Auckland Transport
An Auckland Council Organisation

14 Landscaping

14.1 Auckland Council Weed Management Policy and Vegetation in the Road Corridor Guidelines

It is essential that *AC's Weed Management Policy and Vegetation in the Road Corridor Guidelines* (PDF 500KB) is read via the embedded link before reading the rest of this chapter.

14.2 Scope

This chapter sets out general and specific landscape specification requirements for street trees, planting and vegetation management within the road corridor.

Auckland Transport (AT) is responsible for the vegetation control in the road corridor of rural roads and the maintenance of grass berms in road corridors in urban areas of the Auckland region.

Auckland Council (AC) have responsibility for the maintenance of urban street trees, gardens, bush, natural areas, wetland and landscaped areas in the road corridor according to AT requirements.

AC Parks Department and AT's Road Corridor Maintenance (RCM) Department will work co-operatively together and be in constant contact regarding vegetation in the road corridor.

Details and specifications for vegetation control are broadly covered in this chapter, but must be read in conjunction with the aforementioned Vegetation in the Road Corridor Guidelines and Vegetation in the Road Corridor Guidelines and AC's Weed Management Policy.

This section of the code of practice covers the landscaping specification requirements for works within road corridor managed by AT.

It is divided into 4 parts:

- General Practice
- Landscaping General
- Maintenance General
- Specific Landscaping and maintenance

14.2.1 Codes, Regulations and Statutory Framework

The legislation and statutory documents that control the management of Auckland Transport's asset are:

Resource Management Act 1991,

Local Government Act 1974,

The Conservation Act 1987,

The New Zealand Biodiversity Strategy 2000,

The New Zealand Coastal Policy Statement 2010,

The Regional Pest Management Strategy,

MfE New Zealand Urban Design Protocol,

Health and Safety in Employment Act 1992, (including Arboriculture Approved Code of Practice for Safety and Health in Tree Work)

Biosecurity Act 1993;

New Zealand Standard 8409:2004 Management of Agrichemicals;

Local Government Act 2002;

Local Government (Auckland Council) Act 2009.

Waitakere Ranges Heritage Act 2008

14.3 General Practice

14.3.1 Safety Requirements (RTA)

Various conflicts can occur between landscaping and surrounding features in the urban environment. These include:

- lateral growth of plants can interfere with buildings, structures and overhead services, and obstruct carriageways, footpaths, the luminance of street lights, etc.
- vegetation and structures can cause hazards to motorists and pedestrians by obstructing sightlines and creating obstacles
- damage to pavements and kerbs can occur through increases in root mass, and can be costly to repair and repairing such damage can be detrimental to tree health if not carried out by experts
- damage to underground services and drains can create problems for utility service companies and consumers
- access to maintain landscape can impede street movement for periods of time and create safety management issues for those undertaking the work

Managing these conflicts may be achieved by a variety of means including setting clear zones where landscaping should be avoided, and requiring minimum canopy heights and maximum height limits for low-growing vegetation.

(RTA Landscape Guidelines)

The Health and Safety in Employment Act requires AT to adequately manage risks associated with landscaping, construction and maintenance. This includes:

- Landscaping on steep slopes
- Landscaping that requires work close to traffic
- Landscaping involving the use of pesticides
- Tree work

A Traffic Management plan is required when working in and around the road corridor. Contractors may need a WAP and CAR asa minimum too.

14.3.2 6Vegetation Types and Safety Implication

Assessment criteria based on performance outcomes are proposed rather than a species list. The species list will need to be amended and set in order of priority to suit particular locations.

- Proven robust street performer (tolerant of urban conditions - drought, poor soils, pollution, exposure etc)
- Has a suitable scale and form for the street
- Limited potential for structural damage to kerbs, surfaces, underground infrastructure
- and buildings
- Maintenance of significant views can be achieved (e.g. open or columnar form, or deciduous)
- Ability to have clear single trunk
- Aesthetics (attractive form, foliage, flower or seasonal interest)
- Longevity
- Provides habitat and food for native birds and animals

14.3.3 Road Corridor Clearance Requirements

The following clearance distances are recommended:

- Position street trees so height clearances of 4.5 metres (measured from the carriageway surface at the kerb-line) can be maintained above arterial road carriageways when the trees are mature.
- Position street trees so height clearances of 3.0 metres (measured from the carriageway surface at the kerb-line) can be maintained above local road carriageways when the trees are mature.
- Position street trees so height clearances of 2.5 metres (measured from the footpath surface) can be maintained.
- Set trees back no less than 0.6m from the front of kerb.
- Over-dimensional routes require height clearances of 6.5m and width clearances of 11.5 metres.
- The edge of raised planters constructed in sealed berms should be positioned no closer than 0.6 metres from the outer face of the kerbing (to provide adequate clearances for opening car doors, vehicle overhangs of exiting vehicles etc.) and set back from the Through route on the footpath.

A diagram pictorially showing the above clearances will be added in due course.

An adequate growing environment needs to be provided for trees so that they can develop into maturity without major conflict with kerbs, carriageways, underground services, and footpaths.

14.3.4 Sight Lines

Creation of clear sight lines are required to be kept in the immediate vicinity of:

- Traffic lights, signs and delineators
- Intersections
- Bus stops, schools
- Pedestrian crossings

Within these areas foliage is to be kept clear between the height of 0.6m and 2.5m. [rather show in a diagram - combine with other requirements set out in the rest of this section] For sightline distances refer to *ATCOP Chapter 7 Road Layout and Geometric Design*. The Road Geometric Design and layout will determine the sight lines and the distances. ***Note that these distances may be relaxed in specified areas such as town centres and other slower vehicular speed environments.***

14.3.5 Clearance for Buildings, Lighting and Structures

Potential conflicts caused between landscaping and buildings usually include direct contact or obstruction of natural light. Trees need to be located so that they do not affect the integrity or operation of built structures. Where practical, position trees with minimum clearances of 2.0m from buildings and 1.0m from verandas or building canopies, depending on species and ultimate mature size and maintenance practice. In the case of existing trees new structures need to be designed to accommodate these.

Note that heritage buildings have specific requirements with reference to the legacy councils' District Plans. Consultation with Auckland Council heritage planners will be required in some situations.

The size, crown density and position of trees can all have a potential impact on street lighting. It is therefore important that the potential impact of these aspects on street lighting is assessed and addressed before any proposed planting is undertaken. As a general guide, trees should be located no closer than 5.0m from street light poles (measured from the centre of tree trunks). New lights need to be located to accommodate existing semi-mature and mature trees. Refer to *ATCOP Chapter 19 Street Lighting* for standards.

14.3.6 Clearance for Gas, Utilities and Power-lines

Underground and overhead utility services may limit potential landscaping and care must be taken when positioning trees to minimise the potential for conflicts with utility services. As a general guide, the following clearance is required for trees, noting that some species or situations may require greater distances:

- Minimum 2.0 metres from man holes, drainage catchment and surface opening of underground services
- Minimum 3.0 metres away from low voltage power poles and 5.0 metres from high voltage poles, transformers and transformer poles
- Minimum 4.0 metres away from high pressure gas pipelines and permits are required for any excavation and tree planting in those areas. Low pressure gas providers also require that adequate clearance distances from service pipelines are maintained when excavating within their vicinity
- Minimum 2.0m away from Watercare Services pipelines over 300mm in diameter.
- New services need to provide these distances from semi-mature and mature trees.
- Use of suitably AT approved root barriers maybe required in all instances of works near trees and for new tree planting near underground infrastructure.
- Utility providers need to advise AT how they are going to install their infrastructure near trees without damaging the trees, including possibly harming their development and on-going maintenance.

