SECTION 15 - LANDSCAPE WORKS

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15.1 DESCRIPTION

This section covers the requirements for supply, planting, grass seeding, turfing, erosion protection, tree protection, timber structures, paving, drainage, irrigation and other associated landscape work and maintenance as specified and shown on relevant Drawings, Planting Details and Schedules.

15.2 DEFINITIONS

(a) Weed

A weed is any plant which is not specified in the plant schedule and/or is specified to be removed and/or is classified a weed under the Catchment and Land Protection Act 1994 and/or is not indigenous to the site.

(b) Propagule

A propagule is any structure capable of producing a new plant (e.g. seeds, cuttings etc.).

15.3 INSPECTIONS, SAMPLES & CERTIFICATES SUPPLIED BY CONTRACTOR

The specified inspections, samples and certificates shall be made available or submitted to the Superintendent for acceptance prior to the commencement of associated work. Accepted samples shall become the agreed minimum standard and approved source of supply for the contract work. The Contractor shall not substitute any specified or accepted material without the Superintendent's prior written approval. The Contractor shall be responsible for programming the provision of samples, certificates and all inspections and allowing 48 hours notice to the Superintendent.

The Contractor shall provide the following before commencement of the relevant landscape work:

Inspections
- plant stock for all plant species

Samples
- mulch
- erosion control mat
- weed mat
- tree guard
- any imported topsoil

Certificates
- evidence of origin of indigenous provenance plant material
- testing for any imported topsoil

15.4 SUPPLY OF MATERIALS

All materials shall be supplied by the Contractor unless otherwise specified.

If any materials are supplied by Council, a joint inspection of the materials shall be made by the Contractor and the Superintendent following delivery of the materials to the site. The materials, if satisfactory, shall thereafter become the responsibility of the Contractor with respect to their storage, care, theft, loss or damage.

(a) General Supply of Plant Stock

Plant stock for the Works shall be of the size and type as specified in the plant schedule(s). No substitution of species shall occur without the Superintendent's approval. All stock shall be hardened off in nursery conditions, local to the planting area, for 2-4 weeks prior to planting.

Plants shall show healthy growth, be undamaged, free of disease, have a size in proportion to their pot size and species, not be pot bound and shall generally have roots penetrating to the edge of the pot.

Advanced trees shall be straight-trunked and, when planted, be of minimum height and caliper as specified in the plant schedule(s). Head growth shall be strong and well formed.

Plant tubes shall be a minimum depth of 150 mm.

Plant cells specified shall be a minimum depth of 70 mm. Plant cells shall only be used for grasses and herbaceous plants.

(b) Supply of Indigenous Plant Stock

Indigenous plant species shown on the plant schedules shall be propagated from sources of local provenance found within the site or the closest possible natural plant source of similar genetic make-up.

The Contractor is responsible for obtaining all necessary permits before collecting any propagules. Plant material harvested must be pest free.

The Contractor shall make available for review by the Superintendent an indigenous propagule collection program to supply the quantities of indigenous plant stock as shown in the plant schedule(s).

(c) Supply of Site Topsoil

Site topsoil shall be used wherever possible. The Contractor shall confirm through tests, that site topsoil is free from pathogens, toxic levels of any element, and has a pH, nutrient and trace element ratio which is suitable for the healthy growth of the nominated grass mix and all plant species specified in the plant schedule. The Contractor is responsible for creating a growing medium which will ensure satisfactory growth of the desired species.

The Contractor shall notify the Superintendent of any topsoil characteristic which may reduce the performance of any plant species or grass mix.

(d) Supply of Imported Topsoil

In the event that site topsoil is not available or is not appropriate, imported topsoil shall be supplied by the Contractor at the Contractor's expense. Imported topsoil shall be free from pathogens, toxic levels of any element and any weeds and their roots.

If imported topsoil is used, the Contractor shall supply topsoil with the following characteristics:

Texture	Light to medium, i.e. capable of handling when moist but lacking cohesion so that it will spread easily.
pH	Slightly acid to neutral pH 6.0 - 7.0.
Stone Content	Less than 4% by dry weight with stone size not exceeding 10 mm.
Organic Matter	Decomposed matters shall not exceed 40% by volume, undecomposed matter shall be less than 4% by volume.
Salinity	Less than 600 ppm
Extraneous Material	The topsoil shall be free of sods of subsoil, rubbish, petrol and oil contaminants, lime etc.
General Description	Topsoil for mulch planting beds shall be a light to medium friable clay loam. Topsoil for grass areas shall be a light to medium friable sandy loam.

(e) Supply of Herbicides and Insecticides

Only herbicides and insecticides registered for use in Victoria may be used.

(f) Supply of Fertilizers and Trace Elements

Fertilizers shall be blended in accordance with the results of a site topsoil analysis test and shall take into account soil type, plant species and/or grass type and mix, pH and nutrient level, trace element requirements, average annual rainfall and the planting season.

Fertilizers for plant stock shall be proprietary slow release with a 9-10 month release period and suitable for the establishment of plant types, sizes and species specified in the plant schedule(s).

(g) Supply of Shredded Wood Mulch

Mulch must be produced to comply with AS 4454 – 1997 Soil Conditioners and Mulches and as specified below. Samples of the proposed mulch shall be submitted to the Superintendent for approval and all material used shall conform to the approved samples.

Fine shredded wood mulch or approved equivalent shall be free of soil, rocks, weeds, seed, vermin, deleterious material, toxins or contaminants.

Mulch available from indigenous on-site vegetation shall be used as agreed by the Superintendent.

Mulch derived from plywood products, particle board or painted timber is not acceptable. Particle sizes shall be no wider than 20 mm and no longer than 100 mm. Fines content shall be not more than 5% by volume.

(h) Supply of Playground Mulch

Mulch shall be in accordance with AS/NZS 4422:1996 Playground surfacing – Specifications, requirements and test method. The mulch shall have a nominal size of 75mm and treated to ensure that it contains plant growth inhibiter.

(i) Supply of Weed Mat

The Contractor shall supply and install min. 600 gsm jute or approved equivalent, biodegradable, fire retardant weed mat as indicated or as specified.

The mat shall have sufficiently dense construction so as to prevent light penetration and growth of weeds for 18 months minimum. The surface of the mat shall promote water infiltration.

(j) Supply of Erosion Control Mat

The Contractor shall supply and install 300 gsm jute or approved equivalent biodegradable erosion control mat as indicated on the drawings or as specified.

The surface of the mat shall promote water infiltration and germination of grass seed and shall control erosion until an even grass cover is firmly established.

(k) Supply of Tree Guards and Stakes (200 mm and 300 mm Pots)

Refer to Frankston City Council Standard Drawing SD 520.

Tree guards shall be black PVC mesh 900 mm high, 25 mm squares, stapled to stakes.
Tree guard stakes shall be 1800 x 50 x 50 mm hardwood.

(l) Supply of Tree Guards (Advanced Tree Planting in Pavement)
Refer to Frankston City Council Standard Drawing SD 525.

Tree guards shall be 1500 mm high, 900 mm dia galvanised and powder coated tubular steel, as per Inwell Cat No. 117 or approved equivalent.

