

Restoration & Revegetation Guide North-east catchment, Victoria

Part 1. How to choose a plant list

About this brochure

Once you have selected the appropriate zone brochure, this note will help you to choose appropriate plant lists for a site..

The first two pages are background information. The last two pages provide a worksheet to help you choose the appropriate profile and list/s.

Remember soil fertility and moisture availability are the ultimate factors which control plant growth. The combination of landform (including topography), geology and soil types plus a number of other features influence these two factors.

Three main attributes will help you choose the list which is best suited to a site:

- The landform and topographical features
- The geology and soil type
- Remnant native vegetation

The following information gives more definition about the physical features (which dictate what vegetation occurs or may occur at a site) or where to go to read the background references.

1. Landform & descriptions

Landform is the shape of the land. It is a unit or block of land characterised by the same features (slope, elevation, aspect, geology and how they were formed).

Landforms have been developed for production agriculture and general land management as:

- Production differences closely match landforms
- Soil degradation & health problems match landforms

They are also valuable to assist with how to restore or enhance the native vegetation and habitats.

We have used the broad landform groups and descriptions from 'the Land Resource Assessment of Freehold Land within the North East Region' which is adapted from Rees (2000).

More information can be found on the Victorian Resources Online (VRO) web site:
<http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/landformhome>

We have added some extra categories, to cover common features such as sand ridges, and creeks.

Notes:

- The pictures or 'profiles' show different landforms in the sequence in which they frequently occur.
- The pages are generally in sequence from lower elevations to upper.
- The landforms do not always occur in the sequence represented in the brochure.
- Some individual landforms may be represented more than once in profile lists for a geographic region.
- Waterways are usually on the one page or next to the adjacent landform as you may find them on the ground.

Landform descriptions

Landform descriptions are used to help give more detail about the Landform, and these help determine what vegetation occurs, or may have occurred on a site.

Various descriptors are used including topographical features (slope, aspect, and altitude), drainage (e.g. permanently wet sites) and a variety of other physical attributes.

Steepness of slope:

Steepness generally affects the vegetation due to the depth of type of soil (shallower the steeper the slope) and also the rate of run-off. All therefore affect moisture retention.

Aspect

This generally affects what vegetation occurs where in Mountains, Foothills and to a lesser degree sites on Hills. Aspect affects moisture retention due to timing and duration of sun, as well as wind.

Altitude

Altitude, or height above sea level (ASL), dictates temperature, and therefore moisture retention as well as length of growing season. Altitude is, to a certain degree, included in the broad landform category hence it is not repeated in the worksheet.

Drainage

Permanent or limited moisture dictates plant growth. We have provided a list of some characteristics which are used in the Native Plant List zone brochures.

2. Geology & Soil Type

Geology

The main geological 'classification' names have been taken from the Geological Survey of Victoria (GSV) Reports and maps.

Broad groups include:

- Alluvium (deposited by water)
- Colluvium (weathered from elsewhere)
- Sedimentary (sandstone, mudstone, siltstone etc.)
- Igneous (granitic, granodiorite etc.)
- Volcanic (basalt)

The GSV reports can be found under DPI's website at www.dpi.vic.gov.au. On-line Mapping called 'GeoVic' is also available through this website.

GSV reports may also be obtained through regional libraries.

Soil type

In order to keep this guide reasonably simple we have predominantly used soil texture and depth for the distinguishing features.

Reference has been made to the (older) Victorian Soil and Land Survey Reports, which describe and map the main soil texture types.

We have not used more current terms of the Australian Soil Classification system, such as 'Chromosols' or 'Sodosols' etc, due to the lack of familiarity of many people with this system. The occasional reference is made in the vegetation profiles to the more easily identifiable groups of duplex, gradational or e.g. red brown earths.

The Soil and Land Survey reports for the North East region may be obtained through regional libraries, and can be found under:

<http://www.dpi.vic.gov.au/dpi/vro/soil surv.nsf/HTML/Index>.

The Australian Soil Classification system can be found at:

http://www.clw.csiro.au/aclep/asc_re_on_line/soilhome.htm

Soil texture

Soil texture influences many soil physical properties such as water holding capacity and hydraulic conductivity.

Texture provides an estimate of the relative amounts of coarse sand, fine sand, silt and clay size particles.

Field texture is determined by measuring the behaviour of a small handful of soil grains (<2 mm in size) when moistened and kneaded (1-2 minutes) until it does not stick to the hand. Texture is determined by the behaviour of the moist bolus and length of the ribbon when sheared between thumb and forefinger, as described by (McDonald et al., 1990), " as written on the VRO website (2007).

Soil Depth

A few categories have been used, but are limited to broad changes such as duplex or gradational to shallow or skeletal.

3. Vegetation examples

Determining what species are at or near the site and/or comparison with similar sites in the area will help you refine your assessment of the site and the EVC that may occur/ or have occurred.

Existing remnant native vegetation

Remnant or original (not-planted) native species should be recorded, to help with planning, management and for future monitoring. Start by looking at the trees and identify the species using a guide book. Look for any shrubs and ground cover plants. The main types of shrubs, whether medium height and scattered or low, dense and heathlike, will assist in determining the EVC. Likewise the dominant ground cover, whether grassy, herbaceous or sparse also reflects the site conditions and EVC. EVC identification guides can be obtained through DSE.