14.3.7 Footpath Widths and Clearances

Footpath widths may be reduced by the introduction of planter pits and the lateral growth of trees. A minimum clear walking route (Through route) of at least 1.8m is required to be maintained (refer to *ATCOP Chapter 12 Footpaths and Pedestrian Crossings*. The use of planter pits that are flush with pavement surface or have mountable kerbs can minimise footpath obstruction and reduction accessible widths.

The following clearances are also required:

- Minimum height clearances of 2.5 metres to the lowest branch on a tree should be maintained for pedestrians and cyclists.
- Maintain all landscaping 0.6m from the outer face of kerbs (to provide adequate clearances for opening car doors, vehicle overhangs of exiting vehicles etc.).

14.4 Landscaping General

14.4.1 Soil Volume and Type

The soil serves the needs of the plant by providing water, air, nutrients and stability. The ability of soil to provide these services may be evaluated by key soil attributes (see Table 43).

Table 43: Key Soil Attributes

Key Soil Attribute	Relevance To Plants
Soil moisture content	Water supply, exclusion of air and, consequently, exclusion of oxygen
Stoniness	Stones and rocks dilute the volume of soil within the root depth that is available for water storage and nutrients
Porosity	Promotes stability by allowing deep rooting. Drains excess water, and circulates air to roots
Natural nutrient Status	Controls nutrient supply and reserves

Inadequate soil volume is a common cause of poor vegetation establishment, especially tree establishment, growth and stability. This section sets out what are required minimums. Planter pits constructed in pavement areas should have an adequate volume and quality of soil. Refer to *section 14.7.2* for recommended volumes.

14.4.2 Soil Quality

Imported topsoil must be fertile soil capable of sustaining vigorous and healthy plant growth. It must be of reasonably natural uniform composition, of medium sandy loam texture, and easily worked. It must be free of clay lumps and non-soil material including bricks and other building material. It must also be free of weeds, straw or herbicide residues. Topsoil should have an acidity range of pH 5.5 to 7.5, and be suitable for the plant species being used.

14.4.3 Water and Drainage

Access to moisture and good drainage are a fundamental requirement for tree health. Heavily compacted soils require amelioration through ripping or disking, or the addition of nutrients.

Alternative management systems include passive watering, where 'low flow' road stormwater is directed to planters and street trees (while allowing any greater flows to be collected in the stormwater collection system) and water sensitive design practice (or sustainable drainage systems), which may be designed to meet a range of goals and address water quantity and quality considerations. These systems generally fall into two categories: structural and non-structural, and typically use one or more treatment mechanisms.

These may include:

- Bio retention tree pits, rain gardens, and ponds/wetlands
- Vegetated filtered strips
- Vegetated swales

Refer to *ATCOP Chapter 17 Road Drainage* and to Auckland Council's stormwater standards and policies for more information.

14.4.4 Plants

14.4.4.1 Plant Quality and Size

Plants must be first class specimens of nursery stock, true to name and type with well-developed and well-shaped trunk or stem and canopy. They must be well hardened off to cope with the climatic conditions of the site and free from pest and disease. The plants must have been grown in the containers for at least 6 months over a summer period prior to planting. (Reference-North Shore City Council Nursery Standard- TBC)

14.4.4.2 Species Selection

The intended outcome of street tree planting and landscape planting generally is to create an increasing and positive lasting effect. Species are to be selected with regard to overall composition, placemaking, positive environmental contribution to air and water quality, pollution amelioration, hardiness, low maintenance, longevity and links to biodiversity requirements with the appropriate area and hardiness for the traffic environment. Performance criteria and overriding objectives to guide plant selection will be included in the Appendices of this chapter.

Refer also to *ATCOP Appendix 14D Table 49 Suitable plants for LATM devices.*

What is required? The design and dimensions of the road verge must be appropriate to accommodate planting.

1. A proposal, detailing the location, reasoning for the selection of the species, the maintenance plan etc. must be submitted to the relevant AT project manager approval before finalizing the selection. An agreed internal process is to be developed - refer to the Appendices of this chapter.
2. Permanent planting should be sited within the street furniture zone and consist of trees, flowers, shrubs or grass.
3. Species must be selected with care to ensure that they fit in the surrounding area and are appropriate for the environment.
4. Planting in Historic Character Areas must be as per the specific recommendations in the Unitary Plan. Refer to *ATCOP Appendix 14C*.
5. The size of the trees to be planted must be 45 litre or larger with a minimum stem diameter of 40-50mm at the base of the tree.
6. All plant material must be sound, healthy, vigorous and free of any defects which may be detrimental to plant growth and development.
7. Native planting are not required to be eco-sourced and eco-sited to the area. Eco-sourced plants are plants grown from seed or cuttings from plants which naturally occur in the area to be planted. Eco-sited requires planting plants in the location where they would occur naturally.
8. Decorative gardens must be designed to keep maintenance to a minimum.
9. Species are to be selected with regard to overall composition, low maintenance, longevity and must comply with AT's governing guidelines.
10. AT approval is required prior to any proposal to install an irrigation system.
11. Island gardens must be provided with a duct for a water connection.

14.4.4.3 Handling and Transportation of Plants

1. Plant material must be handled and transported in a way that prevents any damage to plants.
2. Bare root plants must be watered and protected by soil, mulch, scrim or similar materials to prevent root damage and drying.
3. Special care is required to retain as much soil on bare root plants as possible
4. Containerised plants with roots that do not fully fill the container must be lifted by the container; not the stem.
5. Any plant material held or transported on site must be protected from stock, environmental conditions or theft.

14.4.4.4 Storage of Plants

Where plants are required to be stored prior to planting (longer than 24 hours) they must be watered. For longer periods, protect roots from drying out by covering with soil or mulch, and store in suitable location e.g. safe from damage and in shade where appropriate.

14.4.4.5 Replacement Plants

All plants damaged, vandalized, stolen or dead must be replaced to maintain numbers and unity of the design. Plants and planting standards must be of the same quality as previously implemented.

14.4.5 Planting

14.4.5.1 Underground Services

The contractor must ensure that all underground services that are in the vicinity of works are defined and located prior to any excavation. Refer to *ATCOP sections 14.3.3 to 14.3.7* for clearance distance requirements.

14.4.5.2 Planting Season

Planting must not commence until all preparation works have been completed.

Work must only be undertaken when the weather is suitable (i.e. mild, dull and moist) and when the ground is moist and workable.

All planting operations must be suspended during periods of severe frosts, drought, waterlogging or persistent drying winds.

Further details of recommended months for planting will be included in this section once this has been finalized by agreement between AC and AT.

14.4.5.3 Tree Pits

Planting must provide long term benefit to the public with minimal ongoing maintenance. It must not compromise the safe use of the legal road reserve or affect its structural integrity. Suitably sized tree pits are required to ensure the establishment and allow for the maturing of the tree species selected and to minimize damage to surrounding buildings and structures, including the carriageway.

In some situations e.g. within footpaths or adjacent to the carriageway, kerb or wall structures may be used to contain trees and minimize root intrusion. There are also proprietary systems that can be utilized e.g. root barriers and structural soil systems.

These structures and systems are required to take into consideration pavement loading, including covers and grates. These are to be specified to suit the location.

14.4.5.4 Planting Holes

Root balls must be saturated prior to planting and roots loosened if appropriate.

Planting holes must be 2 x root ball diameters in width and 1-1.5 x root ball height.

Planting holes may be tapered. Where tapered planting holes are specified, the top of the hole should be 2-3 times as wide as the root ball and the bottom of the hole should be 20-30cm wider than the root ball.

The bottom and sides of the planting holes are to be roughened to encourage root movement into the surrounding soil.

Soil removed from the planting hole shall be amended with 30% compost and fertiliser before planting.

