

Land and Vegetation Unit

LAND AND WATER DIVISION

WHAT WE DO?



The Land and Vegetation Unit conducts integrated land and vegetation resource surveys throughout the Northern Territory (NT). Land systems and land unit mapping describe a wide range of landscape features including landform, soil and vegetation. Vegetation surveys provide an ecological perspective of floristics and structure. Vegetation and land unit surveys are used as a benchmark for land monitoring and evaluation. As an inventory of land resources, these surveys provide government, industry and the general public with a sound scientific basis to assist in land use decision making.

Land system mapping in the NT: Land system surveys are broad or reconnaissance surveys that provide regional scale information on landforms, soils and vegetation. They provide an initial understanding of large tracts of land often recommending further detailed work on specific areas. Typical mapping scales include 1:250 000.

Land unit mapping in the NT: Land unit mapping is similar, although areas are targeted more intensively thereby providing increased detail across a survey area. While these surveys are originally centred on the agricultural areas of Greater Darwin, Top End Coastal Plains and the Daly Basin, there is now an increased emphasis on development assessment and a demand for regional, strategic and catchment based information for a wide range of clients. Typical mapping scales include 1:25 000 and 1:50 000.



Vegetation mapping in the NT: Vegetation surveys provide an inventory of the type, extent and condition of NT plant communities. Vegetation data is collected at different levels of detail and scale, depending on the purpose of the survey. The data collected in the field, in conjunction with the mapping, can be used for a variety of purposes other than simply defining vegetation

types. These include land monitoring and evaluation, habitat definition for native wildlife, estimating biomass (i.e. carbon stocks), biodiversity assessments and landscape condition to name a few.

Nationally agreed criteria for measuring vegetation health are to be incorporated in future surveys.



Soil Assessment: Soil surveys are undertaken for specific needs including detailed analysis of soil properties for agricultural use and erosion risk. Other types of investigations include acid sulfate soil information in relation to coastal development.

WHY WE DO IT?

Since the scientific collection of land resource information in 1946, there has been an ever increasing pressure on land resources for a wide range of uses. Accurate baseline scientific information leads to sound land management decisions and sustainable use of NT land resources. Some of the legislation requiring land and vegetation information include:

- *Planning Act 2003*
- *Soil Conservation and Land Utilisation Act 2001*
- *Pastoral Land Act 2004*
- *Weeds Management Act 2001*
- *Environmental Assessment Act 1982*
- *NT Bushfires Act 2004*

The Land and Vegetation Unit provide an advisory and extension service with assistance for a wide range of land management enquires using published land resource information and data. Land resource mapping is used daily as a decision support tool for the following issues:

- Land capability
- Agricultural and horticultural development
- Biodiversity conservation planning
- Property management planning
- Land monitoring and evaluation
- Erosion and sediment control planning
- Pastoral land management
- Bushfire prediction and intensity
- Property valuation
- Assessment of development proposals including subdivisions and native vegetation clearing applications



HOW WE DO IT?

Survey Area

Survey areas are determined from catchment boundaries, landscape features, administrative boundaries and other specific land use requirements. A survey team normally comprises a pedologist (soil surveyor) and botanist (plant ecologist). Once an area is selected, remotely sensed products are acquired including aerial photography and satellite imagery. These are prepared for interpretation and analysis using image processing software. Other information such as geological, topographical and cadastral are sourced to increase the understanding of the biophysical resources and land use demands. Historic data are also used to assist in data analysis. Preliminary map unit boundaries are delineated using stereoscopic interpretation of aerial photographs. Other methods are currently being trialled using high resolution satellite imagery.

Field Survey

A field program is undertaken to describe biophysical properties and to determine map units. For integrated land resource surveys sites are described with particular reference to landform, soil and vegetation. For vegetation surveys full floristics and structural formation information is collected along with surface soil characteristics and broad landform and land surface information.

Landform: landform is described according to national standards based on the Australian Soil and Land Survey Field Handbook (Yellow Book). Land surface characteristics include drainage, disturbance, microrelief, erosion, inundation, rock outcrop and runoff.



Soil: soil profiles are described considering horizons, depth, colour, field texture, gravel, structure, field pH, gravel, substrate and parent material. Soils are classified to the Australian Soil Classification.



Vegetation: full floristics, in association with structural formation comprising height, canopy cover, foliage projective cover and growth form are described then summarised per stratum within a quadrat. Vegetation information is described consistent with national standards (Yellow Book – vegetation chapter currently under revision).

Data Analysis and Storage

All site data is entered into Oracle based soil (SAL Info - Soil and Land Information) and vegetation (RAVS – Resource Assessment Vegetation System) corporate databases. Data is interrogated, analysed and grouped based on similar landscape features using multivariate analysis software packages to identify unique map units. Maps are created using a geographic information system (GIS) and attributed with information on soil classification, landform descriptions and vegetation communities. Additional maps are generated through further interpretation including erosion risk, habitat value (i.e. sensitive habitat, pest habitat), land capability, soil orders, soil drainage, soil depth, rock outcrop, slope, pasture potential, introduced plants and threatened flora.

Final Products

The final products derived from integrated land and vegetation resource surveys include technical reports, maps (land unit, land system, vegetation, soil & landform) and associated interpretive maps outlined above. Digital data (spatial & site) can be accessed upon completing a digital data agreement.

RECENT LAND AND VEGETATION PUBLICATIONS

- Stray Creek Catchment Vegetation Survey
- Land Resources of Darwin River Dam and Manton Dam Catchments
- Upper Mary River Catchment Resource Assessment and Degradation Survey
- Land Resources of the Lower Finnis
- Land Resource Capability Assessment in the Alice Springs Area
- Land Systems of Arnhem Land
- Mangrove Survey of Darwin Harbour
- Mangrove Survey of Bynoe Harbour

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Soil and landform

<http://www.nt.gov.au/nreta/naturalresources/soil/index.html>

Vegetation mapping

<http://www.nt.gov.au/nreta/naturalresources/nativevegetation/index.html>