14 standard samples).

Code	Explanation
	PCTs that have 15 or more standard samples, Low confidence is defined by PCTs that record reliability scores below the 90th percentile of all PCTs and accuracy scores below the 95th percentile. PCTs that have a plot membership between 5 and 14 standard samples, Low confidence is defined by those that record either high floristic overlap with any other PCT in eastern New South Wales, or low measures of internal reliability. Taken collectively the Low CCL implies that the PCT may have low levels of reliability when compared to other types. Users may experience difficulty discriminating a target PCT from related PCTs on the basis of floristic information alone because of the gentle gradation between types, or because factors such as disturbance are inherent in samples that are used to define it. May also be more common in types that are subject to seasonal variation in floristic composition, which results in higher levels of variation in floristic composition among samples. **Western NSW CCL definition:** Community type is based on informal analysis, anecdotal information, or community descriptions, and is not based on any plot data analysis. Local experts have often identified these types. Although there is a high level of confidence that they represent significant vegetation entities that should be incorporated in the PCT List, it is not clear that they would meet the standard for floristic types in concept or in the PCT classification approach if data were available. This Level is deemed equivalent to NSWVCA classification confidence level 3.
Very Low	**Eastern NSW CCL definition:** PCTs with fewer than 5 standard samples. Known colloquially as 'placeholders' they describe plant assemblages that suggest different compositional attributes to all other PCTs using the ecological dissimilarity metric thresholds, but evidence is limited to only a few standard samples. The floristic composition is supported by the location of the samples that suggest that they occupy poorly surveyed areas, or a discrete environmental condition such as geological or topographic feature. The available floristic data is unlikely to fully characterise the assemblage of plants likely to occur or the relationships to other related PCTs. The data is also unlikely to describe the spatial distribution with any confidence. Candidate for additional survey. **Western NSW CCL definition:** Community type is based on informal analysis, anecdotal information, or community descriptions, and is not based on any plot data analysis. Local experts have often identified these types. Although there is a high level of confidence that they represent significant vegetation entities that should be incorporated in the PCT List, it is not clear that they would meet the standard for floristic types in concept or in the PCT classification approach if data were available. This level is deemed equivalent to BioMetric Vegetation Types defined on the east coast prior to 2006 that were identified through expert workshops.

Source: DPE (2022)

Appendix B Common data formats

B.1 Group frequency

The format for the frequency data is as follows: <species name>,<group frequency>,<group score>;

Where:

- **species name** = <genus> <specific epithet> <connecting term> <intraspecific epithet>
- **group frequency** = how often the species has been recorded as occurring within a plot within this sub-stratum, expressed as a percentage of the total number of plots used to define the PCT.

  For example, if species x occurred in stratum y in 4 of the 20 plots used to define this PCT, then the group frequency would be (4/20) x 100 = 20. The intent is to provide a measure of how common the species is within the stratum
- **group score** = the mean cover score of the species within the sub-stratum across the plots where it occurs, expressed by using the Braun-Blanquet scale.

  For example, if species x occurred in the emergent stratum y in 4 of the 20 plots with cover scores of 3, 4, 4 and 5, then the 16 plots where it did not occur would be excluded and the mean would be (3+4+4+5)/4 = 4. The intent is to provide a measure of how abundant the species is within the stratum when it is present.

This format applies to these group frequency data fields:

- emergentGroupFrequency
- upper1GroupFrequency
- upper2GroupFrequency
- upper3GroupFrequency
- mid1GroupFrequency
- mid2GroupFrequncy
- mid3GroupFrequency
- ground1GroupFrequency
- ground2GroupFrequency.

B.2 Cover data

The format of the cover data is as follows:<min>;<max>;<mean>;<cover type code>;<cover surrogate derived>

Where:

- **min** = the minimum score recorded for the foliage cover from all plots used to define the PCT, expressed as a percentage of the plot area.

For example, if 3 plots were used to define the PCT, with cover scores in this sub-stratum of 10%, 15% and 18%, then the min would be 10%

- **max** = the maximum score recorded for the foliage cover from all plots used to define the PCT, expressed as a percentage of the plot area
- **mean** = the mean score recorded for the foliage cover from all plots used to define the PCT, expressed as a percentage of the plot area
- **cover type code** = a code indicating the type of measure used to calculate the cover values (min, max and mean). See below for a definition of the codes
- **cover surrogate derived** = an indication of whether the cover was estimated (= yes) or quantitatively determined (= no).