Plants shall be set slightly lower to the surrounding soil to avoid wicking, and the planting hole is to be backfilled in 150mm layers and consolidated so as to remove air pockets. Surplus planting material from the holes shall be spread evenly over the surrounding area (leaving no soil on top of the mulch layer) taking care not to cover the surface of the newly planted root balls with additional fill.

14.4.5.5 Backfill Material

Backfill material must be free of unbroken earth clumps, rock, weeds, grass and foreign objects.

In most cases the planting hole should be backfilled with the original soil excavated from the hole. Excavated soils which are of poor quality (such as soils of high clay or rock content) must be amended with a quality soil medium.

Soil conditioners, fertilisers, protectant chemicals or water aids may be added to backfill or plant in accordance with the manufacturer's recommendations.

14.4.6 Protection

14.4.6.1 Existing Vegetation

Prior to any works commencing on site, an Auckland Transport approved Arborist must be employed to supervise and direct all works within or in close proximity to the root zones of all bush areas, scheduled and notable trees. An Auckland Council Parks arborist should provide input during the design phase. A resource consent will be required for works near scheduled and notable trees.

All bush areas and scheduled and notable trees must be cordoned off to protect the root zone and vegetation, prior to commencement of works and remain in place until completion of work or the commencement of the defects liability period, whichever is later. The protective fencing must be erected under the supervision of the appointed Arborist.

The root zone is defined as the area one third the height of the plant beyond the edge of the canopy. Protection is to be provided to the entire root zone and to remain in place for the duration of the works, as directed by the Works arborist.

At no time should material be deposited or stored, even on temporary basis within the root zones of any scheduled and notable vegetation/tree(s).

All works should meet best practice. Refer BS 5837: 2012

14.4.6.2 Excavation

All excavation works within the root zones of scheduled and notable vegetation must be undertaken under the supervision and direction of an appointed arborist or AT arborist representative. This must be done in consultation with an Auckland Council arborist.

All excavations associated with landscaping that are within the root zones of any scheduled and notable vegetation and trees must be dug by hand, using hand tools only (i.e. hand held spade) to a minimum depth of 500mm below ground level.

All attempts will be made to retain all roots over 35mm in diameter uncovered by excavation. All roots exposed must be kept damp, covered from direct sunlight and protected from damage by a suitable material such as hessian or shade cloth.

When a root greater than 35mm is consented for removal, the arborist must only prune back to the excavation face by the use of hand held tools and the root must be immediately covered to protect it from desiccation and further damage. The excavation face must be covered with geotextile mat and weed cloth, and pinned into place until backfilling occurs, upon which it must be removed.

No storage of construction materials/machinery/equipment/spoil/waste is allowed within 3 metres of the root zone, or where there is a risk of spills or run-off reaching and damaging the root zones.

No operation of machinery must occur within 3 metres of the cordoned off root zone without prior approval from AT arborist or a nominated representative. If machinery has to operate within this zone the works arborist shall determine a site specific solution to protect the tree roots from compaction and root damage.

Silt protection must be in accordance with TP 90.

14.4.7 Soil Preparation

14.4.7.1 Ripping and Scarifying

Heavily compacted soils must be ripped, preferably during the summer period, to a depth of 300mm, with rip lines 0.5m apart, then rolled with a sheep-foot roller or similar, before any topsoil is laid.

Lightly compacted soils must be scarified or disked to a depth of 100mm, with balancing fertilizers as indicated by soil tests (see *section 14.4.8 Fertilising*) applied at this point. Rolling with a sheep-foot roller or similar should be undertaken before any laying of topsoil.

All heavy top soils may be amended by the addition of compost or sand. Stony soils can be lightly machined with a cultivator or similar piece of equipment. Stones can be buried using a reverse rotary hoe.

Soil pH must be brought into a range suitable for grass or plant growth - by the addition of lime and a starter fertilizer.

Ripping and scarifying should not occur around established trees and vegetation.

14.4.7.2 Topsoil

Topsoil must be applied at the depths specified in Table 44: Topsoil Depths for each landscape type. Refer to *section 14.4.2* for soil quality.

Table 44: **Topsoil Depths**

	Grass Areas	Amenity Plantings
Minimum settled depth (mm)	150mm. (Ideally 250-350mm)	500mm

Soil volumes for trees will vary with the species and size of tree to be planted (refer to *section 14.6.2).* Generally tree pits should have an available 8m³ volume of quality soil, depending on surrounding soil conditions. For tree pits and soil volumes for specified planting, refer also to *ATCOP Section 14.6.*

Topsoil should be mounded up above surrounding ground levels when placed for planting.

14.4.7.3 Levelling

The ground area must be presented in a level uniform manner, free of hollows and humps.

The ground surface area must either:

a. Follow contour of land, and/or
b. Be level with a maximum gradient through design to assist with water run-off and/or drainage.

All areas are to be leveled prior to seeding or planting.

14.4.7.4 Inspection

Topsoil should be approximately 10mm below adjacent footpath and level with the top edges of kerbs, grates, inspection portals and any other ground level structural edge located in the road berm. Suitable silt traps should be placed at grates and inspection portals to avoid silt blockage until turf cover is established.

14.4.8 Fertilising

14.4.8.1 Soil Test

A soil test must be undertaken to determine the composition and type of fertiliser and/or lime that is to be applied, and any additional amelioration.

Areas to be newly sown for grass must be fertilised to maintain a pH range of 6.0 to 6.5.

14.4.8.2 Fertiliser for Grassed Areas

Two applications of fertiliser are to be carried out. The first application must be undertaken at one week prior to sowing of grass seed using a suitable starter fertilizer such as di-ammonium phosphate (D.A.P.) at a rate of 25g/m2 and the second application four weeks after grass growth has commenced with a suitable maintenance fertilizer such as Nitrophoska Blue + TE (Trace Elements) at 25g/m2.

14.4.8.3 Fertiliser for Amenity Planting

Annuals, perennials and rose gardens must have an approved granular general fertiliser (low N, high P, K) and blood and bone applied at time of planting as detailed in Table 45: Fertiliser for Amenity Planting. These fertilisers should be applied after leveling the surface 100mm of the bed and before excavating planting holes.

Shrub gardens, hedges and re-vegetation areas must have an application of slow release fertiliser applied to each plant during the planting process as detailed in Table 45 Fertiliser for Amenity Planting.

Table 45: Fertiliser for Amenity Planting

	Plant Size		
	Annuals, Perennials and Roses	Root Trainers to PB20	PB20 — PB40
Fertiliser (NB foliage feeding can be used.)	Super phosphate and blood & bone mixed within the backfill medium	Super phosphate mixed within the backfill medium	Super phosphate mixed within the backfill medium
Application Rate	50 grams/m^2 & 30 grams/m^2 of blood & bone at planting	50 grams/m^2 at planting	80 grams/m^2 at planting
Fertiliser Type	Nitrophoska Permanent or similar slow release fertiliser		

14.4.9 Mulch

14.4.9.1 Mulch Material

Wood chip mulch from tree trimming operations must be well composted, free of weeds and weed seeds and must have no inorganic content. Granulated aged pine bark mulch (e.g. B4 grade bark) is the preferred mulch used in high profile areas.

Mulch types for different locations are to be added to this section in due course.

14.4.9.2 Mulch Depths

A minimum 100mm up to maximum 150mm thick layer of approved mulch must be spread over planting beds and around specimen trees, where directed, ensuring mulch is not contacting against the tree trunk.

14.4.10 Irrigation Systems

14.4.10.1 Approval

Approval from AC Parks Department and AT is required prior to the installation of any permanent or semi-permanent irrigation system. Where irrigation is approved, a duct for a water connection must be provided to amenity or garden planting areas.

