Specification

DRAKESBROOK WEIR RECREATION AREA IMPROVEMENTS

LANDSCAPE & IRRIGATION WORKS

For

SHIRE OF WAROONA

Prepared by

EPCAD Pty Ltd
28-30 Mayfair Street West Perth WA 6005
PO Box 1233 West Perth WA 6872
Telephone: (08) 9481 4410
Facsimile: (08) 9481 6903

MARCH 2023

TABLE OF CONTENTS

SECTION E: PRELIMINARIES

E.01 INFORMATION TO TENDERERS

E. 01.1 Interpretations

Words and expressions in the Contract, except where the context otherwise requires, shall be as follows:

- *'the Contractor' has the same meaning as 'the Builder';*
- *'the Architect' has the same meaning as 'the Landscape Architect';*
- *'the Superintendent' has the same meaning as 'the Landscape Architect';*
- *'the Principal' has the same meaning as 'the Proprietor';*
- *'approved', 'directed', 'required', 'rejected' and similar expressions shall mean approved, directed, required, rejected and the like by the Superintendent; and*
- *'give notice', 'submit' furnish' and similar expressions shall mean give notice, submit, furnish and the like to the Superintendent.*

E. 01.2 Discrepancies between documentation

In the event of any contradiction, discrepancy or ambiguity between anything contained in the Contract documents, drawings, or other referred specifications, then the following hierarchical precedence shall prevail:

i) General Conditions of Contract

ii) Special Conditions of Contract

iii) Statement of Requirements

iv) Drawings

v) Civil Works Specification

vi) Landscape Works Specification

vii) Irrigation Specification

E.02 ENVIRONMENTAL PROTECTION

E. 02.1 Generally

Comply, and make sure that sub-contractors comply, with the provisions of this clause and any other environmental protection provisions in the Contract and with the requirements of any statute, by-law, standard and the like related to environmental protection.

Do not form new tracks, alter existing tracks, erect camps, remove trees or shrubs, cut fences, water, sewerage or power lines or any other such things without approval.

Rectify, to the Superintendent's satisfaction, all environmental damage caused during the Contractor's occupancy of the site by replacement with appropriate flora and soils or such other means as the Superintendent may direct.

E. 02.2 Fire Protection

Light no fires during gazetted fire restriction periods, or where damage to the environment could result, or if permission has not first been obtained from the Superintendent, or the relevant authority, or both.

If permission is granted, keep fires under control and within such areas as may be directed, Protect property, including buildings, fences and the like, and vegetation, including grass, crops, trees, bushland and the like, from the harmful effect of any fire resulting from the work under the Contract.

E. 02.3 Storage on Site

Store materials and equipment on site so as to prevent damage to the site and minimise hazards to persons, materials and equipment. Keep storage areas neat and tidy.

Do not use roads, driveways, paths, hard standings and the like forming part of the Works for access or storage unless prior written approval has been given.

E. 02.4 **Trucking**

Convey soils, earth, sand, loose debris, and the like loose materials to or from the site in a manner that will' prevent dropping of materials on streets, Ensure that the wheels, tracks and body surfaces of all vehicles and plant using the site are free of mud and that mud is not carried on to paved streets or other areas.

E. 02.5 **Existing Flora**

Adequately protect from damage all trees and other plants which need not be removed or destroyed for construction operations, or which are shown on the Drawings and/or specified to be retained, or which are beyond the limits allowed to the Contractor as shown or specified.

SECTION F: SITE PREPARATION EARTHWORKS AND SOIL WORKS

F.01 SETTING OUT

F.01.1 Prior to commencing any works, set out alignments of all walls, principal trees and kerbs for inspection and approval by the Superintendent.

F.01.2 **ALL** setting out of works to be carried out by a licensed surveyor using the electronic design base provided

F.02 SITE CLEARANCE

F.02.1 Any ground vegetation shall be cleared and all dead vegetation, rubbish and other foreign objects shall be removed. Root systems should be grubbed up and all arisings shall be removed from site. Backfill grub holes with suitable spoil from excavations compacted in layers to the density of the surrounding undisturbed topsoil.

F.03 EARTHWORKS GENERALLY

F.03.1 The tender package includes the civil earthworks drawings which show the designed earthworks levels previously completed by the civil contractor, however some sand drift and erosion has occurred since these works were completed. The schedules request earthworks for moving dirt around site and **the Contractor shall be responsible for inspecting the site and the enclosed civil drawings at the time of tender and shall include for whatever additional earthworks are required to achieve the proposed levels indicated on the Landscape Drawings** and as specified below, taking into account the sand drift and erosion that has occurred. The Contractor shall allow for the excavation and backfilling for all retaining walls, piers and the like.

F.03.2 Earthworks shall consist of performing all the operations necessary to achieve the grades shown on the Drawings including, but not necessarily limited to:

- *Excavation and backfilling for all structures within this Contract;*
- *Excavation of existing subsoil;*
- *Placing of excavated subsoil; and*
- *Disposal of surplus material.*

F.04 STANDARDS

F.04.1 Work carried out and testing performed under this Section of the Specification shall comply with the requirements of the following Standards unless otherwise specified:

- *AS 1289 Methods of Testing Soils for Engineering Purposes*
- *AS2223 Garden Soils for Domestic Use*

F.05 EXCAVATION

F.05.1 **Generally**
Excavate to conform to the lines, grades, cross-sections and dimensions shown on the Drawings. The Superintendent may order the removal of any soft spots, debris or organic material exposed when excavated areas have been trimmed to finished formation levels. Remove all rocks and boulders, which protrude above finished surfaces of sub-grades.

F.05.2 **Rock Excavation**
The Contractor shall include for all excavation through rock and removal of arisings from site in his lump sum tender price.

F.06 DISPOSAL OF SURPLUS SPOIL

F.06.1 All surplus arisings from the construction works shall be re-spread on site as directed by the superintendent wherever possible. The Contractor shall remove all remaining surplus material and arising from his earthworks operations from site.

F.07 FILLING

F.07.1 Remove all debris, rubble and vegetative material from sources to be filled and remove from site.

F.07.2 Place and compact fill to conform to the lines, grades, cross-sections and dimensions shown on the Drawings. Allow for the thickness of materials which will be placed in subsequent operations.

F.07.3 Before filling commences, the Superintendent may order the removal of any soft spots, debris or organic material exposed when the nominal depth of topsoil has been stripped.

F.07.4 All fill shall be placed in layers of uniform thickness and each layer shall be compacted as hereinafter specified. The loose thickness of each layer before compaction shall not exceed 300mm.

F.08 **FILL MATERIAL**

F.08.1 The materials used for filling may be obtained from excavations. Fill material shall consist of approved sandy materials and shall be free from logs, stumps, weeds and other perishable matter. The best available material shall be used in the upper layers. Material used in the top 150mm below sub-grades shall be free of particles larger than 50mm. Material used in the top 600mm below sub-grades shall be free of particles larger than 150mm.

F.08.2 The Contractor may use approved stripped topsoil in soft landscape areas but must ensure that this material is not used under paved areas or beneath footings. However, it shall be the Contractor's responsibility to ensure that sufficient topsoil stockpiles are retained to allow for later re-spreading as specified.

F.09 **COMPACTION EQUIPMENT**

F.09.1 It shall be the Contractor's responsibility to provide and operate sufficient rollers of suitable type to compact excavations, fillings and formation in accordance with the Specification.

F.09.2 Compaction equipment shall be suitable for the material being compacted and, unless otherwise permitted, shall include at all times during compaction operations at least one roller of each of the following types:

- *Pneumatic Tyred Rollers*
- *Vibratory Rollers*

F.10 **COMPACTION**

F.10.1 To determine the degree of compaction required, the Contractor shall arrange for a soil testing laboratory registered with the NATA to establish the Maximum Dry Density of the soil to be compacted in accordance with AS 1289 E5.1 and E2.1. The cost of this test shall be borne by the Contractor. The Superintendent is to be given two working days' notice before any soil samples are taken so that he may be present during sampling.

F.10.2 Compaction shall be checked using penetrometer tests in accordance with AS 1289 F3.3 using a penetrometer calibrated by a soil testing laboratory. This calibration will be the accepted criterion for ensuring that the specified density is achieved. The cost of calibrating the penetrometer shall be borne by the Contractor. Compaction of earthworks may not proceed until calibration of the penetrometer has been completed to the Superintendent's satisfaction.

F.10.3 Results of all testing performed by the soil testing laboratory to be provided to the Superintendent.

F.10.4 The Contractor shall uniformly compact all cut and fill areas prior to the final trimming being carried out to 90% of the modified maximum dry density except where otherwise specified in the vicinity of foundations, etc.

F.10.5 Compaction shall be to minimum 7 blows/300mm (as tested with the Perth Sand Penetrometer) for a depth of at least 750mm below the bottom of any structure and extend 500mm beyond the extent of paved areas and structures shown on the Drawings and shall be tested to a depth of 600mm below finished sub-grade levels.

F.10.6 The loose thickness of each layer of fill material, before compaction, should not exceed 300mm.

F.10.7 Construction equipment and traffic shall not be allowed on the sub-grade or fill while it is in a wet condition. Material which has become excessively wet shall be dried or removed from the site and replaced by material of suitable moisture content for compaction at the Contractor's expense.

F.10.8 The earthworks and site formation shall receive a final shaping with a grading machine supplemented with handwork, where necessary, to ensure a smooth surface and uniform cross sections. When final shaping is complete, the surface shall conform accurately to the line, grade and cross-section shown on the Drawing and no roots, sod or other deleterious matter or stones which would be able to pass a 50mm ring shall be in the top 150mm of the sub-grade.

F.10.9 In areas inaccessible to the specified rollers, compaction shall be carried out as directed using smaller rollers or suitable mechanical tampers and must achieve the specified compaction requirements.

F.10.10 **Note:** The Contractor shall provide an **independent site penetrometer compaction test** result to the Superintendent for sign off by a structural engineer, prior to any construction works being carried out in that area.

F.11 **PREPARATION OF SUB-GRADE**

F.11.1 Prior to commencing soil works, the Contractor shall eradicate all weeds and remove all rubbish, roots and stones over 50mm in diameter. All debris arising from these works to be removed from site.

F.12 **EXCAVATION IN CONNECTION WITH THE INSTALLATION OF THE IRRIGATION SYSTEM**

F.12.1 The Contractor shall ensure that topsoil is removed and stored separately during excavation operations, (in connection with the installation of the irrigation system), and that it is subsequently replaced to a depth of 150mm above other backfill materials.

F.12.2 Excess excavated sub-grade materials shall be removed from site.

F.12.3 Excavation for irrigation mainlines shall not occur within one metre of the base of any structures or walls.

F.13 **SOIL CONDITIONER**

F.13.1 Soil conditioner shall fully comply with the AS4454-2013, fully composted product.

F.13.2 The Contractor shall import soil conditioner as follows:

(a) Soil conditioner shall be as supplied by BioWise (08 9410 0477), Natrafert (08 9402 0823) or Richgro Garden Products (08 9455 1323), or equivalent and approved, to the approval of the Superintendent. Submit a 5kg sample and laboratory report form for approval.

F.14 **SOIL WORKS**

F.14.1 The Contractor shall undertake soil works to areas to be planted and grassed as follows:

a) Areas to be turfed
Import and spread 10mm depth soil conditioner and thoroughly incorporate into top 150mm of existing soil.

b) Tree Planting (all stock)
Import soil conditioner and thoroughly incorporate with backfill to tree or shrub pit in the proportions 3 parts backfill to 1 part soil conditioner.

c) All Areas to have Shrub Planting
Import and spread 75mm depth soil conditioner and thoroughly incorporate into top 150mm of existing soil.

d) All Areas to have Tubestock or Littoral Planting
NA.

F.14.2 Soil conditioner shall be incorporated using a rotary hoe except in raised planting beds and other areas with restricted access where the Contractor shall allow for hand digging.

F.15 **FINAL GRADING**

F.15.1 Grade areas throughout to true and even grades and falls to the contours indicated on the Drawings and to finish flush with adjoining kerbs, roads, footpaths, manholes and the like, except where otherwise indicated on the Drawings. Handwork within a distance of 600mm of sprinklers and other fixed reticulation apparatus to prevent damage to system.

F.15.2 Grade to provide falls and so that the surface is constantly self-draining. No irregularities, depressions, hollows or abrupt changes in grades or falls will be accepted.

F.16 **FINISHED LEVELS**

F.16.1 Finished levels on completion of soil works to be flush with top of surrounding kerb, walls, mowing strip, paving or other enclosing element except where otherwise indicated on the Drawings. The Contractor shall allow for settlement to achieve finished levels specified.

F.17 **SOIL WETTING AGENT**

F.17.1 Apply the soil wetting agent "WettaSoil" or approved equivalent, to all areas to be planted and grassed in accordance with the manufacturers' recommendations, and water in.

F.18 **APPROVALS**

F.18.1 Give not less than three (3) working days' notice to the Superintendent so that inspection may be made of the following:

- *On completion of setting out; and*
- *Spreading and incorporation of soil conditioner.*

SECTION G: IN-SITU CONCRETE FOOTINGS

G.01 MATERIALS

G.01.1 Concrete

The concrete shall conform to AS 3600 - 2009 and shall be a mixture of cement, fine aggregate, coarse aggregate and water proportioned so that the amount of fine aggregate shall be the minimum that combined with the cement will produce only sufficient mortar to fill the voids in the coarse aggregate and leave a slight excess for finishing and that the 28 day cylinder strength of the concrete shall equal or exceed 32MPa if not detailed otherwise in the Drawings. The cement content of any mix shall not be less than 270 Kg/m3. No additives shall be used in the concrete, unless otherwise approved by the Superintendent. The slump shall not exceed 70mm or be less than 30mm. The maximum size of aggregate shall be 20mm.

G.01.2 Cement

All cement used shall be portland cement in accordance with AS 3972 and obtained from an approved manufacturer. Cement shall be delivered to the site fresh and in sealed bags and there stored in a weatherproof shed until such time that it is to be used. Any bag showing sign of deterioration or setting is to be rejected.

G.01.3 Aggregate

Fine aggregate shall be well graded, clean, sharp and free from clay and organic impurities in accordance with AS 1141.3.1-2012 and AS 2758.1-1998.

Coarse aggregate shall be crushed granite or diorite clear and free from all impurities and dust in accordance with (AS 1141.3.1-2012 and AS 2758.1-1998)

G.01.4 Water

Potable water shall be used in the concrete mix. The water shall be clean and free of any deleterious matter before use in the mix.

The quantity of water used in the concrete shall be kept to the minimum necessary to ensure adequate workability of the concrete. Under no circumstances may the water/cement ratio exceed 0.60.

G.01.5 Sand

Sand for mortar will be crushed stone or natural sand free from all deleterious substances and have a uniform grading. Sand for bedding or backfilling shall be clean sand free from roots, clay or any deleterious matter.

G.01.6 Steel

Steel reinforcing fabric and steel reinforcing bars for concrete shall comply with the requirements of (AS 1302-1991, AS 1303-1991 and AS 1304-1991) and be free from loose rust or matter likely to impair the bond with concrete.

G.02 COMPACTION OF SUB-GRADE

G.02.1 **Uniformly** compact sub-grade to 95% of the modified maximum dry density when tested in accordance with AS 1289 - 1977 Part E2.1 for the upper 250mm.

