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Glossary
**Introduction**
This Landscape Design Guide outlines Kāinga Ora expectations for well-designed landscapes; it highlights design principles we consider fundamental to building successful environments and communities.

It is one of a number of tools in a wider framework we have established to help us, and the people we work with, understand our expectations around design, quality, and cost, to deliver attractive and functional buildings and landscapes that deliver the best outcome possible, now and in the future.

**Purpose of this guide**
This guide ensures all new landscapes meet Kāinga Ora's design quality, amenity, safety, and maintenance requirements and that landscape environments are fit-for-use by our residents and complementary to surrounding communities.

This guide is not about lip-service; it’s about achieving consistent outcomes and good design principles. The resource serves a number of functions, acting as:

- A briefing document for our staff, design consultants, and development partners, that communicates our expectations around how our sites should be landscaped.
- A guidance document that sets out the quality-level that needs to be met for a development to proceed.
- A quality-review document that will form an integral part of our briefing and quality review processes for landscape projects.

**Aims and objectives**
The design expectations and guidance detailed in this document aim to deliver a consistent message about the role of landscape and the landscape design outcomes sought for developments owned and/or managed by Kāinga Ora. They are intended to assist staff, consultants, contractors, designers, project managers, and other community stakeholders who participate in landscape planning, design, implementation, and maintenance in:

- Improving the overall quality and longevity of landscaping within our developments.
- Optimising value and reducing on-going maintenance costs.
- Enhancing and reinforcing the character and community identity of our developments.
- Creating a positive landscape legacy across our portfolio.

These guidelines respond to “lessons learned” and seek to improve our landscape outcomes to ensure:

- Landscape designs are well-refined, cost-effective, and easy-to-implement and maintain.
- Landscape designs are well-planned, making efficient use of available space that provides a landscape framework residents can, over time, add to and personalise.
- Appropriate plant selection, including species, size, and densities that reflect and enhance neighbourhood character and contribute towards biodiversity.
- Adequate resources are provided for planting to establish and flourish (e.g. sufficient top-soil, sunlight, and maintenance).
Quality, robust, cost-effective outcomes

Kāinga Ora acknowledges that good design cannot be achieved by prescription or regulation, and that landscape design solutions need to be tailored to each individual site and locality.

Nevertheless, the scale of our development programme and the range of factors needing to be considered means clear and definitive landscape design guidelines are needed to ensure, going forward, all our projects meet consistent quality and whole-of-life cost benchmarks.

Fundamentally, this Landscape Design Guide has been created to ensure all our new homes enjoy the benefits of liveable, functional, and sustainable environments that include high-quality plants, products and materials that are, robust, readily-available, cost-effective, and easy-to-maintain.

Using the guide

This resource has been developed to assist landscape architects and consultants in producing functional, attractive, and robust landscape solutions for our developments.

Prior to refining site-specific design solutions, designers are encouraged to familiarise themselves with the information available in each section of this guide, particularly the 10 over-arching design principles and the landscape design guidance within each section.

Reading the design overview and expectations paragraphs at the beginning of each section will help explain why certain methods and strategies are being recommended and the primary goals Kāinga Ora is aiming to achieve with each component within its landscapes.

This guide includes eight sections that cover the key components of landscape design for our projects. The design expectations and guidance covered in each section reflect our expectations for the integration of landscaping through all project phases, and are applicable to projects of all sizes and complexities.

Promoting quality outcomes involves more than just a checklist of parts, and each site has its own challenges and opportunities that must be explored as part of the design process.

Nevertheless, it is critical all projects meet minimum quality and whole-of-life cost benchmarks as described throughout this guide.

Completing a simple concept landscape design prior to full Resource Consent documentation can be a useful exercise for larger sites to provide at council pre-application stage to gain feedback prior to developing a comprehensive scheme.
Who should use this guide

These guidelines have been developed to provide a point of reference for the landscape components of all Kāinga Ora State Housing developments.

The early integration of landscape thinking on projects invariably leads to better overall outcomes and, over time, improved landscape asset performance. In particular, early consideration of landscape opportunities and constraints can also help reduce site works and civil engineering costs and streamline projects through Resource Consent (RC) processes.

Kāinga Ora recognises that successful landscape planning, design, implementation, and maintenance require a specialist body of knowledge. This needs to be supported by a collaboration of all stakeholders whose actions affect landscape outcomes.

Those expected to use this document include Kāinga Ora’s staff, consultant teams, project managers, contractors, and asset management organisations.

The project team

Landscape architects are required to work as part of a multi-disciplinary project team that is expected to collaborate closely to deliver projects that meet our requirements and those of our residents.

These disciplines include, but are not limited to: development managers, project managers, planners, architects, urban designers, ecologists; geo-technical, civil, traffic, fire, acoustic and structural engineers; quantity surveyors, and build partners.

Design input from the project landscape architect during the early stages is critical to achieving the objectives within this guide.

Project team meetings and peer review of site-layout and high-level bulk and location plans provide the opportunity to collaborate and critique site-layout and other aspects of the concept design before it is too late.

Landscape architects will be expected to provide specialist landscape input and will be needed to intervene if a project is not aligning with the landscape and urban design objectives outlined in this guide.

Role of the urban designer

Our urban designers support our staff, consultants, and contractors in project planning, design, and delivery; they assist development and project managers to optimise site-layout, architecture, and landscape design outcomes for all projects. Their involvement includes evaluating design and layout options as well as promoting and sharing best practices and a consistency of approaches to all design-related issues.

These include:

- Advising on site-suitability for development and assessing appropriate yields and typologies those sites can comfortably accommodate.
- Preparing the urban design section of the Project Brief for each project.
- Advising development managers on design consultant selection and assisting in assessing consultants’ offers of services.
- Assisting in the development and review of a project’s landscape and urban design deliverables.
- Contributing to multi-disciplinary design workshops.
- Recommending known successful design solutions and products.
- Stage-gate Technical Advisory Group (TAG) reviews for all projects.
**Role of the development manager**

Our development managers assemble the multi-disciplinary design teams for each project and shepherd projects through their various phases towards timely and cost-effective delivery. It is their role to ensure the various disciplines work together, rather than in isolation, to achieve quality and cost-effective design outcomes.

In regards to landscape design outcomes, development managers play a key role in ensuring an adequate proportion of a project’s budget is allocated to landscaping. In all cases, landscape design outcomes should be considered from the early planning stages of a project. When used effectively, landscape expertise can add value across all project-stages, from how best to optimise landforms and natural features of a site, to how to effectively and cohesively integrate construction within a landscape, including storm-water management, ecological mitigation, tree protection, and landscape treatments associated with engineering and architectural functions and structures.

**Scope of landscape design services**

Landscape architects are generally engaged up to the Resource Consent (RC) stage; the full intent of the landscape outcome needs to be clearly defined and specified in the RC drawing package and supporting documents.

Beyond the RC stage, implementation will generally be tendered to contractors to implement on a design-and-build basis. The landscape architect’s involvement beyond the RC stage will be determined on a by-project basis. Consequently, it is important all landscape architecture RC packages include:

- General site set-out in relation to the wider neighbourhood context, including: proposed architecture, site-topography, and any relevant civil, traffic, or structural engineering constraints.
- Planting design, including all species, plant-spacing, sizes (at both implementation and at maturity), top-soil depths, and planting details. Indicate all tree drip-lines on plans at the diameter of a mature specimen to ensure the property will not be damaged through the entire tree-life-cycle.
- Hardscape design, including all surface material, textures, colours, and specifications.
- Products and utilities required in the landscape.
- Retaining locations and sufficient detail of designed site-levels to clearly indicate how the landscape elements work with changes in ground level.
- Fencing design, including types, heights, visual permeability, and construction details.
- A cross-section (or sections) at a minimum of 1:100 through the site-frontage to the street and/or shared access-way extending from the public footpath through to the building interior at the ground-floor level. This is mandatory where private outdoor living adjoins the street or shared access-way; it needs to accurately represent the relative levels of the footpath, private outdoor living, and ground-floor level to the building, and the heights of the fencing, screening, and/or planting at the frontage.
- Prepare a landscape maintenance plan for hand-over from the landscape contractor to Kāinga Ora’s Maintenance Partners setting out a 12-month, project-specific, soft-landscape maintenance regime that aligns with the planting maintenance guidance notes set out in section 7.2.

All practitioners engaged by Kāinga Ora need to be aware of and abide by all local body rules and development controls.

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### Some typical components of a landscape design package for Resource Consent application.

- **SOFTSCAPE DESIGN**
- **HARDSCAPE DESIGN**
- **FENCING DESIGN**
- **GENERAL ARRANGEMENT LANDSCAPE PLAN**
- **LANDSCAPE DESIGN STATEMENT**
Over-arching Design Principles
1.0 Overview

This section outlines 10 key design principles that guide and inform the multiple components of the landscape design process on Kāinga Ora State Housing developments.

These principles reflect our over-arching priorities, values, and expectations for landscapes across its projects. They should not be considered in isolation, but, as they are closely inter-related, should be pursued in parallel.

Any project that dismisses or fails to adequately consider these principles collectively is unlikely to lead to satisfactory landscape outcomes for Kāinga Ora, our residents, and their neighbourhood.
1.1 Building lives and communities

Overview
Kāinga Ora’s vision is ‘Building lives and communities by housing New Zealanders’. Having a stable home provides a foundation for people to live well and thrive in their family and community.

Expectation
Landscape design helps build lives and communities by delivering cost-effective design solutions that foster community well-being, enhance streets and public spaces, and show respect for local character and amenity values.

Explanation
Good-quality landscape design can contribute to an area’s sense of well-being by encouraging social interaction and community stewardship, helping to soften hard architectural form, enriching bleak areas, and screening unwanted visual effects.

Landscape proposals – including streetscapes, hard and soft landscapes, constructed elements, and utility installations – should be designed to enhance the local sense of place, including respect for local character, culture, and neighbourhood identity.

Design guidance
1. Design streets and public spaces to ensure a positive first impression of the neighbourhood through good urban design, street-tree-framework, lighting, street furniture, boundary treatments, and fencing.
2. Configure streets and communal spaces to promote ‘neighbourliness’ and include provisions specifically set-aside for people to sit, interact, observe, play, and enjoy.
3. Plan sites to enhance local identity, community ownership, and civic pride in the composition of streetscapes, landscaping, communal areas, and installations.
4. For apartment developments, provide communal outdoor spaces in prominent, sunny, locations that facilitate surveillance and encourage opportunities for community interaction, gatherings, and play.
5. Include community well-being features such as focal points, play-areas, seating, communal fruit trees and vegetable gardens, and pedestrian and cycle-friendly linkages in the communal zones serving apartments and larger clusters of houses.
6. Encourage walking through people-focused design by: inter-connecting the pedestrian network; providing passive surveillance over all pedestrian connections; and the selection of street furniture, planting, lighting, and paving materials.
7. Design landscapes to be inclusive and provide for the physical and emotional well-being of all members of the community, including children, those with impaired mobility, and the elderly.
1.2 Safe living environments

Overview
The design of the built environment can have a significant impact on personal safety, security, crime, and social behaviour within a neighbourhood. Landscape design plays a critical role in enabling safer and more attractive neighbourhood environments by the application of Crime Prevention Through Environmental Design (CPTED) principles.

Expectation
Our tenants and their whānau feel safe and secure in their homes and immediate neighbourhood environments.

Explanation
CPTED is a crime prevention discipline that promotes effective design of the built environment to deter anti-social behaviour and foster local custodianship within a community.

CPTED helps reduce crime and fear of crime by reducing criminal opportunity and fostering positive social interaction among legitimate space-users.

A good understanding of local circumstances together with the site-specific application of CPTED principles at the design stage leads to successful community safety and crime prevention initiatives that benefit the development and the wider community.

Design guidance
The Ministry of Justice’s Guidelines for Crime Prevention through Environmental Design (CPTED) sets out seven qualities for well-designed, safer places through landscape design.

These qualities are presented below under two over-arching headings: natural surveillance (the quality that affords places clear visibility (seeing and be seen)) and access control (the implementation of clear physical boundaries to attract or restrict people’s presence).

Natural Surveillance
1. Surveillance and sight-lines: Ensure clear sight-lines are provided between homes and the public realm as well as down shared drives and/or pedestrian lanes from streets, public reserves, and other areas of high activity. Specify appropriate plant species, heights, and densities to retain sight-lines for passive surveillance.

2. Activity mix: Design to encourage passive recreation in public spaces to maintain surveillance. Provide informal surveillance between streetscapes or other public spaces and the homes that front onto them; this includes the ability to see and be seen when approaching and/or entering private property.

Access Control
1. Access: Movement networks should be designed to encourage through-traffic and offer alternate routes for pedestrians. Consider sight-lines and pedestrian choices within the networks to deter criminal activity.

2. Layout: Configure sites to afford maximum exposure of homes to the public realm, including streets, reserves, and shared access-ways, and avoid the creation of isolated enclaves of back-lot housing clustered beyond public view. Way-finding and orientation within a development needs be clear and logical and work within the legible patterns of the wider neighbourhood.

3. Sense of ownership: Ensure the delineation of public and private property is unambiguous, with clearly-defined boundaries that demarcate each home’s defensible space.

4. Quality environments: Maximise the visual quality and amenity of spaces to foster residents’ sense of pride and custodianship. Ensure environments are well-designed, managed, and maintained to provide amenity with reduced maintenance requirements.

5. Physical protection: The landscape should encourage active use of appropriate areas and limit access to sensitive environments or private areas. Avoid areas of entrapment, including blind alleys, high fences around entrance doors, and areas hidden from view by planting or walls. Provide appropriate lighting in all areas, including entrance doors and laneways, and/or common areas not adequately lit by street lighting.
1.3 Low-maintenance and whole-of-life value

Overview
As our developments are predicated on long-term ownership and good tenancy management, buildings and landscapes need to be efficient in their use of space and energy, and sufficiently robust to withstand the general wear and tear of our residents and local environmental conditions with minimal maintenance and repairs.

Expectation
For all material and plant selections in State Housing, our landscapes balance durability and cost, ensuring the best possible long-term value for money is achieved. Where possible, all landscape design embodies low impact, low-maintenance principles where possible.

Explanation
Low-maintenance and whole-of-life value for money in the management of landscape assets is a fundamental component of good landscape design.

Landscape proposals that integrate operation and maintenance thinking are, in the long-term, generally more cost-effective, successful, and enduringly attractive.

Design guidance
1. Base landscape proposals on a simple robust landscape framework that residents can take ownership of and add to over time.
2. Where existing mature trees do not reduce the ability to re-develop the site or detrimentally affect the cost of re-developing the site, retain those that contribute to the local streetscape and/or neighbourhood character and/pr site amenity.
3. Liaise with local asset management and maintenance personnel at the start of the design process to better understand the site from an asset maintenance perspective.
4. Restrict plant selections to species that are hardy and well-suited to their specific function and location, while requiring minimal maintenance over their life-span.
5. Ensure all specifications for constructed landscape elements and utility items include durable products that are easily replaceable and will not require unplanned maintenance under anticipated circumstances.
6. When evaluating material and plant options prioritise whole-of-life cycle costs over simple capital costs.
1.4 Sustainable landscapes

Overview
At the time of publishing, Kāinga Ora owns or manage 64,000 homes, giving 185,000 New Zealanders (4.1% of the population) a place to call home.

We are also at the beginning of a large development programme that aims to deliver 22,000 re-built or retro-fitted homes and up to 12,800 affordable or market homes in the next 10 years. As such, we are a large consumer of raw materials and have a significant environmental foot-print that will impact the environment of both our neighbourhoods and well beyond.

As an organisation, we are therefore uniquely placed to contribute towards environmental objectives. This is due to our ability to reduce our own impacts, influence the behaviour of our contractors and residents, and ‘lock in’ the future environmental performance of our assets.

Expectation
Our developments are designed to significantly reduce the impact of our operations, build programmes, and assets on the natural environment by adopting and incorporating sustainable landscape design practises including, wherever possible, Low-Impact Design (LID) principles and features wherever possible.

Explanation
Delivering the goals of our Environment Strategy will mean:

1. Our operations are more environmentally-sustainable.
2. We own and deliver more sustainable, resilient assets.
3. Our residents are empowered to live in a more environmentally-sustainable way.
4. We promote and enhance local biodiversity by utilising native plant species where possible and appropriate.
5. Wherever possible, we work with and retain existing natural features, processes, and assets within our site.
6. Wherever possible, our developments adopt and incorporate LID principles and features for storm-water attenuation.

