



WAIMAKARIRI
DISTRICT COUNCIL

ENGINEERING CODE OF PRACTICE

PART TEN

RESERVES, LANDSCAPES & OPEN SPACES

April 2009



Part 10: Reserves, Streetscapes & Open Spaces

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Part 10: Reserves, Streetscapes & Open Spaces

10.1 INTRODUCTION

Landscape design for reserves, streetscapes and open spaces is required at all levels of the subdivision and development process, in order to promote the social, economic, environmental, and cultural wellbeing of communities, in the present and for the future. Integrate it with the engineering design to:

- Enhance the character, quality of life and environmental appeal of each development;
- Complement and improve the environmental quality of the surrounding neighbourhood;
- Provide recreation opportunities;
- Increase the region's biodiversity;
- Provide areas for social interaction.
- Contribute to the character, shape and form of the district and its environment.

All landscape developments must seek to optimise long-term community and environmental benefits whilst minimising ongoing maintenance costs, in order to provide for the safe use and enjoyment of the public assets.

Establish the overall objectives for the landscape design, such as wildlife corridors, the provision of reserves, the connection of open spaces, access to and location of watercourses and wetlands and protection of existing valued vegetation, at the outset and incorporate them into the initial concept for the development. Ensure the subsequent engineering design and works are compatible with these objectives.

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10.2 CONSENT AND COMPLIANCE ISSUES

The consent and compliance information set out in CoP Part 2: *General Requirements* applies to all works within the Waimakariri District, with the addition of the clauses below.

10.2.1 Legislation

The Resource Management Act (RMA) 1991 and amendments is the principal statute that controls land development.

10.2.2 District Council Requirements

All relevant WDC policies and specifications shall be complied with. Approval shall be required from the Parks Advisor for any new reserve or street planting assets.

The Council will audit compliance with resource consent conditions by both site inspections and checking of associated documentation to the extent necessary to ensure the work is completed in accordance with the approved plans and specifications and to the Council's standards.

10.2.3 Consent Application – Information Required

In addition to the information required to support the concept drawings and/or Resource Consent plans in CoP Part 2: *General Requirements*, the following data shall also be provided:

- Layout and details of any planned irrigation systems
-

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10.3 QUALITY ASSURANCE REQUIREMENTS AND RECORDS

The developer shall provide the information detailed in CoP Part 3: *Quality Assurance* during design and throughout construction.

10.3.1 The Designer

The designer of all reserves and streetscapes that are to be taken over by Waimakariri District Council must be suitably experienced.

The design reviewer must have at least equivalent experience to the designer.

10.3.2 Design Records

The design report must include a design statement that:

- Shows an understanding of the inherent characteristics and values of the site (e.g. social, cultural, environmental/ecological, economic, historic, recreational), including the existing landform and vegetation;
- Outlines the design philosophy and intent;
- Demonstrates compliance with the CoP;
- Demonstrates compliance with the guidelines for safe environmental design outlined in the *CPTED* guidelines.

Provide detail of the unmodified site gained from a site visit and records which clearly demonstrate it e.g. coloured aerial photographs.

All drawings and documentation must be of sufficient detail and accuracy to ensure understanding of all aspects of the development proposal and assessment of the maintenance implications of the works.

Specifications for all proposed works or items that are not covered by the WDC Standard Specifications must provide sufficient detail that construction standards are not compromised and the Council does not inherit faulty items, features or plantings that require removal, replacement, repair or high levels of maintenance.

Wherever the developer is using a cash-in-lieu contribution to carry out works on behalf of the Council, a schedule of prices and rates with the engineering drawings is required.

10.3.3 Drawings

Drawings must show all streetscape and reserve planting and all facilities, structures and furniture that the developer proposes to install, including existing features to be retained. The location of existing and proposed underground services, irrigation systems and streetlights shall be included, and amenity beds labelled individually. The planting plan must be approved by the Council's Parks Advisor before works may begin.

Planting drawings must have a plant list. This should detail both botanical and common names, PB size at planting, quantity of individual species, staking, planting medium and other planting requirements. The source of the plants shall be recorded for revegetation projects. A clear reference system should be used to identify the location and set out of species. All planting plans containing street trees or tree planting are to show where underground services are located. Refer to Appendix A and Appendix B for tree and plant specifications.

If the development varies from the accepted engineering drawings, approval from the Council shall be obtained **before** undertaking any physical works.



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10.3.4 As-Built Information and Asset Data

As-built drawings and associated reserve asset data which comply with CoP Part 12: *As-Builts* are required for all structures, services and developments on reserves. Where reserves may be geologically unstable, a geotechnical completion report, as detailed in CoP Part 4: *Geotechnical Requirements*, with the as-built drawings is required.

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10.4 OVERALL SUBDIVISION LANDSCAPE DESIGN

Landscape design for reserves, streetscapes and open spaces is required at all levels of the subdivision and development process, in order to promote the social, economic, environmental, and cultural wellbeing of communities, for both the present and future.

Landscape design should be integrated with engineering design to:

- Enhance the character, quality of life and environmental appeal of each development;
- Complement and improve the environmental quality of the surrounding neighbourhood;
- Provide recreation opportunities;
- Increase the region's biodiversity;
- Provide areas for social interaction.
- Contribute to the character, shape and form of the District and surrounding environments.

The developer should work closely with the Council from the start of the subdivision process to establish overall objectives for the landscape design, such as the establishment of wildlife corridors, the provision of reserves, the connection of open spaces, the location of watercourses and wetlands and the protection of existing valued vegetation so that these can be incorporated into the initial concept for the development. The developer must ensure the subsequent engineering design and works are compatible with these objectives.

All landscape developments must seek to optimise long-term community and environmental benefits whilst minimising ongoing maintenance costs.

10.4.1 Design Criteria

The Council will use the following assessment criteria when evaluating development layouts and reserve designs:

Community – The provision of recreation assets that cater for the needs of the surrounding community, as identified by WDC Activity Management Plans and through analysis of local demographics, residential densities, and activity and leisure trends.

Accessibility – The provision of logical, safe and attractive access within the subdivision and to the surrounding community, with good linkages to reserves and community facilities.

Natural resources and habitats – The conservation and restoration of existing natural landforms, hydrological features and processes, wildlife habitats and significant vegetation.

Quality – The provision of environmental and recreational assets which function efficiently, have high aesthetic appeal, and will not cause undue nuisance to neighbouring landowners.

Safety – Any assets must provide for safe use and meet CPTED criteria.

Maintenance – The provision of durable assets whose on-going maintenance and eventual replacement will not place a disproportionate burden on Council resources.

10.4.2 Consideration of Existing Features

10.4.2.1 Existing Waterways and Wetlands

The retention and enhancement of natural waterways and wetlands is an integral part of any development. Opportunities to view should be created by establishing reserves, providing walkways and cycleways, appropriate planting, designing streetscapes, and ensuring that all boundary fencing has clear visibility from neighbouring properties.

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10.4.2.2 Existing Vegetation

The Council will undertake an inspection of existing vegetation on land to be subdivided at the time of the application for subdivision consent, and may require that some trees and other existing vegetation thought to be of ecological importance or significant amenity value be protected and retained e.g. vegetation that provides a visual screen.

All notable/historic trees protected under the *District Plan* or by other legal means must be retained.

All vegetation to be retained must be protected by the subdivision or land-use consent. Existing vegetation should be shown on the engineering drawings and all tree canopies marked out to their drip lines.

All trees and vegetation must be in a safe, healthy and undamaged condition, with an expected life of at least 20 years, when accepted by the Council. Trees requiring extensive work to remove dead or twisted branches will not be accepted by the Council.

Refer to Appendix D, which details particular measures to be taken during construction to protect vegetation and other features.

A qualified arborist must undertake any arboricultural maintenance. Any trenching, excavation and filling within the drip line of the tree must have an approved methodology and be undertaken under the on-site supervision of a qualified arborist.

10.4.2.3 Historic & Cultural Features

Protect and retain culturally significant areas, historic areas (including Ecological Heritage Sites), features of importance to the community, such as monuments and memorials, objects and buildings protected under the *District Plan* or by other formal/legal means.

10.4.2.4 Natural Landforms

Protect natural landforms where appropriate and possible, as they convey the natural heritage of the site, and provide landscape features that can add to the sense of place and local identity.

10.4.2.5 Existing Soils

Protect the structural and functional integrity of the soil system by retaining the natural soil profile. Soils contain most of the life-sustaining features of the terrestrial ecosystem. These include the soil structural features such as organic and inorganic particles, nutrients, and living components (invertebrates and bacteria). These support and sustain the roots of plants that are dependent upon these components. If soils are degraded, the system's ability to support the range of living organisms declines, compromising the wider ecosystem.



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10.4.3 Landscape Planting

10.4.3.1 Benefits of Landscape Planting

Planting should be designed to make a positive contribution to the subdivision and the surrounding local area in one or more of the following ways:

Functionally

- Provide shade, shelter and privacy.
- Reduce noise and air pollution.
- Calm traffic.
- Assist drivers to recognise intersections and major entrances to subdivisions.
- Reduce glare and reflection.
- Provide relief from hard surfaces.
- Control erosion.
- Create physical barriers.
- Provide recreation and amenity value.
- Protect and restore cultural and historical resources and values.
- Protect and enhance indigenous biodiversity.
- Protect and improve water quality.

Aesthetically

- Frame views.
- Reflect the seasons.
- Emphasise landforms, soil types and landscape features.
- Structure and define spaces.
- Reduce the visual impact of roads and hard surfaces.
- Screen unsightly outlooks.
- Provide colour, form, texture and interest.

10.4.3.2 Planting Design

Trees and plantings shall be in accordance with an approved landscape plan. In small subdivisions it may be sufficient for the developer to propose a planting scheme and submit this to the Council for approval.

All planting must be appropriate to the scale and character of the development and the local conditions.

Garden beds and specimen trees should be appropriately designed and located for the particular requirements of the street or reserve.

The proximity of houses, buildings, services, existing or future footpaths, cycleways and access ways should be considered when selecting plant species and their location.

Landscape planting is compulsory along waterways where the banks are steeper than 1:4, but is optional in other circumstances.

All planting must comply with the guidelines for safe environmental design outlined in the *CPTED* guidelines.

Allowance shall be made at the design stage for maintenance activities to be carried out without impeding traffic on the adjacent road.

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10.4.3.3 Compatibility with Engineering Design

Planting plans shall be associated with engineering and earthworks drawings to ensure that the engineering works, earthworks and planting works are all compatible.

The location of specimen trees and plant beds must not compromise the efficient operation of existing infrastructural services.

Plant locations must comply with the legal overhead and underground clearance requirements of the network operators, with allowance made for the natural growth of the plants to maturity.

Trees in new subdivisions must not be planted within 2m of any sewer lateral and the effect of any services must be considered.

Trees planted in new subdivisions must have a 0.9m separation from underground services. This may limit street planting to one side of the road to gain the necessary clearance.

Planting in swales must not obscure or obstruct the access to structures or compromise the hydraulic functionality of the system over time.

10.4.3.4 Species Selection

The selection of trees, shrubs and ground cover plants must be appropriate for the conditions at the planting site, such as soil type, drainage and local climate, to ensure healthy, attractive, well-formed, mature plants. Additional selection criteria include low maintenance and longevity.

Trees and plants used in conjunction with swales must be able to tolerate both water logged soils and drought conditions.

Selection of reserve and street trees is to be in accordance with Appendix B and the WDC *Street Tree Policy*. In addition, trees should be selected and located to minimise ongoing pruning costs and other maintenance requirements, and over-reliance in any one species should be avoided.

When selecting and locating trees, allowance shall be made for each tree to grow healthily for an **expected life of 50 years** without unduly compromising services, surfaces, structures, safety or amenities, or causing unacceptable shading. Trees should be spaced sufficiently far apart to allow healthy development of mature canopies and allow sunlight to penetrate between the canopies.

Various plant species will not be permitted to be planted in Waimakariri streets or reserves due to undesirable characteristics such as their:

- Known potential to become weeds.
- Invasive root systems and potential to sucker.
- Heavy production of seeds and quick germination.
- Heavy production of pollen and/or allergenic pollen.
- Poor form and weak branch structure.
- Susceptibility to disease and pests.
- Poisonous bark, leaves, seeds or fruit.
- Heavy shading over streets (especially in winter).
- Excessive nuisance from falling leaves and debris.

The Council's Parks Advisors will be able to advise on suitable plant and tree species.

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10.4.3.5 Protection of Sightlines

All roadside vegetation on roundabouts, on traffic islands, and within traffic sight lines shown in Figure 10.1 must have either a maximum height of 0.6m or be limbed up to provide a clear trunk to a height of 2.5m. This will preserve sight lines to and from vehicles. The planting must be suitable for climbing up and easily maintained within this height.

All street-tree planting must comply with the minimum separation and sight distances shown in Figure 10.1 and Figure 10.2. These distances may need to be increased to protect sightlines, depending on the road geometry and speed environment.