G.03 MIXING & PLACING

G.03.1 Concrete shall be mixed in an approved mechanical batch mixer. The aggregate and cement shall be first mixed dry, then after the addition of water (the quantity of which shall be carefully measured to ensure uniformity consistency of batches), the contents shall be mixed until there is uniformity in colour and consistency, but in no case shall the mixing continue for less than two minutes after the addition of water.

G.03.2 The concrete may be mixed in an approved central plant and transported on to the site in a pre-mixed condition in specially constructed conveyances, or centrally batched and mixed in transit by specially constructed transit mixers. Production and delivery of the concrete shall be in accordance with the requirements of AS 1379 - 2007.

G.03.3 A plastic surface of concrete shall be maintained until the completion of placing of that part of the work.

G.03.4 Each batch of concrete shall be placed and compacted within 30 minutes of the concrete being discharged from the mixer, or delivered to the site in a transit mixer and discharged therefrom. The methods of handling and placing shall prevent segregation and/or loss of ingredients and shall avoid re-handling. The concrete shall not be dropped by more than 1 metre. Open troughs and chutes where used shall be made of metal or lined with metal. Barrows and buckets shall be of metal. The concrete shall NOT be thrown from shovels.

G.03.5 During and immediately after placing, the concrete shall be thoroughly compacted by mechanical vibration or if necessary by hand in positions agreed by the Superintendent around the reinforcement and shall be properly spaded against the forms to ensure a good surface free from honeycombing. The concrete shall not be subjected to any disturbance after being worked into place. Concreting shall be carried on continuously between joints. The position of all construction joints shall be subject to prior approval of the Superintendent. Newly placed concrete shall be adequately shielded from harmful effects of sun, rain and frost.

G.04 **CURING**

G.04.1 All concrete shall be kept continuously damp for at least 7 days or until thoroughly cured. In hot, dry or windy conditions, the exposed concrete shall be covered and sealed with a PVC membrane, or similar approved material, such that adequate moisture is retained for proper curing.

G.05 **FINISH**

G.05.1 All exposed surfaces of concrete shall be finished smooth and dense. All honeycombed portions shall be cut out and made good to the satisfaction of the Superintendent immediately after the formwork has been struck. All projecting imperfections shall be rubbed down flush with carborundum stone or other approved means and resulting grit and dust thoroughly washed off with clean water. Then as a separate operation a 1-1/2:1 approved sand and Portland Cement mixture shall be worked into the pores over the whole surface with a fine carborundum float in such a manner that no material is left on the concrete face than is necessary to fill the pores completely, so that a uniformly smooth and dense surface is presented.

G.06 **FORMWORK**

G.06.1 The design and construction of the forms shall be the responsibility of the Contractor. The forms shall be removable without injury to the concrete. The forms shall be made either of approved timber, free from loose knots and other defects, or metal in which all bolt and rivet heads are countersunk in faces in contact with the concrete, or other approved material.

G.06.2 The forms shall be built true to line, and braced in a substantial and unyielding manner to maintain position and shape. Joints in forms shall be either horizontal or vertical and the forms and joints shall be mortar tight. Re-entrant angles shall be chamfered and corners filleted, the bevel in each case having equal angles and sides of 25mm, if not shown otherwise in the Drawings.

G.06.3 The contact face of timber formwork used for exposed concrete surfaces shall be made of either dressed timber or undressed timber lined with an approved waterproof lining not liable to warp, so that exposed concrete surfaces on stripping shall be smooth and even and true to the dimensions and slopes given in the drawings.

G.06.4 Forms shall be provided for all vertical surfaces of concrete to be placed in earth excavation.

G.06.5 Dimensions affecting the construction of other parts of the work shall be checked carefully, after the erection of forms and before the placing of concrete. The oil, grease or soap used on forms to prevent adhesion of mortar shall be such that no discolouration of the surface of concrete will result. The oil, grease or soap shall be spread uniformly in a thin film and any surplus shall be removed prior to the placing of concrete.

G.06.6 No concrete shall be placed until the forms have been approved by the Superintendent. The approval of the Superintendent does not relieve the Contractor from his responsibility to provide adequate and dimensionally correct formwork at the required location, level and alignment. If, after the concrete has been placed, the forms show any signs of bulging or sagging, the affected part of the concrete shall be removed. The forms shall be reconstructed rigidly to the satisfaction of the Superintendent and the removed part of the work shall be reconstructed to the requirements of this Specification at the earliest opportunity. All this work shall be completed at no cost to the Principal.

G.07 REINFORCEMENT

G.07.1 The reinforcement shall be built up exactly as shown on the detail drawings and supported in position so as to give the correct cover. Bars and stirrups shall be wired firmly together at all points of intersections and the ends of all wires turned inwards away from the shuttering. Fabric must be waved up over supports exactly as shown on the drawings. The use of a fabric bender is recommended.

G.07.2 The reinforcement shall be accurately bent cold to the shapes shown on the working drawings and all bends shall conform to the special details supplied.

G.07.3 The Contractor shall provide at the Contractor's own expense all supports of timber or other material, pre-cast motor spacing blocks, tying wire and other materials. Fabric reinforcement shall be supplied in flat sheets. Any fabric which has been taken from a roll will not be allowed to be used on the works.

G.08 TESTING

G.08.1 The consistency of concrete shall be determined by the slump test in accordance with AS 1012.3 - 1998. The Contractor shall provide the necessary equipment and conduct the test whenever requested by the Superintendent.

G.08.2 The method of sampling fresh concrete for testing to be carried out in accordance with AS 1012.1 - 1993.

G.08.3 The Contractor shall provide four (4) standard moulds for the making of strength test cylinders in accordance with methods prescribed in AS 1012.8 - 2000. Cylinders shall be made when required by the Superintendent and shall be tested after curing and maturing in accordance with AS 1012.9 - 1999, AS 1012.10 – 2000 (R2014) and AS 1012.11 - 2000, as appropriate.

G.08.4 The testing shall be at the expense of the Principal, except that the cost of all tests failing to reach the required strength shall be borne by the Contractor.

SECTION H: IN-SITU CONCRETE AND SPECIFIC FINISHES

H.01 GENERALLY

H. 01.1 Construct grey concrete footpaths or exposed aggregate paving in accordance with the Drawings and this Specification. The footpaths are to be lock-joint or similar and approved, and any exposed aggregate concrete paving is to have full depth control joints as specified by the Shire of Waroona.

H. 01.2 Where a bench seat or picnic setting is to be surface mounted, concrete footpath is to be thickened at fixing points as per manufacturers instructions.

H.02 SETTING OUT

H. 02.1 Set out the alignments of all in-situ concrete footpaths and obtain Superintendent's approval prior to proceeding.

H. 02.2 All bollards, adjacent walls, contrasting edgings/banding and the like shall be installed prior to the commencement of concrete works.

H.03 SUB-GRADE

H. 03.1 The entire width of the footpath shall be cut or filled as necessary.

H. 03.2 After excavation or filling, compacting, trimming and boxing out, the finished surface of the footpath sub-grade shall conform to the shape and dimensions shown in the Drawings.

H. 03.3 Sub-grade is to be compacted to not less than 95% of the maximum dry density obtained in modified maximum dry density compaction tests (AS 1289.E.1) to a minimum depth below the surface of 500mm.

H. 03.4 All filling shall be placed in generally horizontal layers not exceeding 250mm and compacted prior to the placing of further material.

H. 03.5 A sand bed of clean sand free from roots, clay or any deleterious matter shall be placed to a minimum compacted thickness of 50mm and to the designed footpath width. The bedding shall be compacted to not less than 90% of the maximum dry density obtained in the modified maximum dry density compaction tests (AS 1289.E2.1).

H.04 DIMENSIONS

H. 04.1 The footpath shall be constructed with a cross fall of 2% towards the kerb or in the direction indicated on the Drawings. The finished thickness of the slab to be a minimum of 100mm. The width of the path shall be as shown on the Drawings.

H.05 ALIGNMENT

H. 05.1 The alignment of the edges of the footpaths shall be true to that shown on the Drawings and the Contractor shall ensure that curves are true to radii indicated and smooth flowing with no abrupt changes in direction.

H.06 CONSTRUCTION

H. 06.1 The path shall be placed on the prepared sand bed which shall be screeded to profile and cross fall to provide the finished slab thickness.

H. 06.2 Where the path is constructed in the road reserve, the longitudinal profile of the path shall be the same as the longitudinal profile of the adjacent kerbing. Elsewhere, the path longitudinal profile will be such as to achieve a uniform grading and generally conform to the surrounding finished ground or as shown on the drawings.

H. 06.3 No concrete shall be poured until the sand bedding has been approved by the Superintendent.

H.07 CONCRETE

H. 07.1 The concrete used in this construction shall conform to AS 3600 and be provided by an approved pre-mixed concrete supplier, conforming with AS 1379. Each batch provided shall be supported with evidence of strength slump, aggregate size, etc.

H. 07.2 Concrete shall be of 32 MPa 28 day cylinder test compressive strength.

H. 07.3 The maximum aggregate size shall be 14mm.

H. 07.4 The slump shall not exceed 80mm or be less than 50mm.

H. 07.5 The concrete, when placed, must be well tamped to remove all voids and to work fines to the surface for trowelling.

H.08 PLACING AND FINISHING

H. 08.1 General

The concrete shall be deposited on the sub-grade in such a manner as to require as little re-handling as possible.

The sub-grade shall be thoroughly moistened but not saturated immediately before concrete placement begins. Any necessary hand spreading shall be done with shovels not rakes.

Concrete shall be thoroughly compacted against the faces of forms and along the full length of the footpath by vibration or hand tamping where approved by the Superintendent.

H. 08.2 Strike Off Consolidation and Finishing

The pavement shall be struck off and consolidated with a mechanical finishing machine, vibrating screed or by hand finishing methods when approved by the Superintendent. A slipform paver may be used.

Compaction of concrete shall be achieved by mechanical means unless hand finishing methods are approved by the Superintendent.

Mechanical means of compaction must have the capacity to effectively vibrate and compact the full thickness of the path.

The addition of water to the surface of the concrete to assist in finishing operations may be allowed in hot weather conditions. If permitted such water shall be applied as a fog spray.

After the pavement has been struck off and consolidated, it shall be scraped with a screed board to sufficient length to span between side forms. The screed board shall be operated perpendicular to the centre line of the footpath and shall be moved forward one half its length after each pass. Irregularities in the surface shall be corrected by adding or removing concrete. All disturbed places shall again be straightened.

Final finishing shall not be commenced until bleed water has disappeared from the surface.

A dry cement shake shall not be used to absorb bleed water.
The final finish shall be deep broom finish (approximately 2mm deep), edges to be polished smooth and carefully finished with an edger of radius 75mm or that approved by the Superintendent.

All work to be of high quality, uniform appearance and executed in a tradesmen-like manner.

H. 08.3 Joints

Contraction and isolation expansion joints shall be provided as shown on the Drawings, and as required by the Shire of Waroona.

Transverse contraction lock joints shall consist of planes of weakness created by forming or cutting grooves in the surface of the pavement. They shall be a minimum depth of 20mm or as directed by the Superintendent.

Spacing of joints shall not exceed 5000mm along the footpath and shall be placed at right angles to the centre line.

Formed grooves shall be made by depressing an approved tool or device into the plastic concrete. Joints shall be neatly defined with a jointing tool and smooth trowel finished for 50mm either side of the joint.

Sawn contraction joints shall be created by sawing grooves in the pavement with an approved concrete saw. Sawing shall begin only when the concrete is sufficiently hard to prevent ravelling but

before uncontrolled shrinkage cracking occurs, joints to be sealed with rubber caps or with an approved concrete sealant.

Transverse expansion joints - 12mm wide are to be constructed at 40.0m intervals or as shown on the Drawings for the full depth of the slab. The expansion joint filler shall be continuous from form to form and extend the full depth of the slabs and shall be of an approved bitumen-impregnated fibreboard or equivalent. The filler shall at no point protrude above the surface of the path. Approved bitumen impregnated fibreboard or equivalent shall be such that when it is subjected to compression in hot weather no bitumen is extruded.

The expansion joints shall be marked out with an edging tool to match the appearance of the contraction joints.

An expansion joint shall be installed where the pathway butts to service manholes and existing crossings.

All construction joints shall coincide with contraction and expansion joints. Construction joints in mid slab shall not be accepted.

Construction joints around manholes, junction boxes and edges of crossovers should be treated as expansion joints including the provision for expansion joint filler.

H.09 CURING

H. 09.1 General

Concrete shall be cured by prevention against loss of moisture, rapid temperature change and mechanical injury for at least 3 days after placement.

Moist curing, waterproof paper, polythene sheeting, or liquid membrane compounds may be used. After finishing operations have been completed, the entire surface of the newly placed concrete shall be covered by whatever curing method is applicable to local conditions and approved by the Superintendent.

The Contractor shall have the equipment needed for adequate curing at hand and ready to install before concrete placement begins.

H. 09.2 Moist Curing

Moist curing shall be accomplished by a covering of hessian or burlap or similar fabric mat. The mat shall be thoroughly wet when applied and kept continuously wet and in intimate contact with the pavement surface for the duration of the moist curing period.

H. 09.3 Waterproof Paper - Polythene Sheeting

Waterproof paper or polythene sheeting shall be in pieces large enough to cover the entire width and edges of the footpath and shall be lapped not less than 300mm. The paper or polythene shall be adequately weighted to prevent displacement or billowing due to wind, and material folded down over the sides of the footpath shall be secured by a continuous bank of earth. Tears or holes appearing in the paper or polythene shall be repaired immediately.

H. 09.4 Liquid Membrane Compounds

Liquid membrane compounds shall comply with ASTM Standard Specification C309-74 in all respects.

Compounds which adversely affect the non-slip character of the concrete surface shall not be used. The compound shall be applied to the concrete surface strictly in accordance with the manufacturer's instructions.

H. 09.5 Stripping of Edge Forms

Forms are only to be removed from works after initial set has been achieved and approved by the Superintendent.

H.10 PROTECTION OF PAVEMENTS AND WORKS

H. 10.1 Pavements

Under no circumstances is the surface of the road to be used as a mortar board for mixing cement, concrete slurry etc.

H. 10.2 **Protection of Works**

The Contractor shall always have available materials to protect the surface of new work.

The following measures are to be taken:

"WET CONCRETE" signs to be placed at regular intervals along the length of work and particularly at the start and finish of same. Sign spacing to be to the satisfaction of the Superintendent.

Along the length of work pickets shall be placed at regular intervals and a top and bottom brightly coloured ribbon strung between them. Variations to this requirement require the approval of the Superintendent.

The Contractor should ensure adequate set of concrete is achieved prior to times when an increase in pedestrian/cyclist traffic can be expected, i.e. school closing time.

The Contractor should expect to place persons on the site from time to time to guard against vandalism. This cost is to be borne by the Contractor. Where directed by the Superintendent to do so, and the Contractor fails to comply, the Superintendent may arrange for the work and the full cost of doing so will be charged against the Contractor.

Any damaged sections of the path shall be repaired or removed to the nearest joint as nominated by the Superintendent, replacement and/or repairs to be at the Contractor's expense.

H. 10.3 **Protection against Weather**

During hot weather, precautions shall be taken to avoid premature stiffening of the fresh concrete mix and to reduce water absorption and evaporation losses.

When the temperature of the surrounding air exceeds 32 degrees celsius the requirements of Australian Standard AS 3600 shall apply unless otherwise directed by the Superintendent. The surface is to be protected against rain.