To this end, we have committed to all new developments achieving a 6-Homestar® rating. Homestar® is a national residential rating tool developed by the New Zealand Green Building Council that evaluates the environmental attributes of dwellings to promote warm, healthy, sustainable and efficient dwellings.

Design guidance
1. All development proposals should adopt a holistic approach to design across architecture, landscape, and engineering disciplines that will impact on landscape and external works to optimise environmental outcomes. Early engagement of landscape architects and development engineers will help facilitate integrating environmentally-sensitive design features at the design layout stage.
2. Design site-layouts and landscapes to take best advantage of natural land-forms and the natural character of the area. Retain wherever possible, existing trees and vegetation, and reinforce the existing local character through additional trees on site and, where appropriate, in streets and public spaces.
3. Contribute to regional biodiversity through retention and selection of, where appropriate, native plant and tree species, as well as including generous ‘deep-soil’ areas within developments that can enable the scale of planting to respond to the scale of development and contribute to the urban ‘forest’ within the wider urban context.
4. In the demolition phase, and in void periods between tenancies, retain existing landscape features including all mature, healthy trees.
5. Wherever possible, use the site’s natural characteristics, vegetation, and open space areas to help facilitate ground-water re-charge including maximising permeable areas, retaining over-land flow-paths, and creating natural surface ponding areas.

Reinforce this with LID features to treat rain-water as close as possible to the source using techniques such as rain water retention gardens and swales to filter contaminants, thereby protecting down-stream water quality.

Whenever practical, mimic natural systems and processes in storm-water management to contribute to local sense of place and identity.

6. Prioritise durable, long life-span inert materials that require low-maintenance in the design and specification of landscape features to avoid the slow release of toxic preservatives to the surrounding soils and waterways.

7. Optimise development configurations to promote walking, cycling, and use of public transport.

Providing certain coverages of native planting per site can earn Homestar® points.
1.5 Streetscapes

Overview
Successful streets are social spaces that foster high levels of pedestrian activity, contributing vitality, community stewardship, and well-being to a neighbourhood.

Expectation
The landscape design of public streets supports and reinforces social and spatial connections by giving priority to features that promote low vehicle speeds and promote walking, cycling, and public transport. The tree-scape planting framework responds to and complements neighbourhood character.

Explanation
Attention to the quality and detail of streets and public spaces’ interface with our developments will reinforce social connectedness, and foster local pride in the neighbourhood character.

Design guidance
1. Design streets and civic spaces to promote neighbourliness and include spaces specifically set-aside for people to sit, interact, play, and enjoy.
2. Encourage walking, cycling, and using public transport as practical modes of transportation by providing people-focused amenity and infrastructure, prioritising the safety and amenity of pedestrian routes, and applying traffic calming techniques to encourage low speeds.
3. Select plants and materials to complement the local environment and community.
4. Prioritise pedestrian connectivity by enhancing connections within the development precinct and removing or mitigating physical and psychological barriers, including avoiding drop-downs to vehicle crossings to avoid impeding the continuity of level footpaths.

Example street elevation of south loaded lots.

Example street elevation of north loaded lots.

Where possible, include and complement existing road reserve planting in designs. This can help integrate new developments into neighbourhoods.
**1.6 Mitigating effects of development scale**

**Overview**
The bulk and form of some larger developments can be an intimidating presence in their neighbourhoods; this effect can be exacerbated where a development is among the first projects in a previously suburban neighbourhood that has had a zoning-uplift.

Appropriately-scaled trees can play a key role in reconciling such developments with their local context.

**Expectation**
 Appropriately-scaled trees respond to and complement the bulk and form of our higher-density building typologies to help integrate them into the surrounding urban fabric.

**Explanation**
Specifying planting that will grow to an appropriate scale in key locations can help break down what may otherwise be overly imposing built form.

The relatively large soil volumes required for larger trees also adds to the permeable site-area around our buildings, while the trees themselves help absorb storm-water.

**Design guidance**
1. Locate larger trees where they will provide the greatest relief to the built form from public vantage points. As space is often at a premium along street frontages, street trees can sometimes be proposed to perform screening functions, enabling larger species without being too close to a building’s edge.

2. When locating trees on the northerly-side of building façades, consider deciduous species that will provide shade to cool down homes in summer and let sunlight in during winter.

3. Ensure planting is sufficiently spaced from buildings and services to avoid damage to assets at maturity and enable space for scaffolding for repairs and maintenance. A minimum separation distance of 1m should be maintained between any building and the mature circumference of a tree.

4. Where space is limited and/or the need for screening is high (e.g. where open breeze-ways are exposed to the street), climbers can provide greening and visual softening of built form. Such climbers need to be appropriately-spaced off any cladding material on structures built to withstand the mature live loads of plants.

5. Shared car-parks and steeper slopes can provide sufficiently large areas of open space to enable larger species. Clusters of suitable larger species can help stabilise a slope and provide visual counterpoint and biodiversity.

6. Ensure generous areas of deep-soil are provided in key locations for large developments to enable large specimen trees to achieve maturity and mitigate the visual impact of the built form.
1.7 Accessible landscapes

Overview
Designing homes and landscapes to enable people to live in their own home as long as possible makes economical and emotional sense.

Thoughtful design in the landscape has the ability to reduce dependency, reduce the chance of accidents, reduce the cost of maintenance, and enable people to remain in the comfort and freedom of their own home for longer.

Expectation
As many of our houses as possible can be readily accessed, to the greatest extent possible, by everyone regardless of age or ability.

Explanation
Our Accessibility Policy (2019–2022)¹ sets an initial target that at least 15% of our new builds meet performance requirements for universal design. The remainder will meet as many of the requirements as possible.

Universal design² is defined as being “about making sure everything is accessible to, understood by, and used to the greatest extent possible by everyone without adaptation—or requiring little adaptation”

For the landscape component of our developments the most critical contribution is providing an accessible route from an accessible car-park to the dwelling-entrance.

Design guidance
1. Where possible, locate accessible dwellings close to the public road for reasons of security and ease of non-vehicular access to neighbourhood amenity.

2. Provide one accessible 3.5m x 5m parking space with a maximum grade of 1:20 for every fully universally designed dwelling.

3. Provide an accessible, slip-resistant footpath that is at least 1.2m-wide between the accessible car-park and the main-entry of the dwelling. If there is a bank or drop from the footpath, include an upstand kerb to prevent wheels running off.

Treat any slope greater than 1:20 as a ramp; this will need to comply with the requirements of NZS 4121: 2001 – Design for Access and Mobility: Buildings and Associated Facilities.

4. Choose plant species in close proximity to accessible ramps and paths carefully; ensure adequate separation distance is provided between accessible ramps and paths and any deciduous trees that pose a slip hazard from leaf-drop.

5. Include accessible landscape features including clothes-lines with an adjustable height of 1 to 1.8m and letter-boxes at a height and position that a person in a wheelchair can access. Ensure these features can be used by residents with impaired or restricted mobility.

6. On many sloping sites the length of ramps needed to achieve accessible pathways can impinge on the project’s viability for re-development. Measures such as designing in locations for hydraulic platforms where such platforms can be added when demand arises.

7. To meet our policy targets, a very high proportion of houses meeting our full universal design standards will need to be built on flatter sites to compensate for sloping-sites where such targets may be hard to attain.

¹ For further guidance on accessibility refer to Kāinga Ora – Accessibility Policy 2019 – 2022
1.8 Sloping-site-design

Overview
Sloping-sites present both opportunities and constraints to achieving good, liveable development outcomes.

Expectation
Our developments respond to sloping-sites by taking advantage of opportunities offered for landscape features, privacy screening, and passive surveillance, while avoiding typologies and configurations that compromise streetscapes or resident amenity.

Landscape architects are required to address the challenges of sloping-sites by clearly demonstrating proposed solutions. This includes a combination of showing all key levels on plans (including slopes on footpaths and ramps) and including key cross-sections through the sites indicating how retaining planting and fencing combine to create suitable landscape solutions. It should be noted that slopes above 1:12 are unlikely to support accessible units for single- and two-level typologies, while slopes in excess of 1:8 are not suitable for our ‘standard’ typologies.

Explanation
A three-dimensional site-wide approach should be taken in the design of sloping-sites to ensure a full range of design solutions are considered at an early stage. This includes earthwork alterations to site topography.

Design guidance
1. Where slopes exceed 1:12, ensure all landscape proposals from the earliest concept stage include key levels notated on site plans and cross-sections through critical parts of the site to indicate how retaining, fencing, and planting combine with the proposed dwellings and street frontage to achieve suitable levels or passive surveillance and private amenity.

2. Where possible, use cost-effective solutions to minimise landscape retaining. Consider a gently-sloping lawn for slopes that are less than 1:10 and, where steeply-sloping land does not require access or use as a functional space, consider using embankment planting as an alternative to excessive use of retaining walls.

3. Separate any retaining walls exceeding 0.8m in height into two steps or more separated by a planting strip of not less than 600mm. Note that, where a fall is on to a soft surface, retaining walls between 0.5 and 1m in height will not require safety-from-falling structures.

4. Where sites exceed a slope of 1:8, be-spoke house designs are recommended.

5. In all cases, landscape proposals should include mitigation of visual and environmental impacts imposed by retaining structures and/or extensive site works required to establish building platforms and associated outdoor living and service-areas.

6. Where retaining structures are in full view of streets or other frequently-used public spaces, use measures to mitigate the visual impact of the retaining structures such as climbing or screening plants and staining bare timber.

7. For larger typologies, including apartments and terraced housing, consider opportunities for under-croft parking presented by the slopes ensuring a reasonable level of passive surveillance can be achieved.
1.9 The residents' experience

Overview
The quality of residents’ experience is an essential measure of successful residential developments. The perception of a place and its people can be heavily influenced by the quality and character of its landscape setting and the level of external amenity that setting can offer. Providing attractive and functional landscapes can enable our residents to take pride in their home and environment.

Expectation
To enhance the quality of residents’ user experience by optimising the quality and character of the landscape setting of their homes.

Explanation
Enhancing the residents’ experience of landscaping helps to foster pride of place, reinforcing well-being and stewardship which in turn inhibit anti-social behavior.

Design guidance
1 Enhance the quality of residents’ experience by providing landscapes that are:
   – Well-integrated with the wider urban fabric.
   – Appropriate to the local context and character.
   – Uncluttered and cohesive.
   – Well-implemented and -maintained

2 Design amenity to address the sensory, perceptual, and experiential aspects of developments by including features such as:
   – Community gardens.
   – Creating and enhancing visual landmarks and natural features.
   – Protecting and framing significant views or vistas.
   – Creating interactive play-areas.

3 Enhance the character of the development, along with the quality of residents’ experience by:
   – The size, scale, and form of planting.
   – Its floral display and seasonal colour variation.
   – The provision of shade where and when needed.

4 Use specimen trees to create distinctive landscape markers or features. For example:
   – Providing focal points in gardens or communal areas.
   – Creating or enhancing tree-lined avenues, streets, and lanes.
   – Greening and shading shared-parking and driveways.
   – Forming clusters of trees in open landscapes.

5 Support residents’ health and well-being by:
   – Providing a range of fruiting species across a development to supply fruit throughout the annual cycle promoting sharing among neighbours.
   – Providing community gardens for multi-unit developments.
   – Liaise with the asset manager and Kāinga Ora’s community development team regarding the provision of amenities within communal spaces. In some cases, deferring the implementation of communal space amenities until the development is occupied can enable resident participation in determining appropriate/desired amenity provision.
1.10 Mātauranga Māori

Overview
Kāinga Ora’s commitment to building lives and communities incorporates the implementation of values and principles of Te Ao Māori in the design process.

We aim to serve our residents in a culturally-appropriate manner and support them to remain in their homes as long as they need to.

Mātauranga Māori refers to the framework of knowledge Māori communities, iwi, hapū, and whānau have retained since their arrival to Aotearoa.

Expectation
Mātauranga Māori is considered to inform landscape design practice and allow Māori aspirations to be fulfilled while complementing and improving landscape design outcomes wherever possible.

Kāinga Ora’s vision is to build lives and communities by housing New Zealanders – he pukenga wai, he nohanga tāngata; he nohanga tāngata, he putanga kōrero.

Explanation
Mātauranga Māori is place-based and founded in empirical observation and interaction with the environment and the natural world in which Māori have existed for generations.

The ethnic diversity of our resident base means cultural awareness and responsiveness is required to overlay everything we do, enabling all our residents to prosper and thrive.

Design guidance
The following steps will help ensure the successful implementation of Mātauranga Māori, including kaitiakitanga (stewardship).

1. Ensure any outcomes informed by Mātauranga Māori are context-specific and drawn from local sources of knowledge and interpretation. Engage early with local iwi representatives at the inception phase of a project.

2. For significant projects, consider formation of an iwi working group that can advise on the implementation of Mātauranga Māori-based design solutions related to: environmental management; landscape design; artworks; and cultural heritage management (wāhi tapu/ wāhi taonga).

Ensure this group is appropriately-resourced to contribute and provide input into design and implementation phases.

3. Consider Māori expectations pertaining to kaitiakitanga (stewardship) such as monitoring requirements, species-selection, cultural harvest, mahinga kai, biodiversity, ecological enhancements, and protection of mauri (life force).

4. Tailor design responses to address specific issues within specific areas. Look to local iwi, hapu, or whānau to provide guidance on how this can be achieved as and when appropriate.

5. The design team needs to be familiar with the use and protocols around Te Aranga Māori design principles. These outline how we can engage with mana whenua and positively shape our environments to acknowledge our identity in Aotearoa.

This design represents the Patiki or flounder, a symbol of hospitality.
Circulation
2.0 Overview

This section sets out guidelines to ensure all new developments promote and contribute to achieving safe, well-connected, integrated, and easily-maintained pedestrian and vehicular networks.

The circulation network surrounding and within our developments needs to be designed to improve our residents’ and the wider communities’ quality of life while enabling good access for all modes of transport including walking, cycling, public transport, and cars.
2.1 Pedestrian circulation

Expectation
Our developments enhance pedestrian amenity by giving priority to pedestrians, those with a mobility impairment, and cyclists.

Explanation
Successful neighbourhoods and places are characterised by high levels of pedestrian activity that, in turn, support community interaction and kaitiakitanga/stewardship.

Design guidance
1. Prioritise pedestrian access and safety over vehicle movement through clearly-defined footpaths from the street to front doors.
2. Ensure footpath connections between front doors and streets /JOALs are not fenced in or gated.
3. Design any shared or common access-ways to give priority to pedestrians.
4. Where dwellings are required to be accessible, provide footpaths that align with our performance requirements (i.e. a minimum width of 1.2m and a maximum gradient of 1:20 between car-parks or vehicle drop-off zones and the front door).
5. Where the grade exceeds 1:20, provide ramps and/or steps in compliance with accessible requirements.
6. For apartment developments: pedestrian paths to the main-entry must be at least 1.2m-wide and provide the most direct pathway for pedestrians and those with a mobility impairment from the street front.
7. For entrance paths to multi-unit developments, consider separating paths from the vehicle carriageway using, where possible, planting. Avoid completely isolating the two as their combined activity increases passive surveillance within the internal streetscape.
8. Within private lots: minimise length and width (typically, 800mm-wide) the extent of paths required to access service-areas and other essential functions. Locate outdoor service functions close to dwelling entries while balancing other requirements such as solar access for clothes-lines.
9. Wherever possible, provide pedestrian links to adjacent, publicly-accessible land such as schools, reserves, and esplanades.
10. Where slopes exceed 1:20, ensure all pedestrian paths are durable and cost-effective over their life-cycle, using non-slip finishes (e.g. exposed aggregate). In general, specify a minimum of 20 megapascals, 100mm concrete with a non-slip finish, a maximum 150 cross-fall, and with 100mm-high mountable-kerbs (where adjacent to driveways). Only use permeable paving when required for compliance with planning requirements.
11. Design all steps and access ramps to meet accessible requirements and specifications including: a maximum rise of 180mm; minimum tread of 310mm; and a minimum pitch-line of 23 degrees.

