



LANDSCAPE STANDARDS MANUAL

CITY OF GREATER GEELONG
JUNE 2013



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INTRODUCTION

1.1 PURPOSE



This manual has been developed as a guide to specifying, installing and maintaining public open space landscaping within the City of Greater Geelong. The manual sets out landscaping standards which meet the satisfaction of the Responsible Authority for new subdivisions within the City of Greater Geelong.

The manual is to be used as a reference tool by Council representatives when assessing permit applications, by Consultants for consideration during the preparation of landscape plans for Council submission, and by Landscape Contractors, Site Superintendents and Council Representatives in the field for the purposes of landscape construction, inspections and maintenance. The manual is to be used to ensure that the quality and workmanship of works undertaken within the municipality are of a standard that is in accordance with accepted industry standards, and sound horticultural and conservation practices.

In addition to establishing standards, this manual provides Developers, Site Superintendents and their Contractors with the following useful information relating to the construction and maintenance of public open space reserves with the City of Greater Geelong:

- Key council contacts
- Practical Completion and Handover inspection procedures and checklists
- Maintenance obligations

The assessment of works against this manual should be undertaken with a degree of flexibility, acknowledging that alternate approaches can be appropriate where they are considered to be to the satisfaction of the Responsible Authority.

All landscape works must be documented and endorsed by Council within the detailed landscape plans forming part of the approved planning permit. This may include the requirement for the following plans to be read and prepared in conjunction with the Landscape Plan;

- Vegetation Management Plan
- Tree Management Plan
- Weed Management Plan
- Native Vegetation Offset Management Plan
- Cultural Heritage Management Plan
- Irrigation Layout and Design
- Construction Management Plan
- Site Management Plan
- Environmental Management Plan
- Litter Control Plan
- Landscape Maintenance Plan

It is the developer's responsibility to ensure all relevant authorities are notified and requirements are met. These standards do not waive any responsibilities or approvals required by other authorities.

The Landscape Standards Manual is continually reviewed and will be periodically updated to ensure it remains accurate and responsive to changes and improvements in landscaping and asset management practices.

1.2 DEFINITIONS

1	COGG	The City of Greater Geelong
2	CONTRACTOR	The company/person contracted to undertake the construction and maintenance of the entire works or part of the works, or their authorised representative.
3	COUNCIL REPRESENTATIVE	<p>The Council Officer nominated by the City of Greater Geelong to provide comment and conduct inspections during Construction, Practical Completion, Maintenance and Handover of landscape works.</p> <p>For reserve landscaping this is generally the Recreation and Open Space Planning and Subdivisions Officer. For tree planting in reserves and streetscapes this is generally the Parks Planning Officer.</p>
4	HANDOVER	The point following the satisfactory completion of the Maintenance Period at which ongoing maintenance responsibility for reserve assets, landscapes and tree plantings is handed over to Council. It is the responsibility of the Site Superintendent to arrange for a Handover Inspection following the conclusion of the Maintenance Period.
5	MAINTENANCE BOND	Bond to be submitted and held by Council for the duration of the Maintenance Period. The Bond should cover 125% of the cost of reserve inspections and maintenance and tree establishment and maintenance.
6	MAINTENANCE PERIOD	The period (generally 24 months unless agreed otherwise) following Practical Completion, during which the Site Superintendent is responsible for maintaining all reserve assets, landscaping, and tree plantings in a condition satisfactory to the Responsible Authority.
7	OUTSTANDING WORKS BOND	Bond to be submitted for approval where works will not be completed prior to the issuing of a Statement of Compliance.
8	PRACTICAL COMPLETION	When the landscaping and tree planting has been completed in accordance with the Landscape Plan to the satisfaction of the Responsible Authority. Practical Completion approval commences the Maintenance Period and is required prior to the return of any outstanding Works bonds held for landscape construction or tree planting.
9	RESPONSIBLE AUTHORITY (RA)	The City of Greater Geelong.
10	SITE SUPERINTENDENT	The Permit Holder or their nominated representative responsible for the construction and maintenance of reserve assets, landscaping and tree planting.

1.3 KEY COUNCIL CONTACTS

DEPARTMENT	ISSUES/ASSETS	POSITION/ CONTACT TELEPHONE
RECREATION AND OPEN SPACE	General Reserve Landscaping Playgrounds Barbecues Garden beds Turf Fencing Reserve Practical Completion/Handover Inspections	Recreation and Open Space Planning and Subdivisions Officer T: 5272 4920
ENVIRONMENT AND NATURAL RESOURCES UNIT	Wetlands and Waterways Remnant and Native Vegetation Vegetation Offsets Weed Management	Coordinator Environmental Planning and Waterways Environmental Planning Officer T: 5272 4785
TREE MANAGEMENT	Tree Species Selection Tree Planting Tree Protection/Removal Street and Reserve Tree Inspections	Parks Planning Officer T: 5272 4827 Tree Establishment Supervisor T: 5272 4060
PARKS AND SUPPORT SERVICES	Irrigation Systems - Design - Installation - Acceptance Tests	Irrigation Officer T: 5272 4551
ARTS AND CULTURE	Public Art	Public Art Officer T: 5272 4704
PROPERTY AND FACILITIES	Structures Shelters Decks	Technical Officer – Works T: 5272 4982
ENGINEERING	Civil Works Concrete Paths and Retaining Walls Bridges Boardwalks Lighting	Development Engineer T: 5272 4406

2

PREPARATORY WORK

2.1 EARTHWORKS

2.1.1 DIAL BEFORE YOU DIG

All onsite contractors must perform an underground services check and abide by appropriate Dial before You Dig information. Any damage to utility infrastructure will be the responsibility of the developer.

2.1.2 MACHINERY

Construction vehicles and equipment must be washed down and free of seed and soil before entering the site to prevent the spread of weeds, seeds and pathogens.

2.2 ENVIRONMENTAL PROTECTION

Any works performed must be in accordance with the site management plan in regard to the protection from sediment movement off the site into waterways and storm water systems. Remnant vegetation is to remain and should be protected prior to work commencing and Council's Environment and Natural Resources Unit advised of the protection plan.

2.2.1 SITE LITTER RETENTION AND SEDIMENT CONTROL

The site management plan must include a site litter retention plan and a sediment control plan e.g. fencing downwind of the predominant wind direction, regular site clean ups, rubbish removal and disposal and sediment traps as required.

Methods available for controlling the movement of sediment on the site include:

- **Hay bale sediment fences**

The hay bales should follow the contours of the land as much as possible and be embedded into the ground, butted together as tightly as possible and secured.

- **Geotextile sediment fences**

The geotextile fabric should be secured with the bottom of the fabric buried to make it secure, and to ensure that water is not able to pass underneath the fabric untreated.

- **Grass filter strips**

Grass filters can be used on the footpath adjacent to and flush with the top of the kerb. The filter strip consists of a single roll of turf laid along the kerb with a 1.5m long strip laid perpendicular to the kerb every 10m.

The site must be progressively stabilised and rehabilitated as the project progresses to minimise the area of unstable ground. The maintenance of sediment control devices must continue until the site has been adequately stabilised and the risk of erosion is minimised.

2.3 FILL MATERIAL

Wherever possible, material should be obtained from site. Should imported soil be required, written certification including source, site history and laboratory analysis confirming the soil complies with the EPA's 'Fill Material' categorisation must be provided to the Council Representative. Imported fill will require a visual inspection and approval by the Council Representative prior to unloading on site. Fill shall be free of any deleterious material, including weed material or seed, vegetation, debris, building waste, asbestos and rock.



All rubbish must be removed from the site at the contractor's/developer's expense.

Structural fill shall be spread and compacted in accordance with the requirements of the current applicable Australian Standards.

2.3.1 BACKFILLING

Unless otherwise noted on drawings, backfilling and compacting for irrigation trenches and minor excavations may be site-won materials, provided such filling is sound material free of perishable material or any material that will not form stable fill and is to the satisfaction of Council. All vegetation, topsoil, debris, building waste, rock and rock floaters shall not, under any circumstances, be used as fill and all such materials shall be separated out from any site-won material considered suitable for filling.

2.4 TOPSOIL

Where possible, site topsoil should be used for garden beds and lawns. In acquiring site soil, the top 100mm layer shall be stripped of vegetation and stockpiled on the site. Soil for use in garden bed and lawn areas may then be obtained from the stockpile soil provided the soil meets the requirements as stated below.

2.4.1 EXISTING SOIL

- Free from perennial weeds and their roots, bulbs or rhizomes.
- Free from building rubble, including bricks, concrete, plaster, timber, oil or any other matter deleterious to plant growth.
- Free from rocks or stones greater than 5mm diameter, but in any case, to have less than 5% stone by dry weight.
- Texture to be light to medium friable.

2.4.2 IMPORTED SOIL

Should imported soils be required, the subsoil shall be ripped and cultivated to a depth of 300mm to combine with existing soil/base (refer to Australian Standard AS4419 "Soils for Landscaping and Garden Use"). Imported soils should be:

- Free from perennial weeds and their roots, bulbs or rhizomes.
- Free from building rubble, including bricks, concrete, plaster, timber, oil or any other matter deleterious to plant growth.
- Free from rocks or stones greater than 5mm diameter, but in any case, to have less than 5% stone by dry weight.

- Ph to be 6.0 - 7.0.
- Texture to be light to medium friable.
- Free from silt material.
- Non-hydrophobic.

THE SOIL SHALL CONFORM TO THE FOLLOWING SIEVE ANALYSIS:

TABLE 1: Sieve Analysis

AS Sieve size (mm)	% Passing by mass
2.35	100
1.18	90 - 100
0.600	70 - 80
0.300	45 - 55
0.150	20 - 30
0.075	5 - 15
0.002	3 - 5

Table 1: Sieve Analysis

Where imported topsoil is to be used in landscape construction, three randomly selected samples shall be comprehensively laboratory tested to meet the above requirements. Copies of laboratory certificates demonstrating the mix is in accordance with the above requirements, including details of the soil source, are to be provided to Council prior to spreading imported soil on site.

2.5 EXCAVATED ROCKS

Any earthworks, including the removal of excavated rocks, must be in accordance with the Environmental Management Plan for the site. Should excavated rocks need to be removed from the site, it must be ensured that the removal process will not cause major disturbance to adjacent works or the surrounding site.

Under no circumstances should rocks be moved into existing waterway reserves.

Any earthworks adjacent to a waterway must retain as much embedded and surface material as possible.

2.6 STANDARD SUBSOIL DRAINAGE DETAIL

Where appropriate, provide subsoil drainage to prevent the ponding of surface water in garden beds or grassed areas adjacent to hard paving. (*see Figure 1: Subsoil drainage detail diagram pictured right).

2.7 WEED ERADICATION

A Weed Management Plan, where applicable, shall be followed and implemented throughout the landscape works period.

The Weed Management Plan is to incorporate:

- Location, species and extent of weed infestation;
- Weed management prior to landscape works; and
- Weed management at the completion of landscape works with recommended ongoing treatment methods and timeframes.

A weed eradication program shall be implemented to all areas scheduled for lawn and planting. Following topsoil placement, fine grading, and the installation of a fully functioning irrigation system (where applicable), establish a regular watering program that will encourage germination and growth of weeds over a two to three week period to remove weed seed bank from the soil.

The Contractor shall wait an additional one to three weeks, depending on extent of weed desiccation, to remove residual weed foliage and roots prior to sprigging of turf.

Please note: contact should be made with Council's Environment Department regarding weed control.