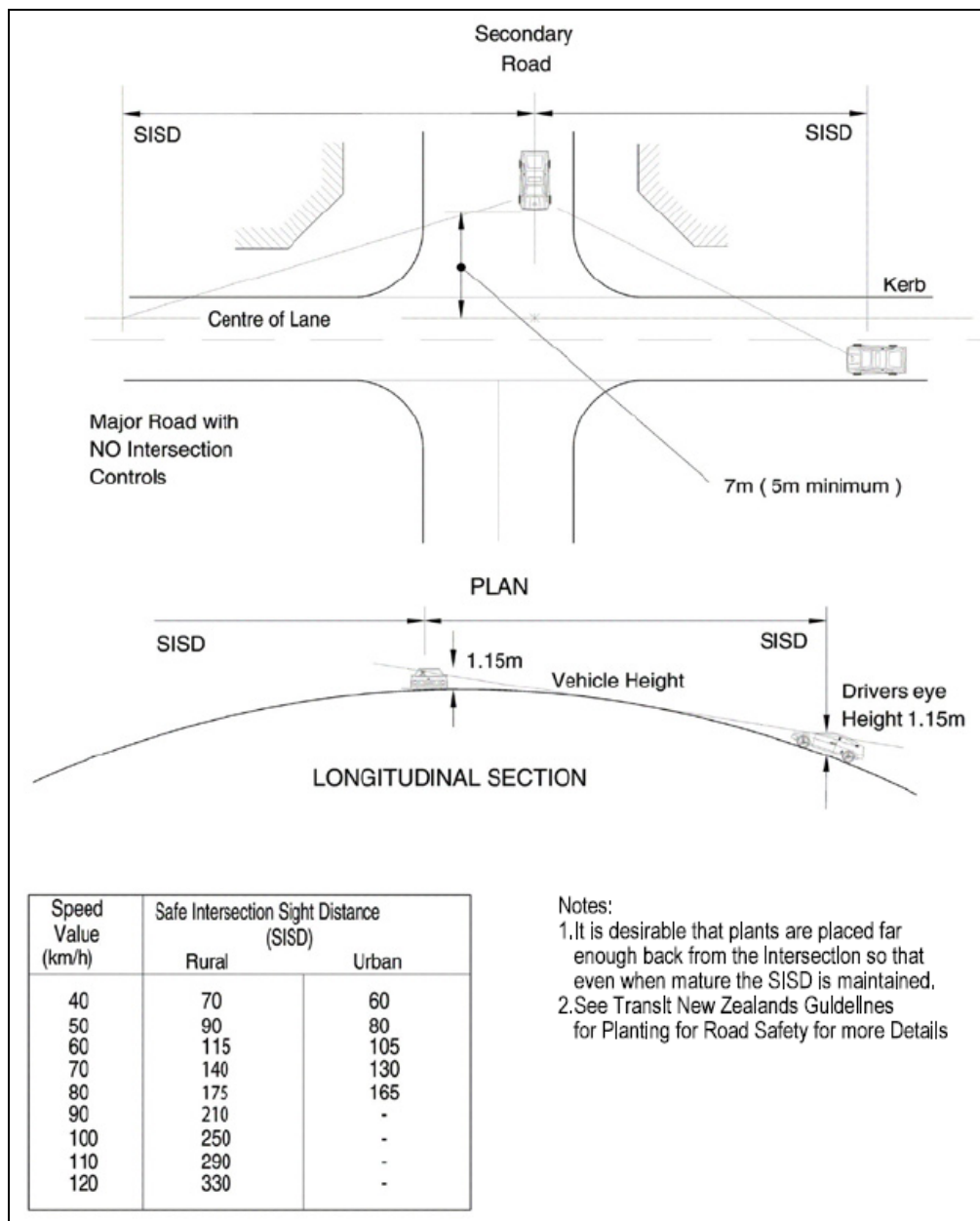


Figure 10.1 Intersection sight distances for clear sight lines (Fig 7.2 NZS 4404)

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10.4.3.6 Street Garden Design and Location

The Council will only approve new street gardens as entrance features to subdivisions and on internal roundabouts. Plant beds within streets, other than on a roundabout, will not be approved.

Roundabouts with an area less than 15.0m² may be planted with groundcover and have one specimen tree planted, which complies with clause 10.4.3.5 – *Protection of Sightlines*.

Shrubs and ground cover plants should be selected and spaced to achieve good form and acceptable coverage of the planted site within 2 to 3 years, but possibly with some slower growing species interspersed. Plant must be able to grow true to form without unduly compromising services, structures, safety, amenities, or causing unacceptable shading. Planting to achieve an established look in the short-term must not result in congestion that requires removal, pruning or thinning in the short to medium term. This does not apply where nursery crops are being used.

All shrubs and/or ground covers should be grouped together in mulched plant beds that are designed to minimise maintenance requirements. The edge definition may be a boundary fence, footpath, kerb, timber batten or informal trench margin. Informal trench margins are not appropriate in sandy soils.

Plants with drooping stems or leaves that might trip pedestrians should be positioned so that the leaves of the mature plants will not hang over any footpath.

Refer to Appendix A for planting and mulching specifications.

10.4.3.7 Street Tree Design and Location

The District Plan currently requires street trees to be placed within the road reserve at an average spacing of 1 tree per 20m of road length or the equivalent number of trees per section of road grouped as approved by the Council. For example, a stretch of road between two intersections of 100m length may have a group of five trees on one side near one end.

Note that the road may need to be realigned to accommodate a group of trees. There may also be additional resource consent requirements.

Street trees placed as above should be primarily centred between the two side boundaries of each residential lot.

Alternative design proposals are strongly encouraged, such as the provision of trees in a dedicated “non-services” berm on either side of a footpath; meandering footpaths; and trees placed in specialised tree planting pits within the carriageway but outside of the live lane. Variation of the boundary lines along streets can create spaces for trees to be planted in groups and can help accentuate road legibility, particularly at intersections. Strategically placed grouped plantings of trees may have more impact than individual trees placed outside each house. Consideration for reduced levels of sunlight will need to be taken into account if group planting is to take place.

Street trees shall be located where they do not affect street lighting, create dark spots or create shaded areas that could lead to icing of carriageway areas in winter or unreasonable shading on private property. Deciduous trees are preferred for street locations, however evergreen trees may be accepted by the Parks Advisor.

Street trees should be planted at a distance from the edge of the traffic lane that provides a clear zone as specified in CoP Part 8 clause 8.12.10 – *Clear zones*.

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Street trees need a minimum berm width of at least 1.5m. Where the berm is less than 2.0m wide, the relationship between the final tree trunk size and the clearances required in Standard Drawings 600-245A/B/C should be carefully considered. Wherever the distance from the kerb to the legal road boundary is less than 4.5m, species growing to less than 8m high over 50 years shall be used.

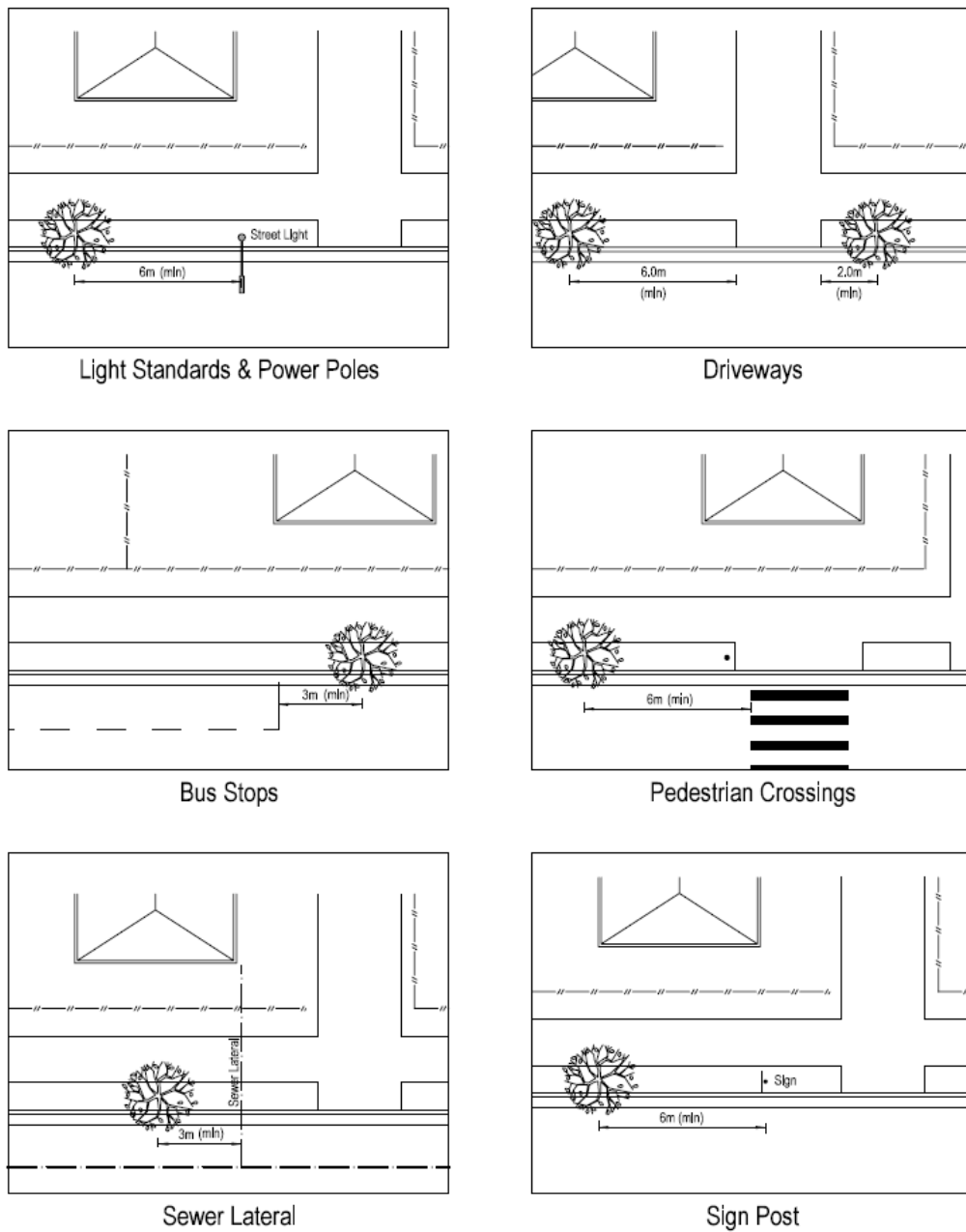


Figure 10.2 Street tree planting separation (Fig 7.1 NZS 4404)

Street trees shall be planted and any necessary root barriers installed in accordance with the *Street Tree Policy* and Appendix B.



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10.4.3.8 Grassed Berms

All lawn areas must have gradients that ensure that surface water drains to a suitable area or outlet. Wherever grass lawns are flat the subsurface must have sufficient free drainage to ensure that water does not pond or settle, to maintain grass growth and health and to ensure that use of the area is not compromised. Areas that may be inundated by water regularly or for long periods are not appropriate for lawns.

Mowers must be able to access all grass berms.

The area for seeding must have adequate topsoil and fertiliser, and be free of weeds.

Refer to CoP Part 8 clause 8.12.2 – *Grassed Berms* (Roading) for details regarding berms on legal road.

10.4.4 Reducing Waste

When designing the development, the ways in which waste can be reduced should be considered, for example;

- Plan to reduce waste during demolition e.g. minimise earthworks, reuse excavated material elsewhere.
- Design to reduce waste during construction e.g. prescribe waste reduction as a condition of contract.
- Select materials and products that reduce waste by selecting materials with minimum installation wastage rates.
- Use materials with a high recycled content e.g. recycled concrete subbase.

The Resource Efficiency in the Building and Related Industries (REBRI) website has guidelines on incorporating waste reduction in projects www.rebri.org.nz/.

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10.5 RESERVES

10.5.1 Reserve Planning

The Council gives priority to the equitable distribution of reserves throughout the District and within each area of urban expansion.

The developer is expected to take the community's needs and aspirations, environmental issues, existing features and vegetation on the development site into account when locating, planning and designing each reserve.

To assist with this, the developer is encouraged to engage a landscape architect and discuss reserve concepts with the Council's Parks & Recreation Manager. It is preferable for this process to begin at a pre-application meeting prior to applying for resource consent.

The requirements for each reserve area may be specific and will depend on what has generally been agreed between the Council and the developer.

Each reserve must be classified in accordance with its primary purpose e.g. recreation or local purpose (utility), and this must be recorded on the subdivision consent layout plan.

Where the terrain is suitable and space is available, the Council prefers the use of swales, soakage basins and wetlands within new developments to store, filter, and move stormwater through reserves. In most situations, the Council will agree to the vesting of these areas as local purpose (utility) reserves instead of recreation reserves.

Sufficient open space must be provided for general recreational purposes (if this is part of the reserve's primary purpose), so that land set aside for utility purposes does not limit the provision and use of open space for the community to enjoy.

A developer who wishes to contribute to the early development of recreation facilities and/or landscape features on a proposed reserve should enter into negotiations with the Council to reach agreement on:

- A landscape plan for the reserve, including planting, paving, fencing and irrigation;
- What elements of the landscape plan the developer will implement;
- The standard of finish to which completed works are carried out;
- The level of development to which completed works are carried out;
- The balance of reserve contribution owing to the Council in cash (if applicable).
- Future maintenance requirements

The reserve will be vested in the Council once the reserve is developed to the agreed level, the 224(c) certificate is signed off and the maintenance period has expired. The Council will, if necessary, carry out further landscape development as and when capital funding becomes available.

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10.5.2 Reserve Design

10.5.2.1 General Considerations

The following factors shall be considered when designing reserves:

- The suitability of the site for its intended purpose;
- The extent and nature of the topsoil and subsoil, including fertility, structure, moisture-holding capacity and drainage;
- Existing and proposed levels and their relationship to the levels of the surrounding land and to the provision of underground services;
- The presence of contaminants and/or imported materials and how any adverse effects can be accommodated and/or mitigated;
- The stability of the site and how any instability can be accommodated and/or mitigated;
- Opportunities for shared use of the land for both recreational and infrastructural purposes, such as drainage easements and stormwater retention in an extreme event (20 year return period or greater), **provided the main purpose of the reserve is not unduly compromised;**
- Access through the area for pedestrians and cyclists;
- The relationship of one reserve to another within reasonable proximity, to avoid duplication.