All proposals for the installation of any irrigation system must be must be approved by AC Parks Department and AT. The type of water connection is to be agreed for each location. Either simple hose connection or permanent water supply feed.

14.5 Maintenance General

14.5.1 Tasks and Activities

Maintenance comprises all tasks and activities necessary for the successful growth of vegetation during the maintenance period which is generally for 12 months. These include general activities relevant to all areas such as checking vegetation areas, pruning of vegetation for safety and to maintain form, plant thinning and weed removal, rubbish removal, pest management, and watering.

Other activities relate to specific landscape types such as mowing berms, checking tree guards and stakes, trimming hedges, replacing annual plants, removing spent flowers. Refer to specific landscape types below and to contract documents and schedules for detailed requirements.

At the end of the maintenance period a formal handover to AT/AC Parks is required.

14.5.2 Mulch

Mulch must be maintained at a minimum 100mm thickness at all times.

Maintain a minimum area around trees in grass of 500mm radius, or the whole area inside a tree surround.

14.5.3 Pest Control

14.5.3.1 Weeds

The intent is to ensure that all works undertaken are carried out in accord with best practices and industry standard.

This code of practice should be read in conjunction with the following,

- NZTA C21
- Biosecurity Act (1993)
- Auckland Transport - Weed Control in Road Corridor Governing Principle
- Auckland Transport - Vegetation in Road Corridor Governing Principle
- Auckland Council - Regional Pest Management Strategy 2007- 2012 (RPMS)
- NZS 8409.2004 Management of Agrichemicals

Any weed spraying must be undertaken with particular note of the requirements for weed control within specified areas identified on the No-Weed Spraying List.

Chemical weed control is not permitted in many areas and such spraying may be done only with the permission of the relevant AT Engineer.

All dead sprayed weed should be removed within 2 weeks of spraying.

The areas to be sprayed include sealed areas where vegetation is encroaching onto or within the sealed carriageway, surface water channels, culvert inlets and outlets, kerb and channel, metal shoulders, street furniture, bridge abutments or traffic islands. Following any construction activity

the developer must reinstate all the disturbed areas with weed-free topsoil and quality grass seed. The areas reinstated must be machine mowable and maintained throughout the defects liability period of the contract.

- No chemical sprays are to be used outside schools or early childhood education centres on days that these institutions are in use.
- No chemical sprays are to be used near shops, bus stops and walkways after 7.00am.
- No chemical sprays are to be used if the wind speed is more than 10km/hour.
- Chemical spray must not be used from a moving vehicle where the vehicle is travelling against the flow of traffic (i.e. on the wrong side of the road).

14.5.3.2 Pest Plant Control

All pest plants as itemized in the RPMS such as gorse, woolly nightshade, acacia, pampas grass, privet etc. should be identified.

The strategy and methodology for pest plant control should be discussed with the Biosecurity team of Auckland Transport within 48 hours of identification.

The proposal for removal and disposal must be approved by the relevant AT Engineer.

All such works should be recorded and reported to the relevant AT Engineer in conjunction with AC Parks.

All maintained areas and bush or natural area fringes should be free of minor pest plant infestations.

Some pest plants may require repeat applications to ensure eradication. Large woody weed debris must be removed from site. Stumps can be poisoned and left rather than being removed.

14.5.3.3 Chemicals

Any chemicals used must be applied in accordance with the manufacturer's recommendations.

All chemicals used for vegetation control should be approved by the Environmental Risk Management Authority as suitable for the purposes. The preferred herbicides are Glyphosate and Metsulfuron. Hormonal or arsenic weed killers must not be used. Other chemicals used must have the approval of the relevant AT Engineer.

14.5.3.4 Animals Pests

Animal pest control measures must be undertaken as per the regional pest control standards of operation and Council bylaws.

14.5.4 Watering and Irrigation

Plants, including grass and trees, must be watered as necessary.

Water must be applied at low pressure, ensuring no water run-off and avoiding any displacement of soil. Any slumping of soil must be reset to grade with the addition of topsoil back-fill until the grade is consistent with the surrounding soil.

14.6 Specific Landscaping and Maintenance

14.6.1 General Requirements

All works must be carried out in accordance with the general requirements above and the Landscape Management Plan and checklists (Refer to *Appendix 14A*).

14.6.2 Trees

14.6.2.1 Tree Soil Volume and Type

Recommended soil volumes for street trees in confined locations are shown in Table 46.

Table 46: Recommended Soil Volumes for Trees

Minimum	8m3
Recommended	10m3
Ideal (where possible)	15m3 or greater

14.6.2.2 Codes of Practice

All work to trees must be carried out in accordance with the Approved Code of Practice for Safety and Health in Tree Work, Part 1: Arboriculture.

Tree maintenance operations must be carried out in accordance with the Approved Code of Practice for Safety and Health in Tree Work, Part 2: Maintenance of Trees around Power Lines. Tree maintenance must only be carried out by operators authorized by AT and personnel engaged in power line clearance work must be competent to perform such tree maintenance.

14.6.2.3 District Plan Provisions

All work to trees must comply with the various Auckland Council and District Plan tree protection provisions or updated requirements of the Unitary Plan.

14.6.2.4 Tree Policy Provisions

All works to trees must comply with all relevant policies defined by AT and Auckland Council.

14.6.2.5 Tree Planting

All container grown stock must have the bag, canes and ties removed prior to planting. Lateral roots systems should not be disturbed unless the roots are considered to require gently 'teasing out' before planting.

Planting must be in accordance with Table 47.

Table 47: Required Provisions for Trees

Size Specific Specifications				
Activity	35ltr	45ltr	80ltr	160ltr
Planting Pit Dimensions	0.8m wide x 0.6m deep	1.0m wide x 0.8m deep	1.2m wide x 1.0m deep	1.5m wide x 1.0 deep
Mulch circles	1m diameter	1.5m diameter	2m diameter	3m diameter
Minimum stakes	2 opposing	2 opposing	3 triangle formation	3 triangle formation
Gauge of stakes	1.5m x 50mm Softwood stakes	1.5m x 50mm Softwood stakes	1.8m x 50mm Softwood stakes	Softwood peeler posts
Water (Litres)	20L	25L	35L	50L

Backfill material must be free of unbroken earth clumps, rock, weeds, grass and foreign objects.

In most cases the planting hole should be backfilled with the original soil excavated from the hole, but with at least 100mm of new drainage material to the bottom of the hole placed in first. Excavated soils which are of poor quality (such as soils of high clay or rock content) must be amended with a quality soil medium.

Soil conditioners, fertilisers, protectant chemicals or water aids may be added to backfill or plant in accordance with the manufacturer's recommendations and as directed.

The use of slow release tablet fertiliser, complete with macro and micro nutrients should be used to the minimum quantity of the manufacturer's specifications. The product selected must contain N.P.K. and low levels of trace elements. Total soluble nitrogen should be low as well as low total phosphorus content.

The tree must be held in position while backfill is placed around the root ball. The backfill must be firmed gently to expel air pockets. Excessive tamping must be avoided as this may over compact soil, reducing water penetration and root growth. The tree must be checked to ensure that the planting level is not below existing soil levels and the tree is vertical. All arisings will be removed from the site.

Trees may require watering-in at the time of planting and for the first year of establishment. This will depend on weather conditions and site and species requirements.

14.6.2.6 Planting Structures

The design of planting structures must be considered as an integral part of the development and surroundings to fulfill both functional and aesthetic requirements. The durability and maintenance requirements of these structures must also be considered in making an appropriate selection. All such structures must be designed to safely withstand appropriate loadings and must not be a hazard to the public. Proposed planting structures must be submitted to the relevant AT Engineer for approval, who will consult with AC Parks, and be agreed to before any work commences on site.