2.7.1 HERBICIDES

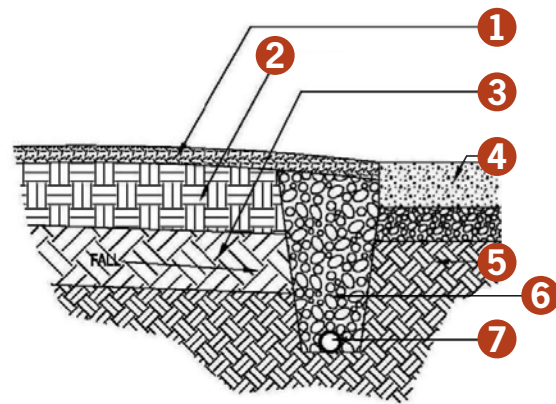
Only herbicides registered for use in Victoria may be used. All herbicides and pesticides are to be used in strict accordance with the manufacturer's instructions at the recommended rates. Herbicides may only be applied by a qualified contractor, certified specifically for herbicide applications.

Herbicides are not to be used in the vicinity of playgrounds or childcare centres. In areas of high density planting, spray hoods must be used to prevent damage to non-target species. Large weeds should be removed manually.

2.7.2 NOXIOUS WEEDS

All declared noxious weeds should be removed or treated accordingly. (ref Conservation and Land Protection Act 1994)

FIGURE 1: Subsoil drainage detail



#	Description
1	Woodchip mulch.
2	Topsoil.
3	Cultivate subsoil to a minimum depth of 150mm and grade to fall.
4	Paving.
5	Existing sub-grade.
6	5-7mm drainage screenings (with no fines).
7	100mm PVC AG Drain/UPVC slotted drain pipe or on site retention system/wetland.



3

GARDEN BEDS

DEFINITION

A garden bed is defined as a mulched area which may or may not have planting. It may also include densely planted areas which are not mulched i.e riparian zones. All garden beds must be maintained in a weed free state. Weeds are to be spot treated with herbicide or manually removed at each site maintenance visit.

3.1 CONSTRUCTION

- Garden beds shall be excavated to a minimum depth of 300mm.
- Where possible, site topsoil should be stockpiled and used for the garden beds.
- Subgrade within planting areas is to be ripped to a minimum depth of 150mm and cultivated with gypsum.
- The subsoil is to be graded and lightly compacted to re-establish a finished soil level of a minimum of 300mm below paving level throughout. The soil is to be evenly compacted throughout to approximately 70% modified maximum dry density.
- Supply and place 200mm minimum depth of approved top soil to establish a finished grade that is 100mm below paving and general levels throughout. Supply and place 75mm depth of approved mulch.

3.2 MULCH

Mulch for all planting areas shall be weathered bark mulch. 80% of particles shall be in the size range 20-35mm in plan, and 5-10mm in thickness.



No particle is to exceed 50mm. Mulch is to be stockpiled and thoroughly weathered prior to delivery to site. Mulch is to be free of weed material and seed, debris and foreign matter.

The Contractor shall spread a 75mm thickness of approved mulch on all garden beds and 200mm thickness of mulch on all trees in accordance with Council's detailed specifications. The stems of all plants shall be kept free of mulch to protect the stem from possible rot.

NB:

- All mulch used shall comply with the above requirements. When in doubt the Contractor should submit a sample to the Council Representative for approval, prior to delivery to site.
- Mulch found to contain any recycled building materials (i.e. chipboard, pine pallet etc.) will be rejected.

3.3 PLANTING

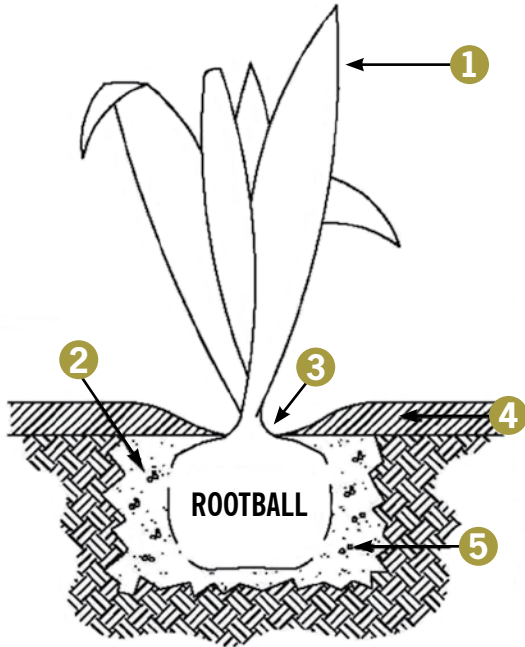
The Contractor shall be responsible for the handling and planting of all plants and in particular shall protect the root mass from all forms of damage during the planting operations.

All planting set outs shall conform to the endorsed landscape plans in specified densities, sizes and numbers. Any change to plant set out to be approved by the Site Superintendent and Council Representative.

- Post hole diggers must not be used. The contractor must ensure there is no glazing of the sides of the holes as a result of the method of digging the hole.
- All hessian and other packaging material must be removed prior to planting.

3.3 PLANTING (CONTINUED)

FIGURE 2: Shrub and groundcover planting detail



#	DESCRIPTION
1	Specified shrub.
2	Excavate hole large enough to provide a 75mm-100mm clearance around the rootball. Post hole diggers not to be used. Backfill with approved topsoil. Hole to be no deeper than the height of the rootball.
3	Top of rootball level with soil.
4	75mm depth approved mulch. Mulch to be feathered away from stems.
5	Fertiliser to be mixed with backfilled soil around the rootball.



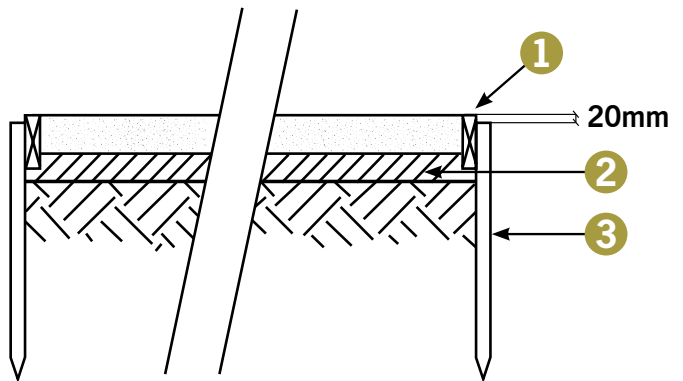
3.4 GARDEN EDGING

Garden beds are to have edging in accordance with the endorsed landscape plan, edging shall be constructed to a standard that:

- Clearly defines the extent of the garden bed.
- Effectively retains mulch within garden beds.
- Inhibits the encroachment of grasses and/or weeds from lawn areas into garden beds.

3.4.1 TIMBER EDGING

FIGURE 3: Timber edging detail



#	DESCRIPTION
1	100x25mm H4 treated pine edging.
2	Garden bed/path profile detailed elsewhere.
3	500x75x25 H4 treated pine pegs at 1.0m centres.

NOTE:

Timber edging to be secured at 1.0m centres to pegs with galvanised screws. Pegs shall be 20mm below the top of the edging. Joints shall be made by bridging the abutting lengths with an additional section of edging set 20mm below the top of the abutting lengths - peg shall be no more than 300mm each side of the join.

Steel Metal edging may also be used instead of the standard timber edging. Check the manufacturer's specification regarding installation.

4

WATER SENSITIVE URBAN DESIGN



4.1 ROYAL LIFE SAVING GUIDELINES

The co-location of public open space with stormwater treatment assets presents potential risks to users of reserves. Consequently, all open bodies of water including stormwater treatment assets such as sediment ponds, detention basins, retarding basins, raingardens, bio-retention basins, wetlands and irrigation ponds must be subject to an independent assessment by a suitable qualified person, providing evidence of compliance with the Royal Life Saving Society of Australia's 'Guidelines for Water Safety in Urban Developments'.

4.2 WETLAND PLANTING

The construction of wetlands and the planting of ephemeral and aquatic plants in and around Water Sensitive Urban Design (WSUD) features including wetlands, retarding basins, bioretention basins and raingardens should be undertaken in accordance with the following guidelines:

Melbourne Water 'Constructed Wetland Guidelines'

http://www.melbournewater.com.au/content/library/wsud/Constructed_wetlands_guidelines.pdf

Melbourne Water 'Constructed Waterways in Urban Developments'

http://ldm.melbournewater.com.au/content/library/5.14/Constructed_Waterways_in_Urban_Developments_Guidelines.pdf



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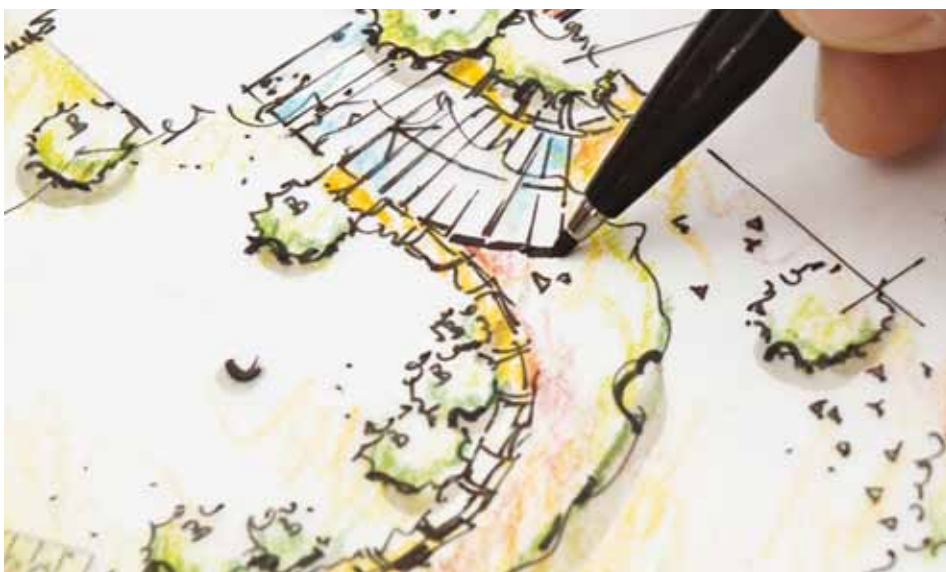
TREE MANAGEMENT

5.1 TREE PLANTING GUIDELINES

Please note: locations of existing utilities networks must be obtained from Dial Before You Dig **Telephone: 1100** prior to any excavation taking place on public land.

5.1.1 GENERAL

- Generally, one street tree should be planted in the centre of each residential allotment.
- Where practical, provide consistent, equal spacing between trees and place trees centrally in the naturestrip.
- Street tree placement on side boundaries of properties must meet the requirements of section 5.7 Intersection Site Distances and Clear Zones.
- Street tree numbers and species proposed for side boundaries of properties may be subject to additional requirements. Generally a maximum of two trees will be approved.
- Where the allotment is to be used for unit development and a central crossover is proposed, place a street tree on either side of the crossover if practicable.
- Trees in parks and reserves must be located at least 3m apart and 3m from garden beds and fixed structures to allow for future mowing. Trees may be planted closer than this in mulched clumps.
- Plans shall be prepared taking into account surrounding hard infrastructure and services however, every site is subject to 'ground-truthing' and it is acknowledged that changes may be required as a result.



- Proposed mulch must meet Council standards as detailed in section 3.2 and be placed around the tree in accordance to the specification shown in figure 4 (pictured right on page 15).

5.2 TREE SPECIFICATIONS

When selecting trees to be planted, it is the responsibility of the Site Superintendent to ensure that all stock meets the requirements shown on the endorsed landscape / streetscape plans.