In general all recreation reserves shall be required to have:

- Appropriate shaping and gradients to allow for mowing and stormwater control;
- Adequate drainage to provide year-round use;
- Adequate top soil;
- An even ground surface free of lumps and hollows;
- No stones, gravel or rubble at the ground surface;
- No gorse or other noxious weeds;
- A grass surface developed, watered, mown and maintained as per clauses 10.4.3.8 and 10.5.2.6, and Appendix C;
- A layout that provides a safe environment for users;
- Features that require reasonable maintenance matched to the purpose of the reserve;
- Structures that have an indefinite design life but not less than 25 years

All built assets (e.g. signs, fences, artworks, lighting, structures and furniture) must be robust, low maintenance, and safe for use by the public. The design and model of park assets shall require the approval of the Parks Advisor. The life-cycle of built assets should be considered, to reduce the frequency of renewing or replacing such assets in the future.

The aesthetics of the colours and construction materials used for built assets should be considered and approved by the Parks Advisor.

The proximity of trees to the reserve boundary shall be restricted as shown in Table 10.1.

Table 10.1 Minimum tree setbacks to reserve boundary

Type of Tree	Minimum Distance from Reserve Boundary
Small tree or shrub	4m
Specimen tree that will exceed 8m height in 50 years	6m
Specimen tree that will exceed 20m height in 50 years	20m

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10.5.2.2 Design Requirements for Different Types of Reserves

Neighbourhood reserves should be designed and developed in accordance with this document and with the Councils' Neighbourhood Reserve Policy.

Good drainage and a firm turf surface are the prime requirements for providing good sports fields. Areas prone to ponding, high water tables and slow drainage are generally not suitable for use as sports fields. The slope of the turf surface must not be greater than 1 in 100.

Winter sports fields must have a minimum of 25m between the sidelines and any reserve boundary, and a minimum of 40m between the goal lines and any reserve boundary. Junior winter sports fields must have a minimum of 10m between the sidelines and any reserve boundary, and a minimum of 25m between the goal lines and any reserve boundary. Cricket blocks must have a minimum of 80m between any point on the block and any reserve boundary.

Wherever sports fields are to be provided, the developer shall supply a sewer connection as specified in the consent conditions and show this on the reserve development plan. This shall be installed over the legal boundary into the reserve and to the specified location.

10.5.2.3 Location of Utilities on Reserves

Any proposed primary utility lines and structures located on reserves must be shown accurately and to scale on the landscape drawings.

Aboveground structures, such as power kiosks and pump stations, must not be located on recreation reserves.

The Council must approve the location of any aboveground structure in an esplanade reserve or local purpose reserve.

Aboveground structures should be located on other types of reserve where they do not reduce the use of the reserve for its prime purpose or interfere with pedestrian and cycle paths.

Wherever reserves are to be provided, the developer shall supply a water connection as specified in the resource consent conditions and show this on the reserve development plan. This shall be installed over the legal boundary into the reserve and to the specified location.

10.5.2.4 Revegetation, Restoration and Connection of Habitats

Revegetation and restoration means planting native trees, shrubs and ground cover plants, based on ecological principles. It may involve infill planting in existing remnant plant associations or the re-establishment of lost associations. Such opportunities should be identified at the earliest stage in planning.

Developers should identify opportunities to use waterway corridors, recreation reserves and street trees to form "green corridors" linking existing and proposed habitats.

Revegetation and restoration planting may also be required along stream and riverbanks and in and around swales, soakage basins and wetlands. Plants used must be able to tolerate inundation and variations in the groundwater and surface water levels. Existing and future variations in micro-topography and microclimate should be taken into account.

Plants should generally be eco-sourced and endemic to the local area. Eco-sourcing means that the plants are grown from seeds which have been collected from old naturally established plants (e.g. forest remnants) that are as close as possible to the revegetation site. There are nurseries that specialise in eco-sourced plants.

Refer to Appendix A for planting guidelines.



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10.5.2.5 Existing Features

Any trees or shelter belts on the site that the Council does not want to retain shall be removed by the developer, including the removal of stumps and reparation of the surface.

Trees that are to remain on site shall be pruned by a qualified arborist to international best practice, and the wood disposed of by approved means. This shall include the removal of any deadwood or crossing branches, and any end weight reduction as required to prune the tree to a high arboricultural standard.

Any redundant or demolition materials shall be removed (including fences, stockyards, and farming use items) from the site.

See Appendix D for requirements for trees in reserves.

10.5.2.6 Grass Maintenance

All reserve grassed areas and road frontages must be able to be accessed by tractor-mounted or ride-on mowers typically used by reserve maintenance staff.

Concrete collars should be laid around lighting poles, bollards (where appropriate) and vehicle barrier posts to eliminate time-consuming mowing and weed control.

All grass slopes must be no steeper than a 1 in 4 gradient. On mounds, or where there is a significant change in gradient, lawns should be designed and constructed to avoid mowers scalping the ground surface.

Grass mixes appropriate to the lawn use should be used, e.g. playing field mix in playing field areas.

Refer to clause 10.4.3.8 for other details regarding grassed areas.

10.5.3 Park and Reserve Access

10.5.3.1 Vehicle Access and Parking

Access points are required for vehicles to undertake mowing, waterway management, rubbish collection, general maintenance and for emergency vehicles (such as ambulances) at sports parks. The location and serviceability of these vehicle access points shall be considered as part of the overall design.

Vehicle access points must be large enough to allow the entry of heavy machinery to clear dangerous vegetation and blocked waterways during storm events and fire fighting equipment wherever structures or planting present a potential hazard.

Access roadways and off-street parking may be required for reserves such as sports parks, district parks, and at the starting points of tracks. The developer shall ensure adequate space for parking areas is allowed for in the design.

Refer to the WDC *District Plan* for parking requirements, design and layout.

Removable barriers shall be located and designed to prevent unauthorised vehicles from damaging the reserve. The design of barriers must be consistent with other design elements in the reserve.

The design and construction of roadways, parking areas, vehicle crossings and cut downs must comply with CoP Part 8: Roading.

Part 10: Reserves, Streetscapes & Open Spaces

10.5.3.2 Pedestrian & Cycle Paths

Pedestrian and cycle paths are an integral part of the reserve design, as they connect access points and activity areas within and across the reserve. They must be accessible, convenient and safe, in accordance with the *CPTED* guidelines.

Formed pedestrian-only paths should be between 1.5m and 2.0m wide, and paths shared by pedestrians and cyclists should be at least 2.5m wide. Path width should be increased to 3.0m wherever a lot of people are expected to use the path.

Pathways and hard surfaces shall be laid at least 1.0m away from the trunks of reserve trees, with a clear space of 2.5m between the path and the lower branches of the tree, as shown in Figure 10.3.

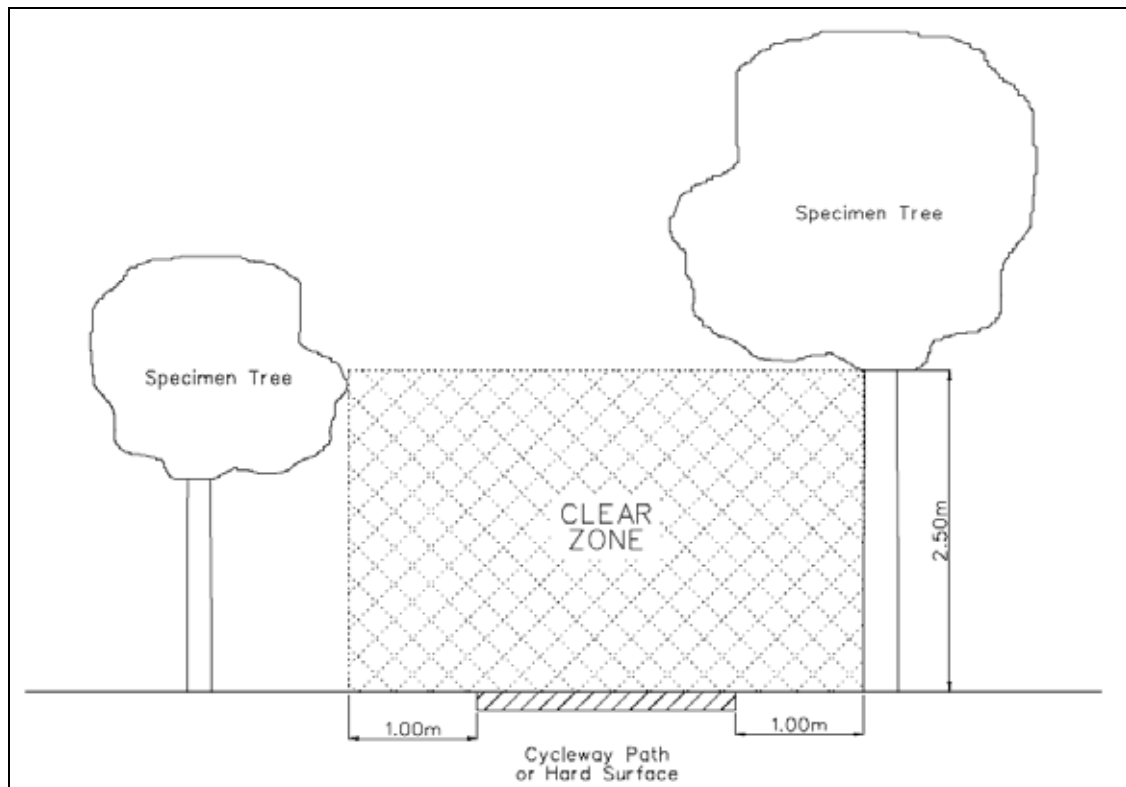


Figure 10.3 Tree offset to hard surfaces in reserves

Walking, mountain bike and multi-use tracks are also integral to the development of some reserves and the enhancement of existing networks, if new tracks can be linked to them. Design and construct walkways or other tracks to comply with NZS/AS 1657:1992 and SNZ HB 8630:2004.

In some reserves, boardwalks may be required as part of the path or walkway/track network to protect sensitive areas such as wetlands and the root zones of protected trees.

CoP Part 8 clause 8.6 –*Road Design* has further information on designing off-road linkages and CoP Part 11 has information on lighting pathways.

The design and construction of pedestrian and cycle paths must comply with CoP Part 8: *Roading*.

Part 10: Reserves, Streetscapes & Open Spaces

10.5.4 Reserve Facilities, Structures and Furniture

10.5.4.1 Playgrounds and Play Structures

The Council's objective is to provide and develop interesting playgrounds that meet the needs of the local community and, in the case of district facilities, the needs and aspirations of the greater community. Not all sites will be suitable for playgrounds.

Approval shall be obtained from the Council for any play equipment within a reserve, including the types and style of equipment. This prevents oversupply or duplication of play facilities in other nearby reserves.

It is important that any proposal integrates the formal play equipment into the entire landscape design for the reserve. The use of natural features in conjunction with formal play structures is desirable.

All play facilities must comply with:

- NZS 5828: 2004 Playground equipment and surfacing, and other applicable standards
- Reserves Activity Management Plan
- The Building Act

10.5.4.2 Recreational Hard Surfaces, Ball Courts & Skate-Boarding Facilities

Recreational hard surfaces are designed to be suitable for many different uses such as skateboarding, rollerblading or handball games.

Approval must be obtained from the Council for any recreational hard surfaces, ball courts and skate-boarding facilities within a reserve, including the types and style of equipment. This prevents oversupply or duplication of these facilities in other reserves.

Skateboarding facilities are designed and built by the Council. Items such as grind rails or small walls may be suitable within a new development but these should be discussed with the Council before incorporating them into the design.

10.5.4.3 Structures

Structures may be installed at the discretion of the Council. These include pergolas, bridges, jetties, boardwalks, barbeques, internal walls, fences and screens.

The design of structures must fulfil both functional and aesthetic requirements. They must be durable and not require a high level of maintenance.

10.5.4.4 Artworks and Sculptures

The Council will consider any requests to install sculptures or other artworks on their merits. The Council will only accept artworks that are durable and do not require a high degree of maintenance.

Any artwork must be acceptable to the majority of the public, appropriate to the character of its setting and to other structural features. Integrated or functional artworks are preferred, such as bridges, light standards and seats.

10.5.4.5 Signs

Reserve signage will be approved and generally installed by the Council following vesting of the reserve.



Part 10: Reserves, Streetscapes & Open Spaces

10.5.4.6 Seats and Picnic Tables

The design of proposed seating and tables must be consistent with the character of the reserve and locality.

The proposed seating and tables must be robust, low-maintenance and safe for use by the public. They can be constructed from materials such as timber, concrete, steel or stone, but the material is not restricted to these examples. Their design must be approved by the Council.

10.5.4.7 Drinking Fountains & Litter Bins

These items must be durable, vandal-proof and consistent with other proposed site furniture and the overall character of the reserve. The Council must approve the design and installation of these items.

10.5.4.8 Boundary Fencing

Fencing covenants are required as a condition of consent for new reserves, including drainage reserves. The developer should co-ordinate fence designs around any reserve or waterway before the subdivision is completed and sections are sold, in order to establish a consistent character.