2 For further guidance on accessibility refer to Kāinga Ora – Accessibility Policy 2019 - 2022.
2.2 Driveways and parking areas

**Expectation**
Our developments feature efficient, safe driveways that prioritise the safety of young children and provide vehicular access to our homes.

**Explanation**
All sites require vehicle access and on-site parking; careful consideration of safety, amenity, and function is critical. Ensuring the safety of all residents – in particular, children – is paramount.

**Design guidance**
1. Design driveways to provide efficient vehicular access that minimises the amount of hard-stand occupied.
2. Restrict the length of vehicle reversing required on any site.
3. Ensure driveways, associated fencing and softscape is configured to provide unimpeded sight-lines to footpaths and approaching vehicles on both sides for drivers when exiting.
4. Where reversing onto the street is not permitted, such as onto arterial or collector roads, ensure there is adequate space for on-site manoeuvring without requiring excessive lengths for reversing.
5. Securely fence-off all private rear yards and outdoor living-areas from driveways with non-climbable fences that are at least 1.2m-high.
6. Avoid site configurations and fencing treatments that result in extended lengths of high fences on both sides.
7. Implement wheel stops, bollards, passing bays, kerb build-outs, and rumble strips to encourage slow vehicle movement and discourage ‘opportunity’ parking.
8. Avoid permeable paving, except where they enable compliance with minimum permeable site area. In such cases, restrict them to car-parking pads and straight lengths of driveways.
9. Where possible, avoid vehicle crossings that result in drop-downs to the public footpath they cross.
10. Ensure trees are columnar in form and/or have a raised canopy to enable visibility between ground-level and 2m high.
11. For stand-alone houses, duplexes, and terraces provide car-parks on house lots at the following ratio:

<table>
<thead>
<tr>
<th>Bedrooms</th>
<th>1</th>
<th>1A</th>
<th>2</th>
<th>3+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car-parks</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*A = accessible carpark (min 3.5m wide x 5m long)
2.3 Common accessways

**Expectation**
Our common access-ways are safe and attractive extensions to their local neighbourhood's street network that enable multi-modal access to all dwellings that don't front onto a street.

**Explanation**
In our developments, common access-ways take on the public role of the street. Within them are the individual addresses and collective identity to the homes they enable access to. As such, they offer an opportunity to unify a development and create a unique sense of place through their design configuration, landscape relief, and selection of surface materials.

**Design guidance**
1. Create an internal streetscape environment that prioritises pedestrian amenity and safety, activated and overlooked by dwellings; this is best achieved where dwelling frontages line the 'street' on both sides.
2. Configure common access-ways to enable direct sight-lines into them from public streets or parks, as well as from the houses that front onto them, while avoiding blind-spots and poorly surveilled accessway appendages.
3. Where possible, ensure good connectivity in larger developments by providing more than one connection back to the public street network. Access-ways that create direct through-routes on sites may need to deploy traffic calming techniques to discourage rat-running.
4. Wherever possible, avoid locating common access-ways alongside neighbour's boundaries.
5. Configure common access-ways to minimise the total paved-area occupied, affording sufficient space for vehicle manoeuvring and safe pedestrian access to dwellings, whilst optimising the extent of permeable areas for greenery and planting.
6. Where space allows, provide a grade separation between vehicle access-ways and pedestrian paths via mountable kerbs.
7. Where space is limited, driveways and pedestrian access can be combined with a flush surface. Use distinctly-textured surface material finishes to indicate areas in which pedestrians have priority and/or to break up the continuity of the carriageway to signal shared use.
8. Vary surface treatment to break-down the visual impact of large surface areas of hard-stand that can otherwise blight a development. Texture variation on concrete surfaces has proven a more durable and effective means of reducing visual impact than colour pigments that can fade over time.
9. Configure fencing and planting along access-ways to retain clear sight-lines along laneways and at junctions to the public street network.
10. Provide lighting for safe night time access; this can include sensor lighting mounted on buildings fronting the access-way, and solar-powered bollard and pole-lighting. Include measures to mitigate adverse light-spill in adjacent or nearby dwellings and/or other sensitive areas.
11. Ensure the layout of shared access-ways can be intuitively understood by visitors and new residents alike, minimizing the need for way-finding signage. In general, where shared access-ways serve more than five dwellings they will be given a name. Where additional signage is required (e.g. for dedicated parking), design the signage to be simple and effective, without drawing attention to Kāinga Ora ownership.

Well designed common accessway layouts can maximise public exposure to rear houses and provide shared amenity space.
Techniques to be, where possible, implemented for common access-ways with 2 entry points.

- Minimise non-essential fencing in the front of lots to maintain manoeuvring visibility and passive surveillance.
- If driveway width is a constraint, use a flush pedestrian path with a clear variation in surface treatment.
- Mountable kerbs provide grade separation for pedestrian paths whilst cost effectively catering for a high number of vehicle crossings.
- Narrowing of the driveway and variation in surface treatment at the entry and exit points informs motorists of the low speed area.
- Variation in surface treatment (every 10-15m) provides traffic calming when a driveway accesses more than one dwelling.
- Variation in surface treatment is ideally used to indicate preferred pedestrian access routes.
- Ensure planting within common access ways is kept low to maximise visibility.

Design techniques to be, where possible, implemented for common access-ways with 1 entry point to achieve traffic calming and safety-activation.

- Designated pedestrian routes down shared access-ways can be flush with shared driveways indicated by variations in paving material.
- Using a planting strip in place of a fence can open up a common access-way to an adjacent public pathway to improve sight-lines and public interface.
2.4 Communal parking storage and service areas

**Expectation**

Shared parking, communal storage, and shared service-areas are conveniently located, and in view of the dwellings they serve while well-screened from public streets and spaces.

**Explanation**

The character of a neighbourhood can be adversely affected if the location, design, and treatment of parking and manoeuvring spaces, associated driveways, and shared rubbish storage and service-areas are not carefully considered.

Parking should not dominate the public frontage of a development where primacy is to be given to dwelling-entries and the pedestrian interface with the street.

**Design guidance**

1. Locate shared parking and storage areas for bikes and mobility scooters behind or to the side of multi-unit developments, in close proximity to, and where they can be seen from, the dwellings they serve (but screened from public view by a combination of the buildings and landscaping).

2. Ensure all parking spaces are well-defined, with signage identifying the units they serve. Include measures such as kerbs, bollards, or wheel-stops to eliminate ‘opportunity’ parking in amenity areas not intended for parking.

3. For larger areas of shared parking reduce the impact of open hard-stand with suitably-scaled trees. Space trees at one medium-scale tree and associated low ground-cover planting for every four car-parks. Ensure all tree foliage occurs above 2m from ground-level to enable clear sight-lines.

4. Consider changes in surface material texture or colours that differentiate parking bays from manoeuvring aisles, to break-down the visual impact of expansive areas of hardstand. Exposed aggregate concrete offers the advantage of concealing oil spills and tyre marks.

5. Use suitable screening to avoid cars’ light-spill into dwellings.

6. Ensure parking proposals incorporate provisions that promote alternative modes of transport including: access to public transport; secure cycle parking, and useful end-of-journey facilities. Bicycle parking can be free-standing or built into the architecture; this needs to provide cover for bikes and the ability for each bicycle to be securely chained.

7. Wherever possible, configure vehicle access to avoid the need to reverse onto roads.

8. Locate shared refuse collection areas in screened locations where they can be accessed by rubbish collection vehicles, away from the street frontage where the wider neighbourhood may be tempted to use them.

9. Ensure refuse collection areas can be readily accessed from all dwellings. Liaise with rubbish collection providers to correctly size the storage area required for each development and to obtain tracking dimensions of collection vehicles.

10. Include a lockable external hose tap in each refuse collection area.

11. Consider including a fire-rated block wall as a buffer for storage or rubbish bins along any neighbour’s boundary.

12. For apartment blocks: provide communal clothes-lines for large items (e.g. sheets); locate these where they are screened from public view but are visible from upper-level apartments.

13. Provide 1.2m-wide access-ways between rubbish collection areas, cycle and mobility scooter storage, and main building-entry points. Wherever possible, ensure access-ways meet universal design criteria.
Amenity areas
3.0 Overview

This section sets out to ensure all developments include suitably-sized and proportioned outdoor areas that enable opportunities to relax, play, exercise, or socialise out of sight of the public gaze, sheltered from prevailing winds, and with reasonable exposure to sunlight.

When executed successfully, outdoor areas have the potential to foster and enable organised and informal community interaction and to promote safer neighbourhoods.
3.1 Frontages and interfaces

**Expectation**
Our building frontages activate, address, and help define the streetscape. This is reinforced by landscaping that facilitates passive surveillance from dwellings over the street or other public spaces while also contributing positively to the character, appeal, and safety of the locality.

**Explanation**
Our public frontages play an essential role in conveying the character, appeal, and ‘fit’ of our developments within their neighbourhoods. They also determine the nature and quality of social interaction between public and private realms that can lead to high levels of kaitiakitanga/stewardship within the local community.

**Design guidance**
1. Clearly define the streetscape interface with building frontages and landscaping that promotes social engagement and community connectivity.
2. Define street-front boundaries with planting and/or fencing that clearly delineate defensible space to both the public and residents.
3. For all dwellings fronting onto a street (including terraced houses), provide a clearly-defined, un-fenced or -gated

primary point of pedestrian access directly from the street.
4. Keep front-yard-fencing low or make it partially visually-permeable to facilitate visual connectivity from dwellings to the surrounding community.
5. Where private outdoor living fronts onto the street, ensure adequate privacy is established for the residents to feel comfortable. Planting cannot reliably achieve this alone; fences up to 1.8m may be required. These should be partially visually-permeable to achieve a degree of passive surveillance.
6. Reinforce the architectural activation of the street frontage via boundary-treatment, entry-definition, and specimen trees. Ensure there are clear sight-lines between kitchen, dining, or living-area windows and the street. A planting strip (at least 400mm-wide) on the street-side of any fencing can soften the impact of the fence.
7. When designing private outdoor living areas that front onto streets or shared access-ways, include cross sections from the public footpath through to ground floor-level building interior, in the landscape drawing set submitted to Kāinga Ora’s, Technical Advisory Group (TAG) or Design Review Panel (DRP).

Prioritise providing unobstructed sight-lines for passive surveillance into the street and common access-ways from kitchen windows.

When outdoor living is located at the front, level with the footpath, achieve privacy for the resident via a full-height screening fence for the length of the patio.

When private outdoor living is slightly elevated from the footpath, achieve privacy via a screening fence that obstructs direct sight-lines for the length of the patio.

When private outdoor living is elevated from the footpath by more than 500mm, achieve privacy via a low screening fence that obstructs direct sight-lines.

Low fences and positioning of the front door and windows allows visual interaction between the dwelling and the public realm.

Retaining walls on front boundaries enable privacy to outdoor living courts in front yards while achieving passive surveillance via sight-lines over low/medium height fences.
3.2 Private outdoor amenity areas

**Expectation**
Every home includes a sheltered outdoor amenity area where residents can comfortably relax, socialise, or play outdoors.

**Explanation**
Private outdoor amenity areas include private outdoor living-areas in the form of decks (for apartments) and paved patio-areas (for houses), as well as fenced-in outdoor play-areas (for houses, including duplexes and terraced homes).

Private outdoor living-areas are best used where they offer enough privacy for residents to use them without feeling over-exposed to the public, while affording a suitable combination of sun, shelter, and shade.

**Design guidance**
1. Provide private outdoor living-areas in the form of paved, level court-yards and decks sized in accordance with the table below and located to enable direct access from the indoor living/dining-area with the best orientation to available sun.

<table>
<thead>
<tr>
<th>Bedrooms/Dwelling</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>8m²</td>
<td>10m²</td>
<td>10m²</td>
<td>12m²</td>
<td>12m²</td>
</tr>
<tr>
<td>Width</td>
<td>2m</td>
<td>2m</td>
<td>2.5m</td>
<td>3m</td>
<td>3m</td>
</tr>
</tbody>
</table>

*These minimum dimensions are sized to enable outdoor dining for the number of residents housed in the dwelling.

2. Ensure all outdoor living-areas comply with the minimum dimensional requirements of the relevant local district plan and, where appropriate, expand on the areas set out above.

3. Prioritise resident privacy within these spaces to avoid exposure to the street or neighbours by way of fences, hedges, screening plants, changes in level, and solid balustrading, noting planting alone cannot be relied on to always establish/survive to fulfil this function.

4. Where outdoor living-areas adjoin the street or shared access-way frontage, ensure fences are high enough to screen residents from passers-by while providing a degree of visual permeability to afford a discrete level of passive surveillance.

In such circumstances, collaborate with other professionals to produce typical cross-sections from internal living-areas to the public footpath.

5. Locate clothes-lines and storage-areas outside the outdoor living-area and, wherever possible, avoid locating them in full view of the indoor living- and dining-areas.

6. For all stand-alone, duplex, and terraced homes, in addition to the minimum outdoor living-area set-out above, provide a fenced outdoor play-area sized in accordance with the table below.

<table>
<thead>
<tr>
<th>Bedrooms</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>15m²</td>
<td>25m²</td>
<td>35m²</td>
<td>45m²</td>
</tr>
</tbody>
</table>

*These minimum areas may need to be expanded to comply with the requirements of the local District Plan. The minimum dimension for the play area is 2.5m.

7. Locate outdoor play-areas where they are afforded direct sight-lines from internal living-areas and/or kitchens. Typically, play-areas are areas of level-lawn contiguous with outdoor living-areas.

8. Storage sheds and clothes-lines may fall within outdoor play-areas.

9. For one bedroom dwellings: all ground-level areas (other than the paved outdoor living-area) will be maintained by Kāinga Ora. Screen outdoor living-areas to achieve suitable privacy from one another and from public vantage points while ensuring unobstructed access is provided to all other common external areas.

Patios and decks are to be sized in relation to number of bedrooms in a dwelling to appropriately accommodate all residents within a household.

All outdoor living-areas and play-areas must be securely fenced (Minimum height 1.2m high) and be able to be externally-accessed via a gate with a child-proof latch.
3.3 Outdoor service areas

**Expectation**
Our stand-alone duplexed and terraced dwellings have access to appropriately-sized service-areas that are functional, accessible, and screened from view of the wider public.

**Explanation**
Functional aspects of service-areas, including sunlight to clothes-lines and convenience of access, need to be balanced with discrete positioning and screening to avoid detracting from neighbourhood and living amenity.

**Design guidance**
1. Provide all stand-alone houses, duplexes, and end-units of terraces with functional service-areas for rubbish bins, a storage shed, and clothes-line, with paved access from the nearest external door.
2. For terraced units where there is no external access to rear yards, provide screened enclosures at the front of the unit. Size these to house rubbish and recycling bins, bicycles, and outdoor equipment, with a height (typically, 1.5m) that does not impede sight-lines from the dwelling to the street or lane.
3. Locate service areas discreetly to avoid adverse effects on the amenity of the local environment and screen from any public vantage points. Where possible, avoid placing the clothes-lines and/or refuse bins in the front yard.
4. Separate service areas from outdoor living-areas and, wherever possible, avoid locating them in full view of the indoor living- and/or dining-areas.
5. Provide bin storage areas that are sized in accordance with local body ordinances.
6. Mitigate adverse impact on neighbours of service areas (including visual impact and odours from rubbish bins) by screening and careful location.
7. For all stand-alone, duplex, and terrace family homes (i.e. two or more bedrooms) clearly delineate all site-boundaries to enable residents to clearly identify the extent of the property intended for their use, which they are expected to maintain.

Fruit trees and vegetable gardens can be effective ways to provide on-site food production. Carefully balance the provision of sufficient screening with enabling passive surveillance from the dwelling over the street or access-way.
### 3.4 Communal outdoor amenity areas

**Expectation**
Residents in our multi-unit developments have access to sunny and well-overlooked shared outdoor amenity spaces sized in proportion to the scale of the development and the makeup of the resident cohort, to enable residents to experience, share, and build collective social capital.

**Explanation**
Kāinga Ora’s current re-development programme involves a sharp trend towards higher-density living where the limited outdoor space afforded to individual dwellings requires supplementation by communal outdoor areas. This fosters and enables organised and informal community interaction, while encouraging play opportunities for pre-schoolers and active recreation for older children and teenagers.

