



ncy Planting Schedule								
	APPROX MATURE SIZE (H X W)	POT SIZE	DENSITY	NO.				
)	4-5m x 3-4m	45 Lt	as indicated	1				
	6-8m x 3-4m	45 Lt	as indicated	2				
			TOTAL NO.	3				
	_							
	2-3m x 1-1.5m	140mm	6/m²	28				
	0.75-1m x 0.75-1m	140mm	6/m²	32				
	0.75-1m x 0.75-1m	140mm	6/m²	56				
	0.3-0.5m x 3-4m	140mm	6/m²	71				
	0.5m x 0.5m	140mm	6/m²	28				
			TOTAL NO.	215				

SCALE AS INDICATED DATE 11.05.21 DRAWN BY NJA CHKD GH T1 REV. DRG.NO. LCD02

### LANDSCAPE WORKS SPECIFICATION NOTES

### A. GENERAL CONDITIONS

#### 1.0 PRELIMINARY CLAUSES

#### 1.1 INTRODUCTION

The work of the landscape contract is to be carried out in accordance with this Specification, accompanying drawings, Conditions of Contract, to the requirements of the local authorities and under the administration of the Superintendent.

#### 1.2 SITE INSPECTION/MEETINGS

The Contractor shall provide a minimum of 48 hours notice prior to required inspections by the Superintendent.

#### 1.3 DAMAGE TO EXISTING WORKS

The Contractor and Superintendent shall inspect all existing works on site prior to commencement of the Contract Works. The Contractor and the Superintendent shall record (via photographs, reports and the like) all existing conditions and damage and defects.

On completion of the Contract Works, the Superintendent and the Contractor shall inspect the Works area to see if additional damage has been caused. The Contractor shall be responsible for any rectification works to existing works, including fences, paving, services, or other property occasioned by construction activities during this Contract.

#### 1.4 SAMPLES

Samples of all materials will be subject to inspection by, and approval of, the Superintendent who will approve samples in writing. A Schedule of Samples is included in Appendix 1

### 1.5 PROTECTION OF EXISTING VEGETATION

A Tree Protection Zone (TPZ) is to be established by means of yellow para-web fencing supported by star pickets and highlighted by tree protection zone signage. Typically the tree protection zones have been established to extend to the tree drip lines. A layer of organic mulch (wood chips) has been placed throughout the tree canopy zones to assist with moisture retention and reduce the impact of compaction.

The Contractor shall inspect the site prior to construction commencing to ensure that the TPZ's are still established and stable, and shall notify the Superintendent if this is not the case. TPZ's are to be retained during construction of the Landscape Works and removed only as required to complete the works prior to or at Practical Completion.

During all works, the Contractor shall take care to protect and minimise disturbance to the existing ground surface, soil and root system around every tree. Do not backfill around the tree trunk to a height greater than the original ground surface. The Superintendent shall be advised of any works that are to be undertaken adjacent to trees and approval is to be obtained for the works to take place, prior to any works commencing. During construction works:

- Do not store, stockpile, dump or otherwise place under or near vegetation any bulk materials or harmful materials such as oil, paint, other chemicals, excavated material, even if for short periods. Prevent wind blown materials, such as cement, from harming vegetation.
- Prevent damage to tree bark. Do not attach stays, guys and the like to existing trees. • Do not remove topsoil from within the drip line of trees unless otherwise specified. If it is necessary to excavate within the drip line, use hand methods such that root systems are preserved intact and undamaged. Open up excavations under tree canopies for as short a period as
- Do not cut any roots exceeding 50mm diameter unless permitted by the Superintendent. Where it is necessary to cut tree roots, use a chainsaw or similar means so cutting causes minimal disturbance. Immediately after cutting, paint roots with an approved root inducing
- hormone Backfill excavations around existing vegetation with specified topsoil. Do not backfill around tree trunks to a height greater than original ground surface. Immediately after backfilling, thoroughly water the root zone.
- Avoid compaction of the ground, especially under trees. If the soil does become compacted loosen by coring 40 mm diameter holes 450 mm deep at 600 mm centres. Backfill holes with coarse river sand mixed with slow release fertiliser and water in.

#### 1.6 PRACTICAL COMPLETION

The Contractor shall ensure that all works of this Contract excluding Items "Consolidation and Maintenance" and "Defects Liability Period" are completed prior to Practical Completion. The Contractor shall notify the Superintendent when they believe Practical Completion has been achieved.

For the purpose of issuance of the Certificate of Practical Completion, all works of the contract shall be absolutely complete and constructed, all debris removed from site and any storage areas made good. APP Projects and the Superintendent shall inspect the works at Practical Completion and state any outstanding defects that require rectification during the Maintenance Period and Defects Liability Period. 1.7 MAINTENANCE PERIOD

The Maintenance Period runs concurrently with the Defects Liability Period. The Contractor shall maintain the whole of the soft landscape works, after acceptance of construction at Practical Completion by the Superintendent, twenty six (26) weeks and present the site at all times during the Maintenance Period in a clean and tidy condition to the satisfaction of the Superintendent.

The Contractor shall provide a log book and maintenance schedule which shall be kept at the site and filled in as required on each visit. Specific maintenance items are included under the Maintenance clauses in the Specification.

The Contractor shall replace immediately, at their own expense, all plants and trees if deemed by the Superintendent to have died or been damaged due to poor or lack of maintenance by the Contractor. At the completion of the Maintenance Period, an inspection shall be undertaken prior to hand over. The Superintendent shall inspect the works and state any outstanding defects that require rectification prior to handover.

#### 1.8 DEFECTS LIABILITY PERIOD

The Contractor shall be responsible for making good any defects within the landscape works (excluding plants and grass) for the entirety of the Defects Liability Period of fifty two (52) weeks from the Date of Practical Completion.