The Council encourages the use of open frontages onto reserves, where acceptable to the residents. This concept ranges from no fence, so that private gardens merge with the reserve landscaping, to low hedges, climbers on trellis and other "green living" barriers.

Boundary fences over 1.2m high are encouraged to be at least 80% open, in order to enable clear visibility from neighbouring properties.

10.5.4.9 Lighting

The Council prefers to light only those paths and cycleways that are designated safe routes, as identified through the *CPTED* process. Although lighting can be beneficial, areas that are lit are not necessarily safe and can give an undesirable message that it is safe to use an area after dark.

The *CPTED* guidelines explain how to use lighting appropriately. Refer to CoP Part 8 clause 8.6 – *Road Design* and Part 11 clause 11.4.5 – *Category P (Cycleways and Paths in Reserves) Lighting* for more detail.

10.5.4.10 Irrigation

The Council's long-term goal is efficient and sustainable use of the District's water supply. The need for irrigation should be minimised by matching plant species to local site conditions.

Irrigation in streets or reserves may be approved at the expense of the developer when it is necessary to overcome difficulties with local site conditions that could prevent the reasonable growth, health and survival of lawns and amenity plantings. The Council should be contacted to discuss the type and control of the irrigation system.

After the establishment period is ended, the Council may negotiate to take over the system at no cost, otherwise the water supply may be required to be disconnected and the irrigation pipes removed.

Revegetated and restored sites are not to be watered unless extreme drought conditions prevail during establishment.

Irrigation systems should be installed in accordance with the WDC *Subdivision Irrigation & Watering Systems Policy*.



Part 10: Reserves, Streetscapes & Open Spaces

10.6 ESTABLISHMENT AND MAINTENANCE

10.6.1 Presentation at Practical Completion of Reserves and Streetscapes

At the time of Practical Completion, all reserves and street gardens must be presented in a tidy condition in accordance with the agreement negotiated with the Council. Refer to clause 10.5.1 – *Reserve Planning*.

Landscaped areas that have been developed must, as a minimum, meet the following general requirements:

- Be free of weed species, tree stumps (above and below ground) and other specified vegetation;
- Be free of surplus, unwanted construction materials, debris, waste (liquid or solid) and rubbish;
- Present an established cover of grass complying with Appendix C (lawn areas only);
- Meet the minimum standards and specifications set out in the appendices for all trees and planted areas;
- Be completed by the developer to agreed plans and standards, within the agreed timeframes and to the satisfaction of the Council.

The Council will inspect all new assets prior to the release of the 224(c) certificate to ensure that the minimum standards and specifications set out in the appendices are met.

10.6.2 Maintenance Requirements

The developer is responsible (and will be bonded) for the establishment, routine maintenance and any replacement of the planting, lawns and associated works during the maintenance period.

The length of the maintenance period is 12 months for shrubs and gardens, following the date of issue of the Council's Completion Certificate. The maintenance period for street and reserve trees shall be 24 months. The maintenance period is to demonstrate that the plants are well established, healthy and fit for purpose.

The developer shall rectify any damage to turf or surrounding areas including scalping, wheel rutting and damage caused by faulty machinery and third party contractors.

All dead, dying, diseased or damaged trees and plants (damage includes vandalism, theft and inappropriate pruning) or those trees and plants that do not conform to the Standard Specifications (included in the appendices) shall be replaced at the developer's cost, as required to maintain the original numbers, grades and species as per the approved plans. Replacement shall take place as soon as favourable planting conditions exist (i.e. winter months). Replacement trees shall be subject to a further 24 month maintenance period.

Paths, roads and all other accessways shall be kept clear of excess growth. This includes sight lines as set out in Figure 10.1 and minimum clear heights over paths and cycleways of 2.5m.

A qualified arborist must undertake formative pruning of trees at least once during the maintenance period. All pruning must comply with recognised international arboricultural best practice. At no time shall crown-lifting (removal of lower branches) exceed more than 1/3 of the total height of the tree. Trees that have been topped or are not up to a high arboricultural standard (as determined by the Parks Advisor) will not be accepted.

A qualified horticulturalist must undertake any required pruning of plants (e.g. shrubs and groundcovers) once planted. All pruning must comply with recognised horticultural practice.



Part 10: Reserves, Streetscapes & Open Spaces

The Standard Specifications included in the appendices outline the minimum establishment and maintenance standards required, and the recommended procedures to be followed, to ensure that all landscape works are at an acceptable standard prior to final inspection and release of the bond. CoP Part 2 clause 2.12 – *Bonds* elaborates on these requirements.

Contract auditing will be in accordance with the specific contract auditing specifications included in the appropriate Specification (see the appendices).



Part 10: Reserves, Streetscapes & Open Spaces

10.7 ASSOCIATED DOCUMENTS

- Appendix A Standard Specification – Amenity Garden Planting & Revegetation Areas (QP-C844)
 - Appendix B Standard Specification – Tree Planting (QP-C845)
 - Appendix C Standard Specification – Grassed Areas (QP-C846)
 - Appendix D Standard Specification – Protection of Existing Features (QP-C847)
 - Appendix E Standard Drawings – 600-500, 600-501A/B, 600-245A/B/C
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Amenity Garden Planting & Revegetation Areas

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Amenity Garden Planting & Revegetation Areas

1.0 NEW BED PREPARATION

- 1.1 The Contractor will spray with a suitable ground marker the outline of the garden beds to be cultivated in accordance with the landscape plan, taking into account any site variations. Any significant variations from the plan considered by the Contractor to be necessary to achieve the desired goal should be discussed with the Parks Advisor prior to implementation.
- 1.2 The Contractor will obtain sign off from the Parks Advisor for the shape of the garden beds prior to spraying the grass off.
- 1.3 A suitably qualified approved operator shall undertake spraying out of planting sites at least two weeks prior to commencement of planting.
- 1.4 All beds shall be rotary hoed to cultivate the existing soil and break up any large soil clods or clay pan areas.
- 1.5 Sufficient good quality compost is to be added to the beds to make the soil more friable, increase humus levels and promote biological activity. Compost will consist of decomposed organic matter, be pH neutral and shall not contain organic matter with a particle size greater than 10mm.
- 1.6 Prepared beds shall be to a cultivated depth of 200mm.

2.0 EXISTING BED PREPARATION

- 2.1 The Parks Advisor may require existing beds to be rotary hoed or dug by hand to cultivate the existing soil and break up any large soil clods.
- 2.2 Compost may be required to be added to existing beds as per 1.5.

3.0 PLANT SELECTION

- 3.1 All plants shall be good quality, nursery prepared stock of normal habit and true to type.
- 3.2 Plants should be hardened off to cope with the climatic conditions of the site and be free of pests and disease.
- 3.3 Plant root systems shall show no evidence of "spiralling" or being root bound.
- 3.4 The Parks Advisor reserves the right to reject any plants based on their quality, size or habit.
- 3.5 The plants to be used will be no smaller than PB3 grade for grasses, PB5 grade for flaxes and PB8 for shrubs. Wetland plants may be supplied in root trainers but must be well rooted.

4.0 PLANT SUPPLY AND CARE

- 4.1 The Contractor shall inspect the plants upon delivery and/or at collection time and inform the Parks Advisor within a day of this of any unacceptable defects in the plants supplied.
 - 4.2 The Contractor will be expected to maintain the plants in good condition in the yard and not damage the plants when transporting them to the planting site or at any other time during the planting operation. Any plants damaged by the Contractor will be replaced at the Contractor's expense.
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Amenity Garden Planting & Revegetation Areas

5.0 SETTING OUT

- 5.1 All plants shall be set out in their locations and spaced in accordance with the supplied planting plan and any agreements reached between the Parks Advisor and Contractor in Section 1.1 of this document.
- 5.2 The plant species and estimated numbers required will be outlined on a planting plan provided by the Parks Advisor. The Parks Advisor shall confirm plant numbers in consultation with the Contractor after the garden beds have been marked out.
- 5.3 As a general principle, gardens shall be planted at a density and with the size of plant that achieves 100% coverage of soil within two years.
- 5.4 In revegetation areas, the plants shall be grouped informally or spaced individually to produce a natural appearance. Plant spacings must be between 1.5m and 0.75m centres, dependant on the species. In some circumstances (e.g. steep slopes or unstable ground) spacings should be reduced to less than 0.75m centres to ensure quick coverage, promote bank stability and lessen maintenance costs. The selection and placement of plants must reflect the natural succession process.
- 5.5 Rows of plants shall be a uniform distance apart with plants positioned alternately to those in adjacent rows.
- 5.6 In areas of block planting, plants shall be spaced so that when established they will completely and evenly fill the areas indicated, unless otherwise specified. The extent of the area to be filled by each species shall first be defined with plants spaced around the perimeter. The remaining plants shall then be used to fill the centre of the area in an informal manner avoiding straight lines and regular geometric patterns, unless otherwise specified.
- 5.7 The locations of the plants may be required to be verified with the Parks Advisor onsite, before any planting works commence. The position of some plants and/or groups of plants may be changed onsite as the planting proceeds. The Contractor shall cooperate with this requirement.

6.0 PLANTING TECHNIQUE

- 6.1 Planting is generally to take place between 1 April and 30 September. Planting may occur outside these times with the approval of the Parks Advisor. Wetland areas may be planted outside the recognised planting season.
 - 6.2 Planter bags shall be removed from the root ball and the bags disposed of. Rootballs shall be saturated prior to planting and roots loosened if appropriate.
 - 6.3 Roots shall not be exposed to the sun or wind at any time. As soon as the plant is removed from the bag, it is to be planted immediately.
 - 6.4 Planting holes shall be 2x rootball diameter in width and 1-1.5 x rootball depth. The bottom and sides of the planting holes are to be loosened to encourage root movement into the surrounding soil. Soil removed from the planting hole shall be amended with 30% compost before planting. Fertiliser shall be applied as per Section 8.0.
 - 6.5 Each plant shall be placed in its planting hole and the surrounding soil shall be pushed in around the root ball to firm up the plant.
 - 6.6 The stems of the plants shall be upright and the nursery earth marks on them shall be at the same level as the existing ground level once planted.
-



Amenity Garden Planting & Revegetation Areas

6.7 Soil surrounding the plant shall be compacted to hold the plant firmly in place and to ensure there are no air pockets below the surface.

6.8 The finished surface shall be compact, firm and level. Any surplus planting material from the holes shall either be removed or spread evenly over the surrounding area (leaving no soil on top of the mulch layer) and taking care not to cover the surface of the newly planted rootballs with additional fill.

7.0 WATERING AND IRRIGATION

7.1 Containerised plants shall be thoroughly moistened prior to planting. If plants are dry, they shall be submerged in water for five minutes until all air bubbles stop rising and then drained before planting.

7.2 All plants shall be watered within two hours of planting, ensuring that the moisture has penetrated to the full depth of the rootball. Watering is important to settle the soil around the roots and eliminate any air pockets. If a water supply cannot be provided at the site, the Contractor will need to provide his own water supply.

7.3 The use of water crystals for amenity plantings may be undertaken as per the manufacturer's instructions and guidelines upon instruction by the Parks Advisor.

8.0 FERTILISERS

8.1 Each plant hole shall have either 'Osmocote Exact – standard' fertilizer or Nitrophoska Permanent or a similar 12 month slow release fertiliser added to the bottom of the hole prior to planting.

8.2 Fertiliser shall be applied in quantities as recommended by the manufacturer.

8.3 No fertiliser shall be applied to wetland plants.

9.0 MULCH

9.1 The planted garden beds shall be mulched with a good quality bark (such as "Budget Bark" from Taggarts, Rangiora), at an approximate settled depth of 75mm.

9.2 All bark mulch shall be free from all other matter, organic or inorganic. All mulch shall also be free from phytotoxins and pathogens, and free of weed species including chip from willow, poplar or any other adventive weed species.

9.3 Mulch shall not touch the stems of the plants and a minimum circle of 50mm shall be cleared from around the stem to avoid stem rot.

9.4 Mulch shall be kept off any other adjoining surface, such as lawn or paved areas.

9.5 At no time shall any topsoil be mixed into the mulch.

9.6 Revegetation and restoration sites are not usually mulched. However, if weed suppression or moisture retention are major issues, mulch or individual weed mats may be applied. Mulch must not be placed where it is likely to be washed into the stormwater system during heavy rain.



Amenity Garden Planting & Revegetation Areas

10.0 EDGING

- 10.1 All planted areas shall have a maintained edge. An edge is typically comprised of a minimum vertical cut of 100mm deep on the bed perimeter, with soil pulled back into the bed from the cut to provide a smooth, rounded and defined edge and to avoid any soil spread to lawn areas.
- 10.2 All curved edges shall be smooth and regular. Where the edge is straight, a string line must be used in order to ensure a true straight line.
- 10.3 Bed edges should be flush with the surrounding surfaces such as paths and lawns.

11.0 SITE CLEAN UP AND RECTIFICATION

- 11.1 The planting site will be left in a clean and tidy condition at the completion of the work, with any loose stones and soil being removed from grass verges.
- 11.2 The Contractor shall ascertain if ground conditions are suitable before commencing the work. Any damage to the turf or surrounding areas resulting from work carried out in unsuitable conditions shall be rectified by the Contractor at the Contractor's own expense.

12.0 HEALTH AND SAFETY

- 12.1 The Contractor shall ensure that all requirements of the *Health & Safety in Employment Act* 1992 are complied with.
- 12.2 If working on the road or road verge, the Contractor shall have in place an approved Traffic Management Plan.
- 12.3 The Contractor shall be solely responsible for public safety within and around the site and shall provide all necessary warning devices, barricades and personnel to ensure adequate safety, protection and warning to any person or vehicle or any property within and around the site.
- 12.4 The Parks Advisor shall be entitled to inspect the site and all plant and equipment at any time to ensure the Contractor is complying with its obligations under section 12.0.