H. 10.4 **Testing and Acceptance Requirements**

H. 11.5 Tolerances

Works shall be undertaken to the following tolerances

viii) Vertical location of path shall not deviate from grade line from top of kerb by more than 10mm.

ix) Grade across path shall be 2.5%.

x) Path surface shall be true to line and not deviate more than 10mm under a 3 metre straight edge.

xi) Spacing of expansion joints shall average 10 metres over any 50 metre section. Individual spacing shall be 10 metres +/- 10mm.

xii) Thickness of path to be 100mm (-0mm + 10mm).

xiii) Width of path as nominated in the Drawings and Specification (-0mm + 20mm).

xiv) Surface irregularities, including abutments to service authority manholes etc. shall not exceed 2mm.

H. 11.6 Test Specimen

The Superintendent shall require evidence that the concrete supplied to the work meets the requirement of this Specification.

An independent NATA registered laboratory shall be employed by the Contractor to fabricate and test specimens and report results, the cost of such testing to be the responsibility of the Principal except in the event of failure.

Acceptance of concrete will be based on the provisions of AS 3600.

H. 11.7 Clean Up and Backfilling

All cement droppings, slurry, etc. and surplus materials to be removed from site.

All form work, pegs, stakes, etc. shall be removed after the curing of the path has been completed and approved by the Superintendent.

After removal of the form work, and acceptance of the path by the Superintendent and the Local Authority, the path shall be backfilled with clean sand. Backfilling shall be compacted to not less than 90% of the maximum dry density obtained in modified maximum dry density compaction tests (AS 1289.E2 1) and shaped level with the top of path.

SECTION I: EXTRUDED CONCRETE WORK

I.01 GENERALLY

I. 01.1 Supply and lay 200 x 200mm 32Mpa (Type A) and 150 x 250mm 32Mpa (Type B) extruded concrete garden edging as indicated on the drawings.

I.02 SETTING OUT

I. 02.1 Set out with pegs the alignments of all concrete edges for the approval of the Superintendent.

I.03 COMPACTION OF SUB-GRADE

I. 03.1 Uniformly compact sub-grade to a minimum degree of 8 blows per 300mm when measured with a falling weight penetrometer. Penetrometer to be a 9kg mass falling 610mm on a 16mm diameter rod.

I.04 CONCRETE

I. 04.1 All concrete used shall be supplied by an approved firm in a ready mixed state and shall conform to the requirements of AS 3600 and shall be provided by an approved pre-mixed concrete supplier, conforming with AS 1379. All concrete shall have a minimum compressive strength of 32MPa at 28 days and shall be composed of a mixture of screenings, sand and cement to give the strength specified with a maximum slump of 90mm.

I.05 TESTING

I. 05.1 The Contractor shall bear the whole cost of obtaining concrete samples to demonstrate compliance with the above Specification, as required by the Superintendent.

I.06 PLACEMENT OF EDGING

I. 06.1 Concrete edging shall be placed by means of an extrusion machine approved by the Superintendent. Any edging that cannot be placed using an extrusion machine may with the approval of the Superintendent be cast in-situ to the same cross section as that of the extruded edge except that cast in-situ edging shall be constructed with a 'key' 100mm deeper than the extruded edging and shall be embedded firmly in the sub-grade to this extra depth.

I.07 SHAPE, DIMENSIONS AND TOLERANCES

I. 07.1 The final shape and dimensions of the extruded edging shall be as shown on the Drawings with the 100mm deep 'key' provided to sections on curves where the radius is less than 12m and where cast in-situ. The top surface of the edging shall be horizontal or parallel to the ruling grade of the land (as indicated on the Drawings) and shall be free from depressions exceeding 3mm when measured from a 3m long straight edge. The surface of the edging shall present a smooth, tidy appearance free from ragged edges.

I.08 JOINTS

I. 08.1 The first 150mm of any new pour shall be cut away and removed. The gap between the previous and new work shall be filled by hand placing, rodding and shaping of the concrete until a satisfactory shape and finish has been obtained. Extruded edging shall be joined to existing garden edging by using the same method.

I. 08.2 Contraction joints shall be constructed at 2.5m intervals by separation of 60% of the adjoining sections of the edging immediately after extrusion. Immediately after the contraction joints have been formed, the extrusion shall be finished by the application of a 2 part sand to 1 part cement slurry by means of an edge shaped screed. The finishing shall bridge over the contraction joints to form a continuous cover. Each contraction joint position shall be clearly marked by a cut in the finishing mortar on the entire exposed face of the edging before the mortar has set.

I. 08.3 Not less than 24 hours after placing of the edging, expansion joints shall be constructed at minimum 5.0m intervals and at all horizontal curve tangent points. The expansion joints shall be formed by the sawing of a 6mm wide gap that completely severs the adjoining sections of the edging. The gap shall be closed with a 10mm diameter closed cell polyethylene foam rod gauged to a regular depth and pointed up with an approved one pack polysulphide sealant material after the Superintendent has inspected and approved the cut joints.

I.09 **CURING**

I. 09.1 After initial set, concrete surfaces shall be cured for a minimum period of seven (7) days by either of the following methods:

(a) Cover with PVC.

(b) Spray with approved membrane.

I.10 **BACKFILLING TO EDGING**

I. 10.1 Backfilling to edging shall be placed after curing and acceptance of extruded edging. This filling shall not take place until at least 7 days after laying of extruded edging. The fill shall finish level with the top of the edging and shall be raked smooth to the specified grades and levels.

SECTION J: PAVING WORKS

NOT REQUIRED

SECTION K: ROCK WORKS

K.12 ROCK PITCHING

K. 12.4 Rocks colour and type to match existing on site boulders, size and location as indicated on the drawings, and to the Superintendents approval.

K. 12.5 Rocks to be set in mortar in a random pattern**.**

K. 12.6 Supply and install geofabric layer beneath spalling, as shown on the drawings, to all rock pitching.

K. 12.7 Sample panel (no less than 1000mm x 1000mm) of stones to be set out dry and approved by the superintendent, prior to mortar installation. Once approval has been given, remaining works may continue.

K.13 BOULDERS

K. 13.4 Boulders are to be relocated from existing locations identified by the superintendent on site.

K. 13.5 Boulders to be buried to a minimum of 25% of total volume.

K. 13.6 Boulders to be located as shown on the drawings and as directed on site by the superintendent. The aesthetic layout and final locations are to replicate natural boulder outcrops.

K. 13.7 Boulders are to be mortared/fixed into place as shown on the drawings.

K. 13.8 Give not less than three (3) working days' notice to the Superintendent so that inspection may be made of the following:

- *Placing of boulders*

SECTION L: STONE WORKS

NOT REQUIRED

SECTION M: ALUMINUM

M.01 GENERAL

M.01.1 Scope of works

Supply, fabricate (where applicable) and install the following as detailed on the Drawings:

- Deck Edge

M.01.1.1 Standards

Materials and workmanship shall conform to the current Australian Standards, where such Standard exists, including the following:

AS 1664	:	*Aluminium Structures*
AS 1665	:	*Welding of Aluminium Structures*
AS 1866	:	*Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes*
AS 3715	:	*Metal Finishing – Thermoset Powder Coating for Architectural Applications of Aluminium and Aluminium Alloys*
AS 4506	:	*Metal Finishing – Thermoset Powder Coatings*

M.02 SHOP DRAWINGS

M.02.1 Submit shop drawings to the Superintendent for approval prior to commencing fabrication. **If there are any changes to the certified for construction drawings, these shall be marked up clearly to enable easy identification.** Any fabrication commenced prior to sign off by the superintendent shall be at the contractors own risk.

M.03 MATERIALS

M.03.1 Materials Generally

All materials as specified hereunder are to comply with the appropriate Specifications of the Standards Association of Australia and shall be of the types, temper and quality most suited to their particular application in this Contract.

M.01.1 Fixings

Unless otherwise specified, all bolts, nuts, washers and screws connecting materials shall be:

- Of at least equivalent strength;
- Of at least equivalent anti-corrosive properties; and
- Compatible.

All fixing metal components (nuts & bolts) are to be galvanised.

M.04 FABRICATION

M.04.1 All fabrication shall comply with the requirements of AS 1664 Aluminium Structures.

M.04.2 Workmanship

- **Prefabrication**
  Fabricate and pre-assemble items in the workshop wherever practical.

- **Edges and Surfaces**
  Keep clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

- **Joints**
  Fit accurately to a fine hairline.

- **Tube Bends**
  Form bends in tube without unduly deforming the true cross section.

M.04.3 The Contractor shall be responsible for checking all as-constructed dimensions of features having a bearing on the final form of fabricated work.

M.04.4 After fabrication all weld splatter and slag shall be removed by suitable mechanical means and all sharp edges and rough welds rounded off.

M.05 **WELDING**

M.05.1 All welding shall be carried out in accordance with with AS 1664 Aluminium Structures and AS 1665 - Welding of Aluminium Structures.

M.05.2 Finish visible joints made by welding, brazing or soldering by grinding, buffing and the like methods appropriate to the class of work before painting, galvanising or the like further treatment.

M.06 **FASTENINGS**

M.06.1 Fastenings, including anchors, lugs, screw, rivets and the like shall be of approved type, appropriate to the work, capable of transmitting the loads and stresses imposed, and sufficient to ensure the rigidity of the assembly.

SECTION N: BRICKWORK

NOT REQUIRED

SECTION O: CEMENT RENDER

NOT REQUIRED

SECTION P: COMPACTED OR STABILISED LATERITE AND GRAVEL WORKS

NOT REQUIRED

SECTION Q: ASPHALT PAVING

NOT REQUIRED

SECTION R: STEELWORK

R.01 GENERAL

R.01.1 Scope of works

Supply, fabricate (where applicable) and install the following as detailed on the Drawings:

- Steel reinforcement to concrete footings;
- Deck structures
- Play equipment

R.01.2 Standards

Materials and workmanship shall conform with the current Australian Standards, where such Standard exists, including the following:

AS 1554	:	*Structural steel welding*
AS 1650	:	*Hot dipped galvanised coatings on ferrous articles*
AS 2132	:	*Guide to the protection of iron* and *steel against external atmospheric corrosion*
AS 4100	:	*Steel Structures*
AS 3679	:	*Structural steel*
AS 1111	:	*ISO metric hexagon commercial bolts and screws*
AS 1112	:	*ISO metric hexagon nuts, including thin nuts, slotted nuts and castle nuts*
AS 1214	:	*Hot dip galvanised coatings on threaded fasteners*
AS 1449	:	*Stainless Steel*

R.02 SHOP DRAWINGS

R.02.1 Submit shop drawings to the Superintendent for approval prior to commencing fabrication. **If there are changes to the certified for construction drawings, these shall be marked up clearly to enable easy identification**. Any fabrication commenced prior to sign off by the superintendent shall be at the contractors own risk.

R.03 MATERIALS

R.03.1 Materials Generally

All materials as specified hereunder are to comply with the appropriate Specifications of the Standards Association of Australia and shall be of the types, temper and quality most suited to their particular application in this Contract.

R.03.2 Fixings

Unless otherwise specified, all bolts, nuts, washers and screws connecting materials shall be:

- *Of at least equivalent strength;*
- *Of at least equivalent anti-corrosive properties; and*
- *Compatible.*

R.03.3 For fixing metal components, use only stainless steel bolts, fasteners or stainless steel anchors.

R.03.4 The minimum bolt size for any anchor shall be 6mm diameter. Where washers are shown or required, they shall be of the same metal or coating as the bolt.

R.04 FABRICATION

R.04.1 All fabrication shall comply with the requirements of AS 4100 - Steel Structures.

R.04.2 Workmanship

- ***Prefabrication***
  Fabricate and pre-assemble items in the workshop wherever practical.

- ***Edges and Surfaces***

Keep clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

- ***Joints***
  Fit accurately to a fine hairline.

- ***Tube Bends***
  Form bends in tube without unduly deforming the true cross section.

R.04.3 The Contractor shall be responsible for checking all as-constructed dimensions of features having a bearing on the final form of fabricated steelwork and allowing for same in fabrication.

R.04.4 After fabrication all weld splatter and slag shall be removed by suitable mechanical means and all sharp edges and rough welds rounded off.

R.05 **WELDING**

R.05.1 All welding shall be carried out in accordance with AS 1554 Part - Welding of Steel Structures.

R.05.2 Finish visible joints made by welding, brazing or soldering by grinding, buffing and the like methods appropriate to the class of work before painting, galvanising or the like further treatment.

R.06 **FASTENINGS**

R.06.1 Fastenings, including anchors, lugs, screw, rivets and the like shall be of approved type, appropriate to the work, capable of transmitting the loads and stresses imposed, and sufficient to ensure the rigidity of the assembly.

R.07 **GALVANISING**

R.07.1 Complete all welding, cutting, drilling and other fabrication before coating.

R.07.2 **All** steel items shall be **hot dip galvanised** to full Australian Standards.

R.07.3 All hot dip galvanising shall conform with the requirements of AS 1650 - Galvanised Coatings and shall be clean, smooth and continuous, free from acid spots, cracks, laminations, runs and drips. The coating shall have a minimum thickness of 85 microns.

R.07.4 Galvanising of fasteners shall conform with the requirements of AS 1214 - Hot Dip Galvanised Coatings on Threaded Fasteners.

R.07 **PROTECTIVE COATING: 2-PACK COATINGS**

R. 07.1 Items where indicated on the drawings will be treated with 2-Pack Coatings;

- Bridge Bearer
- Rubber Seat Swing Support Arch

R. 07.2 Protective coating operations shall be undertaken strictly in accordance with the manufacturers instructions and shall include a zinc-rich primer (or equivalent and approved) pre-treatment process for hot dipped galvanised steel prior to coating.

R. 07.3 Protective Coating colours shall be as follows;

Item to be Painted	**Paint colour (any substitution must be approved by the superintendent)**
Bridge Bearer	Interpon – Core Ten (YX365A)
Rubber Seat Swing Support Arch	Interpon – Core Ten (YX365A)

R.08 SURFACE PREPARATION

R. 08.1 Applicators

Coatings shall be applied only by competent surface coatings applicators.

R. 08.2 General

All surfaces shall be prepared before the application of protective coating in accordance with the instructions of the Paint Supplier and AS1627 “Code of Practice for Preparation and Pre-treatment of Metal Surfaces Prior to Protective Coating”.

Surface preparation by abrasive blast cleaning shall be employed in preference to all other methods. Unless otherwise specified, a minimum surface profile of 60 microns shall be provided during preparation. In areas where blast cleaning is impractical or prohibited, Power Tool Clean to AS1627.2 Class 2 may be used subject to the approval of the Company Representative.

Where Inorganic Zinc Coatings have been exposed for a prolonged period, Zinc corrosion products shall be removed using a method approved by the Paint Manufacturer prior to Top Coating.

Sharp edges on steelwork must be ground off to a minimum of 2mm radius before applying any protective coating (and preparations). If this compromises the HD Galvanised finish please advise the superintendent before continuing.

R. 08.3 Blast Cleaning

Blast Cleaning shall be carried out in accordance with AS1627.4.

Where a wet blasting process is used, only suitable approved corrosion inhibitors acceptable to the coating Manufacturer shall be added to the water stream during blasting as well as during rinsing and hosing of blasted surfaces.

Wet blasting shall not be permitted in Splash Zones or areas of total immersion, as inhibitors are unacceptable in these areas. Dry abrasive blasting is the preferred method for a long term coating performance in immersed conditions.

Blasted surfaces shall be coated within a maximum period of 4 hours or prior to discolouring of the prepared surface, whichever is shorter. If it is not possible to coat the surface within the specified time, the surface shall be reblasted before painting.