#### 1.9 FINAL COMPLETION

The Contractor shall notify the Superintendent at the expiration of the Defects Liability Period, and arrange for a final inspection. For the purpose of issuance of the Final Certificate, all works shall be completed and all defects rectified.

The Superintendent shall inspect the works at Final Completion, issue a final certificate and approve release of any outstanding retention monies, if satisfied that works have reached Final Completion

#### B. TECHNICAL CLAUSES

2.0 SCOPE OF WORKS

The Works include, but are not limited to the supply, delivery, installation, and all other works required to construct the works as follows:

#### Landscape earthworks

- Pavement Finishes and Ground Surfacing
- Insitu exposed aggregate concrete pavements
- Precast pavers on mortar on slab on ground
- Mulched and irrigated garden bed
- Turfed and irrigated lawn areas
- Landscape Drainage Subsoil drains and connections

#### Automatic Irrigation System Reinstatement

- Design and Construct./Reinstatement
- Soft Landscape
- Cultivation and preparation of soft landscape areas. Garden soil mix.
- Turf sand mix
- Planting
- Nominated trees, shrubs and groundcovers
- Staking and Tying
- Mulches
- Organic mulch Consolidation and Maintenance
- 26 weeks

3.0 LANDSCAPE EARTHWORKS

#### 3.1 SCOPE OF WORKS

The Earthworks scope (refer to Engineers specifications) shall have generally established levels to within + 100mm of the required finished levels. All material used for roadways, storage hardstand, crane slabs etc. will be removed by the Builder prior to the Landscape Contractor commencing earthwork. Prior to commencing Landscape Earthworks it shall be the Landscape Contractor's responsibility to verify all dimensions, grades and levels to ensure that the bulk earthworks are generally finished and formed to within ± 100mm of the required shapes, levels, grades and surfaces.

The Landscape Contractor is responsible to be informed of the nature of the site including both surface and sub-surface conditions, soil conditions, rock batters/banks, geological strata and formations, overall drainage patterns as well as all other pertinent site data and features. The Landscape Contractor shall conduct operations such that the area outside the limits of the Earthworks is not disturbed. Any falls or slips of material that occur due to the Landscape Contractors negligence or use of inappropriate methods shall be removed and the area reinstated by the Landscape Contractor at no cost to the Superintendent.

3.2 INSPECTIONS All earthworks will be subject to inspection by the Superintendent. The Superintendent requires forty-eight hours written notice for all inspections. If the works are considered to be inadequate or unsatisfactory for the purposes intended, the Contractors shall perform all necessary remedial work (including further filling, trimming, shaping, etc.) as directed until the required standard is achieved.

3.3 EXCAVATION

3.3.1 Scope of Works Excavation shall consist of:

sections shown on the drawings.

Any surplus excavated material shall be respread on site. The Contractor shall notify Superintendent of any requirement for the off-site disposal of surplus or unusable excavated material. Where the excavation at subgrade level is rocky material, the subgrade shall be loosened and rocks or boulders removed to a depth of at least 150mm below subgrade level in areas on which pavement is to be placed. Any resulting depressions shall be backfilled with approved material properly compacted and drained to suitable outfalls, or in the case of isolated boulders, with properly compacted material similar to the surrounding in-situ material.

5.7.1 Testing

5.7.2 Surface Finish

After completion, the surface shall be evenly graded and trimmed to the required levels, grades and shapes, and the surfaces consolidated by rolling and tamping, to finish within a tolerance of 0 to +10mm of the required levels and lines. A check survey shall be made by the Contractor in the presence of the Superintendent and if necessary, further remedial work performed as required to finish all surfaces and shapes to the satisfaction of the Superintendent.

#### 3.4 UPPER LAYER

Unless otherwise specified, the upper layer shall be built up on the prepared base layer to the profile and materials specified. All material shall be clean, free from rubbish, debris, and other unstable and unsuitable materials, and of type and moisture content suitable for compaction to the required densities.

3.7.1 Cement Stabilised Class 2 FCR

Upon completion of laving and joint grouting, surfaces shall be washed clean with no mortar remaining to prevent grout deposit in the pores. Units Under Pavements / Hard Landscape Surfaces the Upper Layer shall be 3% Cement Stabilized Class 2 FCR compacted to 95% standard maximum shall be sawn to dimensions and angles shown on the drawings. Surface length and width shall not vary by more than 1mm, and all surfaces shall dry density. (When tested in accordance with the relevant requirements of AS1289). not deviate from a straight edge by more than 2 mm in one metre. Face diagonals on each unit shall not differ by more than one millimetre. All face edges shall be finished with a 3mm arris, unless shown otherwise on the drawings.

3.7.2 Imported Topsoil

Under Landscape Areas the Upper Layer shall be imported topsoil, of the type specified. Imported topsoil shall be lightly compacted to 90% standard maximum dry density. (When tested in accordance with the relevant requirements of AS1289).

## 3.5 PLACING

Fill shall be placed and spread in uniform layers and shall be compacted to meet the specified requirements. The Contractor shall ensure that an adequate bond will develop between each layer of fill.During the placement of fill the surface of each layer shall be kept generally parallel to the surface of the subgrade. Prior to the cessation of work each day, the top of the fill shall be shaped and compacted to minimise damage resulting from wet weather.

The Contractor shall construct all embankments so that after shrinkage and settlement and at the time of acceptance of the project they shall have the required grade, width and cross section at all points.

#### 3.6 COMPACTION

Compaction of filling material shall be achieved by ramming to completely fill all cavities around structural members and services components and achieve consistent compacted density throughout. When backfilling service trenches, the material shall be carefully packed around services pipes and fittings and to a level at least 300mm above tops of pipes by manually ramming only, taking particular care to avoid damage and/or displacement of services components and jointing seals. Mechanical rammers may be used in all other locations.