The following will be considered for the performance assessment:

- Traffic safety
- Maintenance
- Quality of work complying with the specifications and best practice guidelines
- Records and the as-built drawings
- NZ Building Act and Building Code. Some of these structures will require Building consent and/or resource consent
- Suitability to sustain long term growth and vigour of selected plants

14.6.2.7 Tree Support

Tree guards may be used to protect trees from accidental damage or vandalism. A variety of styles and design are commercially available plus options for custom made types. Where tree guards are used, the design should allow for easy removal of the guard once the tree is sufficient size to no longer require protection. Segmented types that can be disassembled from around the tree are preferable to single piece structures. Minimum intrusion into the ground plane is necessary to avoid footings for tree guards forming an obstruction to root growth.

Root barriers may be specified to deflect roots away from structures and avoid future damage. A range of products and materials are commercially available. The installation of a root barrier requires specialist knowledge in design, installation and maintenance. AC Parks arborist will have input and sign off on the design and installation method.

Plant stakes and ties are used to provide support to trees during establishment of the root system.

Table 47 describes the number, gauge and arrangement of stakes for tree sizes.

Trees must be staked with a minimum one tie per stake and the tie shall be 50mm, semi-permanent, webbing construction made from a biodegradable product such as hessian or acceptable equivalent.

Trees must be supported with ties at a height equivalent to one-third of the tree height or as high as required to support the tree, within 100mm of the top of the stake. Each tie should be taut, but should not pull the tree towards the stake. The intention is to keep the tree in place while permitting the top to move freely, as such crown movement will encourage increases in stem diameter and root development.

Stakes must be set outside the line of the tree root ball and planting pit; fixed into undisturbed soil to ensure maximum firmness.

Stake positioning must consider the direction of prevailing wind.

The contractor must assess staked trees for 'firmness in the ground' and secure ties prior to cutting the stake.

All stakes must be cut above the webbing tie.

14.6.2.8 Tree Isolation Systems

Where used, molded plastic tree surrounds must be installed in accordance with the manufacturer's recommendations. Tree surrounds must be installed neatly, in a consistent pattern, at an even spacing parallel to kerbs and must be set flush with surrounding ground levels. Surrounds must be installed with adequate room for lawn mowers to pass between the surrounds and adjacent features. Such works must be done as per the requirements of Council's standards and an approval for the proposal must be obtained from Council's Parks Department.

14.6.2.9 Tree Protection

Various protection systems may be specified by AT. These systems may include trunk guards, bollards, gro-tubes and cages and any specific requirements of the environment/special character zone. Refer also to *section 14.6.3*.

14.6.2.10 Rootzone Aeration

Where directed, rootzone aeration must be performed to alleviate soil compaction and break up hard soil pans where excess surface water is present.

Root zone aeration is the responsibility of AC Parks as part of their asset care and maintenance responsibilities.

14.6.2.11 Cable Bracing and Propping

Structural support may be provided in order to extend the safe life of a tree, or to lessen possible risk should the supported part collapse. Cable bracing and propping must be carried out only with the special approval of the Council Parks Department and relevant AT Engineer. Numerous cabling systems exist and caution should be exercised in the choice and installation of any one system.

Personnel experienced in cable bracing and propping should determine fixing positions and materials.

All materials and workmanship must be rated, suitable for application, compatible and of appropriate strength and construction to achieve the bracing safely.

14.6.2.12 Transplanting Trees

Tree transplanting operations must be undertaken in accordance with accepted modern arboricultural best practice and the specifications of Council Parks Department.

14.6.3 Tree Maintenance

14.6.3.1 Stakes and Ties

The contractor must periodically check all trees which are staked and adjust or replace ties as necessary to prevent damage to the tree, or risk to public safety.

Stakes should be in place for 2 years to support trees, isolate trees from damage and assist in retaining mulch around the tree.

14.6.3.2 Mulch

Mulch around the base of trees must be maintained in a tidy and functional condition, as specified in *section 14.4.9*.

14.6.3.3 Weed Control

Weed control must be carried out during planned after-care maintenance visits to ensure the bases of trees retain a tidy appearance, free of invasive grasses and weeds, with a defined edge. The maintenance should be discussed and agreed with the relevant AT Engineer.

14.6.3.4 Isolation and Protection Systems

Maintenance of tree isolation and protection systems must be undertaken as part of the planned after-care maintenance programme.

Tree surrounds in grass and sealed areas must be maintained secure and correctly positioned.

Tree isolation and protection systems must be maintained to provide a tidy appearance and to prevent risk to public safety.

13.6.5.1 Juvenile Trees

Remedial and formative pruning must be carried out as required and as directed by AC Parks arborist. Formative pruning consists of the selective removal of specific branches to enhance form and improve structure, or to directionally shape the tree in accordance with site constraints. Co-dominant stems, crossing and rubbing branches and branches with potentially weak unions which could fail in adverse weather conditions should be removed. Basal shoots and undesirable epicormic growth should also be removed. Pruning requirements will be covered in the maintenance specifications.

For most street trees, a clear trunk should be maintained from ground level to approximately one third of the tree's height, unless otherwise specified.

Where directed, or as part of planned management/maintenance, remove juvenile plants.

14.6.3.5 Fertiliser Applications

All trees will require applications of slow release fertiliser at the time of planting. Any additional fertilizing should only be as directed by the AC Parks arborist.

14.6.3.6 Irrigation

Supplementary watering may be carried out in addition to other planned after-care maintenance visits, to ensure successful tree establishment.

Each tree should receive a minimum of twenty litres of water per application. Water must be applied at low pressure to the base of the tree, from a distance of less than one metre. Care must be taken to avoid the displacement of soil or mulch whilst undertaking watering.

14.6.3.7 Pruning

All pruning requires AC Parks arborist input and approval.

Pruning may be required to maintain the shape and form of trees as well as protecting clearance and sight lines within the road corridor. All pruning including branch removal, dead wooding, pollarding, removal of adventitious shoots from around the base of the tree and trimming must be carried out in accordance with best arboricultural practice.

Reduction pruning and reshaping is necessary to reduce tree height or spread, or to reshape, renew or restore the crown. Pruning must be carried out in accordance with the philosophies and techniques of Alex L Shigo, AS 4373-1996 and BS 3998:2010. The extent of reduction pruning must be determined on a site-by-site basis in accordance with the tree species, size, age, form and habit. The volume of material (foliage and branches) removed from any tree must not exceed 20% unless specifically requested or approved by the relevant AC Parks arborist. All cuts must be made sufficiently close to the trunk or parent branch without cutting into the branch collar or leaving a protruding stub.

After pruning, the tree should:

- have a structurally sound crown
- present no inherent safety issues
- not be significantly compromised i.t.o. tree health, structural integrity and longevity

There must be no stumps at pruning cuts and wound size should be minimized. Pruning cuts must be made in accordance with best arboricultural practice. Pruning must not result in splitting of the tree tissues. Heavy branches must be removed in sections. Large branches within 1.5m of the ground may only be removed with the agreement of the relevant AC Parks arborist. Where substantial pruning is required it should be completed in stages. Pruning operations must take into account the tree species, size, age, seasonal attributes, form, habit and site characteristics. All debris must be removed from site and cleanup must be completed in accordance with Cleanup Performance Measures. Reduction pruning must be completed in conjunction with the clearance of overhead lines.

Control of roots, including root-pruning may also be necessary to protect pavement formation or underground services. All root work must be carried out under the supervision of an arborist, with AC Parks arborist consulted and approval sought prior to works commencing.