Unless otherwise agreed, all street trees must be in a minimum 45 litre sized container and be 1.5 metres tall depending on the tree species. Tree stock must be in a sound and healthy condition and be self-supporting wherever practicable. Should the Site Superintendent wish for the Council Representative to inspect stock prior to delivery, then contact must be made with the Council Representative within reasonable timeframes to allow this to occur.

Indigenous stock:
where indigenous trees are to be used they must be pre-ordered well in advance to ensure supply numbers and pot sizes are achievable.

Tree sizes:
Tree stock selected for planting within each street and reserve must be of a minimum container size suitable for each particular landscape treatment.

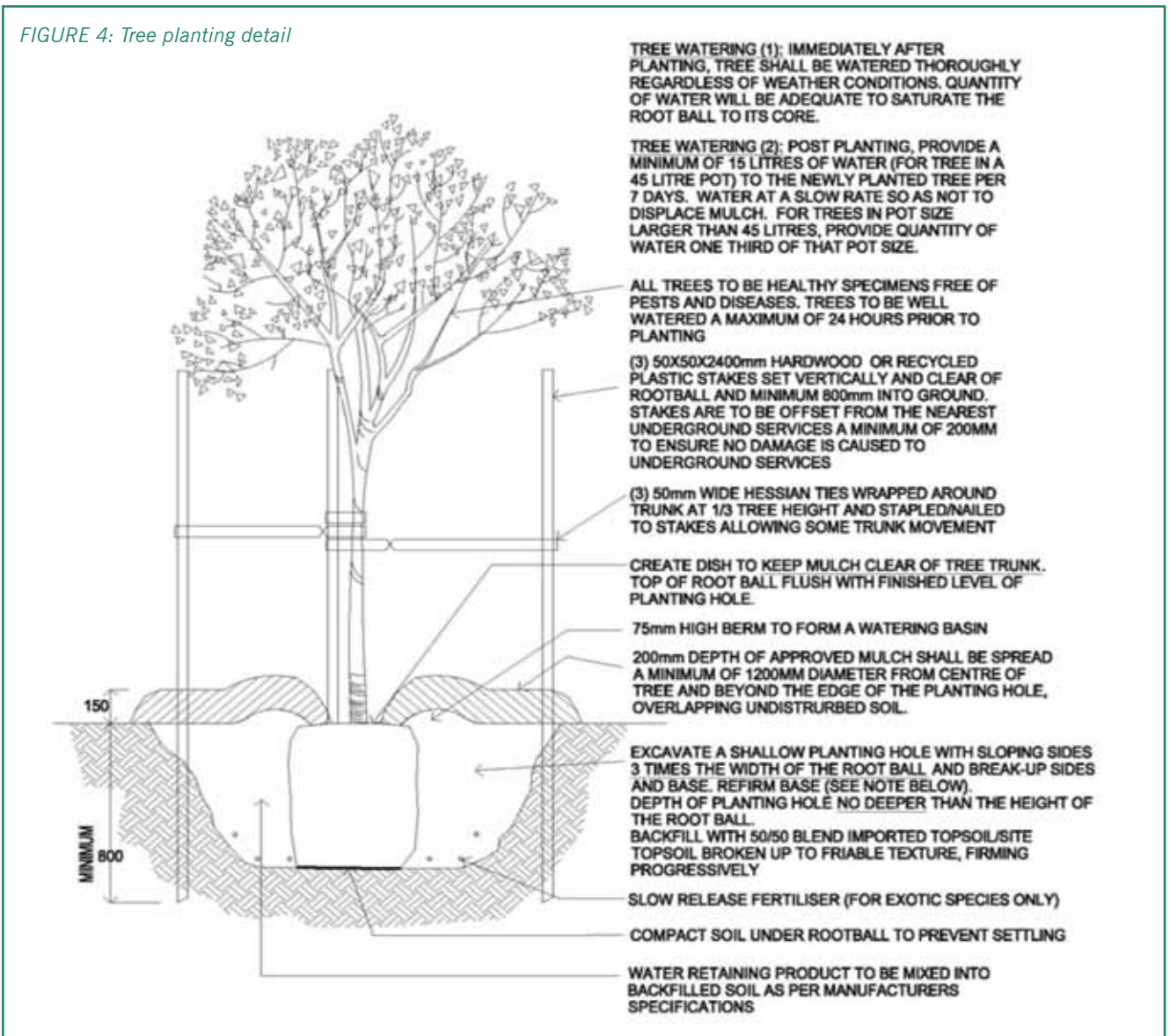
Expected stock and pot sizes are listed in the table pictured right, at the top of page 15.

TABLE 2: Tree Stock minimum planting size

USE/LOCATION	MINIMUM SIZE
Street	45 litre pot/ 1.5 metres high.
Reserves less than 1 hectare	300mm pot/ 1 metre high.
Reserves greater than 1 hectare	Smaller stock may be used (subject to negotiation).
Iconic/specimen trees	150 litre pot (subject to negotiation).
Shrubs	150mm pot.



FIGURE 4: Tree planting detail



NOTE: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF ANY EXCAVATION OR STAKING WORKS.

5.3 STREET TREE OFFSETS/CLEARANCES

- 3m from pedestrian pathways in reserves (species dependant).
- 3m from driveways (species dependant).
- 4m from power poles.
- 4m from light poles (species dependant).
- 3m from service assets, including junction boxes, pits etc.
- 2m from service conduit crossing.
- 3m from fire plugs.
- 2m from domestic service tapping points.
- 2m from stormwater outlet points.

Distances provided may be subject to change dependant upon the site and species selected.

5.4 HOLD POINTS (TREES)

Once a site has been marked out for planting contact shall be made with the Tree Management Council Representative to arrange an inspection and provide authorisation to proceed with planting works. The Council Representative should be provided seven (7) working days notice to ensure that the site visit can be pre-arranged.

During the course of planting should any unforeseen circumstances arise or a particular request is received contact shall be made with the Tree Management Council Representative to inspect and authorise any nominated changes.

Council will endeavour to provide a prompt response to any queries or concerns whilst having regard to the size of the site and the anticipated timeframe for the completion of planting works.

5.5 SPECIES SUBSTITUTION/SOURCING ISSUES

Whilst it is acknowledged that from time to time sourcing particular stock at certain sizes can be difficult, the substitution of tree stock and installation size is not permitted without the prior authorisation of the Tree Management Council Representative. Stock substituted without authorisation will not be accepted at Practical Completion.

It is the responsibility of the Site Superintendent to raise any concerns or issues relating to the supply of stock with the Tree Management Council Representative as soon as is practicable.

5.6 TREE STAKING

Please note: locations of existing utilities networks must be obtained from Dial Before You Dig **Telephone: 1100** prior to any excavation on public land.

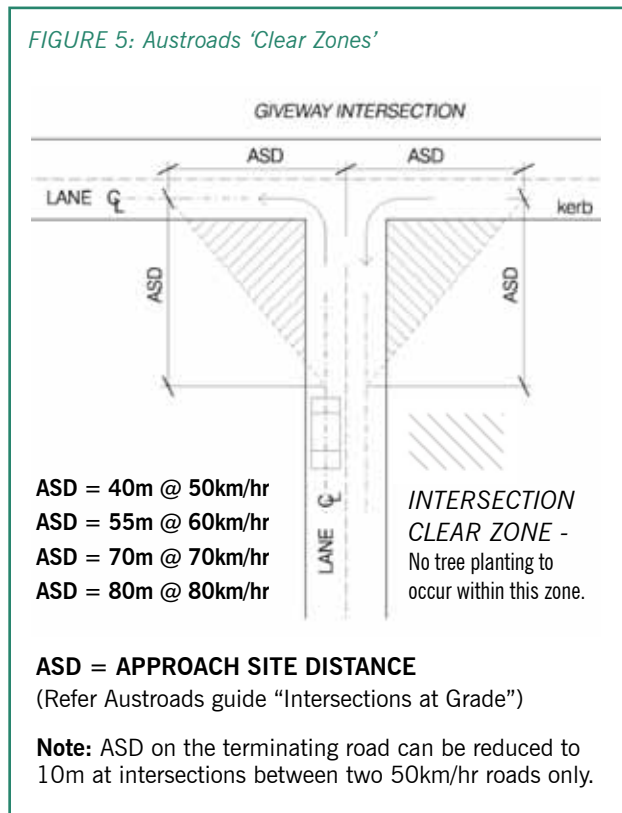
Wooden stakes must only be used. Metal stakes or star pickets will be not approved for use in any location. It is preferable that tree ties are hessian banding however nylon banding may be used by negotiation. Tree ties must be secured to each of the stakes. ‘Shoe string’ or nylon interlocking type ties will not be approved for use.

Residential Streets: dependant upon the size and species involved, two stakes may only be required.

Industrial Estates: tree stakes should be a minimum of 75mmx75mmx2400mm and use three stakes.

5.7 INTERSECTION SITE DISTANCES AND CLEAR ZONES

The diagrams below are the Austroads guide to ‘Clear Zones’ at road intersections. For traffic safety, the Approach Distances (ASD) shown should be retained in all instances where the speed limit on the major road is 60km/hr or above. However, the vast majority of intersections are on low speed residential roads where the speed limit is restricted to 50km/hr. In this instance, the distance may be safely reduced to 10m.



5.8 TREE MAINTENANCE

All streetscapes and landscapes must be maintained to the satisfaction of the Responsible Authority for a minimum period of two (2) years however this timeframe may be extended by negotiation with Council.

The Site Superintendent is responsible for all maintenance on the site during the maintenance period.

- All tree pruning shall be carried out by appropriately trained horticultural/arboriculture staff.
- Tree pruning must be carried out in accordance to AS4373-2007 Pruning of Amenity Trees.
- At no stage should any more than 25% of the existing canopy foliage be removed at any given time.
- Advice must be obtained from the Tree Management Council Representative where any doubt arises in relation to tree pruning.
- Uplifting the canopy of trees can only be performed with the approval of the Tree Management Council Representative.

The Site Superintendent must provide a signed and dated Maintenance Checklist (Appendix 2) to the Council Representative every three (3) months during the maintenance period. Failure to adhere to this requirement may result in the maintenance period being extended.

Council Representatives will regularly inspect the site during the maintenance period and any defects will be communicated to the Site Superintendent in writing. Works must then be completed within two (2) weeks or as agreed by the Council Representative.

Trees not meeting the required standard at the date of the expected handover date will have their maintenance period extended. Evidence (i.e. date of replanting) must be provided to the Council Representative as part of the quarterly report.

NB: replacement planting undertaken immediately prior to handover will not be accepted and will be subject to an extension of the maintenance period.

Inappropriate maintenance regimes and standards will not be accepted by Council. Failure to adhere to standards may result in the extension of the maintenance period. If required, maintenance bonds may be utilised by Council in order to engage contractors to fulfil the outstanding requirements.