Backfilling under pavements is to be compaction tested at the rate of 1 test per 20 lineal metres of trench per layer of backfill, and one test per 100m2 per layer of backfill. Testing is to be undertaken by a NATA registered laboratory. Flooding of filling to assist compaction shall not be permitted.

## 3.7 TRIMMING AND GRADING

Trimming and grading shall consist of:

sections shown on the drawings.

#### 3.8 SITE DRAINAGE

As far as is reasonably practicable, the earthworks shall be maintained in a nominally dry condition. Particular care shall be taken to prevent flooding, ponding, seepage and erosion. The Contractor shall provide temporary embankments as necessary to prevent water from flowing into the earthworks and provide suitable drainage systems to drain off the water which would otherwise collect in the earthworks. All areas eroded due to unsatisfactory drainage installation shall be cut out, re-filled, re-compacted, and re-graded or other erosion techniques employed as considered appropriate by the Superintendent as necessary to repair all damage that occurs.

#### 4.0 CONCRETE

4.1 SCOPE OF WORKS

The scope of landscape works includes but is not limited to: insitu reinforced exposed aggregate concrete pavement

The Contractor shall ensure the topsoil has consolidated, prior to mulch and turf lawn placement, topping up as required where there is any The Landscape Contractor shall supply all materials, plant and labour to construct all new in situ concrete work in accordance with this specification, subsidence. the drawings, the engineering details and the current Australian Standards and related Spread topsoil in maximum 100 mm layers, each slightly compacted either by walking in thoroughly or with a roller weighing between 200-220 kg per supplements. All work shall be constructed in accordance with the details specified and/or shown on the drawings. Any discrepancies shall be metre length. Continue placing topsoil until it accords with the levels and grades required. referred to the Superintendent prior to commencing works. Refer to the Engineers Documents for general specifications in relation to reinforced When topsoiling and grading is approximately 90% complete, arrange for inspection by the Superintendent to approve final grading. Allow for minor concrete footings and mixes. amendments to the fine grading at this stage.

Slip resistance surface condition (WET) requires:

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#### This section specifies requirements for Landscape Earthworks in areas of natural ground outside the line of the Building structure including, but not limited to, all required excavation, backfilling, trimming and grading. The Contractors will be required to undertake all necessary trimming of Bulk Earthworks to finish the site to the specified finished subgrade levels. Refer also to Engineers drawings and specifications

## excavation of all materials from within the limits of the works as required to shape and form the area for construction

preparation and completion of the design surface, subgrade, shoulders, batters and embankments to the required alignments, grade and cross

#### Where removal of material below subgrade level is not required the surface shall not be disturbed by ploughing or scarifying below formation levels. Where groundwater or seepage is encountered the Contractor shall notify the Superintendent and any action to be taken shall, be submitted for review and approval. Cut batter surfaces to be topsoiled shall be lightly scarified or otherwise grooved horizontally.

The base layer of site soil shall be tested in accordance with the applicable requirements City of Melbourne, refer to Appendices

 trimming and grading of all materials from within the limits of the works as required to shape and form the area for construction preparation and completion of the design surface, subgrade, shoulders, batters and embankments to the required alignments, grade and cross

## -P5 or R12 for ramp steeper than 1:14;

-P4 or R11 for ramp steeper than 1:20 but not steeper than 1:14

### 4.2 STANDARDS

Ready mixed concrete shall comply with the current edition of relevant Standards AS 1379. Refer to Engineers Specification for:

- standards
- workmanship, quality
- proportioning strenath
- reinforcement
- formwork
- depth of pavements

#### 4.3 CONSTRUCTION

Wherever the concrete has taken its initial set by reason of placing being stopped or delayed before completion of the portion of the work under construction, the point of stopping shall be deemed a construction joint. The location of construction joints is as shown on the drawings and is to be planned in advance, to the Superintendents approval, and in accordance with the details. Construction joints in pavement shall be:

 Preformed pressed metal joint former (Connolly or Danley or similar approved) key joint system. The key joint shall be supported by galvanised steel dowels at 300mm centres across the joint, as per Structural Engineers specifications. Attach removable capping to the top edge of the key joint. Following pouring and curing, this strip to be removed and filled with an approved soft joint sealer, to colour selected by the Superintendent.

In locations where pavements abut walls, structures or stairs, pits, walls, edging the joint shall be formed with 12mm zipped 'ABELFLEX' x 45mm high, or approved equivalent elastomeric foam jointing material, over which a 25mm deep hydrotite waterstop strip shall be placed. This shall be held down to nom. 5mm below finished level and the joint filled with an approved soft joint sealer, to colour selected by the Superintendent.

#### 4.4 SAWN CONTROL JOINTS

Sawn crack control joints shall be constructed in typical locations shown on the drawings and as specified in the Engineers Documents. Sawn control joint grooves shall be 12mm deep. Where it is necessary to construct a joint in a position not shown on the drawings it shall be constructed at a location and in a manner approved or directed by the Superintendent.

#### 4.5 SAMPLE PANELS

The Landscape Contractor shall provide at minimum 1000 x 1000 sample panels of all concrete finishes for the Superintendents approval, prior to pouring pavement slabs and walls. If approved, the sample can form part of the proposed works. All pavements must be tested to ensure a minimum slip resistance of R11 is achieved.

#### 5.0 PRECAST PAVERS

5.1 SCOPE OF WORKS The works in this section include the supply and installation of:

400mm length x 400width x 46mm depth precast pavers on mortar bed on a reinforced concrete base slab. Carefully setout precast pavers to minimize small cut pavers at edges. Precast paver units shall be Anston 'Ironstone Flint' pavers or approved equivalent, of the dimensions specified. The units shall be free from any injurious defect relating to strength, durability and appearance.

