

Introduction

A shelterbelt is a row of trees and shrubs that provides shelter for stock and pasture primarily from the wind.

This factsheet will explain how you can establish an effective shelterbelt to achieve benefits for your property, stock and local environment.

Presented here are the minimum standards required for shelterbelts established as part of an Environmental Works Grant (EWG), Sustainable Land Management Rebate Scheme (SLMRS), Planning Permit, or a Land Management Plan (LMP).

Benefits of Shelterbelts

Trees and shrubs provide valuable shelter on farming properties and increase farm productivity. Large amounts of topsoil and nutrients can be eroded by strong winds. Shelterbelts slow wind speeds and therefore increase stock and crop health and productivity. Shelterbelts:

- provide shade for livestock, reducing heat stress;
- protect livestock from strong winds and wind chill; and,
- reduce evaporation rates from plants, soil and dams.

In addition, shelterbelts provide significant benefits for local wildlife through:

- providing habitat for birds, mammals, insects and reptiles;
- providing food for animals including nectar, foliage, and insects; and,
- providing corridors and stepping stones for animal movement.

Wildlife that uses a shelterbelt on your property will eat pest insects, and vermin including rats.

Rural landscaping as part of a Planning Permit or LMP is required to protect and enhance the natural environment of the City of Whittlesea's rural areas. It also minimises the visual impact of your development on adjacent properties and local road users.



An example of a shelterbelt funded through the Environmental Works Grant.

Design Considerations

The effectiveness of shelterbelts is influenced by their density, height, orientation and length. Their design should match their purpose and location.

Orientation

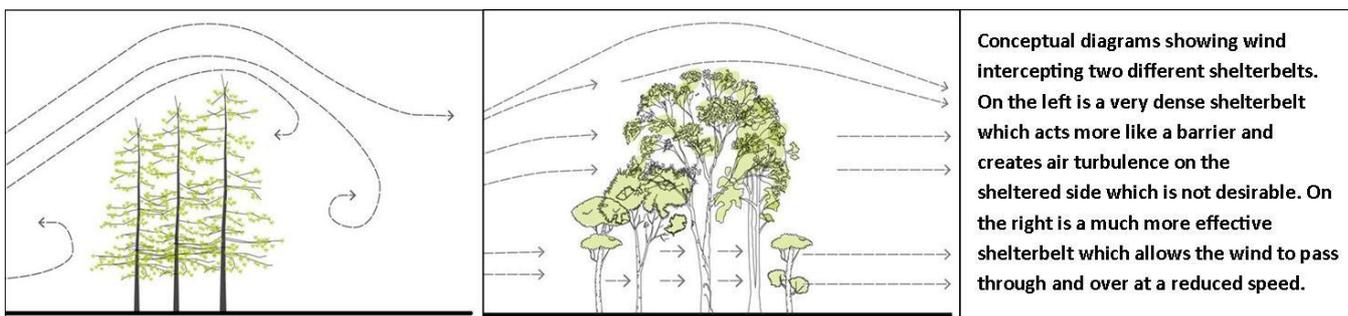
Shelterbelts should be planted across the line of problem winds. No single orientation will provide protection from all winds. For example, a north-south shelterbelt orientation will provide protection from winter westerly winds, while an east-west orientation will protect against northerly summer winds.

You should choose an orientation and location that provides the most benefit to your stock, pasture, crops and buildings.

Density

A certain amount of wind needs to be able to pass through a shelterbelt for it to be most effective. You should aim for a tree and shrub density of 40 to 60 percent. This will allow wind to pass through and over the trees, but still reduce wind speed. An even density of vegetation from the ground to the top of the trees will prevent wind funneling through any gaps. A mix of shrubs and trees will ensure that the density remains even.

A shelterbelt that is too dense, particularly those only consisting of cypress trees, will not slow wind as effectively. They will deflect the wind up and over the shelterbelt, not through it, forcing wind down on the other side and creating turbulence (Mason 2003).



Species Selection

Indigenous species will give the best results. They are adapted to the local conditions (soil and climate), establish and survive well, and are most beneficial to local wildlife.