(m) Supply of Grass Seed (Excluding Playing Field – refer Clause 15.19 (b))

Certified seed only shall be supplied. Seed purity shall be 98%, germination rate shall be 90% including fresh ungerminated seeds. All seed supplied shall comply with the current Seeds Act of Victoria.

Seed mix shall be as follows or other mixture as may be approved by the Superintendent.

Seed mix for Grassing Areas	**Application rates (kg/ha)**	**Seed mix for Grass Reinstated Areas**	**Application rates (kg/ha)**
Fine leaf ryegrass –80%	300kg/ha	Fine leaf ryegrass –80%	300 kg/ha
Couch 10% hulled, 10% unhulled –20%		Couch 10% hulled, 10% unhulled –20%	

All seed mixes contain 20% by weight UF 38 (Azolon) slow release fertiliser.

(n) Supply of Turf

Turf to be supplied and installed shall be StrathAyr "Easicare" or similar approved by the Superintendent. Turf shall be free of noxious or objectionable broadleaf weeds or grass.

(o) Supply of Sterile Grass Seed

The Contractor shall provide suitable sterile rye grass seed for the stabilisation of areas to be subsequently planted, temporary batters and/or stockpiles.

15.5 EROSION PROTECTION

The Contractor shall ensure that all disturbed areas are adequately protected from erosion.

Disturbed areas shall be protected immediately following topsoiling by one or more of the following or other approved methods:

(a) Programming Planting

For areas to be planted, hydro-mulching/mulching and planting shall be implemented as soon as practicable.

(b) Sterile Cover Crop

For areas to be planted, seeding with a temporary cover crop of sterile annual grass at a rate which shall provide quick stable cover to the soil.

(c) Formation Protection

For areas to be grassed, the batter slope or drain shall be sown with grass seed, fertilized as specified and immediately covered with an erosion control mat as required.

For planting bed areas steeper than 2:1, weed mat only shall be installed.

Erosion control and weed mat shall be laid and anchored in accordance with the manufacturer's instructions. In drainage channels the erosion control matting shall cover the full width of the floor and extend 600 mm up each side.

Any erosion control mat area which is damaged or in which a full and even grass growth has not been established within the first growing season shall be repaired or replaced as necessary, to ensure that erosion control and establishment of a full and even grass coverage is achieved.

15.6 TREE PROTECTION

(a) General

Trees and shrubs marked to be retained are to be adequately protected at all times from damage and and, if required, watered for the duration of the contract. Particular care shall be taken to avoid any damage to the roots, trunks and branches.

All trees for retention shall have protective fencing. This shall consist of 2400mm long star pickets traversing the canopy/drip line of the tree and ‘ringlock” mesh or similar approved attached to each picket in five locations. Corner pickets shall include diagonal bracing installed to ensure a rigid temporary structure.

(b) Work Near Trees

When any excavation is required in the vicinity of trees to be retained, hand excavation shall first be made to locate any roots. If directed by the Superintendent equipment shall be kept clear of trees and hand methods of excavation shall be adopted. Roots which are to be affected by the line of the proposed work shall be clean cut with a sharp saw for this purpose clear of the work before machine excavation commences. Removal of tree roots greater than 50 mm in diameter shall require prior approval of the Superintendent.

The areas within the tree drip line shall be kept free of all materials, debris and plant. Materials shall not be leaned against trunks or stacked over the root zone.
Where works will effect the ability of the tree to obtain water, the contractor will be responsible for the regular watering of all trees so effected for the duration of the contract. All costs incurred in connection with protecting trees shall be included in the contract sum.

(c) Penalties

If during the contract period any trees are damaged, the Superintendent reserves the right to repair or replace trees as necessary, and the cost of so doing shall be borne by the Contractor.

If repair work is impracticable, or is attempted and is rejected, the Contractor shall remove the tree and root system if directed, make good, and either replace the tree with a replacement tree of the same species and similar size, or pay damage.

If replacement is not approved, the Contractor shall pay, for any tree removed pursuant to the above, damages assessed as the cost of replacement. If replacement with a smaller tree is permitted, pay damages assessed as the difference between the replacement costs of the smaller and larger trees up to the limit specified.

15.7 TREE SURGERY

(a) General

The Contractor shall allow to carry out remedial pruning works to the existing trees within the work site. Trees nominated for tree surgery shall be worked on by a qualified, skilled and experienced Arborist applying accepted Arborist practices and to the relevant Australian Standards.

This work shall include the removal of dead, diseased or dangerous branches and the raising or thinning of the tree canopies to allow greater light penetration to the new shrub beds.

All prunings shall be removed from the site immediately after pruning in undertaken.

(b) Pruning Branches

All pruning is to be carried out to AS 4373 Pruning of Amenity Trees to a clean cut finish.

Branches or limbs to be removed shall be cut just beyond the branch bark ridges (shoulder rings) and the collar at the base of the branch. Branches shall not be cut flush to the trunk or so far from the trunk that a long stub remains.

Branches less than 50 mm in diameter shall be cut with pruning shears or saw. Branches greater than 50 mm in diameter shall be cut with a pruning saw or chain saw. All equipment shall be kept clean with sharp cutting edges.

All branches greater than 50 mm shall be cut in at least 3 pieces to avoid splitting the branch or tearing the bark. Small branches shall be cut upwards and at an angle.

(c) Dead Branch Stubs

Dead branch stubs that have a collar of live wood shall be cut at the outer edge of the collar but not into the live wood.

(d) Dead Wooding

Remove all broken, diseased, dying and dead wood and any which cross, are weakly attached or of low vigour.

(e) Suckers and Water Shoots

Remove suckers and water shoots as directed. Cut back close to the base and treat with growth retardant in accordance with manufacturer's instructions.

(f) Raising the Crown
Remove branches from the trunks and lower limits of the tree as directed by the Superintendent.

15.8 TREES TO BE REMOVED

No clearing is to be commenced until the extent of the area to be cleared has been pegged by the Contractor and approved by the Superintendent. No trees outside this area shall be removed or trimmed without the prior approval of the Superintendent.

Trees to be removed shall be cut down to a suitable height above ground level. All stumps, roots exceeding 50mm in diameter and other perishable material shall be removed to a depth of not less than 300mm below the finished ground level by either mechanical means or by stump muncher.

Where stumps are designated to remain, the truck shall be cut to ground level and treated with a chemical herbicide in accordance with the manufacturer's instructions.

Backfill all stump holes and excavated areas with approved fill material and required topsoil (preferably local in origin) and compacted to the same degree as the surrounding area.

The Contractor shall remove all demolished material from the site and shall leave the site in a tidy condition.

15.9 SETTING OUT AND SITE PREPARATION

(a) Setting Out

(i) Planting Areas and Individual Plants

The Contractor shall set out the location and shape of planting beds and the location of individual plants in accordance with the Drawings by scaling dimensions from the Drawings or by complying with plant number and density requirements as shown in the plant schedule(s) and locating by reference to existing features.

Trees shall be placed a minimum of 1metre from any fence and shared pathways unless otherwise specified.

(ii) Grassed Areas

The seedbed for grassed areas is to be firm following the general slope of the surface with no localised depressions.