13.0 MAINTENANCE SPECIFICATIONS

- 13.1 The Contractor may be required to maintain the amenity plantings for a minimum period of 12 months after completion of works to ensure the establishment of the plantings.
 - 13.2 All plants shall be watered to maintain healthy vigorous growth throughout the growing season.
 - 13.3 Plants shall be kept free of pests and diseases and garden beds free of organic and inorganic litter in order to achieve their optimum performance and visual amenity.
 - 13.4 Plantings shall be returned to a 100% weed free condition before weed growth exceeds 10% coverage of each area and 10cm in height. All weeds over 10cm in height shall be maintained by hand pulling.
 - 13.5 Additional fertiliser is to be applied to each plant in September of each year. This fertiliser shall be in the form of a balanced 12 month slow release fertiliser.
 - 13.6 All edging shall 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 true straight line is maintained. All curves shall be smooth and regular.
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Amenity Garden Planting & Revegetation Areas

- 13.7 Bark mulch is to be kept at the settled thickness specified in Section 9.1 and shall be kept from hard surfaces.
- 13.8 Where plants overlap hard areas, growth shall be maintained so as not to restrict use of that area. Where plants overlap grass border edges, growth shall be maintained to allow free passage for mowing machines without damage to plants.
- 13.9 Plants damaged, vandalised, stolen or dead shall be replaced as required to maintain numbers. Replacement planting shall take place as soon as favourable growing and planting conditions exist, which in un-irrigated beds is usually during late autumn and early winter. Plants and planting standards shall be of the same quality as specified in Section 3.0 Plant Selection and 6.0 Planting Technique.

14.0 CONTRACT AUDITING

- 14.1 The Council will audit compliance with the contract by both site inspections and checking of associated documentation to the extent necessary to ensure the work is completed in accordance with the approved plans and specifications and to the Council's standards.
- 14.2 The Contractor shall notify the Parks Advisor at least one working day prior to commencing various stages of the works. This is to enable audit inspections required by the contract to be performed.
- 14.3 The Parks Advisor shall send the contractor a copy of an audit carried out, with any areas of concern identified.
- 14.4 The minimum level of inspection shall be as follows:
- After the garden beds have been marked out and prior to the grass/area being sprayed.
 - At the commencement of planting to check plant stock, plant identity, health and size, plant layout, preparation of garden beds, and planting methods used.
 - On completion of the required works.
 - Once during the maintenance period to ensure maintenance conditions are being adhered to.
 - On completion of maintenance period.
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STANDARD SPECIFICATION

Tree Planting

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STANDARD SPECIFICATION

Tree Planting

1.0 TREE SELECTION

- 1.1 Each tree shall be of nursery stock and be of good form that is true to species. Each tree will have a well developed and well shaped trunk or stem and branch placement. Plants shall be healthy, vigorous and free of disease, injury, parasites or insects and shall not be pot-bound. All root masses, except open ground trees shall retain their shape and hold together when removed from their containers.
- 1.2 Trees shall be a minimum of 2.5 metres above the ground level, have a trunk calliper measurement no less than 30mm at ground level, and have a container size of no less than 35 litres or pb95 at the time of planting.
- 1.3 Bare root stock will be accepted only in exceptional circumstances, at the discretion of the Parks Advisor.

2.0 TREE SUPPLY AND CARE

- 2.1 The Contractor shall inspect the trees upon delivery and/or at collection time and inform the Parks Advisor within a day of this of any unacceptable defects in the trees supplied.
- 2.2 Trees shall have a sturdy, clean, straight, stem. Trees shall be a minimum of 1.8 metres in height with a stem diameter that supports the tree without the need for supporting hardware attached to the main stem for support. Trees will be specified using the measurement ranges stated in Table 1. The stem diameter measurement is taken at 150 mm above the ground for trees up to 100 mm calliper size and 300mm above the ground for larger trees.

Table 1 Minimum Stem Diameter

Average Height Range (m)	Minimum Stem Diameter (mm)
1.5-1.8	15
1.8-2.5	20
2.5-3.0	30
3.0-3.6	40
3.6-4.2	60
4.2-4.8	80
4.8-5.5	100
5.5-	130

- 2.3 The Contractor will be expected to pick up and deliver trees to site in a good condition. The trees are to be protected during transportation, loading, unloading and planting. Any trees damaged by the Contractor will be replaced at the Contractor's expense.
 - 2.4 Any bare rooted trees are to have the roots protected at all times to prevent drying out. They must be in a moisture retentive material such as damp straw or Hessian.
 - 2.5 It is the Contractor's responsibility to ensure that trees are watered before they are transported from the nursery. Once trees leave the nursery they are the responsibility of the contractor.
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STANDARD SPECIFICATION

Tree Planting

3.0 SETTING OUT

- 3.1 All trees shall be set out with their locations and spacing in accordance with the supplied landscape or planting plan and/or any agreements reached between the Parks Advisor and Contractor.
- 3.2 Specimen trees and large shrubs in reserves should be planted no closer than the offsets specified in CoP Part 10, Table 10.1 *Minimum tree offsets to reserve boundary*. These offsets are from boundaries with residential properties or from hard surfaces like kerbs, footpaths and cycleways. Specimen trees in lawns shall be planted as far apart as necessary to allow for full growth within a 50-year life span
- 3.3 Specimen trees and large shrubs in the road reserve should be planted in compliance with the offsets specified in Standard Drawings 600-245A/B/C. These offsets are from kerbs, service trenches and hard surfaces like footpaths and cycleways.
- 3.4 The locations of the trees shall be verified by the Parks Advisor by either an approved landscape plan or on-site meeting before any planting works commence.
- 3.5 The Parks Advisor may require that the position of various trees and/or groups of trees be changed onsite as the planting proceeds. The Contractor shall cooperate with this.

4.0 PLANTING TECHNIQUE

- 4.1 The following specifications and the specifications required by Standard Drawings 600-501A or 600-501B are to be adhered to when carrying out tree planting:

Weed free circle/mulching	400mm radius tree circle covered with 7.5cm deep bark mulch.
Tree pit	Pits shall be at least 150mm wider than the root spread each side of the tree and at least 150mm deeper. The bottom of the hole shall be forked over to an additional depth of 150mm to facilitate root penetration, air movement and free drainage. The finished surface shall be slightly convex towards the middle of the pit. The backfilled soil shall be a 50/50 mix of topsoil and compost mix.
Ties	Tree tie shall be looped around the stakes and then bound over itself repeatedly to form a tight support to the tree with giving enough room for slight movement. The tie should be of a black webbing type.
Staking posts (size)	50 x 50 mm timber stakes. If there are multiple trees to be planted, the stakes shall all be uniform in appearance to each other.
Irrigation	A 1900mm long section of perforated Novaflow pipe shall be inserted into the tree pit. The Novaflow is to run down one side of the tree pit, under the intended rootball and up the opposite side of the tree pit to be level with the ground surface. The other end is to extend above the intended mulch layer by 20mm. Both ends of the pipe should be capped. Underground irrigation systems can be used instead of manually watering.
Fertiliser	Each tree shall receive a balanced slow release fertiliser to the amended soil mix.

- 4.2 Planter bags shall be removed from the root ball and the bags removed from the site. Rootballs shall be saturated prior to planting and roots loosened if appropriate.



STANDARD SPECIFICATION

Tree Planting

- 4.3 Roots shall not be exposed to the sun or wind at any time. As soon as the tree is removed from the bag, it is to be planted immediately. If plants are slightly potbound the roots shall be loosened, trimmed and spread out to ensure healthy growth.
- 4.4 The bottom and sides of the planting holes are to be loosened to encourage root movement into the surrounding soil. Where an auger or similar method is used to excavate the tree pit, the sides of the excavation shall be scarified before planting.
- 4.5 Soil removed from the planting hole shall be amended with compost and fertiliser as per the table above before planting.
- 4.6 The tree is to be planted in the centre of the pit with the amended soil/compost mix backfilled and compacted by heeling in firmly so as to ensure that there are no air pockets below the surface.
- 4.7 Vertical staking (600-501B) will be adopted as the preferred method of above ground staking. Diagonal staking (600-501A) may be used in high vandalism areas but only by the approval of the Park Advisor. Tree stakes are to be firm in the ground and if multiple planting is to be carried out the stakes are all to look uniform. Tree ties are to be visually level in appearance.
- 4.8 The nursery earth marks on each tree's trunk shall be at the same level as the existing ground level once planted.
- 4.9 The finished surface shall be compact, firm and level. Any surplus planting material from the holes shall be removed from the site and the surrounding grass raked free of any residue.
- 4.10 All trees shall be well watered within two hours of planting to assist in the bedding in of the tree. Watering shall be of such that moisture has penetrated to the full rootball. If watering cannot be provided at the site, the Contractor will need to provide his own water supply.
- 4.11 Council reserves the right to ask the Contractor to install root barriers (generally in a street environment) when required. Root barriers may be installed at the time of planting on the kerb side and the footpath side of each tree or where there are other infrastructural services (including private or public buildings or other structures) likely to be affected by future growth. Each barrier shall be a minimum of 2000mm length x 600mm depth x 0.5mm thickness. The top of the barrier is to be level with the surrounding surfaces i.e. not protruding above the surface. The proposed root barrier is to have the approval of the Parks Advisor prior to installation.

5.0 MULCH

- 5.1 The tree circles shall be mulched with a good quality bark such as "Budget Bark" from Taggarts, Rangiora, at an approximate settled depth of 75mm.
 - 5.2 All bark mulch shall be free from all other matter, organic or inorganic. All mulch shall also be free from phytotoxins and pathogens, and free of weed species including chip from willow, poplar or any other adventive weed species.
 - 5.3 A minimum circle of 50mm around the trunk of the tree shall be kept clear of mulch to avoid problems with trunk burn.
 - 5.4 Mulch shall be placed in such a way that it does not run onto any other surfaces, such as grassed, paved or sealed areas.
 - 5.5 At no time shall any topsoil be mixed into the mulch.
-



Tree Planting

6.0 EDGING

- 6.1 All tree circles shall have a maintained edge. An edge is typically comprised of a minimum vertical cut of 100mm deep on the lawn perimeter, with soils pulled back into the planting hole from the cut to provide a smooth, rounded and defined edge and to avoid any soil spread to lawn areas.

7.0 SITE CLEAN UP AND RECTIFICATION

- 7.1 The planting site will be left in a clean and tidy condition at the completion of the work, with any loose stones and soil being removed from grass verges.
- 7.2 The Contractor shall ascertain if ground conditions are suitable before commencing the work. Any damage to the turf or surrounding areas resulting from work carried out in unsuitable conditions shall be rectified by the Contractor at the Contractor's own expense.

8.0 HEALTH AND SAFETY

- 8.1 The Contractor shall ensure that all requirements of the Health and Safety in Employment Act 1992 are complied with.
- 8.2 If working on the road or road verge, the Contractor shall have in place an approved Traffic Management Plan for the work.
- 8.3 The Contractor shall be solely responsible for public safety within and around the site and shall provide all necessary warning devices, barricades and personnel to ensure adequate safety, protection and warning to any person or vehicle or any property within and around the site.
- 8.4 The Parks Advisor shall be entitled to inspect the site and all plant and equipment at any time to ensure the Contractor is complying with its obligations under section 8.0.

9.0 MAINTENANCE SPECIFICATIONS

- 9.1 The Contractor shall maintain the trees for a period of 24 months to ensure their successful establishment. Council will accept the trees when the trees have passed their final audit and have been jointly signed off by the Parks Advisor and Subdivisions Engineer, after the 24 month maintenance period.
- 9.2 The Contractor shall maintain the level of mulch around the trees during the 24 month maintenance period to the depth specified above. Mulch shall be kept off grass and hard surfaces.
- 9.3 During the maintenance period, trees shall be watered on a weekly cycle during the summer period (Oct-Mar) and/or as directed by the Council. Each tree should receive approximately 40 litres of water per application in order to saturate the rootball. During period of drought the trees should be watered twice a week at the same 40 litre application. Water shall be applied at low pressure from a height of less than 500mm radially to 600mm from the base of the tree. Care shall be taken to avoid the displacement of soil or mulch whilst undertaking this watering. Where Novaflow pipe has been installed, water should be feed directly into the pipe instead of around the base of the tree. If an underground irrigation system is installed, the Contractor shall monitor the amount of water applied to all trees regularly to establish that water is being applied at adequate amounts for the trees and that all trees are being supplied water.
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Tree Planting

- 9.4 Fertiliser is to be applied to each tree in the Spring of the year following planting. This fertiliser shall be in the form of a balanced slow release fertiliser such as Nitrophoska Permanent, which has a 12 month release period.
- 9.5 Trees should be checked bimonthly. This must include checking ties and stakes to ensure the trees are secure and that they maintain a proper form.
- 9.6 Trees damaged, in poor form or dead during the maintenance period shall be replaced during the next planting season, at the Contractor's expense, as required to maintain the original numbers, grades and species, as per the approved plans. Any replaced trees will require a 24 month maintenance period commencing from when the tree is planted.
- 9.7 Trees shall be kept free of pests and diseases, and tree mulch circles free of weeds and inorganic litter in order to achieve their optimum performance and visual amenity.
- 9.8 All edging shall be maintained in a sharp, neat and vertical condition with all cuttings removed off site on the day of activity. All curves shall be smooth and regular.