5.9 EXISTING TREE PROTECTION

5.9.1 GENERAL

Existing trees to be retained shall be protected on construction sites as follows, and in accordance with AS4970 – 2009 Protection of Trees on Development Sites:

- Determine the extent of protection required for the tree(s) using the guiding principles prescribed within AS4970.
- Tree Protection Zones (TPZ) must be calculated, submitted and approved prior to work commencing. TPZ's must be retained at all times and no access, stockpiling of materials, soil disturbance, excavation works or storage of machinery to be allowed inside the nominated TPZ. The extent and the alignment of the TPZ must be in accordance with location set out at pre-site inspection. The fence should be retained and maintained for the duration of construction.
- Works proposed within the Structural Root Zone (SRZ) of the tree will not be approved; any unauthorised work within the SRZ will result in the tree as being lost, with the Developer and/or their representative remaining liable for all legal and/or financial consequences.
- Temporary vehicular movement across the TPZ can be facilitated by using heavy plywood or metal sheets laid over coarse bark mulch for short-term protection. These should be removed as soon as movement is complete.
- Where services are to be implemented through the root zone of a tree to be retained, their alignment should be bored rather than placed in open trenches, to ensure that root severance does not occur.
- Should root excavation be required, the work should be carried out by hand digging or the use of an air knife. Root cutting should be done by hand, not backhoe or other mechanical equipment, to avoid tearing of roots.
- All pruning works must be carried out by a qualified Arborist.
- All works carried out within the TPZ to be supervised by a qualified Arborist.
- No signs, fences or other items may be attached to trees at any time.
- Once installed, tree protection fencing/measures must not be encroached or removed without the knowledge and authorisation of Council.

5.9.1 GENERAL (CONTINUED)

Generally, the TPZ may be encroached by up to 10% of the calculated protection zone in negotiation with Council. The TPZ must not be encroached in any manner without Council authorisation and works will not be permitted at any time within the calculated value of the Structural Root Zone (SRZ) of the tree. Please refer to Appendix D of AS4970 – 2009 for additional guidance.

NB:

The endorsed Planning Permit may require the need to prepare and submit for approval a Tree Protection Plan, Tree Management must be consulted during this process.

5.9.2 TREE PROTECTION ZONE EXAMPLES

FIGURE 6: Tree Protection Zone - Dripline



TREE DRIPLINE - TREE PROTECTION ZONE (TPZ) is to be erected around the tree dripline. Installation is to be signed off by the Site Superintendent prior to commencing any works.

NO excavation, trenching, storage of materials or waste is to occur within the TPZ.

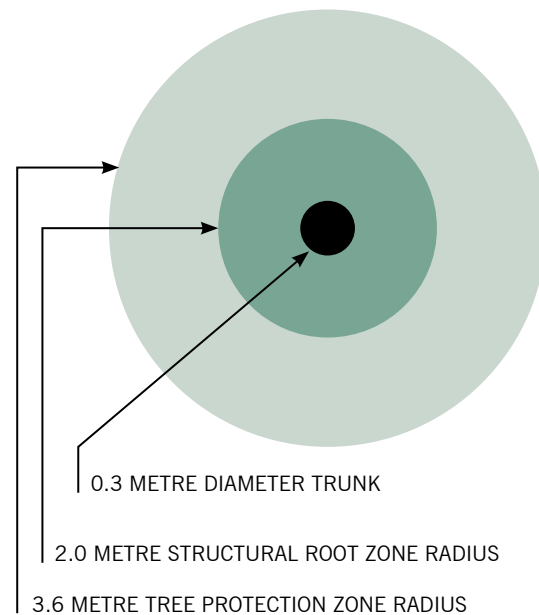
Any tree surgery to be conducted is to be carried out by an approved Arboriculturalist.

NO excavation is to be carried out inside the TPZ without the Site Superintendent's written approval. **NO** mechanical excavation is permitted within the TPZ - hand excavate only.

Any works within the TPZ is to be under the supervision of the Site Superintendent.

FIGURE 7: TTPZ - 300mm diameter tree measured 1.4m from ground level

*NB: Drawing is not to scale



TPZ:

12 times the diameter of the trunk taken 1.4 metres from ground level.

The TPZ is measured from the centre of the trunk and forms a radius around the tree. Multi-trunked trees can be calculated using the guidelines provided within Appendix A of AS4970 – 2009.

SRZ:

Calculated as per AS4970 – 2009/ Amdt 1/2010-03-26.



6

TURF

6.1 NATURE STRIPS

Nature strip treatment is a requirement of the streetscape landscaping plan approval process. Nature strip treatment includes grassing except where street trees and associated mulch rings are located. All nature strips abutting reserves or Council managed facilities shall be mown and maintained to the same standard as the reserves or facilities.

In areas where building works are being undertaken, the establishment of nature strip grassing or any other acceptable treatment approved by the Council Representative may be delayed for a defined period of time. In these instances, PC can be approved for the overall landscape works within the development and the two (2) year maintenance period can commence prior to the nature strip grassing occurring. However, grass nature strips must be established with a second cut, prior to the end of the first year maintenance period. Failure, for any reason, to establish the nature strips within the first year of maintenance, will lead to an extension of the maintenance period of the entire site.

The Site Superintendent is responsible to ensure that, at all times, either prior to the grassing process or after the seed, sprigging or turfing has been undertaken, the site is in a clean and tidy condition, free of rock, weed and rubbish and the grass mown.



6.2 PASSIVE OPEN SPACE

Parks and reserves are to be sprigged or solid turfed with a warm season turf species and appropriately watered and mown to promote establishment during the growth season. Turf acceptance criteria are shown in the table pictured overpage (page 20). The use of seed, including direct seeding and hydro seeding has consistently produced poor results within the City of Greater Geelong and is not an accepted practice for grass establishment within Council reserves.

For the purposes of achieving Practical Completion during cooler months, landscapes may be established with a sacrificial cover of winter grass. All landscapes seeded with winter grass will need to have the winter grass removed and replaced with sprigged or solid turfed kikuyu or couch at the start of the first growing season following PC. Warm season turf is then to be appropriately watered and mown to maximise coverage during the growth season.

A 90% coverage of kikuyu or couch, with no bare or weed patches greater than 1m² is required to achieve Handover at the conclusion of the maintenance period.

Where sacrificial cool season turf is established for the purposes of Practical Completion, the seed must have a minimum 80% germination, showing even coverage with no significant bare patches and must have achieved a minimum of first-cut prior to Practical Completion.

6.3 PLAYING SURFACES (SPORTING FIELDS)

For line planting or muck spreading;

- Use a minimum of 700m² of sod/Ha.
- Sod or topmaked material must be used, not scarified sprigs.
- Existing grass cover must be killed or removed before planting.
- Overseeding of the planted area is not permitted until the warm season variety is established.
- A soil analysis by a NATA accredited lab and a report by a certified soil or turf professional will be required for approval to proceed. A fertility program is to be based off this soil analysis.
- Topsoil needs to be a minimum of 200mm thick.

TABLE 3: Turf species acceptance criteria

Reserve Type	Turf Species	Method	Practical Completion Acceptance Criteria	Handover Acceptance Criteria
Passive Open Space Non-irrigated	Kikuyu or Couch	<ul style="list-style-type: none"> • Sprigged line planted or muck spread • Sodded (instant turf) 	<ul style="list-style-type: none"> • Visible new growth shooting • Minimum 80% strike rate • At least first cut 	<ul style="list-style-type: none"> • 90% cover • No weed or bare patches > 1m²
Active Open Space Irrigated	Santa-Ana Couch	<ul style="list-style-type: none"> • Sprigged line planted or muck spread • Sodded (instant turf) 	<ul style="list-style-type: none"> • Visible new growth shooting • Minimum 90% strike rate • 90% cover • No weed or bare patches > 1m² 	<ul style="list-style-type: none"> • 95% cover • No weed or bare patches > 0.5m²



7

PLAYGROUNDS & PLAY EQUIPMENT

7.1 AUSTRALIAN STANDARDS

All play equipment and fall zones should comply with all relevant Australian Standards including but not limited to AS/NZS 4685, 4422 and 4486. Evidence in the form of an independent playground audit is to be provided to Council prior to Practical Completion.

Where suitable, play equipment is to be installed to a depth that allows the compacted soft fall (250mm deep) to finish flush with existing ground level, and consequently any soft fall indicator plates. Therefore excavation will be required to achieve a depth of 250mm across the playground area (with relevant fall for drainage) for the installation of soft fall, with the top of the edging to finish flush with the existing ground level.

7.2 SOFT FALL MULCH

Soft fall mulch is to be processed pine bark 10mm-14mm, certified to meet the requirements of AS4422 – Playground Surfacing. Playground surfacing mulch is to be installed at a depth of 300mm to allow for settling and compaction over time in order to meet the minimum Australian Standard of 200mm.

The extent of the soft fall area needs to comply with manufacturer's requirements and all relevant Australian Standards and certification provided to Council.

7.2.1 RUBBERISED SURFACES

Rubberised impact attenuating surfaces, where approved within endorsed landscape plans must conform with Australian Standards and must be installed in a single pour to prevent the creation of joins or edges which are prone to damage from lifting and separation of seams.

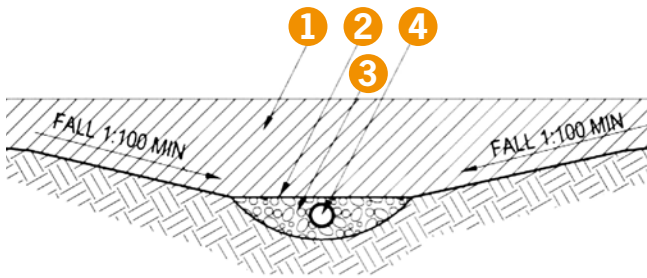


7.3 PLAYGROUND DRAINAGE

All playgrounds must include sub-surface drainage connected to a stormwater system. It is the responsibility of the Site Superintendent to inspect the site during construction and to sign off on the drainage prior to the installation of soft fall mulch or other suitable treatment. Swale/Table drains may be required around the site to direct surface water away from the playground.

Generally, the subgrade system shall comprise subsoil drains surrounded by drainage screenings to a minimum depth of 100mm all around. Subgrade levels shall be formed to fall to drains, allowing for required depth of soft fall mulch. A copy of as-built drainage plans are to be provided to Council on completion of project.

FIGURE 8: Typical playground drainage detail



#	DESCRIPTION
1	Approved soft fall mulch.
2	Geotextile drainage fabric.
3	Drainage screenings.
4	90mm diameter slotted AG drainage pipe.



7.4 SITE SAFETY AND MAINTENANCE

During construction, playground sites are to be fully fenced or para-webbed to protect park users. Fencing is to remain in place until the playground has been signed off by a Playground Auditor and City of Greater Geelong Council Officers.

During the maintenance period, the Site Superintendent is responsible for ensuring that playgrounds are subject to a minimum once-weekly safety inspection (as per appendix 4) to ensure all play equipment is in a safe working order and the site is free from hazards and litter.

7.5 PLAYGROUND AUDIT AND INSPECTIONS

The Site Superintendent must supply a copy of the independent playground audit and all Compliance Certificates prior to the issue of Practical Completion.

Prior to the inspection by the Council Representative for both Practical Completion and Handover:

- All play equipment must be clean and in good working order.
- Keys, where appropriate, are to be handed to Council prior to Handover.
- All timber railings and timber park furniture, must be cleaned and oiled.
- All graffiti removed and surfaces re-finished as necessary.