(iii) Nature Strips

Nature strips shall mean all the areas within the road reserve and within the limits of the contract shown on the plans which are not to be paved with concrete or other paving material.

(b) Site Preparation

(i) Site Clearing

The Contractor shall clear only the site areas to be occupied or affected by the works. The Contractor shall be responsible for the removal of all deleterious and excess material from the site.

General clearing: Remove everything on or above the site surface, including rubbish, vegetable matter and organic debris, scrub, timber, stumps, boulders and rubble.

Grubbing: Grub out stumps and roots over 75 mm diameter to a minimum depth of 500 mm below subgrade under buildings, embankments, or paving, or 300 mm below finished surface in unpaved areas.

Old works: Remove old slabs, foundations, pavings, drains, manholes and the like found on the surface.

Existing grass: Remove existing grass to a depth just sufficient to include the root zone.

(ii) Stripping of Existing Topsoil

Topsoil from the areas of excavation and filling, trimming and grading shall, unless otherwise specified, be stripped to a depth of 150 mm, and neatly stockpiled where directed on site.

Stripped topsoil nominated as 'Approved Topsoil' by the Superintendent shall be used in the Landscape works in this contract and shortfall being made up by importing topsoil.

(iii) Excavation and Filling

Any excavation required shall be finished off with an even surface, thoroughly consolidated until a firm and uniform sub-grade has been obtained throughout the entire area. Depressions which have developed during compaction shall be filled with approved, sound material and consolidated.

Where filling is necessary, approved topsoil shall be imported at no extra cost. Excess excavated material shall be the property of the Contractor and removed from site at no extra cost.

The cartage of soil shall not be carried out along the naturestrip or the footpath (if any), but along the road, the soil being placed directly on to the naturestrips.

(iv) Grading and Trimming

The Contractor shall provide for the minor trimming and grading to the subsoil as required for the works and in conformity with the requirements shown on the drawings.

Should, during the course of the contract, any major filling and/or excavation become necessary, it shall be considered as separate to this Contract. Such works shall be by negotiation as directed and agreed with the Superintendent.

The shaping and trimming of naturestrips shall be completed prior to the sealing of the road pavement.

HP **The Contractor shall obtain the Superintendent's review and approval of the final shape of the nature strips prior to the preparation for sealing of the road pavement.**

(v) Weed and Pest Control

The Contractor shall eradicate weeds by environmentally acceptable methods using a non-residual glyphosate herbicide (or other approved non-residual herbicide) in any of its registered formulae, at the recommended maximum rate following manufactures specifications.

Regularly remove, by hand, rubbish and weed growth that may occur or recur throughout grassed, planted and mulched areas. Remove weed growth only (identify and leave native grasses and plants) from an area 750mm diameter around the base of the trees in grassed areas. Continue eradication throughout the course of the works and during the planting establishment period.

All herbicides and pesticides are to be used strictly in accordance with the manufacturer's instructions.

Weed control shall be in accordance with the Contractor's O H & S Procedure for the Safe handling of Herbicides.

Herbicides shall not be used around wetlands and waterways without prior consultation with the relevant water authority and ecological assessment.

The Contractor shall be responsible to reinstate areas to their pre contract condition, excluding weed growth, if damaged during this process.

The Contractor shall submit for review by the Superintendent nominated herbicides, licensed handlers and any other pesticide types, mixes, rates and application techniques.

(vi) Mounding

Generally: In the areas of mounding cultivated existing soil to a depth of 200mm prior to mound formation.

Construct mounds where indicated on plans from approved fill. Form in the positions and to the height, gradient and dimensions, shown on the Drawings.

Apply fill in layers 300mm thick, compacted to 85% of the dry density ratio with internal packing down. Round gradually corners and intersections of planes.

Construction of mounding shall allow for the top layer of 75mm of approved topsoil in lawn areas.

Material: Approved fill shall be soil or sub-soil material without debris or rubbish, free of chemicals and without stone or rock fragments larger than 20mm diameter. The material shall be slightly clayey in nature to aid in moisture retention.

(vii) Ripping

Planting bed areas shall be cross-ripped to a minimum depth of 450 mm at rip line spacings of 500 mm in order to shatter the ground.

Where trees are to be planted in grass areas, the ground shall be cross-ripped to a distance of a 500 mm radius from each new tree location and to a minimum depth of 450 mm.

Ripping shall not occur within the extent of existing vegetation or the dripline of existing trees.

HP **A representative sample of ground ripping not less than 100 m^2 in area shall be made available for review by the Superintendent at not less than 48 hours notice prior to the commencement of the balance of the relevant work. The accepted ground ripping shall be used as a reference standard for the remaining work to be completed under the Contract. In areas where ripping is not practicable, the Contractor shall submit alternative methods to the Superintendent for review.**

(viii) Batter Treatment

The surface of batters in planting bed areas shall be left rough such that the specified depth of topsoil is "keyed" into the ground in order to prevent slippage and erosion.

(ix) Topsoil Application

Weedy site topsoil shall not be spread to other locations on the site.

Topsoil shall be applied to mulched planting beds following ripping and cultivation.

A total depth of topsoil of 300 mm shall be placed on all mulched planting bed areas and 75 mm (compacted) on areas to be grassed, including nature strips.

Topsoil shall be spread and firmly compacted (to 90% of the maximum value obtained in the Standard Compaction Test in accordance with AS 1289 – 1981) but not over compacted to the specified depth.

(x) Addition of Nutrients and Trace Elements

In order to maximise plant and grass performance, nutrients and trace elements shall be added to the site topsoil during topsoil spreading and/or planting bed areas as specified or agreed by the Superintendent, in accordance with results from site topsoil analysis tests.

The Contractor shall submit for review by the Superintendent nominated fertilizer types, blends, rates and techniques for application, prevention of plant burning and nutrient run-off into waterways.

(xi) Cultivation

All plantation areas shall be cultivated where practicable to a minimum depth of 300 mm by mechanical means. Cultivate manually within 300 mm of paths or structures. Do not disturb services or tree roots, if necessary cultivate by hand.

During cultivation, throughly mix any materials required to be incorporated into the subsoil. After cultivation, the surface shall be left rough to allow topsoil to be keyed in.

Cultivation may cause hard panning in some soil types, such cases shall be brought to the attention of the Superintendent. The Contractor shall advise of alternative cultivation techniques.

In the event of saturated ground conditions, cultivation shall be delayed until the ground has satisfactorily dried out.

Cultivation shall not to occur within the dripline of existing trees.

Procedures for the cultivation of cut or fill batters steeper than 3:1 and undisturbed areas shall be submitted for the Superintendent's review prior to work proceeding.

Seeded grass areas and dydroseeded areas shall be cultivated to a depth of 100 mm.

(xii) Removal of Debris

Remove stones exceeding 25 mm in size, clods of earth greater than 50 mm in size which cannot be broken down, and any weeds, rubbish or other deleterious material brought to the surface during cultivation. Appropriate topsoil shall be used to fill any depressions and holes caused by the removal of rock and other debris from areas which have been prepared for planting or grassing.

(xiii) Subsoil Additives

Additives: Apply additives after ripping or cultivation and incorporate into the upper 100 mm layer of the subsoil.