Kāinga Ora’s Spaces for Building Communities (2018) details the specific parameters and expectations for communal spaces and provides a tool for assessing the specific communal needs of a given development. In addition, the area of required outdoor space and the specific needs of the anticipated cohort for each specific site will be set-out in the Project Brief. The guidance notes below include an outline summary of the spatial and amenity provisions for shared outdoor spaces.

**Design guidance**
1. Locate the primary communal outdoor amenity-area in sunny, centralised locations with gradients predominantly less than 1:20 and with direct sight-lines from dwellings, the street, and/or other well-used public spaces.
2. Where required, minimum areas dedicated to communal outdoor amenity will be set out in the Project Brief for each development. Typically, a minimum area of 130m² will be required.
   Of this, at least 50% is to be in one contiguous area and 40% is to be adjacent to, and directly accessible from, an internal communal space at ground-floor level.
   Do not locate any of the total area in isolated and/or inaccessible areas or narrow side-yards.
3. Encourage parental supervision via placement of indoor communal spaces and family dwellings that over-look play-areas and through provision of facility for sitting and over-looking other activities within the communal areas.
4. Maximise direct sunlight and provide shade and protection from prevailing winds. Consider providing covered areas for rainy-day activities.
5. Where required, provide artificial lighting, taking care to avoid light-spill into adjacent dwellings.
6. Separate children’s play-areas from vehicle circulation routes; prioritise children’s safety needs.
7. Consider including seating, barbeque areas, and structural elements that encourage play.
8. Consider the placement of play activities in relation to the associated noise and reverse-sensitivity of neighbours and residents.
9. For large multi-unit developments (>20) include provision for communal gardens and, where space permits, consider allocation of space for a dog exercise area.
10. Where incidental and/or remaining outdoor spaces occur within the external site-areas of multi-unit developments, ensure CPTED principles and strategies are applied with particular regards to passive surveillance, access control, and avoidance of potential entrapment zones.
11. Provide an external hose tap to each communal shared space.
Boundary treatments
4.0 Overview

The design guidance in this section sets out to ensure all our residents can go about their daily lives feeling safe and secure in homes that foster passive surveillance and connections to their communities, while affording them adequate privacy to relax and socialise outdoors and secure play-areas for children to enjoy.

All boundary treatments in our developments need to enable our residents to feel safe residing in homes with well thought-out, functional outdoor living-areas and landscapes.

A key consideration to achieving this is ensuring communal areas and the public realm surrounding our dwellings are safe places to be, with good visibility from within private properties into public streets, shared access-ways or parks. ‘Eyes on the street’ and ‘seeing and being seen’ are key components of Crime Prevention Through Environmental Design (CPTED), which promotes techniques and strategies for delivering safer neighbourhoods that need to be heeded when designing boundary treatments.
4. Fencing

Expectation
Fences and screening to our housing complement the materiality of the architecture, is both durable and robust, and fosters neighbourhood safety.

Explanation
Fencing design plays a key role in fostering a sense of community, enabling passive surveillance and encouraging interaction between neighbours along street frontages, while also providing outdoor living-areas with suitable privacy.

When designing fencing, it needs to be kept in mind that some parts of a home, including bedrooms, internal living, and private outdoor living areas, demand adequate visual privacy from the public and neighbours.

Design Guidance
1. Design front boundary treatments to clearly define the boundary between public and private spaces, to discourage casual intrusion and delineate the area the residents is expected to look after.
2. Design front fencing to be sufficiently low (generally 0.9m) and/or visually permeable. This will facilitate visual connections between the street and the site and create a feeling of openness to streets and other public spaces while denying concealment to those with ill-intent. Alternatively, use low planting to demarcate the front boundary.
3. Ensure visitors and delivery people have direct, un-fenced pedestrian access to front doors.
4. Design side boundary treatments and fencing next to driveways to ensure drivers entering and exiting a property (including reversing onto the street) are able to see and be seen by pedestrians.
5. Fencing to outdoor living-areas that may be visible from streets and other public spaces needs to balance the need for visual surveillance with suitable levels of visual privacy. Without this balance residents may be disinclined to use these spaces.
6. Ensure adequate privacy is achieved within outdoor living-areas that adjoin street or shared access-way frontages. In general, ensure the top of the fence is 1.8m above the adjacent footpath-level via a combination of the land-form rising above street level by several hundred millimetres plus the fence. Restrict the extent of any fencing exceeding 1.2m in height to 50% of the site-frontage and provide a full height return towards the house to screen the private open space from side-on views from the street.
7. Park or school-yard fencing should deliver a high level of visual permeability to ensure good passive surveillance and to deny would-be burglars the benefit of solid walls to conduct their business behind.
8. Kitchens and stairways are less sensitive to personal privacy considerations and offer good opportunities for visual surveillance. Design fencing between these areas and the public realm to enhance natural surveillance by, wherever possible, not impeding sight-lines.
9. For all homes intended to house children, design fencing and planting to prevent young children from running directly out of the house onto roads or driveways.
10. For all homes intended to house children, provide safe fenced-in yards. Include a child-proof gate on self-closing hinges with a latch at least 1.5m above ground-level.
11. Where possible, maintain existing fencing (i.e. if it is in a sound, presentable condition and meets the functional requirements of this guide).
12. Powder-coated, aluminium fencing offers a premium option for fronting a street or public place over timber fencing, with the long-term benefit of maintaining a tidy appearance with little to no maintenance.

Technical guidance
- Where fencing is required to front a street or common access-way, lower fence heights promote safer environments. In general, restrict fencing height to 0.9m.
- Unless it is part of an outdoor living enclosure, restrict side boundary fencing in front yards between streets and the building set-back line to 1.2m-high.
- To accentuate the architectural form, recess fence junctions with building frontages 1m behind the building frontage.
- Wherever possible, restrict the combined height of fencing and retaining wall to 2m-high. When over 2m, consider using visually permeable fencing to lessen the adverse impact.
- Fencing for rear yards (behind the front façade of houses) should generally comprise 1.8m-high vertical timber paling fences with 8mm gaps between palings.
- Where private outdoor living is located between the dwelling frontage and the street or shared access-way, ensure adequate privacy is achieved.
- In general, ensure the top of a fence is 1.8m above the footpath level. In such cases, ensure any fencing above 1.2m does not exceed 50% of the frontage width. However, ensure the higher fence includes a return towards the house to prevent side-on views from the street into the outdoor living zone.
4.2 CPTED and Privacy

**Expectation**
Our boundary treatments foster safer neighbourhood environments by enabling passive surveillance between private homes and public spaces while affording our residents suitable levels of privacy, sun, and outlook.

**Explanation**
Safety and security are best achieved where the layout and outlook of houses are designed to create and support safe and secure neighbourhood communities in accordance with CPTED principles.

Fencing plays a key role here by ensuring mutual passive surveillance is enabled between the public realm (streets, shared access-ways, and other public spaces) and the dwellings fronting them, while higher, more solid fences enclose and secure back-yards and ensure privacy between neighbours.

In a number of instances where private outdoor living-areas are located between the dwelling and the street, a careful balance needs to be struck between passive surveillance and establishing sufficient privacy for residents. The consequence of over-exposure of such areas is that the residents become less inclined to use them and instead retreat behind closed blinds to their internal living rooms.

• Where 1.8m-high fences are used to meet the above guidance, consider splitting the fence in a solid component below 1.4m with a visually permeable component above 1.4m (that is not less than 30% visually permeable).

• Where space allows, set back any timber fencing by at least 400mm from the front boundary and provide screening planting for visual relief.

• Where timber fences are located in prominent or publicly-visible places, stain the fence.

In turn this negates the intended passive surveillance, along with any sunlight and outlook otherwise afforded to them.

**Design guidance**
1. Design boundary treatments and fencing to enable good natural surveillance of key areas, including streets and common access-ways.
2. Avoid tall fencing that separates the house from the street and common access-ways. This compromises passive surveillance and can undermine the overall sense of community kaitiakitanga/stewardship.
3. Design fencing to maintain sight-lines to the front entrance doors and to avoid the possibility of concealment and/or entrapment of residents or visitors.
4. Where outdoor living at the ground-floor level is located between the street and the dwelling, use a sufficiently high fence designed with a modicum of visual permeability. This provides some awareness of what is happening on the other side while ensuring the resident will be comfortable using this space.
4.3 Low-height screening fences

Design guidance
Low-height screening fencing is generally used for fencing property boundaries that are adjacent to streets, shared driveways, and public areas.

0.9 - 1.2m low-height screening fence recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Timber paling fence</td>
<td>0.9-1.2m high, 100x19mm H3.2 vertical palings, 5mm spacing</td>
</tr>
<tr>
<td>2. Varied timber paling fence</td>
<td>0.9-1.2m high, 150/100/75x19mm H3.2 vertical palings, 20mm spacing</td>
</tr>
<tr>
<td>3. Square top picket fence</td>
<td>0.9-1.2m high, 88x32mm H3.2 D4S vertical palings, 20mm spacing</td>
</tr>
<tr>
<td>4. Timber batten fence</td>
<td>0.9-1.2m high, 45x45mm H3.2 D4S vertical battens, 30mm spacing</td>
</tr>
<tr>
<td>5. Varied timber batten fence</td>
<td>0.9-1.2m high, 45x45/90x45mm H3.2 D4S vertical battens, 30mm spacing</td>
</tr>
<tr>
<td>6. Horizontal slatted timber fence</td>
<td>0.9-1.2m high, 2/100x25mm &amp; 2/50x19mm H3.2 D4S horizontal slats, 15mm spacing</td>
</tr>
</tbody>
</table>

Technical guidance
- Acceptable low-height screening fence options are shown below.

Fig.164

Varied timber paling fence.

Varied horizontal slatted timber fence.
4.4 Mid-height screening fences

**Design guidance**
Mid-height screening fencing is generally to be used for screening service areas and to provide privacy for outdoor living courtyards, in combination with low retaining and level changes to achieve privacy for outdoor living courts.

**Technical guidance**
- Acceptable mid-height screening fence options are shown below.
- Ensure mid height boundary fencing is not climbable. Horizontal board fence types are to be close-boarded (15mm max spacings) up to 1500mm above ground level.

### 1.5m mid-height screening fence recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Timber paling fence</td>
<td>1.5m high, 150x19mm H3.2 RS vertical palings, 45mm spacing</td>
</tr>
<tr>
<td>2  Varied timber paling fence</td>
<td>1.5m high, 100/100/75x19mm H3.2 RS vertical palings, 35mm spacing</td>
</tr>
<tr>
<td>3  Horizontal slatted timber fence</td>
<td>1.5m high, 100x19mm H3.2 RS horizontal slats, 15mm spacing</td>
</tr>
<tr>
<td>4  Varied horizontal slatted timber fence</td>
<td>1.5m high, 2/100x19mm &amp; 2/50x25mm H3.2 RS horizontal slats, 15mm spacing</td>
</tr>
<tr>
<td>5  Horizontal slatted steel fence</td>
<td>1.5m high, powder coated horizontal steel slats, modular steel frame &amp; post system</td>
</tr>
<tr>
<td>6  Horizontal slatted timber fence, steel framed</td>
<td>1.5m high, horizontal timber slats with modular frame and post system</td>
</tr>
</tbody>
</table>

**Fig.165**

**PLAN**

**SECTION**

1. Timber paling fence - 20% visually permeable

2. Varied timber paling fence - 20% visually permeable

3. Horizontal slatted timber fence - 10% visually permeable

4. Varied horizontal slatted timber fence - 20% visually permeable

5. Horizontal slatted steel fence - 20% visually permeable

6. Horizontal slatted timber fence in steel frame - 20% visually permeable

*Varied timber paling fence.*

*Horizontal slatted steel fence.*
4.5 Full-height screening fences

**Design guidance**
Use full-height screening fencing for fencing boundaries between private properties and screening private outdoor living-areas.

**Technical guidance**
- Stain timber fencing that is prominent from streets and public places.
- Where water run-off can be impeded with standard fencing, use an over-land flow-path fence designed in co-ordination with the civil engineer to determine minimum clearance above ground level.
- Ensure full-height boundary fencing is not climbable. Ensure horizontal board fence-types are close-boarded (with 15mm maximum) spacings up to 1.5m above ground-level.

### 1.8m - 2m full-height screening fence recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Timber paling fence</td>
<td>1.8m high, 150x19mm H3.2 RS vertical palings, 5mm spacing</td>
</tr>
<tr>
<td>2 Varied timber paling fence</td>
<td>1.8m high, 100x9mm H3.2 RS horizontal slats, 15mm spacing</td>
</tr>
<tr>
<td>3 Horizontal slatted timber fence</td>
<td>1.8m high, 2/100x19mm &amp; 2/50x21mm H3.2 RS horizontal slats, 15mm high open</td>
</tr>
<tr>
<td>4 Varied horizontal slatted timber fence</td>
<td>1.8m high, 2/100x19mm &amp; 2/50x21mm H3.2 RS horizontal slats, 15mm high open</td>
</tr>
<tr>
<td>5 Overland flow path fence</td>
<td>1.8m high, 150x19mm H3.2 RS vertical palings, 5mm spacing, 300mm aluminium sections at base fixed to inside of posts</td>
</tr>
<tr>
<td>6 Timber board and batten acoustic fence</td>
<td>1.8m high, 150x19mm H3.2 RS vertical palings, 5mm spacing, 50x19mm H3.2 RS battens centered over all gaps</td>
</tr>
<tr>
<td>7 Timber ‘hit &amp; miss’ fence</td>
<td>1.8m high, 150x19mm H3.2 RS vertical palings, 90mm spacing, boards to alternate on opposing sides of fence</td>
</tr>
<tr>
<td>8 Slatted timber fence, visually permeable</td>
<td>1.8-2m high, 100x25mm &amp; 50x25mm H3.2 horizontal slats, 15mm spacing</td>
</tr>
</tbody>
</table>

---

Stain fences that are located in prominent locations.

Slatted timber fence with 30% visually permeable upper section
4.6 Visually permeable fences

**Design guidance**
Use full-height, visually permeable fencing for private outdoor living-areas and outdoor play areas that are adjacent to streets, shared driveways, and public areas that require high levels of security, as well as passive surveillance.

Pool-type fencing enables low planting or hedging on the private side of a front boundary to contribute amenity to the streetscape while clearly being the resident’s responsibility to maintain.

**Technical guidance**
- Acceptable visually permeable fence options are shown below.
- Aluminium pool-type fencing is generally a preferred option for fronting a street or public place over timber fencing. Aluminium is less intrusive on the surrounding environment while requiring little or no maintenance.

### 0.9m - 1.8m visually permeable fence recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Timber batten fence</td>
<td>0.9-1.2m high, 45x45mm H3.2 D43 vertical battens, 45mm spacing</td>
</tr>
<tr>
<td>2 Open aluminium fence</td>
<td>1.2m high, black powder-coated aluminium fence with tube balusters at 95mm centres</td>
</tr>
<tr>
<td>3 Open aluminium fence</td>
<td>1.2m high, black powder-coated aluminium fence with rectangular blade style balusters at 95mm centres</td>
</tr>
<tr>
<td>4 Open aluminium fence</td>
<td>1.5m high, black powder-coated flat top aluminium fence with rectangular blade style balusters at 95mm centres</td>
</tr>
<tr>
<td>5 Open aluminium fence</td>
<td>1.8m high, black powder-coated flat top aluminium fence with tube balusters at 95mm centres</td>
</tr>
<tr>
<td>6 Horizontal slatted steel fence</td>
<td>1.2m high, powder-coated horizontal steel slats, modular steel frame &amp; post system, 95mm spacing</td>
</tr>
</tbody>
</table>

1 Timber batten fence - 50% visually permeable

2 Open aluminium fence - 80% visually permeable

4 Open aluminium fence - 80% visually permeable

5 Open aluminium fence - 80% visually permeable

1.8m open aluminium fence backing onto a public reserve.

1.2m timber batten fence along a common access-way.
Design guidance
Where required, use robust, durable gates to facilitate external access to fenced areas and ensure properties are safe and secure.

Technical guidance
- Only use aluminium gates with aluminium fencing. In all other scenarios, use steel gates.
- Ensure all gates enclosing yards from driveways and streets or enclosing shared play-areas are child-proof with a magnetic latch set at least 1.5m above ground-level and mounted on self-closing hinges.