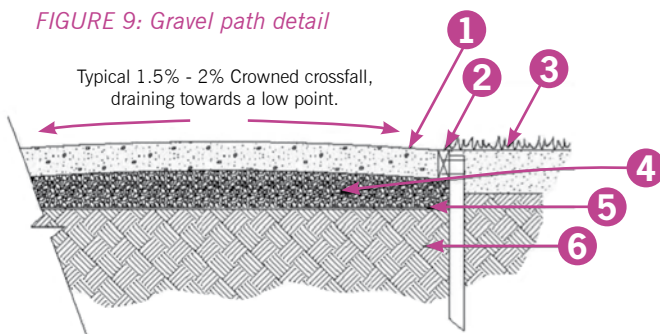
8

PATHWAYS

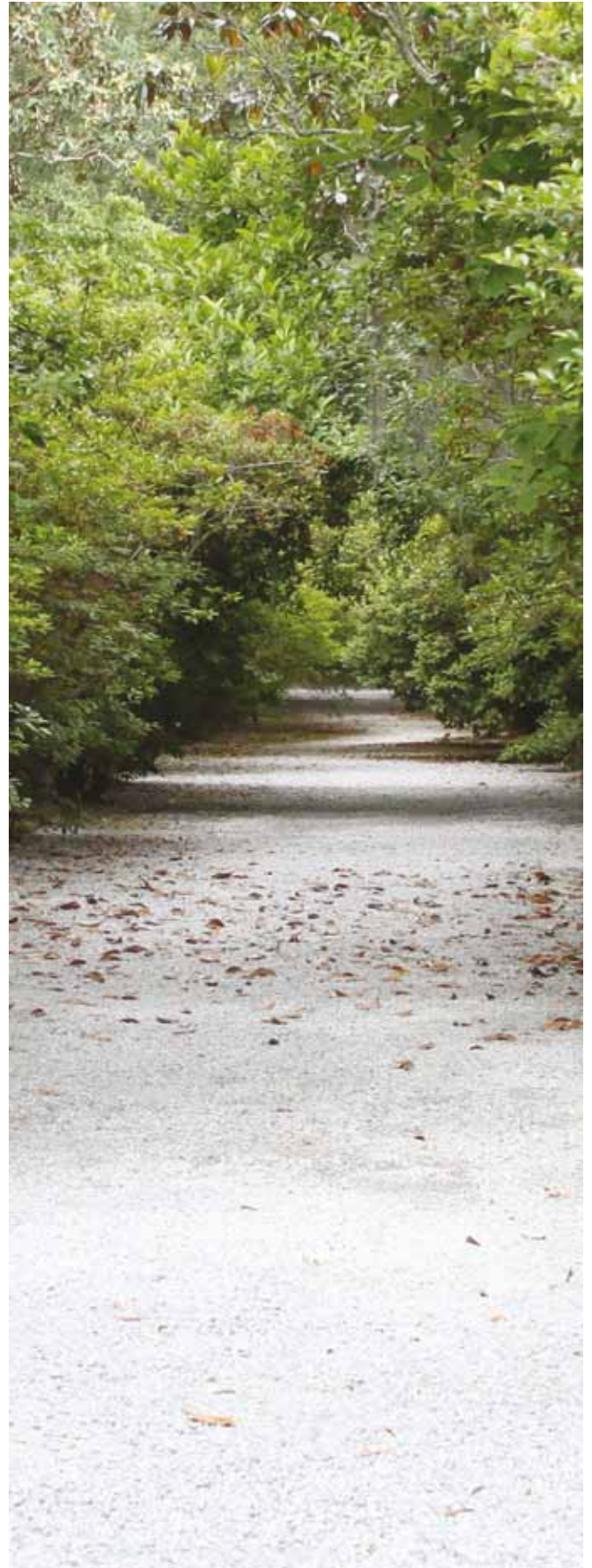
8.1 GRAVEL PATHS

Where gravel/granitic material such as Lilydale Toppings or Tuscan Toppings is used, the gravel must be cement stabilised. Pathway widths will vary however must be a minimum of 1500mm wide. In some circumstances timber edging will not be required.

FIGURE 9: Gravel path detail



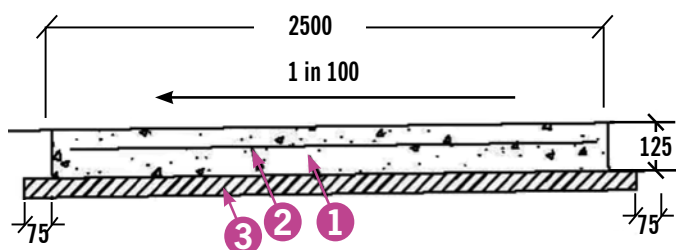
#	DESCRIPTION
1	100mm compacted depth of 3% cement stabilised granitic gravel toppings as specified to be installed in two layers. Each layer to be watered in and compacted as specified.
2	Approved timber edge (refer to timber edge detail).
3	Lawn/garden bed.
4	100mm compacted depth of Class 3, 20mm Nom. size F.C.R.
5	Weed-mat barrier.
6	Existing subgrade to be proof rolled and any obvious soft or spongy areas are to be excavated and replaced with compacted granular fill material to the satisfaction of the Superintendent.



8.2 CONCRETE PATHS

Concrete paths must be constructed to Council specifications. The detail below is for a shared path of 2.5m in width, however some footpaths may be narrower but must be constructed as per the detail below and approved by the City of Greater Geelong.

FIGURE 10: 2.5m shared concrete path specification



#	DESCRIPTION
1	125mm thick 25MPa concrete.
2	SL62 mesh placed on bar chairs (40mm top cover).
3	50mm compacted depth of Class 3, 20mm Nom. size fine crushed rock.

NOTES:

- Concrete strength is 25MPa.
- Council's pram crossing detail to be used at roadways.
- Concrete finish to be light broom finish with edges neatly tooled after the broom is applied (no bullnoses).
- Shared path to have 30mm deep sawcut joints at 2.5metre centres (no tooled joints) and expansion joints at 12metres max.
- All surfaces must comply with AS4586 - slip resistance classification of new pedestrian surface materials.
- Any exposed aggregate surface finish to be achieved by sandblasting after at least 48 hours curing time.
- N12 dia. deformed Dowell bars at 450mm crs. to join old concrete to new when reinstating broken footpath or as directed by Council Officer.
- Expansion joints to be constructed at 12m max. ctrs. and one bay either side of vehicle crossings.
- Remedial grass seeding to any areas of grass damaged as a result of construction works.
- Where permission is granted to use coloured concrete strength to be 32MPa.

Prior to pouring, when formwork is completed and reinforcing steel is on chairs, concrete paths must be subject to a hold-point inspection by a Council Engineering Subdivision Inspector.

Contact Engineering Services on **5272 5272** to arrange a footpath hold point inspection.

8.3 PAVEMENT AREAS

The Site Superintendent is responsible for ensuring that all paving and/or concrete works, including paths, concrete pads (i.e. basketball courts), retaining walls, granitic gravel paths or concrete paving is constructed according to Australian Standards and have been inspected and signed off at all relevant HP stages during the construction process.



9

IRRIGATION SYSTEMS

9.1 STANDARDS

All works, materials and components associated with the installation of the irrigation system shall conform to relevant Australian Standards, Codes of Practice, Regulations and the requirements of Council's 'Irrigation System Installation' guidelines. A copy of these guidelines can be provided by contacting Council's Irrigation Officer on **5272 4551**.

Prior to commencing any installation works, the Contractor shall be responsible for verifying that the point of connection, flow rate, and static and dynamic pressures of the water supply meet the design criteria specified on the irrigation design.

9.2 INSTALLATION

The irrigation system shall be installed according to the irrigation system design specifications, and component manufacturer's specifications. The Contractor shall arrange with a licensed surveyor for locations of the irrigation heads to be surveyed and marked on the ground surface to ensure correct spacing as given in the irrigation system design. Irrigation heads shall be installed to these surveyed marks.

Installation work shall be carried out by a Licensed Water Supply Plumber as defined in the current Water Supply Regulations and in accordance with this Specification and all relevant Australian Standards.

Where deviations from the design are required, the Contractor shall indicate on the irrigation system design the deviation, and consult with the irrigation system designer prior to making any change to ensure that the change is within the design performance specifications.



The contractor must be responsible for the testing and satisfactory performance of the complete irrigation system. Once installation of the irrigation system has been completed, a full set of 'as-constructed' drawings shall be supplied to the Council's Irrigation Officer.

9.3 ACCEPTANCE TESTS

When installation of the irrigation system is completed, an on site inspection shall be carried out by the Council's Irrigation Officer to assess the standard of the works completed and that the irrigation system operates correctly.

An audit of the irrigation system shall also be carried out, or arranged, by the Contractor using an accepted procedure and suitably qualified person to verify that the system meets the design criteria. The results of the audit shall be supplied to the Council's Irrigation Officer. Where the performance of the irrigation system is below the design criteria, the Contractor will be required to carry out any necessary works, including replacement of components, so that the irrigation system meets the design criteria.

9.3.1 STATIC TESTS

Prior to commissioning, ensure valve stations close satisfactorily. Pipe work and fittings to be pressure tested to the satisfaction of the Council's Irrigation Officer to ensure there are no water leaks in the system prior to control valve installation.

9.3.2 COMMISSIONING PROCEDURE

Upon completion of the above static tests in the presence of the Council's Irrigation Officer, the system is to be commissioned in accordance with the following procedure:

- Open each valve to test irrigation system operation. During this procedure, only one valve station is to be open at any one time.
- Test the system by continuous operation for a minimum of three (3) minutes for each valve.

9.4 MAINTENANCE AND WARRANTY

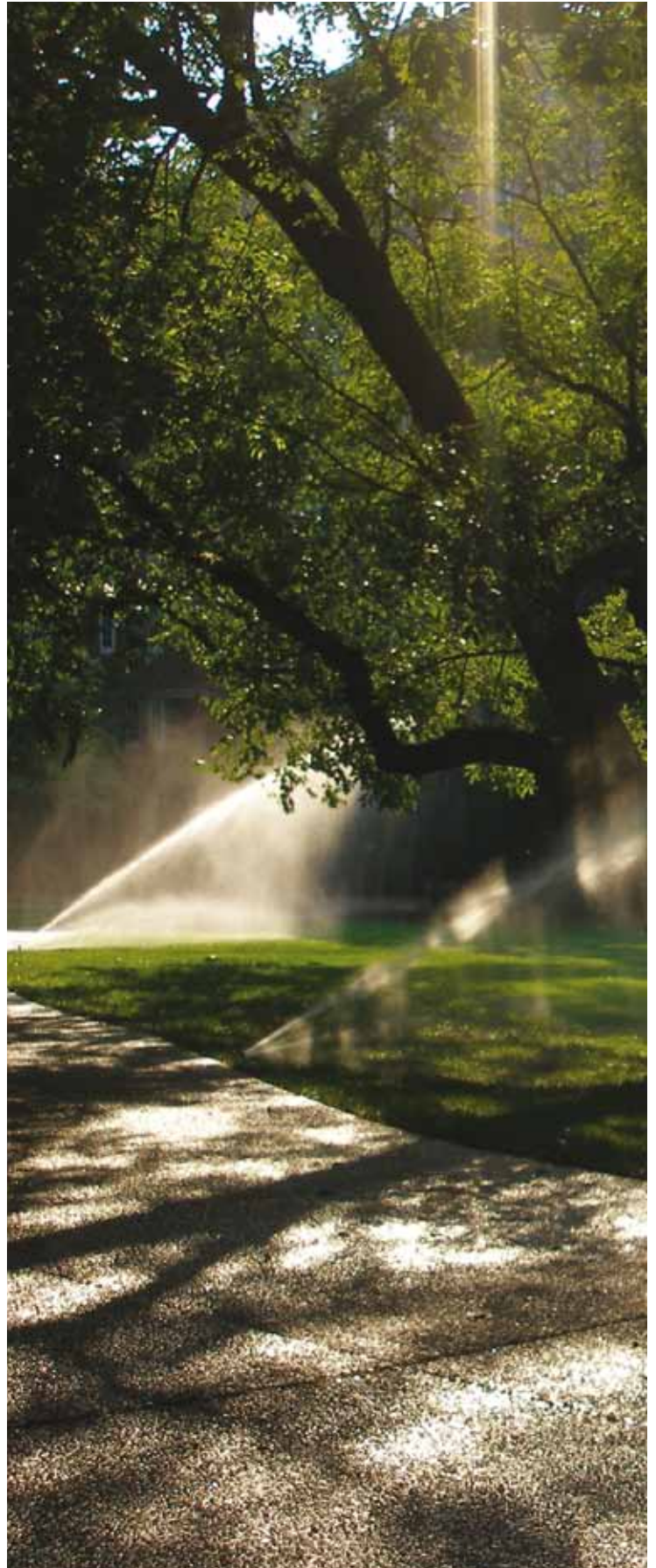
The Contractor will be required to maintain the completed irrigation system in good order and operating condition for the duration of the specified maintenance period from the date of practical completion. During which period any defective part or any breakage which in the opinion of the Council's Irrigation Officer was obviously not due to fair wear and tear or accidental damage beyond the Contractor's control, shall be replaced and/or made good.