Location: Incorporate additives during cultivation where specified.

Subsoil additives: In all areas to be grassed and planted, gypsum shall be supplied and installed on prepared subsoil/topsoil at a rate of 2kg/m2 to garden bed areas, and 1.5 kg/m2 to lawn areas.

(xiv) Planter Bed Edging

(a) Timber Edging

The Contractor shall supply and install timber edging as detailed and located on the drawings. The edge is to be set flush with finished adjoining lawn levels unless otherwise specified. Where curved edges of radius less than 3 metres are required, timber shall be notched and staked to ensure even and accurate curves can be set and maintained.

Unless otherwise specified, timber shall be new 75 mm x 25 mm treated pine edging. Timber shall be straight, free of warps, splits, splinters or other defects.

Provide and install 450 mm x 75 mm x 50 mm hardwood stakes at 1200 centres and nailed to plant bed edging using 50 mm hot dipped galvanise nails.

(b) Sleeper Edging

The Contractor shall supply and install sleeper edging as detailed and located on the drawings. The edge is to be set flush with finished adjoining lawn levels unless otherwise specified.

Unless otherwise specified, sleepers shall be 75mm x 200mm x 2000mm treated pine sleepers. The sleepers shall be bolted to 75 mm x 200 mm x 600 mm treated pine posts at max. 2000 mm centres using galvanised coach bolts.

All timber shall be new, straight and selected to avoid split or damaged faces being exposed. All exposed edges of timber to be chamfered.

(xv) Playground Edging

The Contractor shall supply and install timber edging to playground soft fall areas as detailed and located on the drawings. The edge is to be set flush with finished adjoining lawn levels unless otherwise specified.

Unless otherwise specified, timber shall be 75mm x 200mm x 2000mm treated pine sleepers. The sleepers shall be bolted to 75 mm x 200 mm x 600 mm treated pine posts at max. 2000 mm centres using galvanised coach bolts.

All timber shall be new, straight and selected to avoid split or damaged faces being exposed. All exposed edges of timber to be chamfered.

"Softfall" playground mulch as specified shall be placed and spread to provide a min. compacted depth of 300 mm.

(xvi) Trimming and Finished Levels

The Contractor shall adjust and trim sub soil levels so that sub soil is placed to the level of back of kerb or timber edge. The specified depth of topsoil and/or mulch shall then be added and tapered so that the finished mulch and/or topsoil levels meets flush with the adjacent surfaces.

HP **A representative sample of topsoiling and any associated ground trimming, not less than 100 m^2 in area shall be made available for review by the Superintendent at not less than 24 hours notice prior to the commencement of the balance of the relevant work. The accepted topsoiling and any associated ground trimming shall be used as a reference standard for the remaining work to be completed under the Contract.**

15.10 PLANTING

(a) Mulching

Mulch shall be placed to a minimum depth of 100 mm on planting bed areas. Mulch shall extend at least 500 mm beyond plant centres at the outer edges of planting beds.

All trees in lawn areas are to be mulched with minimum 75 mm deep x 500 mm radius of mulch.

Mulch shall be kept clear of plant stems to avoid collar rot.

HP **A representative sample of mulching, not less than 100 m^2 in area, shall be made available for review by the Superintendent at not less than 24 hours notice prior to the commencement of the balance of the relevant work. The accepted mulching shall be used as a reference standard for the remaining work to be completed under the Contract.**

(b) Weed Control Mat

Weed control mat shall be installed for planting bed areas steeper than 2:1 or as specified.

Weed control mat shall be laid and anchored in accordance with the manufacturer's instructions.

HP **A representative sample of weed control mat installation, not less than 100 m^2 in area, shall be made available for review by the Superintendent at not less than 24 hours notice prior to the commencement of the balance of the relevant work at a minimum 48 hours notice. The planting shall be used as a reference standard for the remaining work to be completed under the Contract.**

(c) Planting

Planting shall be carried out so as to ensure healthy, vigorous growth of plants. The Contractor shall ensure that the correct species are planted in the correct locations at the specified spacings. Planting into the mulch layer shall not occur.

Individually prepared planting holes shall be rough sided and no deeper than the root ball of the plant. Holes in heavy soils or on batters shall be prepared so as to ensure adequate drainage.

HP **A representative sample of planting technique, watering, fertilizing, staking and guard installation for planting beds, not less than 100 m^2 in area, and/or at least one advanced tree shall be made available for review by the Superintendent at not less than 24 hours notice prior to the commencement of the balance of the relevant work at a minimum 48 hours notice. The planting shall be used as a reference standard for the remaining work to be completed under the Contract.**

The planting holes shall be backfilled with friable topsoil free of debris, rocks and clods greater than 50 mm in diameter for:

(i) Pots, Tubestock and Cells

(ii) Advanced Trees

Advanced trees shall be planted with trunks vertical. A slotted flexible agricultural pipe or approved water retention device shall be wrapped around the root ball and allowed to protrude to the surface in order to facilitate watering. The tree shall not be planted into a dry hole. If the hole is dry, the planting hole must be saturated with water prior to planting.

(d) Transplanting

The Contractor shall obtain approval before commencing any transplanting required under the contract.

Timing of the works shall be selected with regard to the appropriate season, time of operation, rootball diameter, etc. Approval may be deferred if weather conditions are unfavourable.

Two days prior to transplanting of each specimen the rootball shall be thoroughly irrigated. Cutting of roots shall be minimised. A ball of soil around the root system shall be maintained in a firm condition by wrapping in hessian or other appropriate open weave material.
Prior approval of the Superintendent shall be obtained for the selective pruning of branches prior to transplanting.

(e) Fertilizing

Except as otherwise specified or shown on drawings all plants shall be fertilized and then watered-in after planting.

Fertilise at the following rates:

Product	100 to 150 mm Pot
Agriform (low phosphate) or equivalent	2 Tablets
Osmocote (long life – low phosphate) or equivalent	1.5 teaspoons (15 grams)
Magamp K (course grade) or equivalent	1.5 teaspoons (15 grams

Place fertiliser in the bottom of the hole and cover with soil to ensure there is no contact between roots and fertiliser.

(e) Watering

All plants shall be watered-in with saturation to the depth of the root ball immediately after planting and at such times during the Contract period as is required to maintain growth free from water stress.

Advanced trees shall be maintained free of water stress.

(f) Tree Guards

A secure tree guard shall be placed around tubestock plants.

Tree guards shall be securely anchored using stakes driven into the ground and as per the Frankston City Council Standard Planting Detail.

(g) Advanced Tree Staking

Advanced trees shall be securely staked with 2 No. 38 mm x 38 mm x 2250 mm hardwood stakes driven into the ground. Advanced trees shall be loosely tied to the stakes with flexible ties.

(h) Seeded Grass Areas

Naturestrips and all areas indicated on the Drawings and/or all areas disturbed by the Contractor which are not to be planted, shall be grassed. Grassed areas disturbed by the Contractor shall be reinstated as specified.

Immediately before sowing, the area shall be lightly raked to give a loose surface on which to sow the seed. The grass seed mix as specified shall be sown on a calm day at 300 kg per hectare to achieve an even seed cover.