R. 08.4 Abrasive Material for Blast Cleaning

The Contractor shall supply suitable abrasive to achieve the required standard of cleanliness and the appropriate profile required. The abrasive shall conform to AS 1627.4 and be free of oil, grease and moisture, and shall contain not more than 50ppm soluble salts. All on site blasting shall use garnet as the abrasive material unless stated otherwise by the Company Representative. New garnet shall be used for final abrasive blasting to obtain an adequate surface prior to painting. Silica sand and other materials potentially containing unbound crystalline silica, including copper slag, shall not be used.

R. 08.5 New Steelwork

All surface preparation of new steel structures and machinery shall be completed in workshop conditions unless specifically noted otherwise.

R. 08.6 Galvanised Steelwork

Where hot dipped galvanised steelwork are required to be painted the surface must first be cleaned in accordance with AS1627.1 and then Brush Abrasive Blasted with non-metallic abrasive to a 20 micron average profile (preferred) or lightly power tool sanded to achieve a roughened surface that will provide a mechanical key.

R. 08.7 Maintenance

Surface preparation on site shall not be carried out in wet or excessively hot, humid (75%) or windy conditions or in the presence of water spray or industrial fall-out which in the opinion of the Company is excessive (see Section 7.9).

All corroded surfaces and areas where the existing coating has broken down shall be abrasive blast cleaned back to base metal as specified.

All surfaces where the existing coatings are sound shall be washed with potable water and lightly blasted to remove any surface contamination.

The areas where existing sound coatings adjoin blasted surfaces shall have 25 mm feathered edges without loose or flaking paint.

R.09 APPLICATION

R. 09.1 Delivery and Storage of Coating Products

All material shall be supplied in the Manufacturer's original containers, durably and legibly marked with the description of contents. The material shall be accompanied with a certificate confirming the colour reference number, the method of application for which it is intended, the batch number, shelf life, date of manufacture and the Manufacturer's name or trademark. All paint, undercoats, primers and all raw materials shall be supplied in sealed containers of not more than twenty (20) litres capacity.

Storage of all materials shall be in accordance with the Manufacturer's instructions and to the approval of the Company. Safety procedures shall be nominated with respect to the storage of hazardous materials.

R. 09.2 Coating

Application of all protective coatings must be carried out in accordance with the Manufacturer's instructions and conform to Australian Standard AS/NZS 2312 – 2002.

No coating shall be applied when:

i) The temperatures of the surfaces are less than 3°C above dew point.

ii) The relative humidity of the air is greater than eighty-five percent (85%) or less than twenty percent (20%).

iii) The air temperature is below 10°C or above 40°C.

iv) The surface temperature is greater than 50°C.

v) There is a likelihood of a change in weather conditions within two (2) hours of application that would result the atmospheric conditions outlined above.

vi) The minimum steel temperature for painting shall be determined from AS2312 - Figure 8.1. Coatings capable of being applied outside these limits shall be subject to the approval of the Company.

vii) No coating shall be applied during fog, mist, rain, in failing or inadequate light or when these conditions are imminent, unless coating operations are performed under cover and are approved by the Company.

viii) In cases where abrasive blast cleaning and painting operations must be carried out in the same area, the blasting work shall only be allowed when the paint film has dried to the extent where the abrasive does not adhere to or damage the coated surface.

ix) Each coat shall be applied uniformly and completely over the entire surface. The paint surface shall be free from runs, sagging, blisters, craters, pinholes or other defects. Coatings not deemed acceptable by the Company shall be removed and re-coated.

x) All Steel with sharp edges shall be stripe coated (10mm either side of edge) prior to applying the remainder of the protective coating. Stripe coating shall entail application by brush or roller to ensure the correct build-up for each coat is achieved. Stripe coating is critical in Tidal Splash and Marine Atmospheric zones.

xi) Where multiple coats are required to achieve specified thickness each shall be tinted for visual differentiation, up to the final colour in the final coat.

R. 09.3 Handling and Storage of Painted Steel Work

During the surface treatment and painting processes and subsequently during storage, the Contractor must ensure that the painted surfaces are not damaged.

During lifting and transportation, edges of steelwork must be protected as necessary and steelwork must be stored off the ground using timber blocks, no member shall be stacked directly on the ground or on other steelwork.

If slings are used for lifting, these shall be cushioned from the coating to prevent damage.

Should any coating damage occur during construction, damaged areas shall be restored to the original specified coating system as soon as possible after erection, according to the procedures outlined in this specification. It shall be the Contractor's responsibility to carry out the touch-up work.

R. 09.4 **Site Painting Procedures**

Site application shall apply to surface preparation and coating of areas of new steelwork left unpainted for site welding. All paint and materials shall be the same as for the shop application. The Contractor shall strictly follow the Manufacturer's instructions with regard to mixing, preparation and application of coatings.

Planning provision shall be made for accomplishing the work in spite of obstacles caused by weather and other local conditions. The Contractor shall familiarise himself with site conditions in case special precautions are required. If temporary shelter (eg tarpaulins) is provided to protect the material from such conditions, the work may proceed uninterrupted.

R. 09.5 **Welding after Painting**

These drawings do not require welding after galvanizing or painting. However, should areas require welding after painting, other than miscellaneous areas not readily located or predetermined, the area shall be masked after blasting and priming. Masking shall be with suitable adhesive tape and shall extend at least 50 mm on all sides of the intended weld area. Welding shall not take place over a painted surface. Where a welded connection is necessary in a previously painted area, the coatings shall be removed back to bare metal to at least 50 mm on all sides of the weld line.

After welding, the weld and surrounding area shall be cleaned to the specified surface treatment and a new coating system applied to the same specification as the surrounding steelwork and overlapped a minimum of
50 mm. A stripe coat of paint shall be applied to the weld.

R. 09.6 **Galvanising**

The galvanised coating on all steel articles as specified on the contract drawings shall conform to the requirements of AS4680. Reference should also be made to AS1214 Hot Dip Galvanised Coatings on Threaded Fasteners.

R. 09.10 **Handling of Finished Coated Items**

All coated Steelwork shall be handled with care to preserve the coating in the best practicable condition. Coatings damaged during construction shall be repaired in accordance with the Company's Representative's directions. When the damage is deemed excessive the coating shall be entirely reapplied, this being at the contractors expense.

R.10 **POWDERCOATING**

R.10.1 Powder coating operations shall conform with the requirements of AS 4506 and shall be undertaken strictly in accordance with the recommendations of "Interpon" (or equivalent and approved) incorporating a chromate dip pre-treatment process for aluminium prior to coating.

R.10.2 Powder coating to be Alphatec 3000 minimum 75 microns applied in accordance with manufacturer's recommendations.

R.10.3 Powder coating colours are the following colours:

Bridge Bearer - Interpon – Core Ten (YX365A)
Rubber Seat Swing Support Arch - Interpon – Core Ten (YX365A)

R.08 **SELECTED FABRICATORS**

R.08.1 Not used

SECTION S: TIMBER WORK

S.01 STANDARDS

S.01.1 Materials and workmanship shall comply with the following standards unless otherwise stated:

- *AS 1492-1498* *Radiata Pine*
- *AS 1604* *Preservative Treatment for Sawn Timber*
- *AS 1608* *Preservative Treated Farm Fencing Timber*
- *AS 1684* *SAA Timber Framing Code*
- *AS 1650* *Hot dipped Galvanized Coatings on Ferrous Articles*
- *AS 1214* *Hot dipped Galvanized Coatings on Threaded Fasteners*

S.02 GENERAL

S.02.1 Supply and install the following timber items as detailed on the Drawings.

- Tree stakes
- Bollards
- Play Items
- Timber Logs

S.03 TIMBER

S.03.1 Supply timber of the types, sizes and finishes as indicated on the Drawings.

S.03.2 All timber shall be first class, free of splits or warps

S.03.3 Play item timber is to be Green Jarrah F8. Jarrah is to be treated with Jarrah Oil (clear) and all ends to be treated with timber sealer. Contractors are to allow for re-adjustment of all fixings etc resulting from shrinkage of the material on site during the 12 month defects period. Timber to be treated a minimum of two times with oil once installed during the 12 month defects period.

S.04 PRESERVATIVE TREATMENT

S.04.1 Radiata pine is to be dried, pressure treated with TPAA – Light Organic Solvent Preservative and then **re-dried** prior to installation on site.

S.04.2 Pressure treatment of pine with preservative is to be carried out in accordance with AS 1604 - 1997 to hazard levels as shown on the drawings and timber shall be clearly stamped to indicate that specified Hazard Level of treatment has been achieved.

S.04.3 When requested by the Superintendent, the Contractor shall supply Certificates, Warranties and the like to confirm the type and level of pressure treatment applied to the timber delivered to the site.

S.04.4 Where the degree of shaping, routing, bevelling and the like indicated on the Drawings as being required as part of the fabrication of timber items is likely to reduce the effectiveness of the preservative treatment then these works shall be carried out prior to preservative treatment.

S.05 TIMBER FIXINGS

S.05.1 All bolts, nails, screws and other timber fixings shall be stainless steel, zinc or hot dipped galvanised.

S.05.2 All hot dip galvanising shall conform to the requirements of AS 1650 - Galvanised Coatings and shall be clean, smooth and continuous, free from acid spots, cracks, laminations, runs and drips. The coating shall have a minimum thickness of 85 microns.

S.05.3 Galvanising of fasteners shall conform to the requirements of AS 1214 - Hot Dip Galvanised Coatings on Threaded Fasteners.

S.05.4 Fastenings i.e., chemical anchors, lugs, screws, rivets and the like shall be of approved type, appropriate to the work, capable of transmitting the loads and stresses imposed, and sufficient to ensure the rigidity of the assembly.

S.06 FINISHING: STAINS, OILING AND PAINTING

S.06.1 **Stains & Oiling**

Supply and apply to all hardwood tree stakes, 2 No coats of Cabots exterior water based stain, or equivalent and approved. Ensure timber is sanded prior to coats. Colour to be Ebony.

Supply and apply to the shade structure timber, 2 No coats of Cabots exterior garden furniture oil, or equivalent and approved. Ensure timber is sanded prior to coats. Colour to be New Natural.

Ensure all timber is smooth-sanded prior to application of finishes. Prepare timber and apply stain or oil strictly in accordance with Manufacturer's recommendations

S.07 **SAMPLES**

S.07.1 Provide 1 No sample of each of the following items for the approval of the Superintendent:

- Site sourced timber posts

SECTION T: FURNITURE

T.01 GRAFFITI PROTECTION

T. 01.1 Supply and apply BARRICADE graffiti protection system [as supplied by Crommelin - Tel: 08) 9458 5711], or equivalent and approved, to all walls and vertical surfaces in accordance with manufacturer's recommendations, as follows:

- *all exposed faces of walls;*
- *all furniture;*
- *all feature structures*

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

T.02 TABLES AND SEATS

T. 02.1 The Contractor shall order and deliver to site and install the following in the locations as indicated on the drawings.

T. 02.2 Furniture shall be supplied by;

Street Furniture Australia
184 Beechboro Road South, Bayswater WA 6053
PO Box 165 Morley WA 6943
Tel 08 6143 6565 | Mobile 0477 68 28 68

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

T. 02.3 Street furniture models to be as follows:-

Bench Seat each:

1 No. Park DDA Seat
Model: PS7-DDA
Batten: Eco-certified Jarrah Hardwood
Mounting: Surface Fixed
Length: 1800mm
Frame: Cast Aluminium Powder Coated Colour: Palladium Silver
Arm Quantity: 2 end arms

Picnic Setting each:

1 No. Park DDA Table
Model: PT9-DDA
Batten: Eco-certified Jarrah Hardwood
Wheelchair: Access from 1 end
Mounting: Surface Fixed
Length: 1800mm
Frame: Cast Aluminium Powder Coated Colour: Palladium Silver

2 No. Park DDA Benches
Model: PB5-DDA
Batten: Eco-certified Jarrah Hardwood
Mounting: Surface Fixed
Length: 1800mm
Frame: Cast Aluminium Powder Coated Colour: Palladium Silver

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

T. 02.4 All finishes are to be as specified

T. 02.5 All street furniture to be installed as per manufacturer’s instructions.

T. 02.6 All fixings used are to be tamper-proof.

SECTION U: PRE-CAST CONCRETE WORKS

NOT REQUIRED

SECTION V: PLAY EQUIPMENT

V.01 PLAY EQUIPMENT

V.01.1 The supply and installation of the play equipment will be undertaken by the following nominated suppliers:

Van Ryt Industries
8 Adams Street
O'Conner
WA 6163

Contact: Luke Priddle
Tel: 0459 022 778
Email: luke@vanrytind.com.au

Equipment:

- Van Ryt Climbing Stump

Lypa
8 Burchell Way
Kewdale
WA 6105

Contact: Calli Pearce
Tel: (08)9361 1355
lypa.enquiries@lypa .com.au

Equipment:

- Lypa Concrete Single Slide Height 900mm

Scapeism
U 3
14 Strang St,
Beaconsfield
WA 6162

Contact: Jahne Rees
Tel: 0417 907 757
Email: JahneRees@scape-ism.com.au

Equipment:

- Big Marron

All colours to be confirmed by superintendant prior to ordering of equipment.

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

V.01.2 The location of all play equipment to be supplied and installed by the above is shown on drawing L103 and shall be to the superintendent's approval. Final location of all play equipment to be determined on site and may need to be relocated due to unsuitable ground conditions i.e. rocks /boulders.

V.01.3 The supply and installation of the playground equipment shall fully comply with all relevant Australian Standards including, but not limited to, the following:

AS/NZS 4422:1996 : Playground surfacing - Specifications, requirements and test method
AS 4422-1996 Playground surfacing – Specifications and requirements and test method
AS 4685.1-6 2004 Playground equipment - General safety requirements and test methods
AS 4685.0:2017 Playground equipment and surfacing - Development, installation, inspection, maintenance and operation.

V.01.4 The Contractor shall allow for the timing of these works, prior to the supply and installation of play sand and rubber softfall to the play area.

V.01.5 The landscape contractor as the head contractor is required to fully supervise and manage the ordering, supply and installation of the play equipment.

V.02 PINE BARK MULCH SAFETY SURFACE

V.02.1 Preparation of Subgrade

Ensure surface to receive pine bark mulch safety surface is free draining and free from stones greater than 35mm diameter and any other sharp or hard objects/protrusions which may cause injury.

Extruded concrete edge or limestone edge is to be pre-laid and cured prior to installation of pine bark mulch safety surface, as shown on detail drawings.

V.02.2 Mulch

Supply and spread 400mm minimum depth clean, rolled pine mulch to the areas as shown on the Drawings.

V.02.3 Standards

V.02.4 The supply and installation of mulch shall fully comply with the following Australian Standards.

AS 2155 -1982 Playgrounds – Guide to siting and installation and maintenance of Equipment.
AS/NZS 4422:1996 Playground Surfacing – Specifications, requirements and test method.

V.02.5 Geofabric Liner

The contractor shall allow for the supply and installation of a geofabric liner beneath all mulch soft-fall areas, separating the clean soft-fall mulch from the existing subsoil. This liner shall be to the full extent of all soft-fall mulch. Liner to be Filter wrap nonwoven geotextile as supplied by Geofabrics Australasia, Bidim or similar and approved.