The Contractor shall be responsible for setting out the works and installing all units as shown on the plans and details. The Contractor shall be responsible for setting out control lines to ensure that paving is not out of square during laying. Units subject shall be protected using boards or similar to the satisfaction of the Superintendent. Paving units shall be left to cure for seven (7) days and traffic shall be kept off paving for seven (7) days after laying.

The Landscape Contractor must make due allowance for cutting around pits, columns, kerbs, planters, walls, fences, building lines and all other structures. All units shall be cut and ground wet to control dust. Diagonal cuts in paving shall not be permitted unless approved by the Superintendent.

#### Installation

- Sweep concrete sub-base and remove all foreign materials.
- On completion of area protect the paved area from traffic.
- Wipe stone clean with damp sponge. 3.

The pavers are to be thoroughly and evenly laid. Pavers shall be flush with adjacent pavers to correct levels and alignments. The surface of all paving shall be an even, smooth and blemish free finish. Care shall be taken to ensure that paving is correctly set out with consistent ioints. All pavers which are located along edges and which need to be cut shall be diamond sawn using lubricated lipping masonry saw.

The line and location of cut pavers is to be agreed with the Superintendent at the time of set out. Pavers are only to be cut to ensure a maximum of 70% paver is retained and laid. Pavers are to be cut neatly, continuously and smoothly around walls, buildings, structures, pits, fences with a maximum horizontal tolerance of 5mm. Pavers that do not conform shall be rejected and the Superintendent will instruct them to be relaid.

Finished surfaces of paver units shall be uniform and even and conform to the following tolerances:

- a) Departure from design level not more than 10 mm.
- Any lipping of adjacent units not more than 2 mm.

#### 6.0 LANDSCAPE DRAINAGE

#### 6.1 GENERAL

Where stormwater pits and connections or subsoil drainage is required, the Contractor shall allow for excavation of trenches, supply and laying of upvc or flexible geofabric wrapped pipes, supply and installation of aggregate, screenings and all fittings and connections into the stormwater system as indicated on the drawings. Drainage work will include breaking into existing drainage structures, making connections and making good any damage to the requirements of the relevant authorities. Refer also to Engineers drawings and specifications

#### 7.0 IMPORTED TOPSOIL

## 7.1 REFERENCE STANDARDS

All equipment, materials and accessories used in this contract shall be new, shall conform to the appropriate current Australian Standard Specification AS 4419 criteria for natural soil and soil blends and shall comply with Local Authority requirements.

#### 7.2 SAMPLES AND TESTING

The Contractor shall allow to have three (3) samples of the imported topsoil Laboratory tested, including analysis for component elements, pH and salt contents. Laboratory certificates shall accompany the sample soil mix submitted for approval at the commencement of the work. Imported topsoil shall not be used until approved by the Superintendent.

#### 7.3 SPREADING

Imported topsoil shall be installed as the upper layer of all garden beds and lawn areas. Topsoil shall be installed to a minimum depth of 450mm. In garden beds finished level shall allow for the placement of mulch.



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# THE CONTRACTOR MUST VERIFY ALL DIM SHOULD BE USED IN PREFERENCE TO SC FROM THE LANDSCAPE ARCHITECT. THIS

- Tubestock 5 gms. (approx. 1/2 teaspoon) 150 mm pots 15 gms. (approx. 1 1/2 teaspoons) 200 mm pots 20 gms. (approx. 2 teaspoons) 300 mm pots 25 gms. (approx. 2 1/2 teaspoons)

- 100 gms. (approx. 8 teaspoons) Place fertiliser in base of hole and mix thoroughly Advanced Trees

Imported topsoil to garden beds and lawn areas is to be Medium Texture General Purpose Garden Soil, to comply with AS 4419 criteria for natural soil and soil blends, and as follows:

#### light to medium friable sandy loam

7.4 TOPSOIL TO GARDEN BEDS AND LAWN AREAS

• free from perennial weeds and their roots, stone or rubble, sods of subsoil and stone, extraneous material and shall not be delivered in a saturated condition

medium texture, i.e. capable of handling when moist but lacking cohesion so that it will spread easily.

• slightly acid to neutral with a pH range between 6.0 and 7.0. • stone content shall be less than 5% by dry weight with the stone size not exceeding 10mm.

 contain organic matter suitable to support plant life. Decomposed matter shall not exceed 40% by volume, undecomposed matter shall be less than 5% by volume

 free of all extraneous material including rubbish, petrol, oil and other chemical contaminants, lime etc. • salt content shall be less than 400 parts per million.

The topsoil shall conform to the following sieve analysis:

AS Sieve Size (mm)Percentage Passing by Mass 19.001002.351001.1890 - 1000.6070 - 800.3045 - 550.1520 - 300.0755 - 150.023 - 5The Contractor shall supply laboratory tested, comparative analysis of both the specified mix and any equivalent proposed, if approval of substitutes is requested.

#### 8.0 PLANTING

## 8.1 SCOPE OF WORKS

The scope of works consists of, but is not limited to the supply and planting, fertilising and maintenance of trees, shrubs, groundcover.

#### 8.2 PLANT SUPPLY

The Contractor shall allow for inspection of all plants on site at the nominated nursery, with the Superintendent, prior to delivery. The Contractor shall liaise with the Plant Supplier to guarantee delivery of plants for use on site at the appropriate time. The Contractor shall source all indigenous plants shall be sourced from suppliers and grown from seed of local provenance. The Contractor shall notify the Principal at least one month in advance of delivery. All plants shall be hardened off to Coastal conditions prior to installation. Inspect all plants prior to delivery and then on acceptance they shall become the Contractors sole responsibility.