Fertiliser, in the form of an approved lawn seed starter fertiliser (NPK 10:4:6) shall be spread evenly at the rate of 300 kg/hectare as part of the seeding operation.

HP No sowing shall be undertaken without the approval of the Superintendent.

After sowing, the seed shall be raked into the top 10 mm of soil and watered with a fine mist spray.

The Contractor shall protect all seeded areas and maintain the seed bed in a moist condition to ensure unhindered germination and growth.

A minimum 90% consistent healthy grass cover within 3 months shall be achieved in all grass areas.

15.11 TURF

(a) Preparation

The designated area shall be prepared as per 15.9 (b).

A prepared mix of approved lawn starter fertilizer N.P.K. ratio 6:6:4 at a rate of 40gms/m2 shall be spread evenly over the prepared surface. The fertilizer shall be raked into the bed to a depth of 50mm and applied at the time of turfing.

(b) Handling

Turf shall be delivered to the site within 24 hours after being cut and shall be installed within 36 hours after being lifted from the nursery. During dry, windy weather the stacks of turf shall be sprayed with water and covered with hessian to keep them moist.

(c) Laying Turf

With topsoil raked smooth and lightly watered, the turf shall be laid in a stretcher bond pattern across any slope. Edges shall be cut with a sharp knife and shall be firmly butted to adjoining strips. The turf shall be pushed, not pulled, into position, and shall not be stretched. On extreme slopes temporary wooden or metal pegs shall be installed.

Any occasional gaps shall be filled with topsoil and tamped. The entire laid surface shall be tamped with a flat board or lightly rolled. Excess trafficking shall be avoided over newly laid areas.

Newly laid areas shall be watered during laying and more thoroughly at the end of each day to saturate the soil to a depth of 75-100mm. Any bare patches shall be seeded with seed identical to the turf species.

During hot dry conditions turf may require watering twice daily. Watering shall be at least daily for the first week except in periods of heavy rain.

(d) Protection

The Contractor shall protect the newly grassed areas against trespass and traffic until the grass is well established. Protection shall as a minimum include the erection of two (2) strand wire on steel 'star' picket protection fencing where necessary, or as directed by the Superintendent, and shall be included in the contract price. Tops of pickets shall be fitted with a domed plastic cap.

15.12 HYDROSEEDING

(a) Preparation

The area to be hydroseeded shall be initially prepared as specified in Clause 15.9 (h).

(b) Fertiliser

Fertiliser to be used shall be a prepared mix of approved lawn seed starter fertiliser (NPK 10:4:6) spread evenly at the rate specified as part of the hydroseeding operation.

(c) Seed Mix

Grass seed mix shall be as specified.

(d) Application

All hydroseeding shall be carried out on calm days.

Sufficient seed shall be placed in a suitable hydroseeding machine to provide a seeding rate at least equal to that specified. The seed,fertiliser, pulp and water shall be constantly agitated during the seeding operation.

Sowing shall be performed by hydromulch method whereby seed, fertilizer and fibre binder (wood cellulose fibre, paper fibre, coconut fibre, sugar cane fibre, organic polymer or other as approved by the Superintendent) are mixed into a slurry and sprayed onto the area.

Apply the slurry using high pressure pumping equipment operated by trained personnel. Spray the mixed slurry under pressure, maintaining a thoroughly mixed supply, operating on a front so that the mixture is evenly distributed over the area. Complete each front before commencing the next.

The slurry mix shall be sprayed onto the prepared area at the following rate:

Seed	300 kg/hectare
Fertiliser	300 kg/hectare
Woodfibre	1500 kg/hectare

Avoid overspray onto buildings and pavements. Protect built structures and pavements where required. Remove any overspray of the slurry mix from built structures or pavements.

(e) Establishment

The Contractor shall protect all seeded areas and maintain the seed bed in a moist condition to ensure unhindered germination and growth.

15.13 TIMBER RETAINING WALLS

(a) General

The Contractor shall supply and install all materials and provide all necessary plant and equipment to complete all excavation, filling, if required, and backfilling including fixtures and footings for the construction of timber retaining walls as shown on the drawings and as per Standard Drawing SD 528.

(b) Type of Timber

Timber used in the construction of retaining walls shall be new and Durability Class 1 (AS 1720.2-1990 Timber Properties) radiata pine (pressure treated with C.C.A.) or F11 stress grade hardwood (red ironbark).

Timber that is excessively warped, split or otherwise unsound shall not be used.

All sizes specified are rough sawn dimensions and as set out in Standard Drawing SD 528 unless otherwise specified.

(c) Fixing Devices

All bolts, nails or other fixing devices shall be hot dipped galvanised and as specified on Standard Drawing SD 528.

(d) Sizes of Foundation Holes

All holes for upright members shall be excavated to the depth and dimension as set out on Standard Drawing SD 528.

The holes shall be free of any foreign material prior to the placement of the uprights.

When an obstruction is encountered in an excavated hole, the Superintendent must be consulted before any modification to the position of an upright member is made.

(e) Setting Out

The Contractor shall set out timber retaining walls to the line and position as indicated on the drawings and shall not alter this without the prior consent of the Superintendent. Uprights shall be placed at standard 2.4 metre centres for the run of the wall with termination ends at 1.8 metres centres unless otherwise indicated in the drawings or the specification.

(f) Construction Details

In general timber retaining walls are to be constructed as to the details and specification shown on Standard Drawing SD 528. For walls exceeding 2500 mm timber retaining walls shall not be used.

For timber retaining walls to a maximum height of 600 mm, upright members may be founded in a dry mixture of 1 part cement to 4 parts clean loam thoroughly mixed, rammed and consolidated around the upright members. Timber uprights shall be laid back with a slope of 1 to 10, unless otherwise specified, with opposing faces plumb. Horizontal members shall be bolted to the timber uprights with 200 mm x 10 mm galvanised coach bolts unless otherwise specified in a neat and regular fashion with all bolt faces equally spaced and straight in appearance.

For timber retaining walls between the heights of 600 mm to 2500 mm upright members shall be founded in a mixture of ready mix concrete (foundation mix) complying with AS 1379 with a 28 day strength of 20 Mpa and 20 mm nominal maximum aggregate size. Galvanised UB uprights shall be placed vertically, unless otherwise specified.

All exposed edges of timber shall be chamfered.

Any variation from the above shall not be permitted without the consent of the Superintendent.

(g) Agricultural Drains

In accordance with Standard Drawing SD 528 provide and lay agricultural drains to the base at the rear of the retaining wall.

Piping shall be 100 mm diameter slotted flexible UPVC Class 400, with standard connections as recommended by the manufacturer, firmly bedded on trench bottom and graded uniformly at a minimum grade of one per cent to pits or other outlet as directed and backfilled with 7mm screenings free from fines to within 150mm of finished surface level.

The piping outlets shall be connected to stormwater drainage services in accordance with good drainage practice.

(h) Completion of Works

On completing the construction of timber retaining walls and AG drainage, the Contractor shall backfill the top 150mm with either:

- 75mm of approved topsoil and 75mm mulch; or
- 145 mm of topsoil and 5mm of turf,

as specified.

Following the placement of backfill material, the area shall be raked to blend into the existing profile of the surface behind the timber retaining wall and to either side of the terminating ends. All timber off cuts and other debris shall then be removed from the site.