V.03 WHITE SAND

Supply and install white washed sand to areas indicated on the drawings from the following nominated supplier:

Cougar Sand Supplies
47 Mount John Road
Heron,
WA 6210

Tel: (08) 9739 1158

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

V.04 SAFETY AUDIT

V.04.1 The contractor must include in the lump sum price 2 No. audits during the contract upon completion of the installation of play equipment and safety surfaces. The audits must be provided each in 1No hard bound copy document as well each in 1No copy digital pdf document.

V.04.2 The contractor must also allow for a copy of the certification of the installed equipment and all safety surfaces, as well as all warranty information and a list of the materials used.

V.04.3 The Play Audit must be carried out by a certified playground auditor with at least 5 years' experience who has regularly performed audits over the past 5 years. A CV is to be provided with the audit. Softfall audits are to be conducted as per Australian Standards by the same auditor in conjunction with each playground audit.

V.04.4 The Safety Audit is to be carried out by the following nominated consultant:

Andrew Reedy
Play Check
PO Box 5063
Canning Vale South

WA 6155
Tel: (08) 9256 1441

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

SECTION W: FENCING

NOT REQUIRED

SECTION AA: TRANSPLANTING OF MATURE TREES

AA.01 GENERAL

AA.01.1 **Scope of Works**
Transplant 32No. Xanthorrhoea preissii to the locations indicated on the Drawings.

AA.01.3 **Responsibilities**
The Contractor shall be responsible for the maintenance of all transplanted trees from the time of planting until the end of the Consolidation Period.

AA.02 NOMINATED SUB-CONTRACT

AA.02.1 Contractor to advise.

AA.03 12 MONTH REPLACEMENT GUARANTEE

AA.03.1 The Nominated Sub-contractor shall provide a "limited 12 month replacement guarantee" for the transplanted trees to include specification of watering and fertilising requirements (to be undertaken by the Contractor) and periodic inspection (to be undertaken by the Nominated Sub-contractor).

AA.04 PAYMENT

AA.04.1 The Nominated Subcontractor shall be entitled to claim for 90% of the total value of the Nominated Sub-contract works at Practical Completion.

AA.04.2 Any transplanted mature trees which die or exhibit signs of irreversible decline during the 12 months following Practical Completion due to reasons other than failure to water, fertilise and maintain as specified, shall be replaced by the Nominated Sub-contractor with trees of equivalent stature, to the approval of the Superintendent, at no additional cost to the Contract.

AA.04.3 On expiry of the 12 month period referred to above, the Nominated Sub-contractor shall be entitled to claim the balance of the monies due (ie 10% of the value of the Nominated Subcontract works).

AA.05 WATERING, FERTILISING AND GENERAL MAINTENANCE

AA.05.1 The Contractor shall be responsible for watering fertilising and maintaining the transplanted mature trees strictly in accordance with the Specification provided by the Nominated Sub-contractor.

AA.05.2 Report any signs of stress in trees to Superintendent immediately upon discovery.

AA.05.3 Any transplanted mature trees which die or exhibit signs of irreversible decline during the 13 weeks following Practical Completion due to the Contractor's failure to water as specified shall be replaced with trees of equivalent stature, to the approval of the Superintendent. Tree replacement operations shall be carried out by the Nominated Sub-contractor named above and shall be paid for by the Contractor at his own expense.

AA.06 GUY WIRES

AA.06.1 Ensure guy wires do not cause a hazard or obstruction and are correctly adjusted. Remove wires when instructed by the Superintendent or as scheduled.

AA.07 XANTHORRHOEA SPECIES.

AA.07.1 Supply 32No. Xanthorrhoea preissii (Grasstrees) as indicated on the Drawings.

AA.07.2 Grass trees shall be single headed, size as follows:

Grass Tree Size Table	
Size (Height from base at ground level)	No. Required
0.5m – 0.8m	8
0.8m – 1.2m	12
1.2m – 1.6m	12

AA.07.3 Grasstree stock to be ‘nursery stabilised’ in preference to ‘direct transplant’

AA.08 SETTING OUT

AA.08.1 The Contractor shall set out with pegs the proposed final location of each individual Xanthorrhoea spp. for the approval of the Superintendent prior to commencing transplanting operations.

AA.09 TRANSPLANTING

AA.09.1 Dependent on supplier, the transplanting of Xanthorrhoea spp can vary and so it is the contractor's responsibility to check the requirements of the supplier against the methodology listed below and immediately advise the superintendednt should there be any discrepancy.

AA.09.2 Xanthorrhoea spp. shall be transplanted using a truck-mounted 1.8m diameter tree spade to the approval of the Superintendent on a one by one basis. A hole of a size suitable to receive the rootball of the Xanthorrhoea spp. shall be excavated in the desired location. The Xanthorrhoea spp. shall be lifted using the tree spade and immediately transplanted into the prepared hole. No delay shall occur-between the lifting and replanting of the Xanthorrhoea spp.

AA.09.3 A second hole shall be excavated as above and excavated material used to fill around the newly transplanted Xanthorrhoea spp. Fill shall be placed in layers not exceeding 200mm and watered in and compacted on completion of each layer.

AA.09.4 The foliage of the Xanthorrhoea spp. shall not be burnt, cut back or removed unless so directed by the Superintendent but the Contractor shall include for this item his tender price.

AA.10 WATERING

AA.10.1 Dependent on supplier, the ongoing watering of Xanthorrhoea spp can vary and so it is the contractor's responsibility to check the requirements of the supplier against the requirements listed below and the irrigation design, and immediately advise the superintendednt should there be any discrepancy.

AA.10.2 On completion of each transplanting operation the newly planted Xanthorrhoea spp. shall be hand watered in until the ground is completely saturated by pushing the hose into the ground around the root ball as well as watering from the top.

AA.10.3 Transplanted Xanthorrhoea spp. are to be watered daily by applying 200 litres to each plant, unless otherwise directed.

AA.10.4 The Contractor shall ensure that the automatic irrigation system and/or hand watering facilities are continuously available and functioning from the time of transplanting until the end of the Consolidation Period.

AA.11 REPLACEMENT OF FAILURES

AA.11.1 The Contractor shall be responsible for the immediate replacement of all transplanted Xanthorrhoea spp. which die or fail to thrive up to Practical Completion and during the 13 week Consolidation Period, unless otherwise directed.

SECTION BB: PLANTING

BB.01 SETTING OUT THE WORKS

BB.01.1 The Contractor shall set out and mark with pegs the location of all trees shown on the Drawings and shall seek the Superintendent's approval prior to proceeding with planting.

BB.01.2 Where underground services, manholes, cable pits, fire hydrants, lamp standards, retaining walls, kerbing, roads, paving and other obstructions occur, plant trees and shrubs clear of such services and obstructions and protect services and obstructions from damage by machines and equipment. Apply to the Superintendent for further instructions where alignments dimensioned on the Drawings cannot be achieved.

BB.02 PLANTS GENERALLY

BB.02.1 **Supply**
All trees and other plants shall be supplied by approved suppliers and shall be in accordance with the Plant Schedules and Drawings.

BB.02.2 **Generally**
Plants shall be vigorous, well established, hardened off, of good form consistent with species or variety, not soft or forced, free from disease and insect pests, with large healthy root systems and no evidence of having been restricted or damaged. Trees shall have a single leading shoot.

BB.02.3 **Plant Ordering**
Within one week of entering into the Contract the Contractor shall provide the Superintendent with details of the proposed supplier(s) for all tree and shrub stock to give the Superintendent the opportunity to inspect and select individual plants at the nursery, if required, The Contractor shall ensure that stock selected by the Superintendent at the nursery is clearly marked and put aside for use on this project. Any substitutions will be rejected.

BB.02.4 **45, 100 & 200 Litre Tree Stock**
Notify the Superintendent of the nursery suppliers of all 45, 100 and 200 litre tree stock to enable the Superintendent to select individual specimens to be supplied to site prior to delivery. All tree stock is to be of the highest quality with trunk callipers appropriate to height and form of tree.

BB.02.5 **Tree Stock**
Trees shall have a single leading shoot, shall be vigorous, of good form and shall have a rootball size appropriate to the height of the tree. Trees shall also have been planted in the relevant pot size for no less than 12 months prior to delivery to site.

BB.02.6 **Tubestock**
Tubestock planting to be restricted to the winter months between June and late August if unirrigated. The contractor shall allow for returning to site if tubestock planting falls outside the construction period.

BB.02.7 **Substitutions**
No substitutions by the Contractor will be accepted. In the event that the species selected is not available the Shire of Waroona will liaise with the specialist botanist and advise the Contractor of any substitutions within 2 weeks of entering into the Contract. All substitutions will be documented and approved in writing by the Shire of Waroona's representative. Substitutions will not be approved if the Contractor has not complied with the Specification. If the contract is awarded well before the winter planting season, the required species are to contract grown to ensure there are no substitutions right before planting season.

BB.02.8 **Labelling**
Label at least one plant of each species or variety in a batch with a durable, readable tag.

BB.02.9 **Replacements**
Order sufficient quantities to allow for plant failures. Replace, with plants of the same specified type, quality and size, any plants which fail or are damaged during the work under the Contract.

BB.02.10 **Warranty**
The Shire of Waroona's appointed specialist will obtain a warranty from the supplier attesting that the plants are true to the specified species and type, and free from diseases, pests, weeds and the like.

BB.02.11 **Storage**
Wherever possible, plants shall be planted immediately after delivery to the site. If this is not possible, keep them in good condition by appropriate storage methods, or as may be directed.

Prevent theft, drying out or damage from any cause including frost, wind, sun, rain, animals and the like. Provide an on-site nursery for holding plant stock on site for more than 48 hours, of sufficient size, with provision for watering.

BB.02.12 **Approval**
The Superintendent will reject any trees or shrubs which do not meet with the requirements of the Specification.

BB.02.13 **Alternative Sizes/Species**
If, in selecting the trees, shrubs and plants as shown on the drawing or as Specified, the Shire of Waroona representatives find the best quality of trees and shrubs available at the time vary in species and container size to those shown or specified, the Superintendent and the Contractor will be notified. The Superintendent shall give the Contractor all necessary directions regarding the selection of plant species and container sizes and such will be the subject of a variation to the Contract.

BB.03 EXCAVATING FOR PLANTING

BB.03.1 Excavate a hole for all shrubs, tubestock planting and groundcovers large enough to provide not less than 150mm all-round the root system of the plant. Break up base and sides of hole to ensure free drainage.

BB.03.2 For all trees in 11litre sized containers or larger, excavate a hole 200mm deeper and 300mm wider than plant container. Break up the base of the hole to a further depth of 150mm and loosen compacted sides of the hole, as necessary to prevent confinement of root growth to the hole.

BB.04 PLANTING

BB.04.1 **Locations**
Do not vary the plant locations from those shown on the Drawings which include the planting zones and species list developed to accommodate a “Noongar 6 seasons” garden theme throughout the precinct, unless otherwise directed. If it appears necessary to vary the locations and spacing’s to avoid service lines, or to cover the area uniformly, or for similar reasons, apply for directions.

BB.04.2 **Planting Conditions**
The Contractor shall not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain, Suspend excavation in other than sandy soils when the soil is wet, planting program for non-irrigated areas to be agreed with Superintendent, depending upon prevailing climatic conditions.

BB.04.3 **Depth of Planting**
When the plant is in its final position in its hole or bed the top soil level of the plant rootball shall be level with the finished surface of the soil surrounding the hole or bed. Test the depth by measuring the sides of containers.

BB.04.4 **Placing**
When the hole or bed appears to be of correct size, and not before, remove the plant from the container with minimum disturbance to the rootball. Where necessary, tease out rootballs before planting. Place plants in holes in an upright position and backfill level with top of rootball, compact soil by hand watering.

BB.04.5 **Backfilling**
Backfill tree pits with a mixture of 3 parts excavated soil to 1 part soil conditioner as specified in Section F above. Lightly tamp down the mixture and water to eliminate air pockets.

BB.04.6 **Fertilising**
Supply and install Agriform fertiliser tablets in the following quantities:

Less than 200mm pot	-	1 x 10g tablet
200mm and 305mm pot, 11 and 15 litre	-	2 x 10g tablets
430mm pot, 45 and 50 litre	-	3 x 10g tablets
100 litre	-	4 x 10g tablets
200 litre	-	4 x 10g tablets
500 litre	-	5 x 10g tablets

BB.05 STAKING AND TYING

BB.05.1 **Staking Details**
Support plants by one of the following methods:

(a) <u>45 Litre Trees</u>

Support with two 50 x 50 x 2400mm hardwood stakes driven 900mm into the ground. Two reinforced rubber ties.

(b) 100 and 200 Litre Trees
Support with two 50 x 50 x 2400 hardwood stakes driven 900mm into the ground. Two reinforced rubber ties.

BB.05.2 Locate stakes on the prevailing windward side unless otherwise indicated on the Drawings.

BB.05.3 Alignment of stakes relative to intervening runs of bollards and other linear features to be as directed on site by Superintendent.

BB.05.4 Stakes shall be 100mm minimum clear from the rootball unless otherwise indicated on the Drawings.

BB.05.5 Height of stakes above ground may be varied to suit form of individual plants as directed by Superintendent on site.

BB.05.6 All ties shall be approved black reinforced rubber, to be tied in loose figure eight configuration and each tie shall be fixed to stakes with two number galvanised clout nails.

BB.06 **ROOT BARRIERS**

BB.06.1 All trees within 1.5m of roads, walls, kerbs or pathways are to have 'Stratagreen', or similar and approved, root deflectors installed in accordance with the Shire of Waroona's requirements. Any substitute shall be of recycled plastics.

BB.06.2 Adequately compact against any hard surface to prevent roots growing towards that element.

Supplier: Stratagreen
Phone: 0437 990 111
Email: gavin.fawkes@stratagreen.com.au
Contact: Gavin Fawkes

BB.07 **WATERING**

BB.07.1 Before planting, ensure that the on-site watering services and equipment are available and properly functioning.

BB.07.2 Areas to be planted shall first be watered to a depth of 100mm and the planting, shall be carried out immediately after watering.

BB.07.3 Watering shall be properly undertaken to keep the planted area moist to a depth of 100mm throughout the period of the Contract and the subsequent Consolidation Period.

BB.07.4 Hand water planting in non-irrigated areas.

BB.07.5 Provide minimum 100mm depth watering basins to all street trees.

BB.07.6 Ensure correct functioning and setting of reticulation following planting and check on an alternate day basis until End of Consolidation Period. If reticulation system is not functioning, hand water until system is operational.

BB.07.7 Any faults or defects to the water services and equipment shall be reported to the Superintendent.

BB.07.8 Watering services and equipment damaged at any time by the Contractor shall be made good at his own expense.

BB.08 **MULCHING**

BB.08.1 Mulch shall fully comply to Australian Standard AS4454-2013 for composts, mulches and soil conditioners. Mulch to be "**Enviro Mulch**" as supplied by Amazon Soils or **equivalent and approved**, to the approval of the superintendent. Submit a laboratory report and a 3kg sample for approval prior to delivery to site.

BB.08.2 Supply and spread mulch as follows:

- *To a depth of 75mm over tubestock and shrub areas, and*

- *To a depth of 75mm to a 750mm radius to all individually planted 45 to 500 litre trees in grass areas.*

BB.08.3 Mulch shall be kept just clear of the plant stem.

BB.08.4 Thoroughly water mulch immediately after spreading.

BB.08.5 Spread site mulch to a depth of 75mm to all areas indicated as mulch on the drawings.

BB.09 **CLEANING UP**

BB.09.1 On completion ensure all plants are in first class, presentable condition by removing dead, damaged and unhealthy branches and trimming where necessary to result in balanced growth typical of their normal form.