Gate recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Open aluminium gate</td>
<td>1.2m high, 0.95m wide, black powder-coated open aluminium gate with balusters at 95mm centres, childproof, magnetic, self-closing gate with a lockable latch</td>
</tr>
<tr>
<td>2 Open steel gate</td>
<td>1.2m high, 0.95m wide, 20mm steel vertical bars at 100mm centres, child proof, magnetic, self-closing gate with a lockable latch, galvanised finish</td>
</tr>
</tbody>
</table>

1 Open aluminium gate in open aluminium fence
2 Open steel gate in timber paling fence

Open aluminium gate.
All gates must have a lockable child proof latch.
4.8 Special purpose fences

**Design guidance**
Use special-purpose fencing for adjoining properties owned by Kāinga Ora (e.g. terraced houses and duplexes where a high-quality finish is required on both sides of the fence).

**Technical guidance**
- Assess special-purpose fencing proposals on a site-by-site basis to ensure they are functionally appropriate to their location and considerate of visual and environmental amenity values.
- Fire-rated concrete block boundary walls can enable groupings of storage sheds, bicycle shelters, or refuse storage to be located along boundaries to neighbours; they can mitigate noise and odours.
- Indicative examples of acceptable special-purpose fence options are shown below.

**Special purpose fence recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Horizontal slat-top narrow timber T &amp; G fence</td>
<td>1.8m high, horizontal tongue &amp; groove timber fence with 300mm slat-top panel, modular steel frame &amp; post system</td>
</tr>
<tr>
<td>2 Horizontal narrow timber T &amp; G fence</td>
<td>1.8m high, horizontal tongue &amp; groove timber fence, modular steel frame &amp; post system</td>
</tr>
<tr>
<td>3 Vertical narrow timber T &amp; G fence</td>
<td>1.8m high, vertical tongue &amp; groove timber fence, modular steel frame &amp; post system</td>
</tr>
<tr>
<td>4 Horizontal narrow timber fence</td>
<td>1.8m high, 70x12mm H3.2 D4S horizontal timber slats, 11mm spacing, modular steel frame &amp; post system</td>
</tr>
</tbody>
</table>

1 Horizontal slat-top narrow timber T&G ‘friendly neighbour’ fence

2 Horizontal narrow timber paling T&G ‘friendly neighbour’ fence

3 Vertical narrow timber T&G fence

4 Horizontal narrow timber fence

Fig 167

Tongue and groove ‘friendly neighbour’ fence.

Horizontal tongue and groove ‘friendly neighbour’ fence.
5

Hardscape treatments
5.0 Overview

The objective of the design guidance in this section is to ensure that hardscape materials and fixtures are robust and durable, enable options and variations in design, while ensuring residents can safely access their homes and enjoy the benefits of well thought-out, functional outdoor spaces.

The recommended specification options for hardscapes presented below have been chosen because they meet the above criteria and allow for variation in design and aesthetic.

To get the best value from available space on sites, impervious surface coverage should, where possible, be minimised to make more site area available for amenity and provide our residents with safe, functional outdoor spaces that promote outdoor living and activities.
5.1 Driveways and parking areas

**Expectation**
Driveway and parking area surface materials within our developments are robust and durable and configured to promote safety, functionality, and visual amenity.

**Explanation**
All sites require vehicle access and on-site parking; it is critical careful consideration is given to safety, function, and visual amenity in the design process.

It is important pedestrian safety and experience is prioritised over vehicle movements, and that driveway-design does not compromise walkability to surrounding, local key destinations.

**Technical guidance**
- Where practical, minimise the length and total paved-area of driveways, while affording sufficient space for vehicle manoeuvring and parking, and optimising the extent of permeable areas for greenery and planting.
- Design shared access-ways for multi-unit developments to enable effective access of service and emergency vehicles.
- Provide visual relief and traffic calming to longer lengths of driveway through variation in texture or colour or both.
- Textural contrast between smooth and exposed aggregate has proven to be more durable than colour variations, which tend to fade over time. Exposed aggregate on vehicular surfaces is also less affected by oil spills and tyre marks.
- Configure expansion joints in the slabs to align with visual relief applications.
- Configure fencing and planting alongside driveways to ensure good visibility for motorists entering and exiting the site.
- Securely fence all private rear yards and children's play-areas from the driveway.
- Avoid continuous lengths of high, close-boarded fencing along driveways. This is unattractive and reduces passive surveillance. Where short sections are used for privacy to outdoor living-areas, provide low planting bed-edging for visual relief.
- Where required, include kerbing, wheel-stops, bollards, passing bays, drop-off zones, mirrors, and signage to maximise safety, prevent ‘opportunity parking’, and protect built assets and vegetation. Take care in the design and specification of such devices to ensure functionality without compromising visual amenity and/or priority of pedestrian considerations.

**Driveway and parking area material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard concrete</td>
<td>20mm aggregate - Broom finish</td>
</tr>
<tr>
<td>Exposed aggregate concrete</td>
<td>20mm aggregate - Exposed aggregate finish</td>
</tr>
<tr>
<td>Asphalt</td>
<td>AC10 - Hot mix asphalt cement, smooth rolled finish</td>
</tr>
<tr>
<td>Grey permeable pavers</td>
<td>Natural grey coloured permeable pavers in 200Lx100W</td>
</tr>
<tr>
<td>Dark grey permeable pavers</td>
<td>Dark grey coloured permeable pavers in 200Lx100W</td>
</tr>
<tr>
<td>Grey sett pavers</td>
<td>Natural grey coloured sett pavers in 200Lx100W (with cleft joint)</td>
</tr>
<tr>
<td>Graphite sett pavers</td>
<td>Graphite coloured sett pavers in 200Lx100W</td>
</tr>
<tr>
<td>Dark grey sett pavers</td>
<td>Dark grey coloured sett pavers in 200Lx100W</td>
</tr>
</tbody>
</table>

Designated pedestrian routes down shared access-ways can be flush with shared driveways (as indicated by paving material).

Where possible, limit permeable materials to car-parking pads and lower traffic areas.
5.2 Pedestrian paths

**Expectation**
Pedestrian paths provide durable and robust continuous slip-free surfaces at comfortable gradients for all users at suitable widths for their purpose.

**Explanation**
Activated places depend on high levels of pedestrian flow to create vitality, support public amenities and activities, and promote community stewardship.

Paths need to be efficiently-routed and direct to be as functional as possible. The design and treatment of paths and walkways should prioritise pedestrian safety and amenity; these are vital to successful community developments.

**Technical guidance**
- Pedestrian paths are either separate from or grade-separated from driveways or are otherwise clearly defined as being distinct from driveways by texture, tone, or colour.
- Ensure concrete pedestrian paths are: at least 100mm-thick, reinforced concrete, have a non-slip finish, are shaped to fall to allow drainage and non-ponding, and are level with adjacent grass/lawn.
- Provide all dwellings with a minimum 1.2m-wide un-fenced pedestrian path from public footpaths and/or common access-ways to the front door of the property. Where possible, footpath gradients should not exceed a slope of 1:20. For accessible units: connect 1.2m-wide pedestrian paths from on-site parking to the front door of the property.
- Configure site layouts to minimise the total paved-area taken up by pedestrian paths, while allowing sufficient width for the purpose of the path.
- Surface treatments should comprise a non-slip finish. Consider exposed aggregate or other means of applying surface texture for better grip where slopes exceed 1:12.
- Shape footpaths to fall to afford drainage and avoid ponding.
- Only use permeable paving when needed to meet planning requirements (this will require co-ordination with the civil engineer).
- All external steps and ramps must have: a minimum pitch of 23 degrees; a minimum tread of 310mm; maximum risers of 180mm; no isolated single-treads; a maximum slope 1:12. Concrete is the preferred material for external steps and ramps.

**Pedestrian path material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard concrete</td>
<td>20mm aggregate - Broom finish</td>
</tr>
<tr>
<td>Exposed aggregate concrete</td>
<td>13mm aggregate - Exposed aggregate finish</td>
</tr>
<tr>
<td>Grey permeable pavers</td>
<td>Natural grey coloured sett pavers in 200Lx100W</td>
</tr>
<tr>
<td>Dark grey permeable pavers</td>
<td>Dark grey coloured sett pavers in 200Lx100W</td>
</tr>
</tbody>
</table>

Provide a distinct pedestrian route, separated from the driveway where possible, from the street to the front door. Planting strips can be an effective separation between paths and driveways, noting strips narrower than 400mm are not suitable for planting.
5.3 Patios and decks

**Expectation**
Suitably-sized and -proportioned durable all-weather surfaces enable our residents to enjoy outdoor relaxation, dining, and socialising.

**Explanation**
Concrete patios or raised timber decks that can be directly accessed from internal living-areas enable outdoor living extensions to the dwelling. Good solar-access, shelter, and privacy in these spaces contribute to our homes being as liveable as possible.

**Technical guidance**
- Only use durable, hard-wearing surface materials with finishes that are not slippery when wet. This enables a range of activities (e.g. children playing or outdoor dining).
- Smoother-textured concrete finishes are preferable to rough finishes such as exposed aggregate. Restrict the use of permeable pavers to projects where there would otherwise be a short-fall in the permeable area required by the territorial authority.
- Where treated timber decking is used for above-ground-level decks, avoid grip-tread surfaces; their grooves accumulate fungal growth, making them slippery when wet.
- Use expansion joints and saw-cuts to break up the scale of larger areas of concrete patios as well as prevent cracking.
- Size patios and decks in accordance with the table in section 3.2.1; these are sized to enable outdoor dining.

**Patio and deck material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Standard concrete</td>
<td>20mm aggregate - Broom finish</td>
</tr>
<tr>
<td>2 Exposed aggregate concrete</td>
<td>10mm aggregate - Light exposed aggregate finish</td>
</tr>
<tr>
<td>3 Sandblasted concrete</td>
<td>20mm aggregate - Sandblasted finish</td>
</tr>
<tr>
<td>4 Grey permeable pavers</td>
<td>Natural grey coloured sett pavers in 200Lx100W</td>
</tr>
<tr>
<td>5 Dark grey permeable pavers</td>
<td>Dark grey coloured sett pavers in 200Lx100W</td>
</tr>
<tr>
<td>6 Timber decking</td>
<td>90x18mm Rad H3.2 Premium GripTead Decking, grip tread side down, CSK screw fixings</td>
</tr>
</tbody>
</table>

- Fig.10
- Fig.4

- Appropriately-sized, flat, private, sunny, paved-areas are as usable as possible for residents.
- Where outdoor living is adjacent to the street, use visually permeable 1.8m fencing to ensure adequate privacy where outdoor living is adjacent to the street.
5.4 Service areas

**Expectation**
All dwellings have access to appropriately-sized service-areas that have robust, functional, accessible, surfaces to access and locate household utilities.

**Explanation**
Our stand-alone, duplexed and terraced houses all have dedicated service-areas.

For apartments each dwelling has access to shared service-areas for refuse collection, car-washing, communal clothes-lines and, where not provided inside the building, private storage.

**Design guidance**
1 Stand-alone houses and duplexes: provide paved, functional service-areas for rubbish bins and clothes-lines, ensuring they can be accessed via a paved pathway from the nearest door.

2 For terraced units where there is no external access to rear yards: provide screened enclosures at the front of the unit. Size these to house rubbish and recycling bins, bicycles, and outdoor equipment.

3 For apartments: provide shared refuse collection areas, shared secure storage facilities (where not provided internally), and communal clothes-lines for items that are too large for those provided on decks.

4 Locate all service areas discreetly to avoid adverse effects on the amenity of the local environment and screen from any public vantage points.

5 Provide sufficient refuse storage area to enable separation of refuse from recycling.

6 Consider location, screening, and access to mitigate neighbours and residents exposure to the adverse impacts of waste and outdoor service-areas, including potential odours from rubbish bins.

7 Restrict grass and grass-block pavers to areas where there is sufficient solar-access for grass to grow.

---

**Service area material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard concrete</td>
<td>20mm aggregate - Broom finish</td>
</tr>
<tr>
<td>Exposed aggregate concrete</td>
<td>20mm aggregate - Exposed aggregate finish</td>
</tr>
<tr>
<td>Grey permeable pavers</td>
<td>Natural grey coloured sett pavers in 200Lx100W</td>
</tr>
<tr>
<td>Dark grey permeable pavers</td>
<td>Dark grey coloured sett pavers in 200Lx100W</td>
</tr>
<tr>
<td>Flush grass pavers</td>
<td>Natural grey coloured flush grass pavers in 400Lx400W</td>
</tr>
<tr>
<td>Raised grass block pavers</td>
<td>Natural grey coloured raised grass block pavers in 200Lx200W square block module</td>
</tr>
</tbody>
</table>

The use of 1.5m-high screening ensures shared bin storage does not obstruct passive surveillance issue.

This adequately-screened service-area incorporates a clothes-line and wheelie bin storage.
5.5 Side yards

Expectation
Side yards are landscaped as befitting their location and context including orientation, visibility, and accessibility.

Explanation
Side yards are often narrow, shady, and difficult to access making maintenance of any planting a challenge.

The surface treatment options offered minimise up-keep while, if and where possible, contributing to amenities.

Design guidance
1 For less-prominent shady side yards and where access to rear yards is required, provide an 800mm-wide concrete path. Include a cross-fall away from the building, and a strip of shade-tolerant ground cover or compacted crushed gravel in the space between the pathway and boundary fence.

2 Use seeded lawn in side yards receiving a minimum average of 4 hours’ direct sunlight per day. This will allow the area to be maintained by mowing while providing a useful amenity-area for residents.

3 Avoid pebble or other loose aggregate surface treatment, which can be easily removed and potentially cause damage to the property.

Side yard material recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawn (seeded)</td>
<td>Durable grade seed, sow 40g/m² (3.5kg/100m²)</td>
</tr>
<tr>
<td>Concrete path</td>
<td>20mm aggregate - Broom finish</td>
</tr>
</tbody>
</table>

In-situ concrete side path between fence and building

Side yards are prone to being in shade for most of the day.
5.6 Lawns

**Expectation**
Lawns improve our residents’ general well-being by providing green visual relief, and enabling informal recreation, play, and social activities.

**Explanation**
Lawns can enhance the quality of our residents’ lives by providing sufficient open space for residents to use and enjoy as they please.

Lawns also contribute to soil-erosion control, recharging and filtering ground-water, and absorbing storm-water whilst providing visual relief to built form and hardscape.

**Design guidance**
1. Hydro-seeding is the preferred option for large lawns exceeding 150m², as it provides a fast, cost-effective way to reliably establish healthy lawns. Avoid hydro-seeding in tight, hard-to-reach locations.

2. For smaller lawns (generally less than 5m²) or where rear yards cannot be readily accessed for mowing, artificial turf is recommended for ease-of-maintenance. Most artificial turf products are considered as permeable for site coverage calculations by most local authorities but are not considered a landscaped area.

3. Configure landscapes to ensure reasonable sunlight reaches all seeded and hydro-seeded lawns. Consider concrete or planting alternatives in heavily-shaded areas, such as narrow side yards.

4. Generally allow at least 500mm for lawn mower access; avoid establishing lawns in spaces where a lawn mower can’t readily access the lawn. For slopes greater than 10° consider substituting lawn or turf with embankment planting.

5. All properties with lawns require a storage shed or garage that can, as a minimum, store a lawn mower.

**Lawn material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawn (seeded)</td>
<td>Durable grade seed, sow 40g/m² (3.5kg/100m²)</td>
</tr>
<tr>
<td>Lawn (hydroseeded)</td>
<td>Tall Fescue seed, wood fibre mulch sprayed onto prepared surface</td>
</tr>
<tr>
<td>Fresh green look artificial turf</td>
<td>Fresh green look artificial turf on 20mm fines over compacted base course</td>
</tr>
<tr>
<td>Natural grass look artificial turf</td>
<td>Natural grass look artificial turf on 20mm fines over compacted base course</td>
</tr>
</tbody>
</table>

![Lawn (seeded)](image1)

![Lawn (hydroseeded)](image2)

![Artificial turf](image3)

![Fig.13](image4)

Lawns are most successful when they are positioned to capture the most sun.

Artificial turf can be an effective treatment for small, hard to access areas.
5.7 Retaining

**Expectation**
On our steeper sites, landscape retaining or battering assists in establishing level building platforms and sufficiently-level areas for outdoor living and service-areas.