10.0 CONTRACT AUDITING

- 10.1 The Council will audit compliance with the contract by both site inspections and checking of associated documentation to the extent necessary to ensure the work is completed in accordance with the approved plans and specifications and to the Council's standards.
- 10.2 The Contractor shall notify the Parks Advisor at least one working day prior to commencing various stages of the works. This is to enable audit inspections required by the contract to be performed.
- 10.3 The Parks Advisor shall send the Contractor a copy of an audit carried out, with any areas of concern identified.
- 10.4 Acceptance criteria shall be as follows.
- a) Trees shall be thriving:
 - With new extension growth present
 - With less than 20% of the original foliage having dropped.
 - With less than 20% dieback of the new foliage, distributed across the entire plant.
 - With less than 5% localised dieback of individual branches.
 - b) Each tree shall be of good form that is true to species. Each tree will have a well developed and well shaped trunk or stem and branch structure. Plants shall be healthy, vigorous and free of disease, injury, parasites or insects.
-



STANDARD SPECIFICATION

Grassed Areas

CONTENTS

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2.0	Turf Supply and Laying.....	2
3.0	Hydroseeding.....	3
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STANDARD SPECIFICATION

Grassed Areas

1.0 FERTILISING AND SEEDING

- 1.1 Grassed areas shall have adequate top soil with a minimum compacted and settled depth of 150mm. Any compacted subsoil shall be ripped, preferably during the summer period, to a depth of 30cm, with rip lines no more than 1 metre apart, then rolled before any laying of topsoil is undertaken.
- 1.2 Top soil shall be friable, contain organic matter suitable to support plant life and have less than 2% by weight of unwanted materials such as stones (no larger than 12mm in diameter in the top 50mm) or other inorganic material.
- 1.3 All grass areas are to be levelled prior to fertilising and seeding.
- 1.4 Grass areas are to be sown with a good quality, slow growing turf rye grass such as Arena SR4500 unless otherwise specified by the Parks Advisor.
- 1.5 All rye grass seed used shall have an endophyte level of greater than or equal to 80%, a purity of more than or equal to 99% and a germination final count of more than or equal to 90%.
- 1.6 The area for seeding shall be free of all weed species.
- 1.7 The seed shall be applied and cultivated to 20mm depth so that the minimum of seed is exposed. The seeded ground shall be levelled and lightly consolidated to ensure good soil/seed contact.
- 1.8 Areas to be newly sown for grass shall be fertilised to maintain a pH range of 6.0 to 6.5. A soil test should be carried out to determine the composition and type of fertiliser and/or lime that is to be applied. Note that a soil test may be required prior to pricing.
- 1.9 Two applications of fertiliser are to be carried out. The first application shall be undertaken when sowing grass seed using a suitable starter fertiliser such as di-ammonium phosphate (D.A.P.) at a rate of 25g/m² and second application four to six weeks after grass growth has commenced with a suitable maintenance fertiliser, such as Cropmaster 20.
- 1.10 For large areas of lawn, grass seed shall be undersown for better strike and reduced loss to birds at a rate of 400kg/ha.
- 1.11 All newly grass seeded areas are to be rolled with a Cambridge roller (or similar roller to minimise compaction) after seeding. A traditional small steel drum may be used for grass berms next to concrete edges to minimise marking of concrete surfaces.
- 1.12 First mowing of newly sown grass areas can be undertaken when 50% of the grass coverage has reached a height of 10cm using a rotary mower.

2.0 TURF SUPPLY AND LAYING

- 2.1 The turf grass mix shall be as specified by the Parks Advisor. The turf shall be sufficiently fibrous for turves to hold together when handled, but excess fibre or thatch is undesirable.
 - 2.2 Turf should be of good quality, free of weeds and pests and of a minimum thickness of 20mm.
 - 2.3 The Parks Advisor may request to inspect the turves prior to them being lifted.
 - 2.4 Turf shall be delivered to the site, kept damp and installed within 36 hours of lifting.
 - 2.5 While carrying out the work, the Contractor shall protect the existing subsoil structures and prevent excessive soil structural damage.
 - 2.6 Turf shall be laid on topsoil that has been cultivated to a depth of 25mm to form a fine even bed.
-



STANDARD SPECIFICATION

Grassed Areas

- 2.7 Turf shall be handled with care and laid in a stretcher bond pattern. The turf shall be laid from planks working over turves previously laid.
- 2.8 Slow release fertiliser shall be applied as specified to the turf prior to watering.
- 2.9 The turves shall be thoroughly watered until the turf mat and top 50mm of soil is wet. After allowing a "soaking in" period, the turf should be lightly and evenly rolled so that the turf mat and the soil surface are thoroughly bonded.
- 2.10 Any inequalities in finished levels owing to variation in turf thickness or uneven consolidation of soil shall be adjusted by raking and/or packing fine soil under the turf, not by topdressing the turf surface.

3.0 HYDROSEEDING

- 3.1 The hydroseeding mulch shall be a mixture of the specified seed, wood-fibre based mulch, fertiliser and a binding agent. The percentage of wood-fibre in the hydroseeding mulch shall be no less than 75%.
- 3.2 The hydroseeding shall be applied to a minimum depth of 5mm. Application rates for high profile areas shall be no less than 200kg/1000m².
- 3.3 Products such as "Hydra red" or an equivalent are acceptable hydroseeding mulches.
- 3.4 Hydroseeding shall be applied using a suitable pumping system with mixing abilities, to prevent settling between applications.
- 3.5 All existing site features, such as paths and fences, shall be protected during hydroseeding application. Any overspray shall be removed promptly.
- 3.6 A low-pressure system shall be used to avoid surface rilling or erosion.

4.0 HEALTH AND SAFETY

- 4.1 The Contractor shall ensure that all requirements of the Health and Safety in Employment Act 1992 are complied with.
 - 4.2 If working on the road verge, the Contractor shall have in place an approved Traffic Management Plan.
 - 4.3 The Contractor shall be solely responsible for public safety within and around the site and shall provide all necessary warning devices, barricades and personnel to ensure adequate safety, protection and warning to any person or vehicle or any property within and around the site.
 - 4.4 The Parks Advisor shall be entitled to inspect the site and all plant and equipment at any time to ensure the Contractor is complying with its obligations under Section 4.0.
-



STANDARD SPECIFICATION

Grassed Areas

5.0 MAINTENANCE SPECIFICATIONS

- 5.1 Grassed areas may be required to be maintained for a minimum period of 12 months after sowing to ensure dense, even turf coverage has been established.
- 5.2 The lawn shall be an even sward of vegetation at a uniform height with a healthy colour throughout. The lawn shall be free from hollows arising from uneven consolidation of the ground and from stones or similar debris.
- 5.3 The specified grasses shall be evenly distributed across the lawn and the entire ground surface covered. The grass sward shall not contain any non-specified grasses or weeds.
- 5.4 All grass areas, once established, shall be mown to a minimum height of 25mm and a maximum height of 50mm unless otherwise specified by the Parks Advisor.
- 5.5 Grass areas shall be maintained at no less than 90% weed free.
- 5.6 Areas where grass coverage does not exceed 95% shall be re-sown.
- 5.7 The contractor shall rectify any damage to turf or surrounding areas including scalping, wheel rutting and damage caused by faulty machinery and sub-contractors.
- 5.8 Damage caused to fixed objects is to be noted and made good at the Contractor's cost.
- 5.9 Any cuttings that fly onto footpaths or surfaces other than the grassed area shall be removed prior to leaving the site. Grass clippings are to be evenly distributed over the grass area or removed.

6.0 CONTRACT AUDITING

- 6.1 The Council will audit compliance with the contract by both site inspections and checking of associated documentation to the extent necessary to ensure the work is completed in accordance with the approved plans and specifications and to the Council's standards.
 - 6.2 The Contractor shall notify the Parks Advisor at least one working day prior to commencing various stages of the works. This is to enable audit inspections required by the contract to be performed.
 - 6.3 The Parks Advisor shall send the Contractor a copy of an audit carried out, with any areas of concern identified.
 - 6.4 The minimum level of inspection shall be as follows:
 - The Contractor shall supply certificates to the Parks Advisor verifying seed used is the mixture specified by the Parks Advisor and which give descriptions of purity, % germination and endophyte content. The seed should be no more than one year old.
 - Prior to seeding to check levelling of surface and ground preparation.
 - On completion of the required works after the first mow.
 - Once during the maintenance period to ensure maintenance conditions are being adhered to.
 - Upon notification from the Contractor that the maintenance period has ended and the assets are ready to be jointly signed off.
-



Protection of Existing Features

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Protection of Existing Features

1.0 PROTECTION OF EXISTING TREES

- 1.1 A temporary fence shall be erected around all existing trees that are to be retained on site. This fence shall be erected at the greater distance of one metre outside the tree's drip line or half the tree's overall height.
- 1.2 This fence shall be erected before any works commence and shall not be removed until all works are complete, without the approval of the Parks Advisor.
- 1.3 Within the fence there is to be no ground disturbance, storing or disposal of any materials.
- 1.4 Where it is not possible to complete the works without encroaching within this fenced area, a proposed methodology shall be submitted to the Engineer for approval.

2.0 PROTECTION OF TREE ROOTS

- 2.1 All roots larger than 25mm diameter shall be retained in an undamaged state and protected, unless the Parks Advisor gives permission in advance for them to be cut. No roots shall be cut if this will have a significant adverse affect on the health and stability of the tree. Where consent is given to cut roots they shall be severed cleanly with a saw or pruning shears.
- 2.2 All exposed roots and cut root ends shall be protected from drying and frost with damp sacking/scrim, polythene sheet or similar material if not backfilled immediately.
- 2.3 Wherever practicable, underground services within 10 metres of a protected tree or within 5 metres of any other tree shall be installed by trenchless methods. Otherwise, excavations within the distances set out in Table 1 below shall be carried out by hand.

Table 1 Minimum excavation distances from trees

Trunk Diameter at Ground Level	Minimum Distance from Edge of Trunk	Tree Class
0 - 100mm	1 metre	All
100 - 300mm	2 metre	All
300 - 500mm	4 metre	All
500 - 1000mm	5 metre	Protected trees
500mm and above	5 metre	Other trees
1000mm and above	10 metre	Protected trees

3.0 TREE REMOVAL/PRUNING

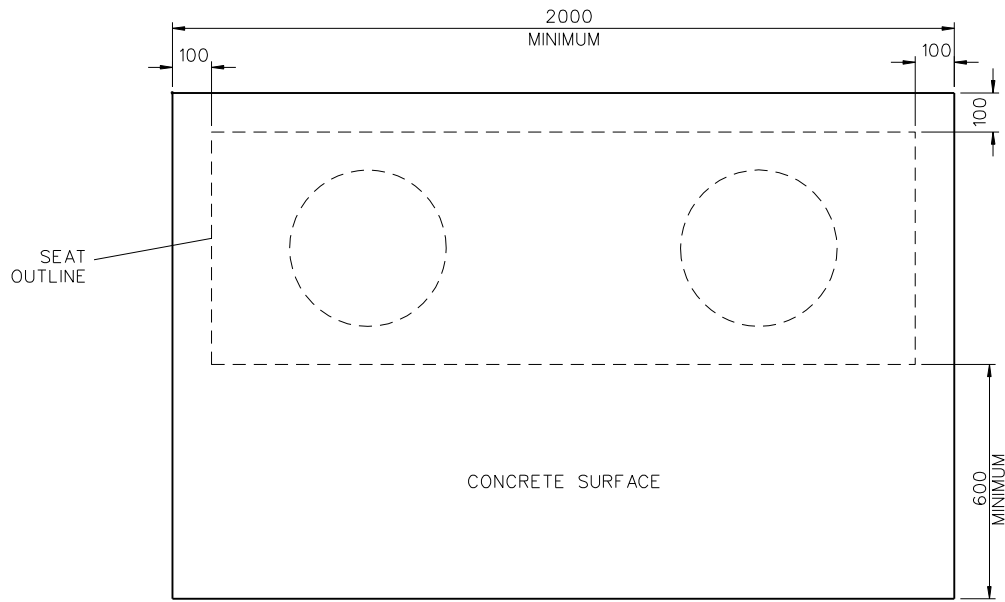
- 3.1 No trees shall be removed or pruned unless they have been specifically identified and marked during a joint inspection by the Engineer and the Contractor.
- 3.2 Trees shown on the drawings as conflicting with the works, but without an explanation of whether or not they are to be removed, must not be removed until they are identified as above. The Contractor shall notify the Engineer of trees which are not shown on the drawings, but which appear to be in conflict with the works.