BB.09.2 After inspection by the Superintendent and on Practical Completion, remove labels and ties from the plants.

BB.09.3 Remove rubbish, weeds and grass from garden beds and leave the Works in a clean and tidy condition.

SECTION CC: TURF

CC.01 **PREPARATION, CULTIVATION AND SOIL WORKS**

CC.01.1 Prepare, cultivate and undertake soil works as specified in Section F above.

CC.02 **FINE GRADING**

CC.02.1 Clear the areas to be planted of rubbish, roots, sticks, weeds and stones greater than 25mm in diameter.

CC.02.2 Grade areas to true and even grades and falls to shed water and to finish flush with adjoining kerbs to roads, footpaths, edges, manholes, pits and the like except where otherwise indicated on the Drawings.

CC.02.3 All grading works shall be undertaken by hand work or by machine as is appropriate to the work, however, all grading and earthworks within a distance of 600mm radius of sprinklers or other fixed reticulation apparatus shall be hand worked to prevent damage to equipment.

CC.02.4 Finish shall be smooth rolled, consolidated and smudge boarded to obtain a perfectly even, well consolidated surface.

CC.02.5 No irregularities, depressions, hollows or abrupt changes in grades or falls will be accepted.

CC.02.6 The cost of such preparation work shall be included in the unit rate per square metre tender price and no extras will be allowed for such preparation.

CC.03 **WATERING**

CC.03.1 Watering shall be properly undertaken to keep the planted area moist to a depth of 100mm throughout the period of the Contract and the subsequent Consolidation Period.

CC.03.2 Areas to be planted shall first be watered to a depth of 100mm and the planting shall be carried out immediately after watering.

CC.03.3 Before commencing planting, ensure that the on-site watering services and equipment are available and properly functioning.

CC.03.4 Any faults or defects to the water services and equipment shall be reported to the Superintendent.

CC.03.5 Watering services and equipment damaged at any time by the Contractor shall be made good at his own expense.

CC.04 **FERTILISER**

CC.04.1 Supply and apply a base dressing of AGRAS plus trace elements (or equivalent and approved) at a rate of 250kg/ha.

CC.04.2 Prior to commencing any fertilising operations the Contractor shall obtain confirmation of exact type/rates of application based upon results of soil tests (refer to Section F above)

CC.05 **PLANTING PROCEDURE**

CC.05.1 **Turf Type**
Pre-grown turf shall be 'Kikuyu' Pennisetum clandestinum (or similar approved by Superintendent and local council) turf free of weeds, fungus, insect pests or other deleterious matter. It shall be a minimum of 25mm thick and to the approval of the Superintendent.

CC.05.2 **Supply**
Obtain turf from a specialist grower of cultivated turf. Obtain Superintendent's approval of proposed supplier and furnish a warranty from the grower that the turf is free from weeds and other foreign matter. Supply a 2.0 m^2 sample of turf for approval by the Superintendent.

The contractor shall obtain a turf certification from the supplier that the turf has been tested and is free of Sting nematode (Ibipora lolii). This certification must be provided to the Superintendent prior to Practical Completion or at time of delivery of the turf. This certification shall be provided by an independent recognised laboratory for nematode testing within the previous 3 months, as evidence

that no Sting nematodes have been detected on the production area of the turf farm where the turf is sourced, prior to Practical Completion.

CC.05.3 **Maintaining Condition**
Deliver turf to the site within 24 hours of cutting and prevent it from drying out between cutting and laying. If possible, lay it within 36 hours of cutting. If it is not laid within 36 hours, roll it out on a flat surface with the grass up, and water as necessary to maintain a good condition. Turf which has yellowed off due to storage for an excessively long period will be rejected.

CC.05.4 **Laying**
Lay the turf along the land contours with staggered, close butted joints, and so that the finished turf surface is flush with adjacent finished surfaces of paving, and the like. As soon as practicable after lying, roll the turf with a roller weighing not more than 90kg/m of width. On slopes too steep for rolling, lightly tamp the turf into place. Any inequalities in finished levels due to variations in turf thickness shall be adjusted by raking out or packing the soil beneath the turf.

CC.05.5 **Strip Turf Laying**
If the turf is laid as strip turf, close butt the end joints and space the strips 5mm apart.

CC.05.6 **Watering**
As soon as possible after rolling, irrigate thoroughly with a fine spray to a depth of 100mm. Continue as necessary to maintain moisture to this depth and to maintain the grass in a healthy condition.

CC.05.7 **Finishing**
Thoroughly water and roll turfed areas to produce true and even grades and falls free from wheel marks, waves, depressions and other irregularities.

CC.06 **TURF AROUND TREES**

CC.06.1 Leave an area of 750mm diameter free of turf around all trees of 45 litre size or larger and mulch as specified in Section BB. Maintain a clean cut edge to circle around trees throughout Consolidation Period.

CC.07 **FERTILISING**

CC.07.1 Two weeks after laying or as otherwise directed by the Superintendent, and thereafter at bi-monthly intervals if required, supply and apply 1.5kg/100sqm of 10:9:8 NPK fertiliser such as Cresco Growing Power. The fertiliser shall not be applied to wet grass and shall be evenly spread over the entire area then thoroughly watered in.

CC.07.2 Give the Superintendent two working days' notice of the start of each fertilising operation to enable him to inspect the operation in progress.

CC.08 **TOP DRESSING**

CC.08.1 When the turf is established, mow closely, remove cuttings and lightly top dress to a depth of 10mm with clean yellow top dressing sand as required to correct any unevenness in the turf surface and as directed by the Superintendent.

CC.09 **CARE AND MAINTENANCE**

CC.09.1 It is the Contractor's responsibility to fertilise, weed, mow and fully maintain the grassed areas for the length of the Contract Period including the thirteen (13) week Consolidation Period specified herein. The Contractor shall mow the grass when it has a general height of 25mm and shall maintain a regular mowing programme thereafter.

CC.09.2 The Contractor shall not disturb the grassed area by means of traffic and trespass until the grass is well established, except where necessary for the purposes of maintenance.

CC.09.3 Where areas of grass are vulnerable to disturbance by members of the public and/or other Contractors the Contractor shall protect the newly grassed areas from trespass and traffic until the grass is well established. Supply and erect temporary fencing to protect grass area. Such fencing shall consist of steel pickets and two wire strands placed at approximately 500mm and 1000mm above ground the uppermost wire is to be enclosed in small diameter white PVC tubing for its length between pickets. Wires, tubing and pickets are to be securely fixed in place. Dismantle and remove temporary fencing from site when directed by the Superintendent.

CC.09.4 Broad leaf weeds and clover shall be eliminated before they set seed by the use of an appropriate approved herbicide Use according to the manufacturer's specification and notify the Superintendent two days prior to use. All weeds shall be eliminated by the end of the thirteen (13) week Consolidation Period.

SECTION DD: STOLONISED GRASS

NOT REQUIRED

SECTION EE: LIGHTING AND ELECTRICAL

NOT REQUIRED

SECTION FF: AUTOMATIC IRRIGATION SYSTEM

FF.01 GENERALLY

FF.01.1 Scope of Works

Supply and install the automatic irrigation system as specified in this document.

FF.01.2 Specification

The Specification for the supply and installation of an automatic irrigation system is contained in Appendix B. The Contractor should note that the Specification in Appendix B is a requirement in addition to this Specification and the General Conditions of Contract and that it should be read in conjunction with same.

FF.01.3 Bore Readings

The contractor shall make themselves aware of the ground water allocations for the site during the construction and consolidation period. Bore meter readings shall be required on a two week basis and shall be provided to the superintendent in a report each fortnight.

FF.01.4 Secondry Irrigation PC inspection by System Designer.

The contractor shall liaise with the irrigation designer to coordinate a secondary irrigation PC inspection. Written confirmation from the irrigation designer that this secondary PC has been carried out and a record of all outstanding defects must be provided to the superintendant before the main landscape and irrigation works PC date as per the programme.

Irrigation Designer: Peelscape Solutions
Contact: Paul Holdom
Tel: 08 9583 4441

Note: Specified brands and suppliers maybe substituted in accordance with the Special Conditions of Contract.

SECTION GG: CONSOLIDATION, DEFECTS LIABILITY & MAINTENANCE

GG.01 PRACTICAL AND FINAL COMPLETION

GG.01.1 Practical Completion of the Works will be given when all construction and planting works are completed to the satisfaction of the Superintendent, and after any defects, etc., found in the course of the inspection of the works are rectified. The granting of Practical Completion may be delayed if all plant material is not growing satisfactorily.

GG.01.2 Notwithstanding the thirteen (13) week limit on the Consolidation Period that period will not be deemed to be completed, or outstanding money paid, until such time as all plant material is seen to be growing healthily and all defects are rectified.

GG.01.3 The Contractor shall make good all damage and losses that are the result of vandalism and theft up until the Date of Practical Completion at his own expense.

GG.01.4 During the Consolidation Period the Contractor shall report full details of any occurrences of theft and vandalism to the Superintendent immediately upon discovery and shall seek the Superintendent's instructions with regard to replacement and repairs.

GG.02 CONSOLIDATION PERIOD

GG.02.1 Consolidation includes all care, as defined below, of the landscape works in this Contract for a period of thirteen (13) weeks from the Date of Practical Completion. Defects Liability includes all repair, amendment, rectification, reconstruction and making good of defects, imperfections, shrinkages or other faults as may be required by the Superintendent during the 12 months Defects Liability Period or within 14 days after its expiration as a result of an inspection made prior to its expiration.

GG.02.2 The thirteen (13) week Consolidation Period will commence after an inspection of the Works by the Superintendent which finds all the works satisfactory to grant Practical Completion. At that time all hard and soft landscape works will be completed. The Contractor will be notified in writing thereafter of the commencement of the Consolidation Period and the date upon which it will cease.

GG.02.3 The sum specified for maintenance during the thirteen (13) week Consolidation Period in Tender Data Schedule A shall be a minimum of 3% of the total Contract sum.

GG.02.4 During the Consolidation Period, any plants or grass areas which are dead, or which do not show healthy growth and satisfactory foliage condition must be replaced by the Contractor at his expense. Such items shall be replaced immediately upon discovery and shall be replaced again, if necessary, at the Contractor's expense to ensure that (theft and vandal damage accepted) the site remains in peak condition throughout the thirteen (13) week Consolidation Period.

GG.03 LANDSCAPE MAINTENANCE GENERALLY

GG.03.1 Maintain the whole of the hard and soft landscape and irrigation works as indicated on the Drawings and as specified in this Contract for a period of 13 weeks from the date of Practical Completion.

GG.03.2 Undertake all works and provide all tools, equipment, plant and machinery necessary to maintain the landscape works as specified and in accordance with good horticultural practice.

GG.03.3 The cost of all such equipment and machinery together with the cost of fertilisers, pesticides, herbicides, mulch and any other equipment and/or materials required on a regular and scheduled basis to fulfil the requirements of the Specification shall be included in the lump sum tender price.

GG.03.4 Where loss/damage has not resulted from negligence on the part of the Contractor, the cost of supply and planting of replacement plants; repair of theft, vandal and other damage caused by agencies beyond the control of the Contractor; and, the cost of supply and installation of irrigation (and other electrical equipment) replacement parts and/or repairs not covered by warranties are to be submitted to the Superintendent for approval prior to carrying out the works. Such works will be valued on the basis of the Schedule of Rates and/or on a "cost plus" percentage basis as submitted as part of the Tender. All other works shall be included in the Lump Sum Tender price.

GG.03.5 Notwithstanding anything to the contrary in the Contract, the Superintendent may instruct the Contractor to perform urgent maintenance works. Should the Contractor fail to carry out the work within seven (7) days of such notice, the Superintendent reserves the right without further notice to employ others to carry out such work at the expense of the Contractor.

GG.04 **MAINTENANCE OBJECTIVES**

GG.04.1 It is the objective of the Principal to maintain the landscape of the development in peak condition at all times.

GG.04.2 The Contractor shall allow to undertake the maintenance operations specified and all other works he considers necessary to achieve this objective throughout the Contract Period.

GG.05 **SCOPE OF WORKS**

GG.05.1 During the thirteen (13) week Consolidation Period, the Contractor shall be responsible for:

(a) The satisfactory maintenance of all works and parts thereof;

(b) Making good all defects as notified by the Superintendent in writing;

(c) Mowing grass areas and line trimming around all obstructions;

(d) Edging around garden beds, paths, kerbs, bollards and the like;

(e) Fertilising all trees, planted areas and grassed areas;

(f) Control of pests and diseases;

(g) De-thatching/verticut of turf annually;

(h) Monitoring, maintenance and periodic adjustment as required to the irrigation system;

(i) Pruning of trees, shrubs, tubestock and groundcovers;

(j) Removal of weeds, rubbish, litter and any other undesirable objects from all planted and grassed areas;

(k) Topping up mulch;

(l) Checking and repair or removal of tree stakes and ties;

(m) The immediate replacement of dead or failing plants and grass/turf areas;

(n) 'Cleaning up' of areas which have been inundated as flood waters recede (refer to section GG.07 below)

(o) Maintaining hard paved and walled areas free of graffiti, dirt, litter, weeds and any other undesirable material;

(p) Adjustment, cleaning and minor repairs to paving, site furniture, structures, fences, etc.;

(q) Reporting on and making good theft and vandal damage, as instructed;

(r) Presenting the site at all times during the Contract in a clean and tidy condition to the satisfaction of the Superintendent; and

(s) All other work necessary to maintain a healthy, clean, neat and tidy landscape in accordance with the objectives stated above.

GG.06 **MAINTENANCE REPORTS**

GG.06.1 On the occasion of each maintenance visit, the Contractor shall submit to the Superintendent a completed Maintenance Report Form detailing operations and areas covered and identifying any problems or issues which require further action. Payment may be withheld if maintenance reports are not submitted within seven days of each visit.

GG.07 **GENERAL MAINTENANCE OPERATIONS**

GG.07.1 **Rubbish Collection and Removal**

GG.07.1.1 GENERALLY: All landscaped shall be kept clear of litter at all times and collection frequency shall be adjusted as necessary to achieve this objective.

GG.07.1.2 RUBBISH & LITTER: Collect and remove all cigarette butts, bottles, cans, litter, vegetative matter (dead leaves, grass cuttings, etc.) and any other undesirable material from all landscaped areas and paved areas/paths/roads and remove from site. All rubbish to be carted to an approved tip.

GG.07.1.3 LEAF LITTER: Leaf litter, twigs and grass cuttings shall be raked up from lawn, grass and paved areas on the occasion of each mowing and collected separately for re-use/composting where possible or removed from site.

GG.07.1.4 TREE BLOSSOM: Sweep and rake up tree blossom from paths and lawns in the vicinity of play areas every other day in appropriate season and remove arisings from site.

GG.07.1.5 STREET SWEEPING: Sweep all streets within the site by mechanical means once per month to remove all sand, litter and other debris.

GG.07.2 **Paving**

GG.07.2.1 GENERALLY: Sweep to keep free from rubbish, dirt, grass clippings, leaf litter, etc. Mechanically clean paved areas as necessary to maintain the highest standards of presentation.

GG.07.2.2 WEED CONTROL: Maintain free from weeds and grasses by hand weeding or by application of approved herbicide.

GG.07.2.3 REPLACEMENT: Report any obstructions, areas of ponding, serious staining or defects in the paving and provide quotation for making good. On receipt of approval, replace paving as instructed.

GG.07.2.4 SAFETY: Erect safety barricades to enclose areas of defective paving that may constitute a hazard until repairs have been completed.