**Explanation**
Retaining or battering is often required when a site is too steep to provide safe access or sufficient level outdoor space for the day-to-day functionality of a household, and/or when land is prone to erosion.

**Design guidance**
1. Design landscape retaining to be structurally and functionally effective whilst avoiding or mitigating adverse impacts on the quality and visual amenity of the site and/or the neighbourhood.
2. Use terraced or stepped-retaining, combined with low or visually permeable fences to manage sites with particularly large level changes. This will reduce visual dominance and any adverse shading effects.
3. Restrict keystone retaining walls to a maximum of 700mm in height with no loading or surcharge.
4. Where possible, for areas requiring retaining higher than 800mm, break retaining into two or more steps separated by planting strips of between 600mm to 1200mm-wide. Ensure planting within these strips is of an appropriate height to screen the visual impact of the higher wall plus any safety-from-falling barriers installed at the top of the higher wall.
5. Provide a safety-from-falling barrier in the form or a sturdy, non-climbable fence for any retaining wall that is 1m or more in height. Wherever possible, locate such combinations along or near a boundary edge to avoid severing a site’s amenity-area.
6. In all retained areas, consider access for maintenance, including lawn mowers.
7. Consider measures to mitigate the visual impact of retaining features when they are in full view of streets or other frequently-used public spaces. Options include stain to timber exposed to public view, and/or screening or climbing plants.
8. Civil engineering design is required for all retaining above 1m and where additional surcharge occurs below 1m (e.g. a house, driveway, or car-park) and any retaining on or within 500mm of a neighbouring boundary.

**Retaining material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey straight faced keystone retaining wall</td>
<td>Straight faced retaining wall, natural grey, max 700mm high with no loading or surcharge (33 per m²)</td>
</tr>
<tr>
<td>Dark grey straight faced keystone retaining wall</td>
<td>Straight faced keystone retaining wall, dark grey, max 700mm high with no loading or surcharge (33 per m²)</td>
</tr>
<tr>
<td>Dark grey textured keystone retaining wall</td>
<td>Textured keystone retaining wall, dark grey, max 700mm high with no loading or surcharge (33 per m²)</td>
</tr>
<tr>
<td>Timber retaining wall</td>
<td>100x100mm H5 RS posts, 200x200mm H4 RS rails, max 1500mm high with no loading or surcharge</td>
</tr>
</tbody>
</table>

Retaining that is higher than 1 meter is required to be designed by an engineer.

Planting at the top and bottom of a retaining wall significantly reduces its visual impact.
5.8 Landscape edging

**Expectation**
Landscape edging provides defined edges to lawns and garden areas and contains loose, un-bound materials such as bark or recycled concrete.

**Explanation**
Landscape edging helps landscapes to stay tidy, attractive, and easy-to-maintain.

It enables loose materials such as garden mulch and soil to stay contained in the locations intended, and defines edges to lawns, gardens, and built edges.

**Design guidance**
1. Install landscape edging to:
   - all gardens where garden beds meet lawn;
   - the boundary of artificial turf areas where the turf meets seeded lawn or garden; and
   - wherever building edges meets a lawn

2. Wherever a building perimeter adjoins a lawn or garden edge, install 150mm-wide concrete mowing strips.

3. Ground-treated timber landscape edging is considered suitable for straight runs.

4. In specific circumstances where timber edging is impractical due to topography, a concrete edging strip may be required.

**Landscape edging material recommendations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber decking</td>
<td>90x18mm Rad H3.2 Premium Griptead Decking, grip tread side down, CSK screw fixings</td>
</tr>
<tr>
<td>Timber garden/paving edging</td>
<td>100x50mm H4 RS Board, 75x50x400mm H4 pegs at 1.2m ctrs</td>
</tr>
<tr>
<td>Concrete mowing strip</td>
<td>20mm aggregate - Broom finish, 150Wx100Dmm</td>
</tr>
</tbody>
</table>

5.9 Above-ground water tanks

**Expectation**
Where needed, above-ground water tanks are discreetly integrated into the landscape.

**Explanation**
Above-ground water tanks may be required as a means of retention or detention of storm-water. Their design and location needs careful consideration at the design stage to avoid their bulky forms disrupting the limited amount of space available for outdoor amenity.

**Design guidance**
1. Where feasible, locate any tanks for storm-water retention underground beneath car-park pads so as not to detract from the permeable site-area, or to interfere with the visual and spatial amenity of the project.

2. Where above-ground water tanks are required, choose slim styles that can merge with or form part of fence lines.

3. Do not locate above-ground water tanks within private or shared outdoor living-areas or outdoor play-areas.

4. Choose colours that complement the architecture of the project with a preference to darker, more recessive colours.
5.10 Storage sheds

**Expectation**
All stand-alone, duplex, or terraced dwellings include a shed, lockable storage unit, or garage.

**Explanation**
This enables storage of such items as a lawn-mower, fuel, tools, bikes and outdoor equipment. If not otherwise provided within the building, lockable storage will also be provided for apartments within their landscape curtilage.

**Design guidance**
1. Except where a garage is provided, include lockable storage sheds for all stand-alone and/or duplex homes and the end-units of terraced houses where rear yards can be externally-accessed.
2. For terraced houses where external access to rear yards is not available, provide secure external storage in the form of low, screened, lockable enclosures. Screening should typically be 1.5m-high and should be 15% visually permeable.
3. Locate storage sheds discreetly in rear or side yards where they are concealed from public view. Place them on flat areas with a concrete base, clear of the outdoor living-area(s).
4. Where rows of sheds are provided along a neighbour’s boundary, provide a fire-rated concrete block or tilt-slab boundary wall.
5. Storage shed colours should be visually recessive and complement the development’s architecture and fencing.
6. Where space is tight, consider using long, narrow sheds that open along the wider dimension (so stored items can be accessed without the need to step inside). Such sheds can be low enough not to stick up above 1.8m-high boundary fences.
7. Ensure storage shed sizes comply with Kāinga Ora’s performance requirements.

5.11 Signage and landscape furniture

**Expectation**
Appropriate signage and landscape furniture is considerate of local character and amenity values and, where required, is provided discreetly.

**Design guidance**
1. When designing or selecting landscape furniture and signage, ensure it is durable, easy-to-maintain, and fit-for-purpose.
2. Signage, street furniture, and lighting installations should be appropriate to location and context, particularly in regard to its size, location, specification, and design quality.
3. Ensure the design of restrictive and/or directional signage (e.g. residents’ parking restrictions) is generic and avoids the potential for state housing stigmatisation.
4. Use intelligent, attractive design to set-out lighting in shared-areas to prioritise safe-access and avoid or mitigate adverse effects on views, vistas, living amenity, and neighbour amenity (including light spill).
**5.12 Clothes-lines**

**Expectation**
All homes have a well-made, robust and durable clothes-lines mounted in discreet, sunny locations.

**Explanation**
Apartments are provided with fold-up clothes-lines located on decks and also have access to a larger communal clothes-line for larger items.

**Design guidance**
1. Place clothes-lines in sunny positions where they are screened from public view.
2. Ideally, locate clothes-lines discreetly in rear yards, well-clear of outdoor living-areas, and close to an external door.
3. Install clothes-lines at a height of 1.8m. For all universally-designed and/or accessible dwellings, provide a clothes-line that can be adjusted between 1.35 and 1.8m.
4. Do not use a retractable clothes-line for accessible units.
5. Ensure footings for free-standing clothes-lines are sufficiently robust to withstand high-winds when fully-loaded.
6. Where fold-up clothes-lines are installed on fences, ensure the fence structure is designed and/or reinforced to withstand high-winds when fully-loaded. Ensure the clothes-line is directly-attached to posts; otherwise, provide separate posts for the clothes-line.
7. Restrict rotary clothes-lines to locations where sufficient space is available without them impinging on outdoor living-areas.
8. Mount clothes-lines on a hard-stand that extends to 800mm in front of the line. Provide a hard-stand access path to the nearest external door to the dwelling.
9. For apartment buildings: provide a fold-up clothes-line on each apartment’s deck, with suitable screening to hide drying clothes from public view. Provide communal clothes-lines for larger items where they can be discreetly screened from public view but can be seen from the windows of as many apartments as possible.
10. Ensure the clothes-line’s total line length aligns with Kāinga Ora’s performance requirements.

**5.13 Letter-boxes**

**Expectation**
All homes have a robust, durable letter-box located along the primary pedestrian access route to the front door.

**Design guidance**
1. For stand-alone, duplex, and terraced houses along street frontages, or private lanes that have been given a name, locate the letter-box at the junction of the front boundary and the pedestrian pathway to the front door.
2. Letter-boxes for homes along un-named common access-ways need to be clustered where the shared footpath or access-way meets the street.
3. Where letter-boxes are clustered, integrate them into the fencing or mount them on a be-spoke support structure. Clustering of letter-boxes on individual posts for each box is not acceptable.
4. For apartment buildings: wherever possible, locate letter-boxes just outside the main pedestrian entrance to the building’s entry-lobby.
5. For universally-designed and/or accessible dwellings: ensure access to letter-boxes are suitable for residents with limited mobility. Provide a sufficiently-sized hard-stand area for a wheelchair next to the letter-box.
Softscape treatments
6.0 Overview

As our sites are re-developed to enable higher-density living, effective landscape planting performs a critical role in providing visual relief and softening to built form that might otherwise dominate our sites and their neighbourhoods.

Well-designed landscape planting plays a key role in the public perception of neighbourhood quality where the appropriate selection of specimen trees and soft landscaping to our street frontages enables continuity and enrichment to neighbourhood character and amenity.

Landscape planting also helps define boundary edges, contributes fruit, retains slopes, and gives form to sheltered outdoor living-areas for our residents to relax, play, and socialise in.

To do all of the above effectively over the life-span of our developments, all plants specified for Kāinga Ora’s developments need to be hardy, low-maintenance, readily-available, and well-suited to both their local climate zone and their specific on-site locations.

Plant options set-out in this section are grouped according to specific plant functions (specimen trees, screening plants etc.). Each with sub-groups for sun exposure levels. The table for each function denotes suitable climate zones for each species as well as the recommended plant bag (PB) size at purchase and expected mature plant dimensions.
6.1 Biodiversity strategy

**Expectation**
Wherever they can perform the same specific functions on site, native and select exotic species that foster and sustain native fauna and micro-flora are favoured over other exotics.

**Explanation**
Our Environment Strategy (2019) sets out three outcomes for the organisation: reduced emissions; reduced waste; and green communities.

Under the last outcome the stated aim is to increase and/or improve native flora and fauna, green space, and air-quality in our communities. This becomes challenging where re-development to higher-densities means expanding areas of hard cover, consequently limiting opportunities for permeable softscape cover.

To meet strategy outcomes, a two-tiered approach is needed:

1. Where appropriate, choose natives and other species that support native fauna and flora. Pay particular attention to planting difficult or unstable portions of land that provide opportunities for tree and plant clusters where native fauna and flora can thrive.
2. Ensure the impact of our developments on storm-water discharge quality is mitigated on-site. This will reduce adverse impacts on waterways and the ecological corridors and biodiversity capital they support downstream.

It is also important that plant-choice decisions take account of species hardiness, growth-rates, and amenity attributes to ensure planting is fit-for-purpose and long-lasting.

*Indicates New Zealand native species.*

**Design guidance**

1. Wherever they offer suitable hardy options for the location and required function, specify native species over exotic species.
2. Wherever possible, eco-source plants locally. Sourcing plants from within 5 kilometres of the site in similar levels of exposure to wind and shade they will be subjected to offers the best chance of plants thriving in the locality.
3. Select species to complement and enhance the biodiversity of a local area. Specifying native plants that can be found within 5 kilometres allows the development to support the local flora, fauna, and character of the surrounding landscape.
4. Specify a wide-range of different plants within and across differing sites. Using the same species too regularly can lead to lack of diversity and susceptibility to losing large numbers of plants due to species-specific disease or abnormal climate conditions.

Wherever appropriate, make a deliberate effort to choose natives species.
6.2 Climate zones

**Expectation**
Plant species selected for our projects thrive in their local climate zones and growing conditions.

**Explanation**
Select species that are appropriate for the unique climate zone and environmental conditions they will be growing in. This ensures planting has the best chance of survival.

The climate zone-system outlined below has been devised to enable landscape practitioners to select the most appropriate plants for the climate zone of any given site. To achieve the most successful outcome, designers with experience in particular climate zones are encouraged to combine their knowledge of local species with the recommended species in this section.

**Design guidance**
1. To assist designers to select appropriate plant species in the simplest and most effective way, the country has been split into different climate zones based on average temperature data. Use these zones as a guide for site-specific plant-selection.
2. Designers with experience in particular climate zones should combine their knowledge of local species with the recommended species in this section to achieve the most successful outcomes.
3. The climate zones each have a distinct landscape character; reinforce this through all aspects of landscape design.

**Climate zones**
Where possible, these zones align with those of territorial authorities. This helps the user easily identify the climate zone of a particular site by its location and select the most appropriate plants for that site.

**Climate Zone 1**
Covers the warm/sub-tropical part of the country that, on average, stays above 0°C throughout the year. This zone extends from Northland down to the top of the Waikato and the Coromandel Peninsula.

**Climate Zone 2**
Covers the parts of the country with a moderate climate with average minimum temperatures between -5 and -1°C. This zone includes the remaining portion of the North Island excluding the Central Plateau.

**Climate Zone 3**
Covers the coldest part of the country including alpine areas and high country with average minimum temperatures of -5 to -10°C. This zone includes the Central Plateau and the entire South Island.
6.3 Specimen trees

**Expectation**
Specimen trees enhance our developments by offering a counterpoint to built form, creating local focal points and features, providing shade as appropriate, and augmenting the character of the neighbourhood setting.

**Explanation**
Specimen trees play an important role in providing visual amenity and a positive first impression to a development, whilst benefiting the local neighbourhood. As our development-densities increase it is becoming increasingly important to allow space for specimen trees and landscape amenity, in particular in development frontages. It is important tree drip-lines are shown on plans at the mature diameter of the species and trees are specified to have lifted canopies when located around vehicle manoeuvring areas.

**Specimen tree recommendations**

**FULL SUN**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Clearance</th>
<th>Mature (O)</th>
<th>Mature (W)</th>
<th>Climate Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer Palmatum (suitable hybrids)</td>
<td>Acer palmatum</td>
<td>Deciduous</td>
<td>95</td>
<td>2m</td>
<td>6m</td>
<td>4m</td>
<td>1,2,3</td>
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<tr>
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<td>Alectryon excelsus</td>
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<td>3m</td>
<td>7m</td>
<td>6m</td>
<td>1,2,3</td>
</tr>
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<td>Alnus jorullensis</td>
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<td>C destructive australis</td>
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<td>Cornus Edith’s White Wonder</td>
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<tr>
<td>Liquidambar styraciflua 'Worplesdon'</td>
<td>Liquidambar styraciflua 'Worplesdon'</td>
<td>Sweet Gum</td>
<td>95</td>
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<td>Magnolia grandiflora Little Gem</td>
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**PART SHADE**

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<tr>
<th>Common Name</th>
<th>Botanical Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Clearance</th>
<th>Mature (O)</th>
<th>Mature (W)</th>
<th>Climate Zone</th>
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<tbody>
<tr>
<td>Acer Palmatum (suitable hybrids)</td>
<td>Acer palmatum</td>
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<td>Liquidambar styraciflua 'Worplesdon'</td>
<td>Liquidambar styraciflua 'Worplesdon'</td>
<td>Sweet Gum</td>
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<td>Olearia paniculata Akiraho</td>
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<td>Pseudopanax crassifolius</td>
<td>Evergreen</td>
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<td>Podocarpus totara Matapouri Blue</td>
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**SHADE**

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<th>Botanical Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Clearance</th>
<th>Mature (O)</th>
<th>Mature (W)</th>
<th>Climate Zone</th>
</tr>
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<tbody>
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<td>Acer Palmatum (suitable hybrids)</td>
<td>Acer palmatum</td>
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<td>Liquidambar styraciflua ‘Worplesdon’</td>
<td>Sweet Gum</td>
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<tr>
<td>Rhopalostylis cheesemani</td>
<td>Rhopalostylis cheesemani</td>
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<td>5m</td>
<td>4m</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>
Design guidance

1. Primarily, place specimen trees in front yards and publicly-visible parts of a site at, where possible, a minimum rate of one tree per dwelling.