The Contractor shall submit documentation that specifies the period of the manufacturer's warranty for all materials provided within the irrigation system including controller, irrigation heads, tank, pump, etc. To guarantee manufacturers warranties, it is imperative that all components are installed as per the manufacturer's specifications. Where installation of components fails to meet the specifications, the Contractor shall be responsible for all costs and works associated in bringing the installation of components to specification.

The Contractor shall ensure that the Supplier agrees to be directly responsible for all components that are provided as part of the irrigation system and, shall state for what period, after the expiration of the above mentioned maintenance period that the Supplier would be prepared to guarantee the equipment supplied under this Contract against faults in materials and workmanship. During which period they would undertake to replace or make good, free of charge, any defective portion of such equipment, which was obviously not due to accidental breakage or fair wear and tear.

9.5 HANDOVER

The contractor shall keep a record of all maintenance works performed during the maintenance period, including receipts for all works and/or components supplied. A copy of these documents, along with all component literature, system instruction manual and as-built drawings must be provided to the Council Representative at handover.



10

MISCELLANEOUS WORKS

10.1 PUBLIC ART

The Developer is required to present details for the regular up keep of public artworks including materials to be used (for cleaning, coating, painting etc) to maintain an excellent standard of presentation. Structural certification by a qualified Structural Engineer and a copy of the Artist's contract is also required for Council's records.

Developers should also provide attribution plaques made from durable materials (bronze, stainless steel, weld etc) to be located on the base or near works of art to acknowledge the Artist. These will include the Artist's name; title and date of the artwork; materials: and for significant commissions, a short statement about the artwork by the Artist (this should be discussed and submitted for approval of the Responsible Authority).

10.2 FURNITURE AND HARD ASSETS

All hard landscape elements, including BBQ facilities, shade shelters, lighting, playground equipment, furniture, litter bins and paving must be installed in accordance with the endorsed Landscape Plan prior to Practical Completion Approval.

Copies of all relevant documentation, including (but not limited to) the following must be provided prior to Practical Completion Approval:

- Building Permits
- Certificates of Compliance
 - Structural
 - Electrical
 - Plumbing
- As-Constructed/Structural drawings

10.2.1 MAINTENANCE OF BARBECUES

All surfaces (including pedestrian hardstand areas and grease receptacle) must be cleaned using methods that are hygienic and safe for facility users. Barbecues shall be cleaned and tested weekly on the day before every weekend and prior to public holidays. An allowance should be made for additional reactive cleaning on an as needs basis.

The developer must maintain the facility in a clean and safe working order for the duration of the maintenance period, arranging for rectification of breakdowns and vandal damage to be repaired within one (1) working day of the breakdown or damage being reported.

10.2.2 SHELTERS

All shelter structures are to be fitted with lightning protection compliant with Australian/New Zealand Standard for Lightning Protection. AS/NZS 1768:2007.

All structures are to be maintained in a clean and safe condition for the duration of the maintenance period. All timber elements are to be oiled prior to Practical Completion and again prior to Handover.

10.2.3 MAINTENANCE ACCESS GATES

Maintenance access to Public Open Space is to be provided using the City of Greater Geelong's standard swinging gates. Maintenance Access Gates must be installed adjacent to layback kerbs with concrete infill to footpath to allow vehicular access.

Refer to Civil Engineering Standard Drawings CGG 702 and CGG 703

<http://www.geelongaustralia.com.au/ct/service/article/item/8cbefaa1b017009.aspx>

10.3 ESTATE ENTRANCE FEATURES

Estate entrance features are discouraged however, if developed, must be located wholly within private property. Council will not be responsible for the maintenance of estate entrance features after handover.

10.4 UTILITY INFRASTRUCTURE

Utility service substations, kiosk sites and the like must not be located on any land identified as public open space or land to be used for any municipal purpose unless otherwise agreed by the responsible authority. Where the siting of utility infrastructure has been approved on an endorsed landscape plan, all equipment pit-lids must be free from damage and finished flush with the surrounding reserve surface level.

11

CONSTRUCTION WORKS

11.1 PRE COMMENCEMENT

Prior to the commencement of landscaping works, a pre-commencement meeting must be arranged on site by the Site Superintendent to meet with the Council Representative. The Site Superintendent, as identified at this meeting, will then be responsible for all construction works, landscape establishment and maintenance of the site and will be the point of contact for Council Officers.

A construction schedule outlining the proposed timing of landscaping components and key milestones should be provided to the City of Geelong Representative at this meeting.

Please note that ten (10) working days notice must be given for site meetings unless otherwise agreed.

11.2 CONSTRUCTION HOLD-POINTS

During construction of all landscaping, the Site Superintendent must attend the site and sign off on all construction Hold Points. Signed and dated documentation, including photo evidence for all Hold Point inspections must be provided to the Council Representative prior to Practical Completion.

Hold Point inspections must be undertaken and documented for the items and construction stages as detailed in Table 4: *Inspection Hold Points* shown opposite on page 29.



TABLE 4: Inspection Hold Points

ITEM	HOLD POINT	SITE SUPERINTENDENT INSPECTION REQUIRED	DOCUMENTARY AND PHOTO EVIDENCE REQUIRED	COUNCIL REPRESENTATIVE INSPECTION REQUIRED
PRELIMINARIES	Pre-Commencement Meeting	✓	✗	✓
SITE PREPARATION	Litter and sediment control	✓	✓	✗
	Tree protection	✓	✓	✗
	Soil preparation	✓	✓	✗
	Topsoil and soil testing	✓	✓	✗
	Weed eradication	✓	✓	✗
GARDEN BED CONSTRUCTION		✓	✓	✗
PLANTING (TREES, GARDEN BEDS AND WETLANDS)	Stock selection	✓	✗	POSSIBLE
	Site mark-out	✓	✗	POSSIBLE
	Planting	✓	✓	✗
HARD INFRASTRUCTURE (ALL CONCRETE TO BE FORMED WITH STEEL IN PLACE)	Retaining walls	✓	✓	✗
	Concrete paths/pavement areas	✓	✗	🕒
	Playground drainage	✓	✓	✗
IRRIGATION SYSTEMS	Layout	✓	✗	✗
	Flushing	✓	✗	✗
	Commissioning	✓	✗	✓

🕒 Inspection to be arranged with Council's Engineering Subdivision Inspector.



12

PRACTICAL COMPLETION MAINTENANCE AND HANDOVER



12.1 DOCUMENTATION

The following documentation must be provided to the Council Representative for all hard landscape elements prior to Practical Completion Approval.

INFRASTRUCTURE	DOCUMENTATION REQUIREMENTS
BUILT STRUCTURES: SHADE SHELTERS, ROTUNDAS ETC	<ul style="list-style-type: none"> • Building Permit • As-built drawings for: <ul style="list-style-type: none"> * Architectural * Electrical * Structural • Certificates of Compliance <ul style="list-style-type: none"> * Engineering * Electrical * Plumbing • Lightning protection compliant with the Australian/New Zealand Standard AS/NZS 1768:2007 • Materials details and colour scheme • Maintenance Schedule • Certificate of Occupancy/Final Certificate
BARBEQUES	<ul style="list-style-type: none"> • Certificate of Compliance – Electrical • Utility connection – power • Weekly cleaning (minimum) maintenance regime • Transfer to Council's preferred utility provider following handover at conclusion of two (2) year maintenance period
LIGHTING	<ul style="list-style-type: none"> • Certificate of Compliance – Electrical • Utility connection – power • Transfer to Council's preferred utility provider following handover at conclusion of two (2) year maintenance period
BOARDWALKS/DECKS ETC	<ul style="list-style-type: none"> • Building Permit • Certificate of Compliance – Engineering • As-built construction plans • Materials Detail and Maintenance Schedule
DRINK FOUNTAINS	<ul style="list-style-type: none"> • Certificate of Compliance – Plumbing • Utility connection – water • Transfer to Council's water account following handover at conclusion of maintenance period
PLAYGROUNDS	<ul style="list-style-type: none"> • Independent Play Space Audit • As-built drainage plans

12.2 PRACTICAL COMPLETION INSPECTION

The Site Superintendent must contact the Council Representative to arrange for an inspection when all works have been completed in accordance with the approved plans. A minimum of ten (10) working days notice must be provided in order for the Council Representative to arrange preliminary inspections by the various Council Departments who will have future ownership or maintenance responsibility for assets within the reserve.

No partial Practical Completion approvals will be issued except in special circumstances and as previously agreed by Council. A signed, completed checklist, Appendix 1, must be submitted to Council before the arranged inspection date.

In addition to the construction documentation detailed at 12.1, the following items must be provided to Council prior to Practical Completion:

- Hold Point Inspection documentation signed off and dated by the Site Superintendent.
- As-built plans (in both PDF and DXF format).
- Schedule of Quantities providing valuations for all assets forming part of landscaping works.
- Maintenance Schedule for duration of the maintenance period.

12.3 PRACTICAL COMPLETION APPROVAL

When all appropriate documentation has been provided and the landscaping works have been completed to the Council Representatives' satisfaction, the Council Representative will advise the Site Superintendent in writing of Practical Completion approval. In circumstances where Practical Completion is approved subject to minor rectification works, these works will need to be completed within four (4) weeks of the approval notification.

If landscaping works have not been completed to Council's satisfaction, the Council Representative will advise the Site Superintendent in writing of further works required. When these works have been completed, the Site Superintendent will make a further appointment for the Council representative to revisit the site. Practical Completion Approval will only be issued when all works have been completed to the satisfaction of Council.

Notification of practical completion approval will include the expected date of final Handover (HO) which will be at such time when the site has been maintained for the duration of the maintenance period from the date of Practical Completion. Landscaping works are generally subject to a two (2) year maintenance period.

A maintenance log of all routine maintenance for the site must be available for inspection. This should generally be in accordance with the Maintenance Schedule provided prior at Practical Completion.

12.4 MAINTENANCE OBLIGATIONS

The maintenance period will commence on the date of Practical Completion approval or upon the issue of the Statement of Compliance, whichever is the latter.

The nominated Site Superintendent is responsible for all maintenance on the site. The Site Superintendent must ensure that all works forming part of the endorsed plans are maintained in accordance with Maintenance Schedule provided at Practical Completion and that maintenance records are completed and submitted for the duration of the maintenance period. The Site Superintendent must provide a signed and dated Maintenance Checklist, Appendix 2, to Council every three (3) months during the maintenance period. Failure to provide this information or the provision of incorrect information may result in the extension of the maintenance period.

Council Representatives will regularly inspect the site during the maintenance period and any defects will be communicated to the Site Superintendent in writing. Works must then be completed within two (2) weeks or as specified by the Council Representative. Failure to complete the works in the specified timeframe may lead to the extension of the maintenance period.