Approval of plants by the Superintendent at this stage will not alleviate the Contractor from responsibility of furnishing plants which meet specification and schedule at time of planting, practical and final completion. The Contractor shall inform the Superintendent immediately if any difficulty is encountered.

Plants shall be healthy nursery stock with a well developed root system, free from disease, injury, insects, weeds and roots of weeds. No tree, shrub, tube, herb or vine will be accepted which is unhealthy and/or has not been adequately hardened off or is otherwise inferior in quality. Plant material shall be planted immediately after delivery to site or heeled in or covered with moist soil or hessian or as directed by Superintendent. Until planted, material shall be adequately protected from frost and winds and be properly maintained. Heights, callipers and pot sizes indicated are minimums. If plant material is unavailable in these sizes then larger stock must be used. Trees shall have a straight trunk, strong branching pattern and good healthy canopy.

#### 8.3 GENERAL PLANTING PROCEDURE

Plant material shall be planted immediately after delivery to site, until planted shall be adequately protected and maintained. Planting shall generally follow this procedure:

Thoroughly soak all plants before planting.

Observe proper precautions so as not to disturb or damage sub surface improvements, or roots of existing vegetation.

• Stake out on the ground the proposed locations of all plant holes prior to excavation. Do not dig holes until locations have been approved by the Superintendent. Adjustments in locations shall be made as directed.

 The depth of excavation of plant pits shall be the depth below finished grade required to accommodate the ball or roots and a bed of topsoil not less than 300 mm in depth. The ball or roots shall rest in this bed when the plant is properly set to finished grade. Excess excavated soil shall be disposed of by the Contractor.

 Place approved slow release fertiliser in base of hole and mix thoroughly with the broken up soil. Fertiliser shall be long life (8 - 9 months) with an N:P:K ratio of (i.e. Osmocote Long Life Fertiliser or approved equivalent). Native plant species shall not have fertiliser applied. • Place plant into hole so that top of soil level at top of root ball matches surrounding level. Backfill around plant with imported topsoil and

remove any debris detrimental to normal growth. Tread in soil lightly adding topsoil as necessary to place ball or roots in a position that will leave plant at finished grades as detailed in drawings.

Thoroughly water in plant during planting process applying adequate water pressure to settle soil and remove air pockets around roots.

#### 8.4 TREE PLANTING

Advanced trees shall be handled and planted as per above GENERAL Planting Clauses as well as the following;

• The Contractor shall accurately set out all tree positions. Where a discrepancy occurs between service locations, carparks or other features and tree planting positions, the Contractor shall notify the Superintendent to ascertain a new tree planting position.

• All trees shall be planted as soon as is practicable and on the same day as delivery to the site. Handle all trees at all times to the best of horticultural practices. Relieve any polishing of the sides of the planting hole caused through excavation of the planting hole. Break up the base of the hole to 200mm

depth. • The top of the tree root ball when planted shall finish min. 100mm above existing ground level; top of watering bowls to finish min 200mm above surrounding levels, grading back evenly to match existing ground level over a 1.0m distance.

 Carefully remove root control bag, cardboard container, spring ring or other tree container. Burlap wrapping can remain around rootball providing it is cut away from the collar of the tree. Burlap must be slit at the base of the rootball to allow loose soil (not roots) to be removed. • Ensure the tree is correctly positioned, vertical and at the correct depth. The form of the tree and branching structure shall be considered at the time of planting to ensure that the tree is appropriately positioned.

 Backfill with damp topsoil. Combine 100gms of long life fertiliser (8 - 9 months) with an N:P:K ratio of 18:0.8:8.3. (i.e. Osmocote Long Life Fertiliser or approved equivalent)

• Prune, trim damaged or low branches where required.

The trees shall be watered prior to, and immediately after planting. Do not plant into dry soil.

• For all trees in grass create a mulch bowl around each tree, min 75mm depth x 1.0m diameter. Provide a spaded edge to define the tree hole. Mulch as specified.

## 8.5 FERTILISER

Fertiliser shall be long life (8 - 9 months) with an N:P:K ratio of 18:0.8:8.3. (i.e. Osmocote Long Life Fertiliser or approved equivalent) at the following

with the broken up soil.

## 8.6 STAKING AND TYING

All trees on natural ground shall be staked or secured where on structure with bracing. Staking and bracing shall be completed immediately after planting. Plants shall stand plumb after staking and bracing. All stakes shall be of a durable hardwood species straight, free from knots and twists and pointed at one end. The Contractor shall protect new planting against wind, trespass and traffic until the area is well established.

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#### 9.0 MULCH

#### 9.1 ORGANIC MULCH

Bark King Softplay Playground mulch or approved equivalent to comply with the current Australian Standard AS4422. Mulch is to be stockpiled and thoroughly weathered prior to delivery to site. Mulch shall be free of weeds, deleterious material, toxins and pathogens. The Contractor is to submit a 0.01 cubic metre sample to the Superintendent for approval prior to delivery to site. All mulch used shall comply with the approved sample.

Provide a sample to the Superintendent for approval prior to ordering or installing. Alternative mixes will be considered with a supplied sample. Ensure sub base (natural ground, landscape fill, topsoil etc) meets specified compaction rates prior to installing topping layer of granitic sand.

10.0 TURF

#### 10.1 SCOPE OF WORKS

The work in this section includes supply and installation of 'instant' natural turf. Natural turf shall be an approved warm season grasses such as Sir Walter Buffalo or approved equivalent. Turf type and supplier details shall be provided to the Superintendent for approval prior to placing order.