EVC Map and Location example

Use the EVC map on the back of the brochure to find similar landforms or EVCs in your area. Visit the location example/s, if you can, and note the features: types of trees, shrubs and ground cover. Not all location examples have vegetation in good condition. They will assist in identifying the main features including physical (landform, geology and soils) and some components of the vegetation.

References

DNRE (2002) Managing your patch of Bush Kit. Department of Natural Resources and Environment, Wodonga.

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Australian Government

Prepared by Sue Berwick, Department of Sustainability and Environment. Photo credit: Sue Berwick

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How to choose a plant list worksheet

North East Restoration & Revegetation Guide

Step 1: View the area you plan to enhance/restore or revegetate.

Determine if there are more than one different types of land/soil/ vegetation and consider these as separate sites. Follow through the worksheet for one site.

Landform: *(tick the appropriate boxes)*

Landform Category	Definition - relative height
<input type="checkbox"/> Floodplain	Present floodplain; low relief
<input type="checkbox"/> Plain	Above flood level; flat with 0-9m relative relief
<input type="checkbox"/> Rise	Above plains; 9-30m relative relief
<input type="checkbox"/> Low Hill	Small hills; 30-90m relative relief
<input type="checkbox"/> Hill / Foothill	Taller hills, between plains & mountains; 90-300m
<input type="checkbox"/> Mountains	Higher altitudes; > 300m relative relief
<input type="checkbox"/> Water body, swamp, depression	Areas which hold water for a period
<input type="checkbox"/> Sand Ridges	In plains area, prior stream deposits
<input type="checkbox"/> Creekline or Drainage line	Ephemeral water courses
<input type="checkbox"/> Slopes and Valleys	Base or slopes of broad gullies, in Hills & Mountains
<input type="checkbox"/> Mountain Plateaux	Relatively flat areas at higher altitudes)

Step 2: Go to the zone Brochure and select the page/s with the same Landform category.

Landform Description: *(tick the appropriate boxes)*

Steepness of slope:

- Flat (0o - degrees)
- Moderate (10o - 30o),
- Gentle (<10o)
- Steep (>30o)

Aspect

Direction

- North and West
- South and East

Characteristics

- Generally hotter and drier
- Generally more 'protected' from wind, sun and therefore moister.

Drainage

- Spring or soak, moist in summer
- Shallow wetland (<50cm)
- Poorly drained site, but dries out
- Moderate depth wetland (<0.5-2m)
- Perched watertable, often above a drainage line
- Deep, usually permanent wetland

Other features

- Granite outcrops, sheets of surface rock
- Conglomerate outcrops

Step 3: Refine your selection of plant lists by cross-checking the features you have selected above with the different Landform Descriptions. This should further reduce the options.

Geology and soils:

Geology: (tick the appropriate boxes)

- | | |
|---|---|
| <input type="checkbox"/> Alluvial (deposited by water) | <input type="checkbox"/> Igneous - granite, granodiorite |
| <input type="checkbox"/> Colluvial (eroded from elsewhere) | <input type="checkbox"/> Volcanic - basalt |
| <input type="checkbox"/> Sedimentary (siltstone, sandstone, mudstone etc) | <input type="checkbox"/> Metamorphic - (hard or compressed rock includes gneiss, schists etc) |

Soil texture: (tick an appropriate box or write in your own description)

- | | |
|---|--|
| <input type="checkbox"/> Clay - heavy soils, cracking in summer | <input type="checkbox"/> Sandy - obvious grains, little organic matter or clay |
| <input type="checkbox"/> Clay loam - mix of organic matter and clay | <input type="checkbox"/> Silts - very fine, powdery soils |
| <input type="checkbox"/> Sandy loams - some organic matter, gritty | |

Soil profile and depth: (tick an appropriate box or write in your own description)

- | | |
|--|---|
| <input type="checkbox"/> Deep soils with defined profile (A and B horizon) | <input type="checkbox"/> Shallow, stony |
| <input type="checkbox"/> Gradational soil - no obvious profile change | <input type="checkbox"/> Skeletal - little to no soil |

Step 4: Refine your selection by cross-checking the features selected above with the geology and soil descriptions in the profiles. This should help confirm choice/s or reduce the options further.

Site Comparisons

Existing remnant native vegetation at or near the site Are there any original native species remaining, (i.e. that have not been planted)? Roadside remnant vegetation is often a reliable place for a comparison. Start by looking at the trees and identify the species, using a guide book if needed.

Then look for any shrubs and types of ground cover plants. Note these down.

EVC Map and Location example

Use either the EVC map on the back of the brochure to find any of the similar landforms or EVCs in your area, or visit the location example/s, if you're able to travel to them. Note the features: landform, and soils as well as types of trees, and any understory plants.

N.B. Not all location examples are in very good condition but they will assist, at least, in identifying the physical features of landform, geology and soils.

Step 5. Compare the species remaining at or near the site, or from the similar location example, with the lists you have narrowed down to, from the previous steps. From this you may immediately be able to select the most appropriate list.

If the species you've noted are common to more than one list, then rely on the landform, geology and soils to select the most appropriate list. This will help ensure the species are most likely to grow and naturally regenerate in the site conditions.