14.6.4 Tree Removals

14.6.4.1 Relevant Codes of Practice and Associated Regulations

Tree removal operations must be carried out in accordance with the Approved Code Of Practice For Safety And Health In Tree Work, Part 1: Arboriculture, and the Landscape Management Plan.

Tree removal operations around electrical conductors must be carried out in accordance with the Approved Code Of Practice For Safety And Health In Tree Work, Part 2: Maintenance Of Trees Around Power Lines.

Personnel engaged in power line clearance work must be competent to perform such tree maintenance.

14.6.4.2 Hazardous Trees

Hazard trees must be given priority during maintenance. These trees must be assessed by a suitably qualified and experienced arborist prior to removal. Whole trees must be removed immediately when they are creating an immediate significant hazard caused by a structural tree defect which cannot be minimised or isolated. Refer to the governing guidelines on Vegetation of this chapter for tree removal procedures.

14.6.4.3 Surrounding Features

When removing trees, care must be taken to avoid damage to property, features, neighbouring trees and sub-canopy planting. Removals must only be carried out by suitable qualified and experienced contractors under the guidance of qualified and experienced arborist.

14.6.4.4 Tree Removal

Prior to any work commencing on site, all trees requiring removal must be accurately marked to indicate tree removal and approved by an AC Parks approved Arborist. The marking of the trees must be carried out by the appointed Arborist in conjunction with the contractors responsible for carrying out the works.

Tree removal operations must comply with the various Council District Plan tree protection provisions or subsequent updated Unitary Plan provisions. Refer to the governing guidelines on Vegetation of this chapter for tree removal procedures.

Trees (other than those specified in *section 14.6.4.2 Hazardous Trees*) must not be removed without the prior written approval of AT, and consultation with AC Parks.

14.6.4.5 Stump Removal

Within 2 weeks of tree removal, stumps must be removed to 150mm below the surrounding soil surface (to a radius of 1metre) and/or sufficiently removed to facilitate the planting and

establishment of a replacement tree (including stakes and a form of tree surround). Excess chippings must be removed from site as part of the stump removal operation.

Where stumps are removed, the area must be re-instated to the same standard as the surrounds. Where stumps are removed from turf areas, the site must be reinstated using weed-free top soil and grass seed. Turf areas must be reinstated level with and to the minimum standard of the surrounding ground.

Where stump grinding is not practicable or required, stumps may be removed either manually (by being dug out), cut to below ground level, or treated with an appropriate herbicide, as directed. Where herbicides are used these must be applied only by competent and AT approved operators in accordance with the manufacturer's directions. If stumps are to be treated with herbicide then care must be given to neighbouring trees.

14.6.5 Swales

14.6.5.1 Establishment

Vegetated swales have a variety of objectives and designs: in general the objectives are to slow stormwater flows, capture some contaminants and allow for some reduction in the total volume of run-off. Refer to *ATCOP Chapter 17 Road Drainage*.

Swales must be planted at densities related to the size of plants to achieve a 100% cover in 2 years. Planting is to be in accordance with *section14.4* of this chapter. The planting hole is to be backfilled with 50/50 mix of topsoil and compost.

Reinstatement of swale planting shall be by design to ensure scour and erosion protection.

An approved time-release fertiliser must be applied to all plants. All plants must be watered in within two hours to assist with plant establishment.

14.6.5.2 Maintenance

Maintenance must be carried out in accordance with *sections14.5 and 14.6* of this chapter.

Swale areas must not be blanket sprayed with herbicide for any more than 10% of every 100m length of swale area. Broadleaf targeted sprays may be used following approval from AT. (Pending AC policy)

14.6.6 Rain Gardens

14.6.6.1 Establishment

Rain gardens allow for the treatment and attenuation of stormwater, which can then be absorbed through ground soakage. Run-off from storm events can overflow into a swale system including rain gardens. Refer to *ATCOP Chapter 17 Road Drainage* and to relevant AC standards for additional information.

14.6.6.2 Maintenance

Maintenance must be carried out as per the designer's operations and maintenance manual- part of the as-built package.

Rain gardens must not be blanket sprayed with herbicide for any more than 10% of every 100m length of swale area. Broadleaf targeted sprays may be used following approval from AT and in accordance with *AC's Weed Management Policy* (PDF 500KB). Refer also to *ATCOP Chapter 17 Road Drainage* for additional information.

14.6.7 Raised Planters, Traffic Islands and Medians

14.6.7.1 Establishment

Landscaping treatment for urban medians will generally consist of hardy, durable groundcovers, or shrubs planted into a mulched bed.

Plants should be setback 600mm from the front face of kerb to avoid overhang of the carriageway. All plantings must have densities that achieve 100% coverage of soil within 2 years.

Planting is to be in accordance with *section 14.4* of this chapter.

14.6.7.2 Maintenance

Maintenance must be carried out in accordance with *sections14.5 and 14.6* of this chapter.

All edges must be maintained and presented in a neat and tidy form.

Edges must be maintained and any grass trimmings removed from gardens, structures or hard surfaces, on the same day that any grass mowing is undertaken. Edges must be cut vertically along any hard edge to prevent overgrowth.

Chemical edges are not permitted as an appropriate edging means.

14.6.8 Grass Berms

14.6.8.1 Batters

Profiles and batters shall be by design. With the requirement that:

Mowable batter slopes are to be no steeper than 1 vertical to 5 horizontal. Batters steeper than 1 in 5 must be densely planted and mulched to reduce maintenance.

The top edge of every fill batter must be level for at least 750mm beyond the outside edge of the footpath while the toe of every cut batter must be level for at least 500mm beyond the outside edge of the footpath.

Batters that have been planted should include edging, terracing or horizontal timber strips to contain and avoid the movement of mulch down the slope. Refer also to *ATCOP Chapter 6 Street Amenities* for additional information.

14.6.8.2 Establishment

The area for seeding must be free of all weed species (such as kikuyu, couch grass, gorse, and blackberry) in addition to any other plants identified in the Landscape Management Plan.

Grass seed must be under and over sown at a rate of 400 kg/ha. Seeds should be undersown for better strike and reduced loss to birds. Broadcast of grass seed is acceptable for areas where the soil is too wet for tractors.

All newly grass seeded areas are to be rolled with a Cambridge roller (or similar roller to minimise compaction) after seeding.

Berms must be spread with first quality topsoil and compacted to a depth of 150mm. The topsoil must be graded to kerb and footpath edges and must be finished 15mm high to allow for settlement except on the low side of the footpath where the topsoil must be finished to prevent water ponding.

Grass seed mix must be either an approved dwarf cultivar rye grass or an approved turf species blend. Other special purpose varieties may be used with the prior approval of AT.

14.6.8.3 Maintenance

First mowing of newly sown grass areas using a rotary mower can be undertaken when 50% of the grass coverage has reached a height of 100mm.

Irrigation may be required at the direction of AT or a nominated representative.

The grassed area must be maintained for a minimum period of 12 months after sowing to ensure that a dense, even turf coverage has been established. 95% grass coverage is required for all grass areas and 90% weed free at the time of handover to AT.

Grass must be maintained to a minimum height of 50mm and a maximum height of 100mm.

All grass areas, once established, must be mown a minimum of once every 4 weeks or as defined by the maximum allowable grass height.

Grass areas must be maintained at no less that 90% weed free.

Areas where grass coverage does not exceed 70% must be re-sown as detailed in this section.

The contractor must rectify any damage to turf or surrounding areas including scalping, wheel rutting, including damage caused by third party contractors.

The contractor must rectify any damage due to faulty machinery (such as hydraulic leaks, faulty machinery operation, scalping or scuffing of turf).

Any cuttings that fly onto footpaths or other surfaces (including garden beds and mulch beds), other than the grassed area, must be removed prior to leaving the site. Grass clippings are to be evenly distributed over the grass area.