GG.07.3 **Site Furniture, Structures and Fences**

GG.07.3.1 GENERALLY: Ensure all site furniture, structures and fences are well presented and maintained in good working order at all times.

GG.07.3.2 BOLLARDS AND OTHER VERTICAL ELEMENTS: Re-set levels of elements which deviate from alignments and re-paint/re-stain any damaged elements. Replace components or whole items where repair is not possible. Provide quotations for replacement and obtain approval before proceeding.

GG.07.3.3 SEATS: Ensure seats are firmly fixed in position and free from ‘snags’ which may cause injury. Sand back and re-stain any parts which are damaged immediately upon discovery.

GG.07.4 **Theft and Vandalism**

GG.07.4.1 GENERALLY: All damage or theft occasioned to the landscape (hard and soft) shall be reported immediately upon discovery together with a quotation for repair/replacements as required. Repair works shall commence immediately upon receipt of instruction to proceed.

GG.07.4.2 GRAFFITI: All graffiti shall be reported to the Superintendent immediately upon discovery. Submit quotations for removal of any other graffiti and obtain approval to proceed.

GG.08 **IRRIGATION MAINTENANCE OPERATIONS**

GG.08.1 **Generally**

GG.08.1.1 The irrigation system shall be maintained and operated so as to maintain the landscape in peak condition, optimising growth rates without causing water logging of the soil or wasting water.

GG.08.2 **Responsibility**

GG.08.2.1 The effective operation of the irrigation system shall be the responsibility of the Contractor.

GG.08.3 **Monitoring and Adjustment**

GG.08.3.1 Monitor and adjust system to ensure effective watering to include a run through of every station of the cycle to detect faults at the following frequency:

- *November to April - Twice a week.*

- *May to October - Once a week.*

GG.08.3.2 Ensure all sprinklers fully pop-up and retract, bubblers and nozzles are free of blockages and sprinklers are providing adequate coverage. Particular attention shall be paid to irrigation of transplanted mature trees and street trees to ensure they are receiving adequate water.

GG.08.3.3 The watering regime for planted areas shall reflect the plant's needs in accordance with the plant type and natural rainfall. Watering shall therefore be monitored throughout the year and adjusted accordingly to ensure appropriate watering. Practice deep watering and water at well-spaced intervals. Watering shall take place early in the morning, not during the night.

GG.08.3.4 Adjust concrete surrounds to sprinklers as necessary to ensure they remain unobtrusive and flush with surrounding levels.

GG.08.3.5 Refer Section E, Clause E.02.10, for water restrictions.

GG.08.4 **Repairs Under Warranty**

GG.08.4.1 Notify the Superintendent of any malfunctions in the system which is due to poor workmanship or faulty materials supplied by installer while still under warranty.

GG.08.5 **Repairs**

GG.08.5.1 All other repairs shall be made within 24 hours of discovery.

GG.08.5.2 Contact the Superintendent immediately and obtain authorisation to prior to proceeding with any repairs.

GG.08.5.3 The Contractor will be reimbursed for repairs to the irrigation system in accordance with the Schedule of Rates or, where not applicable, shall submit original invoices for parts and labour to the Superintendent and shall be entitled to claim the additional percentage stated in the Schedule of Rates.

GG.08.5.4 After repairs or alterations are made to the system, testing shall be performed and any further necessary repairs shall be made to put the system in good working order.

GG.08.5.5 Repair any washouts or erosion associated with faults in irrigation system at the same time as making repairs to system.

GG.08.5.6 Watering services and equipment damaged at any time by the Contractor shall be made good at his own expense.

GG.08.6 **Water Quality Tests**

GG.08.6.1 Take sample of supply water from the lake once per year and supply full analysis of water quality to Superintendent for assessment.

GG.09 **HORTICULTURAL MAINTENANCE OPERATIONS**

GG.09.1 **Grassed areas**

GG.09.1.1 GENERALLY: Maintain grass areas to achieve a healthy, hard-wearing, manicured appearance.

GG.09.1.2 WEED CONTROL: Remove any weeds using approved chemical herbicide or by manual means.

GG.09.1.3 PESTS AND DISEASE: Eliminate all disease and pest infestations immediately they become apparent by approved means and in accordance with Sections GG.10.

GG.09.1.4 MOWING AND TRIMMING:

- *Avoid mowing wet grass.*
- *Mow using cylinder mower in even parallel runs to maintain a maximum grass height within the range 15-20mm.*
- *Trim all lawn edges against kerbs, paths, paving, etc. and around all vertical features such as bollards, tree guards, stakes, etc. on the occasion of each mowing.*
- *Collect all arisings from mowing and trimming operations and remove from site.*

GG.09.1.5 FERTILISING: Fertilise six (6) times per year using Cresco Growing Power lawn fertiliser (or equivalent and approved) applied in accordance with Manufacturer's recommendations. Water the grassed area immediately after fertilising. The Contractor shall keep a written record of fertilising and shall detail the following: date, type and quantity of fertiliser application and general comments on the grass condition at the time of fertilising.

TOP DRESSING: Top dress once a year using clean sharp non-consolidating sand, as required to correct any unevenness in the turf surface and to a maximum depth of 15mm.

GG.09.1.6 DE-THATCHING: Verticut any thatch accumulation greater than 25mm and remove all arisings from site.

GG.09.1.7 AERATION: In compacted or heavily trafficked areas, the turf is to be cored to a depth of 75-100mm using a 10mm coring tyne once per year or as necessary.

GG.09.1.8 WATERING: Apply water at a rate of 40mm/week throughout summer months and generally at a rate appropriate to maintain vigorous and healthy growth.

GG.09.1.9 REPAIRS: Worn, dead or diseased areas of turf shall be replaced using farm grown grass turf to match existing.

GG.09.2 **Retained Existing Trees**

GG.09.2.1 MONITOR: Report any damage and/or signs of stress to retained existing trees to the Superintendent immediately upon discovery.

GG.09.3 **Trees**

GG.09.3.1 GENERALLY: Inspect all trees to ensure that irrigation system is operating effectively and trees are not exhibiting signs of stress. Remedy any problems evident by repairs to irrigation system, pruning or other appropriate action as required.

GG.09.3.2 STREET TREES:

- *Inspect <u>all</u> street trees at least fortnightly during the months of October to April (inclusive) and monthly May to September (inclusive) and ensure that any problems evident are remedied immediately be repairs to the irrigation system, increased frequency of tanker watering, pruning and/or other appropriate action.*

- *Maintain a 1.2 metre diameter area around each street tree free from weeds and grass by line trimming and use of herbicides, as appropriate.*

GG.09.3.3 STAKES AND TIES:

- *Inspect stakes and ties (including guard ties) and adjust and replace as necessary to prevent trees being damaged by wind or chaffing. Loosen ties regularly to prevent strangulation and damage to bark. Replacement stakes and ties shall match those installed at planting.*

- *Remove stakes and ties as soon as trees are wind firm.*

GG.09.3.4 PRUNING: Prune to remove dead, diseased, damaged and dying limbs; to remove obstructions to pedestrian circulation; to shape as appropriate to species; and as directed. Refer also to Section GG.09.7.3 below.

GG.09.3.5 REPLACEMENT: Remove any dead or dying trees (salvaging stakes for re-use) and report to Superintendent.

GG.09.3.6 WATERING BASINS: Maintain watering basins around street trees to ensure effective watering.

GG.09.3.7 TREES IN GRASS: Maintain a weed and grass free area of 600mm diameter around each tree in grass.

GG.09.3.8 DAMAGE BY LINE TRIMMERS: The Contractor shall replace any trees that are permanently damaged by line trimming operations at his own expense.

GG.09.4 **Garden Beds**

GG.09.4.1 GENERALLY: Maintain garden beds free from litter, grass, weeds and any pest/disease infestations. Remove any dead, diseased or dying plants immediately upon discovery and report to Superintendent.

GG.09.4.2 MULCH TO GARDEN BEDS: Rake mulch to maintain even coverage and top-up as necessary with 'Amazon Soils Enviromulch' or equivalent and approved, to maintain minimum depth of 100mm. Refer to Clause GG.09.5 below.

GG.09.4.3 PLANT REPLACEMENT: Obtain the Superintendent's approval prior to proceeding with replacement planting. Replace any individual plants which have failed to thrive with species of the same type and cultivar. Any widespread failures of one species are to be reported so that an appropriate substitute can be identified prior to replacement.

GG.09.5 **Mulch**

GG.09.5.1 GENERALLY: Supply and spread additional mulch where depth of existing cover has reduced to less than 50mm.

GG.09.5.2 QUANTITIES: Allow for the supply and spreading of 50m3 per annum of 'Enviromulch', or equivalent and approved, within the Lump Sum Tender to be utilised as directed by the Superintendent in accordance with Clause GG.09.4.2 above. Garden beds and other areas adjacent to paths and/or highly visible shall be given priority in terms of mulch top up. Additional mulch beyond 50m2 per annum is to be costed as a Variation to the Contract.

GG.09.6 **Fertilising and Soil Amelioration**

GG.09.6.1 SOIL TESTS: To maintain a suitable pH level of 6.5-7.0 for growth and to optimise the fertiliser application regime, soil test shall be conducted once a year in February. Obtain samples from locations as directed by the Superintendent and obtain full analysis with recommendations. Records shall be kept of soil test results. Specialist advice shall be sought for application rates of soil ameliorants and fertilisers, to adjust the pH and nutrient levels in accordance with recommendations.

GG.09.6.2 ADJUSTMENT OF FERTILISING REGIME: The fertilising regimes specified below shall be adapted as necessary to make good any deficiencies identified by soil testing and analysis procedure.

GG.09.6.3 GRASS: Refer to Clause GG.09.1 above.

GG.09.6.4 TREES: Apply 12 month slow release fertiliser (Osmocote or equivalent) in September in accordance with Manufacturer's recommendations.

GG.09.6.5 GARDEN BEDS: Fertilise every six months using slow release fertiliser (Osmocote or equivalent) applied in accordance with Manufacturer's recommendations.

GG.09.7 **Pruning and Dead Heading**

GG.09.7.1 GENERALLY:

- *The main objective is to maintain as natural an appearance as possible, including the removal of excess dead and degenerating material and regular tip pruning to encourage new growth and maintain form. All work is to follow correct horticultural techniques and, is to be implemented at such a time and in such a way to avoid the loss of any foliage or floral colour.*

- *In cases where odd shaped, woody plants have developed, heavy pruning may be necessary. The Contractor shall cut back the dead branches towards the main stem, removing small portions of the branch at a time until a satisfactory result has been achieved.*

GG.09.7.2 SHRUBS, TUBESTOCK AND GROUNDCOVERS:

- *Pruning to shrubs, tubestock and groundcovers shall be carried out in such a way to promote the effect of an interlocking cover of plant growth. In no circumstances shall the plants be pruned to create a mass planted area of 'individual' specimens.*

- *Groundcovers shall be allowed to spill onto the edges of paths, kerbs and recalls. Where plant growth inhibits the use of paths, roads, etc. or extends over mowing edges, trimming shall be carried out to produce informal wavy edges, not hard straight lines.*

GG.09.7.3 TREES: Selectively prune low level lateral growth on street trees to prevent sight lines from being obscured and to allow unrestricted pedestrian movement. Pruning shall be gradual, always leaving ample branch and foliage coverage typical of the growing habit of the tree species.

GG.09.7.4 DEAD HEADING: Dead head in appropriate season.

GG.09.7.5 ARISINGS: Collect all debris arising from pruning and dead heading operations and remove from site.

GG.09.8 **Pests and Diseases**

GG.09.8.1 GENERALLY: Identify the problem and advise the Superintendent of the proposed treatment. Employ approved treatment method until the problem has been eliminated. Refer to Section GG.10 below prior to using any chemicals.

GG.09.8.2 MAJOR INFESTATIONS: Infestations in unacceptably high levels shall be treated by an approved pesticide of low toxicity. Pesticides shall be used in strict accordance with the manufacturer's instructions at minimum rates. Biodegradable pesticides shall be used wherever possible. Mechanical applicators shall be precisely calibrated and care taken when applying to minimise the effect on plant and animal life.

GG.10 **USE OF HERBICIDES AND PESTICIDES**

GG.10.1 **Approval**
All chemicals proposed for use must be to the approval of the Superintendent.

GG.10.2 **Application**
Chemical sprays shall be used only in still conditions and during weekday early mornings when public use of the site is likely to be at a minimum. Chemicals shall only be applied strictly in accordance with the Manufacturer's recommendations.

GG.10.3 **Public Safety**
Take all precautions necessary to protect other users of the site (be they other Contractors, the public, residents or the like) and private property from any harmful effects of herbicide and pesticide applications.

GG.10.4 **Notification**
Give the Superintendent and adjacent residents at least 24 hours' notice of the intention to apply chemicals, clearly stating the reason for their use and expected date and time of application.

GG.11 **REPLANTING OPERATIONS**

GG.11.1 **Generally**
Costs for the supply and installation of replacements for vandalised or stolen plants shall be prepared in accordance with the Schedule of Rates and shall be submitted to the Superintendent for approval prior to carrying out the works. No replacements or modifications felt necessary by the Contractor shall be implemented prior to the written approval being received from the Superintendent. Any plants that degenerate due to Contractor's negligence will be reinstated at the Contractor's expense.