Cover type codes – controlled vocabulary:

- 1N
- 1C
- 2N
- 2C
- 3N
- 3C
- 4N
- 4C.

The cover type codes specify the type of measure used for the cover values (i.e. minimum, maximum, mean and median percentage cover). The cover type codes are a combination of the information specified in the 'Cover type method' field and subsequently the 'Cover type' field.

Cover type method – controlled vocabulary:

- CC Canopy Cover
- FC Foliage Cover
- PC Percentage Cover
- FPC Foliage Projective Cover
- NA Not applicable
- Unknown.

Once 'Cover type method' is specified, the 'Cover type' field can be populated from a controlled vocabulary which includes the final cover type code. The letter part of each code denotes whether the measure is a numeric real value ('N') or includes the upper and lower ranges of a cover class category ('C').

Code	Explanation
1N	**Crown or canopy cover**: Crown cover is defined as the percentage of the sample site within the vertical projection of the periphery of the crowns. In this case, crowns are treated as opaque (Walker and Hopkins 1990). Crown cover is estimated using the

Code	Explanation
	mean gap between crowns divided by mean crown width (the crown separation ratio) (Walker and Hopkins 1990).
2N	**Foliage cover:** Foliage cover is defined as the percentage of the sample site occupied by the vertical projection of foliage and branches (if woody) (Walker and Hopkins 1990). For ground vegetation, it is measured by using line-intercept methods. It will, to some degree, take into account the thickness of a clump of grass. % crown cover x crown type (Walker and Hopkins 1990).
3N	**Percentage cover:** The percentage of a strictly defined plot area, covered by vegetation, generally applicable to ground vegetation that has been estimated rather than measured using line-intercept methods. It does not necessarily take into account the thickness of a clump of grass.
4N	**Projective foliage cover:** The percentage of the sample site occupied by the vertical projection of foliage only (Walker and Hopkins 1990).
1C	**Crown or canopy cover:** As for 1N above, but for data derived from, or containing, class intervals. Crown cover is defined as the percentage of the sample site within the vertical projection of the periphery of the crowns. In this case crowns are treated as opaque.
2C	**Foliage cover:** As for 2N above, but for data derived from or containing class intervals. Foliage cover is defined as the percentage of the sample site occupied by the vertical projection of foliage and branches (Walker and Hopkins 1990). For ground vegetation it is measured by using line-intercept methods. It will, to some degree, consider the thickness of a clump of grass.
3C	**Percentage cover:** As for 3N above, but for data derived from, or containing, class intervals. It is the percentage of a strictly defined plot area covered by vegetation and is generally applicable to ground vegetation that has been estimated rather than measured by using line-intercept methods. It does not necessarily take into account the thickness of a clump of grass.
4C	**Projective foliage cover:** As for 2N above, but for data derived from, or containing, class intervals. The percentage of the sample site occupied by the vertical projection of foliage only (not branches) (Walker and Hopkins 1990).
5C	**Cover abundance rating:** Abundance class system, e.g. Braun-Blanquet.

Source: *Explanation of Cover Type Codes*

This format applies to these cover data fields:

- upper1CoverData
- upper2CoverData
- upper3CoverData
- mid1CoverData
- mid2CoverData
- mid3CoverData
- ground1CoverData

- ground2CoverData.

B.3 Height data

The format for the height data is as follows: <min>;<max>;<mean>;<height surrogate derived>

Where:

- **min** = the minimum estimated maximum height (in metres) of the sub-stratum from all plots used to define the PCT. Note that the height is measured to the top of the crown, tussock, etc.

  For example, if 3 plots were used to define the PCT, with estimated heights in this sub-stratum of 25 m, 26 m and 30 m, then the min would be 25.
- **max** = the maximum estimated maximum height (in metres) of the sub-stratum from all plots used to define the PCT. Note that the height is measured to the top of the crown, tussock, etc.
- **mean** = the mean of the estimated maximum height (in metres) of the sub-stratum from all plots used to define the PCT. Note that the height is measured to the top of the crown, tussock, etc.
- **height surrogate derived** = an indication of whether the height was estimated (=yes) or quantitatively determined (=no).

This format applies to these height data fields:

- upper1HeightData
- upper2HeightData
- upper3HeightData
- mid1HeightData
- mid2HeightData
- mid3HeightData
- ground1HeightData
- ground2HeightData.