All edges must be maintained and presented in a neat and tidy form. Edges must be maintained and any grass trimmings removed from gardens, structures or hard surfaces, on the same day that any grass mowing is undertaken. Edges must be cut vertically along any hard edge to prevent overgrowth. Chemical edges are not permitted as an appropriate edging means. Examples of typical edges encountered include residential fences, post and rail fences, footpaths, service markers (e.g. power cables and boxers), drain lines, manholes, garden edges, bush edges, sign posts, park furniture, buildings and specimen trees.

Mowing around obstructions and mowing strips must be undertaken to the same specifications and standards as that which is done to the main grass area, and on the same day.

14.6.8.4 Flail Mowing

Where directed on rural roads, flail mowing may be carried out at the necessary frequency to maintain a clear road corridor and drainage reserve. Flail mowing must not replace mowing of grass berms where this is a practicable alternative.

14.6.9 Re-vegetation Areas

14.6.9.1 Establishment

Re-vegetation plantings must provide a variety of species that complement the neighbouring forest or scrub areas. Plantings must include those native plants that provide food sources for native bird populations.

Where possible, native re-vegetation projects must include district-sourced species and must be appropriate to and tolerant of the particular site conditions.

Re-vegetation plantings in open areas must be planted at a density and size of plant that achieves 100% coverage of soil in 2 years.

Re-vegetation plantings along forest or bush edges or where a canopy already exists - requires varied planting ratios/ha depending on canopy density.

Plants must be spaced in a random mix in the planting layout to encourage a natural appearance and setting.

Planting is to be in accordance with *section 14.4* of this chapter.

14.6.10 Amenity Planting and Gardens

14.6.10.1 Annuals

Annual bed designs are to be undertaken by a suitably qualified designer and submitted to AT for approval.

Annual beds must provide a colourful visual display, with 3 changes of bedding plants per year.

Annual bed preparation and planting is to be according to *section 14.4* except where indicated below.

Compost is to be evenly distributed in the top 150mm of topsoil a rate of 100mm. Fertiliser is to be applied, and then the bed consolidated by treading and raking until a fine tithe and level surface is achieved. All stones, debris and other foreign materials are to be removed before planting.

Annual beds must be planted at a density of 30 plants per square metre. Plants are to be of potted colour grade.

Rows of edging plants must be a uniform distance apart with plants positioned alternately to those in adjacent rows. Plants other than those used in edging rows should be planted at a uniform distance apart, but in a random (not using lines or rows) system unless otherwise specified.

Plants must be placed firmly and uniformly in the soil so that the top of the root ball is level with the surface.

Soil must be lightly cultivated after planting to remove any footprints.

No surface mulch is to be applied to annual beds.

14.6.10.2 Perennials

Perennial beds must provide seasonal floral displays in high profile areas.

Perennial bed preparation and planting is to follow *section 14.4* except where indicated below.

Perennial beds must be planted at a density and size of plant of that achieves 100% coverage of soil within two planting seasons (usually 4-5 plants per metre). Plants must be a minimum of PB3 grade.

Rows of plants must be a uniform distance apart with plants positioned alternately to those in adjacent rows.

Perennial gardens shall be mulched.

Maintenance must be carried out in accordance with *sections 14.5 and 14.6* of this chapter.

14.6.10.3 Rose Gardens

Rose gardens must provide a seasonal floral display in a formal setting. Beds must be set out to enable good access for maintenance and maximising floral display.

Rose bed preparation and planting is to follow *section 14.4* except where indicated below.

Rose garden beds must be planted at a density of 1 plant per square metre. Plants must be hardened-off and may be bare-rooted (roots must be spread evenly in the planting hole) or container grown (ensure roots have a good covering of soil i.e. no roots showing above the soil level and with no sign of moss or weeds).

A good rose plant has three to five stems each about 25-45 cm long, and with a good fibrous root structure. Roses with roots or stems on one side only are not acceptable. Ensure the graft union is positioned 2-3cm below soil level.

Rows of plants must be a uniform distance apart with plants positioned alternately to those in adjacent rows.

Soil must be lightly cultivated after planting to remove any footprints.

14.6.10.4 Hedges

Hedges must provide a uniform visual barrier, and must be trimmed on the fronting sides and top. Hedges must be maintained to an even height appropriate to the site and species.

Hedges must be planted at a density of 1-3 plants per linear metre dependent on species. Plants must be a minimum grade of PB3.

Rows of plants must be a uniform distance apart. When there is more than a single row, plants must be positioned alternately to those in adjacent rows.

Hedge plants must have growing tips pruned on planting to promote bushy growth.

Hedges must be evenly cut on sides and top and maintained to the desired height, not exceeding 2m at the boundary line.

Hedges should be maintained at least 300mm from the edge of walkways and access ways.

14.6.10.5 Amenity Planting and Gardens Maintenance

Amenity planting designs are to be undertaken by a suitably qualified designer and submitted to AT for approval.

All amenity plantings must be maintained for a period of two years after planting, to ensure establishment.

All plants must be watered to maintain healthy vigorous growth throughout the growing season.

Plants must be kept free of pests and diseases in order to achieve their optimum performance and visual amenity.

No spraying of weeds is to occur in annual, perennial and rose beds. These areas must be kept in 100% weed free condition by mechanical means only. All other planting must be returned to a 100% weed free condition before weed growth exceeds 10% coverage of each area or 100mm in height. All weeds over 100mm in height must be maintained by hand pulling. Any chemicals used must be applied in accordance with the manufacturer's recommendations and the Auckland Transport Spray Policy.

The soil surface of annual and rose beds must be lightly cultivated without damaging plant roots, as required to maintain an even aerated permeable surface without any footprints, etc.

Where present, stakes and ties must be maintained and replaced, as required, in order to fulfill their intended purpose without causing damage to the plants. Regular bi-monthly maintenance of staked shrubs must include checking of the ties and stakes to maintain proper plant form.

Additional fertiliser is to be applied to each plant in September of each year. This fertiliser must be in the form of a balanced slow release fertiliser that has a 12 month release period.

All edging must be maintained in a sharp, neat and vertical condition with all cuttings removed off site on the day of activity. Where the edge is to be a straight line, a string line is to be used to ensure a straight line is maintained. All curves shall be smooth and regular.

Mulch or bark is to be kept at settled thickness as specified, and must be kept from hard surfaces.

Bedding plants should generally be kept free of dead heads in order to rejuvenate and extend the flowering period. This requirement applies to those plants that respond to this treatment.

Where plants overlap hard areas, growth must be maintained so as not to restrict the use of that area. Where plants overlap grass border edges, growth must be maintained to allow free passage for mowing machines without damage to plants.

Plants damaged, vandalised and stolen or dead must be replaced as required to maintain numbers. Replacement planting must take place as soon as favourable growing and planting conditions exist, in unirrigated beds this is usually during late autumn and winter.

Appendix 14A - Landscape Management Plan (LMP) (RTA Landscape Guidelines)

(Refer also to the AT's Vegetation in Road Corridor Guidelines)

Purpose of the plan

The landscape management plan is site specific and is prepared to promote cost effective and consistent management of landscape works within the road corridor. It sets down a standard approach to the maintenance of landscape planting, both in technique and frequency.

The primary objective is to encourage the establishment of plants in the context of the overall plan, focusing on the more dominant and important species rather than individual attention and care to all plants in all areas. Accordingly, the plan should be developed in the context of the maintenance of whole area of planting maintenance and the subsequent suppression of weed species.

Maintenance activities apply to all planted areas, but may need to be concentrated along the margins of roadsides, in median planting area along footway and cycleways, in front of fencing and at intersections.