The areas nominated for turfing are indicated as such on the drawings. A prepared mix of approved lawn starter fertiliser N.P.K. ratio 12:12:8 at a rate of 40 g/m2 shall be spread evenly over the prepared surface. The fertiliser shall be raked into the bed to a depth of 50 mm and applied at the time of turfing. The bed shall be fine graded to achieve falls as detailed. Turf shall be installed within 24 hours of being lifted from site. During dry, windy weather the stacks of turf shall be sprayed with water and covered with hessian to keep them moist.

#### 10.2 LAYING TURF

The prepared, raked and graded surface shall be lightly watered. The turf shall be laid in a stretcher bond pattern across any slope. Edges shall be cut with a sharp knife and shall be firmly butted to adjoining strips. The turf shall be pushed, not pulled, into position, and shall not be stretched.

Any occasional gaps shall be filled with topsoil and tamped. The entire laid surface shall be tamped with a flat board or lightly rolled. Excess traffic shall be avoided over newly laid areas. Newly laid areas shall be watered during laying and more thoroughly at the end of each day to saturate the soil to a depth of 75 - 100 mm.

During hot dry conditions turf may require watering twice daily for a week. Watering shall be at least daily for the first week except in periods of heavy rain. Four (4) weeks after establishment, or sooner if directed by the Superintendent, the Contractor shall apply 'Pivot 400' or equivalent approved fertiliser evenly spread at the rate of 300 kg/ha. The fertiliser shall not be applied to wet grass.

#### 10.3 3PROTECTION

The Contractor shall protect the newly turfed areas against trespass and traffic until the turf lawn is well established. Protection shall include the erection of barricade netting on steel "star" picket protection fencing, where necessary.

#### 10.4 4 ESTABLISHMENT

Turfed areas shall be maintained in a moist condition until establishment. The Contractor shall allow for returfing all areas where the turf sods fail to establish within one month from the date of the original laying. Irrespective of the time of year of laying the grass shall be maintained until a healthy, dense sward is achieved over the whole area.

## 10.5 5 FIRST CUT AND FERTILISER

Four (4) weeks after establishment, or sooner if directed by the Superintendent, the Contractor shall apply 'Pivot 400' or equivalent approved fertiliser evenly spread at the rate of 300 kg/ha. The fertiliser shall not be applied to wet grass. First cut and subsequent mowing shall be carried out as directed by the Superintendent and at intervals to maintain a standard of grass not less than 40mm and not more than 75mm in height.

#### 10.6 PROTECTION

The newly grassed areas are to be protected against damage and pedestrian foot traffic until the grass is established or the grass roots have penetrated through the soil surface. Protection shall include the erection of double strand wire and netting on steel "star" picket protection fencing where necessary.

#### 10.7 CUTTING AND FERTILISE

Four (4) weeks after establishment, the Contractor shall apply 'Pivot 400' or approved equal fertiliser evenly spread at the rate of 300 kg/ha, for two weeks thereafter. The fertiliser shall not be applied to wet grass. First cut and subsequent mowing shall be carried out as directed by the Principal. The grass should be mown at 40mm and kept at that height with cuts at least once per week. No more than one third of the leaf should be cut off at any one time.

#### 11.0 IRRIGATION

#### 11.1 SYSTEM DESIGN

The works in this section include but are not limited to the design, supply, installation, reinstatement and commissioning of an automatic irrigation system in all new garden bed areas and grass areas. The Contractor shall submit the proposed irrigation design drawings and specifications to the Superintendent for approval. The designs shall be submitted within two

(2) weeks of the letting of the Contract. The Contractor shall allow 1(one) week approval time.

Plans of the proposed works shall be at a scale of 1:200 showing locations of all pumps, pipes, valves and control points. The Contractor shall also submit information on all proposed fittings and fixings including the control point(s). Conduits will need to be provided if pavement works precede irrigation installation.

#### 11.2 AUTHORITIES AND APPROVALS

Prior to commencing any work the Contractor shall obtain all necessary approvals and permits from all Authorities. The Contractor shall observe all served notices, shall obtain all necessary permits and shall pay all fees in connection with such notices and as required for the connection of the automatic irrigation system. During the works the Contractor shall co- ordinate the inspection of all the works by the necessary authorities. The Contractor shall provide evidence to the Superintendent that all authority requirements have been complied with.

### 11.3 DESIGN GUIDELINES

All new planting beds as indicated on the drawings shall be irrigated. The irrigation system shall consist of:

#### Appropriate valve connection.

- Sub-surface irrigation to planting areas and pop up sprays to grass areas. The location of emitters and sprays is to be selected in consideration of the type and location of planting specified within the planting within the garden beds, i.e. groundcover, shrubs, hedging, trees and the like or clear of furniture in grass areas.
- Water sensors in appropriate locations, to trigger activation of the automatic irrigation system. Connection to irrigation controller (power provided by others)

All fittings shall be high quality, vandal resistant products and shall be nominated on the design drawings for approval by the Superintendent. All provisions for the irrigation system shall be the responsibility of the Contractor.

The Contractor shall ensure all underground provisions as required (ie pipe sleeves, conduits and blockouts) are installed prior to the completion of hard surfaces, pavements, roadways, buildings, stairs, etc. The Contractor shall ensure the installation is coordinated into the site works at the appropriate stages of the construction program. The irrigation flows, programme timing etc. shall be carefully planned for the particular site conditions, grades and soil type, and designed to ensure no excessive runoff or over irrigation which may cause excessive infiltration or runoff. 11.4 WATER SUPPLY, TESTING

The Contractor shall state in their design the quantity of water required for the system. The Contractor shall confirm, prior to installation of individual

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areas, that required flow rates are available and allow to install a pump and 25mm supply with master valve at the take off point. Prior to installing any materials or equipment of the irrigation works, the contrator shall perform a flow/pressure test at the tank oultet to verify that the water supply is capable of delivering the required pressure head to run the system. Based on this investigation the contractor shall determine the requriements for a pump to ensure adequate flow. Failure to undertake such verification will result in rectification works at the Contractors own expense

The Contractor shall accept responsibility for the proper performance of the system. If, after installation, the system fails to deliver the quantity or coverage of water necessary, and promised in the approved design, the Contractor shall adjust or alter the system to achieve it. No payment shall be made for alterations or adjustments unless the causes are due to unforeseen circumstances, beyond the Contractor's control. Incorrect determination of the available water supply pressure and flow rate will not be regarded as an unforeseen circumstance.