2. Place specimen trees where they can complement dwellings’ solar-orientation (to maximise solar-access to living-areas). Where appropriate, consider deciduous species that offer shade in summer and light in winter.

3. Position tree-trunks at least half the mature-width of the drip-line plus 1m from buildings. This facilitates periodic maintenance.

4. Provides adequate clearance from services in accordance with local service providers’ guidelines, preventing structural damage at any stage of growth.

5. For building frontages, select species of a scale appropriate for the available space and to provide an effective visual counterpoint to the bulk and form of the building frontage. Where space is limited, use columnar trees.

6. Restrict the number of different tree species used in any street or common access-way to achieve neighbourhood continuity and a discernible streetscape character.

7. Where passive surveillance is critical, select tree species and specimens to ensure tree canopies are above eye-level (generally 2m) in all locations.

8. Restrict deciduous trees to locations where they will not contribute to blocking storm-water systems or where leaf-fall will cover critical pathways (presenting a slip-hazard). This should be a particular consideration with housing for those with a disability or the elderly.

9. Ensure all trees represented on site-plans indicate the mature circumference of the selected-species.

10. Only place nikau and/or cabbage trees in a garden bed to avoid fronds accumulating on paths and lawns.

---

*Hoheria sexstylosa ‘Purple Lace’*

*Acer palmatum (Suitable hybrids)*

*Olearia paniculata*

*Carpinus betulus*

*Magnolia soulangeana*

*Gleditsia triacanthos ‘Sunburst’*

*Micelia gracipes* (suitable hybrids)

*Laurus nobilis*

*Aristotelia serrata*

*Liquidambar styraciflua*

*Rhopalostylis sapida*

*Hoheria angustifolia* (suitable hybrids)

*Callistemon ‘Kings Park Special’*

*Callistemon ‘Little Gem’*

*Hoheria populnea* (suitable hybrids)

*Pyrus calleryana ‘Astrocrat’*

*Metrosideros excelsa ‘Mistral’*

*Alectryon excelsus*

*Knightia excelsa*

*Eucalyptus moorei*

*Lagerstroemia indica*

*Zaenus nobilis*

*Liquidambar styraciflua*

*Magnolia grandiflora Little Gem*

*Pittosporum crassifolium*

*Sophora fulvida*

*Meryta sinclairii*

*Eucalyptus moorei*

*Lagerstroemia indica*

*Michelia gracipes*

*Olearia paniculata*
6.4 Screening plants

**Expectation**

Screening plants enhance privacy for residents and soften the visual impact of built elements, including fences and retaining walls.

**Explanation**

Screening species planted in strategic locations and/or in groups can contribute to privacy for residents in their outdoor living-areas, internal living-areas, and bedrooms. Screening plants can also help define boundaries and edges and create visual relief for walls and fences.

### Screening planting recommendations

<table>
<thead>
<tr>
<th>Full Sun</th>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Spacing (cm)</th>
<th>Mature (H)</th>
<th>Mature (W)</th>
<th>Climate Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barberry (suitable hybrids)</td>
<td>Berberis (suitable hybrids)</td>
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<td>U</td>
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<td>1.5m</td>
<td>1.2</td>
</tr>
<tr>
<td>Privet</td>
<td>Ligustrum</td>
<td>privet</td>
<td>Evergreen</td>
<td>18</td>
<td>U</td>
<td>1.8m</td>
<td>1.5m</td>
<td>1.2</td>
</tr>
<tr>
<td>Madagascar fan palm</td>
<td>Fishtail palm</td>
<td>fishtail palm</td>
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<td>U</td>
<td>1.8m</td>
<td>1.5m</td>
<td>1.2</td>
</tr>
<tr>
<td>Crape myrtle</td>
<td>Lagerstroemia</td>
<td>crape myrtle</td>
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<td>21</td>
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<td>1.5m</td>
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<td>Erythrina</td>
<td>coral tree</td>
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<td>U</td>
<td>1.8m</td>
<td>1.5m</td>
<td>1.2</td>
</tr>
<tr>
<td>Crepe myrtle</td>
<td>Lagerstroemia</td>
<td>crepe myrtle</td>
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<td>1.5m</td>
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<tr>
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<td>1.8m</td>
<td>1.5m</td>
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</tr>
<tr>
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### Partial Shade

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<th>Spacing (cm)</th>
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<th>Mature (W)</th>
<th>Climate Zone</th>
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<tr>
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<td>2m</td>
<td>1.2</td>
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<tr>
<td>Crape myrtle</td>
<td>Lagerstroemia</td>
<td>deciduous</td>
<td>18</td>
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<td>2m</td>
<td>2m</td>
<td>1.2</td>
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<tr>
<td>Coral tree</td>
<td>Erythrina</td>
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<td>18</td>
<td>U</td>
<td>2m</td>
<td>2m</td>
<td>1.2</td>
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<tr>
<td>Crepe myrtle</td>
<td>Lagerstroemia</td>
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<td>U</td>
<td>2m</td>
<td>2m</td>
<td>1.2</td>
</tr>
<tr>
<td>Cedar</td>
<td>Juniperus</td>
<td>evergreen</td>
<td>18</td>
<td>U</td>
<td>2m</td>
<td>2m</td>
<td>1.2</td>
</tr>
<tr>
<td>Elm</td>
<td>Ulmus</td>
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<td>2m</td>
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### Shade

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<tr>
<td>Privet</td>
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<td>U</td>
<td>2m</td>
<td>2m</td>
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</tr>
<tr>
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<td>2m</td>
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</tr>
<tr>
<td>Coral tree</td>
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<td>2m</td>
<td>2m</td>
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<tr>
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<td>Lagerstroemia</td>
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<td>18</td>
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<td>2m</td>
<td>1.2</td>
</tr>
<tr>
<td>Cedar</td>
<td>Juniperus</td>
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<td>U</td>
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<td>2m</td>
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<tr>
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<td>Ulmus</td>
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<tr>
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<tr>
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<td>U</td>
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### Special Use

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<th>Mature (W)</th>
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<td>Tecomaria spicata</td>
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<td>2.5m</td>
<td>2.5m</td>
<td>1.2</td>
</tr>
<tr>
<td>Triphylium laxiflorum</td>
<td>blue jasmine</td>
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<td>5</td>
<td>0.8m</td>
<td>2.5m</td>
<td>2.5m</td>
<td>1.2</td>
</tr>
</tbody>
</table>
**Design guidance**

1. When selecting screening plants, assume there will be little to no maintenance, and the final form of the screening will comprise the un-pruned mature forms of the species used. Therefore, spacing will be wider than a typical hedge planting.

2. Where outdoor living-areas are exposed to the street, shared driveway, or other public space, use screening plants in combination with fencing to ensure privacy for residents in these spaces.

3. Where climbing plants are used for screening, ensure the support structure is designed to withstand the mature weight of the climber in addition to any applied live-loads. Keep climbing plants well-separated from external building cladding, down-pipes, and guttering.

4. Concentrate screening species in publicly-visible areas where they will have the most benefit to both residents and the public.

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*References to plant species are not translated.*
6.5 Small contained underplanting

**Expectation**
Small contained underplanting provides green amenity and permeability to tight, confined spaces that would otherwise be difficult to maintain.

**Explanation**
Compact species planted in dense groups offer an effective solution for tight areas near paths, driveways, and buildings. These suppress weed-growth and keep maintenance requirements low while contributing to visual amenity.

### Small contained underplanting recommendations

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Spacing</th>
<th>Mature (H)</th>
<th>Mature (W)</th>
<th>Climate Zone</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>0.3m</td>
<td>0.3m</td>
<td>1,2</td>
</tr>
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<td>Aquilegia 'Tinkerbell'</td>
<td>African lily</td>
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<td>0.5m</td>
<td>0.5m</td>
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</tr>
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<td>Astelia red devil</td>
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<td>0.5m</td>
<td>0.5m</td>
<td>0.5m</td>
<td>3</td>
</tr>
<tr>
<td>Carex albula</td>
<td>white sedge</td>
<td>Evergreen</td>
<td>3</td>
<td>0.5m</td>
<td>0.3m</td>
<td>0.3m</td>
<td>3</td>
</tr>
<tr>
<td>Carex buchanani</td>
<td>south island carex</td>
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<td>0.6m</td>
<td>0.6m</td>
<td>3</td>
</tr>
<tr>
<td>Carex comans (suitable hybrids)</td>
<td>Carex</td>
<td>Evergreen</td>
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<td>0.4m</td>
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<td>Dianella (suitable hybrids)</td>
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<td>0.4m</td>
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</tr>
<tr>
<td>Libertia peregrinans</td>
<td>tuakau</td>
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<td>0.4m</td>
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<td>Evergreen</td>
<td>3</td>
<td>0.5m</td>
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<table>
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<th>Common Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Spacing</th>
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<th>Mature (W)</th>
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<td>Carex disticha</td>
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<td>0.5m</td>
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<tr>
<td>Clivia miniata</td>
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<td>1m</td>
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<tr>
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<th>Climate Zone</th>
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<td>1,2</td>
</tr>
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<td>0.4m</td>
<td>0.5m</td>
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<tr>
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<td>tuakau</td>
<td>Evergreen</td>
<td>3</td>
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<td>0.5m</td>
<td>0.5m</td>
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</tr>
<tr>
<td>Lomandra longifolia 'Evergreen Baby'</td>
<td>lomandra</td>
<td>Evergreen</td>
<td>3</td>
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<td>0.4m</td>
<td>0.4m</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>
Design guidance

1. In publicly-visible locations, use small, contained underplanting in tight spaces that are approximately 5m or less. For larger areas, consider using large-fill under-planting or lawn.

2. Where foliage of other species would be prone to spilling out over access-ways, consider using small, contained underplanting near paths and driveways.

3. Select small, contained underplanting species to achieve optimum growth in any proposed planting location, climate, and soil conditions.

4. Plant small, contained underplanting species at a minimum spacing of 300mm and a maximum spacing of 500mm.

- Ajuga reptans
- Ajuga reptans 'Tinkerbelle'
- Acorus gramineus minimus
- Acorus gramineus 'Red Devil'
- Agapanthus
- Agapanthus 'Tinkerbell'
- Libertia grandiflora
- Carex comans
- Carex comans (suitable hybrids)
- Carex comans 'Tufa'
- Carex dissita
- Carex dissita 'Silverlawn'
- Carex buchananii
- Carex buchananii
- Carex albula
- Carex albula
- Dianella
- Dianella (suitable hybrids)
- Lomandra
- Lomandra longifolia
- Lomandra longifolia 'Evergreen Baby'
- Liriope muscari
- Liriope muscari 'Silverlawn'
- Liriope muscari
- Liriope muscari
- Lomandra
- Lomandra longifolia 'Evergreen Baby'
- Muehlenbeckia axillaris
- Muehlenbeckia axillaris 'Pineapple Sammy'
- Phormium tenax 'Jack Spratt'
- Phormium tenax 'Sweet Mist'
- Phormium tenax
- Phormium tenax
- Astelia nivicola 'Red Devil'
- Astelia nivicola
- Astelia nivicola
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Hebe (suitable hybrids)
- Libertia grandiflora
### 6.6 Large fill underplanting

**Expectation**

Large-fill underplanting provides economical low-maintenance plant coverage to larger spaces in our developments not required for open-space amenity.

**Explanation**

When more extensive areas are required to be planted out, larger growing species can be well-suited to efficiently cover areas. Mass planting of either groupings of single species or complementary mixes of multiple species can offer attractive solutions for managing large areas with minimal maintenance.

---

#### Recommendations for large-fill underplanting

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<tr>
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<th>Part Shade</th>
<th>Shaded</th>
</tr>
</thead>
<tbody>
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<td><strong>Botanical Name</strong></td>
<td><strong>Common Name</strong></td>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>Arthropodium bifurcatum ‘Matapouri’</td>
<td>engarenga</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Astelia nervosa</td>
<td>mountain astelia</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Callistemon viminalis (suitable hybrids)</td>
<td>callistemon ground cover</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Carex virgata</td>
<td>burei</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Chelone rostrata ‘Flavicans’</td>
<td>miniature toe toe</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Chroicocephalus nubra</td>
<td>red tussock</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Coprosma repens ‘Middlemore’</td>
<td>dwarf plant</td>
<td>Evergreen</td>
</tr>
<tr>
<td>‘Coprosma rubra ‘Birdie’</td>
<td>coprosma birdie</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Deites grandiflora</td>
<td>wild iris</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Grevillea (suitable hybrids)</td>
<td>grevillea</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Hardenbergia violacea</td>
<td>happy wanderer</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Hebe ‘Wiri Mist’</td>
<td>hebe wiri mist</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Hebe sidara</td>
<td>boxwood hebe</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Hebe totara</td>
<td>totara</td>
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</tr>
<tr>
<td>Lomandra longifolia (suitable hybrids)</td>
<td>lomandra</td>
<td>Evergreen</td>
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<tr>
<td>Leptopetalum chinenese ‘Green’</td>
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<td>Evergreen</td>
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<tr>
<td>Leptopetalum chinenese ‘Ruby’</td>
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<td>Evergreen</td>
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<tr>
<td>Muilenbeckia astonii</td>
<td>polhusheue</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Phormium (suitable hybrids)</td>
<td>dwarf ornamental flax</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Phormium cookianum ‘Emerald Gem’</td>
<td>dwarf mountain flax</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Pittosporum tenuifolium ‘Gold Ball’</td>
<td>pittosporum</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Raphoepsis indica ‘Cosmic White’</td>
<td>cosmic white</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Rosmarinus officinalis ‘Prostrata’</td>
<td>creeping rosemary</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Rosmarinus officinalis ‘Upright’</td>
<td>upright rosemary</td>
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</tr>
<tr>
<td>Trachelospermum Jasminoides</td>
<td>star jasmine</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Westringia (suitable hybrids)</td>
<td>westringia</td>
<td>Evergreen</td>
</tr>
<tr>
<td><strong>Botanical Name</strong></td>
<td><strong>Common Name</strong></td>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>Arthropodium bifurcatum ‘Matapouri’</td>
<td>engarenga</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Astelia chathamica ‘Silver Spear’</td>
<td>chatham island astelia</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Astelia Fragans</td>
<td>kakahe</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Astelia nervosa</td>
<td>mountain astelia</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Callistemon viminalis (suitable hybrids)</td>
<td>callistemon ground cover</td>
<td>Evergreen</td>
</tr>
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<td>Camellia ‘Quintessence’</td>
<td>camellia quintessence</td>
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<tr>
<td>Chelone rostrata ‘Flavicans’</td>
<td>miniature toe toe</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Chroicocephalus nubra</td>
<td>red tussock</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Coprosma repens ‘Middlemore’</td>
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<td>Evergreen</td>
</tr>
<tr>
<td>Lomandra longifolia (suitable hybrids)</td>
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</tr>
<tr>
<td>Muilenbeckia astonii</td>
<td>polhusheue</td>
<td>Evergreen</td>
</tr>
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<td>Phormium cookianum ‘Emerald Gem’</td>
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<td>Evergreen</td>
</tr>
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<td>Rhododendron (suitable hybrids)</td>
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</tr>
<tr>
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<td>Evergreen</td>
</tr>
<tr>
<td>Westringia (suitable hybrids)</td>
<td>westringia</td>
<td>Evergreen</td>
</tr>
</tbody>
</table>
Design guidance

1. Use large-fill underplanting in medium to large spaces that may be publicly visible and are not required for outdoor living or open lawn amenity.
2. Select large-fill underplanting species to achieve optimum growth for the specific planting location, climate, and soil condition.
3. Carefully consider potential mature height and spread of the species elected to avoid foliage extending over paths, driveways, or built elements.
4. Avoid selection of species above 1.2m in locations that may enable concealment of undesirable behaviour in shared-areas and front yards.
5. Plant large-fill underplanting at a minimum spacing of 400mm and a maximum spacing of 1.5m.
6.7 Ground cover

**Expectation**
Ground cover plants protect soils, retain moisture, and suppress weeds where taller growing plants cannot be used or will not survive.

**Explanation**
Ground cover plants work well under small shrubs and fruit trees, and help keep roots of taller plants cool while retaining soil moisture in hot weather.