Contents of the plan

An example of the landscape management plan is available from AT and should contain the following information:

Background

- Purpose of the plan
- Site boundaries
- Description of landscape types divided into areas (based on maintenance requirements)

Summary time of maintenance and inspection requirements

- Maintenance activities
  - Activities relevant to all areas
    - Pruning of vegetation for safety
    - Management of non-frangible vegetation
    - Noxious weed removal
    - Rubbish removal
    - Fungal, pest and insect attack
    - Auditing and reporting
  - Activities relevant to specific landscape types – grassed areas
    - Mowing and edging
    - Replacement of damaged turf
    - Tree and shrub planting in turf
    - Weed control in turf
  - Activities relevant to specific landscape types – amenity planting etc

Weeding
Mulching
Removal of dead / dying plant material
Replacement plantings
Tree guards and stakes
Fertilising and pruning

Appendices to the LMP

Pest plant species
Monthly maintenance audit proforma
Yearly maintenance audit proforma
Landscape Plans (As-builts)

Appendix 14B - Maintenance Checklist

This checklist outlines the maintenance practices and schedules tasks that should be completed to achieve a site's specific landscape goals, and Auckland Transport's expectations for landscaping:

Table 48: Maintenance Checklist

Maintenance checklist		
Preparation	Identify the level of maintenance required	
	Prepare a resource inventory of existing vegetation on the site	
Planting Management Plan	Consulting maintenance management plans for surrounding areas	
	Set aims and objectives	
	List planting maintenance requirements	
Performance monitoring	Evaluate the success of maintenance performance in achieving overall management objectives	
	Identify areas where management practices can be refined	

Appendix 14C - Unitary plan Information

From Draft Unitary Plan March 2013.

Part 3 Regional and district objectives and policies»3.3 Overlay objectives and policies»3.3.6 Natural heritage»3.3.6.2 Trees in roads and reserves

Overlay description

Trees located within roads and reserves are an important public asset and need to be managed appropriately. As urban areas intensify, public open space will be relied on to a greater extent to provide amenity in these areas.

Trees in our parks and reserves contribute towards Auckland being a desirable place to live and are an important part of Auckland's natural heritage and identity.

Trees located within roads provide a range of values including making roads more attractive and contributing to pedestrian amenity. Environmentally, trees provide important functional values in terms of storing carbon and providing habitat and food for wildlife. The road reserve has a large range of uses particularly for network utilities and at times these can conflict with the presence of trees. A balance of these competing uses needs to be achieved.

Objectives

1. Trees in roads and reserves that contribute to amenity, landscape and ecological values are protected.

2. There is an increase in the quality and numbers of trees planted in roads and reserves particularly within areas identified for intensified living.

Policies

1. Balance the efficient maintenance and upgrading of infrastructure and utilities with the protection of trees and groups of trees in the road reserve.

2. Encourage the planning and development to incorporate the planting and maintenance of trees in public open space.

3. Manage trees within roads and reserves to protect their ecological and amenity values while acknowledging that multiple uses occur in roads and reserves

Refer North Shore City Council Nursery Standard.

Part 3 Regional and district objectives and policies»3.3 Overlay objectives and policies»3.3.3 Historic character»3.3.3.1 Business and residential historic character areas

Overlay description

This overlay seeks to retain and manage identified historic character values of specific residential and business areas. Each overlay is supported by a historic character statement identifying the key attributes or qualities of the area for protection, retention and enhancement. Assessment of proposals for activities, development and modifications to places within historic character areas will be considered against the historic character statement.

Controls have been placed on use, development and demolition of buildings to manage change in these areas. The level of protection varies according to the intent of the overlay and may be more restrictive than the underlying zone. Four additional areas are currently under investigation for potential inclusion as historic character areas. These are Balmoral, Māngere, Onehunga, Ōtāhuhu and Parnell as shown on the planning maps.

Historic character areas will be identified as having either business or residential values. These two types of historic character are provided for as follows:

- Historic Character Business
- Historic Character Residential
  - Helensville
  - Isthmus A
  - Isthmus B
  - Isthmus C
  - North Shore.

Objectives

All historic character areas

1. The historic character values of the area, as identified in the historic character statement, are protected and enhanced, including the history, community associations and the overall notable or distinctive aesthetic or physical qualities of the area.
2. The physical attributes that define, contribute to, or support the character of the area are retained, including:
   a) built form, design and architectural values of buildings and their contexts
   b) streetscape qualities, including historic form, subdivision and patterns of streets and roads
   c) landscape qualities and/or natural features including topography, vegetation and open spaces.
3. Activities and development that do not support and respond positively to the historic character of the area are avoided.

Isthmus A

4. The architectural values of buildings, which contribute to the special character of the streetscape are protected.

Isthmus B, Isthmus C and North Shore historic character areas

5. The landscape qualities of residential areas that display a special blend of built and natural features, generally involving period housing coupled with the presence of trees, are protected.

Isthmus C and North Shore historic character areas

6. The topographic qualities and the distinctive landforms that contributed to the development of built form and subdivision patterns in residential areas are protected.

Isthmus C historic character areas

7. The visual and physical integrity of outstanding volcanic features such as volcanic cones, tuff rings and explosion craters in residential areas are protected.
8. The visual coherence between historic development and natural landforms for residential areas on volcanic cones, volcanic features and coastal cliffs, are maintained and enhanced.

Policies

Protection and use of all historic character areas

Landscape/streetscape and natural character in all historic character areas

25. Manage development and change to retain and enhance existing landscape and streetscape attributes and qualities.
26. Avoid the removal, alteration or destruction of landscape or streetscape features that contribute to, support or define the historic character of the area

Landscape/streetscape and natural character for Isthmus B character areas

27. Retain a reasonable degree of visibility from the street of the spacious and well-landscaped front yards.
28. Maintain the spacious character of the areas included in the overlay.

Landscape/streetscape and natural character for Isthmus B and C

29. Require replacement planting to maintain the landscape qualities and spaciousness of areas in the overlay. Replacement with indigenous trees will be encouraged when this is the traditional pattern of planting in the area, or when an indigenous tree has been removed.
30. Retain larger trees, located on private property, road and reserves that contribute to the character of the area.

Landscape/streetscape and natural character for Isthmus C character areas

31. Keep land disturbance to a minimum so as not to detrimentally affect the form and integrity of volcanic landscapes.
32. Control subdivision, use and development to maintain the natural and cultural heritage values of volcanic features.

33. Retain the natural character and visual amenity of the land above or surrounding the existing residential development on volcanic features,
34. Require new development to respect and not compete in form or design with the volcanic features

Appendix 14D - Suitable Plants for LATM devices

Table 49: Suitable Plants for LATM Devices

Species	Common Name	Spacing (mm)	No/m^2	Size
Agapanthus (dwarf variant)		400	6	Pb5
Arctotis Calendula		400	6	Pb3
Carex Comans		300	11	Pb5
Carex Flagellifera		300	11	Pb5
Carex Virgata		900	1.25	Pb5
Chionochloa Flavicans		900	1.25	Pb5
Coprosma Acerosa		1000	1	Pb5
Coprosma Kirkii		1000	1	Pb5
Dianella Caerulea		400	6	Pb5
Gazania Rigens		500	4	Pb5
Hebe Flame		600	3	Pb5
Hebe Hartii		500	4	Pb5
Hemerocallis Evergreen		700	3	Pb5
Libertia Ixioides		500	4	Pb5
Libertia Peregrinans		600	3	Pb5
Lomandra Longifolia		500	4	Pb5
Metrosideros Carminea		500	4	Pb5
Phormium Cookiianum (dwarf variant)		900	1.25	Pb5

Note that list is not exhaustive and other plants that meet the requirements of the LATM devise constraints may be used.