#### 11.5 DEFECTS LIABILITY PERIOD

The Contractor will be required to maintain the automatic irrigation service installed under this contract, in good order and operating condition for a minimum period of twelve (12) months from the date of Practical Completion. During the Defects Liability Period any defective part or any breakage which, in the opinion of the Superintendent, was obviously not due to fair wear and tear or accidental damage beyond the Contractors control, shall be replaced and /or made good at the Contractors own expense.

#### 11.6 INSTALLATION DETAILS

Installation work shall be carried out by a Licensed Water Supply Plumber as defined in current Water Supply Regulations and in accordance with this specification and AS 3500.1.

#### 11.7 MINIMUM COVER OF PIPES

All main lines shall have a minimum cover of 400mm from the top of the pipe and all laterals shall have a minimum cover of 300mm from the top of the pipe. In paved areas, all pipes shall be placed in a 100mm diameter class SH sewer pipe conduit. The conduit shall have a minimum cover of 600mm from the top of the pipe (under roadways) and shall have a minimum cover of 400mm from the top of the pipe (under footpaths).

#### 11.8 VALVE BOXES

All valves shall be housed in a reinforced green plastic valve box (rectangular or circular as approved by the Superintendent) of sufficient size to allow servicing without digging. Valve boxes shall not be placed in pavement areas under any circumstances. The valve boxes shall have a removable lid and shall be secured by a means of a stainless steel bolt. Valve boxes shall be installed so the top of the cover finishes flush with the surrounding ground level. Only one valve shall be installed within a valve box. Valve boxes shall be supported by bricks or other approved block support.

#### 11.9 U.P.V.C PIPE AND FITTINGS

U.P.V.C pipe shall be unplasticised polyvinyl chloride (U.P.V.C) solvent welded joint pressure pipe, Class 12, complying with AS 3500.1. U.P.V.C solvent weld pressure fittings for use with U.P.V.C pressure pipe shall be classified as Class 12 in accordance with AS 3500.1. Joints for U.P.V.C pressure pipe shall be solvent welded using an approved solvent cement complying with AS 3500.1

#### The jointing method shall be in accordance with AS 3500.1. Prior to solvent welding, all joints shall be suitably prepared and cleaned using an approved cleaning fluid. On installation of the U.P.V.C. pipes and fittings, particular care shall be taken to establish proper grade and alignment. Pipes and fittings must not be strained during installation, fittings shall be separated by at least 300mm of pipe. The method for making solvent welded joints shall be in accordance with AS 3500.1 and the pipe manufacturers recommendations.

11.10 SPRINKLERS, SPRAYS, DRIP EMITTERS

## 11.12 VALVES

Grassed and garden areas shall be maintained in a weed free state. In grassed areas the Contractor shall spray an approved selective weedicide A master valve shall be installed at the supply connection, and shall be detailed on the design drawings. Isolating valves shall be brass gate valves against broad leafed weeds, as directed by the Superintendent and in accordance with the manufacturer's directions. In garden areas the with female B.S.P threads and approved by the relevant water authority. Isolating gate valves Contractor shall manually remove all weeds that appear. shall be installed upstream of all control valves using one (1) brass hexagon nipple. Solenoid remote valves and master valves shall be plastic bodied "Richdel" Model or an approved equivalent.

#### 11.13 CONTROL CABLES

Control cables shall be P.V.C single insulated featuring multi-strand copper conductors, abrasion and moisture resistant. H.D.P.E insulation, suitable for burial underground. Cable shall comply with AS-1125 P.V.C insulated electric cables and flexible cables for working voltages of 0.6/1 kv. The rating of the P.V.C single insulated cable shall be 600 volts, and conductors both active and neutral shall be 1.5mm2 cross section. Each control cable shall be installed in one continuous length between the controller and the corresponding control valve.

## 11.14 LOW DENSITY POLYETHYLENE PIPE AND FITTINGS Low density polyethylene pipe and fittings shall be type 50 complying with AS 3500.1

## 11.15 FILTERS

Filters shall be "ARKAL" disk filter 20mm, 450 mesh, with flushing ball valve, or an approved equivalent.

#### 11.16 PRESSURE REDUCING VALVES

approved equivalent.

11.17 ELECTRICAL WIRING

### 11.18 CONTROLLER

The type of controller shall be nominated on the design drawings and be approved prior to installing. The Controller shall have the appropriate number of stations required for the connection of the entire site. A battery backup is required for the controller.

The general location of the controller shall be in the vicinity of the childrens play area. The actual location on site shall be confirmed on site with the Principal. The irrigation controller shall be housed in an approved, ventilated, weather proof and lockable cabinet. The cabinet shall be painted in a colour nominated by the Superintendent. All required electrical connections shall be made within the cabinet. A double GPO will be installed for the controller, by others. When the installation has been completed, a program shall be set on the automatic controller. The program shall consist of the following:

#### - Days of operation.

- Assigning controller stations to Programs

- Times for each start.
- -Watering durations for each start.

#### 11.29 INSPECTIONS

Pipe work, fittings, valves and joints shall be inspected by the Superintendent prior to backfilling.