12.5 HANDOVER INSPECTION

It is the responsibility of the Site Superintendent to contact the Council Representative to arrange a Handover inspection at the conclusion of the maintenance period. The Site Superintendent must provide a signed and dated Handover Checklist, Appendix 3, prior to the handover site meeting.

No handovers will be accepted (or handover inspection carried out) during the summer period, between 30 November and 1 March.

No partial handovers will be undertaken except in specific circumstances and as previously agreed by Council.

Any trees or plantings that are not up to the required standards must be replaced and monitored until such time as the Council Representative deems that the trees or plants are of an acceptable standard for handover. Proof of planting date must be supplied. In these instances, the maintenance period of two (2) years may need to be extended.

12.5 HANDOVER INSPECTION (CONTINUED)

Upon the acceptance of the site by Council, notification of Handover Approval will be issued to the Site Superintendent. It is the obligation of the Site Superintendent to provide the Notification of Handover Approval to all relevant utility providers and have these accounts transferred to the City of Greater Geelong's preferred suppliers.

12.6 BONDS

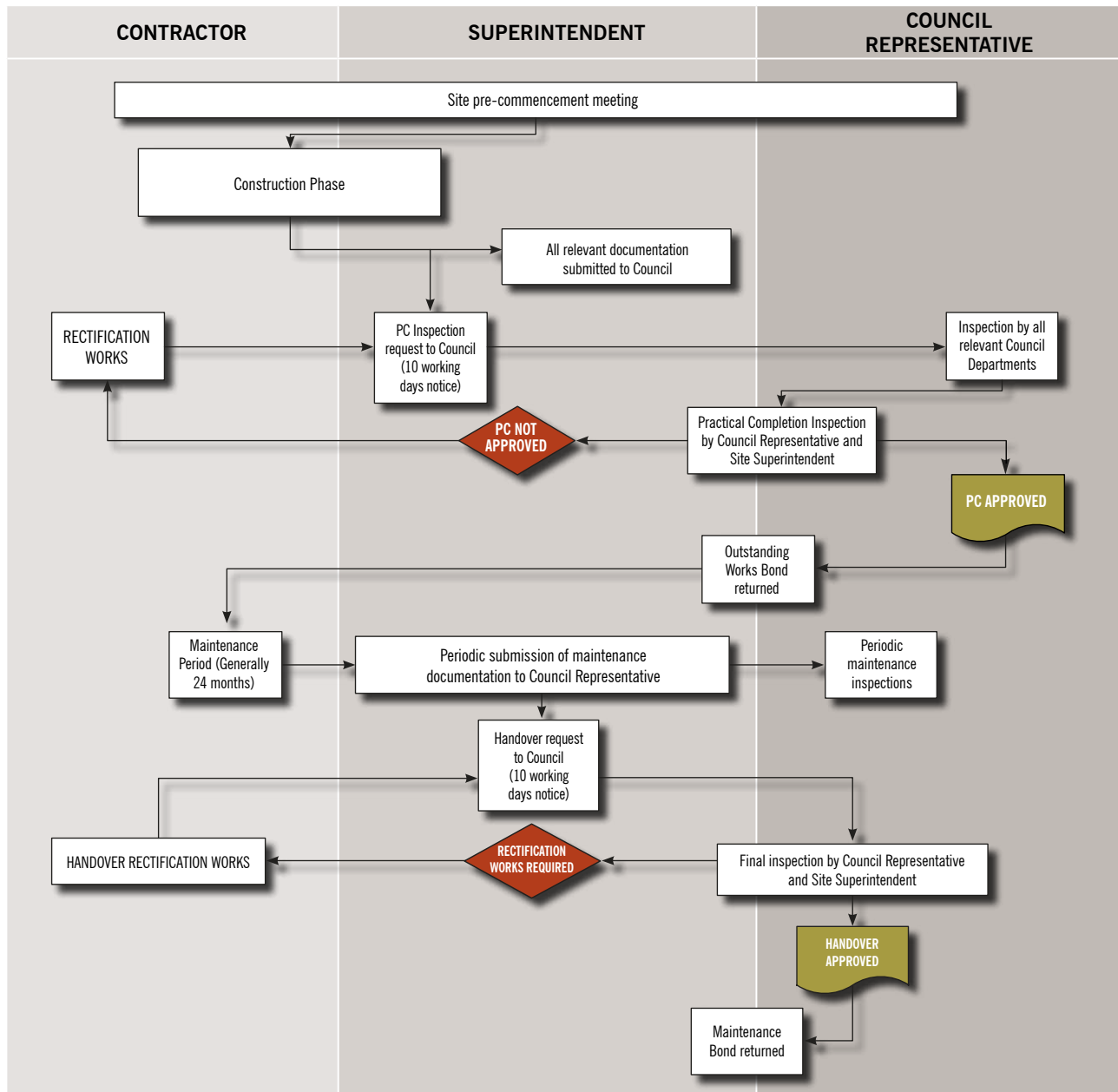
Where landscaping works are not completed prior to Statement of Compliance for all, or a particular stage of

a subdivision, the outstanding landscaping works as shown on the endorsed landscaping plan must be suitably bonded.

The estimate for the cost of incomplete landscaping works must be professionally costed by the Site Superintendent (or their Landscape Designers or Contractors) and then be submitted to the Council Representative for approval. The estimate must include a schedule of quantities for all outstanding works and shall be to the value of 125% of the total cost of outstanding works.

Prior to Practical Completion and the return of any outstanding works bonds, a maintenance bond must be provided to the value of 125% of the value of landscape maintenance of all the works for the duration of the maintenance period.

FIGURE 11: Reserve Landscaping Process



APPENDICES

PRACTICAL COMPLETION MAINTENANCE AND HANDOVER

The following section includes a number of checklists which must be completed and submitted in conjunction with supporting documentation to the Council Representative prior to Practical Completion.



PRACTICAL COMPLETION CHECKLIST

CITY OF GREATER GEELONG

APPENDIX 1 - A

HOLD POINTS: DOCUMENTATION AND PHOTOGRAPHS TO BE PROVIDED

STAGE	ITEM	DATE PROVIDED
SITE PREPARATION	Litter and Sediment Control	
	Tree Protection	
	Soil Preparation	
	Topsoil and Soil Testing	
	Weed Eradication	
PLANTING (GARDEN BEDS, TREES AND WETLANDS)	Garden Bed Construction	
	Stock Selection	
	Site Mark-out	
	Planting	
HARD LANDSCAPING (ALL CONCRETE TO BE FORMED WITH STEEL IN PLACE)	Retaining Walls	
	Paths	
	Concrete Pads	
PLAYGROUNDS	Soft fall area sub-surface drainage – channels and sleeved slotted pipe installed, covered in aggregate and connected to stormwater system	
IRRIGATION SYSTEMS	Layout	
	Flushing	
	Commissioning	

COMMENTS

DETAILS

Site Superintendent:

Contact Name:

Company Name:

Address: State: Postcode:

Contact Telephone: Email:

Signature: Date:

PRACTICAL COMPLETION CHECKLIST

CITY OF GREATER GEELONG

APPENDIX 1 - B/1

CONSTRUCTION DOCUMENTATION TO BE PROVIDED		
ITEM	DOCUMENTS	DATE PROVIDED
BUILT STRUCTURES – SHADE SHELTERS, ROTUNDAS ETC	Building Permit	
	As-built drawings for: <ul style="list-style-type: none"> • Electrical • Structural 	
	Certificates of Compliance <ul style="list-style-type: none"> • Engineering • Electrical • Plumbing 	
	Lightning Protection compliant with the Australian/ New Zealand Standard AS/NZS 1768:2007	
	Materials Details and Colour Scheme	
	Maintenance Schedule	
	Certificate of Occupancy/Final Certificate	
BARBEQUES	Certificate of Compliance – Electrical	
	Utility Connection (electrical) in Developer's name	
	Weekly cleaning (minimum) contract in place for duration of the maintenance period	
LIGHTING	Certificate of Compliance – Electrical	
	Utility Connection (electrical) in Developer's name	
BOARDWALKS/DECKS ETC	Building Permit	
	Certificate of Compliance - Engineering	
	As-built construction plans	
	Materials Detail and Maintenance Schedule	
DRINK FOUNTAINS	Certificate of Compliance – Plumbing	
	Utility connection (water) in Developer's name	
PLAYGROUNDS	Independent Play Space Audit	
	As-built drainage plans	
	Copies of Manufacturer Warranties	
	Weekly safety inspection contract in place for duration of the maintenance period	
IRRIGATION SYSTEMS	As-built plans showing location of all components	
	Copy of Manufacturer's Warranties	
	Utilities connected (electricity and water) in Developer's name	

PRACTICAL COMPLETION CHECKLIST

APPENDIX 1 - B/2

CONSTRUCTION DOCUMENTATION TO BE PROVIDED		
ITEM	DOCUMENTS	DATE PROVIDED
PUBLIC ART	Materials Detail and Maintenance Schedule	
	Certificate of Compliance - Engineering	
GENERAL	Schedule of Quantities providing valuations of the following asset classes:	
	<ul style="list-style-type: none"> • Play equipment • Trees • Furniture • Shelters • Barbecues • Irrigation • Public Art • Paths • Retaining Walls • Bike Racks • Bollards, Post and Rail Barriers • Drink Fountains • Lighting • Litter Bins • Decking • Hardstand Areas • Landscaping (all other assets i.e. earthworks, turf, garden beds etc) 	

COMMENTS

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DETAILS

Site Superintendent:

Contact Name:

Company Name:

Address: State: Postcode:

Contact Telephone: Email:

Signature: Date:

PRACTICAL COMPLETION CHECKLIST

CITY OF GREATER GEELONG

APPENDIX 1 - C/1

PRACTICAL COMPLETION SITE INSPECTION ITEMS

Unless otherwise agreed in writing by the Council Representative, the following parameters must be met in order to achieve Practical Completion approval of Landscaping works within public open space.

ITEM/AREA	REQUIREMENTS	<input type="checkbox"/>	<input type="checkbox"/>
GARDEN BEDS	Free from weeds and litter		
	Mulched throughout to a minimum 75mm in depth		
	Edges clearly defined – not encroaching onto path		
	Plant species, quantities and locations in accordance with endorsed plans		
	All plants displaying good health, free of pest and diseases		
WETLAND PLANTING	Plant species, quantities and locations in accordance with endorsed plans		
	All plants displaying good health, free of pest and diseases		
	All wetland systems and surrounds are free of weeds and litter		
	No wetland system is to include Typha sp (Combungi) or Cyperus Involucratus (Umbrella Sedge)		
	Inlets are adequately rocked to prevent erosion around pipes and infrastructure		
TREE PLANTING	Tree species, quantities and locations in accordance with endorsed plans and conform with specified offsets		
	Trees are securely staked and tied with flexible ties		
	Correctly planted with top of root ball level with surface		
	All trees have a weed free, well-formed mulch ring at least 1m in diameter and 200mm in depth		
	The mulch is clear of the trunk of the tree		
	All trees have a single straight leader (Trees will not be accepted with multiple leaders)		
	Trees are of sound structure and display good health and are free of disease and pests		
	Where die back, leaf burn, windburn, vandalism etc has occurred, trees are to be monitored for recovery or replaced where necessary		
TURF PASSIVE OPEN SPACE	Nature strips are level, 80% grass cover, free of rock, rubbish and weeds		
	Sprigged or sodded warm season turf is first cut with at least 80% of sprigs showing visible new growth		
	Turf areas weed free with no bare patches >1m ²		
	Sacrificial winter grass: first cut, 80% germination <i>NB: to be removed and replaced with sodded or sprigged warm season turf at commencement of first growing season</i>		

PRACTICAL COMPLETION CHECKLIST

APPENDIX 1 - C/2

PRACTICAL COMPLETION SITE INSPECTION ITEMS

Unless otherwise agreed in writing by the Council Representative, the following parameters must be met in order to achieve Practical Completion approval of Landscaping works within public open space.