15.14 DRAINAGE FOR LANDSCAPE WORK

(a) General

Prior to commencing work the Contractor shall confirm that existing levels comply with levels shown on drawings and that the required grades can be constructed. All grading to pits shall be smooth and gradual.

HP The Superintendent shall inspect all drainage work prior to backfilling.

(b) Stormwater Drains and Pits

Stormwater drains and pits shall be constructed in accordance with the drawings and Section 5 – Stormwater Drains and Pits and Section 6 - Concrete of the specification.

(c) Agricultural Drains – General Landscape Works

Excavate for, provide and lay agricultural drains to the lines, gradients and levels in accordance with the drawings and this specification. Check levels before commencing work.

Piping shall be 100 mm diameter slotted flexible UPVC Class 400, with standard connections as recommended by the manufacturer.

Piping shall be laid in a trench not less than 300mm in width at the bottom on a 20mm depth of 7mm dia. aggregate (screenings) bedding free from fines. The minimum gradient of piping shall be one (1) per cent towards the outlet. Trenches shall be backfilled with 7mm dia. aggregate (screening) free from fines, to surface level or as otherwise directed.

The piping outlets shall be connected to stormwater drainage services in accordance with good drainage practice.

(d) Agricultural Drains – Playing Field Construction

Excavate for, provide and lay agricultural drains to the lines, gradients and levels in accordance with the drawings and this specification.

The pipe drain system and its associated pits and outfall connection is to be completed after topsoil application.

All drainage pits lids within the perimeter fence line of the oval are to have 100mm minimum cover topsoil and a location mark shall be placed on the adjacent fence.

(i) Trenches

Pipe trenches are to be cut into the sub-base to a depth below finished surface level, sufficient to provide for:

- 250 mm depth of sand backfill material,
- minimum 80 mm depth of aggregate over the pipe, and
- 20 mm even depth of aggregate under the pipe.

The width of the trench is to be at least twice (2x) the diameter of the drainage pipe to be used, that is, the trench width will be at least 200 mm.

All trenches are to be dug using an implement which will give a clean trench, sides and base.

Spoil from the trenches is not to be left on the surface or returned to the site for use as backfill into the trenches or sand slits.

Prior to the installation of pipe or aggregate (pipe drains), the base of the trench is to be clean of any loose material, and have no undulations.

(ii) Aggregate

Aggregate is to be used as an envelope around the pipe so that at no time will the pipe be in contact with the existing soil at the sides or base of the trench. The aggregate immediately around the pipe shall be 10-12 mm (nom.), covering the pipe to a depth of 40 mm. A layer of 47 mm (nom.) aggregate, free of all organic material and fines shall be placed between the 10-12 mm aggregate and the backfill sand. All aggregate shall be hard and durable gravel or crushed rock. There is to be less than 10% particles smaller than 4.0 mm.

The base of the trenches will be dressed with 10-12 mm aggregate to an even depth of 20 mm.

When laying the aggregate envelope, the pipe must be kept flat on the aggregate bed, without any undulations. It must not be allowed to remain in contact with the sides of the trench.

The 47 mm aggregate is to be placed over the pipe to a minimum depth of 40 mm, yet to a sufficient depth to ensure there is an allowance for consolidated sand backfill of 250 mm.

(ii) Drainage Pipe

The pipe in the lateral drain lines shall be Class 400 subsoil drain of 100 mm diameter. Upper ends of pipes are to be capped in accordance with the approved drawings.

The collector line around the perimeter of the field shall be 150 mm diam. Sewer quality PVC pipe. Sewer quality junctions with inspection openings shall be installed where lateral drains meet collector drain.
Filter fabric will not be used in the interface between the drainage layer and the backfill sand.

(iii) Backfill Sand Material

All the trenches are to be backfilled with a sand material placed at a uniform, consolidated depth of 250 mm. The finished surface of the consolidated trench shall be level with the finished surface level.

Backfill sand material will conform to the following specification:

1.	pH	6.0 - 7.5	
2.	Salt (ppm)	< 500	
3.	Particle size	(% retained)	
	Fine Gavel (>2mm)	0	
	Very Coarse Sand (1mm)	< 10	
	Coarse Sand (0.5mm)	< 20	)
	Medium Sand (0.25mm)	40 - 75)	> 75%
	Fine Sand (0.150mm)	< 40	)
	Very Fine Sand (0.053mm)	< 15	
	Silt & Clay (<0.053mm)	< 5	

4. Hydraulic Conductivity (mm/hr) 350 - 600

15.15 CONCRETE FOR LANDSCAPE WORKS

All concrete and concrete kerb specified in the Contract is to be supplied and placed in accordance with Section 6 – Concrete and Section 7 – Concrete Kerb and Channel of the specification and in conformity with lines, grades and dimensions shown on the drawings or as directed by the Superintendent.

15.16 FOOTPATH PAVING FOR LANDSCAPE WORKS

The Contractor shall construct paving as shown on the plans in accordance with Section 8 – Footpath Pavement Construction of the specification. The placing shall comply with the requirements set out in the specification and drawings.

15.17 LANDSCAPE FURNITURE

The Contractor shall supply and install landscape furniture as shown on the plans in accordance with Section 13 – Signs, Furniture and Fencing of the specification. All furniture is to be as detailed on the drawings. The placing shall comply with the requirements set out in the specification and drawings.

15.18 IRRIGATION – PLAYING FIELD CONSTRUCTION

Supply and install an automatic irrigation system in accordance with the drawings and this specification.

The sprinkler heads are to be set level with the finished surface of the playing field. The integrity of the topsoil layer is not to be disturbed or contaminated, nor is the uniformity of depth of the topsoil layer nor the surface grades surrounding each sprinkler to be adversely affected.

The Contractor is to install 1 square metre of suitable approved blend instant turf around each sprinkler head to avoid damage to the surface from sprinkler wash.

Sprinkler system specifications shall be as detailed in the Drawings.

Water Supply
To be made available from the existing main.

Coverage:
The Contractor is to ensure the irrigation system provides 100% head to head coverage. If the Contractor is in any doubt as to whether the design shown on the plans will meet the coverage requirements, the Superintendent is to be notified prior to the Contractor purchasing of any equipment or commencing any installation.

Flushing:
Adequate flushing out of the irrigation reticulation system is to be carried out before it is placed in operation in order to remove all foreign materials that may have been left or deposited in the piping system during the construction phase.

Coverage Tests:
When the watering system is properly balanced and adjusted, a coverage test shall be performed in the presence of the Superintendent to ascertain that the water coverage for areas is complete and adequate.

Commissioning:
The Contractor shall be responsible for the testing and satisfactory performance of the complete irrigation system as set out below.

(a) Static Tests

Prior to commissioning, the Contractor shall ensure valve stations close satisfactorily.

Control cabling shall be inspected to ensure all cable terminations are adequately insulated and that no short-circuits exist.
Pipework and fittings shall be tested to the satisfaction of the Superintendent to ensure there are no water leaks in the system.

(b) Commissioning Procedure

Upon completion of the above static tests the Contractor shall, in the presence of the Superintendent, commission the system in accordance with the following procedure.