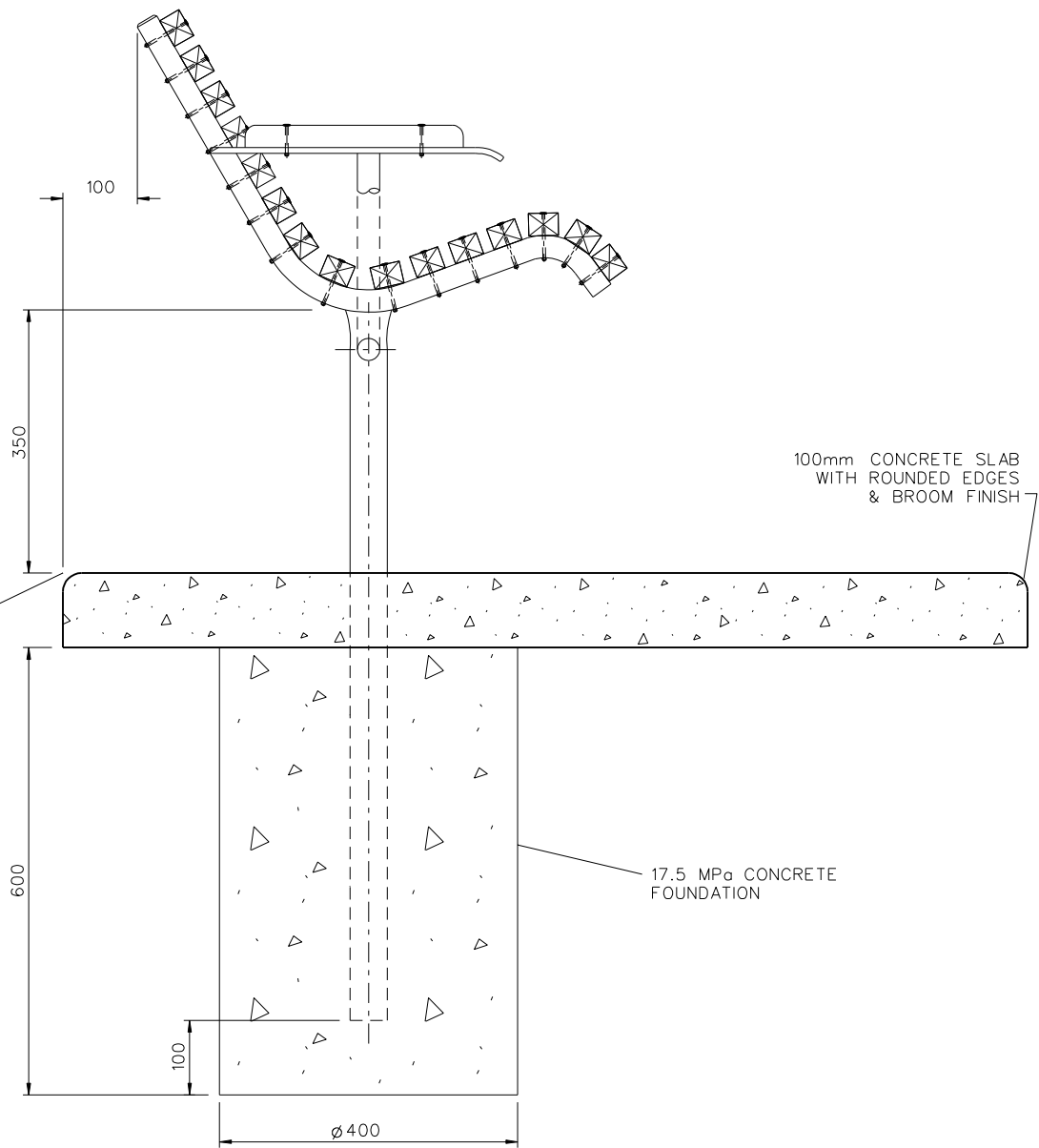
Protection of Existing Features

4.0 DAMAGE TO EXISTING FEATURES

- 4.1 The Contractor shall compensate the Council for any damage done to existing features, either by means of a monetary sum or by replacement of that feature. The Engineer will determine any compensation for damaged landscape planting, in consultation with the Parks Advisor.

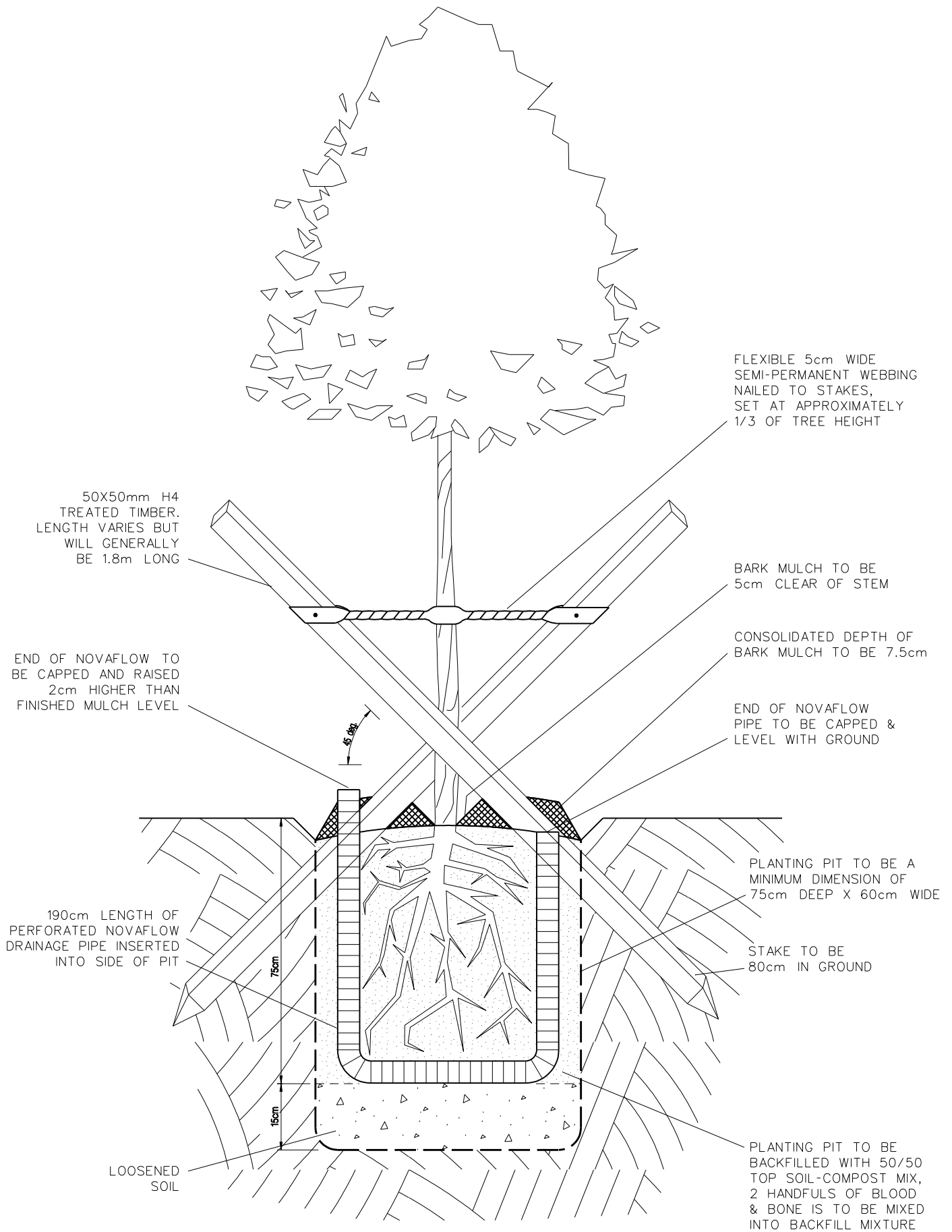


FOUNDATION PLAN

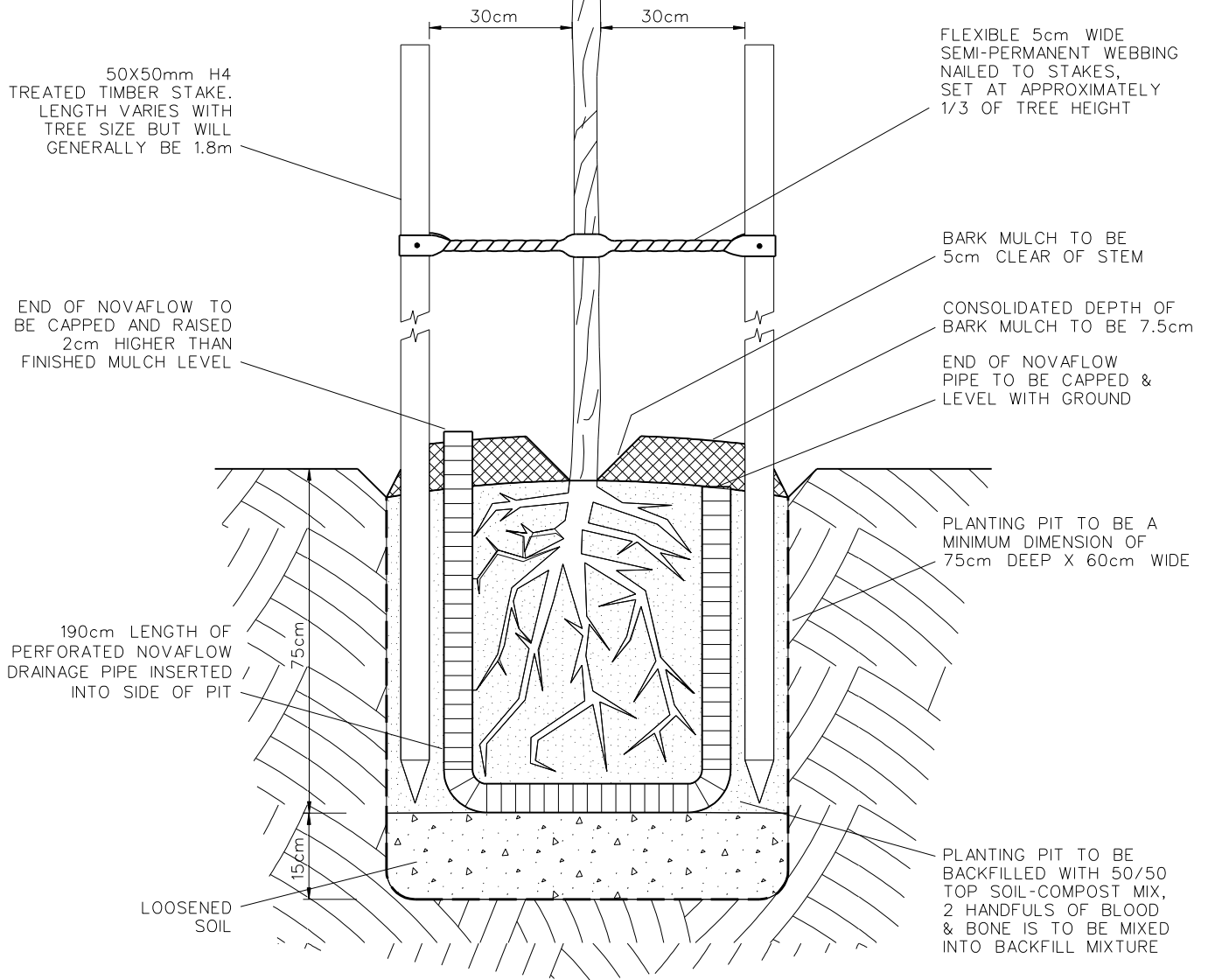
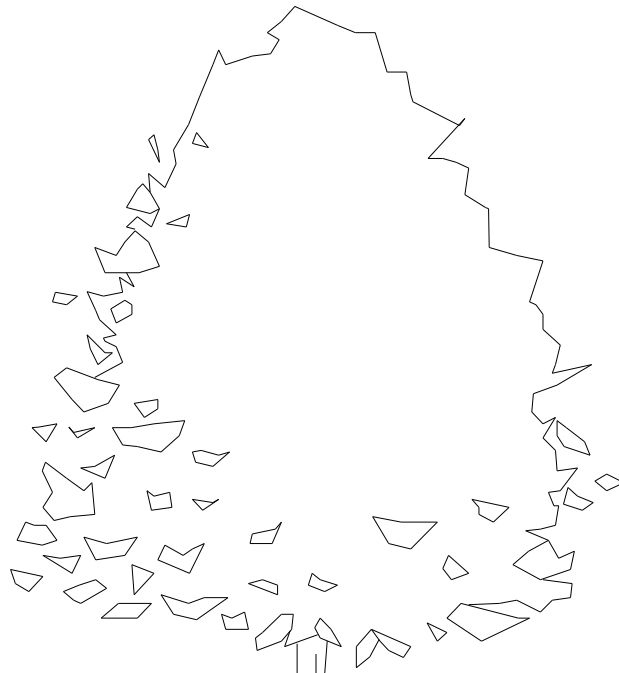