ITEM/AREA	REQUIREMENTS	<input type="checkbox"/>	<input type="checkbox"/>
TURF SPORTING SURFACES	Minimum 90% cover		
	No weed or bare patches >1m ²		
PLAYGROUNDS AND PLAY EQUIPMENT	All equipment to be in a clean and safe condition		
	All equipment is to be installed in accordance with the manufacturers directions and located in accordance with the endorsed landscape plans		
	Soft fall mulch to a minimum depth of 300mm and level with or above all play equipment fall zone depth markers		
IRRIGATION SYSTEMS	Subject to commissioning test and audit by the Council's Irrigation Officer		
PAVEMENTS AND PATHWAYS	All paths to be located in accordance with endorsed plans		
	Paths to be level (free from potholes) and clear of litter, weeds and mulch		
MISCELLANEOUS	Public Art: clean and safe, free from defects		
	Furniture: clean and oiled (timber)		
	Utility Infrastructure: all pits lids to be undamaged and level with surrounding surface		

COMMENTS

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DETAILS

Site Superintendent:

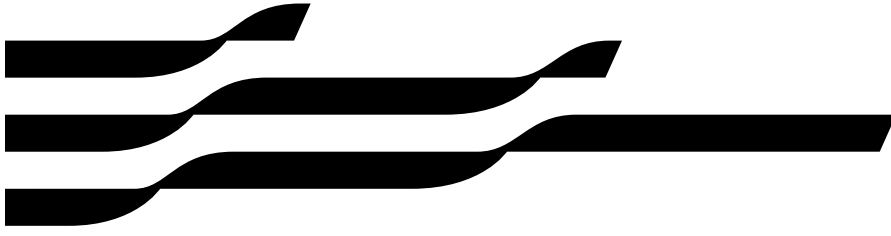
Contact Name:

Company Name:

Address: State: Postcode:

Contact Telephone: Email:

Signature: Date:



MAINTENANCE CHECKLIST

CITY OF GREATER GEELONG

APPENDIX 2/1

MAINTENANCE CHECKLIST

This checklist is to be completed and submitted to the Council Representative every three (3) months during the maintenance period.

ITEM/AREA	REQUIREMENTS	<input type="checkbox"/> <input type="checkbox"/>
GENERAL RESERVE AREAS	Park and reserve areas (including adjacent nature strips) are mown within a height range of 50mm to 150mm. (This will typically require a minimum of 13 cuts per year) and are free of, rock, rubbish and weed.	
	Pot holes or scoured ruts filled and levelled.	
	Selective spraying of broadleaf weed growth within lawn areas and garden beds using registered herbicides and methods to the approval of the Responsible Authority.	
	Removal of builders rubbish, builders stockpiles, domestic litter, wind blown litter and litter dumped on site.	
GARDEN BEDS	Garden beds are in neat order and free of weed and rubbish.	
	Maintaining all planting support materials as installed (eg. replacing damaged or missing tree guards, tree stakes, weed control mat, erosion control matting etc).	
	Garden bed edges are clearly defined with no material encroaching on surrounding path or lawn areas.	
	Any dead, diseased or missing plants have been replaced.	
	All shrubs and groundcovers are displaying healthy and vigorous growth.	
	Mulch is to a minimum 75mm deep and covers whole garden bed.	
TREES	Trees are securely staked with flexible ties.	
	Trees are of sound structure and display good health and are free of disease and pests.	
	All trees have a single straight leader and have been formative pruned.	
	All trees are mulched with a ring at least 1m in diameter and 200mm in depth and a watering bowl formed. All mulch bowls are free of weeds.	
IRRIGATION SYSTEM	All components of system are functional.	
	Automatic controller stations have been set to seasonal settings.	

MAINTENANCE CHECKLIST

APPENDIX 2/2

MAINTENANCE CHECKLIST

This checklist is to be completed and submitted to the Council Representative every three (3) months during the maintenance period.

ITEM/AREA	REQUIREMENTS	<input type="checkbox"/> <input type="checkbox"/>
WETLAND SYSTEMS	Refer to maintenance requirements contained in Melbourne Water documents listed in Technical Note MW1 Wetlands Establishment. Council requires that all Melbourne Water Maintenance standards are to be met.	
	All wetland systems and surrounds are free of litter and weed.	
	All aquatic and ephemeral plantings are displaying healthy and vigorous growth.	
	Any dead or missing plants have been replaced.	
PLAYGROUNDS	Soft fall mulch is spread evenly and within 20mm of surrounding surface level.	
	Soft fall mulch is loose and to a minimum depth 250mm and covering play equipment minimum depth markers.	
	All play equipment is in a clean and safe operating condition, free from defects.	
	Play spaces are free of litter and graffiti.	
HARD LANDSCAPE FEATURES	All hard landscape equipment, including furniture, shelters, bridges, boardwalks barbecues, paths, bins bollards and fencing is undamaged and is being maintained with no missing or damaged items.	
	All graffiti has been removed and BBQ is clean and rubbish removed.	

COMMENTS

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DETAILS

Site Superintendent:

Contact Name:

Company Name:

Address: State: Postcode:

Contact Telephone: Email:

Signature: Date:

HANDOVER INSPECTION CHECKLIST

CITY OF GREATER GEELONG

APPENDIX 3/1

HANDOVER INSPECTION CHECKLIST

This checklist is to be completed and submitted to the Council Representative at the conclusion of the maintenance period, immediately prior to Handover.

ITEM/AREA	REQUIREMENTS	<input type="checkbox"/>	<input type="checkbox"/>
GRASS AREAS/ GENERAL GRASS AREAS (E.G. PARKS, NATURE STRIPS AND RESERVES)	Grass is no longer than 100mm and no shorter than 40mm.		
	Grass is free of pests, diseases and weeds.		
	Grass is displaying even, healthy vigorous growth and must have coverage of minimum 90%.		
	No bare patches >1m ² .		
GARDEN BEDS	Garden beds are free of litter and weeds.		
	Garden bed edges are clearly defined.		
	Any dead, diseased or missing plants have been replaced a minimum of three (3) months prior to handover. Proof of planting date is provided.		
	All shrubs and groundcovers are displaying healthy and vigorous growth.		
	Mulch is 75mm deep and covers whole of garden bed.		
TREES	The required number, size and species of trees are present and are located in accordance with the endorsed plan.		
	Trees display structural integrity and display vigorous healthy growth.		
	Tree stakes must be retained unless directed by the Council Representative. Mulch rings of at least 1m in diameter and 200mm in depth are well formed and weed free.		
	All dead or diseased trees have been replaced as required and maintained for an extended maintenance period as determined by Council.		
	All weeds and suckering material have been removed.		
	All trees have a single straight leader. Minimum 1m from ground level is clear and straight.		
	The rootball of all trees (planted more than 12 months previously) does not move. Any tree where movement occurs should be replaced.		

HANDOVER INSPECTION CHECKLIST

APPENDIX 3/2

HANDOVER INSPECTION CHECKLIST

This checklist is to be completed and submitted to the Council Representative at the conclusion of the maintenance period, immediately prior to Handover.

ITEM/AREA	REQUIREMENTS	<input type="checkbox"/> <input type="checkbox"/>
IRRIGATION SYSTEM	All parts and components of system are functional and the system has been flushed.	
	Certificate of Currency for the back flow test has been provided to the Council Representative.	
	Stations have been set to seasonal settings.	
	As-built drawings indicating fitting types and pipe locations and depth etc, have been supplied to Council together with Irrigation Maintenance Manual and keys to controller box.	
WETLAND SYSTEMS	All wetland systems and surrounds are free of litter and weeds.	
	All planting, including aquatic and ephemeral plants are established and display good health.	
	All sediment traps are removed as directed by the Council Environment and Natural Resources Unit.	
	All protective netting has been removed as directed by the Council Environment and Natural Resources Unit.	
PLAYGROUNDS	Soft fall mulch is spread evenly and within 20mm of surrounding surface level.	
	Soft fall mulch is loose and to a minimum depth of 250mm and covering play equipment minimum depth markers.	
	All play equipment is in a clean and safe operating condition, free from defects.	
	Play spaces are free of litter and graffiti.	
	A current playground Certificate of Compliance supplied to the Council Representative.	
HARD LANDSCAPE FEATURES	All equipment, including BBQ areas, shelters and lighting are cleaned and in good working order and the keys, where appropriate, handed to Council.	
	All paths are in good order, level, with clearly defined edges free from weeds, grass, mulch and litter.	
	Certificate of Electrical Compliance for any power connection e.g. BBQ, lighting, irrigation etc has been supplied to the Council Representative.	
	Timber railings and furniture are cleaned and oiled.	
	All graffiti has been removed.	

PLAYGROUND INSPECTION CHECKLIST

CITY OF GREATER GEELONG

APPENDIX 4

PLAYGROUND INSPECTION CHECKLIST

The following items are to be inspected and attended to on a weekly basis throughout the maintenance period. Records of all inspections and maintenance actions should be maintained and available for viewing by the Council Representative at all times.

ITEM	REQUIREMENTS	<input type="checkbox"/> <input type="checkbox"/>	ITEM	REQUIREMENTS	<input type="checkbox"/> <input type="checkbox"/>
SUPPORTS/ BRACKETS, FOUNDATIONS/ FOOTINGS	No loose or missing fasteners. Check for stability in the ground – should not be loose or able to be moved when pushed/shaken. Check concrete foundations for cracks, erosion and sharp edges.		ROPES, CHAINS, SHACKLES ETC	All ropes and chains are to be in sound condition. Ropes must not be frayed or have any cuts or damaged strands. Chains and shackles with more than 30% wear must be replaced.	
RUST/ROT	Check all equipment and footings of posts and supports for rust/rot or sharp edges.		BOLTS, NUTS, SCREWS ETC	No fasteners are missing or loose.	
BEARINGS/ HINGES	Check all bearings and hinges operate freely and are in sound condition. Grease all points/bearings as necessary.		SEATS	Check they are fastened correctly with no sharp edges or cracks. All rubber coatings to be in good condition.	
WOOD POSTS, DECKING ETC	Check that all wood components are in good condition with no cracks, splintering, rotting or other damage.		UNDER SURFACING	Minimum depth 200mm, level throughout, free of rubbish, weeds, and other foreign material. Rubberised surfaces are not lifting, peeling or damaged.	
SAFETY GUARDS/ INFILL PANELS	All guards are in place and any moving parts such as swivels of hinges that may cause injury are covered. All infill panels are in place and in sound condition.		RAMP SURFACES	Free from rubbish and debris such as glass, sand, stones and oil. Edges of ramps not broken or chipped. Drains in skate bowls are clear of debris and working properly.	
SHARP EDGES	No sharp edges on any surface – especially on slides and skate ramps. All caps on tubes must be in place.		GRAFFITI AND VANDALISM	Any graffiti and vandalism to structures and surrounds should be repaired/cleaned as soon as possible as soon as noticed. Close any equipment that is in a dangerous condition and report the situation to the Council Representative.	

ANY OTHER NOTABLE HAZARDS SHOULD BE REPAIRED OR MADE SAFE IMMEDIATELY.

DETAILS

Inspector's Name:

Company Name:

Signature:

Date:

CITY OF GREATER GEELONG

PO BOX 104

GEELONG VIC 3220 AUSTRALIA

GENERAL ENQUIRIES:

5272 5272

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