#### 11.20 FLUSHING OF SYSTEM

irrigation system to remove all material that may have been left in the system during installation.

#### 11.21 TESTING

During the progress of the work and upon its completion, tests shall be carried out as required in the presence of the Superintendent or any other authorities. All equipment shall be tested and adjusted as it is installed where required to assure proper operation. Any defects or deficiencies discovered as a result of testing shall be repaired immediately and the tests repeated until the test requirements are fully complied with.

The type and model of sprinklers, sprays etc. shall be nominated on the Design drawings for approval by the Superintendent.

If required, pressure reducing valves shall be "BERMAD" Model PRV-075-1, adjustable within the pressure range of 50kpa to 200kpa or an

Electrical wiring shall comply with the current wiring regulations and to the satisfaction of the appropriate power authority.

## After the installation of a section of sprinkler piping and risers or drip irrigation lines, and prior to installation of sprinkler heads and drippers, all control valves shall be opened and water used to flush out the system. Before commissioning of the system, the Contractor shall flush out the

## 11.22 ACCEPTANCE TESTS

When installation of the equipment is completed, it will be tested by the Contractor in the presence of the Superintendent, at no cost to the Contractor, to determine the efficacy of its performance. All air shall be flushed from the system and all components shall be checked for proper operation. The controller shall be fully functioning and all valves entered correctly in

the programme. All sprinklers shall be adjusted in height and spray radius and coverage. All valve boxes shall be adjusted to be flush with finished

#### 11.23 AS CONSTRUCTED DRAWINGS/MAINTENANCE AND OPERATION MANUAL

At the completion of the installation of the system, the Contractor shall provide the Superintendent with one full set of "As - Constructed" drawings The Contractor shall also provide a manual containing all technical specifications, maintenance recommendations, warranties, and spare parts lists for all materials and equipment.

#### 11.24 HANDOVER AND INSTRUCTION

At completion of the Defects Liability Period and Maintenance Period, and acceptance of the works by the Superintendent, the Contractor shall instruct the Superintendent or a person appointed by the Principal, in the operation, maintenance and repair of the system. The Contractor shall provide any tool or keys required for the adjustment or opening of any valve, spray and control cabinet.

12.0 LANDSCAPE CONSOLIDATION AND MAINTENANCE

#### 12.1 SCOPE OF WORKS

The Maintenance Period runs concurrently with the Defects Liability Period. The Contractor shall maintain the whole of the soft landscape works, after acceptance of construction at Practical Completion by the Superintendent, for twenty six (26) weeks and present the site at all times during the Maintenance Period in a clean and tidy condition to a very high standard, to the satisfaction of the Superintendent.

As the landscape spaces will be accessible to and occupied by residents, the Landscape Contactor must monitor all areas for potential trips or hazards, barricading immediately if required and notifying the Superintendent of any hazards considered outside standard maintenance rectification. The Contractor shall provide a log book and maintenance schedule which shall be kept at the site and filled in as required on each visit. At the completion of the Maintenance Period, an inspection shall be undertaken prior to hand over to The Bays. The Landscape Contractor and the Superintendent shall inspect the works and state any outstanding defects that require rectification prior to handover.

#### 12.2 CARE OF PLANT MATERIAL

Throughout the duration of the maintenance period the Contractor shall be responsible for the watering of plants; cultivation to keep garden beds free from weeds; fertilising; all seasonal spraying; pruning of trees, and all other necessary horticultural practices to maintain the plants in a healthy condition.

Seasonal spraying of trees shall be carried out as required. The spray material shall be applied at an appropriate time and shall be effective against all types of pest. The Contractor shall spray all infestations of insects, fungi etc., with appropriate environmentally friendly (where available) sprays. All plants and trees shall receive adequate but not excessive watering to maintain them in a healthy, vigorous and growing state. Fertilise all plants as seasonally required

#### 12.2 MOWING AND TRIMMING GRASS

The regular mowing of grass in all lawn areas at intervals to maintain the standard of grass not less than 40 mm and not more than 75 mm in height at any time during the period of maintenance. Trimming of edges at back of kerb, footpath to be undertaken by mechanical means only. All grassed areas shall be maintained in a healthy condition and fertilised seasonally.

#### 12.3 WEED CONTROL

#### 12.3 FERTILISING

Garden and grassed areas shall be fertilised as required for the particular plant and lawn species and to the best of horticultural practices. A fertilising program shall be submitted for approval, by the Superintendent.

#### 12.4 REPLACEMENT PLANTS

Any tree or plant which is deemed to have failed due to poor or inadequate maintenance, shall be replaced at the Contractor's own expense. Replacement plants shall be of the same size and species as that of the failed plant, unless otherwise directed by the Superintendent. The Contractor shall replace plants immediately.

### 12.5 STAKES AND TIES

The Contractor shall make regular checks to ensure trees are maintained in a stable upright position. Stakes and ties shall be replaced if they fail. Ties shall be retensioned as required to maintain stability

## 12.6 IRRIGATION MAINTENANCE

The Contractor shall make regular checks of the irrigation system to ensure it is in good working order and that it is seasonally programmed. Refer to requirements under Irrigation Clauses for Contractors responsibility under the 12 month Defects Liability Period.

#### 12.7 OTHER

All paths, gutters, roadways, drains etc., will be kept free of soil, silt and other debris at all times. All seasonal spraying, pruning of trees, cleaning up edges, benches, seats and protecting fences, mulch top ups and all other necessary work of maintenance. Seasonal spraying of trees shall be carried out as required. The spray material shall be applied at an appropriate time and shall be effective against all types of pest. The Contractor shall spray all infestations of insects, fungi etc., with appropriate environmentally friendly sprays.

The Superintendent may instruct the Contractor at any time 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 to employ others to carry out the works at the expense of the Contractor.





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