[Drakesbrook Weir Improvements] **MAINTENANCE REPORT FORM**
[*SHIRE OF WAROONA****]***
[*Date****]***

GENERAL MAINTENANCE OPERATIONS

Task	*Instruction*	*Frequency*	*Action Notes*
RUBBISH COLLECTION AND REMOVAL			
Generally	All landscaped areas included within the contract area are to be kept clear of litter	Each inspection	
Rubbish & Litter	All undesirable material including cigarette butts, bottles, cans and household rubbish is to be removed and carted to an approved tip	Weekly	
Vegetative Matter	Leaf litter, branches or tree blossom shall be removed from all turf areas, playgrounds and paved surfaces Branches are to be removed from garden beds. All arisings to be removed from site	Weekly	
Animal Matter	Droppings from all feral or domesticated animals shall be removed from all turf areas, playgrounds and paved surfaces Any carcasses shall be removed and carted to an approved tip	Weekly	
PAVED SURFACES			
Generally	Sweep all surfaces to keep free from rubbish, dirt, grass clippings or leaf litter. Clean paved areas for marking or staining and maximum presentation	Each inspection	
Weed Control	Maintain free from weeds and grasses by hand weeding or by application of approved herbicide (Refer Specification Section GG.10)	Fortnightly	
Replacement	Report any obstructions, areas of ponding, serious staining or defects in the paving and provide quotation for making good	Each inspection	
Safety	Erect safety barricades to enclose any areas of defective paving that may constitute a hazard until repairs have been completed	Each inspection	
Additional Notes			

Task	*Instruction*	*Frequency*	*Action Notes*
PLAYGROUNDS			
Generally	Maintain in a tidy and safe condition at all times ensuring all surfaces are free of deleterious material	Each inspection	
Equipment Safety Checks	Check equipment to detect any potentially dangerous features including but not limited to loose fastenings, sharp edges and frayed material and rectify	Weekly	
Nature Play Elements	Check natural logs or other timber elements to detect any potentially dangerous features including but not limited to splinters, sharp edges or excessive cracks and rectify	Weekly	

Play Structures & Furniture	Maintain in a clean and tidy condition, by brushing down, removing cobwebs, dirt or other staining Ensure all furniture is in a clean and operative state	Monthly	
Rubber Soft Fall	Inspect surface condition for damage, wear or vandalism and report any defective items to the Superintendent	Weekly	
Sand Soft Fall	Thoroughly rake sand to check for presence of syringes/needles or other foreign material and remove all debris Ensure sand is maintained to a minimum 400mm depth and even coverage	Weekly	
Mulch Soft Fall	Thoroughly rake mulch to check for presence of syringes/needles or other foreign material and remove all debris Ensure mulch is maintained to a minimum 400mm depth and even coverage	Weekly	
Paving	Sweep all surfaces to keep free from rubbish, dirt, grass clippings, leaf litter, sand or mulch. Clean paved areas for marking or staining and maximum presentation	Weekly	
Theft or Vandalism	All damage or theft shall be reported to the Superintendent	Each inspection	
Graffiti	All graffiti shall be reported to the Superintendent	Each inspection	
Repairs	Repair all damages including but not limited to, breakage, paint defects or stain leaching and fading Report major damages to the Superintendent	Each inspection	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
SITE FURNITURE, STRUCTURES AND FENCES			
Generally	Ensure all site furniture, structures & fences / balustrades are well presented & maintained in good working order Check and tighten all fixings including tensioning of fence / balustrade wires	Each inspection	
Bollards and Other Vertical Elements	Re-set levels of elements which deviate from alignments and re-paint / re-stain any damaged elements Replace components or whole items where repair is not possible	As required	
Seats, Benches & Tables	Ensure all furniture is firmly fixed in position and is free from “snags” which may cause injury. Replace as necessary Sand back and re-stain any parts which are damaged immediately	Fortnightly	
Timber Boardwalks, Decks and Bridges	Ensure boards are flush, even and firmly secured at all times. Maintain handrails and wires to provide an effective safety barrier	Weekly	

Pavilions, Shade or Other Structures	Maintain in a clean and tidy condition, by brushing down, removing cobwebs, dirt or other staining Ensure all furniture is in a clean and operative state	Monthly	
Barbecues and Drinking Fountains	Maintain in a clean and tidy condition by brushing down, removing cobwebs, dirt or other staining Ensure elements are in a clean and operative state	Monthly	
Metal Work	Maintain free from staining Report any damage or defective surfacing to the Superintendent	Monthly	
Theft or Vandalism	All damage or theft shall be reported to the Superintendent	Each inspection	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
WALLS, ENTRY FEATURES & ROCKWORK			
Generally	Maintain all walls and panels in a clean condition Ensure all rock work walls, swales, weirs or spalling is free of rubbish and litter	Weekly	
Graffiti	Report any damage or graffiti to the Superintendent immediately upon discovery Submit quotations for removal and obtain approval to proceed	Weekly	
Cascades, Weirs and Spillways	Maintain free from weeds and rubbish at all times Clean to keep free from deposited mud, sand or mulch Remove weeds manually or by spot treatment with herbicide only	Weekly	
Theft or Vandalism	All damage or theft shall be reported to the Superintendent	Each inspection	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
WATERBODIES			
Generally	Maintain all standing or temporal water bodies in a clean and healthy state, free from weeds (including non-native plant species) and rubbish	Weekly	
Rubbish & Litter	Keep free from all litter and rubbish and allow for any specialist equipment required to achieve this	Weekly	

Recirculation Systems	If installed ensure cascade, fountains and pumps are operating effectively	Weekly	
Water Levels	Monitor the water levels in any standing water body and ensure fluctuations do not exceed +/- 150mm	Each inspection	
Weed Infestation	Report immediately to Superintendent any deterioration in water quality that becomes apparent, particularly algal growth	As required	
Water Quality	Take a sample of supply water to any standing water body once per year and supply a full analysis of water quality to the Superintendent for assessment	Annually	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
LIGHTING AND ELECTRICAL			
Generally	Visit site and check operation of all electrical equipment within 24 hours of any disruptions to power supply Re-start and re-set timers and all other controllers as necessary to ensure equipment is operating correctly	As required	
Metal Work	Maintain free from staining Report any damage or defective surfacing to the Superintendent	Monthly	
Theft or Vandalism	All damage or theft shall be reported to the Superintendent	Each inspection	
Additional Notes			

SPECIFIED MAINTENANCE OPERATIONS

Task	*Instruction*	*Frequency*	*Action Notes*
COMMUNITY FUNCTIONS IN OPEN SPACES			
Generally	Restore all landscaped areas to pre-function condition Maintenance to be undertaken no later than the morning following the event or earlier if directed by Superintendent	Following Event	
Rubbish & Litter	All undesirable material resulting from the function including cigarette butts, bottles, cans and household rubbish is to be removed and carted to an approved tip	Following Event	

Paving	All markings arising from function set-up including vehicle tyre or temporary structure marks are to be removed by mechanical means	Following Event	
Bollards and Other Vertical Elements	Restore any bollards removed to allow access to their pre-function positions Remove any temporary signage, tape or other material or markings Report any damage or defective surfacing to the Superintendent	Following Event	
Seats, Benches & Tables	Restore all site furniture to their pre-function conditions Remove any temporary signage, tape or other material or markings Report any damage or defective surfacing to the Superintendent	Following Event	
Pavilions, Shade or Other Structures	Restore all structures to their pre-function conditions Remove any temporary signage, tape or other material or markings Report any damage or defective surfacing to the Superintendent	Following Event	
Barbecues and Drinking Fountains	Restore to a clean and tidy condition by brushing down, removing any residue or other staining Ensure elements are in a clean and operative state	Following Event	
Plant Care & Replacement	Restore all planted areas to their pre-function condition and replace any damaged specimens with an identical species Prune any broken or damaged limbs from trees or branches from shrubs	Following Event	
Mulch Restoration	Remove all scattered mulch from adjacent surfaces, restore any unevenness or depressions in garden beds caused by vehicles or structures and restore mulch cover to maintain minimum depth of 75mm	Following Event	
Turf Repairs	Cut out any damaged sections of turf, re-level as required using clean, sharp non-consolidating sand to correct any unevenness in the turf surface and replace to existing level using farm grown grass species to match existing	Following Event	
Irrigation Repairs	Test system and repair any damaged parts or faults to irrigation system within 24 hours of event Contact Superintendent immediately and obtain authorisation to proceed	Following Event	
Theft or Vandalism	All damage or theft shall be reported to the Superintendent	Following Event	
Additional Notes			

IRRIGATION MAINTENANCE OPERATIONS

Task	*Instruction*	*Frequency*	*Action Notes*
Generally	The irrigation system shall be maintained and operated so as to maintain the landscape in optimal condition	Each inspection	
Monitoring	Monitoring and adjustment of system to ensure effective watering to include a run through of every station of the cycle to detect faults	*Nov-April:* Twice a week *May-Oct:* Once a week	
Components	Ensure all sprinklers fully pop-up and retract, bubblers and nozzles are free of blockages and sprinklers are providing adequate coverage	*Nov-April:* Twice a week *May-Oct:* Once a week	
Watering Regime	Watering is to be monitored and adjusted accordingly throughout the year to reflect plants / turf needs and natural rainfall experienced	As required	
Concrete Surrounds	Where installed, ensure all concrete surrounds to sprinklers remain unobtrusive and hold unit level	As required	
Repairs	Repair faults to irrigation system within 24 hours of discovery Contact Superintendent immediately and obtain authorisation to proceed	As required	
Washouts	Repair any washouts or erosion associated with faults in the irrigation system at the same time as making repairs	As required	
Additional Notes			

HORTICULTURAL MAINTENANCE OPERATIONS

Task	*Instruction*	*Frequency*	*Action Notes*
TURF			
Generally	Maintain grass areas to achieve a healthy, hard-wearing, even and manicured coverage	Each inspection	
Mowing and Trimming	Maintain a maximum grass height of between 15-20mm Trim all edges against kerbs, paths, paving, bollards, walls, tree guards, stakes on the occasion of each mow	As required following seasonal variations	
Weed Control	Remove all weeds either manually or by approved chemical herbicide	Fortnightly	
Pests and Diseases	Eliminate all disease and pest infestations immediately they become apparent by approved means and in accordance with the Specification Section GG.10	As required	

Fertilising	Apply approved lawn fertiliser in accordance with manufacturer's recommendations Water grassed area immediately after fertilising	10 Times per Year	
Top Dressing	Top dress using clean, sharp non-consolidating sand to correct any unevenness in the turf surface and to a maximum depth of 15mm	Annually	
De-Thatching	Verticut any thatch accumulation greater than 25mm and remove all arisings from site	Annually	
Aeration	In compacted or heavily trafficked areas, the turf is to be cored to a depth of 75-100mm using a 10mm coring tyne once per year or as necessary	Annually	
Watering	Apply water at a rate of 40mm/week throughout summer months and generally at a rate appropriate to maintain vigorous and healthy growth	Weekly	
Repairs	Worn, dead or diseased areas of turf shall be replaced using farm grown grass species to match existing	As required	
Rough Grass or Meadows	Maintain to achieve a tidy "grazed" appearance using a rotary mower to maintain a maximum grass height of 100mm	As required	
Slashing	Any infrastructure buffer areas of grass are to be cut via mechanical means in November each year Arisings can remain but clear of all structures, fences and paths except in instances where they can become a fire hazard. Clarification will be supplied by the Superintendent	Annually	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
TREES			
Generally	Ensure that irrigation system is operating effectively & trees are not exhibiting signs of stress. Remedy any evident problems by appropriate action	Each inspection	
Street Trees	Inspect all street trees to ensure that any problems evident are remedied immediately including repairs to the irrigation system, increased frequency of tanker watering, pruning and/or other appropriate action	*Oct-April:* Fortnightly *May-Sep:* Monthly	
Trees in Turf	Maintain a 750mm diameter area around trees free from weeds & grass and provide a formed water basin with clean mulch	Weekly	

Retained Existing Trees	Monitor and report any damage and/or signs of stress to retained existing trees to the Superintendent immediately upon discovery	Monthly	
Mature Transplants	Monitor and report any signs of stress in trees to Superintendent. Adjust irrigation system as required and ensure system is operational. Ensure any guy wires do not cause a hazard or obstruction & are correctly adjusted	Fortnightly	
Stakes and Ties	Inspect stakes & ties & adjust & replace to prevent trees being damaged by wind or chaffing. Loosen ties regularly to prevent strangulation & damage to bark Remove when tree is wind firm	Each inspection	
Pruning	Prune to remove dead, diseased, damaged and dying limbs. Remove obstructions to pedestrian circulation and shape as appropriate to species and as directed. (Refer Specification Section GG.09.7.3)	As required	
Watering Basins and Mulch	Maintain mulched watering basins around all trees to ensure effective watering	Weekly	
Replacements	Remove any dead or dying trees (salvaging stakes for re-use) and report to Superintendent	Each inspection	
Fertilising	Apply 12 month slow release fertiliser in September in accordance with manufacturer's recommendations	Annually	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
GARDEN BEDS			
Generally	Maintain garden beds free from litter, grass, weeds & any pest/disease infestations Remove any dead, diseased or dying plants	Weekly	
Plant Replacement	Obtain the Superintendent's approval prior to proceeding with any plant replacement Replace individual plants which have failed to thrive with species of the same type and cultivar	As required	
Mulch	Rake mulch to maintain even coverage and top-up as necessary where depth of existing cover has reduced to 25mm with approved product to maintain minimum depth of 75mm	As required	
Fertilising	Fertilise every six months using slow release fertiliser applied in accordance with Manufacturer's recommendations.	Twice yearly – *Sep & Mar*	

Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
CLIMBING PLANTS, ESPAILERS AND HEDGES			
Generally	Prune and train climbers or espalier plantings to encourage spread up, over or along the supporting structures Prune hedges to encourage directional growth to final shape and maintain size thereafter	*Oct-April:* Fortnightly *May-Sep:* Monthly	
Wires & Support	Promote and fix additional wire as specified and required to assist plants to cover structures	As required	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
EXPOSED OPEN SPACE AREAS **This section is additional to all other horticultural and maintenance items listed elsewhere in this schedule and should be completed as part of the Maintenance Report Form when directed by the Superintendent*			
Generally	All landscaped areas included within the contract area are to be kept in maximum presentable condition	Each inspection	
Rubbish & Litter	Maintain all landscaped areas free from litter, household or building company rubbish or any other wind-blown detritus	Weekly	
Garden Bed Protection	If directed by the Superintendent, install low wind-cloth protection around all open space, median and verge garden beds and maintain in good condition for the length of the consolidation period	Weekly	
Paving	Report any defects in the paving arising from erosion issues and provide quotation for making good Rectification of the erosional cause is to be undertaken at the same time as the paving repair	Each inspection	
Street / Path Sweeping	All sand, mulch or other wind-blown deposition is to be removed by mechanical means from all road surfaces, parking bays or kerb edges All paths are to be maintained free of wind-blown sand or mulch	Weekly	
Cascades, Weirs and Spillways	Maintain free from rubbish at all times and clean to keep free from deposited mud, sand or mulch	Weekly	
Tree & Plant Monitoring	Monitor all plants and trees for any stress or damage resulting from the exposed site or storm events Monitor and ensure all guys and stakes remain taut and functional especially following periods of high winds or storms	Each inspection	

Plant Replacement	Obtain the Superintendent's approval prior to proceeding with any plant replacement Replace individual plants which have failed to thrive with species of the same type and cultivar Report any areas of mass plant failure to the Superintendent immediately	As required	
Bank Stabilisation	Maintain all slopes and banks to their original grade and plant or mulch cover as constructed Any areas of wind or water erosion are to be reported to the Superintendent immediately	Each inspection	
Mulch	Rake mulch to maintain even coverage free of sand or soil deposition and top-up as necessary with approved product to maintain minimum depth of 75mm		
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
FERTILISING AND SOIL AMELIORATION			
Soil Testing	A soil test shall be conducted every February. Obtain two samples from locations as directed by the Superintendent and obtain full analysis with recommendations. Records shall be kept of soil test results. Specialist advice shall be sought for application rates of soil ameliorants and fertilisers, to adjust the pH and nutrient levels in accordance with recommendations	Annually	
Adjustment of Fertilising Regime	All fertilising regimes shall be adapted as necessary to make good any deficiencies identified by soil testing and analysis procedure	Annually	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
PESTS AND DISEASES			
Generally	Identify any problem arising and advise the Superintendent of the proposed treatment. Employ approved treatment method until the problem has been eliminated. (Refer Specification Section GG.10)	As required	
Additional Notes			
Task	*Instruction*	*Frequency*	*Action Notes*
PRUNING AND DEADHEADING			

Generally	Prune all plants to maintain as natural an appearance as possible, including the removal of excess dead and degenerating material and regular tip pruning to encourage new growth and maintain form All work is to follow correct horticultural techniques and is to be implemented at such a time and in such a way to avoid the loss of any foliage or floral colour	Fortnightly	
Shrubs	Prune shrubs to promote the effect of an interlocking cover of plant growth. In no circumstances shall the plants be pruned to create a mass planted area of 'individual' specimens	Fortnightly	
Groundcovers	Prune groundcovers where plant growth inhibits access or extends over mowing edges Trimming shall be carried out to produce informal wavy edges, not hard straight lines	As required	
Trees	Selectively prune low level lateral growth on street and turf trees to prevent sight lines from being obscured and to allow unrestricted pedestrian movement	As required	
Deadheading	Deadhead all flowering plants as required	Annually *Jan-Mar*	
Arisings	Collect all debris arising from pruning and dead heading operations and remove from site	Each inspection	
Additional Notes			