

URBAN DESIGN | LANDSCAPE PRINCIPLES | DESIGN



EARTHWORKS



ECO SERVICES



CHARACTER

UNDERSTANDING THE ISSUES

A well considered landscape treatment is a fundamental component of good infrastructure design. It can contribute to the character of an area, help integrate the road with the surrounding environment, facilitate way-finding for road users, encourage safe driver behaviour and become a valuable ecological asset.

NZTA roadsides have many environmental, historic and cultural values that need to be considered in the design of landscape treatments. Unlike private land, they have largely been protected from agriculture and development, thus often contain:

- // Areas of significance to maori and european heritage,
- // Remnant native vegetation,
- // Habitat and movement corridors for native fauna.

The design of landscape treatment needs to fit in with the surrounding environment and land uses. The effects of plant size and form at maturity, seasonal changes, textures and colours all need to be considered in the design. Plant growth rates and the length of time required for planting to reach the desired visual screening or aesthetic effect should also influence plant selection.

The issues usually associated with poor landscape treatment are complicated designs that are expensive and difficult to maintain; poor plant selection and soil quality; low success rates; planting blocking views for drivers or pedestrians; and poor maintenance arising from poor accessibility for contractors.

Landscape designs are a relatively inexpensive element of our state highways and wherever situated, roads and their settings are enhanced by the presence of vegetation.

Further material can be sourced from NZTA guidelines for highway landscaping: www.nzta.govt.nz/resources/guidelines-highway-landscaping

LANDSCAPE DESIGN

The following principles should guide the design of landscape treatments:

- // **PLANNING:** Landscape proposals must be integrated in the planning of the wider transport project. Specify appropriate design and capital budgets. Consider the landscape design with on-going maintenance requirements.
- // **CHARACTER:** Landscape design contributes to the character and legibility of the rural and urban environment and the road users' experience. It can provide landmarks along a journey, highlight views /glimpses and denote the presence of communities to influence driver behaviour.
- // **PLANT SELECTION:** Locally sourced native species support local biodiversity and landscape distinctiveness and helps create connections between remnant native vegetation. Flowering trees provide seasonal colour. Non-native trees can provide distinctive markers and autumn colour. Deciduous trees increase winter light and heat to adjacent areas.
- // **BUFFER:** Designate a green buffer or planted strip to separate the carriageway from the footpath. This lowers the perceived traffic noise and provides some protection from moving traffic for pedestrians, creating a more comfortable environment.
- // **EARTHWORKS:** Minimise the need for benching as it can be visually jarring and creates areas that are hard to maintain. Cut and fill batters should be feathered into the natural landform and geometric profiles avoided unless it is a deliberate design feature.

// **SAFETY:** Landscaping must be safe to implement and maintain and safe for road users and pedestrians. Locate trees outside clear zones and away from utilities and ensure that the performance of crash barriers are not adversely affected by plants. Choose plants that provides for social surveillance of public spaces.

// **SOIL:** Topsoil compaction, inadequate topsoil depth and mixing of topsoil and subsoil will reduce plant success and plant resilience to drought and waterlogging. Design for minimum 300mm rooting depth for shrubs and 500mm for trees. Avoid weedmat as it can lead to plant failure and reduce natural succession - instead use organic, living or gavel mulches.

// **SCREENING:** Integrate the infrastructure project in the landscape or screen specific elements by selective planting. Screen planting should not obstruct important views but is an important tool to deter graffiti, vandalism and adverse occupation. Select plants that will screen to the required heights and density with minimum maintenance regime.

// **INSPECTION:** Plants and topsoil must be inspected prior to planting to ensure quality of product and alignment with the planting plans and specifications. A two year minimum defects and maintenance period should be required with inspections by the landscape architect at the end of summer and winter, and remedial work undertaken in spring and autumn.

// **SPACE:** Allocate adequate space for landscape treatment. Narrow strips of land for verge and medians will generally result in poor landscape outcomes.

// **ECOLOGICAL SERVICES:** In addition to its amenity and screening purposes, landscaping is required to support ecological processes, augment existing habitats, reinstate wildlife corridors and connections, filter storm-water runoff and improve air quality. Benefits can also be gained from recycling and reusing materials such as top soil and mulching on-site where possible.

// **MAINTENANCE:** Project specific maintenance plans should be developed alongside the landscape plans. Recreating natural landscapes can minimise maintenance requirements and increase their ecological value. Consider hardscape treatments under crash barriers and highway furniture and delineate mowing areas from the carriageway with concrete strips to minimise the need for weed spraying.

// **LOW IMPACT DESIGN:** Low impact stormwater devices such as swales, wetlands, ponds, rain gardens and bio-filtration systems help reduce attenuation and road runoff. Locate and design stormwater devices with the landscape design to connect open spaces, integrate with pedestrian and cycle networks and contribute to local amenity.



BUFFER



SCREENING



SPACE



PLANT SELECTION