(i) The Contractor shall give the Superintendent forty-eight (48) hours notice prior to commissioning the irrigation system.

(ii) Each valve shall be opened to test sprinkler operation. During this procedure only one valve station shall be open at any one time.

(iii) Sprinkler operation shall be tested by continuous operation for a minimum of 15 minutes for each valve.

(iv) Upon satisfactorily completion of the above procedures the complete system shall be continuously operated for a minimum of one hour.

Completion:
Once the watering system is complete and operational to the Superintendent's satisfaction and the works have reached Practical Completion, the Contractor is to supply a set of 'As Constructed' drawings, a complete set of component warranties, an instruction and maintenance manual which shall include a list of all components used in the system, together with their brand names and model numbers and wiring diagrams for the system.

Defects Liability Period:
The defect liability period on the irrigation system shall be 12 months from the date of Practical Completion. This will cover any equipment supplied that has proved to be faulty, and it shall also include any faults associated with incorrect installation or poor work practices. The Contractor shall respond within 48 hours to any request by Council for repairs/rectification during the 12 months period.

15.19 GRASSING – PLAYING FIELD CONSTRUCTION

(a) General

The Contractor shall ensure that the grassing of the playing field is co-ordinated with the irrigation and/or drainage sub-contractors (if any) prior to commencing any works. Any damage to the irrigation and/or drainage systems shall be made good in accordance with the respective irrigation and drainage specifications and standards at the Contractor's expense.

(b) Seedbed Preparation

The following materials are to be cultivated into the top 50mm of sand topsoil (pH 5) using power harrows, consolidated and levelled prior to any grass sowing.

- Dolomite lime, sufficient to bring pH into the range of 6.0 – 7.0 (subject to test results)
- Organic Matter (Dynamic Lifter® granular form or equivalent) at 5 tonne/hectare
- Superphosphate at 500 kg/ha
- Trace element mix at 500 kg/ha

(c) Grass Seed

The blend of grasses to be used shall provide a dense cover capable of use as a football field in winter and cricket field in summer. Certified seed only shall be supplied. Seed purity shall be 98%, germination rate shall be 90% including fresh ungerminated seeds. All seed supplied shall comply with the current Seeds Act of Victoria. All seed mixes contain 20% by weight UF 38 (Azolon) slow release fertiliser.

Seed mix shall be as follows:-

Summer Mix – to be used when sowing between September and February:

Blend of fine leaf fescue (15%), kentucky bluegrass (35%), fine leaf rye grass (40%) and unhulled couch grass (10%) - application rate 300 kg/ha. Oversow 12 weeks later with blend of fine leaf fescue (15%), kentucky bluegrass (35%), fine leaf rye grass (50%) – application rate 300 kg/ha.

Winter Mix – to be used when sowing between March and August:

Blend of fine leaf fescue (15%), kentucky bluegrass (35%) and fine leaf rye grass (50%) - application rate 300 kg/ha. Oversow 12 weeks later with blend of fine leaf fescue (15%), kentucky bluegrass (35%), fine leaf rye grass (40%) and unhulled couch grass (10%) – application rate 300 kg/ha.

The approved seed mix shall be drill sown into the field through a specialised turf seeder. The field shall be covered in at least two directions. A 1 sq.m. of ryegrass blend instant turf shall be laid around each sprinkler head to avoid damage from sprinkler wash.

(d) Soil Sampling

During the period 12-14 weeks after sowing, a soil sample is to be tested for nutrient levels and a report containing recommendations to improve the soil fertility shall be produced and followed. The Superintendent shall be given a copy of the test results and advised of recommended actions to be taken with 7 days of receipt of the report by the Contractor.

(e) Establishment

This phase is of major importance because it is during this time that the long term condition of the turf is determined. It is important to ensure that the turf does not suffer any type of stress during this period.

Watering:

Following seeding, the surface of the field should be kept moist to favor maximum germination. This will require the irrigation system to be programmed to operate in short, frequent cycles. It may be necessary for the field to be watered several times during the day as any drying of the surface will have a detrimental effect on the survival of the turf.

As the seedlings develop, gradually reduce the frequency of watering but increase the watering period to maintain an adequate moisture level in the soil profile. Excessive watering will result in nutrient leaching.

Fertilising:
The fertiliser applied at sowing will be sufficient to last until about Week 6.

Commencing 3 weeks after emergence of the grass, the field shall be fertilised every 4-6 weeks with an approved fertiliser at 400kg/ha.

Maintain the vigour of the turf by applying an approved fertiliser every 4-6 weeks or as the appearance of the turf dictates. Any yellowing of the turf is an indication that fertiliser is needed.

In autumn and spring apply an approved fertiliser at a rate as dictated by the soil analysis.

Mowing:
The field shall be first mown when approximately 80% of the grass has reached a height of 75 mm. For this cut, the height shall not be less than 50 mm. The field should then be mown regularly so that no more than one-third of the leaf length is removed at one time. Subsequent mowing shall gradually reduce the average height to 35 mm.

Any clumps of grass clippings which occur shall be removed on the day of mowing to prevent smothering of the underlying grass plants resulting in bare patches or disease invasion.

Areas that do not develop the required density, or are damaged or lose cover are to be repaired without delay. This may require oversowing with extra seed as necessary.

Maintain regular mowing to develop a strong, dense cover.

The mowing pattern should be varied to avoid wheel ruts developing.
Disease:

Young turf is particularly susceptible to disease invasion. Regular checks, no more than 7 days apart are to be made to ensure no fungal or other disease is effecting the seedings. If any disease is present a sample is to be tested by a recognized turf laboratory and the recommendations for control carried out immediately to prevent loss of plants and density.

Weed Control:
It is important to control the incidence of any weed growth to prevent heavy competition to the turf. Effective control will depend on proper identification of the problem and then the most appropriate action must be taken.

Generally with broadleaf weeds, effective control is achieved when herbicide is applied at the early rosette stage of the weed. This is generally in autumn. If the weeds are allowed to develop large canopies, large bare areas remaining after the weeds have been eradicated, will require reseeding. This is to be carried out as requested by the Superintendent.

Soil Subsidence:
Any soil subsidence or erosion which may occur after the date of Practical Completion of the works shall be made good by topdressing and reseeding as specified in accordance with the above requirements.

Urgent Works:
Not withstanding anything to the contrary of the contract, the Superintendent may instruct the Contractor to perform urgent maintenance on works. Should the Principal Contractor fail to carry out the work immediately the Superintendent reserves the right without further notice to employ others to carry out such work and charge it to the Contractor.

Completion:
The Contractor shall give the Superintendent seven (7) days notice that the works are practically complete, prior to commencement of the Maintenance/establishment period. The Principal Contractor shall inspect the works and if any defects or deficiencies are found they shall be rectified within 14 days.

(f) Maintenance

The Contractor shall be responsible to undertake any and all necessary maintenance works to ensure that by 13 weeks after sowing, the required turf cover and density has been achieved. The field is to have a full cover of sown species. There shall be less than 0.5% broadleaf weeds and less than 0.5% grass weeds present in a given sample area.