FOUNDATION DETAIL

Based on CCC drawing SD712

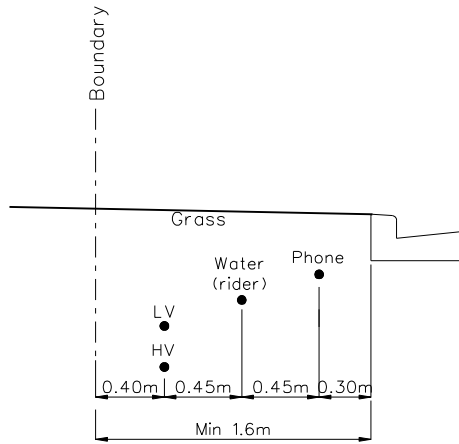


Based on CCC drawing SD701

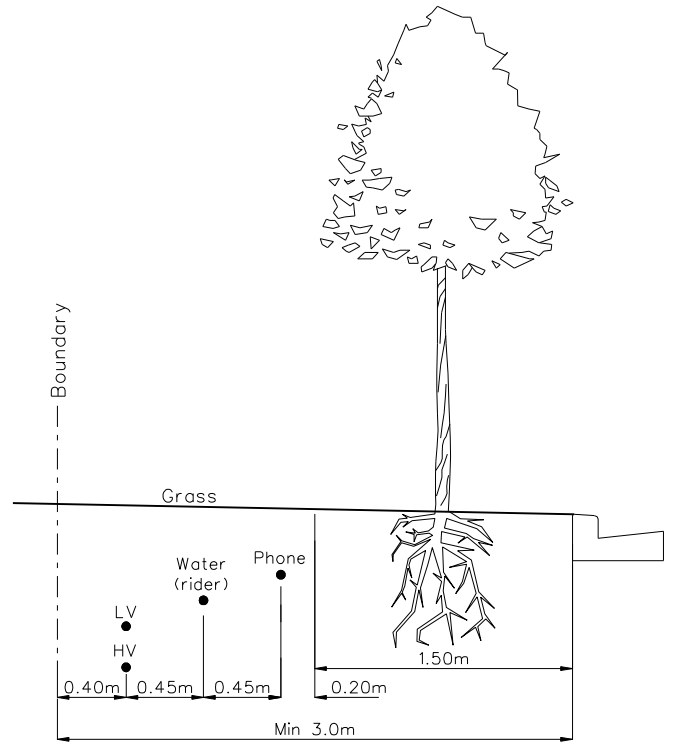


Based on CCC drawing SD702

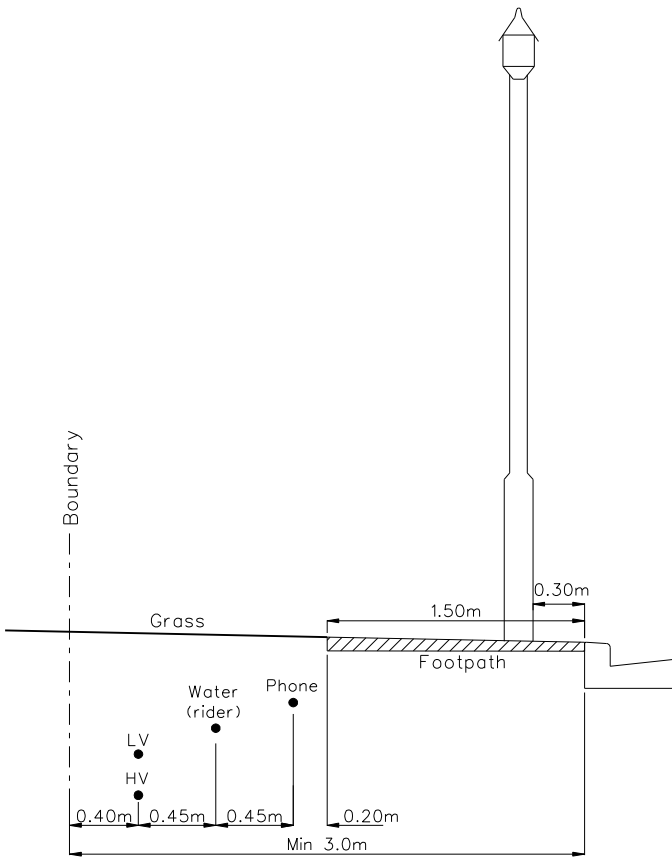
Note: The minimum width of footpath is increased to 2.0m when passing a light standard or other structure. This may overlap the services if the required width is not otherwise available. The length of the widened section shall be no more than 5m.



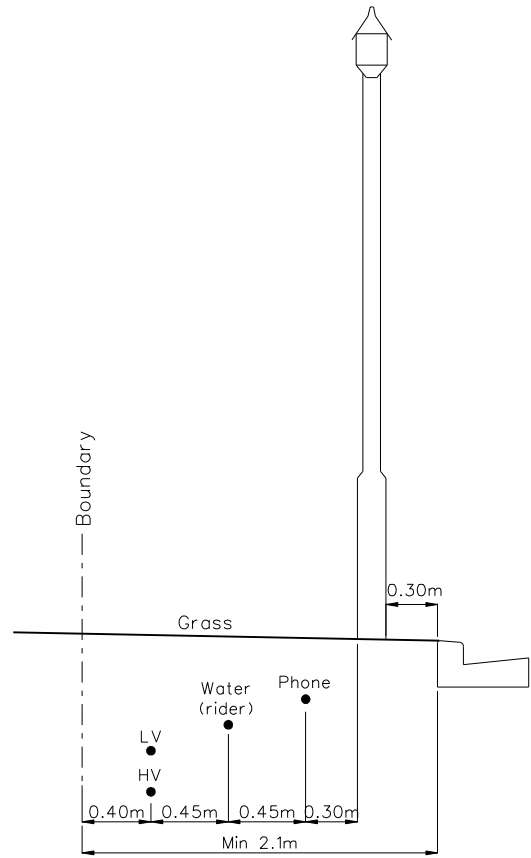
Services Only
1.6m – 2.1m wide



Services & Street Tree
3.0m – 4.5m wide

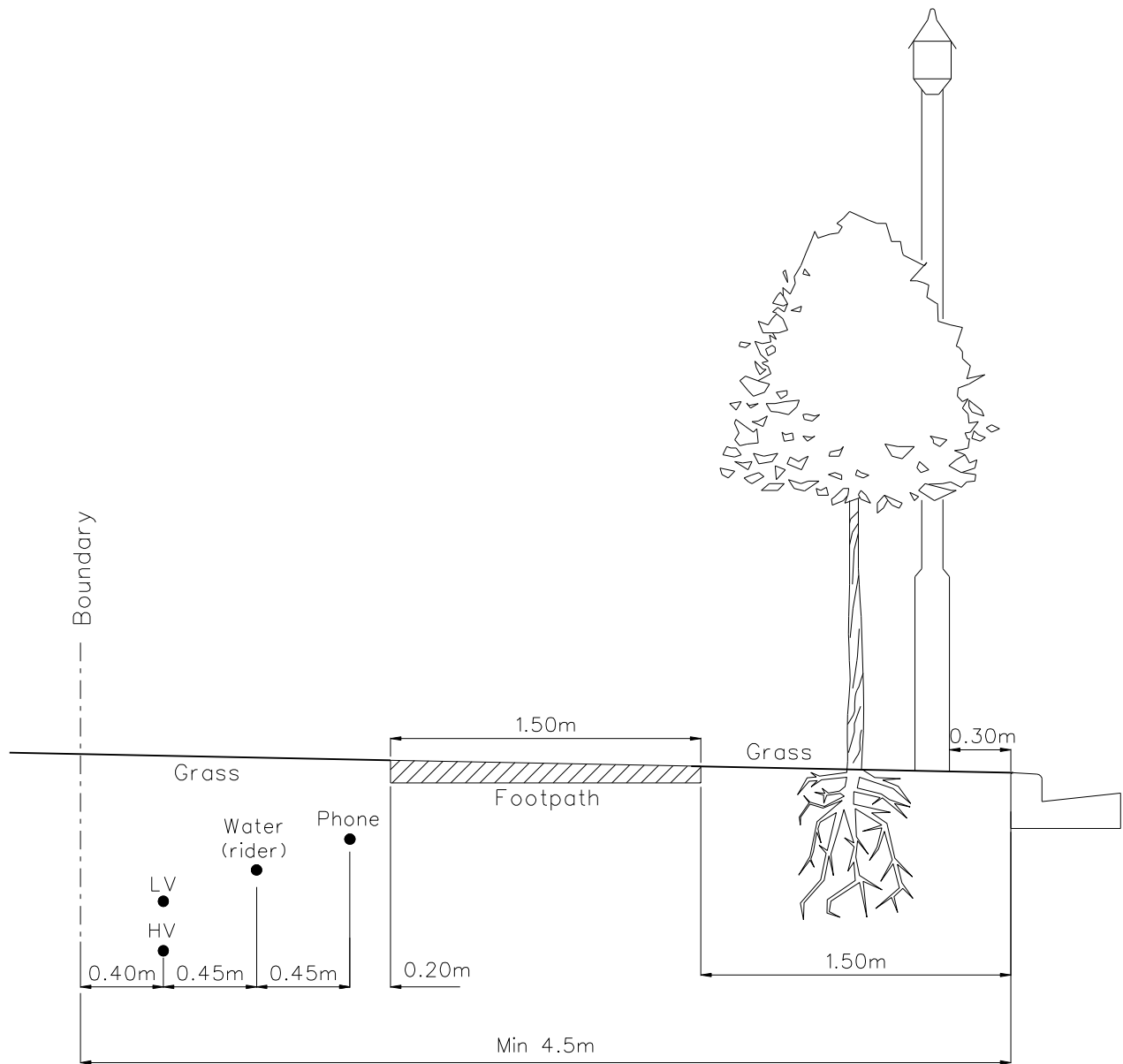


Services & Footpath
3.0m – 4.5m wide



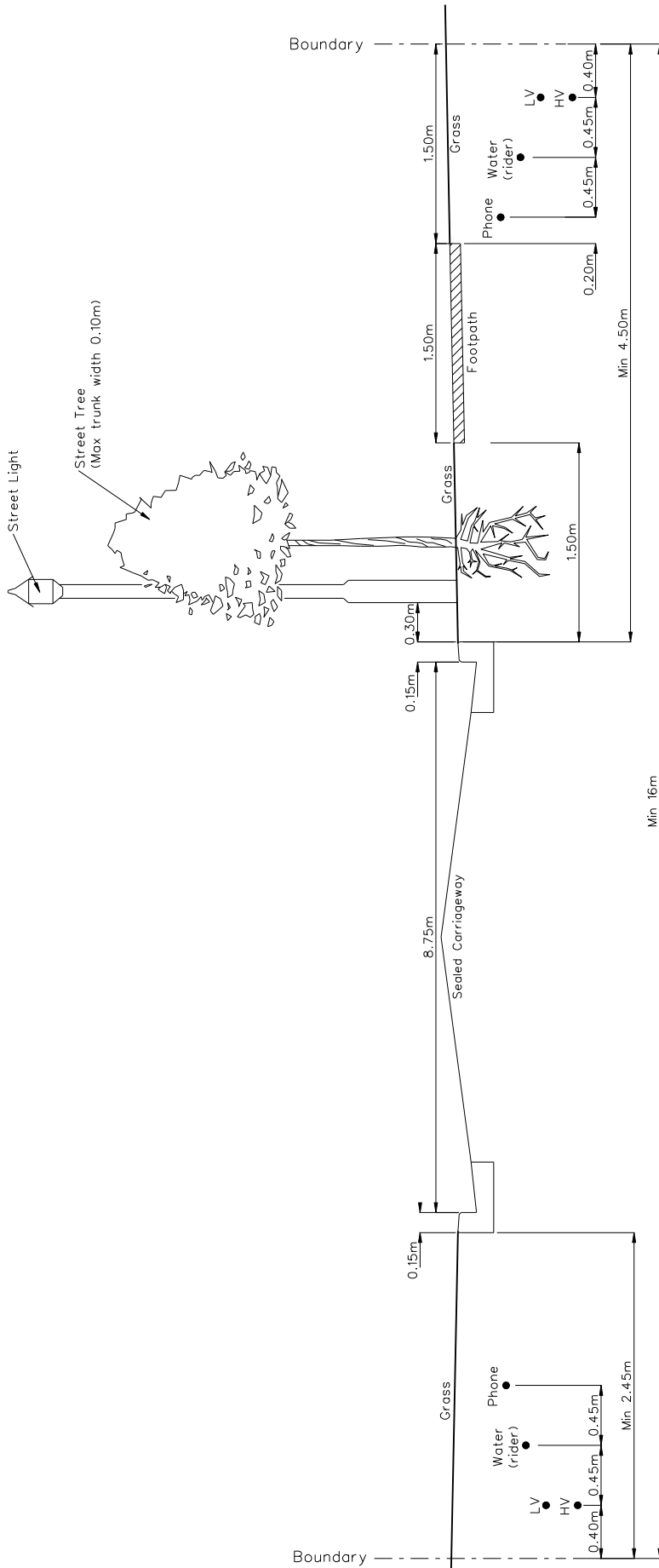
Services & Light Standard
2.1m – 3.0m wide

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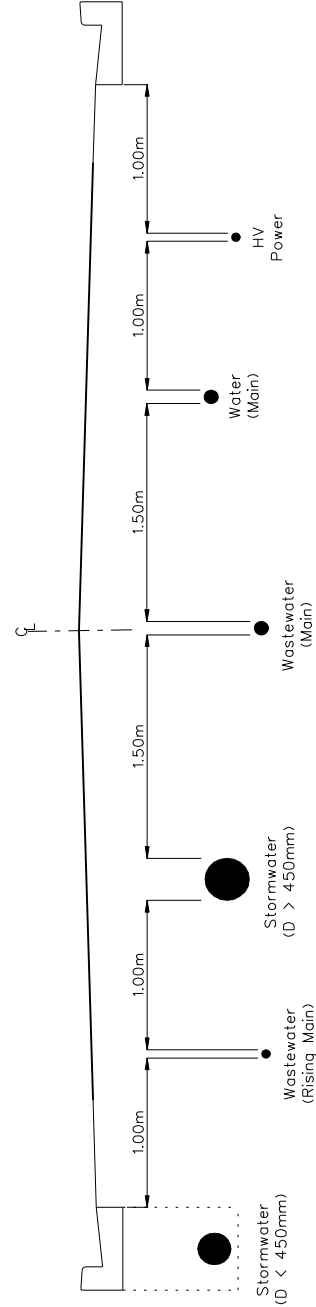


Minimum Widths for a Typical Full Width Berm
 (See District Plan for required components)
 Must be greater than 4.5m wide

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Typical Layout for Local Roads (Residential)
(All spacings given are minimum)



Minimum Spacings for Services in the Carriageway