Using conifers is not advised as they tend to self-prune their lower branches if planted close together, which funnels the wind through gaps at or near ground level (Mason 2003) (Figure 2). Fallen pine needles can also inhibit the growth of other species.

Length and Height

Longer windbreaks are more effective than shorter ones. The length and height of a shelterbelt determines the extent of the area protected.

Wind tends to flow around the ends of shelterbelts, increasing turbulence at that point. Making them longer reduces the overall effect of turbulence.

A well designed shelterbelt can provide protection across the ground for a length up to 20 times its height.

Row Design

Multiple rows of plants are more effective than one or two rows, making the shelterbelt less susceptible to the impacts of gaps and non-uniform growth (DEPI 2009b).

To be eligible under the EWG or SLMRS, shelterbelts **must**:

- only use **indigenous plants**;
- consist of **three rows** of plants, **three metres** apart;
- be **permanently fenced** (where stock are present);
- be a minimum of **ten metres wide**; and,
- be designed so the **outer two rows are two metres** from fences to prevent damage from grazing stock.

To allow plants to grow relatively unrestricted:

- space **trees 5 to 10 metres** apart;
- space **shrubs 2 to 3 metres** apart; and,
- **stagger trees in alternate rows** (not opposite each other) to achieve a uniform density.

Ongoing Management

Ongoing maintenance will be needed to maintain the health and vigour of the shelterbelt, including:

- **replace dead plants** quickly to avoid gaps;
- effective **weed control** to reduce competition; and,
- **maintain fences** to prevent stock access.

Further Information

This factsheet should be read in conjunction with Note SLMP 01 Revegetation Guidelines.

References

Mason, J (2003) Sustainable Agriculture 2nd Edition (Landlinks Press, Collingwood)

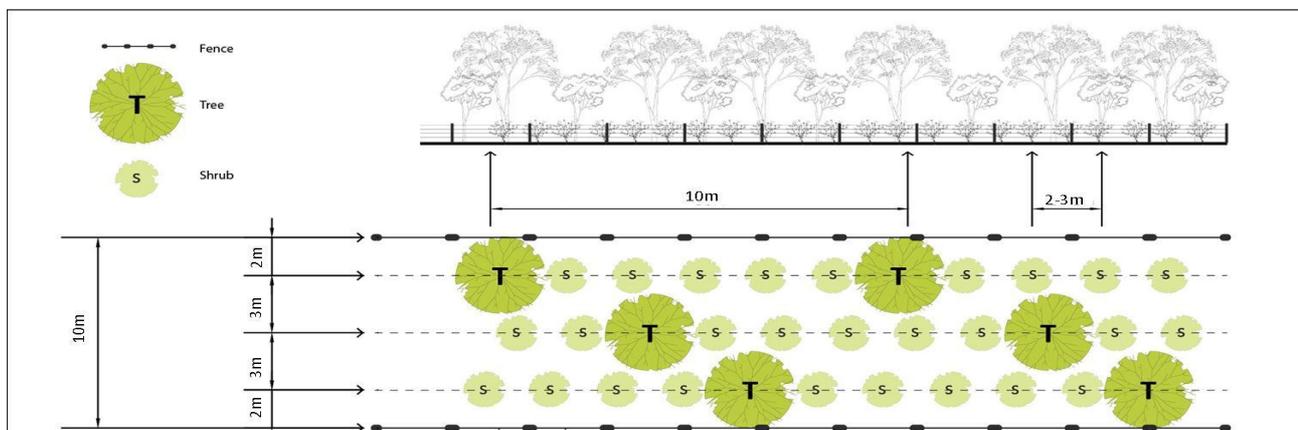
DEPI Landcare Notes (available at www.depi.vic.gov.au):

DEPI (2009a) LC0137: Shelterbelt Management

DEPI (2009b) LC0136: Shelterbelt Design

DEPI (2003c) LC0422: Shelterbelts for Control of Wind Erosion

DEPI (2009) AG0139: Shelterbelts and Wildlife



Recommended spacing of plants for a shelterbelt. Plants in different rows should be offset to reduce gaps. Planting both trees and shrubs will ensure an even density of vegetation from the ground to the top of the belt.