A fifty two (52) week maintenance period on the playing surface shall apply. The Contractor will be required to reinstate subsidence on trench lines within one week of apparent subsidence. The maintenance period will start from the date of Practical Completion.

15.20 ESTABLISHMENT AND MAINTENANCE AFTER PRACTICAL COMPLETION

(a) Scope of Establishment and Maintenance

The Contractor shall establish and maintain the whole of the landscape work performed under this Contract for a period of fifty two (52) weeks following the date of the issue of the Certificate of Practical Completion by the Superintendent. Any defects shall be rectified immediately.

Establishment and Maintenance shall mean the care and maintenance of the works by accepted horticultural and arboricultural practices, as well as rectifying any defects that become apparent in the works under normal use.

Establishment and Maintenance of the landscape work shall include, but shall not be limited to, the following items where and as required:

(i) watering
(ii) fertilizing
(iii) cultivation
(iv) top dressing
(v) renovating
(vi) weeding
(vii) pest and disease control

(viii) staking

(ix) replacement of plant materials

(x) replanting

(xi) pruning

(xii) re-mulching

(xiii) maintaining the site neat and tidy

The Contractor shall give the Superintendent seven (7) days notice that the works have reach Practical Completion for commencement of the establishment/maintenance period. The Superintendent shall inspect the works and if any defects or deficiencies are found they shall be rectified within 14 days.

Any soil subsidence or erosion which may occur after soil filling and preparation operations shall be made good.

All newly planted areas shall be protected from casual pedestrian traffic as specified herein. Protective fences shall be removed following successful establishment of the works.

All mulched surfaces shall be kept in a clean and tidy condition and be reinstated or topped up where necessary.

(b) Joint Inspections

Joint inspections shall be undertaken by the Contractor and Superintendent at three monthly intervals after commencement of the maintenance period.

Any remedial work shall be performed within two weeks of the date of inspection or during the planting season following written documentation of the defect.

(c) Replacement Materials

All replacement materials used shall be in accordance with the requirements of this specification, the drawings and plant schedules.

(d) Maintenance

The works shall be maintained as follows in accordance with the requirements of this specification, the drawings and plant schedules.

(i) Planting

The planting establishment period shall commence at the date of Practical Completion and the maintenance period of fifty two (52) weeks must include one full summer.

Practical completion of the planting works includes, but is not limited to, the germination of grassed areas, establishment of turfed areas and replacement of plants which have failed, been damaged or been stolen during the works.

The Contractor shall produce and comply with a planting maintenance program and keep a log book recording when and what maintenance work has been done and what materials, including toxic materials, have been used. The program and log book shall be made available for inspection on request of the Superintendent.

Where existing planting or grass is within the contract landscape area, the Contractor shall maintain it as for the corresponding classifications of new grass areas or planting.

(ii) Replanting

Plants which die or do not show satisfactory growth within the maintenance period shall be replaced and replanted by the Contractor at the Contractor's expense.

The Contractor shall programme and allow for the supply and propagation of plants whether by seed or cutting as required for any replanting during the current or next available planting season.

All plants (including any replacement plants) are required to clearly indicate healthy growth at the completion of the maintenance period by demonstrating growth through consecutive growing seasons.

(iii) Weed Control

Garden beds shall be weeded a minimum of once every two weeks unless otherwise instructed and be maintained in a minimum 90% weed free state.

Grass areas shall be sprayed with approved selective herbicide against broadleaf weeds as required by the Superintendent and in accordance with the manufacturers directions.

(iv) Watering

Trees, garden bed and grassed areas are to be watered regularly to ensure continuous healthy growth. The minimum requirement shall be consistent with the natural rainfall of the site location. New planting shall receive regular and frequent deep soakings to ensure establishment and healthy growth. During periods of hot and dry weather, lawn areas shall be watered on a daily basis, preferably in the early morning or late afternoon.

(v) Mowing

Initially mow with a sharp rotary type mower taking care to cut no more that one third of the leaf area in any one mowing. Modification to the closeness of cut should be made gradually. Later mowing can be done with a reel type mower.

The first cut and any subsequent mowing during the maintenance period, shall be carried out at intervals sufficient to maintain the grass height at 50 to 75 mm ± 10 mm.

With any mowing, no more than one-third of the leaf length is to be removed. The grass shall be cut in even swathes. The formation of windrows is not permitted. Grass cuttings shall be spread evenly over the mown area without the formation of clumps.

(vi) Reseeding of Seeded Grass Areas

Areas with less than 90% grass cover after three months growth shall be resown by the Contractor at the Contractor's expense.

(vii) Fertilising of Grassed Areas

Apply a complete liquid fertiliser ("Defender Lawn Food", or similar approved) lightly at regular intervals. During winter fertiliser application should be minimised to avoid weed infestation. Generally apply fertiliser at a rate of 3kg per 100 square metres every four (4) weeks during Spring, Summer and Autumn.

Do not apply a dry fertiliser to wet grass. Apply fertilizer to manufacturer's recommendation, ensuring an even spread. Deliver half the application in one direction, then apply the remaining half at right angles to the first application. Do not spread fertiliser by hand. Fertiliser shall be watered in immediately after application.

(viii) Pest and Disease Control

All plants are to be maintained free of insect infestation and plant disease.

Spray against insect and fungus infestation as required, and if considered necessary by the Superintendent. All spraying shall be carried out in accordance with the manufacturer's directions.

Report any occurrence of insect attack or evidence of disease amongst the plant material. The Superintendent shall be notified prior to spraying work being carried out.

(ix) Re-mulching

Areas mulched with shredded wood mulch shall be maintained at a minimum consolidated depth of 75 mm and maximum depth of 100 mm.

(x) Pruning

Trees and shrubs shall be pruned as directed by the Superintendent. Pruning shall be as directed for the establishment of dense foliage or miscellaneous pruning as beneficial to the condition of the plants. Any damaged growth shall be pruned. Tree branches likely to form a dominant "U" or "V" shaped crotch shall be removed.

(xi) Maintaining the Site in a Neat and Tidy Condition

The Contractor shall keep the site in a neat and tidy condition.

(xii) Removal of Tree Guards and Stakes (200 mm and 300 mm Post)

Tree guards shall be removed when the plant reaches 1000 mm in height.

(xiii) Repairs to Erosion Treated and Affected Areas

The Contractor shall maintain all areas subjected to erosion protection treatments and shall repair all damage or erosion which arise during the maintenance period. Any soil subsidence or erosion which may occur after filling and preparation operations, shall be made good.

Such areas shall be re-prepared and re-protected as specified. Additional materials required by the Contractor to maintain, repair or complete the erosion control work shall be supplied by the Contractor at the Contractor's expense.

(xiv) Expiry of Establishment and Maintenance Period

The Contractor shall ensure that all works of the Contract are complete immediately prior to the expiry of the fifty two (52) week Establishment and Maintenance Period. The Contractor shall remove all debris from the site and any material that may have been stored on or adjacent to the site and leave the area tidy.

Grass areas shall have a healthy and vigorous grass sward appropriate to the area and trees and shrubs shall show signs of vigorous growth.

The Contractor shall arrange an inspection with the Superintendent. On approval of the works and rectification of any defects, the Establishment and Maintenance Period shall be deemed to be completed.