**Recommendations for ground cover planting**

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Type</th>
<th>PB</th>
<th>Size</th>
<th>Spacing</th>
<th>Mature (H)</th>
<th>Mature (W)</th>
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<td>Acaena inermis 'Purpurea'</td>
<td>purple bidibidi</td>
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<td>5</td>
<td>0.4m</td>
<td>0.2m</td>
<td>1m</td>
<td>3</td>
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<tr>
<td>Coprosma acerosa (suitable hybrids)</td>
<td>coprosma</td>
<td>Evergreen</td>
<td>5</td>
<td>0.75m</td>
<td>0.2m</td>
<td>1m</td>
<td>1,2,3</td>
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</tr>
<tr>
<td>Leptinella squalida 'Platts Black'</td>
<td>brass button</td>
<td>Evergreen</td>
<td>5</td>
<td>0.4m</td>
<td>0.15m</td>
<td>0.5m</td>
<td>3</td>
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<tr>
<td>Lobelia angulata</td>
<td>panakenake</td>
<td>Evergreen</td>
<td>3</td>
<td>0.4m</td>
<td>0.15m</td>
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<tr>
<td>Muehlenbeckia axillaris</td>
<td>pohehue</td>
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<td>Climbing</td>
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<td>creeping fuchsia</td>
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<td>0.15m</td>
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<td>1</td>
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<td>Leptinella squalida 'Platts Black'</td>
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<td>0.15m</td>
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<td>0.15m</td>
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<td>0.15m</td>
<td>0.5m</td>
<td>3</td>
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<tr>
<td>Lobelia angulata</td>
<td>panakenake</td>
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<td>0.4m</td>
<td>0.15m</td>
<td>2m</td>
<td>1,2,3</td>
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</tr>
<tr>
<td>Scleranthus biflorus</td>
<td>cushion bush</td>
<td>Evergreen</td>
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<td>0.5m</td>
<td>0.15m</td>
<td>0.75m</td>
<td>3</td>
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</tr>
</tbody>
</table>

**Design guidance**

1. Restrict ground cover planting options to inaccessible areas such as under fruit trees, natives that shed large leaves or fronds, vehicle over-hang areas, and narrow gaps between paths and buildings.
2. An effective use for ground cover species in highly-visible areas is in narrow gaps for water run-off between concrete slabs that would otherwise generate weeds.
3. Carefully consider species-selection to avoid potential for vigorous spreading into surrounding areas.
6.8 Fruit trees

Expectation
Edible planting, including fruit trees, offer their bounty and amenity for our residents and their neighbourhoods.

Explanation
Fruit trees produce fruit for our residents, attract native fauna, and provide amenity through blossoms, fragrance, and shade in the summer time. Incorporating edible planting options such as fruit trees or vines can also contribute to the development’s Homestar® rating.

Fruit tree recommendations

**FULL SUN/PART SHADE**

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Type</th>
<th>PB Size</th>
<th>Clearance</th>
<th>Mature (H)</th>
<th>Mature (W)</th>
<th>Climate Zone</th>
</tr>
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<tbody>
<tr>
<td>Acca sellowiana</td>
<td>feijoa</td>
<td>Evergreen</td>
<td>40</td>
<td>1m</td>
<td>3m</td>
<td>2m</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Apricot 'Aprigold'</td>
<td>apricot</td>
<td>Deciduous</td>
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<td>1.8m</td>
<td>3m</td>
<td>2</td>
</tr>
<tr>
<td>Citrus x aurantifolia</td>
<td>lime</td>
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<td>0.75m</td>
<td>2m</td>
<td>1.5m</td>
<td>1,2</td>
</tr>
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<td>Citrus x limon</td>
<td>lemon</td>
<td>Evergreen</td>
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<td>0.75m</td>
<td>2m</td>
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</tr>
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</table>

**Design guidance**

1. Locate fruit trees in sunny positions, sheltered from strong winds, with adequate drainage and sufficient space to attain maturity.
2. Provide a minimum of two fruit trees per dwelling for one to three-bedroom stand-alone, duplex, and terraced homes.
3. Provide at least three fruit trees for homes with four or more bedrooms.
4. For multi-unit developments, and across larger developments of single housing, select a variety of fruit species to deliver a spread of fruiting times across the annual cycle, enabling continuity of supply, and encouraging community interactions through exchange of produce.
5. Avoid placing fruit trees or other edible plants in areas intended to filter rain-water run-off contaminants or along over-land-flow-paths that have passed over vehicular traffic surfaces.
6.9 Embankment and revegetation planting

**Expectation**

Embankment and re-vegetation planting stabilises slopes and provides visual amenity to the parts of sites that would otherwise be difficult to access and maintain, and/or parts of sites that are prone to slipping.

**Explanation**

Embankment planting species can be used to economically cover inaccessible batters and steeply-sloping areas that would otherwise require retaining. In addition, they offer opportunities to significantly contribute to biodiversity by injecting patches of native bush into urban environments.

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### Recommendations for embankment and re-vegetation planting

**FULL SUN**

<table>
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<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Type</th>
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<td>0.75m</td>
<td>3m</td>
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</table>
Design guidance

1. Embankment and re-vegetation species provide planting options for steep-slopes and areas.
2. When selecting, carefully consider the potential mature height and spread of these species.
3. Select embankment planting species to achieve optimum growth in the proposed planting location, climate, and soil condition.
4. Generally, slopes up to 1:4 can be mown and are therefore suitable for lawn. Embankment planting is recommended for steeper slopes.
5. Plant embankment planting species at a minimum spacing of 600mm.
Implementation and maintenance
7.0 Overview

It is critical all planting implemented in Kāinga Ora developments is correctly installed and then properly maintained for a full annual cycle to allow plants to establish adequately and have the best possible chance at survival.

The basic planting implementation and maintenance guidance that follows will ensure good plant survival rates and provide a generic starting point for landscape architects to produce detailed and site-specific implementation and maintenance specifications that local councils may require.
7.1 Planting implementation

**Expectation**
Our landscape implementation follows best-practice to ensure all new planting is of suitable quality, has the best possible establishment, and chance of survival.

**Explanation**
To get the best value from the money invested in landscaping, attention and care to plant selection and implementation is essential to ensure plant losses are minimised and to ensure landscaping can achieve the intended functions and amenity contribution.

**Technical Guidance**

1 **Site Preparation**
   a. Remove all rubbish, debris, excavated material, contaminants, and materials surplus to requirements from the area to be planted.
   b. Before planting, the contractor should ensure all planting areas are weed-free and must undertake all necessary spraying at least one week before starting planting. A minimum of 2 spray applications are required if re-using top-soil or if weed-free top-soil is used.
   c. All garden beds (shrub planting) shall consist of high-quality top-soil that is at least 300mm-deep. Use hand-held tools to undertake any cultivation around existing trees.
   d. Plant all plants PB40 and larger into pits with a diameter at least 500mm larger than that of the root system when fully-spread and a depth of 200mm more than the depth of the root system.
   e. Pierce the bottom of each pit to a depth of 200mm with the tines of a fork or similar implement to ensure root-penetration and free-drainage.
   f. Use rotary augers to roughen the sides of pits to remove the glazing of the surface.
   g. Include proprietary compost that is at least 200mm-deep in the base of tree pits, back-fill the sides with top-soil. If the tree pit is located in a low area or the site is water-prone, place 200mm of free draining material (scoria) at the bottom of each hole.

2 **Plant Supply**
   a. Ensure plant materials are: first-class specimens, and true-to-name and type with well-developed and well-shaped trunk or stem and head. Ensure they are well-hardened-off, free from pests, disease, dis-figuring knots, bark abrasions, and wind or freezing injuries.
   b. The roots shall have a high percentage of fibre that is just touching the edge of their containers.
   c. Where several specimens of the same species are selected, ensure there is evenness of shape and size within the specified size-range.
   d. Ensure all plants are to the bag-size, height, or combination specified on the plans.

3 **Installation of Trees and Shrubs**
   a. Stake all specimen trees with three straight-pointed, un-treated pinus radiata 50 x 50 x 1500mm-long. Use 50mm-wide hessian webbing ties attached to stakes with approved galvanised fastenings. Ensure ties and fixings are sufficiently durable to provide required support to the plants for at least 3 years.
   b. Regularly monitor any planting done in the summer months; watering will be required to keep plants in good health.

4 **Mulching of Planted Areas**
   a. Spray any weeds in newly planted areas with non-residual herbicide, and remove any rubbish or foreign matter.
   b. The contractor must make sure surface levels of growing media are as consistent as possible to allow easy and even application of 75mm of cambium pine bark mulch.
   c. Ensure the finished surface of the mulch in all new landscaped areas is flush with or no more than 25mm below the surrounding ground surface, garden edging, kerb, path, or other formed surface.

4 **Landscape and Plant maintenance handover**
   a. The landscape contractor is responsible for establishing and maintaining all new planting from the time installation is completed up until the hand-over of the project to Kāinga Ora.
   b. In any period between installation and hand-over the landscape contractor is responsible for ensuring optimum conditions for plants to thrive are provided including (but not limited to): barricading; watering; weed control; cultivation; pest- and disease-control; removal of litter; checking of stakes and ties; pruning; and mowing.
   c. In any period between installation and hand-over the landscape contractor will advise the main contractor and the project manager of any plants removed or stolen as well as any damage to the planting, lawn, hard surfaces, or structures caused by others in the course of their work.
   d. Any such damage is the responsibility of the main contractor and should be repaired prior to hand-over.
   e. At hand-over, the landscape contractor must demonstrate to the project manager that landscaping has been carried out in accordance with the project’s Landscape Plans.
   f. At hand-over, the landscape contractor must provide a Landscape Maintenance Plan to Kāinga Ora. This plan sets out a 12-month, project-specific, plant maintenance regime that aligns with the guidance notes set out in section 7.2.
7.2 Planting maintenance

**Expectation**
A 12-month planting maintenance regime is carried out across all developments increasing the likelihood of landscapes thriving in their locality and context.

**Explanation**
All planting in our projects is selected on the basis of being as hardy and as maintenance-free as possible.

Monitoring and maintenance over an annual cycle enables the planting to establish in its new environment and serves to protect our landscape investment.

**Technical Guidance**

1 **Plant establishment period**
   a. All planting, other than in areas set-out below, must be maintained for a period of 12 months from the time installation is completed in accordance with the Landscape Maintenance Plan.
   b. Provide optimal conditions for plant establishment and survival during the 12 month maintenance period. This includes (but is not limited to): barricading; watering; weed control; cultivation; pest- and disease-control; rubbish-removal; checking of stakes and ties; pruning; and mowing.

2 **Areas excluded from the plant establishment period**
   a. Unless otherwise directed by the asset or maintenance manager, all fenced-in areas surrounding stand-alone houses, duplexes, terraces, and ground-level apartments intended for the exclusive use of the dwelling’s residents are excluded from the 12-month maintenance requirement. It is expected such areas will instead be maintained by residents.
   b. Prior to resident-occupation and during any void periods between tenancies within the 12-month establishment period, the maintenance contractor must maintain these areas.

3 **Inspection and reporting**
   a. A suitably-qualified landscaper must inspect all planted and grassed areas on a monthly basis to establish what maintenance is required, and set-out an action programme with the procedures and frequencies set-out below used as a benchmark.
   b. Every 3 months, send a record for the development of monthly inspections and resultant maintenance to Kāinga Ora’s asset manager.

4 **Plant and lawn vandalism, losses and replacement**
   a. Promptly report any vandalised or stolen plants to Kāinga Ora; include the likely cause of the damage. Where instructed by Kāinga Ora, remove and replace any vandalised and/or stolen plants.

5 **Lawn damage**
   a. During the 12-month establishment period, maintenance partners are responsible for any damage to lawns caused by maintenance.

6 **Replacement planting**
   a. Monitor plant health at each monthly inspection and replace any dead or dying plants.

7 **Herbicide applications**
   a. Apply herbicide every 2 months to control any perennial weeds.
   b. Glyphosate will be sprayed by certified operatives from a hand-operated knap-sack or towable spray unit.

8 **Hand-weeding**
   a. At least every 3 months, hand-weed to remove any dead weeds or annual weed growth. Dig out all weeds by hand and remove them from the site.

9 **Adjustment to tree ties**
   a. Adjust tree ties as and when required to ensure trees are not leaning or rubbing on the ties. These should generally be removed by the end of the 12 month maintenance period.

10 **Pruning**
   a. Prune twice-a-year to promote healthy new growth. Immediately remove dead or broken branches if reported or as per instructions from Kāinga Ora.

11 **Fertiliser application**
   a. Apply fertiliser once a year in the spring to all planted areas, excluding grass.

12 **Pest and disease control**
   a. Monitor for pests and diseases on a monthly basis and take appropriate action as and when necessary.

13 **Watering**
   a. Monitor all planting on a regular basis during dry weather to establish ground moisture-levles.
   b. Water when required using mobile watering systems.

14 **Mowing**
   a. Mow lawns on a fortnightly cycle using an up-front mower with a side throw-deck. Take care to ensure roads and footpaths are left in a clean and tidy condition. Weed-eat or spray edges and fixtures to avoid damage from mowers.

15 **Final inspection**
   a. At the completion of the maintenance period arrange a final inspection meeting with Kāinga Ora’s asset manager.

Demonstrate the landscape planting set out in the project’s Landscape Plan is well-established.

Demonstrate how the grounds have been maintained in accordance with the Maintenance Plan as well as any subsequent modifications to that plan made by maintenance partners.
Biodiversity
The variety of different forms of life found on Earth or within an area thereof. This includes: plants; animals; fungi; micro-organisms; and the ecosystems they form. Collectively the diversity and interdependence of species and the associated ecosystems makes Earth habitable for people.

Crime Prevention Through Environmental Design
Crime Prevention Through Environmental Design (CPTED) is an approach that uses design to create naturally safer environments with less reliance on law enforcement. CPTED aims to reduce opportunities for crime and anti-social behaviours, while increasing opportunities for social interaction. In this approach, built environments are designed to make committing crimes less easy, reducing opportunities for crime to occur.

Deep-soil areas
Deep-soil areas are zones of soil not covered by buildings, hardstand, or structures within a development. They exclude all impervious areas, carparks, basements, driveways, and roof areas. They provide benefits including: infiltration of rain-water to the water-table; reducing stormwater run-off; and promoting the healthy growth of large trees with large canopies. Co-located with communal open spaces, they facilitate the use of appropriate trees to provide visual amenity and shade.

Homestar®
Homestar® is a rating tool, developed and administered by the New Zealand Green Building Council. It measures the health, warmth, and efficiency of New Zealand homes across seven key areas. A 6-Homestar® rating or higher provides assurance a home will be warmer, drier, healthier, and more energy-efficient than a typical new house designed to meet the building code. From mid-2019, all new homes designed and built by Kāinga Ora will meet the requirements needed to achieve a 6-Homestar® rating.

Landscape
Landscape covers the planning, design, construction, and planting of all outdoor spaces, including utility and garden areas. An integral part of any successful development, good landscaping creates a pleasant environment for occupants and improves their quality of life.

Landscape can be further divided into hardscape and softscape:

- **Hardscape** refers to the constructed elements of a property, including paving, fencing, walls, and landscape furniture et cetera.
- **Softscape** refers to the living landscape; that is, the plant components.

Low Impact Development (LID)
An approach to land development that works with nature to manage storm-water as close as possible to its source. It is generally associated with vegetated storm-water treatment that involves preservation and retaining of natural features, and minimising impervious areas to create functional and appealing site-drainage that treats storm-water as a resource, rather than a waste product.

Streetscape
A term covering everything that makes up the scene on a street including footpaths, road, street trees, street lights, street furniture, and the building frontages that line the street. Collectively, these elements create an outdoor environment for people to be in, whether travelling from one place to another, or lingering where there is an inviting ambience.

Universal design
Universal design is about “making sure everything is accessible to, and understood by, and used to the greatest extent possible, by everyone without adaptation, or requiring little adaptation”.

Urban forest
The collection of all the trees within a city, town, or suburb including those in both public and privately-owned properties. Urban forests play a vital role in the urban ecology including: supporting biodiversity; mitigating heat build-up; absorbing stormwater; supporting property values; and beautification.

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1 NZ Disability Strategy (2016-2026)